CHILDHOOD OBESITY
December 2015 | Volume 11, Number 6

DOI: 10.1089/chi.2014.0107

Family Resiliency: A Neglected Perspective in Addressing Obesity in Young Children

Madeleine Sigman-Grant, PhD, RD,[1] Jenna Hayes, MS,[1] Angela VanBrackle, MEd,[1] and Barbara Fiese, PhD[2]

Abstract

Background: Traditional research primarily details child obesity from a risk perspective. Risk factors are disproportionately higher in children raised in poverty, thus negatively influencing the weight status of low-income children. Borrowing from the field of family studies, the concept of family resiliency might provide a unique perspective for discussions regarding childhood obesity, by helping to identify mediating or moderating protective mechanisms that are present within the family context.

Methods: A thorough literature review focusing on (1) components of family resiliency that could be related to childhood obesity and (2) factors implicated in childhood obesity beyond those related to energy balance was conducted. We then conceptualized our perspective that understanding resiliency within an obesogenic environment is warranted.

Results: Both family resiliency and childhood obesity prevention rely on the assumptions that (1) no one single answer can address the multifactorial nature involved with adopting healthy lifestyle behaviors and (2) the pieces in this complex puzzle will differ between families. Yet, there are limited holistic studies connecting family resiliency measures and childhood obesity prevention. Combining mixed methodology using traditional measures (such as general parenting styles, feeding styles, and parent feeding behaviors) with potential family resiliency measures (such as family routines, family stress, family functioning, and family structure) might serve to broaden understanding of protective strategies.

Conclusions: The key to future success in child obesity prevention and treatment may be found in the application of the resiliency framework to the exploration of childhood obesity from a protective perspective focusing on the family context.

Introduction

Since 2004, over 3000 articles have been identified in PubMed related to the causes of obesity in preschool children, with many focused on a multitude of risk factors leading to excessive weight. Although recent data indicate a modest reduction in the prevalence of obesity in 2- to 5-year-olds,[1] most US children grow up within an obesogenic environment, which promotes a sedentary lifestyle along with the overconsumption of food. This is done by (1) providing easy access to inexpensive, high-energy-dense foods; (2) reducing energy demands of daily life activities; (3) increasing sedentary leisure time; (4) limiting opportunities for recreational physical activity (PA); and (5) marketing messages that promote eating and sedentary behaviors.[2] Based on family systems framework, it can be conceptualized that how families cope with the challenges of this environment is a product of their potential for resiliency.[3] Moreover, the underlying assumption behind resiliency is that adverse challenges happen—it is *how* stress is handled or perceived that defines whether or not coping is successful.

The most basic definition of individual resiliency is the ability to recover from an adverse (*i.e.*, stressful) situation. Warschaw and Barlow[4] suggest that a resilient individual exhibits 10 components: possessing an unambivalent commitment to life; feeling self-confident; being adaptable; demonstrating resourcefulness; being willing to take risks; accepting personal responsibility; displaying a positive perspective; being open to new ideas; being proactive; and exhibiting attentiveness. These positive attributes allow resilient individuals to balance life stressors, including work and family, life cycle transitions, financial strains, illnesses, and losses. Family resiliency is defined by Patterson as ''the process by which families are able to adapt or function competently following exposure to significant

[1]University of Nevada Cooperative Extension, University of Nevada Reno, Las Vegas, NV.
[2]Department of Human Development and Family Studies, University of Illinois, Urbana, IL.

adversity or crisis''[5] (p. 352). Bridging the child and the community, the family is central as the processes of handling adversity are enacted.[5] Resilient families face challenges efficiently and are rarely derailed by stressors. Key characteristics of resilient households include organized and predictable routines, open and direct communication, and the capacity to adequately deal with negative and strong emotions.[6,7]

Considering that over three quarters of American preschoolers and two thirds of children and adolescents are *not* overweight or obese,[1] it can be said that the majority of children have shown to be resilient to the obesogenic environment. Identifying how these families construct and manage their lives within this potentially high-risk environment should provide valuable insights into understanding the multiple dynamics protecting preschoolers from excessive weight gain and unhealthy behaviors.[8] However, few studies directly link the long-established concept of ''family resiliency'' with either the obesogenic environment or with childhood obesity.[9] There are nevertheless examples of family functioning that could be assimilated to demonstrate the link between family resiliency and childhood obesity. Hence, the aim of this study is to provide a perspective that explores and integrates a family resiliency framework into obesity prevention and describes approaches that could be used in identifying protective factors augmenting a family's resiliency to the obesogenic environment. We hypothesize that similarities underlying resiliency and obesity prevention exist, can be measured simultaneously, and should be integrated into intervention studies.

Methods

The study was divided into two components: a thorough (albeit not systematic) literature review focusing on (1) components of family resiliency that could be related to childhood obesity and (2) factors implicated in childhood obesity beyond those related to energy balance. Search words and phrases included resiliency (both individual and family), childhood obesity, risk factors, protective factors, prevention, family functioning, obesogenic environment, parenting, and stress. Article abstracts containing anything relevant to the topic were reviewed. Key concepts regarding factors associated with family resiliency and childhood obesity were extracted. PubMed was the primary database searched. Given that similarities were noted between child obesity and resiliency research, we then conferred to conceptualize our perspective that understanding resiliency within an obesogenic environment and inclusion of resiliency measurements into future childhood obesity prevention studies are warranted.

Results

Both family resiliency and childhood obesity prevention rely on the assumptions that (1) no one single answer can address the multifactorial nature involved with adopting healthy lifestyle behaviors, and (2) the pieces in this complex puzzle will differ between families. The breadth and depth of the literature review findings validates these assumptions. Yet, there are limited holistic studies connecting family resiliency measures and childhood obesity prevention.

Family Resiliency

Figure 1 depicts the potential impact of family resiliency on child outcomes. Table 1 summarizes postulated attributes of resilient families that apply to negotiating the obesogenic environment. All families experience life challenges. However, when stress and challenges accumulate and family resources are weakened, children are placed at risk for poor outcomes. Children at increased risk for health and social problems are those who are exposed to high levels of stress, in particular, children living in poverty,[10,11] given that their families consistently face more chronic adverse situations.[5] Further, poor women from racial and ethnic minorities experience the most economic, educational, and familial adversity.[12] The impact on their children is well described by Felner,[10] who states that ''the likelihood that those caring for them [children living in poverty] are experiencing stressful or even problematic interactions elsewhere in the settings that define their lives is clearly elevated (e.g. high stress levels; high levels of job instability and underemployment; difficult, exhausting work)'' (p. 42). Among economically disadvantaged women, differences are observed when viewing a gradient of incomes.[13] How mothers perceive their economic situation may modulate the impact of actual experience and reflect how they cope with their environment.[13–17] Indeed, women who perceive themselves as ''strong'' express their pride in overcoming life's stressors associated with poverty in spite of not having control over their economic situation.[18,19]

What is intriguing is that *most* children living in poverty, even though they are exposed to the same stressors as their peers, thrive,[20,21] avoiding drug and alcohol abuse, promiscuity, and other risky behaviors. Although they may experiment with risky choices (*e.g.*, drinking beer, smoking marijuana, and early sexual experiences), resilient children elect not to continue with these choices. Children become resilient when they learn to adapt to challenging demands with guidance from positive, competent adults.[22] In describing resilient children, Ginsburg[23] uses the seven critical C's: competence; confidence; connection; character; contribution; coping; and control. Further, he suggests seven ways that parents can build resilient children: love; let go; expect the best; listen; set a good example; encourage; and teach.

Childhood Obesity

It is well established that food intake and energy expenditure are not the sole determinants of weight status.

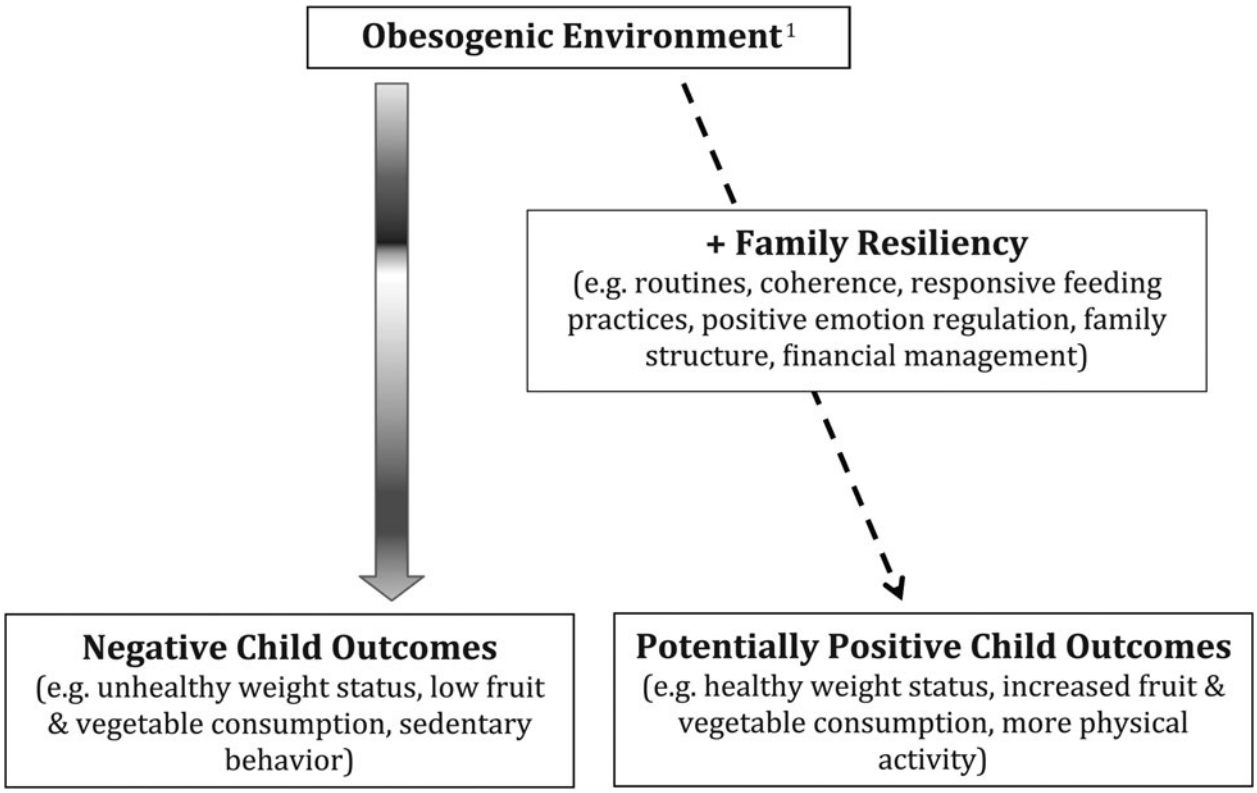

Figure 1. Proposed model depicting potential impact of family resiliency factors. [1]Obesogenic environment is defined as one that promotes a sedentary lifestyle along with the overconsumption of food.

Initially, genetics and epigenetic changes during pregnancy and the first years of life impact child growth and development.[24–27] Thus, a child is born with certain physiological and behavioral propensities that ''predict'' weight status. Utilizing the social-ecological framework, [28] actual preschooler weight status is determined when these individual propensities are exposed to experiences at home, out-of-home care, and preschool (the microenvironment).[29–33] These experiences (and hence weight outcomes) are modulated further by broader social, political, and economic factors (the macroenvironment).[28,33,34] Harrison and colleagues[31] interpreted this framework by describing ''six broad spheres of influence within and surrounding the child, namely, the cell, child, clan, community, country, and culture spheres,'' each with its own unique effect on the child's development (p. 51). It has yet to be determined whether a single component (the individual, the microenvironment, or the macroenvironment) is more influential in development of excessive weight gain in early childhood, but it is clear that all three exert their impact. Further, excessive weight during the preschool years tends to predict later obesity in children, with its concomitant health consequences.[35] It should be noted, however, that not all children who are overweight or obese will display metabolic symptoms (such as high blood pressure, high serum lipids, or high blood glucose levels) that would be expected as outcomes of their excessive weight status.[36]

Table 1. Attributes Promoting Family Resiliency

Four core family functions[5]	Protective factors[22]	Critical constructs[100]
Family formation	Intimate partner relationship stability	Positive outlooks
Nurturance, education, socialization	Family structure	Spirituality
Economic support	Stimulating environment	Family member accord
Protection	Family of origin influences	Flexibility
	Belongingness	Family communication
	Family cohesion (family coherence)	Family time
	Supportive parent-child interaction	Share recreation
	Social support	Routines and rituals
	Stable and adequate income	Support network
	Adequate housing	Financial management

Risk and Protective Factors

Traditionally, research details the multifactorial nature of child obesity from a *risk* perspective. Factors include, but are not limited to, genetic predisposition, personal attributes, family aspects, and environmental features. Some personal risk factors are potentially modifiable (*e.g.*, food choices), whereas others are not (*e.g.*, ethnicity).[37] Environmental factors (*e.g.*, food costs, food availability, inadequate parks, and infrastructure to support PA) are distal to the individual.[38] Risks associated with these issues require policy and economic changes that are not controlled by any one person,[28] directing most research to focus on the preschooler and the family environment.

Preschoolers' personal attributes investigated include child temperament,[39,40] food preferences,[41] eating behaviors,[42] and PA patterns.[43,44] Family aspects examined include feeding practices, feeding styles, and parenting styles,[45] with limited focus on family structure and family stress.[46] Even less attention is paid to direct observation of family interaction patterns thought to regulate feeding practices[47] and emotion regulation.[48,49] However, questions remain regarding measurement of current constructs[50,51] as well as new directions for investigation.[8] Borrowing from the field of family studies, the concept of family resiliency might provide a unique perspective to discussions regarding childhood obesity, helping to identify mediating or moderating protective mechanisms that are present within the family context. Some protective factors are not simply behavioral based; they often are set by family values and cultural norms. Focusing on family units rather than just on the child or the parent may be a promising approach for interventions.[52]

Cumulative Risk and Family Ecology

Families are embedded in larger systems that influence how they raise their children. Simple tasks, such as procuring food, encouraging children to be physically active, and sharing meals, are not only part of establishing healthy lifestyles, but also can be constrained by available resources. For example, access to fresh fruits and vegetables in low-income neighborhoods is notably more difficult than in wealthier neighborhoods,[53] access to green space and safe places to play is more restricted in low-income neighborhoods,[54] and although low income families value the importance of sharing meals together, these units are often marked by more chaotic and tense social interactions.[55] It is not that one single factor places the child at risk for poor health outcomes, but rather the combined effect of multiple spheres of influence on development.

Over time, risk factors accumulate and have a cumulative effect on health. Because risk factors are disproportionately distributed for children raised in poverty, low-income children experience a high dose of risk factors early in life that influence a preschooler's weight. The most common risk factors associated with poor health outcomes include low maternal education, maternal stress, maternal depression, single-parent household, and low income. Although there are exceptions to expected negative outcomes,[13,56] most research highlights that the chronic stress placed on low-income families in meeting basic needs increases allostatic loads, thereby altering the body's responses and negatively changing physio- and psychological parameters.[57]

Using the risk perspective makes the assumption that by reversing or preventing modifiable risks, positive results may occur.[58] However, efforts to reverse children's weight through weight loss interventions focused on modifiable factors, such as increasing fruit and vegetable intake or reducing sugar-sweetened beverage consumption, have met with varying success, depending on family[40,52,53,59–62] and healthcare provider involvement,[59,63] whereas outcomes of prevention efforts directed either at the individual, family, or environment are difficult to assess.[64]

Protective Factors and Family Ecology

An alternative approach to considering children's weight is to explore factors that might *protect* them from gaining excessive weight while improving healthful behaviors. Previously identified protective factors for preschoolers entering kindergarten below the 85th percentile include longer hours of sleep, drinking whole milk at kindergarten age, parental interactive play with children at 9 months, fewer children in the household, and maternal agreement that infants should be fed when hungry instead of on a schedule.[65] An authoritative parenting style also has an impact, albeit small, on preventing excessive weight.[46,66] Similar to parenting styles, an authoritative feeding style predicts healthier weight.[67] Sharing of family meals is associated with healthy habits and lower weight in children and adolescents[62,70] and is directly or indirectly linked to children's health and well-being.[71,72]

Discussion

Although the development of this perspective is limited by the lack of a systematic review, we believe that this initial exploration opens the doors for collaborative discussions. Further, we suggest that rather than the traditional focus on energy balance in preventing childhood obesity and the many risks present in the obesogenic environment, designing interventions that include promoting family resiliency should be explored.

Family Resiliency within an Obesogenic Environment

Whereas income, ethnicity, and race are considered risk factors, in resilient families general positive parenting and family practices transcend these variations in family demographics.[73] Yet, after examining the intricate list of attributes associated with family resiliency (Table 1), it becomes obvious that disparities among low-income and minority populations implicate additional factors specifically related to healthcare, education, and income that

influence a preschooler's weight status and that such families are at an immediate disadvantage, having fewer financial, structural, and physical resources. Additionally, attributes such as problem solving, communication, and social support appear to predict positive outcomes.[21] In fact, many poor children, as a result, can grow up relatively unscathed by the negative effects of poverty, suggesting that parental behaviors and parent-child interactions, along with protective factors within the child's out-of-home environment, serve as buffers.

For individual adults, being female along with factors such as internal locus of control, emotional regulation, belief systems, self-efficacy, effective coping skills, as well as increased education, skills and training, health, and temperament appear to support resilient families.[23] Many of these factors have been addressed in designing and implementing obesity prevention and treatment interventions.[40,61]

Consider navigating through the obesogenic environment while simultaneously functioning as a family, particularly one having limited resources. It cannot be an easy task. Most families are trying to cope the best they can. Wansink and Sobal[74] postulate that during a routine day, hundreds of food and eating decisions are made. A family must make two appraisals when faced with a challenge.[5] The first is to evaluate how difficult it will be to address the challenge, whereas the second is to determine the family's capability to address the challenge. It is the combination of identified resiliency assets that determines how families prioritize their decision making in terms of life's challenges.

Another aspect of the complex picture of child obesity, decision making, has been explored by behavioral economists. Economists theorize that decisions are made in a fast or slow process.[75] Kahneman[75] discusses that most decisions regarding food fall into the ''fast'' process category and are related to environmental stimuli (access to food, portion sizes at restaurants, and ease of meal preparation), whereas planning a meal or identifying caloric intake and needs falls more into the ''slow'' process and requires information for the decision to be made. Despite efforts to change the presentation of options (healthy foods first in the buffet line, placement of fruits and vegetables, shelf placement, and food label information), people tend to pick their preferred option, sticking with the default. Though Liu and colleagues[76] suggest that simplifying nutrition information may assist in easing decision making by minimizing the information processing that needs to occur, it is clear that with the complexity of this option, there may be other more effective approaches for prevention efforts to consider, while incorporating the behavioral economic theories on decision making when discussing behavior change.

Presented with the magnitude of decisions regarding food and activity, how a family functions will determine its choices. To date, no studies have specifically integrated the concept of family resiliency and child weight status, although previous qualitative and quantitative studies have identified and incorporated attributes that relate to a resiliency perspective. One practice that appears to link resiliency and child overweight prevention is family mealtimes,[49] an often used proxy for family routines. The more frequently the family eats together, the better the child's outcome in terms of risk reduction, including a lower risk of obesity. However, it may not be the sheer frequency with which families share meals as much as what happens during the meal. The ways in which families communicate during the meal, regulate emotion, and avoid criticism and distractions have been shown to be related to child weight status and food consumption.[49] These patterned interactions are part of the family's daily routines that provide a sense of order, predictability, and control to everyday life.[77] Families living in poverty that are able to maintain daily routines, such as mealtimes, reduce the likelihood that their children will have poor health outcomes.[55,78,79] Thus, family routines have been proposed as a resiliency protective factor under stressful child-raising conditions.[77,80]

Another important family health routine associated with risk for obesity is sleep. Shortened sleep duration[81–84] and having a television in the bedroom[85] have been associated with the increased likelihood that a child will be obese. Families that create routines around bedtime, such as setting a regular time for bed, brushing teeth, and telling a story, tend to have children who are better sleepers.[86] Conversely, families who use less adaptive routines before bedtime, such as watching television, eating a snack, or engaging in active play, tend to have children with poorer sleep quality.[86] Parental sleep habits also may affect children's sleep habits, which, in turn, affect children's risk for obesity. After controlling for demographic factors, Jones and colleagues found that when preschool-age children got less than 10 hours of sleep per night and their parents got less than seven hours of sleep per night, there was an increased risk for the child to be obese.[87] These findings, along with others, suggest that the creation of adaptive family sleep routines may serve as a resiliency protective factor against childhood obesity.

In high-risk environments, many families develop practices to protect children from not only obesity, but also other negative experiences they perceive to exist. As an example, families living in crime-ridden neighborhoods may not allow their children to play outside, which has the unintended consequence of limited opportunities for PA.[47,88] Thus, this parental decision, made to promote the physical safety of their child, results in an increased risk of obesity. Another example of how the emotional climate can negate appropriate health behaviors is evidenced by parents who select healthful foods for a balanced diet, but demand that a child eat everything on his or her plate.[52,89] It is the reaction to known risk and protective factors that determines the child's resulting weight status. A broader strategy to exposing the balance between promoting healthy behaviors and limiting unhealthy behaviors is needed.

Measuring Family Resiliency within an Obesogenic Environment

An established approach to better understanding the coping mechanisms and potential resiliency of low-income families is to use mix methodology, integrating qualitative and quantitative findings.[90,91] Listening to low-income families discuss their perceptions regarding their stressful lives along with their feelings and attitudes regarding child overweight enriches findings of quantitative studies designed to identify specific approaches to managing the obesogenic environment and expands the concept of family resiliency within the obesogenic environment.[92–94] Interestingly, low-income mothers express similar themes regarding both coping with life stressors in general[18,95] and children's weight status.[92,94] Some low-income mothers express negative thoughts about families with overweight children, reflecting on poor parenting or lack of motivation while simultaneously acknowledging that genetics play a role.[92,94–97] These attitudes, however, depend on maternal weight status.[97] On the other hand, and even during the same interviews, mothers believed that overweight children would outgrow their weight. Feelings of guilt, lack of time, and fear of their child's negative reactions spurred mothers to make unhealthy food choices despite possessing adequate knowledge.[92,93] Negative

Table 2. Potential Measures for Determining How Resilient Low-Income Families with Preschoolers Negotiate the Obesogenic Environments

Preschool obesity		Family resiliency	
Tool	**Measure**	**Tool**	**Measures**
Parenting Behavior Questionnaire-Head Start[101]	Responsiveness, permissiveness, restrictiveness in general parenting (40 questions)	Family Routines Questionnaire[109]	Presence of mealtime routines, mealtime media usage, as well as overall family commitment (yearly, cultural/ethnic, and weekend routines) (28 items)
Caregiver's Feeding Styles Questionnaire[66]	Caregiver feeding styles (authoritative, authoritarian, indulgent, uninvolved, as determined by responsiveness and demandingness) (19 questions)	Family Sense of Coherence Scale (FSOC)[110]	Family's "orientation that expresses confidence that internal and external stimuli are structured and predictable, resources are available to meet the demands from those stimuli, and the demands are worthy challenges" (26 questions)
Child Feeding Questionnaire[102–104]	Caregiver's perception of their child's current weight and their concerns about the child's current and future weight in addition to their concern that their child eats too much when they are not around (4 questions)	Family Economic Strain Scale[111]	12 items to determine perception of personal financial position
Parental Dietary Modeling Scale[105]	Parental modeling as related to food (5 questions)	Financial Strain Scale[16]	10 indicators of financial stress
Parental Covert and Overt Control Over Their Children's Diet[106]	10 questions regarding which foods are brought into the house and which are served	Colorado Child Temperament Inventory[112]	A 30-item scale measuring sociability, emotionality, attention span persistence, reaction to food, and soothability
Children's Eating Behavior Questionnaire[107]	Food and satiety responsiveness (9 items)	Financial Management Skills Scale[14]	5 items measuring specific skills and impression about management skills
Food Insecurity Questionnaire USDA[108]	Measures running out of food, anxiety, and perception regarding food budget, reduced food intake (18, 10, and 6 item scales)	Parent Stressor Index[113]	Sum of 8 questions regarding physical health, mental health, financial strain, and family structure plus a general stress question
		Family Adaptability and Cohesion Scale (FACES) II[114]	30 items derived from FACES (Olson DH, McCubbin HL, Barners H, Laresn A, Muxen N, Wilson M. Family inventories: Second revision. 1992. St. Paul: University of Minnesota) describing relationships and attitudes toward life
		Family Environment Scale Manual[115]	90-item questionnaire with 10 subscales, one of which (Interpersonal Relationship) measures family cohesion

childhood memories guide decisions regarding current family mealtimes.[92–94,96] Balancing being a ''good'' parent, dealing with everyday life stressors, and knowing what should or should not be done within the expediency of the moment prevented some mothers from setting limits and boundaries necessary for creating a resilient family.

Quantitative approaches for measuring parenting in relation to childhood obesity can be used to investigate family resiliency. Combining traditional measures (such as general parenting styles, feeding styles, and parent feeding behaviors) with potential family resiliency measures (such as family routines, family stress, family functioning, and family structure) might serve to broaden understanding of protective strategies. These traditional instruments should be validated for ethnically diverse and low-income mothers. Table 2 presents a limited summary of potential instruments available to be used in combination to explore the concept of family resiliency in the obesogenic environment.

Conclusions

One impetus for considering reframing preschooler obesity prevention and treatment interventions toward a family resiliency perspective stems from the American Academy of Pediatrics. During the revision process for Bright Futures,[98] a new chapter is being added: ''Promoting Lifelong Health for Families and Communities'' (personal communication: Joseph Hagan and Judy Shaw, editors). This is in addition to current chapters on ''Promoting Healthy Weight'' and ''Promoting Physical Activity.'' Creating awareness among healthcare professionals, in addition to providing knowledge, is equally as important to guide families through their decision-making processes.

Drawing upon existing literature on children living in poverty[78] and transactional models of development,[99] we propose that family resiliency against the obesogenic environment is the result of the cumulative effects of multiple resources within the family environment and individual coping skills. The number, intensity, duration, ratio of risk to protective factors, and the perception of its situation will determine whether a family demonstrates resilient outcomes and exhibits resilient processes to life's stressors. Interventions and studies examining childhood obesity risk and protective factors may find it beneficial to include one or more measures of family resiliency to determine moderating and mediating impacts on behavior and weight status in conjunction with more traditional sociodemographic and parent-child interaction measures. Addition of these measures can guide components that are currently missing from interventions and change the perspective from a risk analysis to a promotion of strengthened family functioning.

Regardless of the challenges a family confronts in the obesogenic environment, many children will achieve healthy weights and practice healthy behaviors. However, it is clear that the quest to successfully navigate the obesogenic environment is complex. A multitude of approaches should be considered as progress is made toward healthier child outcomes. To date, research has explored many avenues for prevention and intervention, obtaining results of varying effectiveness, while predominately investigating food consumption and PA behaviors. In reality, the key to future success may be found in the application of the resiliency framework to the exploration of childhood obesity from a protective perspective focusing on the family context.

Throughout this article, we have attempted to connect the concept of family resiliency with the occurrence of childhood obesity. It is important to note that whereas improving obesity-specific behavior may reduce a child's likelihood of being overweight or obese, if the same end results might be obtained by improving factors within the family context (such as reducing stress levels, establishing predictable and organizing daily routines, improving perception of economic strain, and enhancing financial management skills), we may be able to support positive overall family functioning as the mechanism for improving weight status related outcomes. As families take care of themselves the best way they can, we can support them effectively in their efforts to live a healthy life. There is no one single, simple intervention that can ameliorate nonresilient families, just as there is no one solution to the prevention or treatment for child obesity. Intervention would need to depend on the family's specific issues.

Hence, we encourage future research and intervention to include measurement of components of family resiliency while simultaneously investigating childhood obesity issues. In addition, characterizing which components of parenting styles enhance family and child resiliency in relation to eating and PA behaviors could greatly enhance programming efforts aimed at prevention of childhood obesity. Family resiliency against an obesogenic environment deserves consideration by researchers and practitioners in the fields of family studies, obesity prevention, economics, and psychological science, to name a few.

Author Disclosure Statement

No competing financial interests exist.

References

1. Ogden CL, Carroll MD, Kit BK, et al. Prevalence of childhood and adult obesity in the United States, 2011–2012. *JAMA* 2014; 311:806–814.
2. Birch LL, Anzman SL. Learning to eat in an obesogenic environment: A developmental systems perspective on childhood obesity. *Child Dev Perspect* 2010;4:138–143.
3. Masten AS. Ordinary magic: Resilience processes in development. *Am Psychol* 2001;56:227–238.
4. Warshaw TA, Barlow D. *Resiliency: How to Bounce Back Faster, Stronger, Smarter*. Master Media, LTD: New York, 1995.

5. Patterson J. Integrating family resilience and family stress theory. *J Marriage Fam* 2002;64:349–360.
6. Conger RD, Conger KJ. Resilience in Midwestern families: Selected findings from the first decade of a prospective, longitudinal study. *J Marriage Fam* 2002;64:361–373.
7. Luthar SS, Cicchetti D, Becker B. The construct of resilience: A critical evaluation and guidelines for future work. *Child Dev* 2000;71:543–562.
8. Katz DL, Daniels S, Gardner CD, et al. What we don't know: Unanswered questions about childhood obesity. *Child Obes* 2012; 8:7–12.
9. Kitzman-Ulrich H, Wilson DK, St. George SM, et al. The integration of a family systems approach for understanding youth obesity, physical activity, and dietary programs. *Clin Child Fam Psychol Rev* 2010;13:231–253.
10. Felner RD, Devries ML. Poverty in childhood and adolescence: A transactional-ecological approach to understanding and enhancing resilience in contexts of disadvantage and developmental risk. In: Goldstein S, Brooks RB (eds), *Handbook of Resilience in Children*. Springer: New York, 2013, pp. 105–126.
11. Evans GW, Kim P. Childhood poverty and health: Cumulative risk exposure and stress dysregulation. *Psychol Sci* 2007;18:953–957.
12. Lu MC, Halfon N. Racial and ethnic disparities in birth outcomes: A life-course perspective. *Matern Child Health J* 2003;7:13–30.
13. Ball K, Abbott G, Cleland V, et al. Resilience to obesity among socioeconomically disadvantaged women: The READI study. *Int J Obes* 2012;36:855–865.
14. Gundersen CG, Garasky SB. Financial management skills are associated with food insecurity in a sample of households with children in the United States. *J Nutr* 2012;142:1865–1870.
15. Gundersen C, Lohman BJ, Garasky S, et al. Food security, maternal stressors, and overweight among low-income US children: Results from the National Health and Nutrition Examination Survey (1999–2002). *Pediatrics* 2008;122:e529–e540.
16. Gundersen C, Mahatmya D, Garasky S, et al. Linking psychosocial stressors and childhood obesity. *Obes Rev* 2011;12: e54–e63.
17. Garasky S, Stewart SD, Gundersen C, et al. Family stressors and child obesity. *Soc Sci Res* 2009;38:755–766.
18. Vandsburger E, Harrigan M, Biggerstaff M. In spite of all, we make it: Themes of stress and resiliency as told by women in families living in poverty. *J Fam Soc Work* 2008;11:17–35.
19. Tubbs CY, Roy KM, Burton LM. Family ties: Constructing family time in low-income families. *Fam Process* 2005;44: 77–91.
20. McCubbin HI, McCubbin MA. Typologies of resilient families: Emerging roles of social class and ethnicity. *Fam Rel* 1988; 37:247–254.
21. Orthner DK, Jones-Sanpei H, Williamson S. The resilience and strengths of low-income families. *Fam Rel* 2004;53:159–167.
22. Benzies K, Mychasiuk R. Fostering family resiliency: A review of the key protective factors. *Child Fam Soc Work* 2009;14:103–114.
24. Scerri C, Savona-Ventura C. Early metabolic imprinting as a determinant of childhood obesity. *Int J Diab Mell* 2010;2:175–178.
23. Ginsburg KR. *Building Resiliency in Children and Teens*, 2nd ed. American Academy of Pediatrics: Elk Grove Village, IL, 2011.
25. O'Rahilly S, Farooqi IS, Yeo GS, et al. Minireview: Human obesity-lessons from monogenic disorders. *Endocrinology* 2003; 144:3757–3764.
26. Anzman SL, Rollins BY, Birch LL. Parental influence on children's early eating environments and obesity risk: Implications for prevention. *Int J Obes* 2010;34:1116–1124.
27. Choi SW, Friso S. Epigenetics: A new bridge between nutrition and health. *Adv Nutr* 2010;1:8–16.
28. Richard L, Gauvin L, Raine K. Ecological models revisited: Their uses and evolution in health promotion over two decades. *Ann Rev Public Health* 2011;32:307–326.
29. Gable S, Lutz S. Household, parent, and child contributions to childhood obesity. *Fam Rel* 2000;49:293–300.
30. Fiese BH, Jones BL. Food and family: A socio-ecological perspective for child development. *Adv Child Dev Behav* 2012; 42:307–337.
31. Harrison K, Bost K. Toward a developmental conceptualization of contributors to overweight and obesity in childhood: The six C's model. *Child Dev Pers* 2011;5:50–58.
32. Lanigan J, Barber S, Singhal A. Prevention of obesity in preschool children. *Proc Nutr Soc* 2010;69:204–210.
33. Carter MA, Dubois L, Tremblay MS, et al. The influence of place on weight gain during early childhood: A population-based, longitudinal study. *J Urban Heal*th 2013;90:224–239.
34. Salois MJ. The built environment and obesity among low-income preschool children. *Health Place* 2012;18:520–527.
35. Cunningham SA, Kramer MR, Narayan KM. Incidence of childhood obesity in the United States. *N Engl J Med* 2014;370:403–411.
36. Prince RL, Kuk JL, Ambler KA, et al. Predictors of metabolically healthy obesity in children. *Diab Care* 2014;37:1462–1468.
37. Kitsantas P, Gaffney KF. Risk profiles for overweight/obesity among preschoolers. *Early Hum Dev* 2010;86:563–568.
38. Dev DA, McBride BA, Fiese BH, et al. Risk factors for overweight/obesity in preschool children: An ecological approach. *Child Obes* 2013;9:399–408.
39. Bergmeier H, Skouteris H, Horwood S, et al. Associations between child temperament, maternal feeding practices and child body mass index during the preschool years: A systematic review of the literature. *Obes Rev* 2014;15:9–18.
40. Kuhl ES, Clifford LM, Stark LJ. Obesity in preschoolers: Behavioral correlates and directions for treatment. *Obesity (Silver Spring)* 2012;20:3–29.
41. Fildes A, van Jaarsveld CH, Llewellyn CH, et al. Nature and nurture in children's food preferences. *Am J Clin Nutr* 2014;99:911–917.
43. Pate R, McIver K, Dowda M, et al. Directly observed activity levels in preschool children. *J Sch Health* 2008;78:438–444.
42. Birch LL, Doub AE. Learning to eat: Birth to age 2 y. *Am J Clin Nutr* 2014;99:723–728.
44. Pate RR, O'Neill JR, Mitchell J. Measurement of physical activity in preschool children. *Med Sci Sports Exerc* 2010;42:508–512.
45. Vollmer RL, Mobley AR. Parenting styles, feeding styles, and their influence on child obesogenic behaviors and body weight. A review. *Appetite* 2013:71;232–241.
46. Sleddens EF, Gerards SM, Thijs C, et al. General parenting, childhood overweight and obesity-inducing behaviors: A review. *Int J Pediatr Obes* 2011;6:e12–e27.
47. Lumeng JC, Appugliese D, Cabral HJ, et al. Neighborhood safety and overweight status in children. *Arch Pediatr Adolesc Med* 2006;160:25–31.
48. Bost KK, Wiley AR, Fiese B, et al. Associations between adult attachment style, emotion regulation, and preschool children's food consumption. *J Dev Behav Pediatr* 2014;35:50–61.

49. Fiese BH, Hammons A, Grigsby-Toussaint D. Family mealtimes: A contextual approach to understanding childhood obesity. *Econ Hum Biol* 2012;10:365–374.
50. Masse LC, Watts AW. Stimulating innovations in the measurement of parenting constructs. *Child Obes* 2013;9(Suppl):S5–S13.
51. Hughes SO, Frankel LA, Beltran A, et al. Food parenting measurement issues: Working group consensus report. *Child Obes* 2013;9(Suppl):S95–S102.
52. Kitzmann K, Dalton W, Buscemi J. Beyond parenting practices: Family context and the treatment of pediatric obesity. *Fam Rel* 2008;57:13–23.
53. Di Noia J, Byrd-Bredbenner C. Determinants of fruit and vegetable intake in low-income children and adolescents. *Nutr Rev* 2014:1–16.
54. Grigsby-Toussaint DS, Chi SH, Fiese BH. Where they live, how they play: Neighborhood greenness and outdoor physical activity among preschoolers. *Int J Health Geog* 2011;10:66.
55. Kong A, Jones BL, Fiese BH, et al. Parent-child mealtime interactions in racially/ethnically diverse families with preschool-age children. *Eat Behav* 2013;14:451–455.
56. Dupre ME, George LK. Exceptions to the rule: Exceptional health among the disadvantaged. *Res Aging* 2010;33:115–144.
57. Logan JG, Barksdale DJ. Allostasis and allostatic load: Expanding the discourse on stress and cardiovascular disease. *J Clin Nurs* 2008;17:201–208.
58. Toschke AM, Rückinger S, Böhler E, et al. Adjusted population attributable fractions and preventable potential of risk factors for childhood obesity. *Public Health Nutr* 2007;10:902–906.
59. Sargent GM, Pilotto LS, Baur LA. Components of primary care interventions to treat childhood overweight and obesity: A systematic review of effect. *Obes Rev* 2011;12:e219–e235.
60. Quattrin T, Roemmich JN, Paluch R, et al. Efficacy of family-based weight control program for preschool children in primary care. *Pediatrics* 2012;130:660–666.
61. Gerards SM, Sleddens E, Dagnelie PC, et al. Interventions addressing general parenting to prevent or treat childhood obesity. *Int J Pediatr Obes* 2011;6:e28–e45.
62. Neumark-Sztainer DR, Wall MM, Haines JI, et al. Shared risk and protective factors for overweight and disordered eating in adolescents. *Am J Prev Med* 2007;33:359–369.
63. Brotman LM, Dawson-McClure S, Huang KY, et al. Early childhood family intervention and long-term obesity prevention among high-risk minority youth. *Pediatrics* 2012;129:e621–e628.
64. Green LW, Sim L, Breiner H (eds). Committee on Evaluating Progress of Obesity Prevention Efforts, Food and Nutrition Board, Institute of Medicine. *Evaluating Obesity Prevention Efforts: A Plan for Measuring Progress*. The National Academies Press: Washington, DC, 2013.
65. Flores G, Lin H. Factors predicting overweight in US kindergartners. *Am J Clin Nutr* 2013;97:1178–1187.
66. Pinquart M. Associations of general parenting and parent-child relationship with pediatric obesity: A meta-analysis. *J Pediatr Psychol* 2014;39:381–393.
67. Hughes SO, Power TG, Orlet Fisher J, et al. Revisiting a neglected construct: Parenting styles in a child-feeding context. *Appetite* 2005;44:83–92.
70. Hammons AJ, Fiese BH. Is frequency of shared family meals related to the nutritional health of children and adolescents? *Pediatrics* 2011;127:e1565–e1574.
71. Fiese BH, Schwartz M. Reclaiming the family table: Mealtimes and child health and wellbeing. *Soc Pol Report* 2008;22:3–19.
72. Eisenberg ME, Neumark-Sztainer D, Fulkerson JA, et al. Family meals and substance use: Is there a long-term protective association? *J Adolesc Heal*th 2008;43:151–156.
73. Amato PR, Fowler F. Parenting practices, child adjustment, and family diversity. *J Marriage Fam* 2002;64:703–716.
74. Wansink B, Sobal J. Mindless Eating: The 200 daily food decisions we overlook. *Environ Behav* 2007;39:106–123.
75. Kahneman D. *Thinking, Fast and Slow*. Farrar, Straus, Giroux: New York, 2011.
76. Liu PJ, Wisdom J, Roberto CA, et al. Using behavioral economics to design more effective food policies to address obesity. *Appl Econ Perspect Policy* 2013;36:6–24.
77. Fiese BH. *Family Routines and Rituals*. Yale University Press: New Haven, CT, 2006.
78. Evans GW. Environmental Stress and Health. In: Baum A, Revenson T, Singer JE (eds), *Handbook of Health Psychology*. Erlbaum: Hillsdale, NJ, 2001, pp. 365–385.
79. Anderson SE, Whitaker RC. Prevalence of obesity among US preschool children in different racial and ethnic groups. *Arch Pediatr Adolesc Med* 2009;163:344–348.
80. Brooks-Gunn J, Johnson AD, Leventhal T. Disorder, turbulence, and resources in children's homes and neighborhoods. In: Evans GW, Wachs TD (eds), *Chaos and Its Influence on Children's Development: An Ecological Perspective*. American Psychological Association: Washington, DC, 2010, pp. 155–170.
81. Chaput JP, Brunet M, Tremblay A. Relationship between short sleeping hours and childhood overweight/obesity: Results from the ''Quebec en Forme.'' *Int J Obes (Lond)* 2006;30:1080–1085.
81. Plano Clark VL, Huddleston-Casas CA, Churchill SL, et al. Mixed methods approaches in family science research. *J Fam Issues* 2008;29:1543–1566.
82. Cappuccio FP, Taggart FM, Kandala NB, et al. Meta-analysis of short sleep duration and obesity in children and adults. *Sleep* 2008;31:619–626.
83. Taveras EM, Rifas-Shiman SL, Oken, E, et al. Short sleep duration in infancy and risk of childhood overweight. *Arch Pediatr Adolesc Med* 2008;162:305–311.
84. Bell JF, Zimmerman FJ. Shortened nighttime sleep duration in early life and subsequent childhood obesity. *Arch Pediatr Adolesc Med* 2010;164:840–845.
85. Barr-Anderson DJ, vandenBerg P, Neumark-Sztainer D, et al. Characteristics associated with older adolescents who have a television in their bedrooms. *Pediatrics* 2008;121:718–724.
86. Henderson JA, Jordan SS. Development and preliminary evaluation of the bedtime routines questionnaire. *J Psychopathol Behav Assess* 2010;32:271–280.
87. Jones BL, Fiese BH; The STRONG Kids Team. Parent routines, child routines, and family demographics associated with obesity in parents and preschool-aged children. *Front Psychol* 2014: 5:374.
88. Papas MA, Alberg AJ, Ewing R, et al. The built environment and obesity. *Epidemiol Rev* 2007;29:129–143.
89. Tremblay L, Rinaldi CM. The prediction of preschool children's weight from family environment factors: Gender-linked differences. *Eat Behav* 2010;11:266–275.
90. Creswell J, Klassen AC, Plano V, et al. Best practices for mixed methods research in the health sciences. *Methods* 2011;29:1–39.
92. Hughes CC, Sherman SN, Whitaker RC. How low-income mothers with overweight preschool children make sense of obesity. *Qual Health Res* 2010;20:465–478.
93. Malhotra K, Herman AN, Wright G, et al. Perceived benefits and challenges for low-income mothers of having family meals with

preschool-aged children: Childhood memories matter. *J Acad Nutr Diet* 2013;113:1484–1493.

94. Herman AN, Malhotra K, Wright G, et al. A qualitative study of the aspirations and challenges of low-income mothers in feeding their preschool-aged children. *Int J Behav Nutr Phys Act* 2012; 9:132.
95. Pescud M, Pettigrew S, Donovan RJ, et al. Australian children's food and drink preferences: Implications for health professionals. *Nutr Diet* 2012;69:278–284.
96. Kalinowski A, Krause K, Berdejo C, et al. Beliefs about the role of parenting in feeding and childhood obesity among mothers of lower socioeconomic status. *J Nutr Educ Behav* 2012;44:432–437.
97. Ellis S, Rosenblum K, Miller A, et al. Meaning of the terms "overweight" and "obese" among low-income women. *J Nutr Educ Behav* 2014;46:299–304.
98. Hagan JF, Shaw JS, Duncan PM (eds). *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents*, 3rd ed. American Academy of Pediatrics: Elk Grove Village, IL, 2008.
99. Sameroff A. A unified theory of development: A dialectic integration of nature and nurture. *Child Dev* 2010;81:6–22.
100. Black K, Lobo M. A conceptual review of family resilience factors. *J Fam Nurs* 2008;14:33–55.
101. Coolahan K, McWayne C, Fantuzzo J, et al. Validation of a multidimensional assessment of parenting styles for low-income African American families with preschool children. *Early Childhood Res Quart* 2002;17:356–353.
102. Birch LL, Fisher JO, Grimm-Thomas K, et al. Confirmatory factor analysis of the Child Feeding Questionnaire: A measure of parental attitudes, beliefs, and practices about child feeding and obesity proneness. *Appetite* 2001;36:201–210.
103. Crawford D, Timperio A, Telford A, et al. parental concerns about childhood obesity and the strategies employed to prevent unhealthy weight gain in children. *Pub Health Nutr* 2006;9:889–895.
104. Carnell S, Edwards C, Croker H, et al. Parental perceptions of overweight in 3–5 y olds. *Int J Obes (Lond)* 2005;29:353–355.
105. Tibbs T, Haire-Joshu D, Schechtman KB, et al. The relationship between parental modeling, eating patterns, and dietary intake among African-American parents. *JADA* 2001;105:100–106.
106. Ogden J, Reyonlds R, Smith A. Expanding the concept of parental control: A role for overt and covert control in children's snacking behavior. *Appetite* 2006;41:100–106.
107. Wardle J, Guthrie CA, Sanderson S, et al. Development of the Children's Eating Behaviour Questionnaire. *J Child Psychol Psychiatry* 2001;42:963–970.
108. Economic Research Service, USDA. U.S. household food security survey module: Three-stage design, with screeners. Available at www.ers.usda.gov/datafiles/Food_Security_in_the_United_States/Food_Security_Survey_Modules/hh2012.pdf Last accessed August 8, 2015.
109. Fiese BH, Kline CA. Development of the family ritual questionnaire: Initial reliability and validation studies. *J Fam Psych* 1993:6:290–299.
110. Antonovsky A, Sourani T. Family sense of coherence and family adaptation. *J Marriage Fam* 1988;50:79–92.
111. Hilton JM, Devall EL. The Family Economic Strain Scale: Development and evaluation of an instrument with single- and two-parent families. *J Fam Econ Issues* 1997;18:247–271.
112. Rowe DC, Plomin R. Temperament in early childhood. *J Pers Assess* 1977;41:150–156.
113. Parks E, Kumanyika S, Moore RH, et al. Influence of stress in parents on child obesity and related behaviors. *Pediatr* 2012; 130:e1096–e1004.
114. Place M, Hulsmeier J, Brownrigg A, et al. The Family Adaptability and Cohesion Evaluation: An instrument worthy of rehabilitation? *Psychiatr Bull* 2005;29:215–218.
115. Moos RH, Moos BS. *Family Environmental Scale Manual*, 2nd ed. Consulting Psychologists: Palo Alto, CA, 1981.

Address correspondence to:
Madeleine Sigman-Grant, PhD, RD
Department of Cooperative Extension
University of Nevada Reno
4330 Village Spring Street
Las Vegas, NV 89147

E-mail: sigman-grantm@unce.unr.edu