Early Life Adversity and Adult Health

Cynthia S. Levine, Gregory E. Miller, Margie E. Lachman, Teres E. Seeman, and Edith Chen

Abstract

Research has shown that early life adversity can have implications for health later in life. Specifically, socioeconomic disadvantage, parental maltreatment, and parent divorce and death in childhood have been linked to cardiovascular disease, diabetes, cancer, and mortality in adulthood. Increasingly, recent research has focused on which factors can protect against these poor health outcomes and what promotes resilience, despite early life adversity. This chapter reviews research linking early life adversity to health, with a focus on highlighting the psychosocial factors that play this type of protective role. These factors include social and relational ones, such as maternal nurturance, as well as beliefs and coping strategies. The chapter concludes by suggesting areas of future research, including additional investigation of which psychosocial factors protect health, how multiple psychosocial factors might interact to protect health, and how early life adversity might affect adult health across different groups throughout the life span.

Key Words: early life adversity, resilience, psychosocial factors, social factors, relational factors, maternal nurturance, beliefs, coping strategies, adult health, health outcomes

Introduction

A large body of literature suggests that psychosocial stress in early childhood has implications for a range of health outcomes later in life (Miller, Chen, & Parker, 2011; Repetti, Taylor, & Seeman, 2002; Shonkoff, Boyce, & McEwen, 2009; Wegman & Stefler, 2009). Growing up in lower socioeconomic status (SES) environments, being mistrusted in childhood, or experiencing other types of childhood adversity increases one’s risk for a range of chronic diseases of aging and earlier mortality. Previous literature has demonstrated that these associations can be explained in part by a number of factors, including biological programming of pro-inflammatory tendencies and hormone dysregulation that are initiated during childhood, unhealthy behaviors, and reduced physical and psychosocial resources, among others (Braveman & Barclay, 2009; Danese & McEwen, 2012; Repetti, Robles, & Reynolds, 2011; Shonkoff & Garner, 2012; Taylor, 2010). Recently, however, research has focused increasingly on which factors can protect those who experience early life adversity from poor health outcomes (Chen & Miller, 2012).

The present chapter reviews the literature on the association between early life adversity and adult health outcomes, focusing in particular on the psychosocial factors that may protect the health of people who have experienced adversity in early life. We begin by reviewing the literature on early life adversity and adult health, which shows that people who have grown up in lower SES environments, people who have experienced abuse as children, and others who have experienced adversity have a range of poor health outcomes, including greater risk for cardiovascular disease, cancer, Type 2 diabetes, and mortality. We then briefly review some mechanisms underlying this association. Next, we review research showing which psychosocial factors might buffer people who have experienced adversity against poor
health outcomes. These include social relationships, especially a warm family environment and maternal nurturance, as well as certain strategies for coping with adversity. We conclude by outlining directions for future research. Throughout the chapter, we focus primarily, although not exclusively, on studies from the Midlife in the United States (MIDUS) study. Because MIDUS assesses a wide range of psychosocial factors, including multiple types of early life adversity, and includes biomarker data, it is well positioned to illuminate multiple factors that contribute to or mitigate the associations between early life adversity and later life health.

Background Literature on Early Life Adversity and Adult Health

A robust association between early life adversity and adult health has been found across a range of types of adversity and health outcomes. With respect to self-reported outcomes, research using samples of adults in MIDUS, other samples of healthy middle-aged adults, and children showed that people who have experienced different types of adversities in childhood, including poverty and other economic difficulties, exposure to violence, and frequent moves, all rated their overall health as worse in adulthood (Boynton-Jarrett, Ryan, Berkman, & Wright, 2008; Bures, 2003; Greenfield & Laaksonen, 2009; Hahn, Martikainen, & Lahelma, 2005). Research using MIDUS further showed that adversity in early life also predicts later self-reported functional limitations, such as difficulty climbing up a flight of stairs, and a higher number of acute symptoms and chronic conditions in adulthood (Greenfield & Marks, 2009; Miller & Lachman, 2005).

Similar early life experiences have also been linked to physiological measures, such as metabolic syndrome, all-cause mortality, and inflammation, which indicate heightened risk for a number of chronic diseases of aging. For example, research from MIDUS showed that people who grow up in lower SES environments are more likely to develop metabolic syndrome in adulthood (Miller, Lachman, et al., 2011). This is a cluster of symptoms (defined by the International Diabetes Federation as including abdominal obesity, as well as elevated blood pressure, elevated triglycerides, elevated fasting glucose, and low high-density lipoprotein levels; Cornoni, et al., 2008) that is associated with risk for cardiovascular disease (Miller, Lachman, et al., 2011) and all-cause mortality (Cornoni, et al., 2008; Ford, 2005; Lakkia, et al., 2002). A similar association has been documented in MIDUS between self-reported abuse in childhood and metabolic syndrome in adulthood (Lee, Tsienkova, & Carr, 2014). MIDUS data also show that people who have experienced SES disadvantage or other stressors (e.g., parental death, divorce, or abuse) in early life are at greater risk for developing higher levels of all-cause mortality or the dysregulation that develops across multiple systems as the result of repeated attempts to maintain allostatics in the face of ongoing stresses (Friedman, Karlamangla, Gruenewald, Koretz, & Seeman, 2015; Gruenewald et al., 2012). Allostatic load, in turn, has been linked to conditions such as hypertension, obesity, diabetes, and cardiovascular disease (Joner, McEwen, & Lupien, 2010; Seeman, Eppel, Greenland, Karlamangla, & Seeman, 2001; McEwen, Rowe, & Singer, 2001). Finally, early life adversity has been linked to higher levels of inflammation in adults in MIDUS (Hoskinit, Lachman, Mroczek, Seeman, & Miller, 2015; Slopen, et al., 2010), with inflammatory markers in turn predicting risk for cardiovascular disease and other health indicators of aging (Riedlen, Hennelken, Buring, & Rifai, 2000; Riedlen, Rifai, Stampfer, & Hennelken, 2000).

As these associations between early life adversity and physiological risk suggest, early life adversity is further associated with risk for the development of chronic diseases of aging and, ultimately, mortality. Research using MIDUS (Friedman, Monroe, Sheehan, Gruenewald, & Seeman, 2015) and other data (Dong, et al., 2004) showed that experiencing a greater number of different types of adverse events in childhood predicted cardiovascular disease in adulthood. Early life adversity has similarly been linked to cancer. For instance, a study of Jewish Israelis who emigrated from Europe after World War II (i.e., the Kindertransport), who had socioeconomic disadvantage and other adverse childhood experiences, had decreased physical activity in adulthood, which is one of the mediators of the relationship between childhood adversity and adverse outcomes, such as higher levels of inflammation and diabetes in adulthood (Hoskinit et al., 2015; Tsai et al., 2014.

In addition to unhealthy behaviors, research using MIDUS shows that early life adversity has been linked to psychological states that give rise to poor health in adulthood. The majority of this work with MIDUS has focused on the role of psychological well-being. For example, research using MIDUS data showed that early life adversity can increase one’s risk for depressive symptoms, negative affective states, or other indices of lower psychological well-being in adulthood. Specifically, people experiencing adversities in childhood, such as parental divorce or having parents who used authoritarian (high demands and low responsiveness) rather than authoritative (more reasonable demands and high responsiveness) styles of parenting, report more depressive symptoms as adults (Marks, 2000; Ryff, Cooney, & An, 2009; Uphold-Carrier & Utr, 2012). Furthermore, people who experienced abuse as children have higher levels of distress, including depression and anxiety, as adults (Schrefl, Marken, & Largendur, 2014). Childhood psychological violence and lower quality parental relationships predict frequency of positive and higher frequency of negative affect in adulthood (Greenfield & Marks, 2010b; Mallers, Charles, Neupert, & Almeida, 2010). Finally, people who experienced a lack of affection and support from parents or abuse from parents in childhood have lower levels of eudaimonic psychological well-being (i.e., meaning or purpose in life) (An & Cooney, 2006; Greenfield & Marks, 2010a). All of these negative psychological states are, in turn, linked to worse physiological and health outcomes, such as higher levels of Inflammation and increased risk of cardiovascular disease in MIDUS and other samples of healthy adults (Friedman, Hayney, Love, Singer, & Hahn, 2007; Kiecolt-Glaser et al., 2005; Schrefl et al., 2014).

Moderators: Social Relationships

Although early life adversity increases one’s risk for poor health in adulthood, not everyone who experiences adversities as children takes on the risks. Recent research has focused on identifying protective factors that help to buffer against the health risk of early life adversity. We review two types of buffers that research using MIDUS, as well as other samples, has identified: social relationships and individual psychological traits that help people to cope with adversity (Figure 4.1). A range of studies highlight the role that positive social relationships and support can play in fostering good health outcomes (see Cohen, 2004; Uchino, Cacioppo, & Kiecolt-Glaser, 1996, for reviews). For children who experience adversity, one type of social relationship that has the potential to play an especially important role is type 2 diabetes, which is a chronic disease, down the line is a positive and supportive family environment. In particular, research has focused
Early Life Adversity
Examples:
- Low SES in childhood
- Malnutrition in childhood

Adult Health
Examples:
- Physiological risk (e.g., metabolic syndrome, inflammation)
- Cardiovascular Disease
- Mortality

Psychosocial Buffers
Social Relationships, e.g.:
- Warm, nurturant families
- Connections to neighborhood and community

Individual traits, e.g.:
- Shift-and-persist coping strategies

Figure 4.1 Effect of early life adversity on adult health is moderated by social relationships and individual traits, such as adaptive coping strategies.

on nurturant parenting, especially from mothers. Nurturing parents who are warm and sensitive have been shown to provide a variety of educational and psychological benefits to children who experience adversity (see Latto, 2006; Maren, 2001, for reviews). For example, having nurturant parents helps children to feel that the world is a safe place and helps them to develop adaptive emotion regulation strategies (see Cassidy & Shaver, 2008; Repetti et al., 2002, for reviews). Building on the work of researchers highlighting such psychological benefits, a number of studies have investigated the role that nurturant parenting can play in protecting the health of those who experience adversity in early life.

With its national sample and depth and breadth of psychosocial variables, in addition to biological and health data, MIDUS is especially well-positioned to help researchers identify which social relationships factors buffer against the deleterious health implications of early life adversity. Accordingly, researchers have used MIDUS data to explore family relationships—especially relationships with parents—as one pathway to resilience in the wake of early life adversities such as lower early life SES and physical and emotional abuse in childhood. With regard to early life SES, one study using MIDUS data investigated whether parental nurturance might play a role in protecting the health of those who grew up in lower SES environments (Miller, Lachman, et al., 2011). These authors used participants from the MIDUS biomarker sample, a subset of over a thousand MIDUS participants who traveled to a General Clinical Research Center (GCRC) for an overnight visit and from whom biomarker data were collected.

Consistent with previous research, participants’ childhood SES (here, their parents’ level of educational attainment) was related to participants’ metabolic syndrome symptoms. As noted, this is a cluster of symptoms (abdominal obesity, as well as elevated blood pressure, elevated triglycerides, elevated fasting glucose, and low high-density lipoprotein levels; Cornier et al., 2008) that is associated with risk for developing cardiovascular disease. Type 2 diabetes, and all-cause mortality (Cornier et al., 2008; Ford, 2005; Lakka et al., 2002). However, this association was moderated by participants’ relationships with their parents. Although people whose parents had lower levels of educational attainment had a higher number of metabolic syndrome symptoms overall, this effect was less pronounced among those who reported that their mothers had been more nurturing (e.g., understood their problems and worries, gave them attention when they needed it). Indeed, among those with the more nurturing mothers, there was no relationship between early life SES and metabolic syndrome. Such a buffering effect did not emerge for paternal nurturance, which the authors suggested may result from the adults in MIDUS largely being of a generation when mothers, rather than fathers, were largely responsible for childrearing.

These findings are consistent with other non-MIDUS data showing that positive relationships with family members can protect children from the negative physiological correlates of early life SES. For example, in samples of middle school children and healthy adults from the community, maternal warmth has been found to protect children who grew up in lower SES environments against higher levels of allostatic load and pro-inflammatory profiles that would typically be characteristic of this group (Chen, Miller, Kobor, & Cole, 2011; Evans, Kim, Ting, Teaster, & Shainis, 2007). Experimental evidence lends support to the idea that better relationships with parents play a causal role in protecting children biologically when they experience adversity. Among a sample of African Americans in the rural southern United States who were largely from lower SES families, those who were randomly assigned to a parenting intervention that taught nurturant-involved parenting skills had children who displayed lower levels of low-grade inflammation 8 years later compared to those who were assigned a control group (Miller, Brody, Yu, & Chen, 2014).

Positive parental relationships during childhood can buffer against the negative health consequences of emotional and physical abuse in childhood as well. In a study using MIDUS participants, Schafer, Morton, and Ferraro (2014) found that, although people who were abused in childhood had worse self-reported health, more frequent physical symptoms, and a higher number of chronic conditions in adulthood, this relationship was attenuated when they also rated their relationship with both parents as being "good," "very good," or "excellent" overall when they were growing up. The authors suggested that these findings may emerge because the children who had positive relationships with their parents are able to use those relationships as a foundation to forgive or reconcile with their parents as they grew older.

These results are consistent with other non-MIDUS research showing that, although having a harsh relationship with parents is typically associated with negative outcomes in self-rated health over time among adolescents, this relationship is attenuated among adolescents (i.e., seventh graders who were part of a larger study on economic hardship and health) who have a warm relationship with the other parent (Schofield, Conger, Gonzales, & Merrick, 2016). A similar pattern emerges with physiological outcomes. Research using adult participants in the Coronary Artery Risk Development in Young Adults (CARDA) study further showed that abuse in childhood predicted levels of allostatic load among people whose parents were less warm and affectionate, but not among those whose parents were more warm and affectionate (Carroll et al., 2013). Again, experimental evidence suggests that improving parenting can play a causal role in ameliorating the physiological outcomes of children who have experienced mistreatment. For example, teaching parenting skills to foster parents results in greater declines in daily cortisol levels among children who have been mistreated (Rutter, Gunnar, Chamberlain, & Reid, 2000). Thus, across multiple types of early life adversity, positive relationships with one’s parents consistently emerge as a protective factor for physiological and health outcomes across the life course.

Although the MIDUS research on relationships that can buffer children against childhood adversity has focused on parental relationships, some additional studies use other data to show that a wider range of types of social connections, including those with peers, adults outside the home, or the community more broadly, can have a similarly protective effect. For example, one study of African American youth in the rural southern United States has shown that emotional support—defined broadly as a composite of emotional support from parents, peers, and other adults in a person’s social network—can buffer against the physiological correlates of childhood socioeconomic adversity (Brody, Lei, Chen, & Miller, 2014). Specifically, these authors examined allostatic load at age 19 as a function of changes in neighborhood poverty across adolescence. Allostatic load was higher among individuals who lived in progressively poorer neighborhoods throughout adolescence, relative to those who lived in neighborhoods with consistent levels of poverty or who shifted from neighborhoods with higher poverty to neighborhoods with lower poverty. However, even among those who lived in progressively poorer neighborhoods, emotional support played a buffering role. Increasing neighborhood poverty from childhood to adolescence was associated with greater allostatic load among those who had lower levels of emotional support from parents, peers, and other mentors, but not among those who had higher levels of emotional support.
In addition, another study found that supportive role models, or mentors of the young people, provided support and positive messages about the importance of maintaining a healthy lifestyle. This is consistent with the finding that middle-aged women who had higher levels of social support were more likely to engage in healthy behaviors, such as regular physical activity and healthy eating habits. These results highlight the importance of having supportive and positive role models in promoting healthy behaviors among youth.

However, it is important to note that social support is not a sole determinant of health behavior. Other factors, such as personal beliefs, attitudes, and cultural influences, also play a significant role in shaping health behaviors. Furthermore, social support may be more effective in promoting healthy behaviors among people who have already developed a positive attitude towards health and who are motivated to make changes in their behavior. Therefore, interventions aimed at improving social support should be accompanied by other strategies that address these other factors as well.

Another study found that children who had a supportive and encouraging environment at home were more likely to engage in healthy behaviors, such as regular physical activity and healthy eating habits. This is consistent with the finding that children who have a supportive and encouraging environment at home are more likely to have positive health outcomes, such as better academic performance and reduced risk of behavioral problems. These results emphasize the importance of creating a supportive and encouraging environment for children, as it can have a significant impact on their health and well-being.

In conclusion, the role of social support in promoting healthy behaviors is complex and multifaceted. It is influenced by various factors, such as personal beliefs, attitudes, and cultural influences, and it may be more effective in promoting healthy behaviors among people who have already developed a positive attitude towards health and who are motivated to make changes in their behavior. Therefore, interventions aimed at improving social support should be accompanied by other strategies that address these other factors as well. It is also important to create a supportive and encouraging environment for children, as it can have a significant impact on their health and well-being.
high sense of control in adulthood also have better health.

Another individual psychological trait that is likely to protect the health of those who experienced adversity in early life is psychological well-being, which generally encompasses a variety of positive psychological states or the lack of negative psychological states. This can be measured in a variety of different ways, including lack of depression or negative affect, happiness or positive affect (hedonic well-being), or meaning in life and self-realization (situational well-being: Ryan & Deci, 2001; Ryff, 1989; Ryff & Keyes, 1995). While, again, no research that we are aware of has specifically explored whether psychological well-being protects against early life adversity in particular, there is evidence that it can buffer against adversity in adulthood. Using MIDUS, Morozink and colleagues found that lack of depression, positive affect, environmental mastery, positive relations with others, purpose in life, and self-acceptance all buffered individuals with lower levels of educational attainment against high levels of IL-6 (Morozink et al., 2010; see Boylan, Coe, & Ryff, Chapter 30, this volume). In fact, in many cases, the individuals with less education who had high levels of psychological well-being had lower levels of IL-6 that were comparable to those with more education. Further research with MIDUS or other samples could test whether people who have experienced adversity in early life but who have a high psychological well-being in adulthood also have better health.

Role of Demographic and Genetic Factors

Future research could also explore the ways that demographic and genetic factors influence the interaction between early life adversity and psychosocial buffers in determining adults’ health. With respect to demographic characteristics, there are a number of differences that might emerge depending on gender, racial group membership, and the country in which one lives. Turning first to gender, previous research using MIDUS data has found that the relationships between early life adversity and adult health often differ between men and women (see Lee, Ryff, & Coe, Chapter 5, this volume). For example, among women, but not men, the link between childhood socioeconomic disadvantage and cardiovascular risk in adulthood is explained by the higher childhood weight of children as a younger age (Lee & Ryff, 2016). Thus, having higher levels of support in raising children might protect the health of women, in particular, when they have experienced adversity as children. Future research could investigate this idea in MIDUS by testing whether the relationship between childhood socioeconomic disadvantage and cardiovascular risk in adulthood is attenuated among women who receive assistance that might help them care or provide for their children (e.g., financial or unpaid assistance from people other than their partners).

With respect to race, some research has compared the effect of similar experiences of childhood adversity on adult health outcomes in African Americans and whites (see Slopen et al., 2010, for an example with MIDUS). However, less research has compared whether the factors that buffer African Americans and other racial and ethnic groups differ from each other. The existing literature offers some evidence of such effects. For example, in a sample of healthy 13- to 16-year-olds, Chen and colleagues (2013) found that among lower SES children, having a role model was linked to lower levels of IL-6, and this relationship was partly explained by these children also engaging in shifts in the timing of strategies. Thus, it seems that relations with role models may help children to develop shift-and-persist coping strategies, which in turn protect their health, despite their lower SES. Research with MIDUS participants has not examined how multiple buffers might work simultaneously to protect the health of those who experience adversity. However, there is some evidence from this sample that having a combination of multiple psychosocial resources (i.e., control beliefs, social support, and engagement in physical exercise) is related to better cognitive performance, and SES disparities in cognition are mitigated among those who have more of these resources (see Cao et al., 2011). There are at least four possible hypotheses about how multiple psychosocial factors might work together to protect the health of those who experienced adversity in early life. First, it is possible that one psychosocial buffer might mediate the relationship between another buffer and health among children who experience adversity. Chen and colleagues (2013) findings that role models give rise to shift- and-persist strategies that then protect children’s health is an example of such a relationship. Second, it is possible that psychosocial buffers have an additive relationship. For example, as in Agrigoroaci and Lachman’s (2011) study, the combination of buffers such as social support and positive family climate might be protective. A third possibility is that buffers have multiplicative effects. For example, strong family relationships and high levels of social capital might each enhance the protective role that the other plays if children who are close to their parents receive an especially strong health benefit from their parents’ ties to the community. A final possibility is that once a child who is experiencing adversity has one protective factor, having another makes a negligible difference. MIDUS would be a particularly useful sample in which to test such hypotheses due to its comprehensive set of such measures.

Joint Role of Multiple Psychosocial Buffers

Research on factors that protect the health of people who have experienced early life adversity has primarily studied one factor at a time. However, in reality, multiple buffers may occur simultaneously and work in concert with each other. The existing literature offers some evidence of such effects. For example, in a sample of healthy 13- to 16-year-olds, Chen and colleagues (2013) found that among lower SES children, having a role model was linked to lower levels of IL-6, and this relationship was partly explained by these children also engaging in shifts in the timing of strategies. Thus, it seems that relations with role models may help children to develop shift-and-persist coping strategies, which in turn protect their health, despite their lower SES. Research with MIDUS participants has not examined how multiple buffers might work simultaneously to protect the health of those who experience adversity. However, there is some evidence from this sample that having a combination of multiple psychosocial resources (i.e., control beliefs, social support, and engagement in physical exercise) is related to better cognitive performance, and SES disparities in cognition are mitigated among those who have more of these resources (see Cao et al., 2011). There are at least four possible hypotheses about how multiple psychosocial factors might work together to protect the health of those who experienced adversity in early life. First, it is possible that one psychosocial buffer might mediate the relationship between another buffer and health among children who experience adversity. Chen and colleagues (2013) findings that role models give rise to shift- and-persist strategies that then protect children’s health is an example of such a relationship. Second, it is possible that psychosocial buffers have an additive relationship. For example, as in Agrigoroaci and Lachman’s (2011) study, the combination of buffers such as social support and positive family climate might be protective. A third possibility is that buffers have multiplicative effects. For example, strong family relationships

Longitudinal Assessments of People Who Experienced Early Life Adversity

This review of research that examines the role of psychosocial buffers in mediating the adverse effects of early life adversity would further involve tracking people over time to assess trajectories of early life adversity as individuals age. Most research that has studied psychosocial buffers against early life adversity has looked at physiological measures, such as inflammation, metabolic syndrome, and allostatic load, that indicate risk for chronic diseases of aging down the line. Continuing to track these participants over time could allow researchers to investigate whether these individuals are later diagnosed with chronic diseases such as cardiovascular disease or diabetes or whether they have higher mortality rates, all outcomes for which markers such as inflammation, metabolic syndrome, and allostatic load indicate risk (e.g., Lumeng & Evans, 2005; Kralurjak, Stinger, & Seeman, 2006). Future research might track, for example, whether people who have experienced adversity in early life but who also have the psychosocial buffers reviewed in the present chapter, are less likely to be diagnosed with chronic diseases of aging or have lower rates of mortality. These clinical effects, if found, begin to emerge as psychosocial buffers translate to old age.

With respect to MIDUS in particular, continuing to follow these participants as they age would allow researchers to test more hypotheses about the psychosocial buffers of early life adversity on outcomes such as clinical diagnoses and mortality. Such an approach would allow researchers to understand more about how patterns of the buffer of early life adversity are across time and whether they have long-term effects that reach to the end of an individual’s life.

Conclusion

In sum, although a large body of research shows that most people who experience adversity in early life have worse health as adults, people who experience such adversity are resilient. Because it assesses such a range of psychosocial factors, in addition to biological outcomes, MIDUS has shed light on what

LEVINE, MILLER, LAGHAM, SEEMAN, CHEN