

# Risk and Resilience in Pregnancy and Birth

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## Introduction

Pregnancy, birth, and becoming a parent involves substantial changes at biological, psychological, social, and broader cultural levels. As such, it is a continuing process of adaptation to change and new demands. In most societies pregnancy and childbirth are not typically thought of as being associated with adversity, risk, and resilience. However, adversity can arise for women, their partners, and infants during this time. The World Health Organization (2018) estimated that about 830 women die every day from pregnancy- or childbirth-related complications around the world. Physical illness and morbidity can also occur, such as postpartum hemorrhage or preterm birth, with potential long-term consequences for women and their families.

The experience of adversity, stress, and trauma during pregnancy, birth, and postpartum is particularly important because of the potential impact on women and their infants. Pregnancy and birth are associated with increased risk of mental illness, which may be due to exacerbation or recurrence of pre-existing mental health problems or the onset of new mental health problems. In particular, research shows the events of labor and birth can be traumatic for some women and result in posttraumatic stress disorder (PTSD). Reviews show PTSD after birth affects approximately 4% of women in community samples and up to 18% of women in high-risk groups, such as those with severe complications or a history of sexual abuse (Dekel, Stuebe, & Dishy, 2017; Dikmen-Yildiz, Ayers, & Phillips, 2017a). Men can also experience stress and psychological problems during this time (Leach, Poyser, Cooklin, & Giallo, 2016; Philpott, Leahy-Warren, FitzGerald, & Savage, 2017).

There is increasing evidence that anxiety and trauma in pregnancy may also have a long-term impact on the child. A review of prospective studies found children of women who were stressed in pregnancy were at greater risk of emotional and cognitive problems,

language delay, and adverse outcomes like attention-deficit hyperactivity disorder and anxiety (Talge, Neal, & Glover, 2007). Similarly, epidemiological evidence suggests PTSD in pregnancy may be associated with poor outcomes such as preterm birth (Rogal et al., 2007; Yonkers et al., 2014). Stress hormones and epigenetic mechanisms are thought to underlie the effect of stress in pregnancy on the developing baby (Wadhwa, 2005).

Although stress and trauma in pregnancy puts infants at increased risk of poor outcomes, not all children will be affected. A child's long-term risk of poor outcomes is also shaped by psychological and social factors in childhood like parental mental health, parenting, attachments, and exposure to adversity. For example, the importance of women's mental health is evidenced by research showing that depression is associated with poorer maternal sensitivity to the infant's state and more negative patterns of parenting (Field, 2010).

The potential impact of adversity on women and their infants during the perinatal period highlights the importance of examining both risk and resilience in pregnancy, birth, and postpartum. The first part of this chapter provides an overview of experiences of pregnancy and birth and risks that arise, in particular trauma experienced during birth. The second part looks at resilience in pregnancy and birth, what we know, and what we still need to know in this area. The third part looks at theories of resilience in the perinatal period and how it is important to look at resilience at different systemic levels. We conclude with key considerations for future research and theory in this area.

## Pregnancy and Birth

Different perspectives on health determine how women's experiences of pregnancy and birth are understood. Medicine has traditionally adopted a biomedical perspective where the focus is on physiological processes and risk. The biopsychosocial model put forward by Engel (1979) challenged this to argue that psychological and social factors also need to be considered when investigating health and illness related to pregnancy and birth. More recently, researchers have argued the biopsychosocial model should be expanded further to include systemic factors such as macrocultural factors (e.g., ethnicity, socioeconomic status, income) and the rise in digital health (Ahmadvand, Gatchel, Brownstein, & Nissen, 2018; Suls & Rothman, 2004).

In pregnancy, birth, and motherhood, women's experiences are framed by the culture they live in. In high-income countries access to contraception and healthcare means women have more choice, autonomy, and less risk. Healthcare is largely predicated on the medical model, which focuses on detecting and treating risk, disease, and abnormality. Women have regular checks throughout pregnancy to screen for physical risk or problems (e.g., fetal ultrasounds, genetic screening, maternal checks for physical complications). Reduced morbidity and mortality in high-income countries means there is more emphasis on women's experiences of pregnancy and birth, particularly in individualistic cultures.

In low- and middle-income countries (LMIC), however, reduced access to contraception and healthcare means women face greater risk of morbidity and mortality and have less choice and autonomy. The World Health Organization estimates that 99% of maternal deaths occur in LMIC, predominantly sub-Saharan Africa and South Asia. Poor, young women in

remote areas are at greatest risk, with complications of pregnancy and birth being the leading cause of death of adolescent girls in many LMIC countries (World Health Organization, 2018). However, there are social and cultural benefits to having children in LMIC countries. For example, a qualitative study of women in Gambia found childbirth was viewed as a rite of passage that all women must experience to show their womanhood. Becoming pregnant and having children guaranteed marital security. Conversely, not getting pregnant could lead to insecurity and maltreatment from family (Sawyer et al., 2011).

## Risk and Adversity in Pregnancy and Birth

Risk and adversity during pregnancy and birth can be caused by physical, psychological, or social factors. Physically, there is increased risk of maternal or infant morbidity and mortality. It is worth noting that although maternal mortality is greatest in LMIC countries, it does still occur in high-income countries and is even increasing in some countries. For example, in the U.S. pregnancy-related mortality increased from 7 to 18 deaths per 100,000 births from 1987 to 2014 (Centers for Disease Control and Prevention, 2014). Major complications of pregnancy and birth that cause maternal morbidity include pre-eclampsia, severe perineal tears, and postpartum hemorrhage or infection. Infant morbidity and mortality can also arise in pregnancy or birth, including congenital abnormalities, preterm birth, or birth complications resulting in lack of oxygen to the infant.

Psychologically there is also increased risk. Mental illness affects up to one in five women during pregnancy and after birth (O'Hara & Wisner, 2014). Depression and anxiety are most common but other anxiety and stress-related disorders such as obsessive-compulsive disorder and PTSD are also reported. Postpartum psychosis is a rare but severe disorder that affects 1 woman in every 1,000 and has a high risk of maternal suicide and/or infanticide. A number of risk factors make it more likely women will develop mental health problems, some of which are remarkably consistent across different disorders and cultures. For example, mental health problems are more likely to occur if women live in circumstances of social adversity (e.g., deprivation, low socioeconomic status), have a history of psychological problems, have experienced childhood or current adversity (e.g., domestic violence, child sexual abuse), and have poor support (e.g., isolated, single parent, poor family support). In addition, if women are anxious or depressed during pregnancy, this is likely to continue or worsen postpartum (Bayrampour, Tomfohr, & Tough, 2016; Denckla et al., 2018).

Socially, the changes associated with having a baby may increase risk of family dysfunction, breakdown, and adversity, particularly for vulnerable populations. The evidence suggests that for some women having a baby can have a negative impact on marital functioning (Doss, Rhoades, Stanley, & Markman, 2009), the quality of a couple's relationship (Ahlborg, Misaver, & Möller, 2009), and satisfaction with the relationship (Mortensen, Torsheim, Melkevik, & Thuen, 2012) in the first year after birth. For vulnerable or disadvantaged women the risks may be more severe. For example, the highest rates of intimate partner violence (IPV) are found among women of reproductive age (aged 18–34) with rates of between 3% and 9% (Hahn, Gilmore, Aguayo, & Rheingold, 2018). However, there is wide variation between countries with, for example, a study in South Africa finding 42% of women

experienced at least one act of IPV during pregnancy and nine months after birth (Groves et al., 2015).

## Traumatic Birth

Labor and birth is an intense and challenging experience that can be empowering for women but also traumatic for some. Research suggests between 20% and 30% of women experience birth as traumatic. However, it is important to distinguish between women appraising birth as traumatic (commonly referred to as “birth trauma”), women having PTSD symptoms, and women meeting all the criteria for a diagnosis of PTSD. Not all women who report birth as traumatic will have PTSD symptoms or meet diagnostic criteria. Similarly, women may experience some PTSD symptoms but not meet all diagnostic criteria. This has been labeled “partial PTSD” or “subclinical PTSD” and the range of women affected varies widely according to how it is defined or measured. A review of this literature estimated an average prevalence of 9% of women have partial PTSD (Dekel et al., 2017), and it is possible these women may still benefit from treatment or find symptoms resolve spontaneously over time. In terms of diagnostic PTSD, research has predominantly been conducted using diagnostic criteria from the American Psychiatric Association (2000). A meta-analysis of 59 studies using diagnostic criteria found an average prevalence of PTSD of 3% in pregnancy and 4% postpartum (Dikmen-Yildiz et al., 2017b). However, it is worth noting that the majority of this research was conducted in high-income countries. There is some indication the prevalence of PTSD after birth may be greater in LMIC countries. For example, a study in Iran found 54% of women experienced birth as traumatic and 20% had PTSD (Modarres, Afrasiabi, Rahnama, & Montazeri, 2012). PTSD is also highly comorbid with depression with up to 71% of women also reporting depression (Dikmen-Yildiz et al., 2017a).

Understanding of birth trauma and PTSD has to account for the fact that the causes are multifactorial. Conceptual frameworks of the etiology of postpartum PTSD outline various vulnerability, risk, and maintaining factors thought to be important in birth-related PTSD (Ayers, Bond, Bertullies, & Wijma, 2016; Slade, 2006). For example, a diathesis-stress framework was used by Ayers et al. (2016) to summarize the potential interaction between key vulnerability factors in pregnancy, risk factors during birth, and possible maintaining/recovery factors postpartum, which were identified in a review and meta-analysis of 50 studies.

However, it is also clear that many women who have operative births do not develop PTSD and, conversely, that some women with obstetrically normal births do develop PTSD. This is illustrated by a review of the association between severe maternal morbidity and PTSD that concluded the evidence is inconsistent (Furuta, Sandall, & Bick, 2012). This illustrates a few critical points. First, the *subjective experience* of birth is more important in determining whether a woman develops PTSD than obstetric events. Second, we need to consider potential moderating factors, such as whether a woman has a history of trauma, depression or other vulnerabilities. Alongside this, we should also consider resilience factors that can help to explain why women do or do not develop PTSD. Third, social or contextual factors can reduce or buffer against adverse events during birth to influence outcomes.

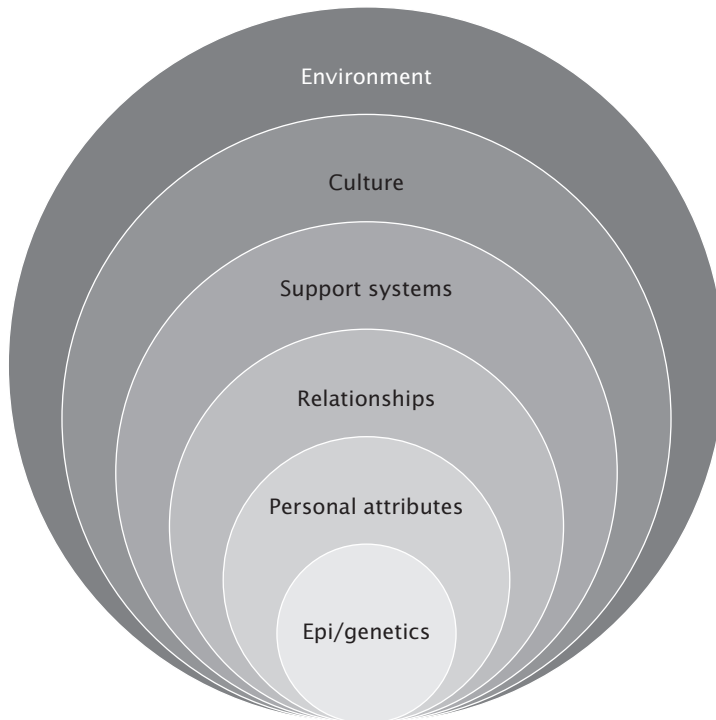
Unlike vulnerability and birth factors, the role of postpartum factors such as additional stress or support in the maintenance or recovery from PTSD has been less examined. A prospective population-based study of 950 women in Turkey found that symptoms of PTSD six months after birth were predicted by poor satisfaction with health professionals during birth and poor support after birth. Other factors that contributed to PTSD in this study were vulnerability factors (anxiety and PTSD symptoms in pregnancy), complications during birth, and postpartum comorbid depression, postpartum fear of childbirth, and further traumatic events after birth (Dikmen-Yildiz et al., 2017b).

Thus, there is a substantial body of evidence identifying the risk factors for birth trauma and PTSD, as well as models proposing how these factors might interact to cause postpartum PTSD. These risk factors for postpartum PTSD are broadly consistent with the literature on risk factors for PTSD in other populations (Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003). However, a few issues need to be considered. For example, models that have been proposed are mainly psychosocial in their approach and do not consider underlying physiological mechanisms or social and environmental influences on trauma. For example, although the importance of social support in birth trauma is evident (Ayers et al., 2016), broader social and environmental factors associated with resilience such as how healthcare system are organized or societal views of birth have not been examined in relation to the prevention of birth trauma and PTSD. Thus, there are likely to be other factors that are important, such as environmental and organizational factors, although there is not enough research for these to be included in reviews and models at this time.

## Resilience in Pregnancy and Birth

The literature on resilience in pregnancy and birth is small and emerging. A thematic analysis of published articles in the area (Young, Roberts, & Ward, 2018) found that researchers describe resilience in pregnancy and birth as a multifaceted process, active in multiple different systems including individual (self-esteem, optimism, attachment), social (positive family relationships, access to peers), and environmental (financial resources, child care, transport) systems as shown in Figure 3.1. Similar to the general literature on resilience, it is defined as being able to (a) protect against (b) minimize the impact of, and/or (c) promote recovery from a crisis or stressor event. Most definitions of resilience describe it as a dynamic process that involves activation of coping techniques to manage or recover from a stressor event (Davydov, Stewart, Ritchie, & Chaudieu, 2010). Definitions diverge, however, in the type and severity of stressor under consideration, outcomes that are considered to show resilience, specific risk and protective factors involved, and the focal actor or actors of the model.

A few specific definitions have been put forward in relation to perinatal resilience. Baraitser and Noack (2007) defined maternal resilience as the mother's ability to accept fluctuations in parenting satisfaction, negative affective experiences within this role, and imperfection in her performance while maintaining emotional connectedness with her child and investment in the parenting role. Gavidia-Payne, Denny, Davis, Francis and Jackson (2015)



**FIGURE 3.1** The multisystemic nature of perinatal resilience.

defined parental resilience as the delivery of appropriate parental care despite the presence of significant risk factors.

A few qualitative studies have examined the way that parents themselves define resilience. Gagnon and Stewart (2014) interviewed 10 women who had experienced violence in pregnancy and found most participants were unfamiliar with resilience as a term but offered content that reflected related concepts. Such content included “to be able to get through situations,” “continuing to go in a positive direction,” “not giving up,” “cope and bounce back,” “find balance and solution,” and “overcome problems and move forward.”

## Constructs of Posttraumatic Growth and Salutogenesis

A number of related constructs have also been applied to birth processes and outcomes. Posttraumatic growth refers to a positive change in one’s belief or functioning as a result of the struggle with highly challenging life circumstances (Tedeschi, Park, & Calhoun, 1998). This goes beyond resilience and includes changes in self-perception (e.g., a greater sense of personal strength, improved self-concept), philosophy of life (e.g., a greater appreciation for each day, spiritual development), and relationships (e.g., deepening of relationships, compassion; Tedeschi & Calhoun, 2004). Posttraumatic growth is conceptualized as a possible,

but not necessary, outcome of trauma and may present in some individuals but not others (Michael & Cooper, 2013). It is now acknowledged that developmental events that are not necessarily traumatic or negative also have the potential to promote personal growth (Aldwin & Levenson, 2004). Evidence suggests up to 50% of women experience at least a moderate amount of personal growth following childbirth (Sawyer & Ayers, 2009). Qualitative studies also support this. For example, a qualitative study with 15 women who had experienced a traumatic birth found four themes of personal growth, which were “opening oneself up to a new present,” “achieving a new level of relationship nakedness,” “fortifying spiritual-mindedness,” and “forging new paths” (Beck & Watson, 2016).

Salutogenesis is a concept from public health that positions health along a continuum and advocates health promotion through supporting well-being rather than analysis of disease (Antonovsky, 1979). It is a systemic model charting health promoting factors in context and across multiple systems. The central component of salutogenesis is sense of coherence, which refers to the belief that (a) challenges experienced are structured, predictable and explicable, (b) adequate resources exist to meet these challenges, and (c) the challenges are worthy of investment and engagement (Mittelmark & Bauer, 2017). Salutogenesis charts a balance between generalized resistance resources (such as social support, coping skills, and ego identity) and generalized resource deficits (such as significant changes of circumstance, developmental crises, and social relational conflict). The concept of salutogenesis has been used in midwifery to challenge the dominant risk avoidance approach to maternity care (Meier Magistretti, Downe, Lindström, Berg, & Schwarz, 2016). While there is a great deal of commonality between salutogenesis and resilience, the most prominent difference is that salutogenesis is a general principle of good health and does not require a significant stressor to become active (Lindström & Eriksson, 2005).

## Resilience During Pregnancy and Birth

Findings that clearly relate to resilience concepts can be seen throughout the broader literature of pregnancy and birth but conscious application of resilience concepts to investigation of pregnancy and birth outcomes is relatively new. For example, research examining resilience to traumatic birth suggests the majority of women are resilient. A longitudinal study of women whose births met DSM-IV criteria for a traumatic event found that only 14% of these women had chronic PTSD one month and six months after birth (Dikmen-Yildiz, Ayers, & Phillips, 2018). Women who were resilient reported more social support and satisfaction with healthcare professionals, less severe PTSD symptoms, less depression, fear of childbirth, and fewer additional traumas since birth. However, this study used diagnostic criteria as an indicator of illness so it is possible that women who did not meet diagnostic criteria (i.e., classed as resilient) still experienced significant symptoms, distress, and disability.

A number of protective factors that buffer against stressors in the transition to parenthood, or mediate the impact of stressors on well-being, have been suggested. Table 3.1 shows a truncated summary of factors (selected to give an overview of the area) reported in the transition to parenthood literature mapped onto the range of systems shown in Figure 3.1.

**TABLE 3.1 Systems Contributing to Resilience in Pregnancy, Birth, and New Parenthood**

<i>Systemic Level</i>	<i>Definition</i>	<i>Suggested Attributes</i>
Epi/genetics	Transgenerational heritable factors related to genetic code and gene expression	Vulnerability to anxiety, depression and other psychological challenges Family history of breastfeeding Family history of trauma Fertility Sensitivity to stress General health
Personal attributes	Individual qualities and characteristics	Disposition Psychological flexibility Meaning making Attachment style Humor Self-efficacy Coping style Locus of control Positive self-esteem Hope Curiosity Reflective functioning
Relationships	Connections with valued others (mediated by availability, attunement, and responsiveness)	Child Intimate partner Other children Family of origin Peer network Mentors Work Religious institution
Support systems	Groups and institutions with varying degrees of formality providing assistance for pregnant women and new parents	Childcare Financial aid Parenting groups Midwifery Obstetrics Pediatric medicine Playgroups Parenting helplines and websites The legal system Health insurance and access initiatives Workplace participation and leave policy Language lessons and cultural inclusion



**TABLE 3.1 Continued**

<i>Systemic Level</i>	<i>Definition</i>	<i>Suggested Attributes</i>
Culture	Dominant social behavior and norms in which the parent is immersed	Parenting narratives Traditional postpartum practices Gender norms Media content Normalized health behaviors (diet, smoking, exercise)
Environment	Natural conditions, circumstances, resources, and stressors	Transport Neighborhood safety Parenting rooms Natural disasters Food quality and security Water sources Exposure to toxins (e.g. pesticides, heavy metals) Air pollution

A number of personal skills and abilities that play a protective role in resilience outcomes have been identified including meaning making, dispositional optimism, psychological flexibility, and an active coping style. Meaning making is the process of attributing coherence and value to life experiences. This has been found to have a protective effect on parents' resilience particularly when related to the changes in identity and relationship that they experience during the process of become a parent (e.g., Fletcher & Sarkar, 2013; Garcia-Dia, Di Napoli, Garcia-Ona, Jakubowski, & O'Flaherty, 2013; Gardner & Harmon, 2002). Parents with optimistic dispositions may feel more hopeful that good outcomes will eventuate in the future (even when the present is characterized by difficulty) and demonstrate flexible application of coping skills (Baldwin, Kennedy, & Armata, 2008; Nes & Segerstrom, 2006). For example, a study of 37 working mothers found those who scored higher on optimism reported less distress and scored higher on resilience (Baldwin et al., 2008). This was true even for those women who reported more objective stressor events.

Interestingly, both psychological flexibility and an active coping style have been identified as protective factors although these two skills are different approaches to challenges. Psychological flexibility refers to the ability to let go of what was expected, accept what is, and formulate new understandings and responses to demand (Skowron, Fingerhut, & Hess, 2014). Active coping refers to approaching problems with a sense of agency and using active problem-solving skills to advocate for needs, utilize resources, and make change in the situation (Brodsky & De Vet, 2000; Gardner & Harmon, 2002). There is a need for future research to refine whether both types of coping confer an advantage or whether resilient parents are employing them both in different contexts and for different needs. For example, acceptance may be the most useful response to a child with a difficult temperament or to a disrupted birth plan, whereas advocacy and linking in with available supports may be more useful when trying to manage a high needs pregnancy or access help for postpartum depression or birth trauma.

Perhaps the most robust finding about resilience in pregnancy and birth is the importance of social support. It is well established that continuous support during labor is important in birth outcomes (Bohren, Hofmeyr, Sakala, Fukuzawa, & Cuthbert, 2017) and, conversely, that poor support or interpersonal difficulties during birth are a risk factor for postpartum PTSD (Ayers et al., 2016; Harris & Ayers, 2012). Reviews of clinical trials show that continuous support during labor is associated with less pain medication, shorter labors, fewer caesarean births, and greater satisfaction with birth (Bohren et al., 2017). Prospective studies show support can potentially buffer women against traumatic birth events and is particularly important for women with a history of trauma or who have complications or high levels of intervention during birth (Ford & Ayers, 2011). Support during labor and birth is therefore likely to be critical in terms of reducing risk and increasing resilience. Research has found associations between PTSD symptoms and a range of support variables, such as poor interaction with medical personnel, perceptions of inadequate care during birth, low support from partner and staff, and being poorly informed or not listened to (Czarnecka & Slade, 2000; Soet, Brack, & Dilorio, 2003; Creedy, Shochet, & Horsfall, 2000). Specific support needs include validation of negative and ambivalent emotions, challenging unreasonable expectations, provision of practical information and support, listening and emotional nurturing, financial aid, distraction, and social engagement (Darvill, Skirton, & Farrand, 2010; Deave, Johnson, & Ingram, 2008). For example, a study of over 1,300 women in the United States examined what characterized women with resilient, moderate or vulnerable psychosocial profiles after birth. Results showed that women who were resilient were characterized by high support and self-efficacy and reported less depression and stress. In contrast, vulnerable women were characterized by high depression and stress and poor support and self-efficacy. Vulnerable women were more likely to have an unintended pregnancy, engage in risky health behaviors, and give birth preterm (Maxson, Edwards, Valentiner & Miranda, 2016).

Qualitative research has shown that parents often perceive their intimate partner to be their first and most important source of social support and that one parent's adjustment influences the other's (Porat-Zyman, Taubman-Ben-Ari, & Spielman, 2017). Some of the key findings in this area have been the importance of effective communication and conflict resolution strategies, open negotiation about the distribution of household chores, shared caregiving, and managing changing sexual dynamics (Cohen, Pentel, Boeding, & Baucom, 2019; Shockley, & Allen, 2018; Vannier, Adare, & Rosen, 2018). Supportive family of origin also contributes to resilience outcomes, especially for the mother, as does access to peers, friends, and parenting communities (Darvill et al., 2010; Lois, 2016).

A number of broader protective factors from community, cultural, and environmental systems have also been identified. These include social connectedness, midwifery and child health services, traditional postpartum practices, and neighborhood safety (Nelson, Kushlev, & Lyubomirsky, 2014; Pistella & Synkewecz, 1999). Goodness of fit between the individual's personal and cultural needs and available community and environmental resources are also important. The parenting narratives present in media and cultural discourse, particularly with regard to gendered parenting roles and division of labor/workforce participation, have also been found to influence resilience outcomes (Welch, Rouleau-Mitchell, Farero, Lachmar, & Wittenborn, 2019).

## Factors Associated With Poor Perinatal Resilience

There are a variety of factors that reduce resilience that are common during pregnancy and the transition to parenthood. These include relationship strain, social isolation, community disengagement, fear of judgment, and low self-esteem. New and expecting parents are also more susceptible to additional life stress due to the greater demand on their coping resources and skills (Dunkel-Schetter, 2011). Relationship strain between parenting partners has been shown to undermine parental resilience (Harville, Xiong, Buekens, Pridjian, & Elkind-Hirsch, 2010; Lennon & Heaman, 2015). Specifically, nonresilient parents scored more highly on marital conflict and dissatisfaction with division of labor in the home (De Haan, Hawley, & Deal, 2002) and IPV, drinking behavior, and anger management difficulties are key concerns for new mothers experiencing poor resilience (Gagnon & Stewart, 2014; Baraitser & Noack, 2007).

Poor support and/or social isolation has also been linked to lower resilience (Lennon & Heaman, 2015; Harville et al., 2010; Hynie et al., 2015) and higher levels of postpartum depression (Miranda et al., 2012). In particular, women who had poor relationships with or were unable to access their mothers due to migration reported greater distress than those who had access to this resource (Miranda et al., 2012; Schlager, 2014). Community disengagement in the form of lack of knowledge about or access to community services has also been identified as a key hindrance to resilience after the birth of a child (Gagnon & Stewart, 2014; Harville et al., 2010). Specifically, new migrant mothers experienced additional difficulties in utilizing systemic supports (Gress-Smith, 2015; Schlager, 2013), and rural women struggled with lack of privacy and limited resources (Shaikh & Kauppi, 2010). Women who lived in the context of poor financial support and unaffordable healthcare perceived strong pressure to return to work as soon as possible following a difficult or traumatic birth despite the risks to their own health and impact on their ability to provide care for their babies (Kaye et al., 2014).

## Theoretical Approaches to Resilience During Pregnancy and Birth

A recent scoping study of resilience theory in the transition to parenthood (Young et al., 2018) found that over half of the published studies did not identify a theoretical framework for their research. Instead, they defined resilience through narrative literature review and then inferred its presence either through low scores on a distress measure or high scores on measures of positive outcomes such as self-efficacy. This approach is problematic and confounds integration of findings. Resilience is a multilevel process involving numerous interacting systems and operationalizing it through inference on a single measure obscures this complexity and may lead to misclassification of participants. For example, a resilient parent may have a low score on a measure of self-efficacy because, within that parent's unique psychosocial context, self-efficacy is not salient to mobilizing a resilience response.

Cross-sectional research relying on distress as a measure of resilience may assess individuals prior to them regaining psychological equilibrium and therein erroneously classify them as non-resilient. Unfortunately, even in studies where a clear theoretical framework has been applied there has been no consensus on which theory should be used. Different frameworks have different emphases on family stress and coping, pathways of resilience to particular outcomes (e.g., low anxiety), or resilience in terms of parenting and child outcomes. Three theoretical frameworks are outlined in this chapter, which were selected because they are explicit theories of resilience and/or specifically pertain to the perinatal period. The list is far from exhaustive. Other less often used theoretical approaches in the area have included application of feminist critical theory, positive psychology, and existentialism.

## Dunkel Schetter's Model of Pregnancy Anxiety

Dunkel Schetter's (2011) model of pregnancy anxiety is a conscious effort to elucidate some of the unique factors related to coping during pregnancy and provide a more specialized theoretical framework. Dunkel Schetter positions pregnancy as a distinct time in the life-span that potentiates revitalization of coping resources as well as revealing developmental vulnerability. She described pregnancy-related stress as chronic in nature and questioned the applicability of resilience models that are built on research about single-impact trauma.

Dunkel Schetter's model presents stress factors as predictors of pregnancy anxiety, biological processes, and resilience resources as mediators, with preterm birth and adverse developmental outcomes as potential outcomes. The model takes a systemic approach, incorporating individual, relational, sociocultural, and community systems and plotting a variety of mechanisms including neuroendocrine, immune, behavioral, sociorelational, and cultural processes. It charts a selection of stress and protective factors based on a synthesis of available literature representing the most robust findings linking pregnancy anxiety and preterm birth. Stressors include maternal hypothalamic–pituitary–adrenal axis, placental corticotropin-releasing hormone, fetal hypothalamic–pituitary axis, and uteroplacental dysfunction as well as disruptive life experiences, predisposition to anxiety, and medical complications. Protective factors include mastery, self-esteem, dispositional optimism, conscientiousness, relaxation, problem-solving, childhood socioeconomic status, presence of an available and effective social support network, familism, spirituality, and communalism.

While Dunkel Schetter's model could, in its entirety, be understood as a model of resilience, it is specifically focused on tracing the trajectory of adverse birth outcomes and child health. The mother's broader psychosocial well-being is not an explicit outcome within this model and the father or alternative parenting partner is not included (other than as a source of support for the mother).

## The Preconception Stress and Resiliency Pathways Model

Following from Dunkel Schetter's (2011) investigation of pregnancy anxiety, the preconception stress and resiliency pathways (PSRP) model describes differential outcomes for pregnancy, fetal programming, and child health (Ramey et al., 2015). This model is novel in that it is the result of a community-based participatory research process that coordinated input from numerous transdisciplinary academics, clinicians, and community representatives over

an extended period of time. The PSRP model is systemic and multilevel in nature combining biomedical and psychosocial indicators and outcomes. The model charts a progression over time from (a) the parenting partnership relationship and home environment to (b) the interpregnancy interval (preconception period), then (c) prenatal development and birth outcomes, and finally (d) the child's outcomes, health behavior, and neurocognitive development. Both mother and father appear in the model but, while their well-being is charted as a direct contributor to child outcomes, it is not explicitly positioned as an outcome of the pathway process.

The resilience processes chart each parent's social support in juxtaposition against their stress and stressors. Allostatic load is also charted, which refers to a composite score of biomarkers that may impact on pregnancy health and outcomes including systolic and diastolic blood pressure, heart rate, body mass index, waist-to-hip ratio, glycosylated hemoglobin, cholesterol, c-reactive protein, and salivary cortisol level. These, along with parental mental and physical health, health behaviors, and parenting, are positioned as causal contributors to resilient child outcomes. The social and environmental variables healthcare, education, work, recreation, spiritual resources, neighborhood, and community contexts are also included and conceptualized as an encompassing framework in which these processes occur.

The PSPR model identifies social attitudes, community well-being, and environmental resources, as having a direct impact on the biology of the individual and the family. Many of the variables are depicted in reciprocal relationships with each other, acknowledging that these influences are not static or unidirectional. For example, the mother's balance of stress versus support will influence the health of the parental relationship and the nature of the home environment, but the relationship and environmental will also influence the mother's level of stress and perceived support. Other novel contributions include tracking the impact of the parental relationship and home environment on the mother's physical health during pregnancy, father's stress and resilience factors positioned as direct contributors rather than moderating variables, and positioning community level variables as causal agents rather than mediating variables.

## Parental Resilience Model

Gavidia-Payne et al. (2015) offer a theory of parental resilience informed by a review of the existing literature, noting that the weight of inquiry lies in family resilience and maternal resilience. Parental resilience is described as both a process in and of its own right and a system that contributes to family and child well-being during crisis. As such, they position parental resilience as an independent concept and a subsystem within family and child resilience. Here, resilient parents are defined as being able to deliver an appropriate level of parental care to children despite the presence of significant risk factors.

Gavidia-Payne et al. (2015) describe parenthood as a seminal stage in human development and thus a time of heightened vulnerability and propensity for resilience behavior. They highlight that factors are rarely inherently risky or protective and instead must be understood in the specific context of each parent. For example, new parents often traverse a period of social withdrawal where their attentions are largely focused on the parent-child dyad to the exclusion of other pre-existing social connections. While in the long term this can cause stress

due to social disconnection and alterations in self-concept, in the short term it is understood as a protective mechanism supporting bonding between parent and child as well as ensuring plenty of stimulation for the parent to learn how to effectively understand and meet the child's needs. Thus provision of social support in the form of increased participation in social groupings outside of the parent-child dyad may not be a beneficial intervention during this time.

Gavidia-Payne et al. (2015) consider child and family characteristics (such as infant temperament and family socioeconomic status), parental well-being, parental self-efficacy, family functioning, and social connectedness as contributing factors to resilience. Notably, they recommend family functioning be assessed in the context of the individual family's everyday routines in cooperation with the parents and children involved. In such a way they hope to build opportunities to operationalize each family's unique personal and cultural context into the model. These contributing factors are charted as mediating against stressor events to facilitate resilient outcomes.

In sum, while a number of models have been used within the literature, there is no one model that fully reflects resilience in pregnancy and birth. This makes meaningful synthesis of findings from studies applying such different conceptualizations of resilience challenging. Researchers cannot be sure they are, in fact, talking about the same thing. Certainly, the heterogeneous way in which resilience is conceptualized within this small literature remains a serious challenge to meaningful comparison of results.

## Key Principles for Future Research and Theory Development

Consideration of the literature on perinatal resilience highlights a few key principles that need to be examined with further research. First, resilience in this period rests on the assumption that pregnancy, birth, and the transition to parenthood is a period of challenges and adaptation with the potential for resilience and growth. While this is broadly accepted in the perinatal literature, it is inconsistent with cultural stereotypes of pregnancy and birth as positive. This paradox needs further explanation.

Second, it is important to take a systems approach to perinatal resilience that considers the role of factors at epi/genetic, personal, relationship, support structures, cultural, and environmental levels. Resilience processes in pregnancy and after birth are highly complex because of the impact of pregnancy and birth on so many of these systems. Thus, research needs to consider how factors from different systems may interact to increase or reduce resilience.

Third, there are key areas of research and theory that have the potential to change how we care for women and families during this time. While an array of factors that contribute to resilience have been identified, the evidence from different areas of study is that relational and support factors are critical in the adjustment to parenthood generally as well as more specifically in relation to birth trauma. This is an area where it is relatively easy to intervene in maternity care systems, healthcare professionals, family relationships, and communities to improve communication and support.

Fourth, there is no one-size-fits-all answer to increasing perinatal resilience. Resilience during pregnancy and after birth will vary across individual contexts and cultures. This is illustrated by examples throughout this chapter of how a woman's culture can affect her risk

of exposure to birth trauma and other stressors, as well as the resources available to her and the way in which the same factor can present as either stressor or resource depending on the individuals' unique biopsychosocial context.

Finally, the literature on perinatal resilience is developing. Heterogenous and often atheoretical approaches to research mean results are tentative. Furthermore, the lack of consensus on the best theoretical conceptualization of perinatal resilience hinders comparison and synthesis of available evidence.

## Conclusion

In this chapter, we have outlined how pregnancy, birth, and becoming a parent involves substantial changes at physical, psychological, social, and broader cultural levels. During this time women are at increased risk of poor physical, psychological, and social outcomes, such as obstetric complications, psychological problems, and relationship difficulties. Examining adversity, risk, and resilience during pregnancy, birth, and postpartum is important because of the potential impact on women and their infants.

Resilience can be examined in terms of specific trauma events, such as birth trauma, or more widely in relation to the transition to parenthood. While a few relevant theories can be drawn on to study resilience, there is no one model that fully reflects resilience in pregnancy and birth. It is important, therefore, that future research and theory examines resilience across different systems. Theoretical development and consensus on how we understand perinatal resilience is also essential to move the field forward.

While some risk and protective factors involved in resilience throughout pregnancy and birth have been identified, meaningful investigation of these factors needs to take into account that the same resource, relationship, or personal ability can be helpful or unhelpful depending on context. For example, community supports and father participation are both protective factors and so it may be assumed that families would benefit from a universal parenting group that both mothers and fathers are expected to attend. However, in some communities involving fathers in a group that some women might attend alone or where topics such as breastfeeding or postpartum care will be discussed might be seen as inappropriate precluding attendance from both the father and the mother. A thorough understanding of nuances is needed to design effective interventions in this area. Particular attributes or relationships are not, in and of themselves, wholly helpful or unhelpful. Instead, the distribution of protective and risk factors plays out within a unique context that must be understood if we are to intervene effectively.

With regard to context, one of the most significant limitations to the current research body is the absence of information about fathers. The majority of studies either limit inclusion to mothers only or examine the experiences of couples as a unit. Parenting constellations that are not cisgender mother–father dyads or single mothers have also received little attention. There is a lack of research exploring resilience in queer, nonbinary, and transgender parenting communities although there has been some work done within the broader transition to parenthood literature (e.g., see Cao, Mills-Koonce, Wood, & Fine, 2016; Tornello, Riskind, & Babic, 2019).



Another prominent limitation is the focus on parents considered “at risk” in some way (such as IPV or premature birth). Researchers have largely focused on parents who are managing an extra stressor or crisis factor to justify the use of resilience concepts, but some theorists have argued that parents who do not meet additional at risk criteria also experience compromised well-being and must navigate personal and relational distress throughout pregnancy and new parenthood (Cowan et al., 1985; Feinberg et al., 2016).

Factors loading onto community and environment systems are also not well explored, and there is a need for longitudinal research that measures resilience at different points in the process beginning with a baseline measurement where possible (e.g., before birth). Pathway models using configural frequency analysis (a statistical technique that uses a priori data categorization to detect patterns in data sets across a number of variables and points in time; see De Haan et al., 2002) or similar techniques are also worth exploring further. Some studies (Gress-Smith, 2015; Ramey et al., 2015) have incorporated biological correlates of resilience into the research design, but more work incorporating environmental and neurological/biological factors would be beneficial and create opportunities for cross disciplinary collaboration (Rutten et al., 2013).

## Key Messages

1. Pregnancy, birth, and becoming a parent involves substantial changes at biological, psychological, social, and cultural levels. As such, it is a continuing process of adaptation to change and new demands.
2. The experience of adversity, stress, and trauma during pregnancy, birth, and postpartum is particularly important because of the potential impact on women and their infants.
3. Resilience in pregnancy and after birth can be examined in terms of specific trauma events, such as birth trauma or IPV, or more widely in relation to the transition to parenthood.
4. Research and theory in this area is developing so understanding and conclusions are limited. A few relevant theories can be drawn on but there is no one model that fully reflects resilience in pregnancy and birth.
5. Future research and theory needs to examine resilience at different levels (e.g., epigenetic, personal attributes, relationships, support systems, culture, and environment).

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