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"i'm Used To Doing It By Myself": Exploring Self-Reliance In Pregnancy

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“I’m Used to Doing It By Myself”: Exploring Self-Reliance in Pregnancy

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ABSTRACT:

"I'M USED TO DOING IT BY MYSELF": EXPLORING SELF-RELIANCE IN PREGNANCY

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The goal of this thesis is to characterize self-reliance during pregnancy as described by a diverse urban cohort of women. We report on qualitative findings from a study conducted to explore the impact of a new pregnancy on women's lives based in New Haven, CT from June 2014 to June 2015. Each participant completed an enrollment survey and an in-depth semi-structured interview about intentions, thoughts, and feelings about her new pregnancy. We used framework analysis to identify concepts from our data and to assess thematic relationships. Eighty-four English-speaking women completed qualitative interviews. Participants averaged 26 years of age, and their pregnancies averaged 7 weeks estimated gestational age. The majority identified as Black (54%) or Hispanic (20%). Most (61%) had not intended to get pregnant and most (65%) planned to continue their pregnancy and parent. Forty-eight percent of women discussed self-reliance (the need to depend on one's own efforts and abilities) in relationship to pregnancy and parenting. The theme of self-reliance consisted of several subthemes: 1) past experiences of self-reliance, 2) expectations of self-reliance in motherhood, 3) financial stability, 4) decision making about this pregnancy, and 5) self-reliance in parenting. Women's belief in their own self-reliance as well as recognition of the limits of self-reliance had a substantial impact on their thoughts, feelings, and decision-making about a pregnancy. We conclude that self-reliance is an important aspect of women's reproductive lives and choices, and may be an important strategy women use to cope with diminished social support and increased life stress during pregnancy. Healthcare providers and researchers should aim to support self-reliance among their pregnant patients, and to further evaluate outcomes and interventions related to self-reliance in pregnancy.

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I also like to thank Dr. Gariepy for including me in the EXPRESS (Experiencing Pregnancy Sharing Stories) research group, whose members include Abby Cutler, Lisbet Lundsberg, and Holly Powell Kennedy. I was fortunate to work with these incredible faculty members, and learned so much from each of them. I'd like to thank Dr. Lisbet Lundsberg for her unending support and constructive advice on the manuscript that formed much of this thesis—specifically on the biostatistics of our sample and help contextualizing my argument in current literature. I'd like to thank Dr. Abby Cutler for her teamwork in coding an immense set of interview transcripts, and for her help talking through our thematic findings. She has been such a valuable resource in the writing of the manuscript and I have come to trust her feedback and edits immensely. I'd like to thank Holly Kennedy for her expertise and for teaching me how to conduct rigorous qualitative research with the Atlas.ti program.

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INTRODUCTION

The goal of this thesis is to characterize self-reliance during pregnancy as described by a diverse urban cohort of women. As research specifically on self-reliance during pregnancy is limited, we situate our discussion of self-reliance in the broader literature of social support and coping mechanisms during pregnancy. We begin with a review of how social support affects pregnancy and neonatal outcomes. It is known that pregnant women experience unique psychosocial stressors, when their available coping strategies may be strained by the daily physical and emotional demands of pregnancy. We highlight how social support can positively mediate or "buffer" these known negative effects of psychosocial stress during pregnancy.[1] We then evaluate known other ways that women may cope with stress during pregnancy, especially when they lack social support: resilience, optimism, and finally, self-reliance.

Social support is defined as the receipt of resources, information, or emotional care through personal relationships.[2,3] Increased social support during pregnancy and the postpartum period has been associated with numerous positive birth outcomes. Research has found relationships between social support during pregnancy and three main sets of outcomes: 1) psychological distress in pregnant women, 2) intrapartum and neonatal outcomes, and 3) maternal postpartum depression.

i. Social support and antenatal psychological distress in pregnant women

In pregnant women, the effects of social support on mental health and health-related quality of life begin early. This association has been described in a variety of ways using different outcome measures. In a cohort of pregnant German women (N=896), Elsenbruch et al. (2007) found that low social support during pregnancy predicted

depressive symptoms. Women were categorized as having low, medium, and high social support based on self-reports. Those with low social support experienced depressive symptoms and reduced quality of life during pregnancy more often than women with medium and high social support ($p<0.001$[i] for both depressive symptoms and reduced quality of life with χ^2 testing of social support groups). [4]

Most research in this area focuses on how social support modifies the impact of stressful events on health outcomes during pregnancy, rather than directly impacting outcomes. In a widely-cited study of over 2,000 women, Glazier et al. (2004) described that women with low levels of perceived social support appeared less able to deal with stress than those with higher social support. Women without social support had more symptoms of depression and anxiety when exposed to stress during pregnancy ($p < 0.05$).[5] One way to conceptualize the relationship between social support and postpartum depression is that increased social support positively mediates, or buffers, stress during pregnancy, decreasing the propensity of antepartum stress to lead to depressive symptoms.[6] This "buffering hypothesis" of stress and social support during pregnancy is also supported by two other studies.[7,8] When faced with stress during pregnancy, women with more robust social support have been found to fare better psychologically than those with weaker support. Ren et al. (2015) studied prenatal depression following a 2013 earthquake in Ya'an, China. Pregnant women with low levels of social support were at higher risk for depression during pregnancy after this stressful event compared to

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[i] Throughout this introduction, relationships between reported variables in studies are presented as correlation coefficients (r), odds ratios (OR), relative risks (RR), or F statistics (F). Variability in statistics reporting is due to presentation variability in source literature. Effort was made to report statistical relationships wherever possible. In some instances reporting these values was not realistic; here results were summarized and significance values reported. Measures of significance are reported as p values or 95% confidence intervals (CI).

pregnant women with high levels of social support (correlation coefficient (r) of objective support measures and Edinburgh Postnatal Depression Scale (EPDS) score: r=-0.324, p<0.001).[7] Similarly, Jesse et al. (2014) conducted a secondary analysis of 318 pregnant women in an ethnically diverse rural community in the Southeastern United States. Among women in this community, satisfaction with social support weakened the relationship between perceived life stress and depressive symptoms during pregnancy (p < 0.01).[8]

Similar to these studies in adult populations, studies among adolescents also support the buffering hypothesis. Pires et al. (2014) describe how social support from mothers and partners impacted adolescents' perceptions of their pregnancies and the associated risk of depressive symptoms. For adolescents without social support, believing that pregnancy would have a negative overall impact was associated with a significantly higher risk of depressive symptoms. For those with supportive partners and mothers, a negative perception of pregnancy seemed to have a weaker effect on subsequent depression. Partner support significantly reduced the chance of depressive symptoms ($r = -0.20$, $p < 0.001$), as did maternal support ($r = -0.18$, $p < 0.001$)[9]

Overall, most studies on the topic found that low or absent social support is associated with antenatal psychological distress among pregnant women. Without the buffer of social support, these women appear to be more susceptible to stressors during pregnancy.

ii. Social support and intrapartum and neonatal outcomes

Research on the relationship between social support and intrapartum and neonatal outcomes has mixed findings, possibly due to the diversity of outcome measures used

(APGAR scores, birthweights, pregnancy complications, preterm deliveries, cesarean section rates, and antenatal hospital admission rates). In this section we will review several cross-sectional studies, many of which were inconclusive in finding an association between social support and desired outcomes. We then review the most recent Cochrane review (2010) and meta-analysis (2015) on this topic, followed by a brief discussion of the four randomized controlled trials (RCTs) published since the Cochrane review on social support interventions and antenatal and neonatal outcomes.

One early study of the effect of social support on birth outcomes was published by Pagel et al. in 1990. The team conducted a prospective investigation of 100 women during pregnancy and birth, and found that higher social support was associated with higher APGAR scores, while higher levels of anxiety were associated with lower APGAR scores at 5 minutes ($r = 0.3$ for social support and APGAR scores, and $r = -0.34$ for anxiety and APGAR scores, $p < 0.01$ for both values). They further demonstrated that women with lower social support and higher anxiety were more likely to be younger, single, lower income, heavy smokers and had more general biomedical risk factors such as diabetes, hypertension, nausea, pre-eclampsia, and bleeding.[10] In this cohort, women who lacked social support during pregnancy were more likely to be at medical risk at baseline, while women with higher social support had more promising neonatal outcomes.

In a cross-sectional study of pregnant women who smoked, Elsenbruch et al. (2007) also reported on social support and intrapartum and neonatal outcomes. In this cohort, women with low social support who smoked during pregnancy delivered neonates with significantly lower birthweights than those of smokers with higher levels of social support ($F = 7.12$, $p = 0.011$). These women also experienced more pregnancy complications (miscarriage, gestational hypertension, and pre-eclampsia) than those

women who smoked and had more social-support (RR = 3.3, 95% CI [1.1, 10.2]), and had a higher proportion of preterm deliveries (OR = 8.1, $p < 0.05$). [4] Again, without the buffering effects of social support, women were more likely to experience the negative effects of smoking and other stressors on their pregnancies and deliveries.

Several researchers have assessed social support's impact on neonatal birthweight specifically. In a prospective study of 622 Ethiopian women, Wado et al. (2014) found that women with worse social support during pregnancy were less likely to give birth to a healthy-weight neonate (over 2500g), even after adjusting for socio-demographic factors (OR = 0.56; 95% CI [0.36, 0.87]). [11] Similarly, Dejin-Karlsson et al. (2000) conducted a cross-sectional study of 872 Swedish women and reported that lack of social support (defined as social stability, emotional support, instrumental support, and social participation) increased the risk of delivering an infant that was small for gestational age (SGA). They reported odds ratios (OR) and confidence intervals [95% CI] for social stability, social participation, instrumental support and emotional support as follows: 1.7 [0.9,3.3]; 2.2 [1.1,4.4]; 2.6 [1.2, 5.7]; 1.5 [0.8, 2.8]. [12] By contrast, Wado et al., Nylen et al. (2013) conducted a prospective study of 235 pregnant women in eastern Iowa and found no direct association between perceived social support and birth weight. However, Nylen et al. found that among depressed pregnant women, having lower satisfaction with partner social support was associated with an increase in preterm delivery ($F = 3.81$, $p < 0.001$) and lower APGAR scores ($F = 2.80$, $p < 0.001$) compared to depressed pregnant women with more satisfying partner support.[13] In a study of low-income, medically uncomplicated Black women (N=208) conducted by Norbeck and Anderson (1989), high social support from a mother or partner was associated with longer gestation, shorter labor, and fewer cesarean section complications compared to those with less support

($p<0.01$).[14] Among each of these specific cohorts, demographic and socioeconomic variables were considered to be consistent across participants, and thus the authors did not control for either factor in their analysis.

Given the mixed findings of individual studies, recent authors have performed RCTs and systematic reviews to better understand the effects of social support on neonatal and intrapartum outcomes. Hodnett et al. (2010) published a Cochrane review of 17 trials including 12,264 women. The trials were all published between 1986 and 2001 and are not discussed individually in the present manuscript. Hodnett et. al. assessed whether interventions to increase social support among pregnant women were associated with improvements in infant birthweight, preterm birth, antenatal hospital admissions, and cesarean rates. The social support interventions that were evaluated focused on advice and counseling, transportation, household help, and emotional support for women with low levels of social support. These interventions were not significantly associated with a reduction in the numbers of preterm births (RR = 0.92, 95% CI [0.83, 1.01]), improved infant birthweight (RR = 0.92, 95% CI [0.83, 1.03]), or improved perinatal mortality (RR = 0.96, 95% CI [0.74, 1.26]) in 11 trials. However, these interventions were associated with reduced rates of caesarean birth in nine trials (RR = 0.87, 95% CI [0.78, 0.97]), and reduced antenatal hospital admissions in three trials (RR = 0.79, 95% CI [0.68, 0.92]).[15]

Hetherington et al. (2015) conducted a systematic review and meta-analysis of 16 cohort studies on social support's effects during pregnancy and preterm birth. Of note, none of these studies were randomized control trials and are not discussed individually in this section. While this review found no significant direct association between low social support and preterm birth (pooled OR from 8 studies = 1.22, 95% CI [0.84, 1.76]) its

findings supported the buffering hypothesis' argument that social support may act as a mitigator of the well-established causal relationship between stress and preterm birth. The results from a pooled analysis of two studies show a significant increase in preterm birth risk (OR = 2.09 95% CI [1.07, 4.07]) among women with high levels of psychosocial stress and low levels of social support; the authors found that women with high levels of social support and high levels of psychosocial stress did not share this risk (OR = 1.66, 95% CI [0.50, 5.48]). The authors concluded that these results support the buffering hypothesis, also described by Glazier et al. [5] that social support may have positive effects on intrapartum and postpartum outcomes by reducing the effects of stress.[16]

Four (RCTs) on the impact of a social support intervention's effects on neonatal outcomes have been published in the past 10 years,[17–20] none of which were included in the Cochrane review discussed previously. Most of these studies confirm the conclusions of the Cochrane review: interventions to increase social support have no positive effect on infant birthweight or risk of premature birth. In 2007, Ickovics et al. published a multi-site RCT at two university-affiliated prenatal clinics. The authors tested whether increased social support during pregnancy, in the form of group prenatal care with facilitated group discussion to engender social support among participants, improved birth outcomes compared to women receiving standard prenatal care. Among all participants (N=1,047), women randomized to group prenatal care were significantly less likely to experience preterm birth compared to those with standard care (OR = 0.67, CI [0.44, 0.99]), but there were no differences in birthweight.[20] Lee et al. (2009) reported on the effects of a home-visitation service intervention on rates of low birthweight among three largely Black and Hispanic communities in New York City (N=501).[19] The intervention arm included home visits by trained healthcare workers to encourage healthy

prenatal behavior, link women to services in the community, and engender social support and decrease stress by helping pregnant women problem-solve and seek support from family members. Lee et al. reported a significant risk reduction in giving birth to a low birthweight infant for the intervention group (OR = 0.43, 95% CI [0.21, 0.89]).

In 2014, Doyle et al. reported on their RCT in Dublin, Ireland among a "disadvantaged community" of women (N=233).[17] They randomized pregnant women to standard prenatal care or an early home visitation program that provided emotional support, prenatal behavior tips, and reviewed pre-birth information. They found no statistically significant differences in neonatal outcome, including birthweight, prematurity, or APGAR scores. Doyle et al. did report an increased rate of spontaneous onset of labor in the intervention group (OR = 1.67, $p < 0.05$), as well as a decreased rate of cesarean section among the intervention group (OR = 0.53, $p < 0.05$). Lastly, Mejdoubi et al. (2014) published a study based in the Netherlands (N=460).[18] It also involved a home-visiting intervention, in this instance by trained nurses who both administered a nation-wide smoking cessation program and offered emotional support to women randomized to the intervention arm. The authors report that smoking significantly decreased among the intervention group (OR = 0.50, 95% CI [0.3-0.9]). They found no significant differences between the two groups in low birthweight (OR = 1.01, 95% CI [0.5, 2.5]) or preterm birth (OR = 1.2, 95% CI [0.6, 2.9]).

Overall, the relationship between social support and intrapartum and neonatal outcomes is mixed. Social support does not seem to directly impact discrete birth outcomes such as prematurity and birthweight, and interventions aimed to increase social support are inconclusive regarding these outcomes. Some evidence suggests that social

support and interventions to increase it may have a positive effect on other outcomes such as decreased cesarean section rates, shorter labor duration, increased rates of spontaneous labor, and decreased antenatal hospital admissions. Furthermore, social support does seem to act as a protective factor against negative effects of psychosocial stress during pregnancy on the risk of preterm birth. This is further evidence of the buffering hypothesis that also emerged when looking at social support and maternal psychological wellbeing during pregnancy.

iii. Social support and postpartum depression

The effect of social support on postpartum depression is well studied, and hundreds of studies exist in the literature characterizing how a lack of social support during pregnancy and the postpartum period increases a woman's risk for postpartum depression.[6,21–23] A Cochrane review by Dennis and Dowswell (2013) reviewed 28 randomized control trials from 1995 to 2011, which included almost 17,000 women. The majority of the trials were conducted in Australia and the United Kingdom, and four were conducted in the United States. The authors assessed the effect of social support-related interventions (psychotherapy, postpartum home visits by nurses, and peer-based telephone support) on the risk of developing postpartum depression. They report that compared to the standard of care, these interventions were effective in reducing women's risk of developing postpartum depression (RR=0.78, 95% CI=0.66, 0.93 in 20 trials with 14,727 women). Individualized postpartum visits by nurses or midwives (RR = 0.56, 95% CI [0.43, 0.73]) and peer-based telephone support (RR = 0.54, 95% CI [0.38, 0.77])[21] were found to be particularly effective in reducing postpartum depression risk.

Since the definitive Cochrane review, several US-based studies have continued the investigation into social support and postpartum depression, with new interventions or among specific populations.[6,22–25] We will briefly discuss three of these studies here. Firstly, Giurgescu et al. (2015) published a cross-sectional study (N=95) of pregnant African American women in Chicago. Among these women, more negative perceptions about their neighborhood environment (perceived social disorder and crime), as well as less social support, were significantly associated with depressive symptoms postpartum ($r = 0.3$ and 0.46 for neighborhood environment and social support respectively, $p < 0.01$). This suggests that daily stressors during pregnancy are associated with depression postpartum, while social support can mitigate this stress and protect against depressive symptoms.

Similar to these findings among women in Chicago, Coburn et al. (2016) describe how prenatal social support can mitigate the effects of interpersonal and daily stressors on postpartum depression among low-income Mexican American women. They interviewed women before 34 weeks gestation and again at 6 weeks postpartum, and measured social support, everyday stressors, culture-specific stressors, interpersonal stress, and depressive symptoms at both visits. Among Mexican American women living in Arizona (N=269), higher levels of daily stressors, partner stress, and family stress were associated with higher postpartum depressive symptoms ($r = 0.46$, 0.44, and 0.37, respectively, $p < 0.01$). Higher levels of reported support were associated with lower levels of depressive symptoms ($r = -0.20$, $p < 0.01$). Among women with moderate and high levels of support, the risk of postpartum depression due to family stress was attenuated ($\beta = -0.12$, $p < 0.05$), suggesting that social support can alleviate harmful effects of interpersonal and daily stress on the risk of postpartum depressive symptoms.[6]

Thus, the buffering hypothesis is supported for social support, stress, and postpartum depression as well.

Lastly, Chae et al. (2017) published a prospective cohort study of women participating in Centering Pregnancy® (CP) group prenatal care (N=341), which involves both education and community building for pregnant women from their first trimester through the end of pregnancy. Social support is considered a central element of CP, and women develop empowering and supportive relationships with each other as they progress through the group sessions. The authors report that although women randomized to the CP arm reported significantly higher rates of subjective social support from family and friends ($p < 0.05$ and $p < 0.01$, respectively), participation in CP had no significant effect on rates of postpartum depression ($p = 0.95$). For this cohort, increasing social support was not protective.

Overall, however, the link between low social support during pregnancy and postpartum depression is conclusive, and interventions to increase social support during pregnancy are protective. Similar to the way social support can buffer the effects of psychological distress on intrapartum and neonatal outcomes, here social support may function to buffer and decrease the effects of stress on postpartum outcomes. A handful of studies discussed in the previous two sections suggest something similar to the findings of Coburn et al.: that social support may improve pregnancy outcomes (such as decreased psychological distress during pregnancy, decreased prematurity, increased birthweight and decreased postpartum depression) because it tempers the effects of circumstances that would otherwise be harmful to pregnancy-related health outcomes.[5,6,8,9,16,26]

Women utilize social support during pregnancy as a way to cope with psychosocial stress, and this support buffers the known risks of stress during pregnancy. We continue with a review of literature that has posited alternative coping strategies that may yield similar benefits to social support.

Coping strategies for low or absent social support

While social support may buffer the effects of stress and psychological distress on pregnancy outcomes, there are, seemingly, other ways women may cope with stress during pregnancy apart from relying on their social networks. The literature on coping strategies during pregnancy posits several alternatives to social support that are internally generated among individual women and do not necessitate seeking help from others. Resilience, optimism, and self-reliance are three potential coping strategies that women may use to cope with negative experiences and stress during pregnancy especially when social support is lacking or not available. [34–39] An in-depth discussion of the limited literature that exists on these concepts follows here.

iv. Resilience during pregnancy

Resilience, defined as an ability to "bounce back" after adversity, [34,40] may act as a protective factor against psychosocial stress and decreased social support (which is itself a type of psychosocial stress) during pregnancy.[34,35] However, authors who characterize resilience during pregnancy use different language to describe it, and also hypothesize different relationships between resilience, social support, and coping strategies. These differences impair generalizability about resilience and its effects during pregnancy, especially the ability of resilience to be protective against the stress of low

social support. In this section we review a recent prospective cohort study and three small qualitative studies on pregnancy and resilience. We conclude with a discussion of a review article on pregnancy and stress that characterizes resilience in pregnancy.

Mautner et al. (2013) conducted a study (N=67) among pregnant women experiencing physical and psychologic stress due to preeclampsia during 2009-2011. They evaluated whether resilience was a protective factor against these stressors' impact on post-traumatic stress symptoms, depression, and health related quality of life. Those participants who scored higher on a 13-item resilience scale experienced decreased rates of depression ($p<0.001$) and better mental quality of life postpartum ($p<0.002$) compared to women with low resilience scores. For these women, possessing resilience meant they were better able to withstand the stress of illness and pregnancy, and experienced less postpartum depression compared to less resilient women. Mautner et al. hypothesized that resilient people are more able to mobilize resources, support from family and friends, and external support systems, which together facilitate self-protection from psychosocial stress.[35]

Keating-Lefler et al. (2014) describe the experience of single, first-time mothers using Medicaid in the Midwestern United States (N=20) during the first three months postpartum. One of the themes identified in this qualitative study is that women use resilience, in addition to social support, to cope with problems and stresses that arise during pregnancy and to prepare for the added responsibilities of motherhood. The authors note that the presence of social support seemed to stimulate participants' personal resilience mechanisms. Resilience emerged as an important element of women's ability to cope with unplanned pregnancy, financial instability, and loss of partners.[34]

Solivan et al. (2015) conducted a small qualitative study (N=15) of adolescent mothers in Southern Louisiana who had full-term pregnancies and normal birth weight infants, and they described elements of resilience in this cohort that may have been protective against the known negative consequences of teen pregnancy (such as low birth weight and preterm delivery). For Solivan et al., resilience was a multi-dimensional quality that included internal characteristics of the adolescents themselves (e.g. self-efficacy and self-acceptance) as well as external support from family and partners.[41] In another small study (N=10) by Gagnon et al. (2014) on international migrant women following violence associated with pregnancy, authors identified resilience as a protective factor against postpartum depression for this high-risk group. Their characterization of the resilience among these migrant women included both internal psychological coping abilities (self-esteem, self-efficacy, optimism), as well as external social support (by family, friends, or church), and also systemic supports, such as access to daycare, community health centers, legal services, and social services.[42] Interestingly, these two authors (Solivan and Gagnon) do not distinguish resilience from social support but use an overlapping framework in which social support can be seen as an element of resilience. This categorization suggests that resilience can be located internally or externally, and may not fully characterize an actionable way pregnant women can cope with psychosocial stress and decreased social support during pregnancy.

Dunkel Schetter (2001), in their in-depth review and summary of the literature on pregnancy and stress, also characterize components of resilience among pregnant women. These include multiple personality characteristics such as self-efficacy, self-esteem, optimism, and conscientiousness, social elements such as integration, connectedness, and perceived social support, as well as physical characteristics such as health and cognitive

ability.[43] This multi-part definition, while broad, seems the most inclusive of all the evidence on resilience in pregnancy, and posits resilience as neither an inherently intrinsic nor extrinsic coping strategy. While resilience is clearly an important component of a woman's ability to cope with stress of various kinds during pregnancy, it remains linked to social support in most characterizations in the literature, and thus may not be an independently adequate coping mechanism for decreased social support during pregnancy.

v. Optimism during pregnancy

One strategy that women might employ in the absence of social support is optimism – described as a woman's prospective belief that even without others' support, she will be able to succeed using her own assets and abilities. Optimism has been found to be associated with decreased postpartum depression among pregnant women with low social support.[37] Optimism in pregnancy has also been associated with decreased rates of postpartum depression among women who experienced significant stress or strain during pregnancy compared to women who did not demonstrate optimistic personality traits.[42]

Lobel et al. (2000) published a prospective cohort study (N=129) of women at a high-risk, university-affiliated obstetrics practice. They examined the impact of prenatal maternal stress and optimism on birthweight. They found that, controlling for gestational age at birth, the least optimistic women delivered infants who weighed significantly less than infants from more optimistic women ($r = 0.20$, $p < 0.05$).

Grote and Bledsoe (2007) published a prospective cohort study that evaluated optimism during pregnancy and rates of postpartum depression among married women in Pittsburgh, Pennsylvania (N=179). They found that optimism of expectant mothers during pregnancy was associated with decreased depression severity at 6 and 12 months

postpartum ($r = -0.41$ $p < 0.001$). They also concluded that among women who experienced significant stress (financial, spousal, or physical) during pregnancy, optimistic women were at decreased risk of developing clinically significant depression symptoms at 6 and 12 months postpartum compared to pessimistic women ($p < 0.001$). Therefore, optimism does seem to be protective against the risks of psychosocial stress during pregnancy—for outcomes of low birthweight and risk of postpartum depression. Women who lack social support may be able to rely on optimistic attitudes to buffer the negative effects of stress during pregnancy.

vi. Self-reliance during pregnancy

Self-reliance is a similar but distinct concept from resilience and optimism and is defined as relying on personal resources and abilities as opposed to those of others.[38,39] While much of the research characterizing resilience during pregnancy involved some discussion of women accessing social support with resilience,[34,35,41,42] self-reliance differs in that it always based intrinsically. Women can possess self-reliance without having any outside supports at all. To our knowledge, only two studies evaluate self-reliance during the perinatal period.[38,39] Due to the unique characterization of self-reliance as being completely distinct from social support, self-reliance during pregnancy could present a newly defined coping strategy among women who experience high psychosocial stress and low social support, and may protect against adverse health outcomes in this group.

Broadly consistent with the potential of self-reliance to protect against adverse health outcomes in the face of stress during pregnancy, a smattering of research exists to

suggest that self-reliance could be an effective mitigator of the effects of stress and low social support in a variety of other health conditions. Self-reliance is described as an adaptive response for newly diagnosed diabetics in rural areas, and one that enables rural people to manage their diabetes more effectively. [46] It has also been described as a protective factor among people with multiple sclerosis in maintaining social function and preventing depression,[47] as well as among adolescents and young adults with systemic lupus erythematosus.[48] Self-reliance has been described as a potential modifier of life stress and social support in women's recovery after breast cancer surgery.[50] Similarly, Daly et al. (2000) describe self-reliance as one of the most effective coping strategies used by patients coping with discharge from the hospital after surviving acute myocardial infarction.[51] Overall, self-reliance can be seen as a coping mechanism patients use when navigating complex health circumstances that impact their quality of life, leading them to manage their health more effectively and independently, and cope with low social support during periods of health crisis.

Stronger evidence that self-reliance might be a beneficial coping strategy during pregnancy comes from studies of the perinatal period. Ashaba et al. (2017) describe self-reliance as a major positive coping strategy for life stress and lack of social support among pregnant HIV-positive women in sub-Saharan Africa (N=20).[38] They conducted their qualitative study in Mbarara, a rural town in Southwestern Uganda among women living with HIV and receiving treatment. All women experienced a pregnancy within 2 years of recruitment. The semi-structured interview guide focused on ascertaining symptoms of depression and the effect on women's pregnancy or postpartum experience, how women felt about their pregnancy, and their partner's attitudes toward the pregnancy. Participants in the study described myriad daily challenges, such being financially unable

to obtain adequate food, shelter, and clothing; internalizing HIV-related stigma; and having difficulty adhering to the protocols of their HIV medications. The authors identified five coping strategies participants used to survive within their circumstances. At the individual level, these coping strategies included acceptance of self and HIV status, as well as self-reliance when partners were not financially supportive. At the interpersonal level, coping strategies included using social support from partners, family, and friends. At the organizational level, coping strategies included relying on a trusted healthcare provider and healthcare system supports. At the community level, coping strategies involved accessing support from a church or spiritual community. The authors conclude that with these coping strategies, women living with HIV manage extreme challenges and have positive pregnancy outcomes.[38] Johansson et al. (2010) conducted a qualitative study (N=21) of first-time parents' experiencing home-based postnatal care in Sweden. They also describe self-reliance as a pervasive theme when talking to these new parents, who were discharged from the hospital within hours of delivery.[39] More similar perhaps to results of studies assessing self-reliance after hospital discharge or surgery,[50,51] self-reliance among Johansson's cohort mostly involved patients doing for themselves what they expected would be done for them in the hospital by nurses and ancillary staff, as well as parents experimenting with breast feeding and other neonatal activities instead of getting immediate guidance from professionals.[39]

There is a paucity of research evaluating self-reliance among pregnant women, and existing evidence suggests that self-reliance during pregnancy is an important coping strategy that may have significant health benefits for mothers and infants. We address the concept of self-reliance as described by a diverse urban cohort of women following confirmation of a new pregnancy. Women discussed experiences with self-reliance as it

related to previous and current pregnancies, parenting experiences, the expectation of motherhood, finances, and decision-making about the pregnancy.

STATEMENT OF PURPOSE

The goal of this thesis is to characterize self-reliance during pregnancy as described by a diverse urban cohort of women. The interviews that form the basis of our analysis are part of a larger study, (EXPRESS), that described relationships between pregnancy intention and health-related outcomes such as depression, anxiety, and stress. For this thesis, we focus on the cohort of women in the EXPRESS study who completed qualitative interviews in English, and analyze themes of self-reliance in pregnancy among their interviews. We hope that this analysis and characterization will identify further areas of study on this topic.

- Aim 1: To describe self-reliance in pregnancy among a diverse urban cohort of women following confirmation of a new pregnancy.
- Aim 2: To contextualize the discussion of self-reliance in pregnancy among existing literature on social support, resilience, and optimism in pregnancy.
- Aim 3: To hypothesize potential impacts on pregnancy outcomes that self-reliance may have, and to generate ideas and questions for further research on this topic.

MATERIALS AND METHODS

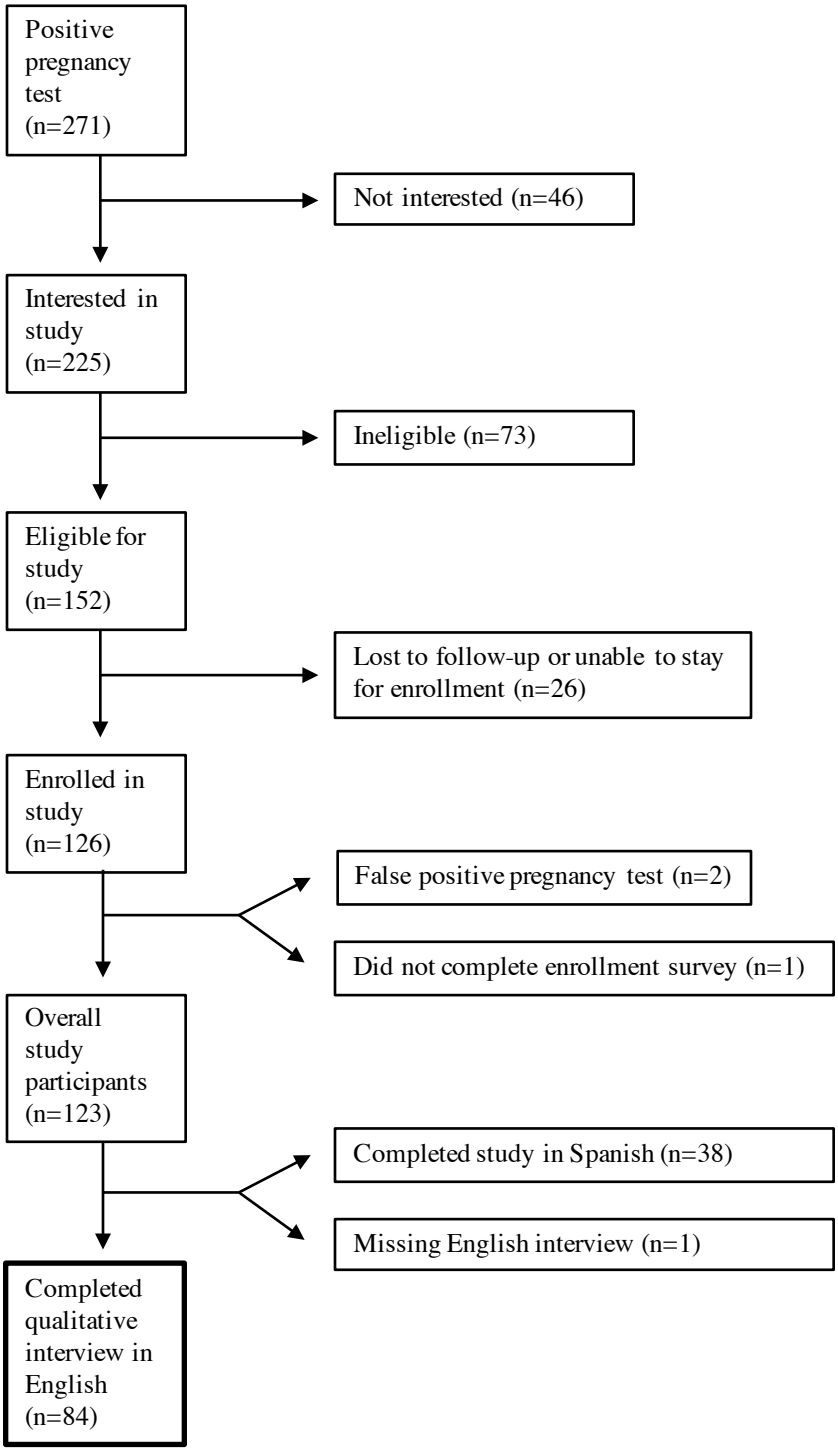
Contributions:

I, Blair McNamara, was responsible for the creation of this project within the larger EXPRESS study. I performed the literature review in the introduction myself. I transcribed many of the initial interview audio tapes, and thematically coded every transcript evaluated here (N=84). Abby Cutler MD also coded all transcripts, and the two of us met frequently to discuss and finalize the codebook. Together, we also grouped codes into larger content themes, and each wrote analysis memos on half of the themes. I identified self-reliance as the theme I wanted to expand on for a manuscript, and I performed the qualitative analysis of the quotes under this theme, with feedback from EXPRESS team members.

Methods:

We report on qualitative findings from a study conducted to explore the impact of a new pregnancy on women's lives.[52] The main study recruited women presenting for pregnancy testing or abortion care at clinics in New Haven, CT from June 2014 to June 2015. The data presented here were restricted to participants from pregnancy testing sites only, in order to focus on women with new pregnancy diagnoses who had not yet made a decision about how to resolve the pregnancy. Clinical staff referred interested women with positive pregnancy tests to the research team, who screened them for eligibility. Women were eligible if they were Spanish- or English-speaking, at a gestational age of <24 completed weeks, 15-44 years old, and completed study enrollment within 1 week of their positive pregnancy test. There were no additional exclusion criteria. Refer to Figure 1. for a flow diagram of those participants screened, eligible, and enrolled in the study. Detailed study methods have been previously published.[52]

Figure 1. Participant recruitment and enrollment flow



Of 271 women with a positive pregnancy test, 225 were interested and were screened by research staff. Of those, 152 were both eligible and interested in continuing

participation. Of these women, 26 were unable to remain at the clinic for enrollment or were lost to follow-up, and 126 women were enrolled. Two individuals were later determined to have had a false-positive pregnancy test, and one consented to participation but did not complete the enrollment survey. Of the remaining 123 participants, 84 participants completed in-depth qualitative interviews in English and are the basis of this analysis. Women who chose to participate in Spanish were analyzed separately and are not included in this qualitative investigation to ensure cross-language credibility, but were included in the larger EXPRESS study.[53]

All 84 participants completed an enrollment survey that collected demographic information (including age, race and ethnicity, relationship status, parity), measures of pregnancy intention, and plans for pregnancy termination or continuation. Enrolled participants were offered the opportunity to complete a one-on-one interview or a focus group interview (four women chose a group interview, which occurred as two two-person groups). Interviews were conducted by skilled research team interviewers using a semi-structured interview guide (Appendix 1) to ask participants open-ended questions about pregnancy intentions, initial and current thoughts and feelings after receiving a positive pregnancy test, and how they felt the pregnancy would impact their life, decisions, and relationships. Participants were also asked about their views of motherhood and if they felt like they would be a good mother now, about how they thought the person they got pregnant with might feelings about the positive pregnancy test, and were asked about relationships with friends and family and how participants felt the pregnancy news would impact those relationships. Lastly, participants were asked who they had told about the pregnancy already, who they planned to tell and why, who they intended to keep the news from and why, and how these people had responded to the news. Participants were

also given the space and time to discuss additional issues related to their feelings about the pregnancy if they wished.

All interviews were audio-recorded and transcribed, while maintaining confidentiality of the participants. We ascertained pregnancy outcome information for each participant during a follow-up monitoring interview or through medical record review (two participants were lost to follow-up and so our outcome data is N=82). We categorized pregnancy outcomes as either miscarriage, abortion, or delivery. All participants provided written consent and received $50 cash as compensation for participation in the qualitative interviews. The study protocol was reviewed and approved by the Yale University Human Research Protection Program.

We used framework analysis to identify key concepts from our data and to assess thematic relationships.[54] We identified codes to evaluate common and dissimilar conceptual threads among interview transcripts. Four researchers (BM, AC, LL, AG) initially coded the same six interviews and then met to assess inter-coder reliability and generate a shared coding strategy and code list. Two independent coders (BM, AC) then coded the remaining transcripts and met regularly to assess and resolve any discrepancies in coding. A senior methodologist and software expert (HPK), provided content-checking and guidance on all analysis. We then grouped codes thematically to draw conclusions about interactions and context in the interviews, and then re-evaluated the text using these themes. We used Atlas.ti (Berlin, Germany) to manage and code the transcripts.

RESULTS

At enrollment, participants averaged 26 years of age and 7 weeks estimated gestational age (EGA) (Table 1). Most identified as Black, non-Hispanic (54%) or Hispanic (20%). The majority reported less than or equal to a high school education (59%), were unemployed or homemakers (52%), were unmarried (92%), and had at least one child (67%). Some reported a previous history of depression (26%) or anxiety (25%). Previous miscarriage was reported by 40% and previous abortion was reported by 41%.

Table 1. Participant characteristics and sociodemographics, N=84

Characteristic	
Age, mean (SD)	26.1 (6.3)
Estimated gestational age at enrollment, weeks (SD)	7.2 (3.1)
Race-Ethnicity, n (%)	
Black, non-Hispanic	45 (54.2)
White, non-Hispanic	13 (15.7)
Hispanic	17 (20.5)
Multiracial, Other	8 (9.6)
Education, n (%)	
12 years/GED or less	49 (59.0)
Some college or college degree	34 (41.0)
Employment, n (%)	
Unemployed/homemaker	43 (51.8)

Full time/part time	40 (48.2)
Relationship status, n (%)	
Single, never married	42 (50.6)
Married	7 (8.4)
Living with partner, not married	19 (22.9)
Separated/divorced/widowed	15 (18.1)
Previous diagnosis of depression, n (%)	22 (26.2)
Previous diagnosis of anxiety, n (%)	21 (25.0)
Previous abortion, n (%)	34 (41.0)
Previous miscarriage, n (%)	32 (39.5)

When asked about the period just before becoming pregnant (pre-conception perspectives), 61% indicated they did not intend to get pregnant, 32% reported that they did not want to get pregnant and 25% indicated the pregnancy was not planned (Table 2). When asked about how they felt after learning they were pregnant, 29% reported that it was the wrong time to have a baby, 31% said the pregnancy was undesired, and only 13% said they were not happy with the pregnancy news (Table 2). At enrollment, 65% planned to parent, 19% planned abortion, 2% planned adoption, and 14% were unsure.

Table 2. Measures of pregnancy context among participants, N=84

Pre-conception perspectives	**Intention**, n (%)	
	Intended to get pregnant	17 (20.2)
	Intentions changing	16 (19.1)

	Did not intend to get pregnant	51 (60.7)
	Wanted, n (%)	
	Wanted to have a baby	23 (27.4)
	Mixed feelings	34 (40.5)
	Did not want to have a baby	27 (32.1)
	London measure of unplanned pregnancy, n (%)	
	Planned	17 (20.2)
	Ambivalent	46 (54.8)
	Unplanned	21 (25.0)
Post-conception perspectives	**Timing**, n (%)	
	Right time to have a baby	27 (32.1)
	Ok but not quite right	33 (39.3)
	Wrong time	24 (28.6)
	Desired pregnancy, n (%)	
	Yes	38 (45.2)
	No	26 (31.0)
	Not sure	20 (23.8)
	Happy about pregnancy, n (%)	
	Happy	54 (64.3)
	Neither happy/unhappy, not sure	19 (22.6)
	Unhappy	11 (13.1)
	Pregnancy plans, n (%)	
	Parent	55 (65.4)

	Abortion	16 (19.0)
	Adoption	2 (2.4)
	Unsure	12 (14.3)

We identified self-reliance as a common and complex theme woven throughout women's discussions about their pregnancies. When discussing their reactions, expectations, and decision-making about their pregnancies, approximately half of women (n=40, 48%) spoke of self-reliance (specifically the need to rely on one's own efforts and abilities), rather than those of others. Discussions of self-reliance overlapped with related discussions about prior pregnancy experiences, prior parenting experiences, current children, relationships, social support, decision making about the pregnancy, and maternal health. We found the theme of self-reliance to consist of several intersecting subthemes: 1) past experiences of self-reliance, 2) expectations of motherhood, 3) financial independence, 4) decision making about this pregnancy, and 5) self-reliance in parenting. Social support, or lack thereof, was a pervasive element of all subthemes, and was intimately related to women's discussion of self-reliance.

i. Past experiences of self-reliance

Many of our participants were already intimately familiar with the notion of self-reliance during pregnancy in the absence of a partner or other social support due to experiences in previous pregnancies or current experiences as mothers. For some, their previous experience with the reality of self-reliance may have led to decisions to parent,

and for others the decision to terminate. For example, several women who were already mothers noted the following.

> *I'm used to doing it by myself. I'm used to being the parent alone, not having to share, except for doctors' appointments and delivery day. (Participant #12 [P-12], age 35)*

> *I mean I* [parented other children] *by myself, and they're doing good. (P-103, age 38)*

Some participants noted both difficulty and gratification as parents who were already self-reliant. One woman who planned to continue her current pregnancy said:

> *My daughter, her father's not, he's in her life, but not as much as he should be. He's trying to get better, you know, I give him that. So it's like you know I'm doing everything, everything on my own. With schoolwork and parent teacher night, report card night, family support night, all of that. I mean I don't mind because yeah I love that when she go back and look at her things she always come to see me, the person that was there. (P-30, age 26)*

Participants cited experiences raising children without social support and necessitating self-reliance as reason why they believed parenting their expected children would be successful. Participants spoke of sacrifice and challenges in being self-reliant parents, but many also described feeling great fulfilled by that role.

Similar descriptions were also offered by women planning abortion, perhaps related to their desire to care for and support the children they were already parenting.

For example, one woman who planned to terminate (and did) expressed pride in her ability to be self-reliant for her young son:

> *Um…do everything I can, for my son to have a good life. So I work…I basically do everything on my own for him. So…and to see him in the morning wake up and smile and say 'Mommy', it's just a good feeling. (P-49, age 21)*

ii. Expectations of self-reliance in motherhood

Some participants took as a given that they would have to be self-reliant in both pregnancy and motherhood; for many women, self-reliance was a necessary element of both.

> *At the end of the day, you know, you're the mother, you know, you have a mother and father but at the end of the day if it doesn't work, you're the mother. This is your child. So whether he is excited about it or not, I have to do what I have to do as a mom for my child. (P-55, age 30)*

> *He's the man and I'm the woman. And at the end of the day, when you have a child, all the care for that child is based on the woman. (P-44, age 37)*

Some participants described motherhood as a responsibility that required overcoming lack of social supports and embracing self-sacrifice in order to fulfill their duties as mothers.

> *Like, you know you're having a baby, it's going to be a struggle sometimes but you have to be able to provide and I'm not the type of person who, who just go and ask somebody, 'hey can you, can you help me' and stuff. And like that I just, you know, feel like I would need to provide for my child. I don't need nobody else to provide. That's how I feel about*

it. (P-1, age 30)

For some women, the idea that the responsibility of parenting would ultimately (and sometimes inevitably) fall to them stemmed from a social norm that fathers are less duty-bound and reliable than mothers.

> *And then at the end of the day, it's mommy's baby always. Like, he could get up and say whatever. Men can do whatever they wanna do, he's not obligated to stay here whether we're married, engaged, together or not. (P-109, age 29)*

iii. Financial independence

Many women also referred to financial independence as a marker of self-reliance, and the reason why they were making the decision to parent, irrespective of their partners' input on the matter.

> *Yeah, I pay the high rent bill. He pays the cable and the gas and they don't add up, so I got the say. This is how the world works! (P-36, age 20)*

> *I'm twenty-one and a half. I can make my own decisions. I work, I make my own money, pay my own bills, so my decision is my decision. If you're not with it, don't be around….but if you're not happy you can leave. I don't care. He probably wouldn't be happy, he'd probably be a little discouraged, upset or something. But it's my decision. (P-98, age 21)*

Discussions about financial independence also overlapped with discussions about the influence of family on pregnancy decision-making and lack of social support from

family, and sometimes shaped a participant's plans to share (or not) the news of the pregnancy with others.

> *I'm just more like…not that I don't care what anyone has to say, but I don't care what their opinions on it. Cuz it's like…if they have something negative to say I'm gonna say well…did you take care of any of my other kids? Would you like to pay a bill out of my house? Would you like me to write you a grocery list for us? So I'm more like, I don't feel the urge to tell everyone cuz I'm like…this isn't their baby. My household isn't their household, I've been on my own since I was eighteen, I've lived in my own place, I've had my own car. So I'm more like, if they find out, they find out. If they don't I could care less. (P-62, age 21)*

Conversely, several participants expressed that they did not see themselves as self-reliant because they lacked financial independence and stability. Some women voiced that they did not want to have to rely entirely on themselves in pregnancy or motherhood, which led some to question if continuing the pregnancy was the right decision. Several participants who felt this way also told researchers that they were planning abortion.

> *I don't want to be struggling…out here with two kids and then, you know, who knows? Me and my boyfriend only been together for a couple months, so…it's just like I'm not trying to do it by myself and I'm not trying to struggle and…I want to be more, I want to have a better job and stability. I don't want to be living on food stamps….I'm just trying to be better, like better us, before having another kid. (P-106, age 23)*

> *And if I'm not stable myself, then I'm not gonna bring somebody into this world and have them struggle with me …. Stable, as um, financially*

having a roof over my head…mm, mostly being prepared for it. I'm not at all. (P-97, age 20)

It's just like I'm not trying to do it by myself and I'm not trying to struggle…because like I said I'm just not trying to be living poor, broke, having to ask people for help like I'm not I don't want to do that. (P-106, age 23)

iv. Decision-making about this pregnancy

First, women displayed self-reliance simply in discussing decisions about their pregnancy. Many women expressed that they were relying solely on their own counsel to contemplate their decisions.

Whatever decision I make is my decision. (P-25, age 25)

Uh to be honest I could really care less what anyone else thinks because uh I'm 18. I'm gonna be 19 next month, and I mean, I'm an adult. I have to do what I have to do. I feel like [it's] my decision. I mean they can't really have no say, cause it's my decision so. (P-45, age 18)

I can do what I wanna do, I don't have to be pressured into doing anything or listening to somebody. (P-98, age 21)

Furthermore, conceptualizations of absent or low social support and the need for self-reliance influenced the way some women approached making decisions about their pregnancies. Women cited self-reliance when considering whether or not to continue their pregnancies, including what it would mean to be single parents. For some participants, the knowledge that they would need to be self-reliant and even single-

parents (either for the first time or again) influenced their plans to terminate, and for others this same knowledge appeared to factor into and reinforce their plans to parent.

Although a few women stated that their decisions depended in part on their partner's wishes, more women expressed the sentiment that their partners' opinions and roles were more or less irrelevant; in other words, they felt confident in their ability to be self-reliant and make decisions about continuing or terminating the pregnancy whether or not their partners stayed involved.

> *But then I realized that I wanted this child no matter who the father is. So…I was like whatever, either you're gonna be in our lives or not. It's not gonna change anything, I'm gonna keep my baby. (P-31, age 23)*

When asked how the father's feelings about the pregnancy impacted her decision to parent, one participant said:

> *No, it doesn't influence me in any way cuz I'm a pretty strong-minded person…I don't have to be with everyone, I can do my own thing. I don't mind being alone. So it's kinda like, whether he was OK with it or not, a baby is still gonna be here. (P-62, age 21)*

The physical reality of pregnancy also shaped women's perspectives on self-reliance and their pregnancy decision-making. Women saw their pregnancies as ultimately belonging to them, and so all decisions would be made accordingly. Two women who planned to parent expressed this sentiment:

> *And I'm like, well you don't have to carry a baby, you know. You don't have to do most of the things. So I'm not saying his opinion didn't matter, but to me it was just like, whatever. (P-62, age 21)*

Men tend to be, you know, like (soft laugh), they don't know. We're the ones that carry (the pregnancy), that do all the work. (P-32, age 24)

v. Self-reliance in parenting

Some women acknowledged that although a possibility, being self-reliant as a single mother without social support was not ideal. Many participants who planned either abortion or adoption pointed to the value of having a partner in parenthood.

Right now I'm single, I don't have anybody, so…I don't think it's…you know I'm not ready for that (e.g. being a single mother) yet. (P-53, age 21)

So to be a good mother I think it takes a partnership. Of course single mothers do it, but I think a man and a woman should raise a child, not just a man or a woman. (P-69, age 25)

I know a lot of families don't stay together. But for me myself, to be able to provide for the child on my own…And if I'm not stable myself, then I'm not gonna bring somebody else into this world and have them struggle with me. (P-97, age 20)

Similarly, a few participants expressed that their previous experience as single parents influenced their strong preference for having partner support in the current pregnancy.

I was by myself, had the baby by myself, took care of him by myself, until now. Well, until a year ago. So, I just, kinda don't want to go through that again, but I know that I'm with him now, that it might be different and that he might actually be there for me, but I don't want to like have the baby thinking that. Oh, he's there now and he'll be with me and this will be a better pregnancy and stuff. (P-25, age 25)

One participant who planned to parent expressed that while her preference would be to have partner support, she was prepared to parent by herself if necessary.

> *I see women do it all the time where you know they go through everything by their self. And it's done and I'm not saying that it can't be done, but to me, I just feel like, you know, what mother doesn't want a father there for her child. You know? And so I feel like that's a big part for me. But I mean either way I'm going to do what I have to do. (P-55, age 30)*

DISCUSSION

In this analysis of a racially and ethnically diverse urban population of women with new pregnancies, we identified self-reliance as a prevalent theme that emerged in discussions with women about how they felt the pregnancy would impact their lives, decisions, and relationships. Our findings suggest that both self-reliance and a recognition of the limits of self-reliance can have a substantial impact on a woman's thoughts, feelings, and decision-making about a pregnancy. Experiences with and examination of self-reliance as it related to social support, previous pregnancies and experiences, expectations of motherhood, financial independence, decision making about the current pregnancy, and self-reliance in parenting, all contributed to a woman's assessment of her new pregnancy.

Our findings advance understanding of self-reliance as a potential response to lack of social support, in several ways. To our knowledge, this study is the first evaluation of women's thoughts and expressions regarding self-reliance at the time of pregnancy diagnosis. We identified two previous studies that specifically report on self-reliance related to pregnancy.[38,39] However, both studies were conducted in the postpartum period, and may be subject to recall bias. Ashaba et al. report on coping strategies used during pregnancy and childbirth by women living with HIV in Uganda (n=20). They conducted post-partum qualitative interviews and identified self-reliance, mostly as it relates to financial independence and parenting, as one of five coping strategies these women used to navigate challenges during pregnancy and beyond.[38] In the second study we identified, Johansson et al. identified self-reliance as one of three main themes that emerged with first-time Swedish parents following same-day discharge

from the hospital after childbirth (n=21). In this study, the concept of self-reliance pertained to parents who needed to rely on their own instincts about newborn care at home, as opposed to asking for help or receiving assistance from healthcare professionals.[39] While helpful in defining some aspects of self-reliance and identifying it as an important theme among postpartum women, these two studies are limited to non-U.S. populations and are retrospective in nature. Our findings build on these smaller studies and clarify how self-reliance may function in a larger, urban, U.S. population of women in early pregnancy, prospectively contemplating pregnancy and parenting. We believe that characterizing self-reliance among pregnant women, often in the presence of limited or absent social support, is novel and an area that warrants further inquiry and analysis.

Strengths of our study include employing a qualitative approach using semi-structured interview questions, which allowed participants to express varied and at times contradictory emotions, thoughts, and feelings, which added complexity and richness to our data. The diverse racial and ethnic representation of our participants is also a strength, given prior research that has shown that the effects of social support and self-reliance vary across ethnic and cultural groups.[55,56] Additionally, this study includes women in early pregnancy with varying pregnancy contexts (intention, wantedness, planning, timing, desirability, happiness) and outcomes (miscarriage, abortion, delivery), and therefore provides important perspectives not often captured in research about pregnancy. Our study may be limited by the lack of specific questions designed to evaluate self-reliance. Instead, the theme of self-reliance emerged from women's discussions about their thoughts and feelings towards a new pregnancy. Another limitation of our study

may be that our participants were recruited from a single geographic area; however, this region is diverse and generally representative of demographics in the United States.[57]

Additional research is needed to explore self-reliance during pregnancy as there may be different and more complex sub-themes. It remains unclear whether self-reliance is a fixed character trait or rather a transient state of being that can be learned or cultivated over time. Future investigations into self-reliance in pregnancy could aid understanding of whether self-reliance is associated with decides woman's decision to continue or abort her pregnancy, if self-reliance can diminish the effects of low or absent social support, or if it positively or negatively affects different maternal and neonatal outcomes, such as postpartum depression or birthweight among women who decide to continue their pregnancy. Although there is evidence that interventions aiming to increase social support during the prenatal and postpartum period lead to better maternal and neonatal outcomes, findings are mixed. [6,24,25] Moreover, we do not know whether these same interventions would have any impact on women's self-reliance, or if interventions aimed to increase self-reliance would lead to better outcomes as well, particularly in the absence of increased social support. Additionally, further evaluation regarding which types of social support and self-reliance effect these outcomes and for which ethnic and cultural communities, is warranted.

Our findings suggest that self-reliance is an important aspect of women's reproductive lives and choices. It's a prevalent concept that is threaded through women's thoughts about pregnancy, and may be an important coping strategy women employ to buffer the negative effects of diminished or absent social support.

In the end, self-reliance may only take women so far in the absence of social support and financial resources. While healthcare providers can try to cultivate individual patient factors (self-reliance) that may be protective against negative maternal and neonatal outcomes, we must also consider the environment and supports that our healthcare systems and government provide for vulnerable women. As of 2015, 13% of all women aged 15-44 in the United States remain uninsured,[59] and over 15 million women living below 250% of the federal poverty level are in need of publicly funded contraceptive services and supplies.[60] The current political climate poses further threats to family planning and preventive healthcare for underserved women,[61–63] as well as to maternity and newborn care.[64,65] Systems can either support or chip away at self-reliance, and in the face of shrinking benefits and worn safety nets, a woman's self-reliance simply may be not enough.

References

1. Woods SM, Melville JL, Guo Y, Fan M-Y, Gavin A. Psychosocial stress during pregnancy. Am J Obstet Gynecol 2010;202(1):61.e1-7.

2. Harris LF, Roberts SCM, Biggs MA, Rocca CH, Foster DG. Perceived stress and emotional social support among women who are denied or receive abortions in the United States: a prospective cohort study. BMC Womens Health 2014;14:76.

3. Feldman PJ, Dunkel-Schetter C, Sandman CA, Wadhwa PD. Maternal social support predicts birth weight and fetal growth in human pregnancy. Psychosom Med 2000;62(5):715–25.

4. Elsenbruch S, Benson S, Rücke M, et al. Social support during pregnancy: effects on maternal depressive symptoms, smoking and pregnancy outcome. Hum Reprod Oxf Engl 2007;22(3):869–77.

5. Glazier RH, Elgar FJ, Goel V, Holzapfel S. Stress, social support, and emotional distress in a community sample of pregnant women. J Psychosom Obstet Gynaecol 2004;25(3–4):247–55.

6. Coburn SS, Gonzales NA, Luecken LJ, Crnic KA. Multiple domains of stress predict postpartum depressive symptoms in low-income Mexican American women: the moderating effect of social support. Arch Womens Ment Health 2016;19(6):1009–18.

7. Ren J, Jiang X, Yao J, et al. Depression, Social Support, and Coping Styles among Pregnant Women after the Lushan Earthquake in Ya'an, China. PloS One 2015;10(8):e0135809.

8. Jesse DE, Kim H, Herndon C. Social support and self-esteem as mediators between stress and antepartum depressive symptoms in rural pregnant women. Res Nurs Health 2014;37(3):241–52.

9. Pires R, Araújo-Pedrosa A, Canavarro MC. Examining the links between perceived impact of pregnancy, depressive symptoms, and quality of life during adolescent pregnancy: the buffering role of social support. Matern Child Health J 2014;18(4):789–800.

10. Pagel MD, Smilkstein G, Regen H, Montano D. Psychosocial influences on new born outcomes: a controlled prospective study. Soc Sci Med 1982 1990;30(5):597–604.

11. Wado YD, Afework MF, Hindin MJ. Effects of maternal pregnancy intention, depressive symptoms and social support on risk of low birth weight: a prospective study from southwestern Ethiopia. PloS One 2014;9(5):e96304.

12. Dejin-Karlsson E, Hanson BS, Östergren P-O, Lindgren A, Sjöberg N-O, Marsal K. Association of a lack of psychosocial resources and the risk of giving birth to small for gestational age infants: a stress hypothesis. BJOG Int J Obstet Gynaecol 2000;107(1):89–100.

13. Nylen KJ, O'Hara MW, Engeldinger J. Perceived social support interacts with prenatal depression to predict birth outcomes. J Behav Med 2013;36(4):427–40.

14. Norbeck JS, Anderson NJ. Psychosocial predictors of pregnancy outcomes in low-income black, Hispanic, and white women. Nurs Res 1989;38(4):204–9.

15. Hodnett ED, Fredericks S, Weston J. Support during pregnancy for women at increased risk of low birthweight babies. Cochrane Database Syst Rev 2010;(6):CD000198.

16. Hetherington E, Doktorchik C, Premji SS, McDonald SW, Tough SC, Sauve RS. Preterm Birth and Social Support during Pregnancy: a Systematic Review and Meta-Analysis. Paediatr Perinat Epidemiol 2015;29(6):523–35.

17. Doyle O, McGlanaghy E, Palamaro-Munsell E, McAuliffe FM. Home based educational intervention to improve perinatal outcomes for a disadvantaged community: a randomised control trial. Eur J Obstet Gynecol Reprod Biol 2014;180:162–7.

18. Mejdoubi J, van den Heijkant SCCM, van Leerdam FJM, Crone M, Crijnen A, HiraSing RA. Effects of nurse home visitation on cigarette smoking, pregnancy outcomes and breastfeeding: a randomized controlled trial. Midwifery 2014;30(6):688–95.

19. Lee E, Mitchell-Herzfeld SD, Lowenfels AA, Greene R, Dorabawila V, DuMont KA. Reducing low birth weight through home visitation: a randomized controlled trial. Am J Prev Med 2009;36(2):154–60.

20. Ickovics JR, Kershaw TS, Westdahl C, et al. Group prenatal care and perinatal outcomes: a randomized controlled trial. Obstet Gynecol 2007;110(2 Pt 1):330–9.

21. Dennis C-L, Dowswell T. Psychosocial and psychological interventions for preventing postpartum depression. Cochrane Database Syst Rev 2013;(2):CD001134.

22. Giurgescu C, Zenk SN, Templin TN, et al. The Impact of Neighborhood Environment, Social Support, and Avoidance Coping on Depressive Symptoms of Pregnant African-American Women. Womens Health Issues Off Publ Jacobs Inst Womens Health 2015;25(3):294–302.

23. Chae SY, Chae MH, Kandula S, Winter RO. Promoting improved social support and quality of life with the CenteringPregnancy<Superscript>®</Superscript> group model of prenatal care. Arch Womens Ment Health 2017;20(1):209–20.

24. McCall-Hosenfeld JS, Phiri K, Schaefer E, Zhu J, Kjerulff K. Trajectories of Depressive Symptoms Throughout the Peri- and Postpartum Period: Results from the First Baby Study. J Womens Health 2016;25(11):1112–21.

25. Mundorf C, Shankar A, Moran T, et al. Reducing the Risk of Postpartum Depression in a Low-Income Community Through a Community Health Worker Intervention. Matern Child Health J 2017;

26. Balaji AB, Claussen AH, Smith DC, Visser SN, Morales MJ, Perou R. Social support networks and maternal mental health and well-being. J Womens Health 2007;16(10):1386–96.

27. Razurel C, Kaiser B, Sellenet C, Epiney M. Relation between perceived stress, social support, and coping strategies and maternal well-being: a review of the literature. Women Health 2013;53(1):74–99.

28. Collins NL, Dunkel-Schetter C, Lobel M, Scrimshaw SC. Social support in pregnancy: psychosocial correlates of birth outcomes and postpartum depression. J Pers Soc Psychol 1993;65(6):1243–58.

29. Kim THM, Connolly JA, Tamim H. The effect of social support around pregnancy on postpartum depression among Canadian teen mothers and adult mothers in the maternity experiences survey. BMC Pregnancy Childbirth 2014;14:162.

30. Morikawa M, Okada T, Ando M, et al. Relationship between social support during pregnancy and postpartum depressive state: a prospective cohort study. Sci Rep 2015;5:10520.

31. Tani F, Castagna V. Maternal social support, quality of birth experience, and post-partum depression in primiparous women. J Matern-Fetal Neonatal Med Off J Eur Assoc Perinat Med Fed Asia Ocean Perinat Soc Int Soc Perinat Obstet 2017;30(6):689–92.

32. Howell EA, Mora P, Leventhal H. Correlates of Early Postpartum Depressive Symptoms. Matern Child Health J 2006;10(2):149.

33. Gao L-L, Sun K, Chan SW-C. Social support and parenting self-efficacy among Chinese women in the perinatal period. Midwifery 2014;30(5):532–8.

34. Keating-Lefler R, Wilson ME. The Experience of Becoming a Mother for Single, Unpartnered, Medicaid-Eligible, First-Time Mothers. J Nurs Scholarsh 2004;36(1):23–9.

35. Mautner E, Stern C, Deutsch M, et al. The impact of resilience on psychological outcomes in women after preeclampsia: an observational cohort study. Health Qual Life Outcomes 2013;11:194.

36. Grote NK, Bledsoe SE. Predicting postpartum depressive symptoms in new mothers: the role of optimism and stress frequency during pregnancy. Health Soc Work 2007;32(2):107–18.

37. Lobel M, DeVincent CJ, Kaminer A, Meyer BA. The impact of prenatal maternal stress and optimistic disposition on birth outcomes in medically high-risk women. Health Psychol 2000;19(6):544–53.

38. Ashaba S, Kaida A, Burns BF, et al. Understanding coping strategies during pregnancy and the postpartum period: a qualitative study of women living with HIV in rural Uganda. BMC Pregnancy Childbirth [Internet] 2017;17. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5423027/

39. Johansson K, Aarts C, Darj E. First-time parents' experiences of home-based postnatal care in Sweden. Ups J Med Sci 2010;115(2):131–7.

40. Masten AS. Ordinary magic. Resilience processes in development. Am Psychol 2001;56(3):227–38.

41. Solivan AE, Wallace ME, Kaplan KC, Harville EW. Use of a resiliency framework to examine pregnancy and birth outcomes among adolescents: A qualitative study. Fam Syst Health J Collab Fam Healthc 2015;33(4):349–55.

42. Gagnon AJ, Stewart DE. Resilience in international migrant women following violence associated with pregnancy. Arch Womens Ment Health 2014;17(4):303–10.

43. Dunkel Schetter C. Psychological science on pregnancy: stress processes, biopsychosocial models, and emerging research issues. Annu Rev Psychol 2011;62:531–58.

44. Ortega AN, Alegría M. Self-reliance, mental health need, and the use of mental healthcare among island Puerto Ricans. Ment Health Serv Res 2002;4(3):131–40.

45. Fischer EP, McSweeney JC, Wright P, et al. Overcoming Barriers to Sustained Engagement in Mental Health Care: Perspectives of Rural Veterans and Providers. J Rural Health Off J Am Rural Health Assoc Natl Rural Health Care Assoc 2016;32(4):429–38.

46. Page-Carruth A, Windsor C, Clark M. Rural self-reliance: the impact on health experiences of people living with type II diabetes in rural Queensland, Australia. Int J Qual Stud Health Well-Being 2014;9:24182.

47. Somerset M, Peters TJ, Sharp DJ, Campbell R. Factors that contribute to quality of life outcomes prioritised by people with multiple sclerosis. Qual Life Res Int J Qual Life Asp Treat Care Rehabil 2003;12(1):21–9.

48. Tunnicliffe DJ, Singh-Grewal D, Chaitow J, et al. Lupus Means Sacrifices: Perspectives of Adolescents and Young Adults With Systemic Lupus Erythematosus. Arthritis Care Res 2016;68(6):828–37.

49. Drew EM, Schoenberg NE. Deconstructing fatalism: ethnographic perspectives on women's decision making about cancer prevention and treatment. Med Anthropol Q 2011;25(2):164–82.

50. Funch DP, Marshall JR. Self-reliance as a modifier of the effects of life stress and social support. J Psychosom Res 1984;28(1):9–15.

51. Daly J, Elliott D, Cameron-Traub E, et al. Health status, perceptions of coping, and social support immediately after discharge of survivors of acute myocardial infarction. Am J Crit Care Off Publ Am Assoc Crit-Care Nurses 2000;9(1):62–9.

52. Gariepy A, Lundsberg LS, Vilardo N, Stanwood N, Yonkers K, Schwarz EB. Pregnancy context and women's health-related quality of life. Contraception 2017;95(5):491–9.

53. Squires A. Methodological challenges in cross-language qualitative research: a research review. Int J Nurs Stud 2009;46(2):277–87.

54. Gale NK, Heath G, Cameron E, Rashid S, Redwood S. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. BMC Med Res Methodol 2013;13:117.

55. D'Anna-Hernandez KL, Aleman B, Flores A-M. Acculturative stress negatively impacts maternal depressive symptoms in Mexican-American women during pregnancy. J Affect Disord 2015;176:35–42.

56. Guendelman S, Malin C, Herr-Harthorn B, Noemi Vargas P. Orientations to motherhood and male partner support among women in Mexico and Mexican-origin women in the United States. Soc Sci Med 2001;52(12):1805–13.

57. Kolko J. "Normal America" Is Not A Small Town Of White People [Internet]. FiveThirtyEight. 2016 [cited 2018 Jan 8];Available from: https://fivethirtyeight.com/features/normal-america-is-not-a-small-town-of-white-people/

58. Negron R, Martin A, Almog M, Balbierz A, Howell EA. Social support during the postpartum period: mothers' views on needs, expectations, and mobilization of support. Matern Child Health J 2013;17(4):616–23.

59. Jones RK, Jerman J. Abortion Incidence and Service Availability In the United States, 2014. Perspect Sex Reprod Health 2017;

60. Contraceptive Needs and Services, 2014 Update [Internet]. Guttmacher Inst. 2016 [cited 2018 Jan 8];Available from: https://www.guttmacher.org/report/contraceptive-needs-and-services-2014-update

61. Why We Cannot Afford to Undercut the Title X National Family Planning Program [Internet]. Guttmacher Inst. 2017 [cited 2018 Jan 8];Available from: https://www.guttmacher.org/gpr/2017/01/why-we-cannot-afford-undercut-title-x-national-family-planning-program

62. Recent Funding Restrictions on the U.S. Family Planning Safety Net May Foreshadow What Is to Come [Internet]. Guttmacher Inst. 2016 [cited 2018 Jan 8];Available from: https://www.guttmacher.org/gpr/2016/12/recent-funding-restrictions-us-family-planning-safety-net-may-foreshadow-what-come

63. Grossman D. Sexual and reproductive health under the Trump presidency: policy change threatens women in the USA and worldwide. J Fam Plann Reprod Health Care 2017;43(2):89–91.

64. Carroll AE. Why Is US Maternal Mortality Rising? JAMA 2017;318(4):321–321.

65. No One Benefits If Women Lose Coverage for Maternity Care [Internet]. Guttmacher Inst. 2017 [cited 2018 Jan 8];Available from: https://www.guttmacher.org/gpr/2017/06/no-one-benefits-if-women-lose-coverage-maternity-care

Appendix 1. Individual and focus group interview guide

As you know we are doing a study to learn about women's experience of pregnancy, especially about how they felt about being pregnant and the impact of the pregnancy on their lives. Some of the questions we will ask will seem rather personal and it is completely up to you to share what you are comfortable with and will be kept confidential to those in this room. You will never be identified by your real name.

If you decide you do not want to share your feelings in the group that is fine, we can talk privately later if that is better for you.

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1. When did you find out that you were pregnant?

2. Pregnancy can be intended, unintended or ambivalent. How would you describe your intention about this pregnancy?

3. Can you tell me your initial thoughts after receiving your positive pregnancy test?
    a. How would you describe your initial feelings?
    b. How would you describe your mood?

4. How are you feeling now?
    a. How would you describe your mood?
    b. Have your feelings changed at all since you received your pregnancy test?
    c. What do you think caused this to change?

5. How do these feelings influence your decision about whether you want to parent, adopt out, or terminate the pregnancy?

6. What does it mean to you to be a good mother?
    a. Do you think you'd be a good mother now? Why or why not?

7. Regarding the person you got pregnant with, how do you think he feels or would feel (if he doesn't know yet) about your positive pregnancy test?
    a. How do those feelings influence you?
    b. How important is your relationship with him (whether in a relationship or not) to how you're experiencing this pregnancy?

8. How has this pregnancy impacted your daily life?
    a. How are things at home?
    b. With finances?
    c. With work/school?
    d. How do you think they will they be impacted in the future? Positively or negatively?

9. How are your relationships with your friends and family lately?
    a. How do you think your relationships will be impacted by this pregnancy in the future?

b. Will they change or stay the same? For the better or worse?

10. Who have you told about the pregnancy?
    a. Who have you not told?
    b. Why?
    c. How have they responded to the news?
    d. Were you pleased or displeased with their responses?
    e. Were you surprised with their responses?

11. Are there additional issues related to your feelings and your pregnancy that you'd like to discuss?