The Educational Stratification of Social Influence Processes and the Valuation of Risks

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ABSTRACT

People navigate a maze of professional and lay knowledge and beliefs when making decisions about health behaviors. When barraged with health information and beliefs, do people behave differently depending on their educational attainment? Using first pregnancy as an empirical example, I explore educational differences in two behaviors for which women receive conflicting information—consumption of prenatal caffeine and alcohol. For both behaviors, I find evidence that the social influence women receive is stratified by their education level. This particular case study also reveals a complex counter-example from a health inequality perspective: very highly educated pregnant women often defy standard biomedical prenatal recommendations. To explain this counter-example, I draw from a sociological perspective that considers the sociocultural forces that lead particular health behaviors to be deemed risky. Based on the empirical evidence, I argue that we should expand our understanding of the ways that social influence and the valuation of health risks are stratified and thus contribute to social inequalities in health.

INTRODUCTION

Examining the way individuals react to advances in health research may help identify the origins of inequalities in health behaviors related to morbidity and mortality (Kenkel 1991; Gortmaker and Wise 1997; Link, Northridge, Phelan, and Ganz 1998; Lichtenberg and Lleras-Muney 2005; Glied and Lleras-Muney 2008; Miech 2008; Chang and Lauderdale 2009; Price and Simon 2009). For instance, following the U.S. Surgeon General's warning about smoking, highly educated people altered their behaviors more than those who are less educated to avoid deleterious health effects (Kenkel 1991). Undoubtedly such advances and changes in norms impact health behavior, and they may promote the formation of health inequalities, but the majority of new health information is not as definitive as the Surgeon General's warning about smoking. Instead, people navigate a maze of professional and lay knowledge and beliefs (Clark, Shim, Mamo Fosket and Fishman 2003; Schnittker 2009). When navigating this maze of health information and beliefs, do people behave differently depending on their educational attainment?

My aim is twofold. First, to advance the literature on the origins of social inequalities in health, I examine educational differences in decision-making from a unique and informative vantage point—when medical information about a health behavior is uncertain. To evaluate this process, I use a specific case study, women who are pregnant for the first time, or prima gravida women. This particular case study reveals a complex counter-example from a health inequality perspective, which consistently argues that socioeconomic status is inversely related to healthy behaviors and outcomes: very highly educated pregnant women often defy standard biomedical prenatal recommendations. Second, to explain this counter-example I draw from a sociological perspective that problematizes the sociocultural forces that lead particular health behaviors to be deemed risky.

As a case study, first pregnancy provides an opportunity to achieve both aims. Similar to other new health events, it affords the opportunity to observe how people make decisions when faced with the same health change (pregnancy) over equivalent time periods. During their prenatal appointments, women are provided information about two health behaviors—which are the focus of this study—that *may* have detrimental effects on their fetuses according to current biomedical knowledge: caffeine and alcohol consumption. Prima gravida women receive conflicting health information and influence about health habits during pregnancy from members of their social network, including their health care providers. I observe the way that pregnant women's decisions about caffeine and alcohol differ by education level amid this conflicting information and social influence.

In assessing this complex process I use a mixed-method study design composed of first trimester survey interviews and third trimester in-depth interviews with pregnant women, as well as in-depth interviews with their health care providers. Using this design I am able to (1) describe educational patterns of alcohol and caffeine consumption early in pregnancy; (2) account for their provider's prenatal recommendations; and (3) provide a rich description of pregnant women's decision-making processes about prenatal behaviors during their pregnancy.

To use this empirical example to advance the literature on the origins of social inequalities in health I synthesize diverse literatures, borrowing specifically from research about the emergence of health inequalities as well as the influence of social relationships on health behaviors. Expanding on our current understanding of the origins of health inequalities, I argue that beyond education, social relationships are central to the way people make decisions about conflicting information because people rely on others to evaluate risks. Even more, I posit that the process of valuing the risk associated with a given health behavior—the valuation of a health

risk—is determined by social and cultural forces, which requires that we use a broader lens to consider the meaning of health (Schnittker 2009) and health behaviors. This perspective has the potential to expand our understanding of the ways social influence and the valuation of health risks are stratified and thus contribute to social inequalities in health.

UNDERSTANDING THE FORMATION OF SOCIAL INEQUALITIES IN HEALTH

In spite of the significant improvements in quality and length of life in the United States and other developing countries, an array of interdisciplinary research provides evidence of long-standing social inequalities in health (Virchow 1848; Antonovsky 1967; Kitagawa and Hauser 1973; Duleep 1989; Preston and Elo 1995; Lauderdale 2001; Marmot 2004; Warren and Hernandez 2007). One of the most prominent explanations for these long-standing inequalities, fundamental cause theory, posits that socially advantaged people have more money, knowledge, power and prestige that enable them to avoid deleterious health effects when biomedicine advances (Link and Phelan 1995). Thus, even though proximate causes of disease can potentially change with improvements in treatment, screening or the discovery of health hazards, by and large people with better social conditions are more likely to benefit from these improvements to live longer and healthier lives.

Building on the idea that biomedical advances can have the unintended consequence of precipitating health inequalities, a new strand of research examines the ways that external shocks of health information or changes in social norms prompt people to react differently depending on their socioeconomic status. The 1964 U.S. Surgeon General's report about the hazards of smoking is a prime example of such an exogenous health shock: the warning was *external* to other factors affecting individual's decisions about smoking, yet the information altered their

perspective on the behavior. Indeed, in the decades after the 1964 report, individuals were much more likely to quit and less likely to begin smoking if they had completed more schooling (Kenkel 1991).

Analogous external shocks of health information and technology have also prompted the formation of inequalities in health. With advances in cancer and HIV/AIDS screening and treatment (Link et al. 1998; Glied and Lleras-Muney 2008; Rubin, Colen, and Link 2010), new drug technology (Chang and Lauderdale 2009), and technological innovation in infant care (Gortmaker and Wise 1997), over the course of a few decades income and education disparities in morbidity and mortality linked to specific health behaviors emerged. In a similar way, a shift in the social stigma associated with cocaine use during the late 1980s prompted people with more education to quit using cocaine at higher rates, and over the course of the next decades an education gradient in use emerged (Miech 2008). Each of these findings supports the same central idea: Individuals with more education and income have a higher likelihood of adopting behaviors to avoid health hazards when biomedicine advances or social norms change.

Navigating the Maze of Health Information

Although advances in biomedical knowledge have served as a catalyst for the formation of inequalities in specific health behaviors, most often people navigate a maze of health information. Contextualizing within the broader history of biomedicalization provide provides one lens to understand how people navigate the maze, and why the processes that influence their decisions about health behaviors may be stratified by education.

The rise of medical authority in the United States increased both the domain and power of medicine (Starr 1982) and led an increasing number of problems to be "defined and treated as medical problems" (Conrad 1992:209). This process of medicalization expanded to biomedicalization at the end of the 20th century, characterized by the "integration of medical

knowledge with lay belief and behavior" (Schnittker 2009:2160) within the context of the current technoscientific perspective on health (Clarke 2003) and abundance of commercial health interests. As a result, sources of knowledge became more diverse, access to these sources increased, and the demarcation between professional and lay knowledge became blurred.

In a parallel trend, after the epidemiological transition, as chronic illnesses rose as the top causes of morbidity and mortality, behavioral modifications—and individual responsibility—became the focus of biomedical and epidemiologic research and interventions (see Armstrong 2000). The confluence of these trends elevates "health itself…[as an individual moral responsibility] to be fulfilled through improved access to knowledge, self-surveillance, prevention, risk assessment, the treatment of risk, and the consumption of appropriate self-help/biomedical goods and services" (Clarke et al. 2003:162). Today individuals are responsible for acquiring and navigating far more health information from a heterogeneous array of sources. As a result, those who possess not only the access to health information, but also the ability to understand and act upon it, will be better positioned to take control of their health.

The Centrality of Education

Given the increasing complexity of health information, how might education affect the way people decide to behave? Aside from bestowing additional human capital, education expands cognitive abilities, develops communication skills, and through the process of learning "builds the confidence and self-assurance needed to attempt to solve problems" (Mirowsky and Ross 2003: 26-7). These benefits likely manifest in an enhanced ability to decipher, understand and react to health information (Rosenzweig 1995; Cutler and Lleras-Muney 2010), particularly as people have become consumers of health (Conrad 2005). Thus, education may play a central role in helping individuals make decisions about the increasingly heterogeneous array of health information

because “a knowledgeable public may demand better health, while simultaneously increasing the sophistication and complexity with which that demand is met” (Schnittker 2009:2175).

Managing Uncertainty through Social Relationships

The blurred demarcation between expert and lay health knowledge, as well as the focus on individual personal responsibility to be healthy, elevates the importance of additional sources of health information and social influence. When presented with health information, social relationships act as one mechanism affecting change in behavior, particularly when individuals are faced with uncertainty. To manage the uncertainty of new innovations or health information individuals react “by drawing on others to define a socially acceptable interpretation of the risk” (Burt 1987:1288). In turn, individuals receive normative pressure to behave in a particular way through a process of social influence. Thus, social relationships can be a source of social influence regarding decisions about health behaviors (Baronowski et al. 1983; Montgomery and Casterline 1996; Behrman, Kohler and Watkins 2002; Umberson, Crosnoe and Reczek 2010).

An Empirical Example: Prenatal Caffeine and Alcohol Consumption in the U.S.

To assess whether and how education influences the way people navigate the increasingly complex maze of health information, I concentrate on decisions after a new health event: first pregnancy. New health events serve as health shocks, which have generally been used to estimate the effect of an illness diagnosis on employment and earnings (Smith 1999; 2004). Arguably, these events are not true health shocks, given that they are not entirely external to individual health decisions because people are often aware of factors that may influence their onset. However, “the actual realization [of a chronic illness diagnosis] and especially its timing may be unanticipated" (1999:152). As a new health event, first pregnancy presents a unique case study to observe how people make decisions over equivalent time periods. Although women may

have altered their behaviors if they had planned to become pregnant, the focus of this analysis is on their decisions about behaviors during pregnancy.

I focus on caffeine and alcohol consumption because biomedical knowledge about these behaviors has evolved over the past four decades and the information and social influence women receive from others are often conflicting or unclear. The central tenets of fundamental cause theory (Link and Phelan 1995) dictate that well-educated individuals will consistently make decisions that provide them with a health advantage. Thus, when navigating the maze of health information, I expect that women with more education will decide to avoid health risks, particularly because they believe themselves to be morally responsible for their own health and the health of their fetus (Clarke 2003; Armstrong 2003). Moreover, in managing the uncertainty associated with prenatal alcohol and caffeine consumption, I anticipate that women will rely on social influences from those in their social network.

Biomedical Recommendations for Prenatal Consumption of Alcohol and Caffeine

The leading association of biomedical physicians (the American College of Obstetricians and Gynecologists, or ACOG) and certified nurse-midwives (American College of Nurse-Midwives, or ACNM) that aid with prenatal care and delivery in the U.S. put forth official position statements about prenatal behaviors, which the U.S. Surgeon General occasionally supplements.

ACOG acknowledges that research on the adverse outcomes associated with caffeine consumption during pregnancy is conflicting (ACOG 2011a). In their most recent recommendation, also adopted by the ACNM, ACOG notes that only high levels of consumption—more than 200 milligrams of caffeine per day (e.g., more than 12 ounces of caffeinated coffee)—are associated with miscarriage or preterm birth (ACOG 2011a). Previous studies had elevated the level of concern associated with caffeine intake (Morris and Weinstein

1981; Infante-Rivard et al. 1993; Mills et al. 1993; Infante-Rivard et al. 2000; Cnattingius et al. 2000; Weng, Odouli and Li 2008), and affirmed a 1980 report by the Federal Drug Administration warning women to abstain from drinking caffeine (Golden 1995). Although prenatal caffeine consumption is now deemed safe, in moderate quantities, the subject has been a common source of anxiety and concern in the U.S. Thus, many pregnant women reduce their intake or abstain completely.

There is also a lack of clarity about adverse effects associated with prenatal alcohol consumption. ACOG and ACNM currently recommend that women abstain from alcohol during pregnancy because they conclude that biomedical research has not determined a safe level for consumption (ACOG 2011b; ACNM 2011). The U.S. Surgeon General also recently released an advisory in 2005 about the hazards of drinking alcohol during pregnancy, including Fetal Alcohol Spectrum Disorders (FASD). According to the warning, these disorders are directly linked to prenatal alcohol consumption, which are manifest in the form of fetal growth deficiencies, abnormal facial features and abnormalities of the central nervous system. This most recent warning superseded the earlier warning, in 1981, that merely suggested that pregnant women limit the amount of alcohol they consume (United States Department of Health and Human Services 2005).

Outside of the U.S. biomedical community there is less of a consensus about the deleterious effects of alcohol. Major medical associations in other Western nations, such as the United Kingdom, France, Ireland, Australia, and Canada (O'Leary et al. 2007), put forth a range of recommendations, the most lenient of which advise women to only avoid binge drinking. The changes in the U.S. recommendations also create further confusion because women receive conflicting advice through their social relationships and/or other media outlets. Due to generational differences in the acceptance of alcohol consumption, women's mothers, aunts and grandmothers

frequently advise them that some level of alcohol consumption is safe during pregnancy. Thus, observing these particular behaviors provides an ideal opportunity to study how education and social influence affect the way people navigate the maze of conflicting health information and beliefs.

DATA AND ANALYTIC STRATEGY

Data

Research Design

I utilize a three part research design that combines a quantitative component (Part A) and two qualitative components (Parts B and C). For Part A, I sequentially enrolled women to participate in a 20-minute survey interview—during their first trimester—from four health clinics in two Midwestern cites over the course of thirteen months (November 2009-November 2010). Women were eligible to participate if they were over the age of 18, pregnant for the first time (prima gravida), under 27 weeks pregnant, and spoke English. Women with planned and unplanned pregnancies were included and were enrolled up through their and second trimester to ensure that those who lacked access to early prenatal health care were included. Women also qualified for the study if they had previously had an elected or spontaneous abortion (essential prima gravida).

Although women with a range of educational backgrounds participated in this study, to understand the complex interplay between education and decision-making about prenatal behaviors a larger proportion of participants were well educated (i.e., a college degree or more). Women who participated in the study were more highly educated than the average prima gravida woman: 40 percent had completed a master's, professional or doctoral degree, and only 22 percent did not complete college. Exploring decisions among well-educated pregnant women

allows for a more nuanced understanding of the ways that educational attainment influences decisions when they receive conflicting health information.

During the survey interview women completed the Health Information and Behaviors during Pregnancy Study (HIBPS) questionnaire, which I created for this study. Women were asked about their socioeconomic background, health knowledge, and health behaviors. The preferred mode of administration for the questionnaire was in-person, but participants were also given the option to complete it over the phone. Among participants, 85 percent completed the survey in-person and 15 percent completed the survey by phone. All surveys were conducted by me or by a trained survey interviewer. Approximately 68 percent of eligible women who were seen in the four clinics agreed to participate in the 20-minute survey interview.

For Part B, I stratified each monthly sample into three education categories (less than a bachelor's degree, bachelor's degree and graduate/professional degree) and randomly selected a subset of two women from each strata to participate in in-depth semi-structured interviews at the beginning of their third trimester (between weeks 28 and 30). These educational categories are appropriate given the aim to provide a nuanced understanding of the way people make decisions differently depending on their educational background. In all, I conducted in-depth interviews with 41 women. This design allowed me to assess how decisions about prenatal behaviors differed by educational attainment.

Finally, for Part C I conducted 14 in-depth interviews with health care providers—including the physicians, midwives, and nurses—who provided care for at least five respondents from Part A. These interviews allow me to portray a more complete illustration of the ways that women's health care providers offered health information or influenced women's behaviors.

Measures

Health Behaviors. The HIBPS questionnaire includes questions borrowed from the Pregnancy Risk Assessment Monitoring System (PRAMS) and the Behavioral Risk Factor Surveillance System (BRFSS) questionnaires to measure beverage consumption (Gilbert, Shulman, Fischer and Rogers 1999; Centers for Disease Control and Prevention 2009). Women were asked the BRFSS question "[d]uring the past 30 days, have you had at least one drink of any alcoholic beverage such as beer, wine, a malt beverage or liquor?" with response options "yes" or "no." Although women may abstain during pregnancy, they may have consumed prior to knowing that they were pregnant.[1] Therefore, women were asked the following questions from the PRAMS questionnaire about the previous three months: "how many alcoholic drinks did you have in an average week?" and "how many times did you drink 5 alcoholic drinks or more in one sitting?" None of the questions included in the PRAMS or BRFSS questionnaires inquired about caffeine consumption, so I developed a variant of the BRFSS question about alcohol, "[d]uring the past 30 days, how many times a week did you have at least one drink with caffeine?" with response options "yes" or "no."

Education. Aside from the previously mentioned theoretical reasons, education is a great indicator of socioeconomic status for a number of methodological reasons central to this study (Elo and Preston 1996; Hummer and Lariscy 2011): 1) in most instances, schooling ends in the beginning of adulthood and does not change; 2) it is a stable measure of socioeconomic status regardless of employment status; and, 3) it precedes, and often directly impacts, other measures of socioeconomic status such as income and occupation, thus reducing the impact of endogeneity. The educational distribution of respondents who participated in the survey and in-depth interviews was very similar. Among survey respondents, 21.5 percent completed some college or

less, 38.6 percent completed their bachelor's degree and 39.9 percent completed a graduate degree (i.e., master's, professional or doctoral degree). Similarly, about 18.4 percent of in-depth interview respondents completed some college or less, 42.1 percent finished their bachelor's degree and 39.5 percent completed a graduate degree.

My measure of education level is based on a question from the 2009 National Health Interview Survey (NHIS; NCHS 2009), which I then code as three dummy measures: less than a bachelor's degree (i.e., less than a high school degree, General Educational Development test, high school degree, associate's degree or some college), Bachelor's degree, and graduate degree (master's degree, professional degree or doctoral degree). These categories compose higher levels than what is typically used in related research, but they reflect the relatively high education levels of this sample of women at the four participating clinics.

In-Depth Semi-Structured Interviews

The in-depth interviews included a comprehensive review of the HIBPS questionnaire, during which I asked about decision-making processes and recorded any health behavior changes. Each in-depth interview was transcribed a short time after being conducted and themes that emerged were content-coded using Atlas.ti version 6 (Lofland, Snow, Anderson and Lofland 2006). If women had discussed caffeine or alcohol consumption with others, simply asking them about their consumption would frequently prompt them to recall information, advice, comments and judgment from those in their networks, and, at times, from strangers. Expanding on this, my questions delved into interaction with their social contacts, specifically three areas: 1) specific advice received about caffeine/alcohol, 2) intake or behaviors among pregnant peers; 3) perceived opinions about caffeine/alcohol. The in-depth interviews took place outside of the health clinic, which allowed women to be more open about their decision-making processes.

Analytic Strategy

To understand how women make decisions about prenatal health behaviors, I begin by using the in-depth interviews with health care providers (i.e., nurses, midwives and obstetricians) to summarize the information that they provide about caffeine and alcohol. Next, I use the survey data to describe educational patterns in caffeine and alcohol consumption early in pregnancy. Finally, I use the in-depth interviews to examine factors that women identify as salient when they are choosing what to avoid or drink, and then explore whether and how their decisions differ by education level. Given that these interviews take place later in pregnancy, my analysis centers around their health behavior decisions over the course of their pregnancies. To explore any educational differences I adopted a simple three-level classification system that indicates whether women increased, decreased or did not change their intake.

UNDERSTANDING DECISION-MAKING ABOUT CAFFEINE AND ALCOHOL CONSUMPTION

Health Information Provided During Prenatal Appointments

Nurses, midwives, and obstetricians generally agreed about the message they should provide, but the information they gave was often conflicting. The upper-limit providers gave for moderate caffeine intake was 4-5 beverages per day and one provider recommended that women "limit it" with no reference to a distinct quantity. Conversely, two providers advised patients to reduce their intake or abstain during the first trimester because of a higher risk of miscarriage. Aside from these inconsistencies about quantity, if women reported no caffeine consumption during their intake visit it was often not discussed during subsequent visits *unless* women addressed it. Providers all reported that during early prenatal appointments they gave a uniform recommendation that no safe limit for alcohol consumption had been determined, or according to one obstetrician: "I give the [ACOG] party line!" Unlike caffeine, alcohol intake is specifically addressed during all

intake visits; however, if women reported no intake most providers did not address it during subsequent appointments. If women were nearing the end of their pregnancy, some reiterated that there is no safe limit while others urged women to "indulge" only on special occasions and in small quantities (e.g., one glass of wine only). Aside from their professional opinions, many providers reported that they find an occasional a sip or a glass [of wine or champagne] acceptable, especially if it is during a special occasion. By and large, health care providers who cared for women at the clinics supported moderate prenatal caffeine consumption and opposed prenatal alcohol consumption, but they provided a range of guideline interpretations.

Descriptive Statistics: Education and Beverage Consumption in Early Pregnancy

Caffeine Intake during First Trimester

As shown in Table 1, prior to or soon after becoming pregnant, 80 percent of women consumed very moderate quantities of caffeine (less than 7 beverages per week) or quit entirely. Nearly all were cognizant of the ACOG guidelines, regardless of whether they had discussed it during their appointments. According to the survey results, women restricted their intake of caffeine, as 36 percent of women reported no intake, 39 percent had 1-3 drinks per week, 6 percent had 4-6 drinks per week and only 20 percent consumed caffeine daily. At this point in their pregnancies, there were no differences in intake by education level.[2]

[Table 1 about here.]

Alcohol Intake during First Trimester

Although nearly all women also quit drinking upon becoming pregnant, they frequently reported that they had consumed some quantity of alcohol prior to realizing that they were pregnant. During this pre-pregnancy period there was educational variation in reported alcohol consumption as shown in Table 2. There were statistically significant educational differences in pre-pregnancy

alcohol consumption, but no clear pattern. Educational differences in reported binge drinking were more prominent, and statistically significant. Only 2 women out of 88 (2.2 percent) with a graduate degree reported consuming more than 5 drinks in one sitting at least twice in the three months pre-pregnancy compared to college graduates (15 percent) and those with some college or less (20 percent). These educational differences in binge drinking support the central tenets of fundamental cause theory, with more highly educated women consuming alcohol in safer quantities. By the time women were receiving prenatal care, regardless of education level, 94.3 percent reported no intake during the past thirty days (all survey respondents were at least 6 weeks pregnant).

[Table 2 about here.]

Summary of Survey Results

Results from the survey interview conducted at the beginning of pregnancy reveal that prenatal behaviors did not differ by education level. Although some women chose to drink caffeine, the distribution of weekly consumption cut across education levels. Nearly all women quit drinking any alcohol, a decision that did not vary by education level. Only pre-pregnancy drinking levels differed by education level, with well-educated women engaging in less binge drinking, but early pregnancy served as a relatively clean slate to observe any differences in decisions about prenatal alcohol consumption later in pregnancy.

Decisions about Caffeine and Alcohol: In-Depth Interview Results

A few themes emerged among women of all education levels. Women often reported that they were initially cautious about their caffeine intake because of the higher overall risk of a miscarriage during the first trimester. Upon reaching the second trimester milestone about half began to increase their intake to moderate levels. Regarding alcohol consumption, the majority of women, about 75 percent, abstained completely by avoiding even an occasional “sip” of alcohol. For those who

abstained from alcohol, guilt was a strong motivator, regardless of what others believed. Women frequently expressed feelings of guilt if they consumed caffeine, yet they did not if they consumed alcohol. Rather, those who consumed alcohol were primarily fearful about being judged by others.

Educational Differences in Social Influences: Caffeine Consumption

Although feelings of guilt cut across educational boundaries, educational differences in social influences about caffeine consumption emerged.[3] When asked about their pregnant peers—other women (or partners of women) who had a baby within the past ten years—more women *without* a graduate degree reported that those in their networks consumed caffeine prenatally. Important individuals in their networks often gave approval or expressed ambivalence, as Sarah—who completed college and whose husband has an associate's degree—describes:

> *Q:* What does he [your husband] say?
>
> Sarah (college degree): He says it's fine, I mean, it's like one of those guilty pleasure things that I can still do and not feel too bad about it…

In similar discussions, most often (about 75 percent of the time) women with a graduate degree were pressured to decrease their intake or abstain entirely. Nearly all reported that their peers had chosen not to drink caffeine or to limit their intake severely (if they knew how they had behaved), an approach with which many of their husbands or partners concurred. Occasionally women reported being influenced by someone else, even if their partner approved. For example, Eleanor's husband agreed with her daily coffee consumption, but she changed her behavior because of a negative comment from a co-worker:[4]

> *Q*: How about caffeine? Are you drinking caffeine now?
>
> Eleanor (graduate degree): I'm drinking caffeine. It's hopefully diluted but…well, okay…After my first trimester, I started gradually drinking it and then I noticed that it became more of a daily routine for me. And…**I recently had a coworker make this comment to me about the fact that I was drinking coffee.** And she made me feel guilty about it. I don't know if she intentionally meant to make me feel that way but she made a comment like, **"Oh, is drinking coffee good for the baby?" And she was recently pregnant last fall and I'm assuming that she probably didn't drink caffeine then either**. And I took that as kind of like a passive aggressive way to say like you shouldn't be drinking caffeine. And I have kind of felt guilty about my one…six ounce cup of coffee a day…I don't even know if it would be considered a

> "moderate" amount. I mean it's probably like a very minimal amount**. So like the last ten days I haven't had *any* coffee.**
>
> *Q*: Okay. So, tell me a little bit more about your reaction to her comment about the caffeine.
>
> Eleanor: Well, I mean internally I was really annoyed and thought that it really wasn't any of her business because I felt like I'd made an informed decision and had been given the go-ahead by even my medical… the midwives, and I thought that it was a very judgmental kind of comment even though I could tell she was trying to make it in this kind of passive way. **And then it also made me feel guilty and it played into that ten percent doubt or questioning of me drinking caffeine in general during my pregnancy which, you know, I would say her comment did influence me to not…**And I wanted to see how I would do, you know, without. And it's been fine. So I feel good about it.

Eleanor described a multilayered decision-making process, and she was most influenced by the guilt invoked by her co-worker's comment *regardless* of how close she was with her. Aside from her co-worker's explicit comment, Eleanor also believed that she did not drink caffeine while pregnant, which exerted social influence in another form. Both the comment and the perceived behavior contributed to her decision to limit her caffeine intake.

Educational Differences in Social Influences: Alcohol Consumption

Women of all educational levels experienced social influences about prenatal alcohol consumption, but the degree to which their decisions were affected differed by education. At the beginning of their third trimester, approximately 10 percent of women without a graduate degree consumed some alcohol, compared to about 50 percent of women with a graduate degree. Women with the least education were most likely to be socially influenced to avoid alcohol completely as exemplified below:

> Samantha (some college): Hmm, like since I found out I was pregnant, **like all my friends'll be like, "You can't come cause we're going to drink."** Like they're very like…and like my best friend, he's a guy. And like one of my co-workers is joking and saying for my birthday she's going to buy me a huge bottle of wine. And he was like, "If you buy her a bottle of wine, the air will drink it!" So, like everyone's all like down my throat about not drinking. But, I didn't drink before I got pregnant so it's not a problem for me.
>
> *Q*: So there's no issue. But, everybody's telling you to not drink at all.
>
> Samantha: Yeah.
>
> *Q*: And did they say why?
>
> Samantha: (laughing) **They said cause something's gonna; my child's gonna come out wrong, or something's going to be wrong with him and fetal alcohol syndrome.** Like everyone stresses that.

Samantha, who has not completed college, encountered significant negative social influence from her friends and co-workers—most of whom completed some college—to avoid all alcohol. To prevent her from being exposed to people who were drinking, her friends even excluded her from social events.

If they chose to drink, women with a graduate degree, and some women with a bachelor's degree, were judged less harshly by people in their network compared to those with less education. Instead, these women reported that their friends and family socially influenced them to accept some moderate consumption of alcohol as safe. Lisa, who has a master's degree, describes a conversation with a college friend who is a lawyer and drank wine during her pregnancy:

> *Q*: And then when it comes to alcohol, can you tell me about your discussions with [your friend]?
>
> Lisa (graduate degree): We talked a lot about whether or not it was okay to have a little bit. And both her and her husband are of the thinking that **a little bit's not going to do anything**. And when she was pregnant, she'd have like—**when we were together—she'd have like a small**, like a really small, but I don't know how many ounces it was or anything, but like a really small **glass of wine**. When she was in her second and third trimester at that point. But she didn't see any harm in doing it.

Lisa then went on to describe her own decision to only drink an occasional sip of alcohol, but reported that her friends would have accepted her decision to drink more.

Not all highly educated women encountered the same social acceptance, however. Eleanor, who completed a master's degree, conveyed a story about her pregnant friends:

> *Q*: And so has that come up, have you seen other women drinking during pregnancy?
>
> Eleanor (graduate degree): Hmm-mm, no, because I've actually been around a few pregnant women throughout my pregnancy. I've had two friends that are in town that were pregnant and the one had a baby in March. The other one just had hers in June. So we've all been about twelve weeks apart and none of us have drank. **If we'd get together, we'd buy the fake like sparkling apple juice as like a replacement or whatever. But yeah, no drinking.**

Eleanor was later offered some champagne at a celebration, but she declined the offer, noting that her decision was reinforced by her pregnant friends who also abstained. Of note, in this instance all of the women were *concurrently* pregnant, which served to further cement their decision to abstain.

Among women with a bachelor's degree, all but one uniformly abstained from all alcohol—including small "sips" of wine or beer. Behaviors among women who had completed college were more mixed, but, compared to women who had completed a graduate degree, they did not receive as much social influence to drink alcohol:

> Helen (college degree): And so I thought of all the times [to drink], if I'm pregnant, it should not absolutely be worth it at all. So, I was like I don't need to drink that.
>
> *Q*: Okay. So, did that come up in any conversations? Do you have any friends that are pregnant or anybody else that you know?
>
> Helen: Yeah, actually, just one of my coworkers is pregnant and she did not know that she was pregnant and then she had a couple times where she had a drink and then **she asked if I thought it was okay and I'm like, "I don't know! Ask your doctor and don't do it again!"** So, yeah. But with me drinking, not really, because most of my friends know I don't really drink. So, it wasn't really something that came up.

Helen, who holds a Bachelor's degree, chose not to drink any alcohol, and *she* socially influenced her co-worker not to drink alcohol in the future. When asked her opinion, rather than describe her own behavior Helen recommended that her pregnant friend seek a professional opinion.

The Role of Health Care Providers: Caffeine Consumption

In the face of questions or advice, and to allay their own concerns, women of all educational backgrounds sought professional opinions from their midwives or physicians, but those *without* a graduate degree were more inclined to follow it. For instance—Jodi, who holds a Bachelor's degree—struggled with her decision to drink caffeine throughout her pregnancy:

> *Q*: Okay. So tell me what you mean. You mentioned the term "guilt." What do you mean by that?
>
> Jodi (college degree): ...I think about the decisions that I'm making and how they would impact my baby and then I feel bad. If I think there could even possibly be one consequence to the decision that I'm making then I feel bad about it. I still do it; I just feel bad about it for the time period and then move forward. Caffeine is a good example because when I first got pregnant, I thought really long and hard about whether or not I should completely give up caffeine. I have a full-on caffeine addiction**. There's no reason to deny it and so I ended up talking it over with the midwives and saying to them, "Is there any consequence if I severally cut back and have one cup of coffee a day." And up to that point I still had one cup of coffee a day, I just felt bad about it. And then they told me it was okay and the guilt is gone now.** So I just need that like confirmation, I guess, that the consequences are not so significant that you need to really be worried about it.

After discussing her intake during a prenatal appointment, Jodi received conflicting information from others, many outside what she considered to be her *social* network:

Q: And so did someone say something to you about it or …

Jodi: My boss has told me that I shouldn't drink caffeine. Several of my co-workers have told me that I shouldn't drink caffeine. Strangers in coffee shops tell me that I shouldn't drink caffeine. Strangers in airports tell me that I shouldn't drink caffeine…**it seems like probably once a week or so I get somebody that I don't know that's not in my circle of people, giving me a judgmental, "Are you sure that's good for your baby?"**

In response, Jodi consulted her midwife, who again affirmed the safety of moderate consumption:

Jodi: I asked [the midwife], **I said that I had heard from a variety of other people that you shouldn't have any caffeine at all when you were pregnant. And she said to me, "It's something where we would like you to be sure that you're very moderate about how much you're having but it should be a small amount, no more than two cups a day.** And that as long as you're within that range, it should be okay." So she had said there's not any lasting consequences, of course you don't want to have six Mountain Dews in a day but if you're having one or two cups of coffee, it's fine.

Armed with this information, Jodi continued to drink coffee at work, in spite of reservations from her boss and co-worker.

Q: Do you have an example of what they would say to you or …

Jodi: My boss looked at me and said, "You know, I see you're still drinking coffee. You know that's *really* bad for your baby, right?" **And I looked at her and said, "Well, I asked my doctor and she said that it was okay, so I'm actually going to go with her advice on this one."** And that ended that.

An avid coffee drinker, she decided to restrict herself to one cup of coffee, but her daily habit still elicited concern from others so she again discussed it with her midwife. Armed with information, as well as the medical authority associated with the midwife's advice—which she describes as her "doctor's" advice—she thwarted criticism about her decision.

Unlike Jodi, when pressured to avoid caffeine, Stephanie, who holds a Ph.D., reacted by quitting—or severely limiting—her caffeine intake, even though she had consulted her midwife:

Q: Okay. What did [the midwife] say?

Stephanie (graduate degree): I believe that she said like a cup of coffee or like a caffeinated drink is okay. Per day. They haven't really seen that it affects the baby, like one cup of caffeine a day. **And, my friends, I think they're not…some people are like, "Oh, I gave it up," or some people said that they kept drinking.** And other people ask me, like, "Do you still drink coffee," you know, because I love like lattes. And, I said, "No. I have it maybe like once a week." But, I said, "I usually don't." **And then they're like, "Oh! You're so disciplined!"** So, I don't know. I guess it just kind of depends. **Nobody says like, "Oh, you shouldn't." But, like I know my sister-in-law, she thinks I shouldn't.**

Q: Okay. Has that come up in conversations with her?

> Stephanie: Yeah, I mean…Oh, yeah. Yeah. Definitely. But, she; **I think she has said it to me before but like not, not like *you* shouldn't, but like that she didn't, and that she just doesn't see the point of having it if you don't really need to.**

Assurance from her midwife was not enough—nor did she mention the midwife's professional recommendation in conversations with others—and even though some of her pregnant peers gave up caffeine, she zeroed in on her sister-in-law's behaviors and opinions. In addition to making her aware of her own behavior, her sister-in-law also gave her opinion that caffeine should be avoided during pregnancy. Aside from this social influence, Stephanie also received positive reinforcement from friends for limiting her caffeine intake. Although given the same professional recommendation as Jodi, Stephanie was more swayed by social influence from her friends and family, a decision-making process that was more common among highly-educated women.

The Role of Health Care Providers: Alcohol Consumption

In contrast to conversations about caffeine, very few women brought up questions about alcohol during their prenatal appointments—a finding confirmed during in-depth interviews with the intake nurses, midwives and physicians. Due to the ubiquitousness of health warnings about alcohol and pregnancy, if women drank alcohol they avoided the subject out of fear that their provider would disagree or judge them. Such concerns were not unmerited: Providers were frequently unaware of their patient's alcohol consumption, and many reported that if they found out a patient had consumed alcohol later in pregnancy they be concerned about an addiction problem. One midwife even noted that screening is less common at the clinic because it does not serve a population of high social risk:

> Midwife: I don't think…**I don't think I've ever had a woman hint to regular use even if it's really minimal.**
>
> *Q*: Right.
>
> Midwife: But now I kind of have to backtrack. At this clinic, it's not addressed again second and third trimester. But, **at the community clinic**, we have a lot of grants so there's a lot more intervention socially

> and risk assessment, lifestyle assessments done by the RNs because they room all of our patients and they're got grant parameters and requirements to meet...And so those patients**, that whole population of our patients are being screened.**
>
> *Q*: And that's serving the lower income …
>
> Midwife: Mm-hmm, **high risk, socially higher risk**.

Due to this lack of patient-provider communication, providers deemed their highly educated patients to be at a low risk for alcohol consumption, even though they were most likely to be drinking minimal to moderate amounts of alcohol.

Outside of prenatal appointments, more highly educated women often expressed opinions that moderate alcohol consumption during pregnancy is both safe for their fetus and socially acceptable in their networks. They openly questioned provider recommendations or relayed secondhand recommendation:

> Jane (college degree): Yeah. So, like **my aunt is like, "My doctor said I could have a glass of wine every single week." She's like, "And I always did and my kids were fine."** And my friend Sarah, again, she was like, "You can have like on average, as long as you never, ever get to the point where you feel the alcohol," she's like, "you can have like a half a beer everyday if you want to." And I actually believe you probably can…

Highly educated women often cited these as "informal" guidelines, which providers will not discuss during the official prenatal appointment:

> Kelsey (graduate degree): And I've heard…I never asked them specifically about alcohol either, but from what I've heard from other people…You know, everything you read is like, "Oh, of course it's best to not have any at all." **But what I've read between the lines is pretty much every doctor is like yeah, but it probably won't hurt to have a couple a week, either!** So, and just judging on that people did it forever before the last like fifteen years, I don't think it hurts. And I'm a little…I don't like to eat a lot of crap and I'm conscious of like what I put in my body and I really don't think that that is harmful.

All but one of the providers interviewed responded that there is no safe alcohol limit and women should abstain, yet half approved a small amount of alcohol, particularly a glass of wine or champagne at a special occasion. No providers approved of daily or weekly consumption of alcohol, in any amount. Thus, although Kelsey accurately assessed the divide between providers' ACOG "party line" and their own personal opinions, her assessment of an unspoken safe limit was inaccurate. Among those who drank, women with a graduate degree often reached a similar

conclusion, and their inaccurate assessments of their provider's informal guidelines were only exacerbated by the lack of provider-patient communication about alcohol.

International Differences in the Cultural Acceptance of Alcohol Consumption

One final topic emerged as a common theme: Women cited international prenatal alcohol consumption when explaining their decision to drink.

> Elisabeth (master's degree): That one is one that has bothered me for years, like before I even thought I was going to get pregnant because it really ticks me off the way they've simplified it so much…**I had a friend who was pregnant and she was in France and she had some issue come up and she went to the doctor. And he said, "Well, you should just have a drink and relax. And he said, "Oh, wait. I'm sorry, you're American. You probably won't do that."** And it just got me thinking like well this isn't like a … like obviously if every baby born in France had fetal alcohol syndrome, they would not be doing…like it's a developed country and **it seems like we just have like gone to the easier message to tell people, "Just don't do it," because it's easier.** And I always felt like I was sort of talking down to women and sort of obnoxious, so I had opinions about it!

As a whole, women with more education, including those with a bachelor's degree or higher, cited these international differences in prenatal alcohol consumption. Using the medical authority of international physicians they questioned the U.S. guidelines and deduced that the *lack* of fetal alcohol symptoms among babies born in European countries verified their opinions. In essence, prenatal alcohol consumption among European women socially influenced behavioral norms an ocean away.

DISCUSSION

Observing the way people behave differently following advances in biomedicine or abrupt changes in social norms provides one vantage point to understand the emergence of social inequalities in health (Link et al. 1998; Glied and Lleras-Muney 2008; Chang and Lauderdale 2009; Gortmaker and Wise 1997). My approach differs from these previous studies, which have attended to changes in a specific health behavior after the emergence of *new* health information or technology. I examine educational differences in decision-making from a unique and

informative vantage point—when medical information about a health behavior is uncertain. Thus, I consider the origins of social inequalities in health by examining educational differences in decision-making from an alternative vantage point.

In light of this aim, concentrating on women's decisions about prenatal consumption of caffeine and alcohol over the course of their first pregnancy (a new health event) provides an ideal illustration of the role of education—and social influence—in navigating health information from a heterogeneous array of sources. Results from in-depth interviews revealed that women were socially influenced to alter their behavior differentially depending on their education level, a process that contributed to the formation of educational differences in prenatal behaviors.

These educational differences in social influences were a mirror image of one another. Throughout the course of their pregnancy, more highly educated women were embedded within networks that socially influenced them to avoid caffeine (or quit entirely), and, in turn, these women reacted by reducing their intake. Even though their obstetricians and midwives approved caffeine in moderate amounts, these highly educated women were more influenced by others in their networks. Conversely, women with less education received less social influence to reduce their caffeine intake and they more often followed advice from their health care provider that moderate consumption is acceptable. This example echoes the predominant pattern between socioeconomic status and health behaviors, and aligns with the central tenets of fundamental cause theory: People with more education will tend to avoid health risks more actively compared to those with less education.

Changes in prenatal alcohol consumption contrast this example: Women who had completed less schooling were more likely to drink alcohol at levels that were potentially

harmful to their fetus prior to learning they were pregnant. Although women almost uniformly quit drinking any alcoholic beverages during their first trimester, a subset (about 25 percent) of primarily highly educated women began to increase their consumption. Other research confirms that during pregnancy well-educated women imbibe more than others (Centers for Disease Control and Prevention 2002; 2009). These highly educated women were socially influenced to engage more in "risky" behavior, and they questioned the ACOG "party line" recommendation about alcohol consumption. Over the course of their pregnancies, the reversal in the education-alcohol consumption gradient provides a unique counter-example to the established literature on socioeconomic gradients in health behaviors (Pampel, Krueger and Denney 2010), and it elevates the role of social relationships in the face of uncertain health information.

Social Relationships

As women progressed throughout their pregnancy they become a magnet for health information and social influence, which frequently provoked them to alter their behavior. Amidst the range of factors influencing women's decisions about prenatal behaviors, they consistently cited the importance of social influence. The importance of social influence resonates with a wide-ranging literature, dating back to very early sociological studies of suicide (Durkheim [1897] 1979), which has emphasized the significance of social relationships on decisions about fertility (Montgomery and Casterline 1996; Kohler, Behrman and Watkins 2001), health behaviors (Umberson, Crosnoe and Reczek 2010), and health decision-making (Pescosolido 1992).

In spite of the well-established benefits of network ties for health, at times networks clearly guide people to rebel—in this instance against established medical guidelines. Through social relationships people are influenced to alter their health habits; interaction with their peers may present social opportunities to increase their caloric intake (Christakis and Fowler 2007) or foster

illicit drug use (Taylor, Repetti and Seeman 1997), for instance. This side of social relationships provides one, rather straightforward, explanation for alcohol intake among pregnant women: They are more likely to be a part of networks that encourage "deviant" health behaviors.

The Valuation of Risks and the Metamorphosis of Biomedical Knowledge

A more complex explanation requires that we question *why* some health behaviors are labeled as deviant, and that we examine *why* some people are embedded within these "deviant" networks. Although health inequality research often attends to social conditions that place people at risk of becoming ill, when choosing outcomes of interest we rarely question the valuation of risky behaviors, instead we assume that each health risk holds the same social status. Yet, social and cultural forces have led particular health behaviors to be deemed risky depending on the value of that particular behavior as well as the type of lifestyle it signals (Bourdieu 1984; Nettleton and Bunton 1995; Allen et al. 2005), or the moral issues at hand (Armstrong 1993). Regardless of how risky a behavior is from a medical or epidemiological perspective, health behaviors "can act as a basis of exclusion in social relationships, reinforce symbolic boundaries between status groups, and serve to preserve inequality in modern societies" (Pampel 2002:53).

The shift in the socioeconomic gradient in drug use after cocaine became "culturally redefined as unhealthy" (Meich 2008:353) exemplifies the ambiguous way that health behaviors are categorized as risky. Previously deemed to be a relatively safe drug (Musto 1999), cocaine became the target of the political campaign to "Just Say No" and the social status it garnered fell prey to the increasing availability of alternative variants (i.e., "crack cocaine") (Hamid 1992; Musto 2002). At the same time, deaths among a number of high-profile athletes and celebrities elevated the public's awareness of the potential risks of using (Meich 2008). Combined, this cultural redefinition incited the socioeconomic gradient in cocaine use to reverse.

For centuries, the safety of prenatal alcohol consumption has also been redefined depending on salient social and cultural issues. Pre-Mendelian physicians originally hypothesized an association between drinking and heredity during the eighteenth and nineteenth century (Armstrong 2003). Such concerns found a welcome audience during the temperance movement, but with the appeal of Prohibition alcohol was again deemed socially acceptable and medically safe during pregnancy (Towler and Butler-Manuel 1973). The year 1973 marked a key turning point: abortion was legalized and Fetal Alcohol Syndrome first appeared in biomedical literature (Armstrong 2003:14). Since its inception, biomedical knowledge about FAS or FASD has been murky at best, due largely to the inherent ethical concerns associated with studying it. Even though a number of physicians questioned the rising trepidation about alcohol consumption, "the bias toward positive results in the scientific literature [was] exacerbated [because there was] an overt moral dimension to the research question at hand" (Armstrong 2003: 83).

Prenatal caffeine consumption does not have the same storied history, in part because very high consumption is associated with miscarriage during the first trimester rather than a visible disorder among children, such as FASD (Källén 1988). Concerns about its teratogenic effects have instead ridden the larger wave of apprehension about alcohol consumption, as the purview of fetal care has extended in recent decades (Armstrong 1993). Despite a lack of evidence to support abstaining from caffeine entirely (Armstrong et al. 2008), some physicians recommend that pregnant women "stop caffeine intake completely during pregnancy if it is at all feasible" (Weng et al. 2008). Thus, parallel issues have emerged regarding the current biomedical knowledge about prenatal caffeine consumption.

Education, Social Influence Processes and the Valuation of Risks

Returning to the original question, do people behave differently depending on their educational attainment when they navigate a maze of health information? In the current era of biomedicalization, the pregnant women who participated in this study were held accountable for their prenatal behaviors by others who elevated their decisions about caffeine and alcohol consumption as "individual moral responsibilities" (Clark 2003:162). When faced with navigating the maze of prenatal health information and responsibilities, women of all educational backgrounds relied on others "to define a socially acceptable interpretation of the risk" (Burt 1987:1288), but they received different social influences depending on their educational attainment. Thus, rather than enhancing women's ability to decipher and navigate conflicting health information, in these examples *education served to stratify the social influences they received* as well as their receptivity to these influences.

Even more, to assess why these social influences operated differently for caffeine and alcohol, I argue that women *evaluated the risks associated with each behavior* differently by education. When faced with the blurred demarcation between professional and lay knowledge, women with higher levels of education were more empowered to evaluate risks differently from their health care providers, whose formal advice served as an extension of the leading biomedical associations. When asked—during the survey interviews (N=223)—whether they believe that drinking moderate amounts of alcohol during pregnancy is associated with birth defects, 88 percent of women without a college degree responded that it *definitely* increases the likelihood, compared to 54 percent of women with a graduate degree. These results indicate that more women with graduate degrees began their pregnancies questioning the warnings about prenatal alcohol intake, a belief that was affirmed over the course of their pregnancies through their interactions with others.

Information and social influences about the teratogenic effects of alcohol were further complicated by providers' informal recommendations. Although they gave the official ACOG "party line" during prenatal appointments, during private conversations they approved minimal consumption. This *informal* recommendation diffused throughout women's networks, particularly among those with more education because they tend to interact more with other highly educated people (i.e., midwives or obstetricians) due to the homophily principle (McPherson, Smith-Lovin, and Cook 2001).

The result is that minimal or moderate prenatal consumption of alcoholic beverages, particularly those that signal a higher social status such as wine, was *valued* more as a "risk" behavior. As one highly-educated woman, who chose to drink wine, said, "if you drink in moderation and not excessively it's okay…I'm not a lush…I'm not drinking like hard liquor." Perhaps because concerns about caffeine intake have not garnered as much attention as alcohol intake (United States Department of Health and Human Services 2005), and because it is so accessible and affordable, highly educated pregnant women do not "rebel" against the prenatal caffeine intake guidelines in the same way that they question prenatal alcohol guidelines.

Limitations

There are a few important caveats of this research. First, this study does not attend to the complex interplay between social selection and social influence. Given that the present study focuses on interaction with network members over the course of four or five months and the formation or dissolution of relationships was not the focus of the later interviews, it is difficult to disentangle these processes. Indeed, with regard to alcohol and caffeine consumption, a few women alluded to processes of social selection. For instance, one participant declined social invitations from a friend because she did not agree with her prenatal alcohol consumption. Thus, the present analysis represents the effect of social processes *net* of any social selection. Second,

because of the social stigma associated with prenatal caffeine and alcohol consumption, there may be social desirability bias in the survey and in-depth interview results. To lessen concerns about this bias during the survey interview, women were first asked about their smoking behavior—an arguably more stigmatized behavior—immediately prior to their alcohol intake. Third, the study includes prima gravida women from two Midwestern cities; thus, it is beyond the scope of this research to make generalizations to the broader U.S. population. Rather, the intent of this research is to expand our understanding of the stratification of social influence processes and the valuation of risks in a specific empirical example.

CONCLUSION

This study contributes to our understanding of the origins of social inequalities in health from a unique vantage point by attending to the way people make decisions about health behaviors when faced with conflicting health information. By employing the novelty of first pregnancy, my empirical example unravels the complex social and cultural motivations for change in prenatal caffeine and alcohol consumption. Contrary to expectations, instead of working directly to enhance women's ability to navigate conflicting information, education stratified specific social influence processes that affected their decisions about these prenatal health behaviors. The finding that the networks of highly-educated women do not uniformly influence them to behave healthier suggests that we need to expand our current understanding of the origins of social inequalities in health. I argue that we should consider the value of each risk, and the lifestyle it signals, in order to fully understand how socioeconomic differences in health behaviors originate.

NOTES

1. The earliest time that most women are able to determine if they are pregnant is approximately four weeks.

2. A two-sided Fisher's exact test was used because of expected values lower than five.

3. For the majority of the in-depth interview analysis I refer to women with a graduate degree as highly educated. However, in a few instances—described in the text—I include women who have a college degree in the as highly educated category.

4. Here—and throughout the results section—sections of quoted text are bolded to add emphasis.

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Table 1. Caffeine Consumption by Education-Level

Caffeine Consumption During First Trimester of Pregnancy

	Some College or Less		College Degree		Graduate Degree		Total	
No caffeine	13	27.1%	34	39.1%	33	36.7%	80	35.6%
1-3 drinks/week	24	50.0%	34	39.1%	29	32.2%	87	38.7%
4-6 drinks/week	2	4.2%	7	8.0%	5	5.6%	14	6.2%
Daily or more	9	18.8%	12	13.8%	23	25.6%	44	19.6%
	48		87		90		225	

Note: Educational differences in caffeine consumption were NOT statistically significant based upon a two-sided Fisher's exact test.

Table 2. Alcohol Consumption by Education-Level

Alcohol Consumption by Education-Level during Three Months Prior to Pregnancy

	Some College or Less		College Degree		Graduate Degree		Total	
zero	18	37.5%	21	24.1%	23	25.6%	62	27.6%
less than 1 drink/week	2	4.2%	17	19.5%	7	7.8%	26	11.6%
1-4 drinks/week	23	47.9%	35	40.2%	53	58.9%	111	49.3%
5 or more	5	10.4%	14	16.1%	7	7.8%	26	11.6%
	48		87		90		225	

Note: Educational differences in alcohol consumption were statistically significant based upon a two-sided Fisher's exact test ($p<0.05$).

Five Alcoholic Beverages or More During One Sitting by Education-Level in Three Months Prior to Pregnancy

	Some College or Less		College Degree		Graduate Degree		Total	
zero	32	68.1%	62	72.9%	69	78.4%	163	74.1%
1 time	6	12.8%	10	11.8%	17	19.3%	33	15.0%
2 times or more	9	19.1%	13	15.3%	2	2.3%	24	10.9%
	47		85		88		220	

Note: Educational differences in alcohol consumption were statistically significant based upon a two-sided Fisher's exact test ($p<0.01$).

*Alcohol Consumption During the Past 30 Days by Education-Level During First Trimester of Pregnancy**

	Some College or Less		College Degree		Graduate Degree		Total	
no	44	91.7%	83	96.5%	84	93.3%	211	94.2%
yes	4	8.3%	3	3.5%	6	6.7%	13	5.8%
	48		86		90		224	

Note: Educational differences in caffeine consumption were NOT statistically significant based upon a two-sided Fisher's exact test.