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SOCIAL NETWORKS, DRUG USE, AND DRUG ABUSE HELP-SEEKING: A TEST OF THE NETWORK EPISODE MODEL AMONG AFRICAN AMERICAN WOMEN

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DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in the
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ABSTRACT OF DISSERTATION

SOCIAL NETWORKS, DRUG USE, AND DRUG ABUSE HELP-SEEKING: A TEST OF THE NETWORK EPISODE MODEL AMONG AFRICAN AMERICAN WOMEN

Untreated substance use disorders are a major public health concern that has costly consequences at both the societal and individual level. Identifying the characteristics and resources of those who seek help for substance abuse problems in order to inform more effective intervention and treatment techniques is therefore an important research objective. Using the Network Episode Model (NEM) as a theoretical framework, this dissertation examines both substance abuse help-seeking (i.e. inpatient/outpatient treatment and 12-Step meeting attendance) and patterns of drug use over time among low-income African American women, with a special focus on the role of the social network system in shaping these outcomes.

Drawing on social network theory, critical race theory, and health service utilization research, this test of the Network Episode Model addresses the relative absence of work examining the connections between network characteristics and help-seeking in multiply marginalized groups. The core relationships proposed by the NEM are systematically tested using longitudinal data gathered for the Black Women in the Study of Epidemics Project (N=643).

Findings of multilevel models indicate strong support for the Network Episode Model. Specifically, measures of social influence, social control, and social integration significantly predict both patterns of drug use and help-seeking. Importantly, having contact with and receiving health advice from a physician emerged as a significant predictor of a number of positive outcomes, including quitting or abstaining from illicit drug use during the study and attending 12-Step meetings.

. Results also reveal that experiences specifically related to low-income African American women's multiply marginalized status – such as experiencing gendered racism – significantly predict patterns of drug use over the study timeframe and may be an important risk factor for substance abuse. In all, this research reveals the important contributions of both traditional predictors and social network predictors on substance abuse help-seeking and patterns of drug use over time. Conclusions suggest that given the

limited financial and material resources of multiply marginalized groups, learning how to mobilize or effectively build upon available social network resources to encourage substance abuse treatment may be a particularly fruitful strategy to explore.

KEYWORDS: Social Networks, Substance Use, African American Women, Network Episode Model, Help-Seeking

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CHAPTER 1: INTRODUCTION AND STUDY RATIONALE

Untreated substance use disorders are a major public health concern that has costly consequences at both the societal and individual levels (McLellan et al. 2000). Recent estimates place the societal burden of drug abuse and dependence in 2007 alone at approximately $193 billion, including the loss of work productivity and the costs of health care, incarceration, and drug enforcement (ONDCP 2012). Though substance use disorders can be effectively treated in a variety of settings, ranging from inpatient medical facilities to more informal outpatient communities (e.g. 12-step programs), the majority of those with these disorders do not seek or receive treatment (Perron et al. 2009; D'Onofrio 2003; Andrews & Henderson 2000). Identifying the characteristics and resources of those who do utilize substance abuse treatment services in order to inform more effective intervention and treatment strategies is therefore an important research objective.

A promising line of research in this area has begun to investigate how the social networks of those with substance use disorders influence utilization of substance abuse treatment[1]. To date, findings indicate that social networks can serve to both encourage and discourage substance abuse treatment seeking and treatment completion (Tracy et al. 2012; Davey et al. 2007). Individuals whose networks include a greater number of social ties already in substance abuse treatment, for example, are significantly more likely to enter treatment (Davey et al. 2007). That is, regular interaction with members of one's social network who are in drug treatment may serve to normalize treatment and foster an

[1] In this dissertation, the term "help-seeking" will be used interchangeably with treatment seeking or treatment utilization. Help-seeking includes a broader range of health-promoting activities that are not necessarily "treatment" (e.g. 12-step program attendance).

environment of recovery (Davey et al. 2007). Conversely, having large networks of active users or street-based network affiliations is associated with a lower likelihood of entering substance abuse treatment (Tucker et al. 2011; Wasserman et al. 2001). Research also indicates that for those with co-occurring disorders (i.e. substance use and mental health disorders), social support from network connections is especially important for treatment participation (Tracy & Biegel 2006).

Importantly, available research suggests that social network factors may differentially influence women and men with substance use disorders. Existing research suggests that men tend to receive greater support from family members to enter treatment than do women (Grella 2008). Further, though research has found that female substance users may be less socially isolated than male substance users (e.g. they are less likely to report few or no persons in their social networks than men), women's social integration and sizeable networks may come at an important cost. Some research indicates that interpersonal conflicts with social ties can be a trigger for relapse and disrupt treatment and recovery among women with substance use disorders (Sun 2007; Lincoln 2000). Additionally, while some research indicates that the children of women with substance use disorders may be a significant source of emotional support, research also finds that women may perceive parenting demands as a major barrier to substance abuse help-seeking or a reason for dropping out of treatment (Tracey & Martin 2007; Kissman & Torres 2004; Daley & Gorske 2000; Cox 2000).

In all, social support and social relationships generally appear to have more significant and diverse effects on women with substance use disorders than men (Skaff et al. 1999). However, research is needed to determine how these factors unfold over time,

especially among groups whose social networks may have been disrupted by criminal justice system involvement. Using the Network Episode Model (NEM) as a theoretical framework, this research will examine how social support and other social network characteristics shape and are shaped by drug use and drug use help-seeking among low-income African American women. The core relationships proposed by the NEM will be systematically tested using longitudinal data gathered for the Black Women in the Study of Epidemics (B-WISE) Project (described in Chapters 3 and 4). The NEM represents a promising approach to understanding patterns of drug use and substance abuse help-seeking because it situates social network factors as the key mechanism underlying a number of health behaviors, including help-seeking. Specifically, the model recognizes that when individuals are making determinations about their health and wellbeing – chiefly, if, when, and what type of health care services are needed – they do so as social actors (Pescosolido 1991). The NEM is a dynamic model of utilization that recognizes social networks both shape and are shaped by health and help-seeking. Given the research linking network factors to both substance use and substance abuse treatment utilization, it is clear that social networks may play a key role in patterning this type of help-seeking. The Network Episode Model also considers patterns of illness and help-seeking over time (i.e. the illness career), rather than focusing on single illness events.

Further, though the NEM has proven robust to theoretical tests in a variety of contexts, it has rarely been tested among groups at the intersection of multiple marginalized identities, such as the low-income African American women examined in this research. African American women are a particularly interesting test case of the NEM because, as will be described in greater detail, their social networks are unique in a

number of ways and are poorly understood, especially as they relate to support for substance abuse treatment. For example, evidence suggests that reliance on extended kin and friendship networks for various types of support is a distinctive characteristic of low-income African American communities (Ellison 1990; Aschenbrenner 1975; Hays & Mindel 1973). Because much of what is known about the role of social networks as mechanisms shaping health and health behaviors may not apply to populations in different cultural contexts, there have been numerous calls for research examining racial and ethnic minority groups (Thoits 2011; Badr et al. 2001; Taylor 2007). As will be described in the following chapter, this research will also draw on critical race scholarship, working to integrate some of the significant experiences (e.g. gendered racism) and attitudes (e.g. cultural mistrust, John Henryism) that may pattern the drug use and drug use help-seeking of women living at the intersection of multiple disadvantaged statuses. As the Network Episode Model has largely focused on non-minority groups, the inclusion of these culturally relevant factors represents a novel contribution. Further, as aspects of low-income African American women's multiply marginalized status may shape their networks, health, and health behaviors (e.g. drug use), their inclusion in this research is warranted.

Addressing Gaps in the Current Research

Bringing together several key currents of research in sociology, this study fills important gaps in the existing literature. Drawing on social network theory and methods and health service utilization research, this application of the Network Episode Model addresses the relative absence of work examining the connections between network characteristics and help-seeking in multiply marginalized groups. This is a worthwhile

goal because it is necessary to bring such populations from the periphery of research to the center (Choo & Feree 2010). In using a sample that is entirely African American women, this research is grounded in the knowledge and perspectives of these women. The stratified sample (described in detail in Chapters 3 and 4) of primarily low-income African American women from the community, as well as women under criminal justice supervision, also ensures that there is an appropriate representation of African American women from diverse backgrounds.

Importantly, this research provides an opportunity to extend and refine theory and knowledge of mechanisms by which social network factors directly and indirectly shape health behaviors and outcomes. Many of the theoretical processes that have been outlined linking social networks to health and health behaviors are premised on the Western emphasis on independence and individualism – values that may have decidedly less relevance among certain subcultures or groups. As critical race theory suggests, race shapes every aspect of social life and theoretical extension that acknowledges the racialized context of health problems, health behaviors, and treatment, are essential if one wishes to understand trends among racial minorities (Ford & Airhihenbuwa 2010). A key limitation of existing research is that it does not provide a clear understanding of what the Network Episode Model looks like when applied to African American women. For low-income African American women living at the intersection of various marginalized gender, class, and racial identities, interdependence and cooperation involved in making daily life happen may influence the structure and role of social networks in unique ways. The findings of this research will provide additional insight into how the NEM may serve

as a useful tool for understanding the key social network mechanisms underlying African American women's patterns of drug use and related help-seeking.

The longitudinal, multilevel methodological approach is also a notable strength of this research. Scholars have argued that further research using longitudinal data must be conducted in order to address criticisms that hypothesized relationships between social network characteristics (like social support and social integration) and health outcomes are attributable to reverse causation (Thoits 2011). Specifically, though many studies have noted associations between network, socio-demographic, and help-seeking variables, more complex analyses, such as the multivariate longitudinal modeling used in this study, are needed. Making use of advanced multi-level modeling and time-lagged independent variables will allow this research to provide stronger conclusions about causal relationships between variables than previous studies. The quantitative approach also fills an important gap in the literature, since the existing empirical work testing the Network Episode Model among racial or ethnic minorities is primarily qualitative, rather than quantitative, in nature. Though these studies are significant in their own right, it is important to reproduce, validate, and contextualize such research with different methods and data.

Finally, while the Network Episode Model has been used to examine a variety of different types of help-seeking and service utilization it has rarely been used to consider entry into substance abuse treatment. This extension of the NEM is critical given that extant research in the field of substance abuse has demonstrated social network factors may play an important role in patterning substance abuse treatment. Ultimately, learning more about the ways in which the social networks of substance users facilitate continued

use, entry into treatment, recovery, relapse, and other outcomes, could provide researchers with a wealth of information that could be used to tailor more effective intervention and treatment programs. Given the limited financial and material resources of multiply marginalized groups, learning how to mobilize or effectively build upon available social network resources to encourage substance abuse treatment may be a particularly fruitful strategy to explore.

Chapter Overviews

To address the aforementioned gaps in theoretical and empirical knowledge, this dissertation will systematically investigate the relationships between the core components of the Network Episode Model. Chapter 2 will provide a review of the relevant literatures and empirical work that inform this project. Importantly, this includes an in-depth discussion of the Network Episode Model and the justification for using this theory to examine patterns of substance use and help-seeking among low-income African American women. In Chapter 3, the longitudinal B-WISE data used for these analyses will be described, and the coding strategy for the variables used to represent the core components of the NEM will be detailed. The analytic strategy and descriptive statistics will be provided in Chapter 4.

Chapter 5 is the first of four analytical chapters testing predictions informed by the Network Episode Model. In this chapter, multilevel modeling will be used to examine the ways traditional predictors of health service utilization shape patterns of drug use (e.g. daily drug use, continuing drug use over time, quitting use) and drug use help-seeking (i.e. drug abuse treatment and 12-Step meeting attendance). This chapter mimics the approach of health service utilization models which preceded the development of the

NEM; namely, the Socio-Behavioral Model and the Health Beliefs Model. These models focus primarily on the role of basic socio-demographic measures, enabling resources, health status, and illness severity in shaping health service utilization. Though this chapter does not include social network system measures, it examines the effects of low-income African American women's unique social location at the intersection of multiple marginalized statuses on their patterns of drug use and related help-seeking.

Chapter 6 uses multilevel modeling to examine a number of social network system characteristics as predictors of drug use and related help-seeking. Because the Network Episode Model situates social networks as a central mechanism influencing health behaviors, the primary goal of this chapter is to investigate how the networks of low-income African American women in particular predict drug use and help-seeking outcomes over time. Broadly, the social network system predictors considered in this chapter include measures of normative influence, social control, and the social safety net.

Chapter 7 presents analyses predicting the social network system using individual context and background characteristics, including social demographics (e.g. age and income), stressful life events (e.g. experiencing a financial crisis and gendered racism), and health status (e.g. general physical health and substance use). An important aspect of the Network Episode Model is the dynamic relationship between the social network system, health behaviors, and individual contextual factors. For this reason, it is important to examine networks as both predictors and outcomes. The results of this chapter will clarify how the social networks of these women function in response to stressful life events and health problems like depression, and how they may be shaped by socioeconomic and other factors. Additionally, using social network characteristics as an

outcome measure is a novel approach of this research, as factors that shape network size and function have received relatively little attention.

The final analytical chapter, Chapter 8, describes findings from models predicting social network system characteristics using lagged drug use and help-seeking measures. Specifically, using the B-WISE longitudinal data, the purpose of this chapter is to reveal what effects patterns of drug use and help-seeking in the recent past have on social network features in the present. This chapter will also explore differences in the effects on social network system outcomes of formal inpatient/outpatient treatment utilization versus more informal 12-Step meeting attendance. Like the previous chapter, social network system measures serve as an outcome – which represents an important study contribution.

Finally, Chapter 9 concludes this study with a discussion of key findings and study contributions. This will include special attention to implications for extending the Network Episode Model to multiply marginalized populations, for whom the effects of network mechanisms are not well understood. Study limitations and implications for policy and future research are also described.

CHAPTER 2: THEORETICAL AND EMPIRICAL BACKGROUND

This dissertation draws on several bodies of research, including work in the area of social networks, medical sociology, help-seeking and health service utilization, and critical race theory, to contextualize the key relationships that are examined. The following sections address the important theoretical and empirical developments that serve as the foundation of this research. Specifically, this chapter traces the history of social network analysis and theory, as well as the development of the other main theoretical perspective underlying this research, the Network Episode Model. Because this dissertation focuses on low-income African American women, a description of what is known about African American women's social networks and patterns of drug use is provided. Finally, a number of connections to critical race theory are explained, outlining factors that are of special relevance for African American women.

Social Network Analysis

The social networks within which individuals are embedded can have powerful direct and indirect effects on beliefs, behaviors, and trajectories over time (Borgatti et al. 2009). While many sociological theories acknowledge this idea broadly, social network research places the structure (e.g. size, closeness, etc.) and function (e.g. offering support, advice) of ties between individuals at the center of analysis. Since Durkheim, characteristics of network relationships have been considered important when examining a wide range of phenomena. In Durkheim's own research on suicide he argued that both an excess and absence of social integration[2] can have devastating effects on the quality of

[2] In this research, the term social integration is used interchangeably with "social safety net". Social integration refers to the degree to which an individual feels bonded to others in their community, group, or society. A strong social safety net (e.g. high level of social support) implies

individual mental health and well-being (Durkheim 1897). German sociologist Georg Simmel developed networks research further, mapping social ties around the turn of the century. In Simmel's writings he describes dyads (two-person groups), triads (three-person groups), and the role of social circles in defining individual social identities (Simmel 1918; Wasserman & Faust 1994: 292). While Simmel's contributions were instrumental in shaping what has come to be known as social network analysis, the field has since expanded to encompass a broad range of theoretical perspectives and methodological approaches.

Though social network analysis has its origins in research pioneered as early as the late 19th century, it enjoyed a resurgence in popularity in the 1970s with the publication of Granovetter's seminal article and then again in the 2000s (Granovetter 1973; Borgatti et al. 2009). As theoretical advances have helped resolve some of the longstanding criticisms that social network research lacks a solid unifying foundation, and technological advances have made it easier to gather data and conduct analyses on networks, social network analysis has become increasingly common across disciplines in both the physical and social sciences (Borgatti et al. 2009). Because social networks matter for so many different types of outcomes and because social network theory and methodology are flexible enough to accommodate a variety of types of research questions, the literature employing a social network perspective is expansive. The versatility of social network research partially lies in its ability to connect both the macro and micro-level of analysis. Broadly, network research can shed light on the structural relationships upon which groups and communities are built – demonstrating the ways in

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greater social integration, whereas a weak social safety net (e.g. low level of social support) implies less social integration.

which network structure can shape opportunities (e.g. Granovetter's strength of weak ties [1973]) and access to information (e.g. Burt's structural holes [1995, 2004]). Additionally, social network analysis can also be used to investigate individual-level outcomes and the role of personal network factors, such as social support, on micro-level outcomes.

The two primary types of network analysis – sociocentric and egocentric – take different approaches to understanding the structure and influence of network connections. Sociocentric, or whole network research, focuses on mapping the direct and indirect connections between members of a bounded or closed set of individuals in an effort to explain group-level outcomes, such as diffusion of information. In contrast, egocentric network research focuses on a central individual or "ego" and the connections this person has to "alters" or the family members, friends, colleagues, and others with whom they interact. Egocentric network analysis focuses on the ways network structure and flow of resources affect individual outcomes. Ego-network data collected as part of the National Longitudinal Study of Adolescent Health, for example, has been used by researchers to examine weight gain, psychological symptoms, and substance use (Ali et al. 2012; Perry 2006; Ali & Dwyer 2010; Fujimoto et al. 2012). A well-developed body of literature has consistently found that egocentric network ties have measureable effects on physical and mental health outcomes, as well health behaviors (Lovasi et al. 2010).

Medical sociologists have long considered health and the experience of illness as fundamentally social, with outcomes shaped by interactions with and obligations to kin and other ties (Parsons 1951). Social constructionist arguments in medical sociology have also long framed illness as the product of cultural and historical forces – suggesting that

social forces and social interaction play a major role in shaping definitions of and behavior toward health and illness (Berger & Luckman 1966; Conrad & Barker 2010; Brown 1995). From research on social integration and the strength of ties, to research focusing on social capital, social support, and the exchange of resources via social ties, sociological interest in the characteristics, structure, and functions of social relationships as they relate to health is extensive (*see* Fujiwara & Kawachi 2010; Smith & Christakis 2008; Umberson & Montez 2010; Thoits 2011; Lin 1999). From this wealth of research, a variety of key mechanisms linking social network factors to health and well-being have been identified.

Normative Influence and Health

Social norms influence health behaviors and mental and physical health outcomes in ways that are often difficult to measure (Berkman et al. 2000; Stroebe & Stroebe 1996). The norms of a group are established, reinforced, and/or revised through social interactions and social comparison (Festinger 1954; Marsden & Friedkin 1994). Once established, norms influence behavior, including health behaviors. For example, norms regarding appropriate use of health services, exercise, diet, and substance use can be formed in this way (Thoits 2011). Social comparison among network members and the normalization of various types of behaviors within a network can encourage both health promoting behaviors and risky behaviors (Cohen 1988). Importantly, normative influence can shape how individuals cope with life circumstances, which may have positive or negative consequences, depending on the context (Kim et al. 2010). Individuals may also be exposed to competing normative influences from different sources, depending on who they rely on for health information (e.g. family, friends, and healthcare providers), and

these can have an important effect on health behaviors. Unfortunately, this area of research is not well-developed in the medical sociology literature and additional research is needed to determine how subtle forms of normative influence and social comparison work to shape health behaviors (Thoits 2011). Unpacking how these and other "upstream" network factors, more distal in the chain of causation, influence individual and group health indirectly will require further theoretical extension and innovative multilevel modeling approaches (Berkman et al. 2000).

Some research in the substance abuse literature has examined the way different forms of normative influence work to shape patterns of substance use, misuse, and help-seeking. Research has found that perceived norms of behavior are strong predictors of drug use, especially among younger adults (Hawkins et al. 1999; Davey-Rothwell & Latkin 2007). Given perceptions of norms and the behaviors of others, individuals may model their own actions accordingly to align with what they perceive others are doing. This can result in the spread of drug use, or other behaviors, within a network (Smith & Christakis 2008; Davey-Rothwell & Latkin 2007). A family history of substance use disorders has also been found to predict drug use among adults (Harrington et al. 2011). Though genetic and other mechanisms may partially shape this outcome, normative influence by way of social learning[3] is arguably also at play (Galea et al. 2004). Importantly, research suggests that social norms may be especially significant in promoting illicit drug use among women, as research suggests they are more likely to

[3] Social learning refers to the process by which individuals learn from others in their environment through observation, imitation, and modeling (Bandura 1977). For the purpose of this research, social norms can be thought of as a product of social learning.

indicate that partners, family members, and friends use drugs or tacitly support their drug use (Greenfield et al. 2007; Bendtsen et al. 2002; Grella & Joshi 1999; Kline 1996).

Social Control and Health

While normative influence represents network members' indirect influence (through the process of social learning) on alters' behaviors, social control works more actively and directly to shape health. Intuitively, sociologists recognize that social ties serve as conduits advice, which can have direct effects on health and health behaviors. For example, research has revealed that individuals may be pressured by family members, friends, and other network members to seek treatment when their symptoms are considered serious, and that this social pressure is significantly correlated with health service utilization (Pescosolido et al. 1998; Vogel et al. 2007). Social network members can directly intervene, police, motivate, or pressure individuals with whom they regularly interact, ultimately shaping health behaviors (Thoits 2011; Berkman et al. 2000; Uchino 2004; Umberson & Montez 2010).

Social control exerted by network ties can have both positive and negative effects, as it may serve to directly motivate health preserving or redeeming behaviors or it may motivate participation in behaviors with deleterious health consequences. For example, non-drug using members of an individual's core social network may directly motivate entry into substance abuse treatment by way of an "intervention" or by simply encouraging treatment seeking. Additionally, minor children may also serve to regulate health behaviors and encourage positive changes among female drug users. Research indicates that responsibilities to children served as strong, direct motivators for women to seek substance abuse treatment and cease drug use, though being a primary, sole care-

giver can also prevent certain types of treatment seeking (Kline 1996; Knight et al. 1999; Dawson 1996). Substance using members of an individual's social network may also directly pressure them to begin or continue unhealthy substance use, or abstain from seeking treatment. Research indicates that male romantic partners, for example, may offer little encouragement to their drug-using female partners to enter treatment, even though they generally had negative views of women's substance use (Laudet et al. 1999). It is important to note that mechanisms linking social network factors to health are rarely as direct or easily identified as these simplified examples suggest – rather, they are complicated, subtle, indirect, dynamic and, in some cases, context-specific (Umberson et al. 2010; Umberson & Montez 2010).

In addition to the ways spouses or children may monitor and potentially control women's health behaviors, religious and other organizations may also directly work to keep certain behaviors "in check" (Umberson 1992). Research suggests that among African Americans particularly, the church has been a significant source of social control (Johnson et al. 2000; Lincoln & Mamiya 1990). Specifically, involvement in religious organizations may serve to constrain or curb certain behaviors that are perceived negatively, like illicit drug use, alcohol use, and criminal involvement (Johnson et al. 2000; Lincoln & Mamiya 1990). However, despite the well-established importance of the church among African Americans broadly, little research has examined the degree to which church membership may serve to regulate illicit drug use behaviors in the presence of other social network system factors.

The Social Safety Net and Health

In addition to normative influence and social control, another way the social network system may shape health is through the social safety net. The social safety net refers to the supportive resources individuals have at their disposal to avoid and cope with potentially adverse circumstances. For example, a particularly well-researched aspect of the social safety net linking social networks to health is perceived social support. As already mentioned, network ties are conduits for a variety of resources, including emotional, informational, and instrumental support (Lin & Wescott 1991). Emotional support includes providing comfort, sympathy, and/or understanding, while informational support includes providing advice or knowledge useful for decision making. Instrumental support is the provision of financial support and other material goods, as well as supportive services like child care or transportation. These forms of social support have indirect and, in some cases, direct benefits for individuals. Indirectly, access to the material and immaterial resources provided by network members may support individuals' ability to cope with the hassles of day-to-day life as well as stressful situations (Wheaton 1985; Cohen 2004; Thoits 2011). In addition to working indirectly to buffer stress, perceived emotional support appears to have a direct positive effect on longevity and psychological well-being (Uchino 2004; Lin et al. 1999; Taylor & Stanton 2007). For those dealing with chronic conditions or long-term illness – such as substance abuse or dependence – social support is especially important, as the instrumental and other support provided by kin and other ties may facilitate individuals' ability to engage in treatment and focus on recovery (Lovasi et al. 2010; Tracy & Biegel 2006; Daley & Gorske 2000; Cox 2000).

A lack of social support, more commonly termed social isolation, has also been shown to have important health consequences. Specifically, research indicates that social isolation is associated with psychological distress, increased mortality, and a range of negative health behaviors, among other adverse mental and physical health outcomes (Cacioppo & Hawkley 2003; Seeman 1996; Lovasi et al. 2010; Ennett & Bauman 1994). Compared to individuals who are social isolated, those who have more supportive networks tend to be more likely to cope actively with problems and have a greater sense of control and self-esteem (Cornwell & Waite 2009; Ernst & Cacioppo 1999; Thoits 2009).

Health Service Utilization Research

There are innumerable pathways, both distal and proximal in the chain of causation that contribute to individual and group health outcomes. Sociological research addressing health service utilization or patterns of help-seeking spans from the 1950s to the present, and has focused on a variety of factors that influence utilization of health services. Most notably, early approaches to health service utilization research focused on the economics of utilization, the impact of socio-demographic characteristics like age, sex, and education, and the psychology of utilization (McKinlay 1972). More recent approaches also consider the role of social networks – including their size, the strength of ties, etc. – in patterning health service utilization. After providing a brief overview of the most significant trends in utilization research, a detailed overview of the theoretical framework used in this research – the Network Episode Model – is presented.

One of the first theories of health service utilization was Andersen's Socio-Behavioral Model (Andersen 1968). In developing this model to understand families' use

of health services, Andersen focused on three major factors that serve to motivate or discourage decisions to utilize these services. First, access is framed as an important aspect of this decision-making process. Individuals or families that are geographically distant from necessary health care resources are generally less likely to utilize these resources, as are those who do not have the financial resources to access available services. Second, the nature of the illness shapes decisions to seek or abstain from health care services. Generally speaking, those with very severe or debilitating conditions are more likely to seek medical intervention than those who experience common, mild bouts of illness, even if they experience other barriers to care (i.e. lack of financial resources). Finally, Andersen's Socio-Behavioral Model recognizes that socio-demographic factors like gender, race, and age influence utilization choices. There has been extensive health service utilization research using the Socio-Behavioral Model, and elements of Andersen's model have been incorporated into subsequent, more elaborate models (Andersen 1995; Green et al. 1980; Tanner et al. 1983; Phillips et al. 1998).

Another influential model for examining health service utilization is the Health Beliefs Model. A dominant theoretical frame until the 1980s, the Health Beliefs Model was developed late in the late 1950s and early 1960s by a group of social psychologists (Hochbaum 1958; Rosenstock 1960; 1966; Janz & Becker 1984; Strecher & Rosenstock 1997). Unlike the Socio-Behavioral Model, which relies mainly on *objective* measures of need and access, the Health Beliefs Model is informed by *subjective* measures of individual perceptions of illness severity, benefits of health care interventions, and barriers to services (Pescosolido 1991; Janz & Becker 1984). Broadly, the psychosocial model suggests that those who perceive themselves as particularly susceptible to illness,

perceive a condition as especially serious, or perceive few barriers compared to the many benefits of intervention, are more likely to use health services than those who do not share these beliefs (Rosenstock 1966; Strecher & Rosenstock 1997). The Health Beliefs Model, like the Socio-Behavioral Model, has been cited extensively since its introduction and applied to a variety of health contexts (Strecher & Rosenstock 1997).

Limitations of the Socio-Behavioral and Health Beliefs Models

Despite the enduring popularity of these models and the important findings such research has yielded, significant criticisms have prompted alternative theoretical perspectives explaining health service utilization. One major criticism of both theories is their emphasis on individual decision making based on rational choice theory (Pescosolido 1992). Essentially, both models attempt to interpret individual decision-making based on a variety of influences which actors seemingly weigh in a cost-benefit analysis when making decisions to use, delay, or abstain altogether from health care interventions. As Pescosolido argues, a rational choice approach assumes "consistency in individual preferences, perfect knowledge, and …the ability of individuals to make probability calculations undauntingly" (Pescosolido 1991; Simon 1976). In addition, the emphasis on individual choice also means less attention is given to the role of group or cultural influences or the constraints of the social system (Pescosolido 1991; Freidson 1970).

Another significant criticism of these theories is the lack of attention to the social network context in which individuals make decisions about health, illness, and healing (Bass & Noelker 1987; Guendelman 1991; Portes et al. 1992; Horwitz 1977). Shared norms, values, expectations and beliefs shape the ways in which individuals go about

managing their health (Olafsdottir & Pescosolido 2009). As Parsons outlines, the sick role[4] comes with both social privileges – like being temporarily excused from work and other duties – and social obligations, like seeking qualified professional help in an effort to get well (Parsons 1951). Additionally, the relationship between physician and patient is also social, with both actors relating to one another in what, ideally, is a mutually rewarding situation. But just as individual perceptions of health care providers shape utilization, lay perceptions of medicine, physicians, institutions, and the health care system more broadly are also shaped by social and cultural processes.

Social Networks & Health Service Utilization

In medical sociology, there has been a special interest in how social networks influence health related decision making and service utilization. Drawing on Georg Simmel, early work by Charles Kadushin considering the role of what he called "social circles" marks an important beginning for research integrating social network analyses and health service utilization (Kadushin 1966). Kadushin defines social circles as informal chains or networks of indirect and direct interaction that link together people of similar interests (1966). In this seminal piece, Kadushin details how social circles influence decision making regarding the use of psychotherapeutic treatment. Though he studied social circles indirectly, Kadushin's research suggests that of those going to psychiatric clinics, most conferred with friends and family prior to doing so, and to varying degrees, these social circles influenced the choices they made regarding seeking out psychological treatment (Kashushin 1966: 800-801). Kadushin highlighted the

[4] The "sick role" was first theorized by Talcott Parsons and refers to the social role one enters when they become sick enough that they cannot fulfill their duties as a productive member of society.

significance of networks, finding that controlling for membership in social circles essentially erased the effects of class differences on the utilization of psychotherapeutic health services (Kadushin 1966). This early work was one of the first to illustrate the importance of networks and acknowledge how everyday interactions with acquaintances shape utilization and help-seeking behaviors.

Drawing on a more refined definition of a "social network", sociologist Allan Horwitz built on Kadushin's early work (Horwitz 1977; 1978). Social networks can have differing effects on individuals' help-seeking behaviors – at times encouraging medical intervention and at other times insulating them from contact with health professionals (Horwitz 1978; Freidson 1970). As Horwitz's research shows, both kin and friend networks influence pathways to psychiatric care in observable, measureable ways. Namely, individuals without strong insulating family networks and with open friendship networks tend to seek referrals to enter treatment quickly, even with less severe mental health problems (Horwitz 1978: 101). Horwitz suggests that the reason these individuals may be more likely to seek psychiatric treatment is because their open friendship networks (where friends do not know one another) are more likely to offer diverse information and advice to individuals, increasing the likelihood that someone will provide novel information about available treatments (1978: 303). Those with both weak kin and friendship networks, on the other hand, are the slowest to seek treatment. Beyond these important findings, Horwitz's article, like Kadushin's earlier work in the 1960s, found that *in every case* "social network categories are better predictors of entry into treatment than social class…" (Horwitz 1978: 101). These findings add support to the aforementioned criticisms of the Socio-Behavioral and Health Belief Models,

demonstrating the inadequacy of these early integrated approaches to addressing patterns of health services utilization. This research also suggests that social class may simply be a proxy for social network characteristics that influence health services utilization more directly.

The Network Episode Model

In the early 1990's, Bernice Pescosolido developed the Network Episode Model (NEM) in response to criticisms about the individualistic nature of early utilization models. The NEM is a broad theoretical approach to understanding help-seeking that emphasizes the dynamic role that social network interactions have in influencing the process of decision making (Pescosolido 1991). Though other sociologists had posited the importance of social network membership in shaping utilization behaviors, it was Pescosolido's Network Episode Model that integrated social network theory and help-seeking research, providing a unifying theoretical framework. The NEM conceives of individuals as pragmatic and social, and health service utilization as a nonlinear and dynamic process that is largely event-based (Pescosolido 1991; Pescosolido 1992; Pescosolido & Boyer 2010). Within the Network Episode Model, interactions with members of an individual's social network are the main underlying mechanism that shapes help-seeking behaviors (see Figure 2.1; Pescosolido & Boyer 2010).

There are four main assumptions upon which the Network Episode Model is built. First, the model acknowledges that there are many individuals with whom actors confer when faced with an illness. These social ties are sources of information about health and health problems, emotional support and advice, as well as instrumental and financial support (Pescosolido 1991; 1992). Second, the theory recognizes that actors rely on more

than economic rationality (i.e. cost-benefit) when making decisions about health services utilization, rather it is a "bounded rationality" that underlies the decision making process (Pescosolido 1991). That is, decision making is bounded or constrained by imperfect information about potential choices and their consequences, as well as time and cognitive limitations (Jones 1999). While individuals are adaptive and seek to maximize the benefits they experience, in doing so they must navigate uncertainty and both internal and environmental limitations (Simon 2000). Third, the Network Episode Model conceives of the decision-making-process as dynamic, with individuals making a variety of decisions as they navigate through many stages of an unfolding episode (Pescosolido 1991; Pescosolido et al. 1998).

Fourth, the NEM situates interaction within social networks as the central mechanism on which all decision-making is based. This final assumption, with its roots in the symbolic interactionist perspective, suggests that it is through interaction with members of networks that meaning becomes attached to one's own situation, thusly influencing the decision-making process (Pescosolido 1991). As Pescosolido suggests,

> "…a particular action, choice, or decision is embedded in a social process where the network interactions of individuals not only influence preference formation and define the situation but also drive the process of deciding whether something is wrong, whether anything can be done about it, what should be done, and how to evaluate the results."

Taken together, these foundational characteristics of the NEM frame health service utilization in a uniquely social way that has stimulated a growing body of research.

Figure 2.1 provides a visual representation of the NEM and demonstrates the dynamic nature of the Network Episode Model (Pescosolido & Boyer 2010). The relationships presented in this diagram between the social content and episode base,

social network system, and the illness career are at the very center of this research. Broadly, this diagram suggests that the relationship between social network and illness career measures is a complex one – characterized by reciprocal influence. Namely, just as social network characteristics influence illness trajectories and health service utilization, they are also influenced by the illness career. The relationship between these variables changes over time, and with the nature of the illness event. In all, the dynamic nature of the NEM is noteworthy because it is a unique characteristic of the model and a key process being tested in these analyses.

Since Pescosolido's seminal article, the Network-Episode Model has been operationalized and tested in a variety of settings with promising results. Using quantitative and qualitative data, research by Pescosolido and colleagues has provided strong support for the NEM, revealing that social network members play an instrumental role in influencing help-seeking decisions of those contemplating treatment for mental health services (Pescosolido et al. 1998; Perry & Pescosolido 2012, 2014). Findings demonstrate that network ties may be a source of support or conflict for individuals, and can exert varying degrees of influence on formal mental health service utilization decisions (Pescosolido et al. 1998). A recent study examining women's birth attendant decisions also found support for the core assertions of the NEM. Findings from this study reveal that social network factors have significantly more explanatory power for utilization decisions than individual demographic attributes, like education and socioeconomic status (Edmonds et al. 2012). Another study testing the NEM examined mental health service utilization among homeless people in Canada (Bonin et al. 2007). Given the universal health care system in Canada, this study was uniquely situated to

consider factors that influence entry into the formal health care sector beyond the barriers that financial concerns and access traditionally provide. Bonin and colleagues findings show support for the model, demonstrating that the size and level of support provided by social networks are significantly related to use of mental health services among the populations studied (Bonin et al. 2007).

Applying the NEM to Special Populations

Although the NEM has been tested successfully in a variety of settings, research applying the NEM to minority racial and ethnic groups – especially among populations that have greater health care needs and have demonstrated patterns of less frequent formal health service utilization – has been slow to develop. Rather, many of the studies testing the NEM rely on data where non-white participants comprise only a small proportion of the total participants. There are some noteworthy exceptions to this general trend which highlight the need for additional research in this area. An important study by Pescosolido and colleagues, examining utilization of mental health services among impoverished Puerto Ricans, found that larger more supportive networks resulted in less direct entry into the medical sector (Pescosolido et al. 1998). While these findings support the core assertions of the NEM, the results demonstrate that the effect of social network factors may be fundamentally different among racial and ethnic minority groups of low socioeconomic status. Though the results of this study help to clarify some of the discrepancies in previous research considering impoverished populations and the effect of their social networks, further research is needed (Pescosolido et al. 1998).

Findings from another study, a recent qualitative examination of the pathways to substance abuse treatment among American Indian adolescents, also support the NEM

(Novins et al. 2012). The results of this research suggest that the tight-knit structure of American Indian communities, specifically the important roles which elders, other adult community members, and family members have in the lives of American Indian adolescents, significantly influence entry into formal substance abuse treatment (Novins et al. 2012). In all, despite what the limited research testing the NEM among special populations reveals, it provides relatively little insight into how social network factors play out among groups experiencing multiple marginalized statuses. Specifically, it cannot be assumed that findings from research focusing on predominantly white, middle-class individuals reflect trends in groups that may have differing patterns of social interaction, support, and norms regarding help-seeking.

The Social Networks of African American Women

Because this research focuses primarily low-income African American women, it is necessary to provide a general overview of research describing characteristics of this population's networks and the role of these network factors in patterning health and help-seeking. Social networks have their own norms, beliefs, and values – and research suggests that the social networks of African American women may have a unique effect on their health and patterns of utilization. Research indicates, for example, that African American women typically have larger health networks and are more likely to use informal help when making decisions regarding personal problems than white women (Neighbors & Jackson 1984; Chatters et al. 1989). Further, a wealth of evidence suggests that low-income African American women's networks are comprised of many extended kin, through which financial, emotional, and other resources are exchanged (Ellison 1990; Aschenbrenner 1975; Hays & Mindel 1973). More recent research has refined how these trends are understood, highlighting the important gender differences in social

network composition between African American men and women (Sarkisian & Gerstel 2004). That is, while African American and white men are similar in terms of the degree and type of kin support they report, African American women are significantly more likely to be involved in reciprocal exchanges of transportation and household help, as well as child care, when compared to white women (Sarkisian & Gerstel 2004). Specifically, African American women are more likely to receive instrumental support like child care and household help from network members and provide this type of support in return to kin and friend ties, while white women are more likely to engage in reciprocal exchanges of emotional support with their network members (Sarkisian & Gerstel 2004).

These extended supportive ties, developed in part due to the prevalence of single female-headed households and widespread poverty, have important implications for the health and well-being of African American women (Ricketts 1989). Some research suggests these ties serve as informal sources of health advice among African American women, simultaneously serving as barriers to formal help-seeking (Chandler 2010). Other research indicates that subjective family closeness predicts happiness and life satisfaction among African Americans, both of which are important components of good mental health (Ellison 1990). Another study suggests that social support from both friends and family members is a critical resource for coping with stress in the lives of African American women (Fowler & Hill 2004; Mays et al. 1996). While the reciprocal ties common in the social networks of low-income African American women may aid them in successfully navigating the daily challenges associated with a lack of financial and other resources, there is a limit to the benefit that can be derived from these ties. At some

point, reciprocal expectations and the demands of maintaining extensive informal networks can become stress-inducing, rather than stress-buffering (Warren 1997; Jackson 2007). Additionally, while the exchange of social support among African American women's network may have a variety of benefits, it does not serve to completely offset the myriad negative consequences of living at the intersection of multiple marginalized identities (Sarkisian & Gerstel 2004). Essentially, the impact of socioeconomic status, race, and gender remain important considerations.

Networks, Substance Use, and Substance Abuse Help-Seeking

Very few studies have specifically examined how characteristics of African American women's social networks influence substance abuse treatment utilization, but an overview of key findings is warranted. A qualitative study of women with substance use disorders indicates that the extended kin and non-kin networks of African American women provide considerable instrumental, emotional, and other types of support; including child care, housing, and even money (Tracy et al. 2010). Consistent with the Network Episode Model, findings suggest that encouragement from network members supportive of participants' recovery, along with the material support they could provide, facilitated entry into substance abuse treatment for some of the African American women interviewed.

However, these strong networks also inadvertently serve to promote continued substance use in some participants, as they could rely on their core network ties to bear some of the burden of their addiction (Tracy et al. 2010). As one might expect, the role of supportive personal networks in promoting continued substance use was more frequently reported when the network ties themselves were substance users (Tracy et al. 2010).

Ultimately, though the results of this research offer preliminary support that African American women's social networks play an important role in patterning substance abuse treatment, further research is needed to validate these findings and examine the role of other social network factors. Additionally, attention to the ways drug use and related help-seeking in turn shape networks is needed.

Critical Race Theory

As this research suggests, racial status appears to have an important role in shaping the structure, function, and effects of social networks. Given the potential importance of race this research also draws heavily on critical race theory and intersectionality. Rather than a theoretical perspective with a set of distinct testable hypotheses or specific mechanisms linking race to particular outcomes, critical race theory is a broad approach for researchers in diverse fields working to interrogate and challenge the role of race and racism in creating and perpetuating inequalities in American society (Ford & Airhihenbuwa 2010). The critical race theory movement emerged in response to the relative absence of critical discourses of race in legal studies and academia in the 1970s (Delgado & Stefancic 2000). Pioneered by law professors Derrick Bell, Alan Freeman, and Richard Delgado, early work sought to de-mystify the more subtle forms of racism and discrimination that were largely unchallenged by Civil Rights efforts of the 1960s (Delgado & Stefancic 2012; Bell 1973; Freeman 1981; Freeman 1978; Delgado 1982). These and other critical race theorists posit that race-based discrimination is deeply embedded in the fabric of social life in the United States, resulting in a legal system, governmental policies, and institutions, that produce and reproduce a status hierarchy that marginalizes people of color (Ford & Airhihenbuwa

2010). As seen from a critical race perspective, racism and discrimination do not occur only as discrete instances of name calling, denied employment, or stereotyping, but rather as a pervasive feature of the dominant culture (Delgado & Stefancic 2012). In this way, discrimination may shape a number of outcomes, including mental health, physical health, and substance use.

The Intersectionality Approach

Critical race theory, though developed in the field of law, has been applied to a variety of contexts and encompasses an array of theoretical and methodological approaches. For the purposes of this research, the intersectionality approach provides a useful framework from which to examine the health and health service utilization of African American women as they relate to exposure to inequality through multiple disadvantaged statuses. Intersectionality was initially developed by African American feminist scholars as a response to their marginalization by second wave feminist theorists who were predominantly middle class and white (Mullings & Schulz 2006; Mullings 1997). Early work by critical race scholars Kimberlé Crenshaw and Patricia Hill Collins first outlined the perspective (Crenshaw 1989; 1991; Collins 1994; 1999; 2000). The core of the argument made by these theorists was that conventional approaches to understanding inequality focusing on a single aspect of disadvantage – class, race, gender, *or* sexuality for example – failed to recognize that these various statuses impact one another such that a person's experience of their gender is intimately connected to their class and race.

Past work focusing on African American women relied on the idea of "double jeopardy" – the notion that African American women are doubly disadvantaged by their

status as women and racial minorities (Mullings & Schulz 2006). The intersectionality approach takes this idea further: rather than suggesting that disadvantaged statuses have an additive effect on one another, it suggests that they are interconnected in complex ways that cannot be easily separated or discretely added to one another. This approach rests on the premise that an additive method which "conceptualizes people's experiences as separate, independent, and summative" does not reflect the reality of how people simultaneously experience their identities (Bowleg 2008; Andersen & Collins 1995; Cuadraz & Uttal 1999; Weber & Parra-Medina 2003).

The concept of intersectionality, though it can be applied broadly to any group, has been particularly well established as it applies to African American women. As Patricia Hill Collins suggests, "…the convergence of race, class, and gender oppression characteristic of U.S. slavery shaped all subsequent relationships that women of African descent had within Black American families and communities, with employers, and among one another" (2000: 4). For African American women, a combination of racism, sexism, and classism has resulted in their exposure to multiple forms of oppression at a societal level, community and institutional level, and individual level (Brown 2003: 2). Low socioeconomic status African American women experience disadvantage in unique and compounding ways that are distinct from other racial groups and African American men (Mullings & Schulz 2006; Collins 2000).

Though a considerable body of scholarship investigates how this exposure influences health – through the stress of racial discrimination and sexism – the full potential of an intersectional approach has yet to be realized (Jackson et al. 2001; Brown 2003; Warner 2008; Poussaint & Alexander 2000). An important challenge for medical

sociologists, medical anthropologists, public health scholars, and others interested in intersectionality will be to further develop this body of scholarship. Because a key component of the intersectionality framework is social justice, the perspective has great promise for research seeking to expose and resolve health disparities (Weber & Parra-Medina 2003). Additionally, though some of the intersectionality literature has addressed aspects of health, a great deal more research is needed (e.g. Kohn & Chavous 2002; Braboy-Jackson & Williams 2006; Zambrana & Dill 2006; Weber & Parra-Medina 2003).

Critical Race Theory and African American Women's Health

The current study seeks to add to the important body of critical race theory – specifically, intersectionality research – that explores how intersecting disadvantaged statuses work to shape health behaviors and outcomes. As already noted, the Network Episode Model has rarely been tested among minority groups. However, evidence suggests that groups experiencing multiple marginalizing statuses may think and behave differently than the dominant group (i.e. middle class Americans of primarily European descent) when dealing with an illness episode, such as mental illness or substance use disorders (Pescosolido et al. 1998; Novins et al. 2012). From the perspective of critical race scholars, the legacy of racial discrimination in health care may have an enduring effect on perceptions of modern health care, medicine, and physicians (Chandler 2010). While the echoes of Tuskegee, involuntary sterilization, and denial of health care services in the pre-Civil Rights era may be distant in the minds of younger generations of African American men and women, persistent disparities in the quality of health care available in many contemporary African American communities inarguably have important effects on

attitudes toward and patterns of help-seeking (Chandler 2010; Braunstein et al. 2008; Smedley et al. 2003).

This research makes a number of connections to critical race theory and the multiply marginalized status of the low-income African American female respondents that warrant further mention here. Specifically, the effects of cultural mistrust, level of trust in physicians, experiences of gendered racism, exposure to violence and victimization, and coping orientation (i.e. John Henryism) are all considered in this test of the Network Episode Model. These culturally-relevant concepts deserve attention because they may have important implications for low-income African American women. That is, each of these measures has been previously linked to health outcomes among African American populations, and may shed light on the effects these attitudes and processes have on patterns of drug use and help-seeking among the women who are the central focus of this research.

Cultural Mistrust

As previously mentioned, a long history of discrimination in the United States has promoted the interests of certain groups over others. For African Americans, marginalization has had a number of deleterious outcomes on health and well-being. One of the by-products of this history of inequality and discrimination is that it may foster or exacerbate feelings of cultural mistrust directed toward Whites and societal intuitions that have been seen as sites of injury, injustice, and inequality. For the purposes of this research, cultural mistrust represents a broad form of suspicion toward and doubt of Whites in interpersonal and social relations (Terrell & Terrell 1996). Research indicates that high levels of cultural mistrust are negatively correlated with certain types of health

service utilization among African Americans – indicating that sentiments of cultural mistrust may be projected onto health care institutions (Whaley 2001; Chandler 2010).

Drawing on qualitative interviews conducted with low-income African American and Latina women, Shelton and colleagues found that a common theme among the African American women in their study were feelings of cultural mistrust toward Whites directed at health care institutions (Shelton et al. 2011). Specifically, some women felt they were not treated fairly in health care settings, that they had limited access to educational materials that they could identify with as a racial minority, and that the history of medical experimentation on African Americans continued to erode trust in the health care setting where providers remained primarily White (Shelton et al. 2011). Though the age of the women sampled for this study (age 40 and older) may limit the representativeness of these findings, broadly these research findings indicate that cultural mistrust may play a vital role in shaping perceptions of health care and patterns of health service utilization among African American women.

Trust in Physicians

In addition to considering the role of cultural mistrust, this research also includes a measure assessing participants' trust in physicians. The scale used to capture this concept for this research was not created specifically for use with racial or ethnic minorities; rather it is a general measure of the level of interpersonal trust participants felt toward the last physician they encountered (Anderson & Dedrick 1990). Extant research has suggested that low levels of trust in physicians may play a role in delayed health service utilization and adverse health outcomes in African Americans (Wiltshire, Person, & Allison 2011). Other research has described the more indirect effects that levels of

patient trust in healthcare providers may have on compliance with treatment for African Americans with hypertension (Cuffee et al. 2013; Halbert et al. 2006). This research revealed that a high level of trust in physicians mediated the association between racial discrimination and measures of treatment compliance (Cuffee et al. 2013). That is, though experiencing racial discrimination reduced medication adherence in the hypertensive African Americans sampled, feelings of trust toward healthcare providers reduced the effects of this discrimination on treatment compliance (Cuffee et al. 2013). Like cultural mistrust, the findings broadly indicate that level of trust in health care providers may shape help-seeking and other health behaviors in meaningful ways.

Gendered Racism

Both cultural mistrust and trust in physicians can be directly shaped by experiences of discrimination. For African American women, there is a growing body of research indicating racism and sexism work together to create a system of oppression (gendered racism) that works distinctly from the ways sexism and racism operate separately (hooks & Mesa-Bains 2006; Thomas et al. 2008; Perry et al. 2012). Living at the intersection of disadvantaged racial and gender identities, African American women simultaneously experience these statuses and this can shape the type of discrimination they are exposed to, as well we their perception of and responses to discriminatory events (Thomas et al. 2010). Findings from a study of harassment in the workplace, for example, revealed that African American and Latino women experienced more frequent, severe, and diverse forms of discriminatory harassment than white women and men, and non-white men (Berdahl & Moore 2006). This exposure to multiple forms of discrimination at the societal, community, and individual level attributable to African American women's

distinct sociocultural location at the nexus of intersecting disadvantaged statuses shapes a number of significant outcomes (Robinson-Brown & Keith 2013).

Importantly, research examining gendered racism among low-income African American women has linked these experiences to risk for negative health outcomes, including depression, psychological distress, and low-birth weight among pregnant women (Perry et al. 2013; Jones & Shorter-Gooden 2003; Jackson et al. 2001). Both racism and sexism can serve to limit access to health promoting resources, and, at the macro-level, limit the social mobility of African American women (Robinson-Brown & Keith 2013). It is important to note that these statuses do not have merely an additive effect that places African American women in "double jeopardy" (Beale 1979). Gendered racism is a distinct form of oppression whereby racist and sexist life events cannot be easily disentangled from one another – rather, as the intersectionality framework would suggest, "oppressions work together in producing injustice" (Collins 2000: 18). Given the wealth of positive associations research has found between racial discrimination and drug use, further research examining the relationship between experiences of gendered racism and patterns of substance use over time is merited (Grekin 2012; Borrell et al. 2007, Gibbon et al. 2007; Landrine et al. 2006).

Victimization & Exposure to Violence

Just as African American women are disproportionately exposed to discrimination because of their marginalized racial and gender identities, research indicates that they are also vulnerable to a number of different forms of violence (Crenshaw 1991). Though men are still slightly more likely than women to be victims of violent crimes, African Americans are significantly more likely to be a victim when compared to Whites (34.2

per 1000 versus 25.2 per 1000; Truman et al. 2013). Though rates of violent victimization remained stable for other ethnic groups, according to research from late last year, rates may be on the rise among African Americans (Truman et al. 2013). Further, African American women specifically are at a greater risk than white woman and men of any race for sexual violence and intimate partner violence (CDC 2012; Black et al. 2011).

In addition to being exposed to violence, women with low socioeconomic status may have limited resources to improve their circumstances (Wyatt et al. 2000; Marsh 1993). By describing low-income African American women's disproportionate exposure to violence the goal is not to paint these women as victims without agency – indeed, the resilience of African American women to historical and modern forms of oppression is remarkable (Collins 2000). Rather, it is important to recognize this aspect of African American women's lives as it may have important consequences for their long-term health and well-being. Violence exposure has been linked to a number of harmful health behaviors, including risky sexual behaviors and substance use and misuse (Woodson et al. 2010; Wilson et al. 2012). Considering victimization in this research, which examines patterns of drug use and help-seeking among low-income African American women, is therefore an important component of capturing the ways these women's life circumstances may shape their health and behavior.

Active Coping and John Henryism

While the stressors to which African American women are disproportionately or uniquely exposed – such as violent victimization and gendered racism – can adversely influence health outcomes, the ways women react to and cope with such experiences may also have important consequences for their overall health. Furthermore, research indicates

that coping strategies which may be effective and adaptive in one context may be maladaptive and harmful in other circumstances. Active coping, which refers to a broad range of strategies employing one's available resources to address and resolve a problem, has been found to be adaptive and protective for a number of health outcomes by way of buffering stress (Southwick et al. 2005). However, a growing body of evidence suggests that active coping may have a reverse effect for African American populations. Specifically, the John Henryism hypothesis suggests that rather than helping African Americans resolve stressors, "…continuous and active engagement with chronic psychosocial stressors (i.e. occupational demands, discrimination, job insecurity) will promote sustained and dangerously elevated physiological reactions..." that can have adverse health consequences (Bennett et al. 2013).

The body of research linking high levels of John Henryism or active coping to hypertension and increased cardiovascular reactivity among African Americans is somewhat well-documented, but overall support for this theory has been mixed (James et al. 1987; James 1994; Bennett et al. 2013). That is, research linking John Henryism to negative mental health outcomes or substance abuse among African American women has yielded mixed findings (Perry et al. 2012; Williams & Lawler 2001). Research published this year finds, importantly, that high levels of John Henryism may actually be advantageous for well-being in African American women (Bronder et al. 2014). These findings suggest that high levels of John Henryism may promote positive mental health in African American women, and that John Henryism could be an important resource worth considering when examining outcomes that are related to mental health and well-being,

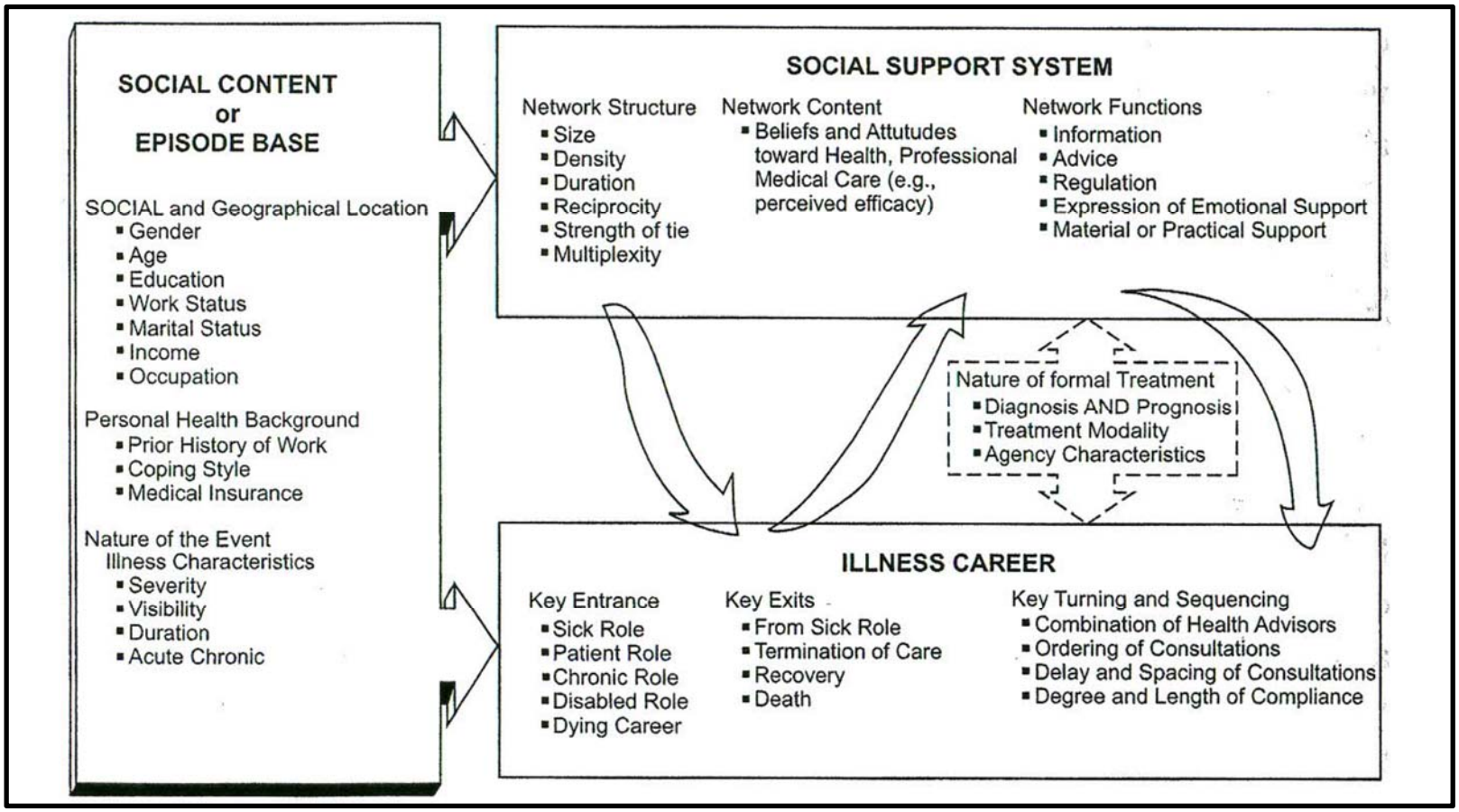
rather than physical health (Bronder et al. 2014). For these reasons, the concept of active coping is important to consider in research on help-seeking and health outcomes.

Summary

Ultimately, as critical race theory suggests, many of the key theoretical processes that have been identified by social scientists may not be generalizable to African Americans and other racial and ethnic groups. This is especially true of groups that may not share white, middle class populations' Western norms and values privileging independence over interdependence and collectivism (Thoits 2011). Because behavioral norms and the structure of social networks differ across cultural contexts, network processes are likely to vary across social statuses and racial, ethnic, or other groups (Badr et al. 2001; Taylor 2007). Using an approach advocated by critical race and intersectionality theorists – placing African American women at the center of research – this dissertation examines the ways in which the unique social-structural location of African American women shapes their social networks and patterns of drug abuse and help-seeking.

The next two chapters provide an in-depth description of the data used, sample characteristics, study measures, and the analytic strategy. Chapter 4 also includes sample descriptive statistics, and bivariate comparisons of drug-using and non-drug using participants.

Figure 2.1. Pescosolido's Network Episode Model



SOURCE: Pescosolido, B.A., & Boyer, C.A. 2010. "Understanding the Context and Dynamic Social Processes of Mental Health Treatment." Pp. 420-438 in A.V. Horowitz and T.L. Scheid, eds., *A Handbook for the Study of Mental Health: Social Contexts, Theories, and Systems, 2nd Edition.* New York: Cambridge University Press.

CHAPTER 3: DATA AND MEASURES

Broadly, this dissertation will provide a test of the Network Episode Model, extending this theory to a multiply marginalized group of predominantly low-SES African American women. Specifically, the central question this dissertation will consider is: How do the core components of the Network Episode Model work in dynamic ways to shape patterns of drug use and related help-seeking for women at the intersection of disadvantaged racial, gender, and class statuses? Each of the analytical chapters will investigate research questions designed to examine the relationships between individuals' network properties, their social and demographic characteristics, and drug use and help-seeking pathways over time.

Data

The data for this project came from Waves 1 through 4 of the Black Women in the Study of Epidemics Project (B-WISE; Grant R01DA022967-05). Data collection began in 2008 and follow-up for the study will continue into 2014. The overall goals of this project were to identify disparities in the health and health service utilization of drug using and non-drug using African American women across criminal justice status. A total of 643 African American women were recruited for the study and completed a baseline interview (Wave 1); including 240 prisoners, 197 probationers, and 206 community-based participants. A stratified sampling technique was used such that approximately half of each sample were drug users at baseline, while the other half were non-drug users. This sampling strategy was selected due to the high rates of drug use among women who were incarcerated or under probationary supervision. After completing the first interview at Wave 1, participants completed follow-up interviews at 6, 12, and 18 months after

baseline or, for those recruited while incarcerated, after their release. These interviews are Wave 2, Wave 3, and Wave 4, respectively.

Recruitment strategies for the study differed across the three samples. Prisoners were recruited from three Kentucky prisons with the approval of the Department of Corrections and the institutions' wardens. Lists of all African American female inmates prepared by the pre-release coordinator were provided to study staff monthly, and inmates were mailed a recruitment letter requesting that they attend an informational session held at the prison. Probationers were recruited by study staff from six probation offices in districts with the highest percentage of African Americans. All female probationers reporting to their probation officer were approached by study staff, regardless of perceived race, and women interested in participating were screened for eligibility. Finally, respondents for the community sample were recruited through posted flyers and advertisements in local newspapers. Study flyers were posted in areas with the highest percentage of African American residents based on available Census data. This poster included a toll-free number for potential participants to call, and interested women were screened over the phone by trained interviewers.

Eligibility for all participants was limited to women who self-identified as African American, were at least 18 years old, and were willing to participate. Women recruited as part of the prison sample were also required to be incarcerated at the time of the Wave 1 interview and eligible for release within 60 days of this interview. All participants were screened prior to enrollment in the study to determine their drug user status in an effort to ensure approximately half of all samples were non-drug users. Women from the prison sample were asked about their drug use in the year prior to incarceration. Therefore, all

drug-using participants enrolled in the study reported illicit drug use in the most recent year they lived in the community.

Once recruited into the study, a face-to-face baseline interview was completed, lasting about two hours. As with all other waves, Wave 1 interviews were completed in a private location by trained African American female interviewers. Interview locations included a private room within the study's office building, secluded spaces within public libraries, and private rooms within community centers and churches. All study interviews were also completed with the aid of computer assisted personal interviewing (CAPI) to reduce response and data entry error. Biological specimens were collected for drug and other testing as part of the study procedure and participants were compensated $10 for completing each of these optional tests. Participants were also compensated for their time: $20 for the baseline interview and $25 for all follow-up interviews. Contact with participants between interviews was maintained to ensure continued participation, and respondents were compensated $5 for providing the optional updated contact information between interviews at 2, 4, 8, 10, 14, and 16 months. There was also an 18 month completion bonus of $10. In all, for participating and completing all optional testing and between-interview contacts, participants may have been compensated up to $50 for the baseline interview, $45 for the 6 month follow-up, $45 for the 12 month follow-up, and $85 for the 18 month follow-up. All research was completed with the approval of the University of Kentucky Institutional Review Board.

[Table 3.1. Here]

While study follow-up is ongoing, the retention rates as of March 2014 were 94%, 92%, and 90% for eligible participants at Waves 2, 3, and 4, respectively. Table 3.1

displays the criminal justice status and self-reported drug use status (drug use = ANY drug use in past year, non-drug use = no drug use in past year) at the time of the Wave 1 baseline interview (N = 643). Additionally, this table includes the number of participants, by sample and drug use status at baseline, completing Wave 2 (N = 546), Wave 3 (N = 531), and Wave 4 (N = 520).

It is important to note that this sampling strategy, with community and probation sample participants recruited largely from low socioeconomic status, racially and socioeconomically segregated communities, introduced bias. That is, confounding factors may partially explain relationships between the variables in this study. For example, past research has indicated that illicit drug use in one's social network *and* in one's neighborhood have significant effects on individuals own drug use (Schroeder et al. 2001). Those living in economically depressed areas may have greater access to illicit substances. Though it is not possible to completely control for such factors, to the extent possible, a number of variables were used to control for socioeconomic disadvantage, exposure to stressful life events, and other relevant environmental characteristics which might shape both independent and dependent measures used in these analyses.

Measures

For the purpose of this research, a number of measures were selected from the B-WISE dataset to test the core relationships proposed by the Network Episode Model. That is, variables and scales from the B-WISE Study were used to capture each of the three major components of Pescosolido's model (as shown in Figure 2.1 of the previous chapter; Pescosolido & Boyer 2010). These three components – the social content and episode base, the social network system, and the illness career – served as both

independent and dependent variables in the four analytical chapters. Below is a description of these measures as they were coded for study analyses. Figure 3.1 shows the core components of the Network Episode Model, completed with the B-WISE scales and variables used to measure these components.

[Figure 3.1 Here]

It is noteworthy that measures used in this research included both time-variant and time-invariant predictors. Time-varying predictors are those that were determined at each wave of data collection, and for which there was significant variation over time. Time-invariant measures were captured only at Wave 1 or were naturally time invariant (e.g. family history). In this research, time also differed for women in the prison sample. Specifically, during the Wave 1 interview prison-based participants were asked to report drug use and other behaviors in the year prior to incarceration (rather than simply "in the past year"). Wave 2 follow-up for women recruited while incarcerated took place 6 months after their release from prison, and all questions referencing behavior or attitudes in the "past 6 months" referred to that time period. Essentially, for women recruited as part of the probation and community sample, the "past 6 months" referred to the actual time between Wave 1 and Wave 2 interviews, while for women incarnated at Wave 1 the real time period between Wave 1 and Wave 2 data collection included a gap (i.e. the time for which they were incarcerated).

Social Content and Episode Base

For the purpose of this study, the social content and episode base included measures of basic socio-demographics, stressful life events, the structural health background, physical health status, mental health status, and event illness characteristics.

These measures were selected to align with Pescosolido's original model, to the extent that it was possible, and to capture additional factors that may have unique relevance for patterns of drug use and misuse, help-seeking, and patterns of drug use over time among low-income African American women (e.g. gendered racism). Measures of the social content and episode base were used only as independent variables in this research. As described in the previous chapter, findings from studies using the Socio-Behavioral and Health Beliefs Models, have identified these items as significant predictors of health service utilization. These measures are an important component of this study as they indicate both a person's protective resources (e.g. income, education, having insurance) and risk factors for drug use (e.g. stressful life events). As protective factors, a number of these items measure resources for avoiding poor health, facilitating access to health services, and aiding recovery.

Age. Participant age in years was captured at Wave 1 and is included in this research as a time-invariant predictor.

Education. Education coded in years is also a time-invariant predictor, and was determined at baseline.

Household Income. Household income is a time-varying predictor that was captured at all waves. It is coded in tens of thousands of dollars to the midpoint, meaning reported ranges (e.g. $0 to $4,999) were converted to single numeric values (e.g. 2.5).

Sample. Two time-invariant variables were used to control for recruitment sample, with community serving as the excluded reference group. A dichotomous variable for recruitment as part of the prison sample was coded 1 for prison and 0 for all

other responses, and a variable for recruitment as part of the probation sample was coded 1 for probation and 0 for all other responses.

Financial Crisis. Financial crisis is a time-varying, dichotomous measure coded 1 if participants experienced "a major financial crisis" in the year prior to the Wave 1 interview or incarceration, and 0 if the participant did not. For Waves 2, 3, and 4, financial crisis was coded 1 if participants experienced a financial crisis in the 6 months prior to the follow-up interview and 0 if they did not.

Gendered Racism Scale. For the purposes of this research, racism and sexism were considered together by combining two separate scales, the Schedule of Racist Events (SRE; Landrine & Klonoff 1996) and the Schedule of Sexist Events (SSE; Klonoff & Landrine 1995). The 17-item SRE and 15-iem SSE prompted respondents to answer a number of questions about discrimination they experienced in the past 6 months "as a woman" and "because you are black". These items were scored with two different Likert scales: the SRE was measured using a 6-point scale (never, once in a while, sometimes, a lot, most of the time, and almost all of the time), while the SSE was scored on a 4-point scale (never, rarely, sometimes, and often). To prevent racist events from being overrepresented on the gendered racism measure created by combining the two instruments, the 6-point SRE Likert scale was converted to a 4-point Likert scale identical to the SSE response categories by collapsing "a lot", "most of the time", and "almost all of the time" into a single category, "often". Further, because there were six identical items across the SRE and SSE, these matching items were added together and averaged, so that single events were not weighted too heavily in the final scale. To create the gendered racism scale, all items unique to the SRE and SSE, as well as the averaged

items, were added together for a composite score for experiences of gendered racism. This process was replicated for each wave of data, as gendered racism is a time-varying measure.

Combining these scales to create a single measure of gendered racism was justified for several reasons. Theoretically, for women living at the intersection of marginalized racial and gender identities, experiences of racism and sexism are frequently linked to one another and differentiating the individual effects of each separately may not reflect the reality of lived experiences (Perry et al. 2012; King 2003; Thomas et al. 2008). Further, including both of these measures in regression models separately presented a problem given the degree to with they were correlated to one another (i.e. multicollinearity). The gendered racism scale was highly reliable at all waves of data collection (Wave 1 $\alpha = 0.90$; Wave 2 $\alpha = 0.78$; Wave 3 $\alpha = 0.79$; and Wave 4 $\alpha = 0.85$).

Cultural Mistrust Inventory. Also capturing a culturally relevant concept, the Cultural Mistrust Inventory (CMI) was included in this research to measure attitudes held by B-WISE participants (Terrell & Terrell 1996). The CMI is a 14-item scale used to assess the level of interpersonal mistrust African American feel toward Whites. A 7-point Likert scale ranging from 1 "strongly disagree" to 7 "strongly agree" with a neutral category of 4 was used by participants to score their level of agreement or disagreement with instrument items. Items were both positive (e.g. "whether you should trust a person or not is not based on his race") and negative (e.g. "Whites can rarely be counted on to do what they say"), with positive items reverse coded to reflect a final scale with higher scores indicating greater levels of cultural mistrust. Greater levels of mistrust have been

found to be positively correlated with measures of perceived racial discrimination (Terrell & Terrell 1996). This instrument is time-varying and was reliable at all waves of data collection (Wave 1 $\alpha = 0.76$; Wave 2 $\alpha = 0.74$; Wave 3 $\alpha = 0.77$; and Wave 4 $\alpha = 0.71$).

Adult Victimization. Adult victimization is a time-invariant measure determined at Wave 1 using 7 items from the Traumatic Life Events Questionnaire (TLEQ; Kubany, et al. 2000). These 7 items assessed the number of times a participant had been the victim of or witness to a violent crime in their adult life, with scores ranging from 0 or "never" to 6, which indicates experiencing an item "more than 5 times". Items included, for example, being the victim of an armed robbery or being the victim of unwanted sexual contact. For each participant, responses to the 7 items were summed, and then converted to a dichotomous variable, such that 1 indicates being victimized or witnessing victimization as an adult, else 0.

Insurance Status. Two time-varying dichotomous variables were used to measure insurance status at Waves 1 through 4, with no insurance serving as the excluded reference group. A variable for private insurance was coded 1 if the participant had private insurance in the past 6 months, and 0 for all other responses. A second measure for public insurance was coded 1 for those who reported having public insurance in the past 6 months and 0 for all other responses.

Usual Doctor. A time-varying dichotomous variable was used to measure whether or not participants had a doctor or health care provider they would usually see. For all waves, this measure was coded 1 if they had a usual doctor and 0 if they did not.

Trust in Physician Scale. The Trust in Physician Scale was used to measure participants' interpersonal trust in their physician. Specifically, study respondents were presented with 11 items, both positive and negative, and asked to what extent they agreed or disagreed with the statements as they applied to the last doctor they saw. A 5-item Likert scale was used (strongly disagree, disagree, undecided, agree, and strongly agree). Negative items were reverse coded, responses were added together, and the mean was calculated, with higher overall scores indicating more trust and lower scores indicating less trust. The alphas for this time-varying instrument indicated good reliability at all waves (Wave 1 $\alpha = 0.85$; Wave 2 $\alpha = 0.87$; Wave 3 $\alpha = 0.85$; and Wave 4 $\alpha = 0.87$).

Self-Rated Health. Self-rated health is a time-varying measure of overall health status as reported by participants. Participants were asked to describe their health in the past year (at Wave 1) and past 6 months (at Waves 2-4) on a scale of 1 to 5 (poor, fair, good, very good, and excellent). This measure was coded into a dichotomous variable with 1 representing poor or fair health, and 0 representing good or better health.

Medication for a Physical Problem. Another time-varying measure was used to represent respondents' physical health status. The variable was coded 1 for participants who reported taking medication on a regular basis for a physical problem (e.g. arthritis, chronic pain, diabetes, etc.), and coded 0 for participants who did not report taking medication for a physical problem. As with the self-rated health variable, this measure was asked in relation to the past year at Wave 1, while it was asked in reference to the past 6 months at Waves 2, 3, and 4.

History of Mental Health Problems. Mental health history is a time-invariant, lifetime measure captured at Wave 1. The variable was coded 0 if respondents did not

report a history of nervous or mental health problems and 1 if they reported they had such a history.

Depression. A time-varying measure for depression was included to further capture participant mental health status. This item was taken from the Addiction Severity Index, and was captured at both baseline and all waves of follow-up. The measure was coded 1 if participants reported they had experienced serious depression for at least 2 weeks in the last year (Wave 1) or last 6 months (Waves 2-4). This variable was coded 0 for participants who did not experience a significant period of depression.

Active Coping/John Henryism Scale. The John Henryism Scale for active coping is a 12-item scale used to measure an individual's inclination to cope in an active rather than passive way with psychosocial environmental stressors (James 1996). Participants were presented with an item from the scale (e.g. "hard work has really helped me get ahead in life"), which they then scored 1 through 5 (completely true, somewhat true, don't know, somewhat false, and completely false). The total active coping score was determined by adding the responses for all items, with higher scores representing a greater orientation to cope actively with stressors. The reliability for this scale was good for all waves of data collection (Wave 1 $\alpha = 0.77$; Wave 2 $\alpha = 0.80$; Wave 3 $\alpha = 0.79$; and Wave 4 $\alpha = 0.82$).

History of Drug Problems. A history of drug problems is a time-invariant, lifetime measure captured at Wave 1. The variable is coded 0 if respondents did not report a history of drug problems and 1 if they reported they had such a history.

Alcohol Use. Alcohol use is a time-varying, dichotomous measure, coded 1 if the respondent used any alcohol in the past year (Wave 1) or past 6 months (Waves 2-4) and 0 if the respondent reported no alcohol use.

Social Network System

The social network system is at the very core of the Network Episode Model. For the purpose of this research, the social network measures taken from the B-WISE Study were organized into three general processes: normative influence, social control, and social integration via the social safety net. These measures correspond to unique mechanisms through which health services utilization and health outcomes are shaped, and may have important implications for both substance misuse and recovery. The social network system measures that follow were selected with careful attention to Pescosolido's conceptualization of the NEM, as presented in the previous chapter. These measures served as both independent (Chapters 6) and dependent (Chapters 7 and 8) variables in the analytical chapters of this research.

A number of the social network measures used in this research were gathered using a name generator. A name generator is used to collect lists of ego-network ties with specific roles (e.g. discussants, regulators) or statuses (e.g. kin, friend, doctor). For this research, participants were asked to name up to 10 people with whom they discuss health matters when they arise. Using the health matters network is a good theoretical fit for this research since one of the main goals is to determine how this core health network responds to negative health behaviors (i.e. drug use) and help-seeking (i.e. attending 12-Step meetings or drug abuse treatment). After names were elicited for this health matters network, the participant was prompted to respond to a series of questions for each of the

individuals named. For example, they were asked how frequently they discuss health matters with each person named, if the ties encourage health service utilization, etc.

Normative Influence

Normative influence refers to the ways network ties that are in some proximity to an individual may shape that individual's behavior (Berkman et al. 2000). Essentially, individuals may model their own behavior from those they are surrounded by or exposed to regularly. For example, living in close proximity to individuals with a history of drug problems or active drug use may serve to influence one's behavior such that they also develop an unhealthy pattern of drug use. This has been most clearly illustrated in the research linking normative influence to patterns of adolescent smoking (Mercken et al. 2012).

Parental History of Drug Problems. Parental history of drug problems is a dichotomous, time-invariant measure of normative influence determined at baseline. Respondents were asked to report if their biological mother and father had a history of drug problems. These two separate items were added together and the final measure is coded 1 if participants reported either their mother or father had a history of drug problems, and 0 if they had no parental history of such problems.

Parental History of Mental Health Problems. Parental history of mental health problems is a dichotomous, time-invariant measure of normative influence determined at baseline. Respondents were asked to report if their biological mother and father had a history of nervous or mental health problems. These two separate items were added together and the final measure was coded 1 if participants report either their mother or

father had a history of nervous of mental health problems, and 0 if they had no parental history of such problems.

Living with Someone with Drug or Alcohol Problem. This dichotomous, time-varying measure of normative influence captured whether or not a participant usually lived with someone who had a drug or alcohol problem. If participants reported living with someone in the past 6 months (Waves 2, 3, and 4) or the past year (Wave 1) who had a drug or alcohol problem this variable was coded 1. For those who did not report living with someone who has a drug or alcohol problem, this measure is coded 0.

Sources of Health Information. For another measure of normative influence, three time-varying, dichotomous variables are used to account for participants' sources of health information. At Wave 1, women were prompted to report whether they had relied on family, friends, or a physician or health care provider as a source of health information in the past year. At Waves 2, 3, and 4 women were asked whether they relied on family, friends, or a physician or health care provider as a source of health information in the past 6 months. At each wave, these three variables (health information from family, friends, and doctor) are coded 1 if the participant reported that person or group as a source of health information, and 0 if they did not.

Health Matters Network Size. Health matters network size is a time-invariant count variable, captured for the majority of B-WISE participants (N = 342) at Wave 4. This measure of normative influence was determined using a name generator. Specifically, participants were asked to name individuals that they turn to when health matters arise. The number of ties named was then converted into a count variable, ranging from 0 to 4 ties, since no one named more than four valid health matters network

members. As in past research, this study considered network size as a measure of normative influence because larger networks tend to have a greater influence on health attitudes and behaviors than smaller networks (Pescosolido et al. 1998).

Health Matters Network Mean Discussion Frequency. Health matters network discussion frequency is a time-invariant measure, captured at Wave 4 (N = 342). For this measure of normative influence, respondents were asked how often they discussed health matters with each of the health matters network members they named as part of the name generator. Response categories ranged from 1 to 6 (almost every day, several times a week, once a week, once or twice a month, a few times a year, and never), and were reverse coded so a higher score would reflect greater discussion frequency. The average discussion frequency reported across all health matters network ties was calculated, and this mean was used to measure the frequency of discussion with health matters network ties.

Social Control

Social control works to shape health by controlling or regulating behavior. Simply, individuals may behave in a way that is directed by others (e.g. spouse or religious leader), or because it is expected of them (e.g. fulfilling parenting duties). For example, out of a sense of obligation for their child or spouse, women who have children or are married may feel greater pressure to limit their behavior to what is acceptable given social norms (Umberson 1987). Theoretically, it might be expected that these women would be less likely to misuse drugs or engage in other negative health behaviors that would threaten these roles.

Mean Encouragement from Health Matters Ties to Utilize Health Services. An important measure of social control included in these analyses is the mean level of encouragement from health matters ties to utilize health services. At Wave 4, respondents were asked how often health matters ties they named as part of the name generator encouraged them "to see a health professional, to stop doing things bad for health, or to begin health behaviors" (N = 342). Response categories ranged from 1 to 6 (almost every day, several times a week, once a week, once or twice a month, a few times a year, and never), and were reverse coded so a higher score would reflect greater encouragement. The average frequency of encouragement reported across all health matters network ties was calculated, and this mean was used to measure the average level of encouragement from health matters ties.

Marital Status. Marital status is a time-invariant measure of social control determined at Wave 1. It is a dichotomous variable coded 1 if the respondent was married or living as married, and 0 if they were single, divorced, or widowed at baseline.

Minor Child. A dichotomous, time-invariant variable is used to measure whether or not participants had a child under the age of 18 at the time of the Wave 1 interview. If the participant had a minor child this variable was coded 1; it was coded 0 if they did not have a minor child at the time of the baseline interview.

Ethnic Community. Another measure of social control used in these analyses was membership in an ethnic community. Participants were asked at each wave if they were active in an organization or social groups that included mostly members of their own ethnic group in the past year (Wave 1) or past 6 months (Waves 2, 3, and 4). Response categories were 1 to 4 (strongly disagree, disagree, agree, and strong agree). Responses

were then coded to 1 if the participant indicated agreement and 0 if they indicated disagreement with the statement. This measure was calculated for each wave of data collection.

Church Membership. Church membership is a time-varying variable coded 1 if participants indicated they were an official member of a church or religious community in the past year (Wave 1) or past 6 months (Waves 2, 3, and 4) and coded 0 if they were not an official member of a church or religious community.

Social Safety Net

The social safety net is a measure of social integration used to refer to the presence and degree of support resources from friends and family. Social support works in a number of ways to shape health. Importantly, strong, supportive networks are essential for managing the stress of both every day and exigent life circumstances. In this way, social support networks can serve to "buffer" the potentially harmful effects of stress on health and wellbeing (Uchino 2004). In addition to working as a stress buffer, social support may also work to prevent stress from occurring in the first place by promoting feelings of belonging and purpose (Uchino et al. 2012). That is, strong social support networks can provide many of the emotion and material resources needed to manage daily life such that individuals are exposed to fewer stressors, and therefore have fewer adverse consequences of this stress. In all, assessing the social safety is key as past research has found that social safety net measures may have significant consequences for the health and wellbeing of low-income African American women (Perry et al. 2012).

Social Support. Social support, a measure of the social safety net, was captured with two, time-varying scales: social support from family and social support from friends.

These two scales were actually subscales taken from the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al. 1988). Social support from family is a 4-item subscale, with 7-category Likert responses ranging from 1 (very strongly disagree) to 7 (very strongly agree), with a neutral category. Subscale items included, for example, "my family really tries to help me" and "I get the emotional help and support I need from my family". Scores were calculated by taking the mean of the responses to subscale items. The reliability of this scale for all waves of data collection was very good (Wave 1 $\alpha = 0.94$; Wave 2 $\alpha = 0.93$; Wave 3 $\alpha = 0.95$; and Wave 4 $\alpha = 0.94$).

The subscale for perceived social support from friends was also used in this research. This 4-item subscale included such items as "I have friends with whom I can share my joys and sorrows" and "I can talk about my problems with my friends". Like the subscale for social support from family, responses ranged from 1 to 7, and individuals' scores were determined by taking the mean of all responses. The reliability of this time-variant measure of social support from friends was very good at all waves of data collection (Wave 1 $\alpha = 0.95$; Wave 2 $\alpha = 0.96$; Wave 3 $\alpha = 0.96$; and Wave 4 $\alpha = 0.95$).

Number of Friends. Another measure of the social safety net was the number of close friends reported by the participant. Specifically, respondents were asked to report the number of close friends they had, not including their spouse, partner, or family members. This time-varying variable was determined at Wave 1 for the past year and at follow-up waves for the past 6 months. Given the positive skew of the reported number of friends measure, the natural log of this variable was taken at all waves to create a transformed measure that was less skewed and more manageable for analyses.

The Illness Career

The illness career, the third and final component of the Network Episode Model, includes the pattern and timing of all measures taken by individuals to manage their health or illness. For the purposes of this study, the illness career indicates four key measures that capture illness severity (i.e. daily drug use), treatment and help-seeking (i.e. receiving drug abuse treatment and attending Narcotics or Cocaine Anonymous), and patterns of drug use across study waves (i.e. the illness career). These measures serve as both independent (Chapters 8) and dependent (Chapters 5 and 6) variables in the analytical chapters.

Importantly, as described in the previous chapter, the NEM does not conceptualize help-seeking as a single event of entering formal treatment upon the onset of a health problem or episode of illness (Pescosolido & Boyer 2010). Rather, the NEM acknowledges that patterns of illness and help-seeking, which make up the illness career, are significantly more complicated than rational choice theory would suggest. Individuals may acknowledge or reject that they have a major health problem or illness, and what Talcott Parsons called "the sick role". Individuals can choose to utilize health services or pursue alternatives to traditional health services, such as self-help or alternative medicine (Pescosolido 1991). Finally, the NEM approach also recognizes that health problems or illness may develop into a chronic pattern, where individuals experience periods of recovery, worsening illness, help-seeking, and termination of help that was sought to cope with the onset of that health problem (Pescosolido 1991).

This conceptual model is a particularly excellent fit for drug misuse, as it reflects the chronic nature of addiction, and the reality that those with substance abuse problems

often enter and exit treatment a number of times in their lifetime. Additionally, this model also acknowledges that individuals may choose alternative forms of help beyond formal health service utilization. This is particularly important as it relates to drug misuse, given the popularity of 12-Step programs like Narcotics or Cocaine Anonymous.

Daily drug use. Daily drug use is a time-varying dichotomous variable created from a self-report measure of drug use frequency. Response categories of the original measure were collapsed into two categories: daily drug use (ranging from 1 time per day to 4 or more times per day) was coded 1 while any drug use less frequent than daily use was coded 0 (this included no use, monthly use, and weekly use). Daily drug use captured drug use for the past year at Wave 1, and for past 6 months at Waves 2, 3, and 4. This dichotomous measure of drug use was selected to provide a sense of drug use severity, a comparison to the patterns of drug use captured in the illness career measure described below.

It is worth noting that the B-WISE Study also includes data regarding drug use that is not self-reported. Specifically, at Waves 2, 3, and 4 participants are asked to provide a urine sample which is then screened for 10 illicit drugs, including marijuana, amphetamines, cocaine, etc. This measure was not used for this study because it was not collected at Wave 1 to capture drug use and because of the limitations of urine tests to detect different types of illicit drugs. That is, while drugs like marijuana are able to be detected by such tests for up to several months after chronic use, other drugs leave the system more rapidly and use in the past 6 months may go undetected. Further, some drugs that are detected by the drug screen (e.g. opiates) may be used as prescribed, therapeutic medications rather than abused as illicit drugs. Finally, the self-report illicit

drug use data is also more complete, as some women (e.g. those in jail) were not able to complete the urine test.

Drug Abuse Treatment. Drug abuse treatment is a time-varying dichotomous measure coded 1 if respondents had participated in inpatient, outpatient, or jail/prison based drug abuse treatment and coded 0 if they did not participate in these types of treatment. This measure captured drug abuse treatment utilization in the past year at Wave 1, and in the past 6 months at Wave 2, 3, and 4.

Narcotics or Cocaine Anonymous Meeting Attendance. A dichotomous, time-varying help-seeking measure was created for participant attendance at NA/CA meetings during each wave. Participants who attended 1 or more Narcotics or Cocaine Anonymous meetings in the past year (Wave 1) or past 6 months (Waves 2, 3, and 4) were coded 1. Participants who did not attend NA/CA meetings were coded 0. A simple dichotomous measure was selected because there was not enough variation among participants on the frequency of NA/CA attendance measure to justify using a categorical or count variable. That is, the majority of participants attended NA/CA meetings one of more times per week. Further, this dichotomous variable does serve to measure help-seeking orientation, a core components of the NEM.

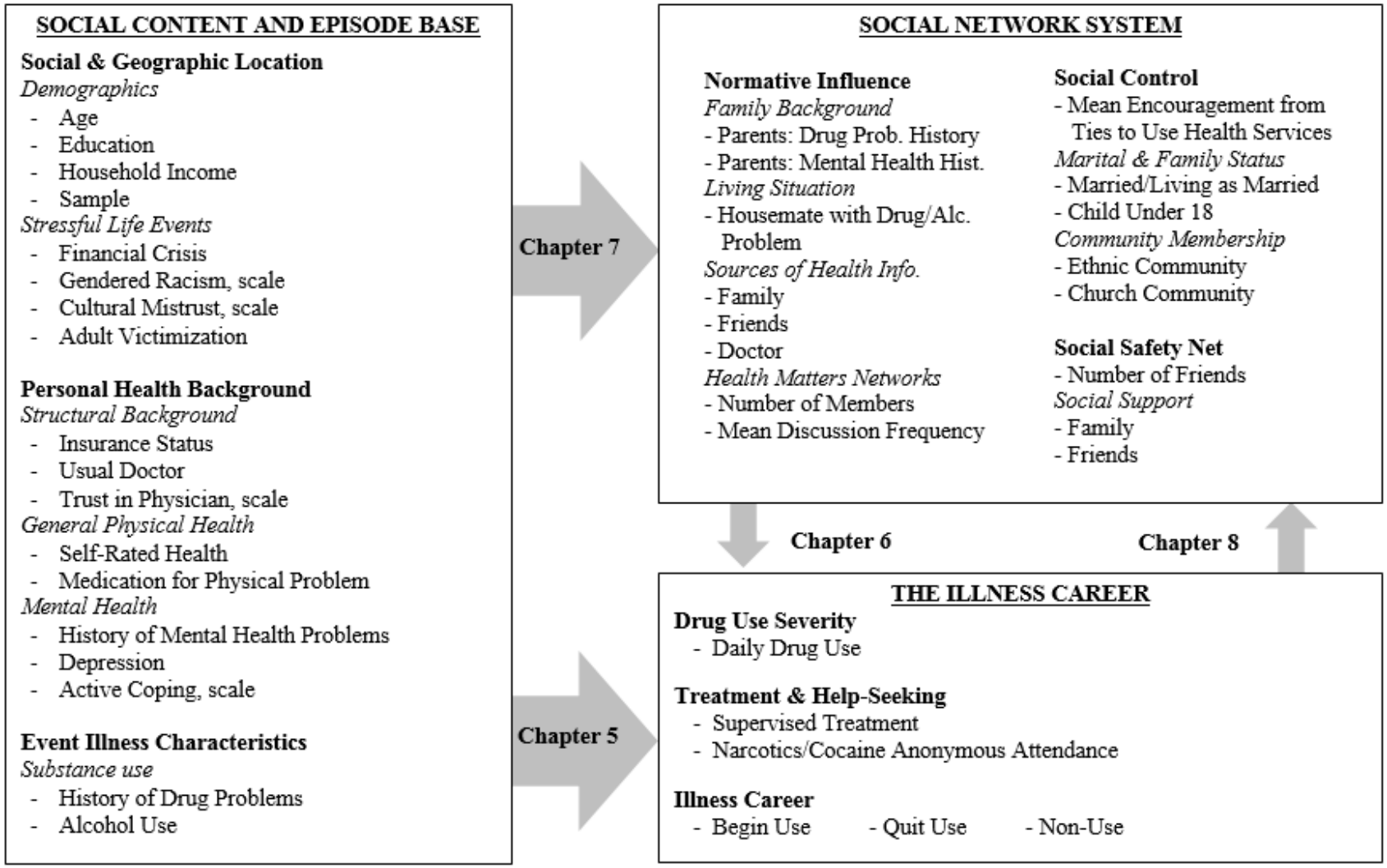
Illness Career. For the purposes of this study, a categorical variable was also created for Waves 2, 3, and 4 to capture patterns of drug use across the study time frame. This time-variant measure is termed the illness career. To create this variable, reported frequency of all drug use at each wave was calculated. This measure was then dichotomized such that drug use in the past year (Wave 1) or past 6 months (Waves 2, 3, and 4) were coded 1 for use of any drugs, and 0 for no reported drug use. Since the goal

of this measure was to capture *patterns* of drug use these measures were then used to create a mutually exclusive categorical variable with four possible categories: continuing drug use, beginning drug use, quitting drug use, and continuing non-drug use. Beginning at Wave 2, this measure is used to describe an individual's drug use across two waves of data. For example, at Wave 2 a participant was coded 1 for continuing drug use if they used any drugs at **both** the previous wave (Wave 1) and the current wave (Wave 2). Participants at Wave 2 were coded 2 for beginning use if they did **not** use any drugs at the previous wave (Wave 1) and did report drug use at the current wave (Wave 2). Individuals were coded 3 for quitting use at Wave 2 if they reported drug use at the previous wave (Wave 1), but did **not** report drug use at the current wave (Wave 2). Finally, participants at Wave 2 were coded 4 if they did **not** use drugs at either the previous wave (Wave 1) or the current wave (Wave 2). This coding strategy was replicated at Wave 3 (with Waves 2 and 3) and Wave 4 (with Waves 3 and 4).

Table 3.1. Sample Size by Criminal Justice and Drug User Status at Baseline & Follow-Up, B-WISE

	Wave 1 Baseline	Wave 2 6 Months	Wave 3 12 Months	Wave 4 18 Months
Community	**206**	**202**	**199**	**199**
Drug Using	105	103	101	102
Non-Drug Using	101	99	98	97
Prison	**240**	**160**	**153**	**147**
Drug Using	188	124	120	115
Non-Drug Using	52	36	33	32
Probation	**197**	**184**	**179**	**174**
Drug Using	102	96	94	92
Non-Drug Using	95	88	85	82
Total (Number of Subjects)	**643**	**546**	**531**	**520**

Figure 3.1. Network Episode Model with B-WISE Measures



CHAPTER 4: METHODS AND DESCRIPTIVE STATISTICS

Analytic Strategy

For Waves 1 through 4, the available CAPI collected data are transferred from SPSS to STATA, version 12. Individuals for which key demographic or other data are missing are excluded from these analyses. These respondents were compared to the retained sample on key variables, revealing no significant differences. For all models presented, the total number of participants examined is included. Additionally, before any analyses are performed, the relationships between model predictor variables are examined to ensure that high levels of correlation are not present. Highly correlated predictors can result in multicollinearity within regression models, which can bias estimates and mask significant effects. In the analyses that follow, a number of statistical techniques are used to test hypothesized relationships. Broadly, these analyses examine the relationships between the three major components of the Network Episode Model (NEM). Each of the chapters will systematically investigate the core relationships between two components of the NEM (see Figure 3.1). Chapter 5 examines how social content and episode base measures shape illness career dynamics. Chapter 6 investigates the influence of the social network system on the illness career over time. Chapter 7 considers how the social content and episode base is related to the social network system. Finally, Chapter 8 addresses the relationship between the social network system and the illness career, using lagged illness career measures to predict changing social network properties over time.

To examine the relationships proposed by the NEM, multilevel modeling is used for longitudinal data analysis, as described in greater detail below. Poisson and linear

regression are used to analyze the social network system outcome variables that are only available at Wave 4, also described in greater detail below.

Multilevel Modeling

Because the study uses data collected at multiple points in time over the course of 18 months, multilevel modeling (MLM) is used for all longitudinal analyses. The longitudinal data examined in this research are clustered such that a respondent's observations across waves are more similar to each other than observations from two or more different respondents. That is, within-respondent observations are correlated and would therefore violate the basic assumption of independence in ordinary least squares regression. Multilevel modeling is appropriate because it does not assume that observations are uncorrelated, and allows for the examination of within-person variance. Additionally, multilevel modeling can also accommodate unbalanced data, or missing data at follow-up waves. Given that there is not complete data for all B-WISE participants for Waves 1 through 4, MLM is the most appropriate modeling strategy for these analyses.

With the exception of the analyses that use the social network measures only captured at Wave 4 (Chapters 7 and 8), random intercept regression is used. This statistical approach is a compromise between population average approaches that completely pool the data, effectively ignoring clustering, and approaches with no pooling that ignore between-cluster variation. Random intercept regression partially pools estimates of cluster means, and allows for random intercepts. It is noteworthy that random intercept regression provides estimates for both time variant and time-invariant variables within the model, which is desirable for the purposes of this research. Fixed

effects models are inappropriate for these data because longitudinal measures are "sluggish," meaning there is insufficient change over time within individuals to detect predictors of within-person variation.

A number of the outcomes examined using MLM are binary outcomes. For these time-varying measures, multilevel mixed-effects logistic regression is used to test the hypothesized relationships between measures. Using Stata's *xtmelogit* command for multilevel mixed effects regression, binary dependent variables are predicted with groups of related independent variables, examined in a stepwise fashion. This stepwise approach is used to examine how groups of related measures operate independently and within the context of a full model, which includes all independent variables. However, before these variables are considered, it must be determined which control variable(s) for time will need to be included in the model. A measure for time, and then for time squared, are included in an otherwise empty mixed effects model, and examined for significance. The time measures that are significant in these preliminary analyses are included in the restricted, stepwise models and the full model to control for the effects of time. For all models presented, the intraclass correlation is calculated and presented in tables. Finally, the number of subjects (participants) and observations (data points across waves) are included for each model, as are Wald chi-square tests for overall model significance.

In addition to binary outcomes, analyses also address ordinal outcome measures like social support scores. To predict ordinal dependent variables, multilevel mixed-effects linear regression using Stata's *xtmixed* command is used. As with analyses examining binary outcomes, measures for both time and time squared are examined as predictors. Significant time measures are included as controls in the restricted and full

models. A stepwise approach is also used to examine groups of related variables, and a full model is presented that examines all predictors of interest. Both the number of subjects and the number of observations are displayed, and significance is determined using the F-statistic included with each model. Intraclass correlation (rho) is also calculated and shown for all models.

While the majority of the models presented in the forthcoming chapters use multilevel modeling options from Stata's *xt* suite of commands (e.g. *xtmelogit, xtmixed*) that encompasses a number of longitudinal and multilevel modeling tools, generalized linear latent and mixed models (i.e. *gllamm*) are also used. This is the only tool available in Stata for analyzing the nominal illness career measure – which describes patterns of drug use across waves – because it provides unique estimates of the independent predictors' effects on each of the illness career categories, (excluding a reference category). Because only a small number of participants quit use at each given wave and there is little variation in the quitting use category over time, converting the categorical illness career measure to a series of dummy measures to be predicted with *xtmelogit* models is a problematic approach that may not yield consistent estimates for this outcome. The GLLAMM approach, however, produces more reliable estimates and has greater flexibility regarding a number of model options. For the purposes of these analyses, GLLAMM is used with multinomial logistic regression specified and using adaptive quadrature for more computationally efficient modeling, with odds ratios presented (Rabe-Hesketh et al. 2004; Rabe-Hesketh et al. 2005).

Time-invariant Models

Despite the majority of the models in these analyses using all waves of data and therefore requiring multilevel modeling, a number of the social network system variables that serve as outcome measures in Chapters 7 and 8 are captured at only Wave 4. For this reason, multilevel modeling techniques cannot be used. Stata's *regress* command for linear regression is used for continuous measures of the social network system captured at Wave 4 (e.g. mean frequency of discussion with health matters ties). For count variables (e.g. health matters network size), Poisson regression is used to examine relationships between independent variables at Wave 3 and the outcome measure at Wave 4. Poisson regression results are presented as incidence rate ratios. To ensure that a Poisson model is a good fit for the data, Poisson regression results are examined using Stata's *poisgof* command. Interpreting the results of this test are relatively simple: if the Pearson goodness of fit statistic is significant, it indicates there is significant over-dispersion and that negative binomial regression is a more appropriate fit for the data than Poisson regression. If necessary, negative binomial regression is used. For all models, appropriate fit statistics are presented (e.g. R-squared and F-statistics).

Descriptive Statistics

Before examining the relationships between the three core components of the Network Episode Model, a number of statistics describing the B-WISE data are presented. In addition to providing descriptive statistics, bivariate analyses are presented comparing baseline differences between women who self-reported drug use at Wave 1 and those that were non-drug users. Because this research examines patterns of drug use and related help-seeking, it is useful to have a baseline understanding of differences

between drug users and non-drug users. Further, given the stratified sampling technique, with half of all participants being drug users at baseline, understanding significant differences on key variables between these two groups provides a useful frame within which to interpret results of the analytic chapters that follow.

Social Content & Episode Base Measures

[Table 4.1 Here]

Table 4.1 shows the Wave 1 descriptive statistics for the social content and episode base measures. These variables capture the basic demographics, health background, and substance use characteristics of the women recruited for the B-WISE Study (N = 643). As described previously, women participating in the study are recruited from the community, prison, and probation samples. Approximately 37 % of the women are recruited while incarcerated, while 30.64 % are on probation at Wave 1, and 32.06 % are not under criminal justice supervision. The average age of the participants in the study is about 36 years old, making them younger than African American women, on average, nationally (U.S. Census Bureau 2011). The mean number of years of education is about 12 years – equivalent to a high school education. The average household income of the women in the study is $18,500, indicating they have a considerably lower household income than the national average of $32,229 for African American households in the United States (U.S. Census 2012a; DeNavas-Walt et al. 2012).

Measures of stressful life events encountered by the low-income African American women in the B-WISE Study are also displayed in Table 4.1. According to results, about 45% of the women report experiencing a financial crisis in the year prior to the baseline interview. A staggering 81.02 % of B-WISE participants have been the

victim of a crime as an adult. The average gendered racism score is 14.04, which indicates that negative experiences associated with racial and gender statuses are a common feature of most respondents' lives. Additionally, sentiments of cultural mistrust toward Whites are also moderately strong among women in the B-WISE Study (mean = 45.57).

The structural background measures describe B-WISE participants' access to enabling resources and attitudes toward health care. Over one-third of women (36.24 %) report having no insurance in the year prior to the Wave 1 interview, while 44.01 % have public insurance and 19.75 % have private insurance. Over half of the low-income African American women sampled indicate that they have a usual doctor or other health care provider that they see for care. Participants also indicate a moderately high level of trust in their physicians (mean = 40.48).

Measures of both physical and mental health are also described in Table 4.1. At Wave 1, about 30 % report good, very good, or excellent physical health, while nearly 70% report fair or poor physical health. Additionally 37.95 % of participants report taking medication for a physical problem. Approximately 42 % of the B-WISE participants report a history of mental health or anxiety problems. Further, 51.40 % of women had at least two or more weeks of serious depression in the year prior to the baseline interview – or prior to incarceration for the women recruited as part of the prison sample. The mean active coping score for the sample is relatively high at 50.93, indicating that, on average, women in the study tend to actively confront stressors in their lives, rather than avoid them.

Importantly, over half of the women in the study (56.92 %) have a history of drug problems, and 61.43 % report drug use in the year prior to the baseline interview or incarceration. Though not included in the table, the most frequently reported drugs used during this period are marijuana (47.90 %), crack/freebase (25.82 %), and cocaine (16.33%). Finally, about 61 % of the low-income women sampled report using alcohol in the year prior to the Wave 1 interview.

[Table 4.2 Here]

In addition to providing basic demographic statistics on the social content and episode base measures, Table 4.2 shows the results of bivariate statistics comparing women who are drug users with those who are non-drug users at Wave 1. As indicated by significant chi-quare and t-test analyses, the majority of the differences between drug using and non-drug using women are statistically significant. These results indicate that on average, compared to non-drug using participants, drug using women are younger, have slight lower educational attainment, and lower household incomes ($p<0.05$, $p<0.01$, and $p<0.001$, respectively). Drug using women are more likely to be recruited from the prison sample (47.59 %, $p<0.001$), and over half (50.89 %, $p<0.001$) had experienced a financial crisis in the year prior to baseline or incarceration (compared to on 35.48 % of non-drug users). In all, of the stressful life events measured, drug using women report experiencing significantly more on average than those who did not use drugs.

Participants who are drug using at Wave 1 are also more likely to be without health insurance ($p<0.001$), while non-drug using women are more likely to have private insurance ($p<0.001$). Women who are non-drug users are, on average, also more likely to have a usual physician (64.11 % versus 49.11 %, respectively; $p<0.001$) and express trust

in physicians (mean = 41.77 versus mean = 39.66, respectively; $p<0.001$) than women who are drug using at Wave 1. Though none of the differences in general physical health status between drug users and non-drug users are significant, findings do indicate that, on average, women who reporte drug use at baseline are more likely to have a history of mental health problems and experience depression for longer than 2 weeks in the past year or year before incarceration ($p<0.001$ and $p<0.01$, respectively). Further, women who are not drug users at Wave 1 have a slightly higher active coping score than women who are drug using at baseline (51.89 compared to 50.38, respectively; $p<0.01$).

Importantly, women who are drug users at baseline are signifincatly more likely to have a history of drug use problems compared women who do not use drugs (73.42 % versus to 30.65 %; $p<0.001$). While only 31.45 % of non-drug using women have consumed alcohol in the year before the first study interview, nearly 80% of drug using participants have used alcohol ($p<0.001$). In all, the findings of these bivariate statistics indicate a number of significant differences between drug using and non-drug using African American women in the B-WISE Study. Generally, drug using women tend to be of a lower socioeconomic status, involved with the criminal justice system, and are more likely to experience stressful life events than non-drug using women. Given the baseline circumstances for these women, their illness trajectories over time may be negatively effected. That is, they may be more likely than higher status women to experience continuous, severe drug use over the course of the B-WISE Study.

Social Network System

[Table 4.3 Here]

Table 4.3 shows the descriptive statistics for the social network system measures captured at Wave 1. These measures include those that capture normative influence, social control, and the social safety net. Findings indicate that nearly 35% of participants have at least one biological parent with a history of drug problems, while 26.99% indicate they have one or more biological parents with a history of mental health or anxiety problems. About 37% of the low-income women in the study report that they had lived with someone who had a serious drug or alcohol problem in the year prior to the baseline interview or incarceration. Importantly, women in the study cite a diversity of sources from whom they receive health information from in the year prior to the Wave 1 interview or incarceration. About three-quarters of respondents cite a doctor as a source of health information, while 60.65% name family, and 40.75% name friends as sources of health information.

Social network system measures measured at Wave 1 also include variables that describe aspects of social control present in the lives of the low-income African American women in the B-WISE Study. According to these results, about 13.53% of participants are married or living as married at the time of the baseline interview and slightly more than half of the participants have children under the age of 18 years (52.72%). The percentage of respondents married is particularly noteworthy because it is far below the national average for African American women over the age of 18 years (30.10 %; U.S. Census Bureau 2012b). There is a moderate level of community membership as well, as 50.39% of participants are a member of an ethnic community and

62.67% are a member of a church or religious group in the year prior to the Wave 1 interview or incarceration.

Finally, three measures of the social safety net are shown. According to results, the average level of social support participants perceive from their families is 5.29, while they report slightly less social support from friends, on average (mean = 5.05). These findings demonstrate that participants have, on average, relatively strong perceived support from both friends and family members. The number of friends varies across the sample, ranging from 0 to 11 friends, with a mean of 2.59 friends.

[Table 4.4 Here]

As with the social content and episode base measures, after preliminary descriptive statistics are computed, bivariate statistical analysis is performed to examine differences in these measures between drug users and non-drug users at Wave 1. From these analyses, a number of statistically significant differences emerge. Of the drug using participants, 39.12% report that one or more of their parents had a drug problem history, compared to 28.28% of non-drug using women ($p<0.05$). Additionally, drug users are more likely to live with someone in the year before baseline that has a drug or alcohol problem than non-drug users (47.59% versus 20.16%; $p<0.001$). Participants who are drug using at baseline are also less likely than non-drug users to cite a doctor as a source of health information in the year before baseline or incarceration.

Though a number of social control and social safety net measures are compared, only three emerge as significant. Findings indicate that women who are non-drug using at baseline are more likely than drug users to be a member of an ethnic or church community ($p<0.05$). Non-drug using women also note greater social support from their

friends, compared to those who report drug use in the year prior to the Wave 1 interview or incarceration (5.39 versus 4.84; $p<0.001$). Taken together, these social network system measures indicate that the low-income African American women in the B-WISE Study who report using drugs are more likely than non-drug users to possess characteristics or have experiences that put them at risk for drug use (e.g. family history, living with a drug user, etc.). Conversely, women who report not using drugs at Wave 1 are more likely to be subjected to forces of social control by way of their greater likelihood of membership in religious or ethnic communities. These women also tend to have greater levels of social support from friends, which may be protective against certain negative health behaviors. Analyses in the chapters that follow examine these relationships in greater detail.

[Table 4.5 Here]

In addition to describing the social network system at Wave 1, Table 4.5 displays the descriptive statistics for the social network system measures used in this research that are captured at Wave 4. The results of this table show that characteristics of participants' health matters networks at Wave 4. According to these results, the average network size is between 1 and 2 people – indicating women tend to have relatively intimate networks with which they share health concerns (mean = 1.39). Despite this, the mean discussion frequency and mean level of encouragement are comparably high, suggesting health matters networks have regular, active discussion (mean = 4.09) and these ties are an important source of encouragement to use health services (mean = 4.22). Finally, these results suggest that women in the study, on average, have about one health matters

regulator who attempts to get the participant to change their behavior or see a health professional (mean = 1.15).

Illness Career Measures

[Table 4.6 Here]

Table 4.6 presents the descriptive statistics for the final component of the Network Episode Model examined in this research, the illness career. As shown, at each wave of data collection more than half of all participants were daily drug users. Daily drug use was highest at Wave 1, with 57.85 % of study participants reporting that they used drug every day in the year prior to baseline or incarceration.

Help-seeking measures are also described for Waves 1, 2, 3, and 4. As with drug use, drug abuse treatment is most common in the year prior to the first interview, with 18.20% of participants attending treatment for drug misuse at this time. Utilization of drug abuse treatment services drops off sharply after Wave 1, with less than 10% of respondents attending inpatient, outpatient, and other formal drug treatment at Waves 2, 3, and 4 (6.79 %, 6.78 %, and 3.85 %, respectively). Despite the low frequency of this measure at later waves, it was included in these analyses as a comparison of 12-Step attendance. Attendance at Narcotics or Cocaine Anonymous meetings, like drug abuse treatment, is most common in the year before the Wave 1 interview or incarceration (20.06 %). Attendance at these 12-Step meetings decreases with each wave of data collection, with 17.25 % of women attending NA/CA meeting in the 6 months prior to Wave 2, 14.50 % at Wave 3, and 11.73 % at Wave 4.

[Figure 4.1 Here]

The illness career measures at Waves 2, 3, and 4, which describe patterns of drug use across all waves, are also shown in Table 4.6 and graphically represented in Figure 4.1. According to these results, 32.17 % report drug use at both Wave 1 and Wave 2. The percentage of participants continuing drug use is relatively consistent across all waves (31.26 % at Wave 3, and 31.60 % at Wave 4). Continuing a pattern of non-drug use, on the other hand, differs across study waves. While 35.66 % report not using drugs at both Wave 1 and Wave 2, this number increases considerably at Waves 3 and 4. Specifically, 52.92 % report continuing a pattern of non-use from Wave 2 to Wave 3, while 50.87 % reporting non-use at both Wave 3 and Wave 4. Importantly, only 5.15 % of respondents at Wave 2 reporting beginning drug use from a period of non-use at Wave 1. This number increases slightly at Wave 3 to 9.23 % and 9.06 % at Wave 4. Finally, while more than one quarter of respondents cease drug use between Wave 1 and Wave 2 (27.02 %), comparably fewer transition from a period of use to non-use at Wave 3 (6.59 %) and Wave 4 (8.48 %).

In the chapter that follows, analyses predict these illness career measures with the social content and episode base measures previously described. Using multilevel modeling, this research considers a number of hypothesized relationships between measures based on the Network Episode Model and past research findings.

Table 4.1. Descriptive Statistics for Social Content & Episode Base Measures – Wave 1 (N = 643)

	Mean/ Percent	SD	Range
Social & Geographic Location			
Demographics			
Age (years)	35.75	11.45	18.00 – 68.00
Education (years)	12.02	2.17	3.00 – 20.00
Household Income[1]	18.50	19.31	2.50 – 87.50
Sample: Community	32.06 %		
Sample: Prison	37.33 %		
Sample: Probation	30.64 %		
Stressful Life Events			
Financial Crisis	44.95 %		
Gendered Racism	14.04	9.98	0.00 – 54.00
Cultural Mistrust	45.57	10.81	18.00 – 93.00
Adult Victim	81.02 %		
Personal Health Background			
Structural Background			
Insurance: None	36.24 %		
Insurance: Public	44.01 %		
Insurance: Private	19.75 %		
Usual Doctor	54.90 %		
Trust in Physician	40.48	6.95	15.00 – 55.00
General Physical Health			
Self-Rated Health: Good+	30.02 %		
Self-Rated Health: Fair/Poor	69.98 %		
Medication for Phys. Prob.	37.95 %		
Mental Health			
History of MH Problems	42.30 %		
Depression	51.40 %		
Active Coping	50.93	6.15	14.00 – 60.00
Event Illness Characteristics			
Substance Use			
Drug User (Baseline)	61.43 %		
History of Drug Problems	56.92 %		
Alcohol Use (Any)	60.81 %		

[1] Coded to the midpoint, tens of thousands of dollars

Table 4.2. Bivariate Statistics Comparing Drug Users & Non-Drug Users for Social Content & Episode Base Measures – Wave 1 (N = 643)

	Drug User (N = 395)		**Non-Drug User** (N = 248)		Test Statistic
	Mean/%	SD	Mean/%	SD	X^2/T-Test
Social & Geographic Location					
Demographics					
Age (years)	34.97	10.64	36.99	12.54	2.19*
Education (years)	11.83	2.10	12.34	0.14	2.93**
Household Income[1]	16.21	17.02	22.04	21.97	3.74***
Sample: Community	26.58 %		40.73 %		14.00***
Sample: Prison	47.59 %		20.97 %		46.17***
Sample: Probation	25.82 %		38.31 %		11.17***
Stressful Life Events					
Financial Crisis	50.89 %		35.48 %		14.61***
Gendered Racism	14.90	10.41	12.68	9.12	-2.75**
Cultural Mistrust	46.38	10.98	44.27	10.42	-2.42*
Adult Victim	84.30 %		75.81 %		7.16**
Personal Health Background					
Structural Background					
Insurance: None	40.76 %		29.03 %		9.07***
Insurance: Public	45.06 %		42.34 %		0.46
Insurance: Private	14.18 %		28.63 %		20.07***
Usual Doctor	49.11 %		64.11 %		13.84***
Trust in Physician	39.66	7.06	41.77	6.60	3.78***
General Physical Health					
Self-Rated Health: Good+	67.85 %		73.39 %		2.23
Self-Rated Health: Fair/Poor	32.15 %		26.61 %		2.23
Medication for Phys. Prob.	36.71 %		39.92 %		0.67
Mental Health					
History of MH Problems	49.11 %		31.45 %		19.47***
Depression	55.84 %		44.35 %		8.03**
Active Coping	50.38	6.32	51.79	5.79	2.83**
Event Illness Characteristics					
Substance Use					
History of Drug Problems	73.42 %		30.65 %		113.67***
Alcohol Use (Any)	79.24 %		31.45 %		145.99***

[1] Coded to the midpoint, tens of thousands of dollars

Table 4.3. Descriptive Statistics for the Social Network System – Wave 1 (N = 643)

	Mean/ Percent	SD	Range
Normative Influence			
Family Background			
Parent(s): Drug Problem Hist.	34.95 %		
Parent(s): M.H. Problem Hist.	26.99 %		
Living Situation			
With Person w/ Drug/Alc. Prob.	37.01 %		
Sources of Health Info			
Family	60.65 %		
Friends	40.75 %		
Doctor	74.03 %		
Social Control			
Marital and Family Status			
Married/Living as Married	13.53 %		
Minor Child	52.72 %		
Community Membership			
Member Ethnic Community	50.39 %		
Member Church Community	62.67 %		
Social Safety Net			
Social Support			
Family	5.29	1.74	1.00 – 7.25
Friends	5.05	1.75	1.00 – 7.00
Network Size			
Number of Friends	2.59	2.31	0.00 – 11.00

Table 4.4. Bivariate Statistics Comparing Drug Users & Non-Drug Users for the Social Network System – Wave 1 (N = 643)

	Drug User (N = 395)		**Non-Drug User** (N = 248)		**Test Statistic**
	Mean/%	SD	Mean/%	SD	X^2/T-Test
Normative Influence					
Family Background					
Parent(s): Drug Problem Hist.	39.12 %		28.28 %		6.29*
Parent(s): M.H. Problem Hist.	28.08 %		25.25 %		0.49
Living Situation					
With Person w/ Drug/Alc. Prob.	47.59 %		20.16 %		49.18***
Sources of Health Info					
Family	62.28 %		58.06 %		1.13
Friends	37.97 %		45.16 %		3.26
Doctor	70.13 %		80.24 %		8.11***
Social Control					
Marital and Family Status					
Married/Living as Married	12.91 %		14.52 %		0.34
Minor Child	53.16 %		52.02 %		0.08
Community Membership					
Member Ethnic Community	47.09 %		55.65 %		4.46*
Member Church Community	58.99 %		68.55 %		5.95*
Social Safety Net					
Social Support					
Family	5.24	1.74	5.38	1.72	1.02
Friends	4.84	1.83	5.39	1.55	3.91***
Network Size					
Number of Friends	2.50	2.34	2.73	2.28	1.24

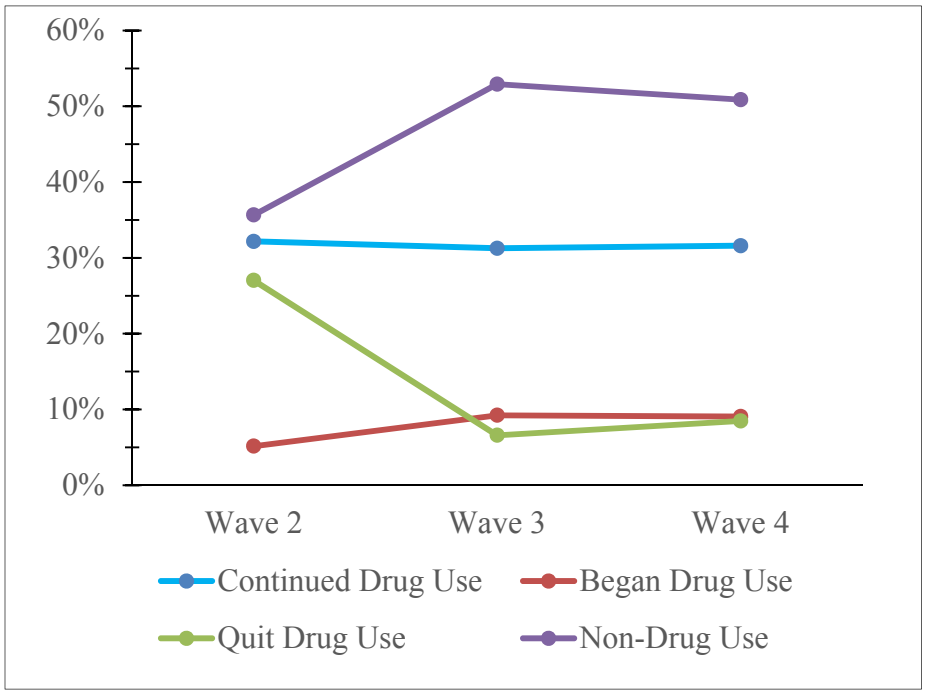
Table 4.5. Descriptive Statistics for the Social Network System – Health Matters Network Characteristics at Wave 4

	Mean	SD	Range
Health Matters Network Characteristics			
Size	1.39	1.08	0.00 – 4.00
Mean Discussion Frequency	4.09	1.36	1.00 – 6.00
Mean Level of Encouragement	4.22	1.59	1.00 – 6.00
Number of Health Matters Regulations	1.15	1.10	0.00 – 5.00

Table 4.6. Descriptive Statistics for the Illness Career & Help-Seeking – Waves 1, 2, 3, and 4

	Wave 1	Wave 2	Wave 3	Wave 4
Drug Use Severity				
Drug Use Daily	57.85 %	53.31 %	50.75 %	54.23 %
Help-Seeking				
Drug Abuse Tx	18.20 %	6.79 %	6.78 %	3.85 %
NA/CA Attendance	20.06 %	17.25 %	14.50 %	11.73 %
Illness Career				
Continued Drug Use	—	32.17 %	31.26 %	31.60 %
Begin Drug Use	—	5.15 %	9.23 %	9.06 %
Quit Drug Use	—	27.02 %	6.59 %	8.48 %
Non-Drug Use	—	35.66 %	52.92 %	50.87 %

Figure 4.1. Illness Career Measures at Waves 2, 3, and 4



CHAPTER 5: RESULTS OF MODELS PREDICTING THE ILLNESS CAREER WITH THE SOCIAL CONTENT & EPISODE BASE

In the previous chapter, bivariate and other analyses are used to describe the social status, social networks, and prevalence of substance use among the low-income African American women in the B-WISE study. The central focus of this chapter is to examine the effects of socio-demographic and illness context variables on drug use and related help-seeking outcomes. These analyses mirror the strategy of earlier health service utilization models that dominated prior to the Network Episode Model, namely Andersen's Socio-Behavioral Model and the Health Beliefs Model (Andersen 1968; Rosenstock 1966; Strecher & Rosenstock 1997). Such models propose important connections between economic resources, access to treatment services, and a variety of socio-demographic characteristics and patterns of health service utilization. This chapter replicates previous research using data from an understudied group – low-income African American women – providing additional evidence for these relationships and laying the foundation for empirical tests of the NEM in the analyses that follow. Examining patterns of drug use and help-seeking among these women is particularly important given their disproportionate vulnerability to a number of adverse health outcomes. Further, this research includes additional measures which may have special relevance for African American women's health and help-seeking (e.g. gendered racism, cultural mistrust).

The results from Chapter 5 are important for two major reasons. First, the conclusions of this chapter will provide a useful baseline understanding of how demographic and illness context variables, absent of social support and other social network factors, influence drug use frequency (i.e. daily use), help-seeking (i.e. entering

drug abuse treatment or attending 12-Step meetings), and the illness career (patterns of drug use over time). There is reason to suspect, for example, that some of these variables may have a greater effect on the type of substance abuse help-seeking chosen than others. For example, a rational choice theoretical approach suggests that having insurance that covers the cost of formal substance abuse treatment might be predictive of utilizing this type of treatment. Second, by having a model to compare the analyses testing the social network components of the NEM in the following chapters, it is possible to evaluate their specific contributions to African American women's patterns of drug use and help-seeking.

Daily Drug Use

[Table 5.1 Here]

Daily drug use, a dichotomous variable, is used to capture drug use frequency. In accordance with past research described in Chapter 2, there are a number of hypotheses regarding the effects of social location, personal health background, and substance use history on daily drug use. Specifically, as age, education, and income increase, the odds of daily drug use are hypothesized to decrease. Criminal justice involvement will also predict greater frequency of drug use. Further, experiencing stressful life events or attitudes are hypothesized to positively predict daily drug use. Participants' personal health background is also anticipated to predict daily drug use. Controlling for active coping, those with a history of mental health problems or who report depressive symptoms will have higher odds of daily drug use compared to those who do not report mental health problems or depressive symptoms. Finally, a history of drug problems and reported use of any alcohol are hypothesized to predict greater odds of using drugs daily.

These hypotheses are tested using multilevel mixed effects regression, with both time and time squared included as controls across all models. Five restricted models with related variables are tested, and a final full model including all variables is presented. Model 1 shows the significance of demographic predictors on the outcome of daily drug use. Results indicate that both education (OR=0.77, $p<0.001$) and household income (OR=0.99, $p<0.05$) are significant predictors of daily drug use, such that more years of education at baseline and higher income predict lower odds of using drugs daily, on average. Model 1 also indicates that the predicted odds of using drugs daily during the study timeframe are 7.07 times greater for women recruited while incarcerated compared to women recruited as part of the community sample ($p<0.001$). Similarly, the odds of women from the probation sample using drugs daily during the course of the study are 5.34 times greater than women from the community ($p<0.001$).

Model 2 examines the role of stressful life events and cultural mistrust on daily drug use. The results of this model provide mixed support for the initial hypothesis. While both experiencing a financial crisis (OR = 1.50, $p<0.05$) and being victimized as an adult (OR = 3.07, $p<0.01$) increase the predicted odds of using drugs daily, neither experiencing gendered racism nor reporting sentiments of cultural mistrust achieve significance.

Models 3, 4, and 5 show the results of analyses testing features of participants' personal health background – specifically, structural context, physical health status, and mental health status. Only three measures significantly predict daily drug use. It is estimated that those who have private insurance are 76% (OR = 0.24, $p<0.001$) less likely to use drugs daily over the course of the study compared to those without insurance.

Further, those who take medication for a physical problem have significantly lower predicted odds of daily drug use compared to those who do not take medication (OR = 0.67, $p<0.05$). Conversely, it is estimated that those who reported at baseline that they had experienced mental health problems in their lifetime are 4.06 times more likely to use drugs daily during the study compared to those who did not report such problems ($p<0.001$).

Model 6 shows the results when all independent variables are included together in a single model. According to the full model, several measures which are significant in the restricted models no longer achieve significance after including potential confounding factors. That is, household income, experiencing a financial crisis, reporting being victimized as an adult, having private insurance, and taking medication for a physical health problem are not significant predictors of daily drug use after including controls. However, both baseline age and education significantly predict daily drug use, such that as age and education increase, the odds of using drugs daily are predicted to decrease (OR = 0.98, $p<0.05$ and OR = 0.99, $p<0.01$, respectively). Further, as is the case in restricted Model 1, participants from the prison and probation sample are estimated to be significantly more likely to use drugs daily during the study timeframe compared to those from the community sample (OR = 4.73, $p<0.001$ and OR = 3.62, $p<0.001$, respectively). Counter to what was hypothesized, the effects of stressful life events which are significant in Model 2 did not hold in the full model. A history of mental health problems as reported at baseline did predict daily drug use in the full model, and those with such a history are predicted to be 2.17 times more likely to use drugs daily during the study time frame than those without such a history ($p<0.01$).

It is important to recognize that Model 6 also includes measures assessing the nature of the illness characteristics. As previously described, these measures capture participants' current and past use of substances, and both are significant in the full model. On average, those who report a history of drug use problems at baseline are 3.99 times more likely to use drugs daily during the study than those who do not have a history of drug use ($p<0.001$). Interestingly, any alcohol use is also estimated to positively predict daily drug use (OR = 3.34, $p<0.001$). In all, Model 6 indicates that basic socio-demographic characteristics, mental health, and drug and alcohol use history are the strongest predictors of daily drug use during the study timeframe. The intraclass correlation was moderately strong within each individual over time (rho = 0.59), suggesting that tendency to engage in daily drug use is relatively stable across waves of the study for each participant.

Help-Seeking

As described in Chapter 2, past health service utilization research identifies a number of relationships between demographic, financial, and need-related variables and help-seeking. Broadly speaking, these relationships are expected to be visible in the results of the following analyses examining drug abuse treatment and Narcotics Anonymous and Cocaine Anonymous (NA/CA) attendance. However, because attending 12-Step sessions is largely self-motivated and does not utilize substantial financial resources like receiving drug abuse treatment may, it is anticipated that some of these factors will have decidedly less relevance for this type of help-seeking. Given past findings and the types of help-seeking examined here, the following relationships are hypothesized. First, it is hypothesized that income, insurance status, and trust in physician

will predict seeking drug abuse treatment. That is, greater income and trust in physician, as well as having insurance of any kind predict participating in drug abuse treatment. Attending NA/CA will also be predicted by income and insurance status, such that lower socioeconomic status and not having insurance will predict attending 12-Step based help-seeking. It is expected that those from the prison or probation sample will be more likely to engage in both types of help-seeking, given that both populations are likely subject to routine monitoring (e.g. as by a probation or parole officer). Women recruited as part of the prison sample may also have to attend treatment as a mandatory condition of their entry into the community. Finally, it is hypothesized that a lifetime history of drug use problems will predict both types of help-seeking, and those who are in NA/CA will also have lower odds of alcohol use.

Drug Abuse Treatment

[Table 5.2 Here]

Table 5.2 presents the results of the multilevel mixed effects regression of attending drug abuse treatment on participant social and geographical location, personal health background, and nature of event illness characteristics. Both the restricted models and full model include control variables for time and time-squared, as well as a control for drug use problem history. According to Model 1, which includes demographic measures, household income significantly predicts drug abuse treatment. Specifically, a one unit increase in household income reduces the predicted odds of attending drug abuse treatment by 2% (OR = 0.98, $p<.05$), contrary to what was hypothesized. Model 1 also reveals that women recruited while incarcerated or on probation are estimated to be 1.88 times and 2.18 times more likely to attend drug abuse treatment during the study

timeframe than those who are recruited while under no criminal justice supervision ($p<0.05$). As expected, the control measure for history of drug use problems is significant, such that those with a reported history of such problems at baseline are predicted to be 8.49 times more likely to attend drug abuse treatment during the course of the study than those who do not report past drug problems ($p<0.001$), on average.

Model 2 examines the influence of stressful life events and attitudes on drug abuse treatment. While these measures are hypothesized to significantly predict drug use frequency and patterns of drug use over time, they are not anticipated to predict help-seeking. Contrary to expectations, women with a reported history of adult victimization are predicted to be 3.02 times more likely to seek drug abuse treatment during the study timeframe ($p<0.01$). As with the previous model, a history of drug use positively predicts seeking drug abuse treatment (OR = 9.69, $p<0.001$).

Models 3, 4, and 5 introduce predictors associated with participants' personal health background, including measures of their physical and mental health. Of these measures, only private insurance achieves significance. Specifically, compared to those without insurance, the predicted odds of those with private insurance seeking drug abuse treatment are 57% lower than for those without insurance (OR = 0.57, $p<0.05$). These findings are the opposite of what was hypothesized, as it was expected that cost deters women without insurance from this type of treatment. Across all three models, history of drug use reported at baseline positively predicts seeking drug abuse treatment during the study.

Model 6 includes all measures in a full model. In this model, only three predictors reach significance. First, as expected, those recruited while on probation are estimated to

be 1.87 times more likely to receive drug abuse treatment than those recruited from the community ($p<0.05$). As in Model 2, those who report being victimized as an adult are 3.89 times more likely to seek this form of treatment when compared to those who do not have a history of victimization as an adult ($p<0.01$), on average. Finally, as is the case across all restricted models, a reported history of drug problems at baseline predicts seeking drug abuse treatment (OR = 6.77, $p<0.001$). Alcohol use across waves does not significantly predict receiving this type of treatment. The relatively low intraclass correlation for this model (rho = 0.24) indicates that there is only modest correlation in use of drug abuse treatment across waves for any given individual. In all, findings of this full model indicate that financial barriers do not have a significant effect on receiving drug abuse treatment, while criminal justice involvement, being victimized, and having a history of drug related problems are significant.

Narcotics Anonymous and Cocaine Anonymous Attendance

[Table 5.3 Here]

Table 5.3 shows the results of multilevel mixed effects regression models examining predictors of attending 12-Step meetings, specifically Narcotics and Cocaine Anonymous (NA/CA). As is the case with drug abuse treatment, income predicts NA/CA meeting attendance. That is, as income increases the predicted odds of attending 12-Step meetings decrease (OR = 0.98, $p<0.05$). As was originally hypothesized, criminal justice involvement predicts attending NA/CA meetings during the course of the study timeframe. Women recruited while incarcerated are predicted to be 5.53 times more likely to attend 12-Step meetings than women recruited from the community, while women from the probation sample are 4.35 times more likely to attend meetings

($p<0.001$). The control measure of reported history of drug use problems at baseline also significantly predicts NA/CA attendance, such that compared to women who do not have a drug use history, those who do are 14.86 times more likely to attend 12-Step meetings ($p<0.001$), on average. As Model 2 shows, none of the stressful life events or attitude measures tested emerge as significant predictors of NA/CA attendance.

Models 3, 4, and 5 present the results of various personal health background predictors on NA/CA meeting attendance. Though none of the measures, excluding the drug use history control variable, achieve significance in Models 4 and 5, insurance status is a significant predictor. As Model 3 demonstrates, having either private (OR = 0.44, $p<0.01$) or public insurance (OR = 0.50, $p<0.001$) compared to being uninsured, reduces the predicted odds of attending 12-Step meetings. As hypothesized, across all three models a history of drug use problems significantly predicts attending NA/CA meetings.

Model 6 includes all measures from the restricted analyses. With the exception that private insurance is no longer a significant predictor of attending 12-Step meetings, all relationships from the restricted models hold. As hypothesized, women of lower-socioeconomic status – those who are uninsured and who have lower household incomes – are predicted to be significantly more likely to seek out this type of help, which does not come at great expense compared to inpatient or outpatient forms of treatment. Also aligning with what was initially hypothesized, women who are under criminal justice supervision are disproportionately likely to attend NA/CA meetings. Compared to women recruited from the community, those who are incarcerated at baseline are an estimated 4.32 times more likely to participate in 12-Step meetings during the course of the study ($p<0.001$), while women recruited while on probation are 3.27 times more

likely to seek this form of treatment ($p<0.001$). History of drug use problems, as reported at baseline, and any alcohol use are also significant predictors in this final model, and are in the expected directions based on hypotheses. Specifically, African American women with a history of drug use problems are predicted to be 14.33 times more likely to attend 12-Step meetings ($p<0.001$); while any alcohol use reduces the predicted odds of attending NA/CA meetings by 53% (OR = 0.53, $p<0.001$). Though slightly higher than for drug abuse treatment, the intraclass correlation for this model is moderate (rho = 0.38), suggesting the data are not highly clustered within individuals over time.

Illness Career Measures

[Table 5.4 Here]

Like daily drug use and help-seeking, patterns of drug use over time – or as it is termed under the Network Episode Model, the illness career – are also important outcomes that are hypothesized to be related to the independent variables examined in this chapter. Using Stata's generalized linear latent and mixed models command (*gllamm)*, the effects of social location, personal health background, and illness characteristics on the illness career are tested and presented in Table 5.4. Odds ratios for three illness career outcomes – beginning use, quitting use, and non-use – are shown, with continued drug use across study waves as the reference category.

Based on what is known about factors which contribute to drug use and abstention, there are a number of hypothesized relationships between the variables examined in this chapter and their effects on patterns of drug use over time. First, it is hypothesized that older, more educated, and more affluent participants will be more likely to quit use or not use drugs across waves, compared to continuing use. Compared

to African American women recruited as part of the community sample, women who are under criminal justice supervision will be significantly more likely to begin use, quit use, and not use drugs over the study timeframe, compared to continuing use. Because these women are, in many cases, under some sort of criminal justice supervision over the course of the study they will be significantly more likely to not use drugs during the study than women from the community who are not subject to such monitoring. Additionally, it is hypothesized that stressful life events will negatively predict quitting use or non-drug use; rather, controlling for active coping orientation, these events will predict beginning substance use or continuing use across waves. Depression, a history of mental health problems, and any alcohol use are also hypothesized to negatively predicted non-drug use and quitting use. Finally, as in previous models, a history of drug problems is expected to predict drug use, and women with a history of drug problems are hypothesized to have decreased odds of quitting use and abstaining from use during the study.

As Table 5.4 shows, there is mixed support for these hypotheses. As anticipated, the predicted odds of older participants quitting use (OR = 1.09, $p<0.05$) or consistently not using drugs across waves (OR = 1.14, $p<0.001$) are significantly greater compared to continuing use. Contrary to expectations, education and income are not significant predictors of the illness career. However, as anticipated, women who are recruited while incarcerated or on probation have substantially greater predicted odds than women in the community of not using drugs across waves compared to continuing use (OR = 16.33, $p<0.05$ and OR = 13.06, $p<0.01$, respectively). Women incarcerated at baseline are 19.21 times more likely than women from the community sample to quit use compared to continuing use, on average, though women on probation are not significantly more likely

to quit use during the study timeframe ($p<0.01$). Inconsistent with initial hypotheses, criminal justice involvement also predicts beginning use during the study relative to continuing use, such that women from the prison sample are predicted to be 25.38 times more likely to begin use and women on probation are 15.63 times more likely to begin use than women from the community ($p<0.01$). This relationship can likely be explained by the fact that compared to women in the community, women under criminal justice supervision are likely to have periods of not using drugs during the course of the B-WISE study.

Stressful life events and attitudes were also hypothesized to predict the illness career. Of the four measures examined in this model, only one emerges as a significant predictor, demonstrating partial support for the hypothesis. Gendered racism significantly predicts all three illness career outcomes over the study timeframe, such that women who experience gendered racism are predicted to be significantly less likely to begin use (OR = 0.78, $p<0.05$), quit use (OR = 0.82, $p<0.05$), and continue nonuse (OR = 0.82, $p<0.01$) compared to continuing drug use. This suggests that experiencing gendered racism predicts continuing drug use, and exposure to such discrimination may therefore be a risk factor for drug abuse and a hurdle for those hoping to recover from substance dependence.

In addition to the hypothesized effects of stressful life events, it was predicted that depression and a history of mental health problems would decrease the odds of quitting use or continuing non-use during the study timeframe. These relationships did not achieve significance as expected, however having a usual doctor emerged as a significant predictor of both quitting use and non-drug use across waves. Women with a

usual doctor are an estimated 2.89 times more likely than those without a usual doctor to quit use during the study timeframe, compared to continuing use ($p<0.05$). Having a usual doctor also predicts abstaining from drug use over time such that those with a usual doctor are 3.58 times more likely to not use drugs across waves compared to continuing use ($p<0.001$), on average. These findings suggest that contact with a physician may directly or indirectly promote positive health behaviors.

Finally, this model demonstrates support for the hypothesized relationship between the illness career and the substance use illness characteristics controlled for in these analyses. As expected, African American women reporting a history of drug problems at baseline are predicted to be significantly less likely to quit use (OR = 0.06, $p<0.01$) or have periods of nonuse (OR = 0.01, $p<0.001$) during the study. Additionally, women with a history drug problems are also estimated to be less likely to begin use (OR = 0.03, $p<0.01$) over time – potentially because they are more likely to continue using across waves of the study than to have a period of nonuse from which to reinitiate drug use. Like having a history of drug use problems, women who use any alcohol are significantly less likely to abstain from drug use across waves (OR = 0.01, $p<0.001$), quit use (OR = 0.01, $p<0.001$), or begin use from a period of nonuse (OR = 0.03, $p<0.001$), compared to continuing use, on average. Ultimately, these findings suggest that age, criminal justice supervision, experiences of discrimination, and access to a physician, in addition to current and past substance use behaviors, are the strongest predictors of the drug use illness career in low-income African American women.

Summary

[Table 5.5 Here]

The purpose of this chapter was to provide a foundation for understanding the contributions of later analyses by examining traditional social epidemiological predictors of drug use and help-seeking. The effects of demographic characteristics, criminal justice involvement, stressful life events, mental and physical health background, and other factors on both patterns of drug use and help-seeking were examined (see summary of hypotheses and findings in Table 5.5). Findings reveal that those most likely to use drugs on a daily basis have a history of drug use problems and mental health problems, are involved with the criminal justice system, and have used alcohol during the course of the study. Though stressful life events were not significant predictors of daily drug use in the full model presented in Table 5.1, results of the multilevel *gllamm* model reveal a more nuanced picture of predictors of drug use and non-use during the study timeframe. As the findings presented in Table 5.4 reveal, experiencing gendered racism – the combined effects of racial discrimination and sexism – plays a significant role in patterning drug use. That is, low-income African American women that experience gendered racism are less likely to quit drug use or abstain from drug use compared to continuing drug use over the study timeframe. This suggests that experiences related to their multiply-marginalized statuses, beyond being damaging in their own right, may have negative effects on these women's health behaviors, potentially contributing to adverse health and other outcomes through substance use pathways.

Though many of the hypothesized relationships between variables based on past findings were supported, there were also some important findings that emerged contrary

to expectations. Despite prior research indicating the importance of financial concerns as paramount in health service utilization decisions, this research indicates that this may be less influential in the case of substance abuse help-seeking. Though neither income nor insurance status are significant in the full model, findings from the restricted models examining drug abuse treatment indicate that those with greater income and private insurance are significantly *less* likely to receive such treatment, even when a history of drug use problems is included as a control measure. Results of the restricted and full models indicate that criminal justice supervision predicts drug abuse treatment seeking, and may therefore play a more significant role than financial factors in motivating help-seeking among this sample of African American women with relatively low socioeconomic status, on average.

The findings for 12-Step meeting attendance demonstrate a significant, negative effect of income and insurance status on help-seeking. This, however, was anticipated as Narcotics Anonymous and Cocaine Anonymous are available at no cost to those who participate. Like drug abuse treatment, NA/CA meeting attendance was positively predicted by criminal justice involvement. In all, findings regarding both types of help-seeking examined in these analyses may partially be a product of the sampling strategy used in the B-WISE Study – which includes a nearly equal representation of women from the community, on probation, and from a prison sample. Women under criminal justice supervision may be particularly likely to receive substance abuse treatment as a condition of their release or probation, or seek help voluntarily because routine monitoring and drug testing mean they are particularly motivated to sustain their recovery.

The next chapter will build upon these results by examining the role of the social support system in predicting patterns of drug use and help-seeking among low-income African American women. Social network characteristics and interactions with social network members are central components of the Network Episode Model. The analyses in Chapter 6 will explore new ground by testing relationships proposed by the NEM among an understudied population (i.e. low-income African American women) and different form of help-seeking (drug abuse and 12-Step based substance abuse services) than has previously been examined using the NEM. This chapter will investigate how different social network mechanisms – namely, normative influence, social control, and social integration – work to influence health behaviors and help-seeking.

TABLE 5.1. Multilevel Mixed Effects Regression of Daily Drug Use on Social Content and Episode Base Measures

	Model 1	Model 2	Model 3
Social & Geographical Location			
Demographics			
Age	0.99 (0.01)	—	—
Education (years)	0.77 (0.04)***	—	—
Household Income[1]	0.99 (0.01)*	—	—
Sample[2]: Prison	7.07 (2.18)***	—	—
Probation	5.34 (1.61)***	—	—
Stressful Life Events/Attitudes			
Financial Crisis	—	1.50 (0.25)*	—
Gendered Racism (higher=more)	—	1.00 (0.01)	—
Cultural Mistrust (higher=more)	—	1.01 (0.01)	—
Adult Victimization	—	3.07 (0.99)**	—
Personal Health Background			
Structural Context			
Insurance[3]: Private	—	—	0.24 (0.07)***
Public	—	—	0.82 (0.18)
Usual doctor	—	—	0.86 (0.16)
Trust in physician (higher=more)	—	—	1.01 (0.01)
Physical Health			
Poor self-rated health[4]	—	—	—
Medication for physical problem	—	—	—
Time			
Time	0.42 (0.14)**	0.50 (0.19)	0.31 (0.11)**
Time Squared	1.16 (0.07)*	1.13 (0.08)	1.24 (0.09)**
Number of obs	2208	2226	1822
Number of groups	642	643	643
Wald chi^2	94.68***	28.63***	35.06***
Intraclass Correlation	0.63	0.66	0.66

NOTE: Odds Ratio presented; standard errors in parentheses.
* = p < .05; ** = p < .01; *** = p < .001
1 Coded to the midpoint, in tens of thousands of dollars.
2 Reference category is "community (not currently involved with criminal justice system)".
3 Reference category is "no insurance".
4 Reference category is good, very good, or excellent health.

TABLE 5.1 (continued). Multilevel Mixed Effects Regression of Daily Drug Use on Social Content and Episode Base Measures

	Model 4	Model 5	Model 6
Social & Geographical Location			
Demographics			
Age	—	—	0.98 (0.01)*
Education (years)	—	—	0.85 (0.05)**
Household Income[1]	—	—	0.99 (0.01)
Sample[2]: Prison	—	—	4.73 (1.57)***
Probation	—	—	3.62 (1.14)***
Stressful Life Events/Attitudes			
Financial Crisis	—	—	1.35 (0.26)
Gendered Racism (higher=more)	—	—	0.99 (0.01)
Cultural Mistrust (higher=more)	—	—	1.01 (0.01)
Adult Victimization	—	—	1.58 (0.52)
Personal Health Background			
Structural Context			
Insurance[3]: Private	—	—	0.64 (0.20)
Public	—	—	0.81 (0.17)
Usual doctor	—	—	0.84 (0.16)
Trust in physician (higher=more)	—	—	1.03 (0.01)
Physical Health			
Poor self-rated health[4]	1.40 (0.26)	—	0.84 (0.16)
Medication for physical problem	0.67 (0.13)*	—	0.96 (0.21)
Mental Health			
Mental health problems (lifetime)	—	4.06 (1.07)***	2.17 (0.58)**
Depression (2 weeks+; past year/6M)	—	1.36 (0.24)	1.32 (0.27)
Active coping style (higher=more)	—	1.00 (0.02)	1.02 (0.02)
Nature of Event Illness Characteristics			
Substance Use			
Drug use problems (lifetime)	—	—	3.99 (1.12)***
Alcohol use (ever, past year/6M)	—	—	3.34 (0.66)***
Time			
Time	0.49 (0.15)*	0.55 (0.18)	0.41 (0.19)*
Time Squared	1.14 (0.07)*	1.12 (0.07)	1.19 (0.10)*
Number of obs	2229	2228	1785
Number of groups	643	642	637
Wald chi^2	13.14*	42.36***	147.18***
Intraclass Correlation	0.67	0.66	0.59

NOTE: Odds Ratio presented; standard errors in parentheses.
* = p < .05; ** = p < .01; *** = p < .001
1 Coded to the midpoint, in tens of thousands of dollars.
2 Reference category is "community (not currently involved with criminal justice system)".
3 Reference category is "no insurance".
4 Reference category is good, very good, or excellent health.

TABLE 5.2. Multilevel Mixed Effects Regression of Drug Abuse Treatment on Social Content and Episode Base Measures

	Model 1	Model 2	Model 3
Social & Geographical Location			
Demographics			
Age	1.00 (0.01)	—	—
Education (years)	0.97 (0.05)	—	—
Household Income[1]	0.98 (0.01)*	—	—
Sample[2]: Prison	1.88 (0.57)*	—	—
Probation	2.18 (0.66)*	—	—
Stressful Life Events/Attitudes			
Financial Crisis	—	0.96 (0.19)	—
Gendered Racism (higher=more)	—	1.01 (0.01)	—
Cultural Mistrust (higher=more)	—	1.00 (0.01)	—
Adult Victimization	—	3.02 (1.15)**	—
Personal Health Background			
Structural Context			
Insurance[3]: Private	—	—	0.43 (0.15)*
Public	—	—	0.94 (0.19)
Usual doctor	—	—	0.98 (0.20)
Trust in physician (higher=more)	—	—	0.98 (0.01)
Physical Health			
Poor self-rated health[4]	—	—	—
Medication for physical problem	—	—	—
Nature of Event Illness Characteristics			
Substance Use			
Drug use problems (lifetime)	8.49 (2.58)***	9.69 (2.80)***	9.75 (2.84)***
Alcohol use (ever, past year/6M)	—	—	—
Time			
Time	0.14 (2.58)***	0.21 (0.11)**	0.15 (0.07)***
Time Squared	1.29 (0.12)**	1.22 (0.12)	1.30 (0.13)**
Number of obs	2210	2228	1824
Number of groups	641	643	643
Wald chi^2	123.73***	127.68***	113.69***
Intraclass Correlation	0.32	0.31	0.23

NOTE: Odds Ratio presented; standard errors in parentheses.
* = p < .05; ** = p < .01; *** = p < .001
1 Coded to the midpoint, in tens of thousands of dollars.
2 Reference category is "community (not currently involved with criminal justice system)".
3 Reference category is "no insurance".
4 Reference category is good, very good, or excellent health.

TABLE 5.2 (continued). Multilevel Mixed Effects Regression of Drug Abuse Treatment on Social Content and Episode Base Measures

	Model 4	Model 5	Model 6
Social & Geographical Location			
Demographics			
Age	—	—	0.99 (0.01)
Education (years)	—	—	0.98 (0.05)
Household Income[1]	—	—	0.99 (0.01)
Sample[2]: Prison	—	—	1.80 (0.55)
Probation	—	—	1.87 (0.56)*
Stressful Life Events/Attitudes			
Financial Crisis	—	—	1.02 (0.22)
Gendered Racism (higher=more)	—	—	1.01 (0.01)
Cultural Mistrust (higher=more)	—	—	1.00 (0.01)
Adult Victimization	—	—	3.89 (1.72)**
Personal Health Background			
Structural Context			
Insurance[3]: Private	—	—	0.57 (0.21)
Public	—	—	0.84 (0.18)
Usual doctor	—	—	0.92 (0.20)
Trust in physician (higher=more)	—	—	1.00 (0.02)
Physical Health			
Poor self-rated health[4]	1.39 (0.28)	—	1.38 (0.30)
Medication for physical problem	0.81 (0.17)	—	1.02 (0.23)
Mental Health			
Mental health problems (lifetime)	—	1.28 (0.29)	0.99 (0.23)
Depression (2 weeks+ past yr/6M)	—	1.08 (0.23)	0.79 (0.18)
Active coping style (higher=more)	—	1.00 (0.02)	0.99 (0.02)
Nature of Event Illness Characteristics			
Substance Use			
Drug use problems (lifetime)	10.86 (3.13)***	10.26 (2.99)***	6.77 (2.10)***
Alcohol use (ever, past year/6M)	—	—	1.08 (0.23)
Time			
Time	0.17 (0.08)***	0.18 (0.08)***	0.17 (0.10)**
Time Squared	1.25 (0.12)*	1.25 (0.12)*	1.27 (0.15)*
Number of obs	2231	2230	1786
Number of groups	643	642	637
Wald chi^2	127.37***	125.92***	113.01***
Intraclass Correlation	0.31	0.32	0.24

NOTE: Odds Ratio presented; standard errors in parentheses.
* = p < .05; ** = p < .01; *** = p < .001
1 Coded to the midpoint, in tens of thousands of dollars.
2 Reference category is "community (not currently involved with criminal justice system)".
3 Reference category is "no insurance".
4 Reference category is good, very good, or excellent health.

TABLE 5.3. Multilevel Mixed Effects Regression of NA/CA Attendance on Social Content and Episode Base Measures

	Model 1	Model 2	Model 3
Social & Geographical Location			
Demographics			
Age	1.01 (0.01)	—	—
Education (years)	0.92 (0.05)	—	—
Household Income[1]	0.98 (0.01)*	—	—
Sample[2]: Prison	5.53 (1.81)***	—	—
Probation	4.35 (1.45)***	—	—
Stressful Life Events/Attitudes			
Financial Crisis	—	0.87 (0.16)	—
Gendered Racism (higher=more)	—	1.00 (0.01)	—
Cultural Mistrust (higher=more)	—	1.01 (0.01)	—
Adult Victimization	—	1.70 (0.59)	—
Personal Health Background			
Structural Context			
Insurance[3]: Private	—	—	0.44 (0.14)**
Public	—	—	0.50 (0.11)***
Usual doctor	—	—	1.10 (0.21)
Trust in physician (higher=more)	—	—	0.99 (0.01)
Nature of Event Illness Characteristics			
Substance Use			
Drug use problems (lifetime)	14.86 (4.72)***	23.87 (7.57)***	23.64 (7.65)***
Alcohol use (ever, past year/6M)	—	—	—
Time			
Time	0.70 (0.05)***	0.73 (0.06)***	0.76 (0.06)***
Number of obs	2210	2228	1824
Number of groups	641	643	643
Wald chi[2]	134.88***	124.78***	116.40***
Intraclass Correlation	0.44	0.47	0.43

NOTE: Odds Ratio presented; standard errors in parentheses.
* = p < .05; ** = p < .01; *** = p < .001
1 Coded to the midpoint, in tens of thousands of dollars.
2 Reference category is "community (not currently involved with criminal justice system)".
3 Reference category is "no insurance".
4 Reference category is good, very good, or excellent health.

TABLE 5.3 (continued). Multilevel Mixed Effects Regression of NA/CA Attendance on Social Content and Episode Base Measures

	Model 4	Model 5	Model 6
Social & Geographical Location			
Demographics			
Age	—	—	0.99 (0.01)
Education (years)	—	—	0.95 (0.05)
Household Income[1]	—	—	0.98 (0.01)*
Sample[2]: Prison	—	—	4.32 (1.42)***
Probation	—	—	3.27 (1.09)***
Stressful Life Events/Attitudes			
Financial Crisis	—	—	0.81 (0.16)
Gendered Racism (higher=more)	—	—	1.01 (0.01)
Cultural Mistrust (higher=more)	—	—	1.01 (0.01)
Adult Victimization	—	—	2.01 (0.73)
Personal Health Background			
Structural Context			
Insurance[3]: Private	—	—	0.55 (0.19)
Public	—	—	0.42 (0.09)***
Usual doctor	—	—	0.99 (0.20)
Trust in physician (higher=more)	—	—	1.00 (0.01)
Physical Health			
Poor self-rated health[4]	1.25 (0.24)	—	1.44 (0.30)
Medication for physical problem	1.16 (0.23)	—	1.15 (0.25)
Mental Health			
Mental health problems (lifetime)	—	0.99 (0.23)	0.80 (0.19)
Depression (2 weeks+ past yr/6M)	—	1.24 (0.24)	1.22 (0.26)
Active coping style (higher=more)	—	0.99 (0.02)	0.98 (0.02)
Nature of Event Illness Characteristics			
Substance Use			
Drug use problems (lifetime)	25.72 (8.11)***	25.32 (8.10)***	14.33 (4.76)***
Alcohol use (ever, past year/6M)	—	—	0.47 (0.09)***
Time			
Time	0.73 (0.05)***	0.75 (0.05)***	0.74 (0.07)**
Number of obs	2231	2230	1786
Number of groups	643	642	637
Wald chi^2	124.53***	123.98***	135.97***
Intraclass Correlation	0.47	0.47	0.38

NOTE: Odds Ratio presented; standard errors in parentheses.
* = p < .05; ** = p < .01; *** = p < .001
1 Coded to the midpoint, in tens of thousands of dollars.
2 Reference category is "community (not currently involved with criminal justice system)".
3 Reference category is "no insurance".
4 Reference category is good, very good, or excellent health.

Table 5.4. Multilevel GLLAMM Model of Categorical Illness Career Outcome on the Social Content & Episode Base Measures

	Illness Career Measures[1]					
	Begin Use		**Quit Use**		**Non-Use**	
Predictors	OR	SE	OR	SE	OR	SE
Social & Geographic Location						
Demographics						
Age	1.07	0.04	1.09*	0.04	1.14***	0.04
Education	1.22	0.23	1.29	0.23	1.29	0.23
Household Income	0.98	0.02	0.99	0.02	1.00	0.02
Sample: Prison[2]	25.38**	29.01	19.21**	21.32	16.33*	17.93
Sample: Probation[2]	15.63**	15.98	6.28	6.26	13.06**	12.78
Stressful Life Events						
Financial Crisis	0.92	0.48	0.80	0.40	0.45	0.22
Gendered Racism	0.78*	0.06	0.82*	0.06	0.82**	0.06
Cultural Mistrust	1.01	0.03	0.99	0.03	1.00	0.03
Adult Victim	0.57	0.56	0.58	0.54	0.98	0.90
Personal Health Background						
Structural Background						
Insurance: Public[3]	1.44	0.91	2.13	1.29	2.18	1.30
Insurance: Private[3]	0.88	0.93	1.58	1.53	3.26	3.02
Usual Doctor	2.70	1.39	2.89*	1.41	3.58***	1.70
Trust in Physician	0.96	0.04	0.96	0.04	0.96	0.03
General Physical Health						
Self-Rated Health	0.87	0.49	0.64	0.34	0.89	0.46
Medication for Phys. Prob.	2.56	1.60	1.88	1.13	1.78	1.04
Mental Health						
History of MH Problems	0.57	0.48	0.48	0.40	0.46	0.38
Depression	0.55	0.33	0.68	0.38	0.48	0.26
Active Coping	1.02	0.05	1.02	0.05	1.05	0.05
Event Illness Characteristics						
Substance Use						
History of Drug Problems	0.03**	0.03	0.06**	0.06	0.01***	0.01
Alcohol Use (Any)	0.03***	0.02	0.01***	0.01	0.01***	0.01
Number of Level 1 Units (Observations)	1159					
Number of Level 2 Units (Respondents)	505					
Log Likelihood	-987.01					
Variance Level 2	19.56 (4.75)					

[1] Excluded comparison category is "Continued Drug Use"
[2] Excluded comparison group is "Community Sample"
[3] Excluded comparison group is "No Insurance"

Table 5.5. Summary of Hypotheses and Findings in Chapter 5

Topic	Research Question	Hypothesis	Corroborated?
Demographics & Daily Drug Use	Do basic demographic measures significantly predict daily drug use?	As age, education, and income increase, the odds of daily drug use will decrease.	Partially
Criminal Justice Supervision & Daily Drug Use	Does criminal justice involvement predict daily drug use?	Criminal justice involvement will predict greater frequency of drug use.	Yes
Stressful Life Events & Daily Drug Use	Do stressful life events or attitudes shape daily drug use?	Experiencing stressful life events will predict using drugs daily.	Partially
Mental Health & Daily Drug Use	Do depressive symptoms and a history of mental health problems predict daily drug use in the low-income African American women of the B-WISE Study?	Controlling for active coping, those with a history of mental health problems or who report depressive symptoms will have higher odds of daily drug use compared to those who do not report mental health problems or depressive symptoms	Partially
Substance Use & Daily Drug Use	Do a history of drug use problems and any alcohol use predict daily drug use?	A history of drug problems and reported use of any alcohol are hypothesized to predict greater odds of using drugs daily.	Yes
Enabling Factors & Drug Abuse Treatment	Do enabling factors identified in previous research (income, insurance status, and trust in physician) predict drug abuse treatment?	Greater income and trust in physician, as well as having any kind of insurance will predict participating in drug abuse treatment.	No
Criminal Justice Supervision & Help-Seeking	Does criminal justice involvement predict either seeking drug abuse treatment or 12-Step meetings (i.e. Narcotics Anonymous or Cocaine Anonymous)?	Those from the prison and probation sample will be more likely to engage in either type of help-seeking, given that both populations are likely subject to routine monitoring, or because it may be a condition of their entry into the community.	Yes

Table 5.5 (continued). Summary of Hypotheses and Findings in Chapter 5

	Research Question	Hypothesis	Corroborated?
Substance Use & Help-Seeking	Do a history of drug problems and alcohol use shape patterns of help-seeking?	Lifetime history of drug use problems will predict either type of help-seeking, and those who are in NA/CA will have lower odds of alcohol use	Yes
Demographics & the Illness Career	Do basic demographic measures significantly predict patterns of drug use and non-use over time?	Older, more educated, and more affluent participants will be more likely to quit use or not use drugs across waves, compared to continuing use.	Partially
Criminal Justice Status & the Illness Career	Does being involved in the criminal justice system predict patterns of drug use and non-use over time?	Compared to African American women recruited as part of the community sample, women who are under criminal justice supervision will be significantly more likely to begin use, quit use, and not use drugs over the study timeframe, compared to continuing use.	Yes
Stressful Life Events & the Illness Career	Do stressful life events or attitudes shape patterns of drug use and non-use over time?	Stressful life events will negatively predict quitting use or non-drug use; rather, controlling for active coping orientation, these events will predict beginning substance use or continuing use across waves.	Partially
Mental Health & the Illness Career	Do depressive symptoms and a history of mental health problems predict patterns of drug use and non-use over time among the low-income African American women of the B-WISE Study?	Depression and a history of mental health problems will negatively predicted non-drug use and quitting use.	No
Substance Use & the Illness Career	Do a history of drug problems and alcohol use shape patterns of help-seeking?	Any alcohol use will negative predict non-drug use and quitting use. A history of drug problem will predict decreased odds of quitting use and abstaining from use during the study timeframe.	Yes

CHAPTER 6: RESULTS OF MODELS PREDICTING THE ILLNESS CAREER WITH THE SOCIAL NETWORK SYSTEM

While the previous chapter examined traditional social epidemiological predictors of substance use, treatment, and the illness career, the analyses that follow investigate how social relationships shape illness behavior through three major mechanisms. Building on the preliminary work of Chapter 5, these models focus on understanding how the social network system – including measures of normative influence, social control, and the social safety net – predict patterns of drug use and related help-seeking. As discussed previously, individuals' behavior is shaped by those around them through normative influences. Through observation of those in proximity to themselves (e.g. in the home) or from whom they rely on for information about health (e.g. friends, doctors), individuals learn information about appropriate health behaviors and model their behavior according. Social control works more directly than this, and refers to the ways network ties may attempt to openly guide an individual's behavior (e.g. encouragement to use health services) or the ways in which the expectations of alters shape individual health behaviors (e.g. expectations and responsibilities of being a mother may lead to positive health behaviors). The social safety net represents the resources individuals have at their disposal to manage everyday life and stressful events. Importantly, social safety net resources like social support foster feelings of belonging and purpose.

The influence of social relationships is at the very core of the Network Episode Model, and health and help-seeking decisions are made through dynamic interactions with network ties and the activation of support resources. However, it is unclear how the core social components of the NEM shape drug use and related help-seeking among low-

income African American women. The goal of these models is to systematically test the significance of the social network system in predicting African American women's drug use – including patterns of use over time and drug use severity – as well as the role of network mechanisms in predicting both drug abuse help-seeking and 12-Step attendance.

Daily Drug Use

[Table 6.1 Here]

To assess drug use severity or frequency, daily drug use was used. In accordance with the Network Episode Model, it is hypothesized that the social support system will significantly predict daily drug use. Specifically, negative normative influences – such as family history of drug problems or living with a person who has drug or alcohol problems – are expected to predict using drugs daily. Additionally, greater levels of social control are expected to predict a lower likelihood of using drugs daily, as it is anticipated that factors like having children, being married, and attending church expose the women in this research to messages discouraging illicit drug use. Further, because social support resources are beneficial for managing life hassles and feeling a sense of belonging, it is expected that higher levels of support will be associated with a lower likelihood of daily drug use.

Multilevel mixed effects logistic regression is used to examine the influence of social network system predictors on daily drug use, with both time and time-squared included in all models as controls. Seven restricted models are performed with groups of related variables tested together and a full model including all variables is presented. As Models 1, 2, and 3 demonstrate, normative influences predict daily drug use among the low-income African American women in the B-WISE study. Specifically, the odds of

daily drug use during the course of the study are 2.19 times greater for women who have parents with a history of drug problems ($p<0.01$). Results also indicate that living with a person who has a drug or alcohol problem increases the odds of daily drug use by 1.72 ($p<0.01$). Other variables of interest, including sources of health information, do not significantly predict daily drug use.

Models 4 and 5 show the effects of four measures of social control and regulation on daily drug use. As hypothesized, measures representing higher levels of social control have a protective effect, reducing the predicted odds of daily drug use. Women who are married or living as married and those who are a member of an ethnic community have lower estimated odds of using drugs daily compared to those who are unmarried or not members of an ethnic community (OR=0.46, $p<0.05$ and OR=0.7, $p<0.05$, respectively). Neither having a minor child nor membership in a church or religious community significantly predict daily drug use. Contrary to expectations, none of the social safety net measures included in Models 6 and 7 achieve significance, and Model 7 itself is not significant according to the Wald chi-square test for overall model significance.

As shown, all significant relationships from the restricted models hold in the final model, with the exception of parental history of drug problems. This variable becomes only marginally significant (OR=1.83, $p<0.06$). Thus, the effects of both normative influences and social control have enduring predictive power both independently and when included within a single full model predicting daily drug use. Additionally, the intraclass correlation is moderately strong within each individual over time (rho = 0.64), suggesting that tendency to engage in daily drug use is relatively stable across waves of the study for each participant.

Help-Seeking

Help-seeking behaviors, especially as they relate to contentious health problems like substance abuse, are predicted to be significantly shaped by the social network system. Though the NEM predicts the social network system will influence help-seeking, the direction of this effect varies depending on the resources and attitudes flowing through networks and the quality and nature of relationships. For example, networks can support or discourage help-seeking, advocate certain types of help over others, or provide conflicting advice. For these analyses, it is hypothesized that sources of health information will significantly predict substance abuse help-seeking. Particularly, those who received health information from a doctor will be more likely to seek drug abuse treatment or attend 12-Step meetings (Narcotics Anonymous or Cocaine Anonymous). It is also hypothesized that those who are married or have a minor child will be more likely to seek either drug abuse or mutual help (NA/CA) given role-related responsibilities to their partner or children. Finally, it is hypothesized that as perceived social support increases, regardless of the source, it will predict help-seeking. Because high scores on this measure of social support capture positive perceptions of trust and integration with network members, it is anticipated that this support will serve to encourage positive health behaviors and recovery, rather than facilitate negative health behaviors like continued drug use (Tracy et al. 2010).

Drug Abuse Treatment

[Table 6.2 Here]

Table 6.2 presents the results of the multilevel mixed effects logistic regression of attending drug abuse treatment on select normative influence, social control, and social

safety net measures. As Models 1, 2, and 3 indicate, normative influence measures significantly predict attending drug abuse treatment. Specifically, having a parent with a history of drug problems and living with a person with drug or alcohol problems increase a respondent's predicted odds of attending drug abuse treatment by a factor of 1.94 and 2.14, respectively ($p<0.05$ and $p<0.001$). Participant cited sources of health information do not achieve significance in Model 3 and, contrary to expectations, do not appear to predict utilizing drug abuse treatment services.

The effect of social control measures are assessed in Models 4 and 5. As anticipated, results indicate that low-income African American women who are parents to a child under the age of 18 are predicted to be more likely to attend drug abuse treatment than those women without a minor child (OR=1.66, $p<0.05$). Neither marital status nor the community membership measures achieve significance.

The significance of the social safety net measures are examined in Models 6 and 7. While social support from family and number of friends do not achieve significance, social support from friends appears to have a negative effect on attending drug abuse treatment. Specifically, as social support from friends increases, the predicted odds of attending drug abuse treatment decreases (OR=0.98, $p<0.05$).

Model 8 is the full model, including all measures from the restricted analyses. As the full model shows, only the normative influence measures significant in the restricted analyses remain predictors in the full model. Thus, it appears that when considering drug abuse treatment among low-income African American women, measures of normative influence – namely, family history of drug problems and living with substance users – may be the most important network features. The intraclass correlation is relatively low

(rho = 0.37), suggesting only modest correlation between responses across waves within any given participant.

Narcotics Anonymous and Cocaine Anonymous Attendance

[Table 6.3 Here]

Table 6.3 presents the results of the multilevel mixed effects logistic regression of attending Narcotics or Cocaine Anonymous (NA or CA) on select normative influence, social control, and social safety net measures. As with drug abuse treatment seeking, living with someone who has a drug or alcohol problem significantly predicts this form of help seeking (OR=2.07, $p<0.001$). Aligning with the previously stated hypothesis, citing a physician as a source of health information predicts an increase in the likelihood of attending NA or CA meetings (OR=1.44, $p<0.001$).

Model 4 indicates that two measures of social control significantly predict attending NA or CA meetings. According to these results, low-income African American women who are married or living as married are estimated to be less likely to attend 12-Step meetings when compared to women who are single, divorced, or widowed (OR=0.46, $p<0.05$). Conversely, women who have minor children are predicted to be more likely to attend these meetings than women who do not have children under the age of 18 (OR=1.79, $p<0.05$).

According to the full model, the significant effects of variables in the restricted models hold, with the exception of having a physician as a source of health information and number of friends. As with the analyses examining drug abuse treatment, the results of Model 8 indicate mixed support for the initial stated hypotheses. As in Table 6.2, it is surprising that neither sources of health information nor social support predict help-

seeking. Further, while the significance of marital status and having a minor child support the core relationships proposed by the NEM, marital status appears to have an unanticipated negative influence on help-seeking. The intraclass correlation is moderately strong (rho = 0.63), suggesting a relatively high correlation between responses across waves within any given participant.

Illness Career Measures

[Table 6.4 Here]

Patterns of drug use over time are also important outcomes that are hypothesized to be predicted by the social network system. As previously described, Stata's *gllamm* command is used to test the effects of normative influences, social control, and the social safety net on the categorical illness career outcome measure. Odds ratios for three illness career outcomes – beginning use, quitting use, and non-use – are presented, with continuing use across waves serving as the excluded reference category.

The Network Episode Model suggests that these social network system measures will predict patterns of substance use and recovery from dependence over time, but as with the previous analyses in this chapter, the direction and magnitude of these effects is unclear among low-income African American women. Past research does, however, suggest several hypotheses. First, based on extant substance use research, it is hypothesized that participants with a family history of drug problems will be more likely to continue drug use over time and be less likely to abstain from drug use. Similarly, living with someone who has a drug or alcohol problem will also predict continued drug use, and be associated with lower odds of abstaining from drug use. It is also hypothesized that citing a physician as a source of health information will predict not

using drugs and quitting drug use, compared to continuing drug use. Greater social control, particularly church membership, is hypothesized to be protective from drug use. Finally, controlling for parental history of drug problems, greater levels of social support from family members are hypothesized to predict quitting drug use and abstaining from drug use, compared to continuing drug use.

The results presented in Table 6.4 demonstrate mixed support for these hypotheses but make clear, in line with the NEM, that a number of the social network system measures predict the illness career outcomes examined. As was hypothesized, African American women who have at least one parent with a history of drug problems are significantly less likely to quit using drugs (OR = 0.21, $p<0.05$) or maintain non-drug use (OR = 0.14, $p<0.01$) across waves during the study timeframe when compared to those who continued drug use across waves. Somewhat surprisingly, those with a parental history of drug problems are predicted to be significantly less likely to begin using drugs during the study timeframe, when compared to those who continued use across waves (OR = 0.22, $p<0.05$). This may be because they are more likely to already be using drugs and thus would be unlikely to report not using drugs at any prior wave during the course of their participation in the B-WISE Study. Parental history of mental health problems also predicts abstaining from drug use such that those with a parental history of mental health problems are less likely to report not using drugs across waves, compared to continuing use (OR = 0.30, $p<0.05$).

As expected, those who live with a person who has a drug or alcohol problem are predicted to be significantly less likely to be non-drug using compared to continuing use across study waves (OR = 0.32, $p<0.01$). Importantly, as anticipated, having a doctor as a

source of health information predicts non-use (OR = 2.57, $p<0.05$) and quitting drug use (OR = 2.65, $p<0.05$) compared to continuing use. Although not hypothesized, having a doctor as a source of health information also predicts beginning drug use, compared to continued use (OR =3.29, $p<0.05$). This may be due to women relying on a physician for health information being more likely to never use drugs during the course of the study, while those who do not receive health information from a doctor are more likely to continue drug use across waves.

Because they are so strongly predictive of the outcome measures, marital status and parental status are excluded from these analyses. That is, there is insufficient variation in the distribution of marital and parental status across the categorical outcome variable to accurately estimate unbiased coefficients. Specifically, the majority of women who are married and have children are also non-drug using across waves. Contrary to expectations, membership in a church community is not a significant protective factor against drug use.

Finally, only one of the social integration and safety measures significantly predicts dynamic patterns of drug use over the illness career. Results indicates that as social support from friends increases, the predicted odds of beginning use (OR = 1.06, $p<0.05$), quitting use (OR = 1.05, $p<0.05$), and not using drugs (OR = 1.06, $p<0.01$) increase, compared to continuing use. Though it may seem somewhat contradictory to the other significant results that perceived social support from friends predicts beginning drug use during the study, it is important to keep in mind the reference category. Specifically, participants with more supportive friendships have a greater likelihood of

not using drugs at some point during the study, compared to those who perceive less support.

Summary

[Table 6.5 Here]

The purpose of this chapter was to test the significance of the social network system in predicting patterns of drug use and help-seeking over the course of the illness career. The effects of normative influences, social control, and the social safety net on the illness career were investigated. Broadly, the findings of this chapter provide support for the Network Episode Model, as they indicate that a variety of social network system measures play an important role in predicting daily drug use, both drug abuse treatment and 12-Step help-seeking, and the illness career. Though these findings are theoretically proposed by the NEM, the significance and direction of some of these effects were unexpected. As summarized in Table 6.5, the results of this chapter provide mixed support of the hypothesized relationships between the illness career and social network system. These results demonstrate several important findings regarding drug use and help-seeking among the low-income African American women of the B-WISE study.

First, as expected, measures of normative influence play a significant and important role across all of these analyses. Having a parental history of drug problems and living with someone who currently has drug or alcohol problems strongly predicts regular drug use and continuing drug use over time. Additionally, findings indicate that those who have a family history of drug problems were both significantly less likely to quit using drugs or maintain periods of non-drug use across waves, compared to continuing drug use, while participating in the B-WISE study. While this research posits

that there is an environmental normative influence mechanism at work here, it is also possible that this relationship is partially explained by some hereditary genetic characteristic which increases vulnerability to substance abuse problems and/or resistant to treatment. Perhaps because they are so predictive of drug use to begin with, these measures of normative influences also predict seeking drug abuse treatment.

It is noteworthy that having a doctor as a source of health information is predictive of a number of positive outcomes in the low-income African American of the B-WISE Study. Not only were these women more likely to quit drug use or abstain from use relative to those that continued drug use across waves during the study timeframe, they were somewhat more likely to attend Narcotics or Cocaine Anonymous meetings during the course of the study. These findings reveal the importance of contact with a physician, underscoring the positive impact such contact can have on the health behavior outcomes assessed in this chapter.

As important as the connections between the network system and illness career outcomes among low-income African American women revealed by these analyses are, the hypothesized relationships between variables not corroborated in this chapter are also telling. Surprisingly, despite the documented importance of religion and the church in many African American communities, results of this chapter failed to support the hypothesized protective effect of church membership on the outcome measures assessed. That is, though other aspects of social control or regulation significantly predict both daily drug use and help-seeking, membership in a church community does not predict these behaviors. Further, despite relatively high levels of social support from family members reported by study participants, perceived social support from family members

never achieved significance in the models of this chapter. This may be because there is insufficient variation in family social support across study participants to detect significant effects of this variable. Receiving health advice from family members was also non-significant across all models. In all, these results indicate that normative influences and social control appear to be better predictors of drug use patterns and related help-seeking than social integration.

The next chapter will further investigate the social networks of the low-income African American women of the B-WISE study. Specifically, it will examine how network size, structure, and function may be predicted by demographic characteristics, stressful life events, health background, and substance use. Chapter 7 will build on the findings of this chapter by providing insight into the individual characteristics that predict such outcomes as getting health information from a doctor or having social network ties that encourage help-seeking. This is critically important because while much research has been devoted to examining the outcomes of social networks and relationships, fewer studies have investigated factors that influence characteristics of social networks in the context of health.

TABLE 6.1. Multilevel Mixed Effects Regression of Daily Drug Use on the Social Network System

	Model 1	Model 2	Model 3	Model 4
Normative Influence				
Family Background				
Parent(s): Drug Prob. History	2.19 (0.64)**	—	—	—
Parent(s): M.H. Prob. History	1.21 (0.38)	—	—	—
Living Situation				
W/ Person w/ Drg/Alc. Prob.	—	1.72 (0.31)**	—	—
Sources of Health Info				
Family	—	—	1.29 (0.21)	—
Friends	—	—	0.96 (0.16)	—
Doctor	—	—	0.89 (0.14)	—
Social Control				
Marital and Family Status				
Married//Living as Married	—	—	—	0.46 (0.17)*
Minor Child	—	—	—	1.36 (0.34)
Community Membership				
Member Ethnic Community	—	—	—	—
Member Church Community	—	—	—	—
Time				
Time	0.42 (0.14)**	0.53 (0.16)*	0.50 (0.15)*	0.47 (0.14)*
Time Squared	1.18 (0.08)*	1.13 (0.07)*	1.14 (0.07)*	1.14 (0.07)*
Number of obs	1791	2235	2237	2237
Number of groups	515	643	643	643
Wald chi^2	15.66**	16.09**	10.10	12.53*
Intraclass Correlation	0.65	0.67	0.67	0.67

NOTE: Odds Ratio presented; standard errors in parentheses.
* = $p < .05$; ** = $p < .01$; *** = $p < .001$

TABLE 6.1 (continued). Multilevel Mixed Effects Regression of Daily Drug Use on the Social Network System

	Model 5	Model 6	Model 7	Model 8
Normative Influence				
Family Background				
Parent(s): Drug Prob. History	—	—	—	1.83 (0.58)
Parent(s): M.H. Prob. History	—	—	—	1.10 (0.36)
Living Situation				
W/ Person w/ Drg/Alc. Prob.	—	—	—	1.81 (0.41)***
Sources of Health Info				
Family	—	—	—	1.46 (0.29)
Friends	—	—	—	0.95 (0.20)
Doctor	—	—	—	0.95 (0.18)
Social Control				
Marital and Family Status				
Married//Living as Married	—	—	—	0.30 (0.12)**
Minor Child	—	—	—	1.26 (0.37)
Community Membership				
Member Ethnic Community	0.71 (0.11)*	—	—	0.65 (0.12)*
Member Church Community	0.84 (0.14)	—	—	1.04 (0.21)
Social Safety Net				
Social Support				
Family (squared)	—	0.99 (0.01)	—	1.00 (0.01)
Friends (squared)	—	1.00 (0.01)	—	1.00 (0.01)
Network Size				
Number of Friends (nat. log)	—	—	0.95 (0.14)	1.14 (0.18)
Time				
Time	0.48 (0.15)*	0.50 (0.15)*	0.63 (0.21)	0.66 (0.25)
Time Squared	1.14 (0.07)*	1.14 (0.07)*	1.08 (0.07)	1.10 (0.08)
Number of obs	2229	2229	1915	1540
Number of groups	643	643	605	483
Wald chi^2	13.06*	10.57*	2.41	35.32**
Intraclass Correlation	0.67	0.67	0.69	0.64

NOTE: Odds Ratio presented; standard errors in parentheses. * = p < .05; ** = p < .01; *** = p < .001

TABLE 6.2. Multilevel Mixed Effects Regression of Drug Abuse Treatment on the Social Network System[1]

	Model 1	Model 2	Model 3	Model 4	Model 5
Normative Influence					
Family Background					
Parent(s): Drug Prob. History	1.94 (0.52)*	—	—	—	—
Parent(s): M.H. Prob. History	1.35 (0.38)	—	—	—	—
Living Situation					
W/ Person w/ Drg/Alc. Prob.	—	2.14 (0.42)***	—	—	—
Sources of Health Info					
Family	—	—	0.82 (0.17)	—	—
Friends	—	—	1.21 (0.27)	—	—
Doctor	—	—	0.99 (0.20)	—	—
Social Control					
Marital and Family Status					
Married//Living as Married	—	—	—	0.63 (0.22)	—
Minor Child	—	—	—	1.66 (0.38)*	—
Community Membership					
Member Ethnic Community	—	—	—	—	0.83 (0.16)
Member Church Community	—	—	—	—	0.93 (0.19)
Time					
Time	0.16 (0.08)***	0.21 (0.09)***	0.16 (0.07)***	0.17 (0.07)***	0.17 (0.07)***
Time Squared	1.28 (0.13)*	1.22 (0.11)*	1.26 (0.12)*	1.26 (0.12)*	1.26 (0.12)*
Number of obs	1792	2237	2239	2239	2231
Number of groups	515	643	643	643	643
Wald chi^2	67.99***	87.47***	77.54***	80.48***	77.45***
Intraclass Correlation	0.44	0.42	0.45	0.44	0.44

NOTE: Odds Ratio presented; standard errors in parentheses.
* = $p < .05$; ** = $p < .01$; *** = $p < .001$
[1] Significant relationships hold when individual history of drug problems is included as a control.

TABLE 6.2 (continued). Multilevel Mixed Effects Regression of Drug Abuse Treatment on the Social Network System[1]

	Model 6	Model 7	Model 8
Normative Influence			
Family Background			
Parent(s): Drug Prob. History	—	—	1.92 (0.55)*
Parent(s): M.H. Prob. History	—	—	1.08 (0.32)
Living Situation			
W/ Person w/ Drg/Alc. Prob.	—	—	2.41 (0.60)***
Sources of Health Info			
Family	—	—	0.85 (0.22)
Friends	—	—	1.04 (0.28)
Doctor	—	—	1.33 (0.34)
Social Control			
Marital and Family Status			
Married//Living as Married	—	—	0.56 (0.24)
Minor Child	—	—	1.47 (0.40)
Community Membership			
Member Ethnic Community	—	—	1.04 (0.25)
Member Church Community	—	—	1.01 (0.25)
Social Safety Net			
Social Support			
Family (squared)	1.00 (0.01)	—	1.00 (0.01)
Friends (squared)	0.98 (0.01)*	—	1.00 (0.01)
Network Size			
Number of Friends (natural log)	—	0.98 (0.17)	1.04 (0.20)
Time			
Time	0.17 (0.08)***	0.20 (0.10)**	0.25 (0.14)*
Time Squared	1.25 (0.12)*	1.20 (0.12)	1.17 (0.13)
Number of obs	2231	1916	1540
Number of groups	643	605	483
Wald chi^2	80.22***	61.76***	67.72**
Intraclass Correlation	0.44	0.44	0.37

NOTE: Odds Ratio presented; standard errors in parentheses.
* = p < .05; ** = p < .01; *** = p < .001
[1] Significant relationships hold when individual history of drug problems is included as a control.

TABLE 6.3. Multilevel Mixed Effects Regression of NA/CA Attendance on the Social Network System[1]

	Model 1	Model 2	Model 3	Model 4	Model 5
Normative Influence					
Family Background					
Parent(s): Drug Prob. History	1.51 (0.46)	—	—	—	—
Parent(s): M.H. Prob. History	1.12 (0.36)	—	—	—	—
Living Situation					
W/ Person w/ Drg/Alc. Prob.	—	2.07 (0.40)***	—	—	—
Sources of Health Info					
Family	—	—	0.87 (0.16)	—	—
Friends	—	—	1.13 (0.23)	—	—
Doctor	—	—	1.44 (0.27)*	—	—
Social Control					
Marital and Family Status					
Married//Living as Married	—	—	—	0.46 (0.18)*	—
Minor Child	—	—	—	1.79 (0.46)*	—
Community Membership					
Member Ethnic Community	—	—	—	—	1.05 (0.19)
Member Church Community	—	—	—	—	1.13 (0.22)
Social Safety Net					
Social Support					
Family (squared)	—	—	—	—	—
Friends (squared)	—	—	—	—	—
Network Size					
Number of Friends (log)	—	—	—	—	—
Time					
Time	0.71 (0.05)***	0.76 (0.05)***	0.73 (0.05)***	0.72 (0.05)***	0.72 (0.05)***
Number of obs	1792	2237	2239	2239	2231
Number of groups	515	643	643	643	643
Wald chi^2	23.18***	37.11***	27.71***	31.19***	23.91***
Intraclass Correlation	0.60	0.60	0.60	0.60	0.61

NOTE: Odds Ratio presented; standard errors in parentheses. * = p < .05; ** = p < .01; *** = p < .001

[1] Significant relationships hold when individual history of drug problems is included as a control.

TABLE 6.3 (continued). Multilevel Mixed Effects Regression of NA/CA Attendance on the Social Network System[1]

	Model 6	Model 7	Model 8
Normative Influence			
Family Background			
Parent(s): Drug Prob. History	—	—	1.57 (0.57)
Parent(s): M.H. Prob. History	—	—	0.98 (0.37)
Living Situation			
W/ Person w/ Drg/Alc. Prob.	—	—	2.30 (0.60)**
Sources of Health Info			
Family	—	—	0.81 (0.20)
Friends	—	—	1.10 (0.30)
Doctor	—	—	1.42 (0.35)
Social Control			
Marital and Family Status			
Married//Living as Married	—	—	0.19 (0.11)**
Minor Child	—	—	2.09 (0.72)*
Community Membership			
Member Ethnic Community	—	—	1.11 (0.26)
Member Church Community	—	—	1.30 (0.33)
Social Safety Net			
Social Support			
Family (squared)	1.00 (0.01)	—	1.00 (0.01)
Friends (squared)	1.00 (0.01)	—	1.01 (0.01)
Network Size			
Number of Friends (natural log)	—	1.42 (0.24)*	1.41 (0.28)
Time			
Time	0.72 (0.05)***	0.68 (0.05)***	0.70 (0.07)***
Number of obs	2231	1916	1540
Number of groups	643	605	483
Wald chi^2	24.09***	28.36***	48.25***
Intraclass Correlation	0.60	0.64	0.63

NOTE: Odds Ratio presented; standard errors in parentheses.
* = $p < .05$; ** = $p < .01$; *** = $p < .001$
[1] Significant relationships hold when individual history of drug problems is included as a control.

Table 6.4. Multilevel GLLAMM Model of Categorical Illness Career Outcome on the Social Network System

	Illness Career Measures[1]					
	Begin Use		**Quit Use**		**Non-Use**	
Predictors	OR	SE	OR	SE	OR	SE
Normative Influence						
Family Background						
Parent(s): Drug Prob. History	0.22*	0.14	0.21*	0.13	0.14**	0.09
Parent(s): M.H. Prob. History	0.43	0.27	0.39	0.23	0.30*	0.18
Living Situation						
With Person w/ Drug/Alc. Prob.	0.83	0.45	0.76	0.39	0.32**	0.16
Sources of Health Information						
Family	2.01	1.04	1.77	0.86	1.32	0.61
Friends	0.54	0.30	0.43	0.23	0.44	0.22
Doctor	3.29*	1.54	2.65*	1.16	2.57*	1.06
Social Control						
Marital and Family Status						
Married/Living as Married	—	—	—	—	—	—
Minor Child	—	—	—	—	—	—
Community Membership						
Ethnic Community	1.10	0.52	1.31	0.59	1.66	0.71
Church Community	0.59	0.30	1.01	0.50	1.25	0.59
Social Safety Net						
Social Support						
Family (Squared)	1.02	0.02	1.03	0.02	1.02	0.02
Friends (Squared)	1.06*	0.03	1.05*	0.03	1.06**	0.02
Network Size						
Number of Friends (natural log)	1.11	0.43	1.24	0.45	1.31	0.33
Number of Level 1 Units (Observations)	1112					
Number of Level 2 Units (Respondents)	420					
Log Likelihood	-1029.51					
Variance Level 2	64.89 (15.79)					

Note: Marital and Family Status measures were excluded from these analyses.
[1] Excluded comparison category is "Continued Drug Use

Table 6.5. Summary of Hypotheses and Findings in Chapter 6

Topic	Research Question	Hypothesis	Corroborated?
Negative Normative Influence & Daily Drug Use	Do negative normative influences previously found to predict drug use in other populations predict daily drug use among B-WISE study participants?	Negative normative influences – like family history of drug problems and living with a person with a drug/alcohol problem – will predict daily drug use in low-income African American women.	Yes
Social Control / Integration & Daily Drug Use	Do measures of social control and social integration predict lower likelihood of using drugs daily?	Greater levels of social control and social integration will be protective against daily drug use.	Partially
Sources of Health Info & Help-Seeking	Is citing a doctor as a source of health information a significant predictor of whether or not a woman seeks drug abuse treatment or mutual help (NA/CA)?	Those who receive health information from a doctor will be significantly more likely to seek help of any kind for substance abuse problems.	Partially
Family Structure & Help-Seeking	Is being a parent or spouse predictive of help-seeking?	Having a minor child and being married will significantly predict entering drug abuse treatment and attending mutual help (NA/CA) meetings.	Partially
Social Support & Help-Seeking	Does having a strong social safety net predict help-seeking among low-income African American women?	Social support, regardless of the source, will predict help-seeking.	No
Normative Influence & the Illness Career	Do negative normative influences significantly predict patterns of drug use (i.e. the illness career) among participants?	Having a family history of drug problems and living with a person with a drug or alcohol problem will positively predict continued drug use and beginning drug use, while negatively predict quitting or abstaining from drug use.	Yes
Sources of Health Info & the Illness Career	Is citing a doctor as a source of health information a significant predictor of patterns of drug use among B-WISE participants?	Having a physician as a source of health information will predict not using drugs and quitting drug use, compared to continuing drug use.	Yes
Social Control & the Illness Career	Do measures of social control predict the illness career?	Social control, particularly church membership, will be protective from continuing drug use and beginning drug use.	No

Table 6.5 (continued). Summary of Hypotheses and Findings in Chapter 6

	Research Question	Hypothesis	Corroborated?
Social Support & the Illness Career	Does perceived social support from family members significantly predict illness career measures?	Controlling for parental history of drug problems, social support from family members will predict quitting drug use and abstaining from drug use, compared to continuing drug use.	No

CHAPTER 7: RESULTS OF MODELS PREDICTING THE SOCIAL NETWORK SYSTEM WITH SOCIAL CONTENT & EPISODE BASE MEASURES

Just as the previous two chapters have examined pathways outlined by the Network Episode Model, the next two chapters will further investigate the social network system and how it is shaped by both social content measures (Chapter 7) and help-seeking, drug use, and the illness career (Chapter 8). Rather than considering the social network system as a predictor of substance use behaviors and help-seeking, these two chapters will examine the social network system as an outcome. As discussed in Chapter 2, the Network Episode Model posits a dynamic relationship between its three core components: the social content and episode base (e.g. demographics and participant health status), the social network system (e.g. social support), and the illness career (e.g. patterns of treatment seeking). Importantly, just as individuals' social network systems shape outcomes, they too are shaped by other aspects of the model. In this chapter, social network system measures are examined as dependent variables, shaped by individual's the social content and episode base – which includes participants' socio-demographic characteristics, stressful life events, health status, and substance use history. This represents a unique contribution to the literature, as social networks are rarely considered as outcomes of interest.

The primary goal of Chapter 7 is to determine which demographic and other social content measures predict ego network characteristics at follow-up. Understanding how factors like age, level of education, stressful life events, and health status influence ego network structure (e.g. size and frequency of discussion) and what is exchanged via network ties (e.g. encouragement to seek help, social support) is an essential part of this

research because it provides the necessary context for understanding how networks influence behavior and vice versa. For example, it is useful to know from an intervention and prevention standpoint which characteristics might predict receiving greater levels of encouragement from health matters ties to use health services. Further, considering these relationships is crucial given the focus of this research on an understudied group – low-income African American women – for whom the effects of such factors on ego network structure and content are largely unexamined.

Normative Influence

Network Size & Structure

Network size and frequency of discussion with network ties are two important measures of normative influence. Generally speaking, larger networks with more frequent discussion have a stronger potential normative influence than smaller, less active networks. For the purpose of this research, the size of and the frequency of discussion with health matters network members at Wave 4 are predicted with time invariant measures from Wave 1 (e.g. sample, drug problem history) and time variant (e.g. income, alcohol use) measures from Wave 3. There are a number of anticipated relationships between mean health matters network size and mean frequency of discussion at the final wave and social content and episode base measures. First, because criminal justice involvement can disrupt networks it is hypothesized that criminal justice involvement of any kind will predict smaller health matters networks and lower frequency of discussion, compared to women recruited from the community.

It is also hypothesized that health problems or poor health will predict having larger health networks and greater frequency of discussion with these networks at follow-

up. Serious health problems, like depression, can fragment networks and diminish interaction with alters. However, since this research is considering specifically health matters network, it is expected that women with worse health will be more likely to confer with others regarding their health problems, and will therefore have larger health matters networks, with more frequent discussion.

[Table 7.1 Here]

Table 7.1 display the results of the significant Poisson regression models of mean health matters network size at Wave 4 on social content measures. For the sake of brevity and clarity, only models which achieve overall significance – as indicated by likelihood ratio chi-square significance – are presented, and incidence rate ratios (IRRs) and standard errors are shown. As Table 7.1 demonstrates, contrary to hypotheses, a number of social content and episode base measures do not significantly predict Wave 4 health matters network size. Specifically, stressful life events, structural background, and general physical and mental health at earlier waves do not predict network size at the final wave. Two significant models are presented; one which includes basic demographics and another which includes substance use measures. According to Model 1, as hypothesized, women who were incarcerated at baseline are predicted to have a smaller mean network size at Wave 4 compared to women in the community at baseline (IRR = 0.70, $p<0.01$). Though incarceration is significant, as expected, being on probation at baseline does not significantly predict Wave 4 health matters network size.

Contrary to expectations, reported physical and mental health indicators captured at Wave 3 do not predict health matters network size at Wave 4. However, the model including substance use history did achieve overall significance. Though any alcohol use

at Wave 3 does not predict health matters network size at Wave 4, a history of drug problems is significant such that holding alcohol use at Wave 3 constant, women with a history of drug problems have smaller mean health matters networks at Wave 4 compared to women who do not have a history of drug use (IRR = 0.70, $p<.0.01$). A possible explanation for this finding may be that the disruptive effect of illicit drug use on networks lasts over time, such that these women may have smaller network even after they have ceased drug use. However, since this measure does not indicate how long ago these drug problems were, or if they are ongoing, this interpretation is largely speculative. The effects of drug use on networks, however, will be examined in further detail in the following chapter.

[Table 7.2 Here]

Table 7.2 presents the significant regression models predicting health matters network mean discussion frequency at Wave 4 on social content measures. As with the previous table, only models which achieve overall significance (based on the significance of the F-statistic) are presented. Coefficients and standard errors are shown. According to Model 1, both household income and recruitment as part of the probation sample significantly predict the mean frequency of health matters network discussion at Wave 4. Specifically, controlling for the other variables in the model, each unit increase in household income at Wave 3 predicts a 0.01 unit decrease in the reported mean frequency of discussion with health matters network members at Wave 4 ($p<0.05$). Contrary to what was anticipated, holding the other variables in the model constant, being recruited for the study while on probation predicts a higher mean frequency of discussion with health matters network ties at Wave 4 by 0.47, compared to women in the community sample

($p<0.05$). Overall, this model indicates that less affluent women who are under criminal justice supervision may discuss health matters with greater overall frequency than wealthier women not under criminal justice supervision.

Models 2 and 3 illustrate the influence of physical and mental health status at earlier waves on the frequency of discussion with health matters network ties at Wave 4. As was hypothesized, indicators of poorer mental and physical health at Wave 3 predict a greater mean frequency of discussion with health matters network ties at Wave 4. A measure of negative physical health at Wave 3, taking medication for a physical problem, predicts a higher mean frequency of discussion with health matters network members at Wave 4, compared to women who did not report taking medication for a physical problem at Wave 3 ($\beta = 0.46$, $p<0.01$). Similarly, reporting depressive symptoms at Wave 3 predicts a higher mean frequency of discussion with health matters network members at Wave 4 by 0.61, holding covariates constant ($p<0.01$).

The final model, Model 4, shows the impact of substance use on frequency of discussion with health matters network ties at Wave 4. While alcohol use at Wave 3 is not significant, a history of drug problems did achieve significance in this model. That is, compared to African American women without a history of drug problems, having a history of drug problems predicts a higher mean frequency of discussion with health matters network members at Wave 4 by 0.36, holding any alcohol use constant ($p<0.05$). Coupled with the findings regarding network size, these results suggest that women with a history of drug problems have smaller health matters networks, but discussion with these network ties is more frequent.

Sources of Health Information

Another important indicator of social influence, beyond the size and frequency of discussion with health matters networks, are the characteristics of those who make up these networks. The influence of friends, family members, and others may be significantly different, with these groups providing differing advice for managing health and well-being. Knowing what predisposes low-income African American women to rely on different sources of health information is of interest for several reasons. First, it is essential to understanding how these women go about managing their health and health related problems. Low-income women without insurance, for example, may be less able to access a physician for medical advice and may therefore turn to friends of family members to fill the gaps when facing an uncertain, chronic, or non-life threating health problem. This can, in turn, have an important impact on health decisions and long-term outcomes. Further, it is useful to know if certain health problems – like mental health or substance use problems – predict the kind of source sought for advice. Again, if family members or friends are more likely to be sought for advice by African American women who experience depressive symptoms or drug problems, this has important implications on the patterning of help-seeking among these women.

[Table 7.3 Here]

Because longitudinal data are available for both independent and dependent measures, multilevel modeling is used to determine which social content and episode base measures predict citing family members, friends, and doctors as sources of health information during the study. There are several hypothesized relationships between these variables. Though it is unclear what will significantly predict citing family or friends as

sources of health information, it is anticipated that women who are more educated and have insurance of any kind will be more likely to rely on a doctor for health information. Further, as income increases, so too will the predicted likelihood of naming a doctor as a source of health information. These hypotheses are supported by extant literature demonstrating the important role of enabling factors, like income, education, and insurance status, in predicting health service utilization (Andersen 1995; Green et al. 1980; Tanner et al. 1983; Phillips et al 1998; Strecher & Rosenstock 1997). Additionally, other access or enabling factors such as a usual physician and a higher level of trust in physicians will predict naming a doctor as a source of health information. Finally, controlling for covariates, women who experience worse physical and mental health are predicted to be more likely to name a doctor as a source of health information. Women who have greater health needs are more likely to seek help for their problems, and will therefore have greater odds of naming a physician as a source of health information than those in better health.

Three separate multilevel mixed effects regression models are presented in Table 7.3. These models predict citing family, friends, or a doctor as a source of health information on all social content measures used in this study, including demographics, physical and mental health status, and substance use history. According to these results, age predicts relying on family as a source of health information. As one might expect, every year increase in age reduces the odds of citing family as a source of health information by 3% (OR=0.97, $p<0.001$). Additionally, being victimized as an adult (OR=0.67, $p<0.05$) and a history of mental health problems (OR=0.66, $p<0.05$) also negatively predict turning to family for health information. The intraclass correlation for

this model is relatively low (rho = 0.27), suggesting only modest correlation between responses across waves within any given participant.

The results of the regression model predicting friends as a source of health information is also presented in Table 7.3. Findings show that being under criminal justice supervision at baseline significantly predicts the odds of turning to friends for health information. Specifically, women who were incarcerated at baseline have lower predicted odds of citing friends as sources of health information compared to women who were recruited as part of the community sample (OR = 0.44, $p<0.001$). Similarly, women who were on probation at baseline also have lower predicted odds of turning to friends for health information compared to women not under criminal justice supervision at baseline (OR = 0.62, $p<0.01$). As in the previous analyses predicting family as a source of health information, the intraclass correlation of this multilevel model is relatively low (rho = 0.26).

The final model displayed predicts citing a doctor as a source of health information on social content measures. This model indicates strong support for several of the initial hypotheses. As expected, women with public insurance are predicted to be 1.74 times more likely to list a doctor as a source of health information compared to women without insurance ($p<0.05$). Having private insurance also significantly and positively predicts having a doctor as a source of health information compared to not having insurance (OR = 1.96, $p<0.001$). Further, compared to women who do not have a usual doctor, having a usual doctor predicts greater odds of citing a physician as a source of health information (OR = 2.26, $p<0.001$). Also aligning with hypotheses, a one unit

increase in trust in physician score increases the predicted odds of having a doctor as source of health information by 1.03 times ($p<0.05$).

Lastly, though none of the mental health predictors achieve significance, both measures of general physical health significantly predict citing a doctor as a source of health information, as hypothesized. Those who indicated fair or poor health are predicted to be 1.40 times more likely to turn to a physician for health information compared to those with good, very good, or excellent health ($p<0.05$). Women who take medication for a physical problem are also predicted to have 2.52 times greater odds of citing a doctor as a source of health information compared to women who do not take medication ($p<0.05$). The intraclass correlation for this model is low (rho = 0.09), indicating very little correlation for this outcome across waves for any given individual. It is noteworthy that substance use – either a reported history of drug problems or any alcohol use – does not significantly predict sources of health information.

Social Control

Ties Encouraging Health Service Utilization

[Table 7.4 Here]

Social control refers to network members' active, direct influence on alters' behaviors and can have positive or negative effects on health and well-being. For the purposes of this study, a positive form of social control by social network members is being considered: the mean level of encouragement from health matters ties to utilize health services. It is hypothesized that this outcome will be significantly predicted by a number of the social demographic and health background measures. Specifically, it is expected that women who may have greater health needs will receive more

encouragement from health matters ties to utilize services. For this reason, women who are under criminal justice supervision (given the concentration of health problems among these women) and those who report health problems (e.g. poor self-rated health, take medication for a physical problem, report depressive symptoms) will receive more encouragement from health matters ties to utilize services. Additionally, it is hypothesized that less affluent women who may have fewer resources to avoid or manage health problems will have worse health which, in turn, will predict greater encouragement from network ties to utilize health services. That is, as income increases, women will receive less encouragement to utilize health services and women with insurance of any type will have lower mean levels of encouragement to utilize health services when compared to women of no insurance. To assess the validity of these hypotheses, regression is used to predict the mean number of health matters network ties that encourage health service utilization at Wave 4 on social content and episode base measures. Five restricted models with groups of related variables that achieved overall model significance (based on the significance of the F-statistic) and a full model with all measures included are shown. Coefficients and standard errors are displayed.

Table 7.4 presents the significant stepwise regression models of this outcome as measured at Wave 4 on social content measures. As Models 1 and 2 show, the relationship between household income, insurance status, criminal justice involvement, and mean level of encouragement from ties to utilize services aligns with what is expected. That is, each unit increase in household income at Wave 3 predicts a 0.03 unit decrease in the mean level of encouragement to utilize health services at Wave 4 ($p<0.01$). Similarly, compared to women without insurance at Wave 3, having public

insurance at Wave 3 predicts a lower mean frequency of health matters network ties that encourage service utilization at Wave 4 (-1.25, $p<0.001$). Further, compared to women from the community, being recruited for the prison sample and probation sample predicts an increase in the mean frequency of health matters ties that encourage service utilization (0.73, $p<0.01$ and 0.62, $p<0.05$, respectively). Supporting what is hypothesized, it appears that lower status women – who possibly have more substantial health needs – receive greater encouragement from network ties to utilize services.

Models 3 and 4 illustrate the significance of physical and mental health predictors on the outcome measure. Though a history of mental health problems does not significantly predict a greater mean level of encouragement from health matters ties to utilize services at Wave 4, both depressive symptoms and self-rated health are significant in the hypothesized direction. That is, compared to those with good, very good, or excellent health, having fair or poor health at Wave 3 predicts an increase in the mean level of encouragement to utilize health services at Wave 4 ($B = 0.49$, $p<0.05$). Additionally, experiencing depressive symptoms at Wave 3 predicts greater encouragement from health matters ties to utilize health services at Wave 4, compared to those who did not experience depressive symptoms ($B= 0.78$, $p<0.01$).

Model 5 demonstrates that both a history of drug problems and any alcohol use at Wave 3 predict mean level of encouragement to utilize health services at Wave 4. Holding covariates constant, having a history of drug problems predicts a greater Wave 4 level of encouragement to use health services by 0.66 compared to not having a history of drug problems ($B = 0.66$, $p<0.01$). Interestingly, the relationship between any alcohol use at Wave 3 and the outcome was the opposite of this: using any alcohol at Wave 3 predicts

a lower level of encouragement from health matters ties to utilize health services at Wave 4 ($B = -0.43$, $p<0.05$). The differing direction of effects for these final two predictors is likely a result of the differing severity between these two measures. A history of drug problems suggests a chronic, potentially relapsing and remitting pattern of substance use, while any alcohol use could range from very little drinking (as was the case for the majority of participants) to problem drinking. Thus, occasional drinking could potentially go unnoticed by health matters network ties, and may not prompt the sort of encouragement for help-seeking that a history of drug problems might.

Finally, Model 6 presents all restricted measures in a single, full model. Findings regarding the significance of income, probation status, and depression hold. However, a number of measures significant in the restricted model are not significant predictors in the full model. Specifically, findings regarding incarceration at baseline, insurance status, self-rated health, and the substance use measures no longer hold.

Social Safety Net

Social Support

As discussed in Chapter 2, there is a well-established body of research linking social support to health outcomes. Social support, as an indicator of social integration, can have both negative and positive consequences. For the purposes of this study, perceived social support from friends and family members are considered separately to determine the differences and similarities between these groups regarding their effects on help-seeking and the illness career (these findings are described in the previous chapter). As proposed by the Network Episode Model, social support and other social network factors are shaped by social content and episode base measures. To understand what

factors predict social support from these sources, multilevel mixed effects regression is used. It is hypothesized criminal justice involvement at baseline will predict lower levels of social support from family and friends. Women who experience stressful life events, poor mental and physical health, or a history of drug problems will also have lower predicted levels of social support from both sources. Finally, because women with a more active coping style may be more likely to reach out to network connections that they perceive as supportive to deal with their problems, women with a higher active coping score are predicted to perceive significantly greater levels of social support from family and friends.

[Table 7.5 Here]

Table 7.5 presents the results of two multilevel models predicting perceived social support from family and friends, respectively. According to these results, being under criminal justice supervision does not significantly predict social support from family members. However, findings do provide some evidence for the hypothesis that criminal justice supervision negatively predicts social support. Specifically, being incarcerated at baseline predicts lower levels of social support from friends compared to being in the community at baseline ($\beta = -0.32$, $p<0.05$). Findings also support the hypothesis that stressful life events negatively predict social support from friends and family. That is, experiencing a financial crisis predicts lower levels of social support from family members, compared to not experiencing such a crisis ($\beta = -0.28$, $p<0.005$). Further, as experiences of gendered racism increase, perceptions of support from both family ($\beta = -0.01$, $p<0.01$) and friends ($\beta = -0.01$, $p<0.05$) also decrease.

Results also indicate that participants' personal health background plays a significant role in shaping social support. Though it does not significantly predict social support from family, poor or fair health predicts a lower level of perceived social support from friends, compared to good, very good, or excellent health ($\beta = -0.20$, $p<0.05$). A history of mental health problems and depressive symptoms are also significantly predictive of social support. Women with a history of mental health problems, compared to women without such a history, are less likely to perceive social support from their family members ($\beta = -0.30$, $p<0.01$). Experiencing depressive symptoms significantly predicts lower levels of perceived social support from both family ($\beta = -0.20$, $p<0.01$) and friends ($\beta = -0.18$, $p<0.05$). Additionally, though it was not expected, compared to women without a usual doctor, women with a usual doctor have higher predicted levels of social support from family members ($\beta = 0.16$, $p<0.05$).

The final hypothesis, that active coping positively predicts perceived social support from family and friends is strongly supported by the results of these two regression models. Results indicate that as active coping increases, so too does perceived social support from family ($\beta = 0.03$, $p<0.001$) and friends ($\beta = 0.04$, $p<0.001$). Importantly, history of drug problems and any alcohol use do not significantly predict social support from friends or family.

Summary

[Table 7.6 Here]

The purpose of this chapter was to examine the role of social content and episode base measures in predicting a variety of social network system characteristics. A summary of all findings is presented in Table 7.6. Using social network measures

captured at Wave 4, these analyses show that health matters network structure – that is, network size and frequency of discussion with network ties – is significantly predicted by a number of social content measures. Women who were incarcerated at baseline and who reported having a history of drug problems have smaller health matters networks at Wave 4, which may have important implications on the health and well-being of these women. Given the chronic nature of substance abuse and the vulnerable position of women reentering the community after a period of incarceration, this finding may seem particularly troubling. However, these findings regarding network size alone are not necessarily cause for alarm. As this chapter also reveals, women under probationary supervision and who have a history of drug problems are predicted to have more frequent discussions with their health matters network ties. Perhaps most importantly, women with a history of drug problems and women who were incarcerated or on probation at baseline are predicted to have networks that are more likely to encourage health service utilization.

In all, findings from this chapter indicate that women who have greater health needs – that is, they have physical or mental health problems or a history of substance abuse problems – are more likely to have discussion with their health matters network ties and are more likely to receive encouragement from these ties to utilize health services. It was expected that women who were less affluent, with lower incomes and without insurance, would be exposed to more messages encouraging health service utilization from social network members given that they may have more health needs compared to more affluent participants. Results from this research support this expectation and reveal that among low-income African American women, health need

appears to play a significant role in predicting the frequency of discussion and encouragement to use health services from health matters network ties.

Further, findings illustrate that health status and need also predict naming a physician as a source of health information. Specifically, women with poor self-reported health or who take medications for a physical problem are predicted to be more likely to cite a doctor as a source of health information, compared to women who have good physical health or do not take medications. However, findings show that structural factors also play a critical role in predicting naming a doctor as a source of health information. Specifically, having public or private insurance significantly predicts citing a doctor as a source of health information. These findings indicate that health status and structural enabling factors like insurance work together to shape those who make-up networks, the frequency of discussion with health matters network members, and the type of advice (i.e. encouragement) provided by these networks.

Finally, this chapter also examined which social content and episode base measures predict social support from family and friends. These results show that as experiences of gendered racism increase, social support from friends and family are predicted to decrease. This is an important finding as it suggests that, in addition to the psychological distress of experiencing discrimination, women who report these events are predicted to feel less support from friends and loved ones. It is also noteworthy that in addition to gendered racism, reporting depressive symptoms also predicts lower levels of perceived social support from family and friends. These results indicate that experiencing gendered racism and depression can have important social effects, like feelings of isolation from family members and friends. Social support can be an important resource

for dealing with day to day struggles and stressful life events, potentially buffering the effects of such distressing experiences. Low-income African American women who experience gendered racism or depressive symptoms could stand to benefit greatly from the positive effects of support resources, and with fewer such resources, these distressing events and feelings may be further exacerbated over time.

The next chapter will further explore the social network system as an outcome, building on the limited body of work that identifies factors predicting the characteristics of networks in the context of health. Chapter 8 will examine how substance use, help-seeking, and the illness career shape the social network system of low-income African American women. The findings of Chapter 8 will contribute to the relative dearth of knowledge regarding the effects of two different forms of help-seeking (drug abuse treatment and self-help group involvement) and patterns of drug use on network system characteristics.

Table 7.1. Health Matters Network Size at Wave 4 on Demographics & Substance Use Measures at Wave 3

	Model 1	Model 2
Social/Geographic Location		
Demographics		
Age	0.99 (0.01)	—
Education	1.00 (0.02)	—
Household Income[1]	1.00 (0.01)	—
Sample: Prison[2]	0.70 (0.09)**	—
Sample: Probation[2]	0.85 (0.10)	
Event Illness Characteristics		
Substance Use		
History of Drug Problems	—	0.78 (0.07)**
Alcohol Use (Any)	—	0.98 (0.09)
N	338	341
LR Chi-Squared	14.54*	7.28*

NOTE: Incidence rate ratios (IRRs) and standard errors presented
* = p < .05; ** = p < .01; *** = p < .001
[1] Coded to the midpoint in tens of thousands of dollars
[2] Excluded comparison group is "Community Sample"

Table 7.2. Health Matters Network Discussion Frequency at Wave 4 on Demographics & Substance Use Measures at Wave 3

	Model 1	Model 2	Model 3	Model 4
Social/Geographic Location				
Demographics				
Age	0.01 (0.01)	—	—	—
Education	-0.01 (0.04)	—	—	—
Household Income[1]	-0.01 (0.01)*	—	—	—
Sample: Prison[2]	0.05 (0.22)	—	—	—
Sample: Probation[2]	0.47 (0.22)*			
Personal Health Background				
General Physical Health				
Self-Rated Health[3]	—	0.22 (0.19)	—	—
Medication for Phys. Prob.	—	0.46 (0.18)**	—	—
Mental Health				
History of MH Problems	—	—	0.12 (0.17)	—
Depression	—	—	0.61 (0.22)**	—
Active Coping	—	—	0.03 (0.02)	—
Event Illness Characteristics				
Substance Use				
History of Drug Problems	—	—	—	0.36 (0.17)*
Alcohol Use (Any)	—	—	—	-0.32 (0.17)
N	263	265	265	266
F-Statistic	2.84*	4.80**	3.51*	4.29*
R-Squared	0.05	0.04	0.04	0.03

NOTE: Coefficients and standard errors presented
* = p < .05; ** = p < .01; *** = p < .001
[1] Coded to the midpoint in tens of thousands of dollars
[2] Excluded comparison group is "Community Sample"
[3] Excluded comparison group is "Good, Very Good, or Excellent Health

Table 7.3. Multilevel Mixed Effects Regression of Sources of Health Information on Social Content and Episode Base Measures – Three Models

	Source of Health Information					
	Family		**Friends**		**Doctor**	
	OR	SE	OR	SE	OR	SE
Social/Geographic Location						
Demographics						
Age	0.97***	0.01	0.99	0.01	0.99	0.01
Education	1.03	0.04	1.03	0.04	1.03	0.04
Household Income[1]	1.00	0.01	1.00	0.01	1.01	0.01
Sample: Prison[2]	0.76	0.15	0.44***	0.09	0.89	0.17
Sample: Probation[2]	0.85	0.16	0.62*	0.12	1.04	0.19
Stressful Life Events						
Financial Crisis	0.83	0.11	1.21	0.17	1.01	0.15
Gendered Racism	1.00	0.01	1.01	0.01	1.00	0.01
Cultural Mistrust	1.01	0.01	1.00	0.01	0.99	0.01
Adult Victim	0.67*	0.13	0.92	0.19	0.87	0.17
Personal Health Background						
Structural Background						
Insurance: Public[3]	1.15	0.25	0.78	0.17	1.74*	0.39
Insurance: Private[3]	0.95	0.14	1.01	0.16	1.96***	0.30
Usual Doctor	1.21	0.17	1.01	0.15	2.26***	0.32
Trust in Physician	1.00	0.01	1.00	0.01	1.03*	0.01
General Physical Health						
Self-Rated Health[4]	1.06	0.16	1.08	0.16	1.40*	0.23
Medication for Phys. Prob.	1.15	0.18	1.26	0.20	2.52***	0.42
Mental Health						
History of MH Problems	0.66*	0.11	0.78	0.13	0.87	0.14
Depression	0.83	0.13	1.08	0.17	1.17	0.19
Active Coping	1.02	0.01	1.01	0.01	1.01	0.16
Event Illness Characteristics						
Substance Use						
History of Drug Problems	1.21	0.21	1.12	0.20	1.00	0.16
Alcohol Use (Any)	1.25	0.17	1.12	0.15	0.92	0.13
Time						
Time	0.27***	0.09	0.53	0.19	1.01	0.39
Time Squared	1.22**	0.08	1.01	0.07	1.03	0.77
Number of Observations	1786		1786		1786	
Number of Groups	637		637		637	
Log Likelihood	-1149.52		-1064.88		-831.53	
Wald Chi[2]	90.06***		64.30***		145.02***	
Intraclass Correlation (rho)	0.27		0.26		0.09	

NOTE: Odds Ratios and standard errors presented

* = p < .05; ** = p < .01; *** = p < .001

[1] Coded to the midpoint in tens of thousands of dollars

[2] Excluded comparison group is "Community Sample"

[3] Excluded comparison group is "No Insurance"

[4] Excluded comparison group is "Good, Very Good, or Excellent Health"

Table 7.4. Multilevel Mixed Effects Regression of Mean Encouragement from Health Matters Ties to Use Health Services on Social Content and Episode Base Measures

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Social/Geographic Location						
Demographics						
Age	0.01 (0.01)	—	—	—	—	-0.01 (0.01)
Education	-0.01 (0.05)	—	—	—	—	-0.01 (0.05)
Household Income[1]	-0.03 (0.01)**	—	—	—	—	-0.02 (0.01)*
Sample: Prison[2]	0.73 (0.25)**	—	—	—	—	0.28 (0.33)
Sample: Probation[2]	0.62 (0.25)*	—	—	—	—	0.64 (0.30)*
Personal Health Background						
Structural Background						
Insurance: Public[3]	—	-1.25 (0.33)***	—	—	—	-0.43 (0.39)
Insurance: Private[3]	—	-0.36 (0.24)	—	—	—	-0.47 (0.24)
Usual Doctor	—	0.15 (0.25)	—	—	—	0.32 (0.26)
Trust in Physician	—	-0.03 (0.02)	—	—	—	-0.02 (0.02)
General Physical Health						
Self-Rated Health[4]	—	—	0.49 (0.23)*	—	—	0.34 (0.26)
Medication for Phys. Prob.	—	—	0.22 (0.21)	—	—	0.09 (0.24)
Mental Health						
History of MH Problems	—	—	—	0.05 (0.20)	—	-0.10 (0.24)
Depression	—	—	—	0.78 (0.25)**	—	0.66 (0.28)*
Active Coping	—	—	—	0.01 (0.02)	—	0.02 (0.02)
Event Illness Characteristics						
Substance Use						
History of Drug Problems	—	—	—	—	0.66 (0.19)**	0.28 (0.27)
Alcohol Use (Any)	—	—	—	—	-0.43 (0.20)*	-0.36 (0.24)
N	263	197	265	265	266	194
F-Statistic	5.76***	4.50**	3.41*	3.40*	8.67***	2.93***
R-Squared	0.10	0.09	0.03	0.04	0.06	0.21

NOTE: Coefficients presented; standard errors in parentheses. * = p < .05; ** = p < .01; *** = p < .001

[1] Coded to the midpoint in tens of thousands of dollars; [2] Excluded comparison group is "Community Sample"; [3] Excluded comparison group is "No Insurance"; [4] Excluded comparison group is "Good, Very Good, or Excellent Health"

Table 7.5. Multilevel Mixed Effects Regression of Perceived Social Support Score on Social Content and Episode Base Measures – Two Models

	Source of Social Support			
	Family		Friends	
	Coef.	SE	Coef.	SE
Social/Geographic Location				
Demographics				
Age	0.01	0.01	0.01	0.01
Education	0.08	0.03	0.05	0.03
Household Income[1]	0.01	0.01	0.01	0.01
Sample: Prison[2]	0.20	0.14	-0.32*	0.14
Sample: Probation[2]	-0.14	0.14	-0.15	0.13
Stressful Life Events				
Financial Crisis	-0.28***	0.07	-0.05	0.08
Gendered Racism	-0.01**	0.01	-0.01*	0.01
Cultural Mistrust	-0.01	0.01	0.01	0.01
Adult Victim	-0.12	0.14	0.11	0.14
Personal Health Background				
Structural Background				
Insurance: Public[3]	0.17	0.12	-0.06	0.13
Insurance: Private[3]	-0.10	0.08	-0.13	0.09
Usual Doctor	0.16*	0.07	0.07	0.08
Trust in Physician	0.01	0.01	0.01	0.01
General Physical Health				
Self-Rated Health[4]	-0.15	0.07	-0.20*	0.08
Medication for Phys. Prob.	-0.07	0.08	0.17	0.09
Mental Health				
History of MH Problems	-0.30**	0.11	-0.17	0.11
Depression	-0.20**	0.07	-0.18*	0.08
Active Coping	0.03***	0.01	0.04***	0.01
Event Illness Characteristics				
Substance Use				
History of Drug Problems	-0.01	0.12	-0.20	0.12
Alcohol Use (Any)	-0.08	0.07	-0.09	0.08
Time				
Time	-0.06	0.16	-0.04	0.18
Time Squared	0.01	0.03	0.01	0.03
Number of Observations	1786		1786	
Number of Groups	637		637	
Log Likelihood	-3000.15		-3169.90	
Wald Chi^2	179.36***		170.92***	
Intraclass Correlation (subject)	0.55	0.02	0.43	0.02

NOTE: Coefficients and standard errors presented.
* = p < .05; ** = p < .01; *** = p < .001
[1] Coded to the midpoint in tens of thousands of dollars; [2] Excluded comparison group is "Community Sample"; [3] Excluded comparison group is "No Insurance"; [4] Excluded comparison group is "Good, Very Good, or Excellent Health"

Table 7.6. Summary of Hypotheses and Findings in Chapter 7

Topic	Research Question	Hypothesis	Corroborated?
Criminal Justice Involvement & Network Size	Does criminal justice involvement at baseline predict health matters network size at Wave 4?	Criminal justice involvement of any kind will predict smaller health matters networks at Wave 4.	Partially
Criminal Justice Involvement & Discussion Freq.	Does criminal justice involvement at baseline predict mean frequency of discussion with health matters network ties?	Criminal justice involvement of any kind will predict lower frequency of discussion with health matters network members at Wave 4.	No
Health & Network Size	Does health status at Wave 3 predict health matters network size at Wave 4?	Health problems or poor health at Wave 3 will predict having larger health networks at Wave 4.	No
Health & Discussion Freq.	Does health status at Wave 3 predict mean frequency of discussion with health matters network ties?	Health problems and poor health at Wave 3 will predict greater frequency of discussion with these networks at follow-up.	Yes
Demographics & Health Info.	Which demographic characteristics predict reporting a physician as a source of health information?	Women who are more educated and have a higher income will be more likely to rely on a doctor for health information.	No
Health Status & Health Info.	Does health status predict reporting a physician as a source of health information?	Women with worse physical and mental health to be more likely to name a doctor as a source of health information	Partially
Enabling Factors & Health Info.	Do enabling factors previously identified as associated with use of health services (e.g. insurance status) predict identifying a physician as a source of health information?	Those with any type of insurance, a usual physician, and a higher level of trust in physicians will be more likely to rely on physician for health information.	Yes
Demographics & Encouragement to Use Health Services	Which demographic characteristics significantly predict mean levels of encouragement to utilize health services at Wave 4?	Less affluent women (lower income, without insurance) will have greater mean levels of encouragement to utilize health services at follow-up.	Yes
Criminal Justice Involvement & Encouragement to Use Health Services	Does criminal justice involvement at baseline predict mean levels of encouragement to utilize health services at Wave 4?	Lower status women with any criminal justice system involvement at baseline will have greater predicted levels of encouragement to utilize health services at follow-up.	Yes

Table 7.6 (continued). Summary of Hypotheses and Findings in Chapter 7

	Research Question	**Hypothesis**	**Corroborated?**
Health Status & Encouragement to Use Health Services	Does health status at Wave 3 predict mean levels of encouragement to utilize health services at Wave 4?	Worse overall physical and mental health, will predict a higher mean level of encouragement to utilize health services.	Yes
Criminal Justice Involvement & Social Support	Does criminal justice involvement at baseline predict levels of social support from family members and friends?	Criminal justice involvement at baseline will predict lower levels of social support from family and friends.	Partially
Stressful Life Events & Social Support	Do stressful life events predict levels of social support from family members and friends?	Experiencing stressful life events will predict lower levels of social support from family and friends.	Yes
Health Status & Social Support	Does health status predict levels of social support from family members and friends?	Worse overall health will predict lower levels of social support from family and friends.	Partially
Active Coping & Social Support	Does active coping score predict levels of social support from family members and friends?	Women with a higher active coping score are predicted to perceive significantly greater levels of social support from family and friends.	Yes
Drug Problems History & Social Support	Does a history of drug problems as reported at baseline predict levels of social support from family members and friends?	Women with a history of drug problems will have lower levels of predicted social support from family and friends.	No

CHAPTER 8: RESULTS OF MODELS PREDICTING THE SOCIAL NETWORK SYSTEM WITH ILLNESS CAREER MEASURES

Like the previous chapter, Chapter 8 examines predictors of the social network system. As already stated, while social network factors have frequently been examined as predictors or correlates of a variety of dependent variables, comparatively few studies have examined network factors themselves as outcomes of interest. Paired with the previous chapter, this research works to fill a gap in the extant literature regarding what is known about the factors that shape low-income African American women's networks. The primary goal of this chapter is to explore how substance use and substance abuse help-seeking predict a number of ego-network characteristics.

The Network Episode Model predicts that the relationship between the illness career and the social network system is a dynamic one. That is, just as the social network system shapes patterns of help-seeking and illness career trajectories, help-seeking and patterns of health and well-being in-turn shape the social network system (Pescosolido 1991; 1992). Because the B-WISE data are longitudinal, there is a unique opportunity to examine how receiving drug abuse treatment, attending Narcotics and Cocaine Anonymous meetings, and patterns of substance use in earlier waves shape social network factors at later waves. In addition to providing new insights into the ways drug use and help-seeking shape social network size, structure, and function, taken together with the findings of previous chapters, these analyses further illustrate how the Network Episode Model operates among low-income African American women.

Normative Influence

Network Size & Structure

As discussed in the previous chapter, health matters network size and frequency of discussion with health matters network ties are important measures of the level of influence these networks have on individual behaviors. However, it is unclear what effect certain health-related decisions have on the structure of these health matters networks among low-income African American women. Understanding how patterns of drug use and substance-related help-seeking shape network size and structure is an important goal because it may reveal relationships between the illness career and networks that have important implications for encouraging help-seeking and positive outcomes over time. Using lagged illness career variables at Wave 3 – including dichotomous measures of daily drug use, receiving drug abuse treatment, NA/CA meeting attendance, and patterns of drug use across waves – network size and mean frequency of health matters network discussion at Wave 4 are predicted. Poisson regression is used to predict network size, while linear regression is used to predict mean discussion frequency.

It is hypothesized that there will be a number of significant connections between daily drug use, help-seeking, and patterns of substance use at Wave 3 and network size and discussion frequency outcomes captured at Wave 4. First, using drugs daily at Wave 3 will predict smaller health matters networks with less frequent discussion at Wave 4. Women who are using drugs regularly may be less likely to reach out to others to discuss health matters, in part because these women may be more likely to socially isolated than their non-drug using peers. Further, drug use, unlike some other health problems (e.g. chronic illness) may not be perceived as a health problem or contributing to such

problems by the drug users themselves, therefore not eliciting a reaction (i.e. reaching out and conferring with network ties) to prompt resolution. Indeed, drug use may be actively hidden from ties that endorse health-promoting norms and would potentially challenge such behaviors.

However, because help-seeking for substance abuse problems exposes individuals to a wider net of people with whom to discuss health, well-being, and recovery – including physicians, counselors, and others with drug abuse histories – it is anticipated that help-seeking in Wave 3 will have important impacts on health matters network size and mean discussion frequency at Wave 4. Those who participate in drug abuse treatment at Wave 3 are expected to have larger health matters networks, with more frequent discussion at Wave 4. Given that participating in 12-Step programs means interacting with a network of individuals in a mutually supportive exchange, it is anticipated that attending Narcotics or Cocaine Anonymous at Wave 3 will predict larger health matters networks with greater discussion at Wave 4. Finally, the illness career will also significantly predict health matters network size and mean frequency of discussion at Wave 4. Specifically, women who begin use at Wave 3 will have smaller health matters networks with less frequent discussion, while those who quit drug use or continue a pattern of non-drug use will have larger networks with more frequent discussion at Wave 4. Women who are non-drug or who cease drug use may exhibit greater concern about managing their health and be more likely to seek out network members regarding health matters.

[Table 8.1 Here]

Results from four Poisson regression models predicting health matters network size at Wave 4 on drug use severity, treatment and help-seeking, and the illness career are displayed in Table 8.1. Contrary to the hypotheses, Models 2, 3, and 4 did not achieve overall significance as determined by the likelihood ratio chi-square test. That is, drug abuse treatment, NA/CA attendance, and the illness career measures at Wave 3 do not significantly predict health matters network size at Wave 4. However, daily drug use does emerge as a significant predictor of network size at Wave 4. As expected, those who use drugs daily at Wave 3 are expected to have smaller health matters networks at Wave 4 compared to those who do not use drugs daily (IRR=0.79, $p<0.05$).

[Table 8.2 Here]

Findings regarding the mean discussion frequency at Wave 4 are displayed in Table 8.2. Though it was hypothesized that receiving drug abuse treatment and attending 12-Step meetings would predict greater discussion with health matters network members at Wave 4, these models do not achieve overall significance as determined by the F-test statistic. Further, Model 4 examining the effects of the illness career measures also failed to reach statistical significance, matching the results of network size described in Table 8.1. Despite these non-significant findings, Model 1 does achieve significance. That is, daily drug use at Wave 3 predicts mean frequency of network discussion. Specifically, compared to women do not use drugs daily at Wave 3, using drugs daily predicts a higher mean frequency of discussion with health network members at Wave 4 by 0.43 ($p<0.05$). This finding does not confirm the initial hypothesis. These results suggest that rather than predicting lower levels of discussion with health matters contacts, daily drug use may

prompt network members react and discuss health related concerns with these individuals.

Sources of Health Information

In addition to predicting network size and frequency of discussion, understanding what predicts African American women's sources of health information is a worthwhile goal. This is especially vital as it relates to naming a doctor as a source of health information – as relying on medical professionals may directly contribute to health-promoting decisions and better overall health. Further, drug use severity, substance abuse help-seeking, and patterns of drug use overtime may have important effects on the types of people individuals turn to for health information, and, for that matter, whether or not they seek anyone at all.

Because the B-WISE study includes measures that assess sources of health information at all waves, longitudinal analyses can be used to predict this outcome. For the purposes of this chapter, multilevel mixed effects regression using Stata's *xtmelogit* command is used to regress naming either friends or a physician on the illness career measures[5]. It is hypothesized that non-drug use in the previous wave will predict a greater likelihood of naming a physician as a source of health information in the current wave. Women who are non-drug using may be more mindful of health concerns and more likely to turn to physicians for health information. Further, non-drug using women may have greater access to doctors or health care professionals.

[5] Family as a source of health information was also examined as an outcome measure, but the overall model did not achieve significance, so it is not presented here. Additionally, lagged measures of daily drug use, receiving drug abuse treatment, and attending NA/CA were used to predict the outcome measures, but as these models also failed to achieve overall significance as indicated by the Wald chi-square test, they are not presented.

[Table 8.3 Here]

Table 8.3 shows the results of two models using lagged illness career to predict citing friends and doctors as sources of health information. The hypothesized relationship between continuing non-drug use in the previous wave and citing a doctor as a source of health information in the current wave is supported by the findings presented in Table 8.3. That is, controlling for time, continuing non-drug use in the previous/lagged wave increases the predicted odds of citing a doctor as a source of health information in the current wave by 78%, compared to those who continued drug use in the previous/lagged wave ($p<0.01$).

These analyses also reveal an unanticipated finding. Results indicate that non-drug use in the previous/lagged wave also predicts citing friends as a source of health information in the current wave. Specifically, compared to continuing use in the previous/lagged wave, continuing nonuse in the previous/lagged wave predicts a 47% decrease in the odds of naming friends as sources of health information in the current wave ($p<0.01$). It is noteworthy that across both models the intraclass correlation is relatively low (rho = 0.25 and rho = 0.29), suggesting only modest correlation between responses across waves within any given participant. Ultimately, the findings that women who are non-drug using across the previous/lagged wave are predicted to be less likely to turn to friends and more likely to turn to a doctor for health information suggests that these women may be more likely than those that continue drug use to seek out health services and potentially adopt healthy behaviors.

Social Control

Mean Encouragement from Health Matters Ties to Utilize Health Services

Encouragement from network ties to utilize health services is a direct way by which ties can shape health behaviors. However, it is unclear if drug use and help-seeking predict encouragement to utilize health services among low-income African American women. Given the results in Table 8.2 that women who use drugs daily in the lagged wave are predicted to have a higher mean discussion frequency with health matters ties, it is hypothesized that daily drug use in Wave 3 will significantly predict greater mean levels of encouragement from health matters ties at Wave 4. Said differently, it is expected that daily drug use will prompt health services network members to intervene by encouraging health service utilization to improve their health. Further it is anticipated that participating in drug abuse treatment or attending NA/CA in Wave 3 will positively predict encouragement from ties to use health services at Wave 4. Given that drug using women are more likely to have co-morbid health problems that require treatment, and would likely have been exposed to encouragement to address such issues during prior instances of substance abuse treatment, it is expected that they will report greater levels of encouragement from health matters ties. Finally, illness career measures at Wave 3 are also hypothesized to significantly predict the mean levels of encouragement from health matters ties at Wave 4, such that continuing a pattern of non-drug use in the lagged wave will predict lower mean levels of encouragement from health matters ties to use health services at Wave 4. It is expected that compared to women who continue drug use across the study time-frame, those who are non-drug users will have fewer health problems and therefore receive less encouragement from network ties to utilize health services.

[Table 8.4 Here]

Linear regression is used to predict the mean frequency with which health matters network ties encourage service utilization at Wave 4 on daily drug use, receiving drug abuse treatment, attending NA/CA meetings, and the illness career at Wave 3. The results of these regression models are shown in Table 8.4. These results demonstrate mixed support for the initial hypotheses. First, the findings regarding daily drug use (Model 1) are consistent with what was hypothesized. Results indicate that using drugs daily at Wave 3 predicts a higher mean frequency of ties that encourage health service utilization at Wave 4 by 0.50, compared to those who do not use drugs daily at Wave 3. However, the other hypothesized relationships are not supported by these analyses, as Models 2, 3, and 4 do not achieve overall significance. These findings indicate that while daily drug use may serve as a catalyst for network ties to offer encouragement to seek health services, other patterns of drug use (i.e. non-drug use in the previous wave) do not significantly predict this outcome. Further, the results of these analyses also indicate that help-seeking in the previous wave does not significantly predict receiving more or less encouragement from ties to use health services in the current wave. The lack of relationship between these items may be explained by the encouragement measure, which only relates to general health matters and not specifically to substance use and related health matters.

Church or Religious Community Membership

While predicting encouragement from network ties is an important outcome with a number of therapeutic implications, understanding how patterns of drug use and help-seeking shape church or religious community membership is also an important goal of

this chapter. Religion has been called the "cornerstone" of African American communities, and past findings indicate that African Americans report more religious involvement than other ethnic groups (Chandler 2010; Giger et al. 2008). Attending church or participating in a religious community expose individuals to important forces of social control and regulation, and have been linked to a lower likelihood of substance use and abuse (Chitwood et al 2008). However, the link between help-seeking and substance use as predictors of church participation and religiosity is much less developed in the literature. Past findings indicate that, despite the seemingly religious overtones of 12-Step programs, those who attend meetings are not significantly more likely than those who do not participate in such programs to attend church or place a greater importance on religion in their daily lives (Brown et al. 2001). However, it is unclear if these findings reflect similar attitudes and behaviors among low-income African American, for whom church membership may be a more significant part of their day to day lives.

Based on past findings and theoretical implications, there are several hypothesized relationships between substance use and help-seeking measures at the previous/lagged wave and being a member of a church or religious community at the current wave. It is expected that those who use drugs daily during the lagged wave and those who continued drug use across waves will have lower predicted levels of church attendance. Women who use drugs regularly may be deterred by the social control aspect of religious community membership, and may prefer to abstain from membership in organizations that generally deter substance use. Similarly, beginning use, quitting use, or continuing non-drug use in the previous wave (compared to continuing use) will predict church community membership in the current wave. That is, women who experience

continued non-drug use or periods of non-drug use will be more likely than those who continue drug use across waves to be a member of a religious community. It is hypothesized that receiving drug abuse treatment or attending NA/CA meetings in the lagged wave will not be significantly associated with church or religious community membership in the current wave.

[Table 8.5 Here]

Multilevel mixed effects regression is used to predict being a member of a church community at the current wave on drug use and help-seeking measured in the previous/lagged wave. The results of these four models are presented in Table 8.5. As Models 1 shows, contrary to the hypothesis, daily drug use in the lagged wave does not significantly predict being a member of a church community in the current wave. Also contrary to what was predicted, Model 2 shows that receiving drug abuse treatment in the previous wave predicts belonging to a church in the current wave. Specifically, compared to those who did not receive drug abuse treatment at the lagged wave, those who completed drug abuse treatment at the lagged wave are predicted to have decreased odds of being part of a church community at the current wave, holding time constant (OR = 0.45, $p<0.01$). However, as expected, attending NA/CA meetings in the previous wave does not predict church membership.

Importantly, supporting the initial hypotheses, all three illness career measures shown in Model 4 emerge as significant. That is, those who began use, quit use, and continued nonuse at the previous/lagged wave have increased odds of being members of a church community at the current wave, compared to those who continued use at the previous/lagged wave. This effect is particularly noteworthy for women who continued

non-use in the previous/lagged wave, as they are predicted to be 5.02 times more likely to be a member of a church community in the current wave ($p<0.001$). Though the significance of beginning use may seem contradictory, it is important to keep in mind the reference category is "continue use". Women who continue a pattern of drug use overtime may have a more severe drug use than women who intermittently use drugs over time. For women with more severe drug use, the social control aspect of church community membership may be a stronger deterrent from participation than for women whose drug use is inconsistent.

In all, these findings shed light on the role of drug use and help-seeking in predicting church and religious participation among low-income African American women. Though the majority of the African American women in this study report membership in a church community, these results indicate that drug use may pattern this membership in important ways. Importantly, women who consistently use drugs over time or who have received drug abuse treatment are significantly less likely to participate in religious communities. This suggests that while the church may be a useful site for drug prevention efforts given its particular importance in many African Americans communities, developing church-based drug intervention strategies may be less productive given that drug using women are less involved with such institutions.

The Social Safety Net

Social Support

As already discussed, social support is a critical resource for a number of health outcomes. However, drug use and help-seeking can disrupt networks and may have consequences for levels of social support over time. Using multilevel mixed effects

regression, perceived social support from family and friends at the current wave are predicted with lagged illness career measures[6]. It is hypothesized that continuing a pattern of non-use, compared to continuing drug use, in the lagged wave will predict greater levels of social support from both family and friends. While women who continue drug use over time may be more likely to have health matters network members intervene due to concern regarding their overall health, generally speaking, their drug use is expected to be a somewhat alienating force. That is, regular, chronic drug use is expected to produce smaller networks, and within which women will feel less integrated and supported.

[Table 8.6 Here]

The results of the multilevel model are displayed in Table 8.6. The hypothesized relationship between social support from family and friends at the current wave and continued non-drug use in the lagged wave is supported by these results. That is, compared to those who continued use in the previous/lagged wave, those who continued non-drug use in the previous/lagged wave have greater predicted levels of social support from family ($\beta = 0.28$, $p<0.05$) at the current wave, holding time constant. Additionally, as with social support from family, those who continued non-drug use in the previous/lagged wave have greater predicted levels of social support from friends ($\beta = 0.31$, $p<0.05$) at the current wave compared to those who continued drug using in the previous/lagged wave.

[6] Lagged measures of daily drug use, receiving drug abuse treatment, and attending NA/CA were also used to predict the social support outcomes, but these models failed to achieve overall significance and they are therefore not presented.

As shown, the intraclass correlation in these models is moderate at 0.59 for social support from family and 0.56 for social support from friends, indicating substantial correlation between responses of the same individual over time. This suggests that the provision of support is, to some degree, driven by stable characteristics of individuals and relationships. For example, these findings do not indicate that beginning drug use in the lagged wave disrupts social support from the sources examined, though it does appear though it does appear that abstention from drug use *over time* predicts greater levels of social integration. This suggests that social support resources are not disrupted by the ebbs and flows of daily life, but rather they may be more likely to respond to major life changes that continue over longer periods of time (e.g. lower perceived support following continuing patterns of drug use).

Summary

Taken together, the findings of this chapter reveal a number of significant relationships between the illness career and social support system. Importantly, these findings provide further support for the Network Episode Model by demonstrating the dynamic nature of the relationship between network measures and the illness career. By examining how drug use and help-seeking shape social network structure and function, it becomes clear that the illness career can have a number of important effects which may shape health matters networks over time. Notably, results demonstrate that though daily drug use predicts smaller health matters networks at follow-up, there is both more frequent discussion with and a greater level of encouragement to utilize health services from these ties. This suggests that everyday drug use prompts discussion with members of one's social network, and that these ties actively encourage health promoting behavior

in a way that they would not for non-drug users or those with less severe use. So while frequent drug use in the previous wave predicts smaller networks at follow-up, these results show that ties who remain involved may be more likely to intervene or be "activated" by this negative health behavior.

Further, the results of this chapter verify what one might expect; being non-drug using across waves of the study tends to predict greater social integration and a richer social safety net compared to women who continue drug use over time. That is, not using drugs across wave predicts greater levels of perceived social support from both family and friends at follow-up. Additionally, non-drug using women are also more likely to be a member of a church or religious community at follow-up. Even women who quit or began drug use during the study – indicating they have at least one wave of non-drug use – are predicted to be more likely to attend church at follow-up. Though women with more frequent drug use may prompt networks into action, the overall implication of these findings is that women who are non-drug users are predicted to have more robust networks over time. Given that not using drugs across study waves also predicts a greater likelihood of naming a doctor as a source of health information, these results suggest that women who do not use drugs may be better situated to continue patterns of non-use in the future than those who report using drugs.

The analyses of this chapter also reveal some particularly interesting findings regarding religious or church community membership. Results suggest that, compared to continuing drug use, women who are non-using at some point during the study timeframe are more likely to participate in a church or religious community. Additionally, religious community membership does not appear to be predicted by daily drug use and is, in fact,

negatively predicted by attending drug abuse treatment. This suggests that church membership may not serve as a haven for women struggling with ongoing substance abuse problems, even African American women for whom religiosity and spirituality may be a more salient part of day to day life. This extends what is known about how drug use and treatment shape religious involvement among this underserved and understudied group.

Surprisingly, the results of this chapter indicate that help-seeking in the previous wave – both drug abuse treatment and NA/CA attendance – seems to have little impact on the social network system at later waves. Indeed, the only finding relating help-seeking to the outcome measures was that drug abuse treatment in the previous wave predicts not being a member of a church or religious community at follow-up. It is certainly noteworthy that 12-Step meeting attendance did not predict larger or more supportive networks at follow-up, given that participation in such groups is meant to expand one's network to encompass a larger therapeutic circle of others working to achieve and maintain their recovery. It is also somewhat surprising that attending drug abuse treatment did not disrupt networks in any of the ways examined, as it may involve being away from family and friends for significant periods of time. These results may be partially due to data limitations, discussed in greater depth in Chapter 9, but they nonetheless represent striking findings.

In the next and final chapter, there will be a discussion of the overarching findings from Chapters 5, 6, 7, and 8. Chapter 9 will also address the findings of the previous analytical chapters as they relate to the Network Episode Model – including the contributions of each of these chapters to understanding the ways this theoretical

perspective operates among low-income African American women. Practice implications for substance abuse treatment and future research directions will also be considered.

Table 8.1. Poisson Regression of Health Matters Network Size at Wave 4 on Drug Use & Help-Seeking Measures at Wave 3 – Four Models

	Model 1	Model 2	Model 3	Model 4
Drug Use Severity				
Daily Drug Use (lagged)	0.79 (0.07)*	—	—	—
Treatment & Help-Seeking				
Drug Abuse Treatment (lagged)	—	0.88 (0.17)	—	—
NA/CA Attendance (lagged)	—	—	0.86 (0.12)	—
Illness Career[1]				
Begin Use (lagged)	—	—	—	0.77 (0.14)
Quit Use (lagged)	—	—	—	1.09 (0.22)
Non-Use (lagged)	—	—	—	1.03 (0.11)
N	340	341	341	340
LR Chi-Squared	6.35*	0.47	1.25	3.28

NOTE: Incidence rate ratios and standard errors presented
* = p < .05; ** = p < .01; *** = p < .001
[1] Excluded reference category is "continued use across waves"

Table 8.2. Linear Regression of Health Matters Network Mean Discussion Frequency at Wave 4 on Drug Use & Help-Seeking Measures at Wave 3 – Four Models

	Model 1	Model 2	Model 3	Model 4
Drug Use Severity				
Daily Drug Use (lagged)	0.43 (0.17)*	—	—	—
Treatment & Help-Seeking				
Drug Abuse Treatment (lagged)	—	0.04 (0.35)	—	—
NA/CA Attendance (lagged)	—	—	0.36 (0.23)	—
Illness Career[1]				
Begin Use (lagged)	—	—	—	0.28 (0.31)
Quit Use (lagged)	—	—	—	-0.13 (0.37)
Non-Use (lagged)	—	—	—	0.28 (0.19)
N	265	266	266	265
F-Statistic	6.60*	0.01	2.44	1.04
R-Squared	0.02	0.00	0.01	0.01

NOTE: Coefficients and standard errors presented
* = p < .05; ** = p < .01; *** = p < .001
[1] Excluded reference category is "continued use across waves"

Table 8.3. Multilevel Mixed Effects Regression of Source of Health Information on Illness Career Measures – Two Models

	Source of Health Information			
	Friends		Doctor	
	OR	SE	OR	SE
Illness Career[1]				
Begin Use (lagged)	0.67	0.23	1.09	0.35
Quit Use (lagged)	0.63	0.16	1.45	0.35
Non-Use (lagged)	0.53**	0.11	1.78**	0.36
Time				
Time	0.87	0.14	0.92	0.14
Number of Observations	1048		1075	
Number of Groups	531		546	
Log Likelihood	-600.61		-709.54	
Wald Chi^2	10.56*		9.81*	
Intraclass Correlation (rho)	0.25		0.29	

NOTE: Odds ratios and standard errors presented.
* = p < .05; ** = p < .01; *** = p < .001
[1] Excluded reference category is "continued use across waves" lagged

Table 8.4. Linear Regression of Mean Frequency of Health Matters Network Ties that Encourage Health Services Utilization at Wave 4 on Drug Use & Help-Seeking Measures at Wave 3 – Four Models

	Model 1	Model 2	Model 3	Model 4
Drug Use Severity				
Daily Drug Use (lagged)	0.50 (0.19)*	—	—	—
Treatment & Help-Seeking				
Drug Abuse Treatment (lagged)	—	0.53 (0.41)	—	—
NA/CA Attendance (lagged)	—	—	0.48 (0.27)	—
Illness Career[1]				
Begin Use (lagged)	—	—	—	0.33 (0.37)
Quit Use (lagged)	—	—	—	-0.25 (0.44)
Non-Use (lagged)	—	—	—	0.05 (0.22)
N	265	266	266	265
F-Statistic	6.57**	1.67	3.10	0.48
R-Squared	0.02	0.01	0.01	0.01

NOTE: Coefficients and standard errors presented
* = p < .05; ** = p < .01; *** = p < .001
[1] Excluded reference category is "continued use across waves"

Table 8.5. Multilevel Mixed Effects Regression of Being a Member of a Church Community on Drug Use and Help-Seeking Measures – Four Models

	Model 1	Model 2	Model 3	Model 4
Drug Use Severity				
Daily Drug Use (lagged)	0.68 (0.14)	—	—	—
Treatment & Help-Seeking				
Drug Abuse Treatment (lagged)	—	0.45 (0.13)**	—	—
NA/CA Attendance (lagged)	—	—	0.88 (0.23)	—
Illness Career[1]				
Begin Use (lagged)	—	—	—	2.83 (1.45)*
Quit Use (lagged)	—	—	—	2.54 (1.02)*
Non-Use (lagged)	—	—	—	5.02 (1.89)***
Time				
Time	0.83 (0.08)*	0.79 (0.07)*	0.83 (0.07)*	0.80 (0.16)
Number of Observations	1591	1592	1592	1047
Number of Groups	547	547	547	531
Log Likelihood	-896.53	-893.80	-897.34	-615.66
Wald Chi^2	7.00*	10.98**	4.12	18.58**
Intraclass Correlation (rho)	0.71	0.72	0.71	0.74

NOTE: Odds ratios and standard errors presented

* = $p < .05$; ** = $p < .01$; *** = $p < .001$

[1] Excluded reference category is "continued use across waves"

Table 8.6. Multilevel Mixed Effects Regression of Perceived Social Support Score on Illness Career Measures – Two Models

	Source of Social Support			
	Family		**Friends**	
	Coef.	SE	Coef.	SE
Illness Career[1]				
Begin Use (lagged)	0.04	0.17	-0.13	0.17
Quit Use (lagged)	-0.01	0.13	0.15	0.14
Non-Use (lagged)	0.28*	0.12	0.31*	0.12
Time				
Time	0.03	0.06	0.09	0.07
Number of Observations	1045		1045	
Number of Groups	530		530	
Log Likelihood	-1795.17		-1811.01	
Wald Chi[2]	10.40*		13.71**	
Intraclass Correlation (subject)	0.59	0.02	0.56	0.02

NOTE: Coefficients and standard errors presented.
* = p < .05; ** = p < .01; *** = p < .001
[1] Excluded reference category is "continued use across waves

Table 8.7. Summary of Hypotheses and Findings in Chapter 8

Topic	Research Question	Hypothesis	Corroborated?
Daily Drug Use & Network Size	Does daily drug use in the previous wave shape network size at the current wave?	Daily drug use at Wave 3 will predict smaller health matters networks at Wave 4.	Yes
Daily Drug Use & Discussion Frequency	Does daily drug use in the previous wave shape the frequency of discussion with health matters ties at the current wave?	Daily drug use at Wave 3 will predict a lower mean frequency of discussion with health matters network members at Wave 4.	No
Drug Abuse Treatment & Network Size	Does entering drug abuse treatment in the previous wave shape network size at the current wave?	Participating in drug abuse treatment at Wave 3 will predict larger health matters networks at Wave 4.	No
Drug Abuse Treatment & Discussion Freq.	Does entering drug abuse treatment in the previous wave shape the frequency of discussion with health matters ties at the current wave?	Participating in drug abuse treatment at Wave 3 will predict a higher mean frequency of discussion with health matters network ties at Wave 4.	No
12-Step Attendance & Network Size	Does attending Narcotics or Cocaine Anonymous meetings in the previous wave shape network size at the current wave?	Attending NA/CA meetings at Wave 3 will predict larger health matters networks at Wave 4.	No
12-Step Attendance & Discussion Freq.	Does attending Narcotics or Cocaine Anonymous meetings in the previous wave shape the frequency of discussion with health matters ties at the current wave?	Attending NA/CA meetings at Wave 3 will predict a higher mean frequency of discussion with health matters network members at Wave 4.	No
Illness Career & Network Size	Does beginning drug use in the previous wave (after a wave of non-use) shape network size at the current wave?	Beginning drug use at Wave 3 will predict smaller health matters networks at Wave 4.	No
Illness Career & Discussion Freq.	Does beginning drug use in the previous wave shape the frequency of discussion with health matters ties at the current wave?	Beginning drug use at Wave 3 will predict a lower mean frequency of discussion with health matters networks at Wave 4.	No
Illness Career & Network Size	Does quitting drug use (after a wave of use) or continuing a pattern of non-drug use in the previous wave shape network size at the current wave?	Quitting drug use or continuing non-drug use at Wave 3 will predict larger health matters networks at Wave 4.	No

Table 8.7 (continued). Summary of Hypotheses and Findings in Chapter 8

	Research Question	Hypothesis	Corroborated?
Illness Career & Discussion Freq.	Does quitting drug use or continuing non-drug use in the previous wave shape the frequency of discussion with health matters ties at the current wave?	Quitting drug use or continuing non-drug use at Wave 3 will predict a higher mean frequency of discussion with health matters network at Wave 4.	No
Illness Career & Sources of Health Information	Does non-drug use in the previous wave predict sources of health information at the current wave?	Non-drug use in the previous wave will predict a greater likelihood of naming a physician as a source of health information in the current wave.	Yes
Daily Drug Use & Health Service Encouragement	Does daily drug use at Wave 3 predict receiving encouragement from health matters ties to seek health services at Wave 4?	Daily drug use in Wave 3 will predict greater mean levels of encouragement from health matters ties at Wave 4.	Yes
Help-Seeking & Health Service Encouragement	Does help-seeking at Wave 3 predict receiving encouragement from health matters ties to seek health services at Wave 4?	Participating in drug abuse treatment or attending NA/CA in Wave 3 will predict greater encouragement from ties to use health services at Wave 4.	No
Illness Career & Health Service Encouragement	Does continuing non-drug use at Wave 3 predict receiving encouragement from health matters ties to seek health services at Wave 4?	Continuing non-drug use in Wave 3 will predict a lower mean number of health ties that encourage service utilization at Wave 4.	No
Daily Drug Use & Church Membership	Does daily drug use at Wave 3 predict church attendance at Wave 4?	Daily drug use during the lagged wave will predict lower levels of church attendance in the current wave.	No
Illness Career & Church Membership	Do patterns of drug use (i.e. the illness career) in the previous wave predict church or religious community membership in the current wave?	Beginning use, quitting use, or continuing non-drug use in the previous wave will predict church community membership in the current wave.	Yes
Help-Seeking & Church Membership	Does help-seeking in the previous wave predict church membership in the current wave?	Receiving drug abuse treatment or attending NA/CA meetings in the lagged wave will not be significantly associated with church or religious community membership in the current wave.	Partially
Illness Career & Social Support	Does non-drug use in the previous wave shape levels of social support from family and friends at the current?	Continuing a pattern of non-use in the lagged wave will predict greater levels of social support from both family and friends.	Yes

CHAPTER 9: DISCUSSION, LIMITATIONS, AND IMPLICATIONS

The overall purpose of this research was to examine the social network dynamics that underlie patterns of drug use and help-seeking (i.e. the illness career) among low-income African American women. Though research applying the Network Episode Model has demonstrated broad support for the theory (Pescosolido et al. 1998; Bonin et al. 2007; Edmonds et al. 2012; Novins et al. 2012), little research has investigated how social networks shape the illness career of those living at the intersection of multiple disadvantaged statues. Because networks function differently in distinct contexts, extant research findings are not necessarily generalizable to these women or to the case of drug use and related help-seeking (Pescosolido 2010). While past efforts have been made to investigate and describe individual-level risk and protective factors that relate to substance use, treatment, and recovery, work of this kind may offer little insight into the core mechanisms which drive a range of attitudes and behaviors that shape the practical realities of African American women's lives (Pescosolido 2011). The Network Episode Model, as a theoretical tool, suggests the networks within which individuals are embedded play a key role in shaping conceptions of health and illness and ideas about acceptable responses to health problems. That is, networks influence decisions about what treatment(s) to pursue, where and when to pursue them, and to what degree or extent to comply with treatment(s) that are undertaken. Thus, networks are a key mechanism that shapes health outcomes in complex ways.

This research responds to the relative absence of work investigating the linkages between network characteristics, drug use, and help-seeking among multiply marginalized populations. Importantly, the findings of this research demonstrate the

dynamic relationship of low-income African American women's social networks to patterns of drug use and help-seeking. That is, social networks serve as both predictors and as outcomes of drug use and recovery pathways. As predictors, network features shape drug use and help-seeking through social influence, social control, and social integration. As outcomes, networks are shaped by measures of social context like criminal justice status, as well as frequency of drug use and patterns of use over the course of the study. In addition to insights on the social networks of the low-income African American women at the heart of this research, findings also reveal the significant influence of living at the intersection of multiple marginalized statuses on health and well-being. The remainder of this chapter addresses these contributions, as well as the limitations of this research, and concludes by offering implications and suggestions for future research.

Social Networks as Predictors

The findings of this research, generally speaking, indicate that social influence and social control measures are more significant predictors of drug use and help-seeking than measures of social support. Predictors relating to family context emerged as significant for both drug use and help-seeking outcomes. Additional measures of social influence, including living with someone who has a substance abuse problem and individuals' sources of health information, also have a significant impact on the behavioral outcomes assessed in this study.

The Influence of Family

Social network system factors related to family context were particularly important in this study. First, findings indicate that a family history of drug problems

predicts drug use among participants in this research. Specifically, parental history of drug problems predicts more frequent drug use, lower odds of quitting use during the study timeframe, lower odds of nonuse across consecutive waves of a data collection, and a greater probability of attending drug abuse treatment. These findings regarding the importance of parental substance abuse history are supported by a number of studies linking family history of substance abuse to the presence of substance use disorders in individuals (Gfoerer 1987; Merikangas et al. 1992; Boyd 1993; Reinherz et al. 2000; Pescosolido et al. 2008). Results of this study may be partially explained by the negative social influence that drug-using parents have on children and young adults. Individuals exposed to parental substance abuse during formative stages of their development may come to see drug use as normative.

As social learning theory suggests, these women may model their own behavior and coping strategies on those of their parents and may come see drug use a reasonable response to stressful life events (Jessup 1997). Though the majority of research in this area relates to substance use in late adolescence and early adulthood, there are reasons to suspect that parental history of drug problems may have an enduring effect on the women in this study. The cohesive strength attributed to extended family networks and the close kin relationships of African Americans appear to persist over time and may exert a powerful influence well into adulthood (McAdoo 2007; Burton 1996; Taylor & Chatters 1991; Silverstein & Bengtson 1997). Importantly, the low-income African American women in this research may have fewer resources with which to respond stressful or burdensome life events to which they are disproportionately exposed, and may respond in the ways that are available to them – including strategies that may be considered

maladaptive, like substance use. Resources associated with a more advantaged status may mitigate the risks associated with family histories of substance abuse.

Past research indicates that there are numerous mechanisms that may be at work in the association between family substance abuse histories and individual behaviors, including genetic factors, which certainly cannot be ruled out but are beyond the scope of this project (Pescosolido et al. 2008). Research investigating the interaction of genetic characteristics and the environment may be particularly interesting in the case of low-income African American women, as their social location at the nexus of disadvantaged status may have an important effect in activating genetic predisposition to certain types of health problems.

In addition to the importance of parental history of drug problems as a measure of social influence, results of this research indicate that family status may serve as an important force of social control in the lives of the women in this study. Specifically, findings show that being married or living as married predicts both less frequent drug use and lower odds of attending 12-Step meetings. Past research has also found that women who are married or who have children tend to have lower rates of substance abuse and dependence, and that transitions to marriage and parenthood are associated with declining rates of illicit drug use in women (SAMHSA 2005; Bachman et al. 2012; Umberson 1987). For those who are married, the transition to spouse means a new source of regulation and social control in everyday life. For those who are daily illicit drug users, this level of regulation or social control may interrupt patterns of use. That is, spouses may directly intervene and regulate their partner's behaviors, especially those they perceive as unhealthy or maladaptive (Umberson 1987; Hughes and Gove 1981).

Furthermore, given this environment, married individuals may themselves be more likely to regulate their own negative health behaviors and conform to spousal role expectations. It is noteworthy that there has been a decline in marriage among African American women and that this is particularly true for women with low educational attainment (Goldstein & Kenney 2001; Collins 2000). Thus, these findings regarding the transition to marriage and reduced rates of drug use should be considered carefully and with the knowledge that, for most low-income African American women with less educational attainment, marriage may not be a life course transition that is available to them.

Though it did not shape patterns of drug use, having children under the age of 18 did predict attending Narcotics or Cocaine Anonymous meetings. This aligns with past research findings that have documented the important influence motherhood can have on patterns of substance abuse help-seeking (Kline 1996; Knight et al. 1999; Dawson 1996). For African American women, the role related demands of motherhood may make 12-Step attendance a more reasonable form of help-seeking than pursuing inpatient, residential, or other forms of drug abuse treatment. Given the prevalence of female-headed households and single-parent homes, these forms of help may require efforts to find childcare, cost a considerable sum without insurance, and require transportation of a great distance, among other factors. Even with an extended network and supportive ties, these remain significant barriers to formal substance abuse treatment seeking. Furthermore, for single mothers especially, the anonymity of attending Narcotics and Cocaine Anonymous meetings may be preferable to attending more formal drug abuse treatment, where their participation marks a documented admission of their substance use problems in a health care setting. As many women in the B-WISE study are already in a

precarious position with risk of potentially losing custody of their children, seeking inpatient or outpatient substance abuse treatment may be perceived as too risky.

These findings are opposite of the relationship between marital status and 12-Step participation. In the context of marriage, admitting problems with illicit drug use and seeking help may be perceived negatively by one's male partner and the threat of courtesy stigma associated with having a partner in treatment (even in an anonymous setting) may predict negative attitudes toward help-seeking (Laudet et al. 1999). It is noteworthy that while only about 14% of women in the B-WISE study were married at Wave 1, over half (52.72%) had a child under the age of 18. Given that the transition to motherhood might be a more salient experience for low-income African American women than the transition to spouse, treatment and prevention strategies should focus on addressing the needs of women with children who might already be more likely to seek help for their illicit drug use problems.

Other Significant Social Influences

In addition to the role of social network system measures associated with family context, this research reveals two other factors that have an important role in shaping drug use and help seeking. First, living with a person who has a drug or alcohol problem predicts daily drug use, lower odds of non-drug use across consecutive waves, and a higher probability of attending either drug abuse or 12-Step treatment. Living with someone who has a substance use problem may influence behavior in a number of ways. It could mean that illicit substances more readily available to those in the same household as the person who has a substance abuse problem, thereby increasing access and the possibility of use. Further, such a living arrangement may shape perceptions of drug use.

That is, in a context where substance use is regularly occurring in the home by a member of ones' close personal network, it may be become normalized – thereby increasing individuals' risk and vulnerability to use drugs themselves. This may be especially the case if the cohabitant is a romantic partner.

Living with a person who has a substance abuse problem also predicts attending 12-Step meetings. A possible explanation for this relationship is that individuals who live with someone who has a substance abuse problem may have a more severe drug problem themselves – as is indicated by daily use being significantly predicted by this measure – and therefore are more likely to seek help. It is also possible, though less plausible perhaps, that those with a substance use disorder may be more likely themselves to attend such meetings, and encourage those living with them who are drug users to do the same. A limitation of this measure is that it is unclear if the individuals living with participants who had substance abuse problems were selected because they were drug using and thereby facilitated participants' own drug use, or if their drug use problems were precipitated by respondent's drug use, or vice versa. It is also impossible to determine if the substance abusing person living with the respondent is a romantic partner or intimate. Not knowing the specific nature of the relationship between this substance abusing person and the participant is an unfortunate limitation. Knowing this additional information would allow a more clear explanation of the pathways linking living with a substance abuser to drug use and related help-seeking.

Another significant predictor of patterns of drug use and treatment-seeking revealed by this research is naming a doctor as a source of health information. According to results, having a doctor as a source of health information predicts greater odds of 12-

Step meeting attendance, quitting use during the study timeframe, continuing a pattern of non-use across consecutive waves, and also beginning drug use. Though the last of these seems a negative health behavior compared to the other outcomes, it is important to recall that "beginning use" indicates experiencing a period of non-drug use during the study time frame and is only significant in comparison to the reference group of continuing use across consecutive waves of the study. Naming a doctor as a source of health information, not surprisingly, can therefore be seen as having a positive influence on the health behaviors of African American women. Physicians are a direct source of health promoting advice which may influence patients to adopt more healthful lifestyle changes. Further, women who seek out doctors for health advice may be more likely to seek help of other kinds, such as 12-Step programs.

It is important to recognize, however, that having access to a physician remains a privilege, rather than a right, in the United States. Though the Affordable Care Act may begin to make physicians more accessible to all, at the time this data was obtained, that was not the case. As the results of Chapter 7 indicate, enabling factors like having public or private insurance or a usual doctor are significant predictors of naming a physician as a source of health information. As shown in Chapter 6, these factors which are indicative of more advantaged status also predict greater odds of non-drug use across study waves and quitting use. Taken together, these findings suggest that status can work directly to shape patterns of drug use and also indirectly, through patterning access to physicians. In this way, socioeconomic status might be considered more distal in the chain of causation, while seeing a physician has a direct, proximal relationship to drug use behaviors (Link

& Phelan 1995). Though additional analyses were beyond the scope of this project, further research to clarify these pathways is needed.

Social Support

Though social support from family and friends did not predict help-seeking in the full models presented in Chapter 6, it does significantly predict the illness career. As social support from friends increases, so too do the odds of non-drug use over time, quitting use during the study timeframe, and beginning use compared to continuing drug use over time. As with the previous findings, the significance of beginning use during the study time frame may not represent risk of starting to use drugs, but rather odds of having a period of non-use (even if followed by drug use at the next wave) compared to continuing a pattern of drug use. These findings indicate that perceived support from family and friends have differing effects on patterns of drug use over time. Importantly, being socially integrated in a friend group and feeling positively supported by these individuals – that they really try to help you and that you can count on them when things go wrong – may interrupt patterns of continuing drug use over time. In this way, a network of positively supportive non-kin relationships may make the low-income African American women of this study less vulnerable to continuing substance use and more likely to cease negative substance use behaviors.

It is somewhat surprising, given the importance of extended kin networks among low-income African American women, that social support from family members does not play a significant role in shaping patterns of drug use and help-seeking among the women in this study (Jarrett 1994). While drug use may be normative in some households (e.g. where parents have drug use problems), if this were the case in general, family social

support would likely predict patterns of drug use among participants. As these findings demonstrate, social support from family does not predict drug use. An explanation for the lack of significance of family social support in this research may be that the kind of support received from family members does not directly shape patterns of drug use or help-seeking. Because this measure only captures perceived feelings of support relating to decision-making and emotional needs and does not, for example, include items regarding the provision of material and other resources, it may miss aspects of social support from kin networks that shape drug use or help-seeking. Further, it may be the case that reciprocal demands with extended kin memberships are more significant than those with friends, thereby reducing the positive, potentially health promoting, effects they might otherwise have on behavior (Sarkisian & Gerstel 2004). Finally, individuals may be less likely to confide in their family members regarding certain types of drug use, which may be seen as a source of shame, whereas they may feel more comfortable discussing such problems with close friends.

Social Networks as Outcomes

Social network system measures were also examined as outcomes, a novel contribution of this research, as there is considerably less known about the factors that predict network characteristics than the role of networks as predictors of health and other outcomes. Findings reveal that criminal justice involvement and patterns of drug use play an important role in shaping the social network system.

Criminal Justice Involvement

Because the B-WISE data includes women under three different levels of criminal justice supervision (i.e. community, probation, and prison), it is possible to compare these

groups. The findings of this dissertation clarify a number of important differences between the social network characteristics of these women. Specifically, as might be expected, women who were incarcerated at baseline have significantly smaller health matters networks at the final wave of data collection than do women recruited from the community sample. Further, they have lower predicted odds of relying on friends for health information and lower levels of social support from friendship networks. These findings align with what is known about the effects of incarceration on social networks; namely, incarceration serves to disrupt and potentially destabilize relationships with those on the "outside" (Rose & Clear 2003). While family members and extended kinship ties may be more likely to stay in contact during a period of incarceration and be a source of support upon release, friendship networks may have higher turnover and less stability for women who re-enter the community. Unfortunately, even after women who were incarcerated are released, having served time in prison may lead to further marginalization. The stigma associated with being a female offender, financial instability, and low self-esteem can all contribute to difficulty maintaining established networks and establishing new relationships upon re-entry (Clear et al. 2001; Rose et al. 2001).

However, the findings of this research also indicate that both women who were incarcerated and those who are on probation receive greater overall encouragement from their health matters network ties to use health services. This encouragement may be prompted by the worse overall health of women in this study involved with the criminal justice system. Women involved with the criminal justice system have been shown to have more serious health problems compared to the general population, including co-occurring mental and physical health problems and substance use disorders (Peters et al.

1997; Langan & Pelissier 2001; Tuchman 2010). Results of this research demonstrate that these women have greater odds of being daily drug users and a greater likelihood of attending Narcotics or Cocaine Anonymous meetings, indicating their drug use may be more severe than women from the sample under no criminal justice supervision.

It is important to note that though their drug use may be more frequent and motivate them to attend 12-Step meetings, findings of this research also suggest that the drug use of women who are recruited while incarcerated or on probation is also less likely to be consistent. That is, these women are more likely than women recruited from the community to start and stop use during the study timeframe rather than continue use across study waves. The women under criminal justice supervision at baseline are more likely to be subject to routine monitoring throughout the study time frame as a condition of their release or probation. In some cases this includes random drug testing or home visits, which may motivate these women to reduce, temporarily suspend, or cease drug use. Those who were incarcerated may also have participated in mandatory substance abuse treatment as a condition of their release, which could also motivate positive changes in drug use behaviors.

However, the efforts to maintain non-drug use among low-income women on probation and recently released from prison may also be complicated by their return to the same environment they left, which may include access to illicit drugs and substance use. The confluence of enabling and health-promoting factors (e.g. receiving treatment or attending 12-Step meetings) and routine monitoring (e.g. drug testing as a condition of probation or release) on one hand, coupled with the stress of having been recently released from prison or on probation – including problems like joblessness, precarious

living conditions, child custody issues, health problems, and low self-esteem – on the other hand, may explain the disrupted patterns of drug use and abstention found in this research among women involved with the criminal justice system. Additional work is needed to further explore the dynamic relationship between network factors, stressors, and patterns of substance among women involved with the criminal justice system.

Drug Use & Networks

Like criminal justice status, drug use also plays an important role in predicting characteristics of the social network system according to the findings of this study. As shown in Chapter 7, a history of drug problems predicts smaller health matters networks at Wave 4. However, having a history of drug problems also predicts a higher mean frequency of discussion and greater mean levels of encouragement to use health services from members of participants' health matters networks. Similarly, daily drug use also predicts a higher mean level of encouragement from health matters network ties to use health services. Generally speaking, worse health – as indicated by depressive symptoms and taking medication for a physical problem – predicts more frequent discussion with health matters networks. Taken together, these findings suggest that a history of or current health problems may "activate" health matters ties and that these ties may, in some instances, even work to encourage women to seek help for these problems.

That being said, just because individuals report experiencing a health problem or have ties encouraging them to utilize health services, does not necessarily indicate they will actually consult a physician. Results of this research suggest that only certain health problems predict naming a doctor as a source of health information. Specifically, neither mental health problems nor a history of drug use problems predict greater odds of naming

a physician as a source of health information, while taking medication for a physical problem does predict this outcome. There are a number of potential explanations for these results. It may be that mental health and substance abuse problems are perceived as less urgent or significant than physical health problems, therefore not motivating women to consult a physician. Individuals also may not perceive a physician as the form of help appropriate for dealing with such problems. More likely however, the strong predictive relationship between needing medication for a physical health problem and seeing a doctor can be explained by the fact that physicians serve as gatekeepers to accessing prescription medications. If the women in this study require a prescribed medication, they likely have to consult with a doctor at least annually to receive a renewal of this prescription.

Additional clues to predicting who names a doctor as a source of health information come from Chapter 7. The findings of this chapter show that traditional enabling factors associated with Andersen's Socio-Behavioral Model predict reporting a physician as a source of health information (Andersen 1968). Specifically, having insurance of any kind (compared to no insurance), higher levels of trust in physicians, and a usual doctor are significant predictors. These findings are supported in the extant literature on health service utilization (Kirzinger et al. 2012; Chandler 2010; Smedley et al. 2003; Anderson 1990). Future research examining specific pathways and dynamic relationships between these enabling factors, social network characteristics, and use of health services are justified given the independent significance of such factors and network features on the illness career. It is worthy of mention that a limit of the outcome measure "physician as a source of health information" is that it is not possible to identify

definitively why participants consulted a physician. That is, participants only indicated that a doctor was "a source of health information", not the nature of the consultation.

Finally, this research also demonstrates some of the ways patterns of drug use over time shape the social network system. Not using drugs over time appears to have the most significant and diverse influence on network characteristics. According to study findings, non-drug use in the previous waves predicts greater levels of social support from both family and friends, greater odds of being part of a church community, greater odds of naming a doctor as a source of health information, and lower odds of naming friends as a source of health information. Compared to continuing use across previous waves, women who continue a pattern of non-drug use appear to be more socially integrated and have richer networks that may offer a number of potential health promoting benefits. For African American women specifically, being more socially embedded – especially in religious communities – has been linked to greater levels of psychological well-being (Brown et al. 2000; Snowden 2001; Seawell et al. 2014). These resources are particularly important as they relate to buffering the effects of discrimination on health (Seawell et al. 2014; Perry et al. 2012). Further, the greater probability of relying on a physician as a source of health information may further contribute to making choices that will have positive effects on overall health.

Given the suggested significance of religious community membership among African American women and the high levels of church participation among B-WISE Study participants, that these are the only significant study findings on religion is noteworthy. Results did not indicate, for example, that church attendance shapes patterns of drug use, revealing that church does not serve as a force of social control or regulation;

at least when considering drug use. Rather, not using drugs predicts that low-income African American women will participate in religious or spiritual communities and is one of a number of network characteristics that shows they are more socially integrated than women who continue patterns of drug use across the study timeframe.

Intersectionality and Critical Race Theory: Race, Gender, and Class

Though the social network system characteristics and their relationship of reciprocal influence with the illness career are a major focus of this research, a central goal is also to examine how living at the intersection of marginalized race, class, and gender statuses shape patterns of drug use and related help-seeking among low-income African American women. While cultural mistrust did not emerge as significant in the analyses included in this study, gendered racism, victimization as an adult, and active coping do appear to shape the social network system and the illness career. Findings from this research regarding the role of intersecting inequalities have meaningful implications for policy, substance abuse treatment, and future research, which are described in the final section of this chapter.

Gendered Racism

As already discussed in Chapter 2, experiences of gendered racism among African American women have been linked to a number of deleterious mental and physical health outcomes (Perry et al. 2012; Perry et al. 2013; Jones & Shorter-Gooden 2003; Jackson et al. 2001). The findings of this research add to the body of literature examining gendered racism by extending these findings to drug use. That is, as the results of Chapter 5 demonstrate, gendered racism significantly predicts lower odds of quitting use, non-drug use across waves of the study, and beginning use during the study timeframe. Moreover,

gendered racism also appears to disrupt networks, in that experiencing gendered racism predicts less perceived social support from family and friends. So, not only are women who experience gendered racism less likely to quit using drugs or continue non-drug use across consecutive waves, experiencing this form of discrimination may also undermine social support; or, at least, perceptions of social support.

These findings are particularly troubling because, in addition to study results indicating that social support from friends predicts quitting drug use and continuing non-drug use over time, past research also indicates that social support may be a key resource for helping women of color who experience discrimination (Perry et al. 2013; Perry et al. 2012; Seawell et al. 2014). This past research finds that by reducing the stress burden associated with gendered racism, social support may contribute to better health outcomes. Because gendered racism directly predicts both continuing drug use over time and lower odds of quitting drug use, as well as lower levels of social support from family and friends (a context that further puts these women at risk of negative health outcomes), it represents a major social and public health concern.

Adult Victimization

Low-income African American women are disproportionately exposed crime and violence, and this may have important effects on their networks and health (Crenshaw 1991; Black et al. 2011; CDC 2012; Trumam et al. 2013). For this reason, victimization as an adult was included as a measures in this research. Findings from Chapter 5 support what has been found in the existing literature (Woodson et al. 2010; Wilson et al. 2012). Specifically, being a victim (or witness) of a violent crime as an adult predicts significantly greater odds of daily drug use and receiving drug abuse treatment. These

findings suggest that experiencing a violent crime as a victim or witness may motivate individuals to turn to drug use in an effort to manage their response to these traumatic incidents. Further, because women who have been victimized are more likely to attend drug abuse treatment, this may imply that such experiences with violence may exacerbate drug use, leading to more serious or detrimental use that requires treatment. Additional research is needed to examine how differential coping strategies may mediate or moderate the relationship between health outcomes and exposure to violence or traumatic events.

John Henryism

John Henryism, or active coping orientation, is also examined in this dissertation. As described in Chapter 2, research has linked active coping orientation among African Americans to negative health outcomes (James et al. 1987; James 1994; Bennett et al. 2013). Though a more active coping orientation is generally thought to be advantageous, the John Henryism hypothesis posits that fully engaging with chronic stressors like discrimination and financial stress may have negative psychological and physiological consequences for African Americans (Bennett et al. 2013). The findings of this research, however, do not support this theory. Rather, active coping orientation predicts greater levels of social support from family and friends, and appears to have no direct, predictive relationship on patterns of drug use or related help-seeking. Though active coping was not examined as a mediator between experiences of gendered racism and drug use, the results of this research show no evidence that women with a more active coping orientation are at an elevated risk of drug use. Rather, as might be expected, women who cope more actively with problems have a greater perception of support from friends and

family, likely because in actively coping with stressors they are more likely to cultivate and access such resources.

Limitations

There are important limitations of this study that should be acknowledged. First, this data is not a representative sample of African American women nationally. The B-WISE study is, however, a relatively balanced representation of low-income urban African American women across criminal justice status. The stratified sampling strategy, with three samples (community, prison, and probation) and approximately half of all participants reporting drug use at the baseline interview, presents a unique opportunity to examine how marginalized statuses and criminal justice involvement shape patterns of illicit drug use. Because low-income African American women are an understudied and underserved population, conducting research of this kind – especially longitudinal research – represents an important contribution. Using longitudinal modeling permits researchers to make more accurate statements about the causal relationships between variables of interest. A notable strength of the B-WISE data are the excellent follow-up rates for all waves of data collection, which allow for more robust longitudinal data analysis.

Further, measures of substance abuse treatment available in this research are limited. The drug abuse treatment outcome, for example, was included as a comparison to 12-Step attendance and to represent a more formal, institutionalized measure of treatment. However, in order to have a large enough number of participants for statistical analysis, three treatment measures had to be combined. In combining inpatient, outpatient, and prison/jail based drug abuse treatment into a single dichotomous time-

varying measure, the nuance of these individual measures is lost. Importantly, results predicting this as an outcome must be interpreted carefully since women under criminal justice supervision who were required to complete substance abuse treatment as a condition of their release are not electing voluntarily to enter treatment, rather their attendance is mandatory. Though the Network Episode Model does not assume that simple rational choice underlies help-seeking decisions, such mandatory treatment may subvert the normal social and other processes that shape help-seeking. Additionally, motivations for seeking inpatient compared to outpatient treatment may differ in significant ways.

Also, measures of illness career outcomes – categorical classifications of changes in drug use over time – were not designed for this purpose. Ideally, illness career measures like beginning and quitting use would be examined over longer periods of time. Also, it would be valuable to have information about respondents' intentions and perceptions of these patterns, providing more accurate representations of phenomenon like "relapse" and "recovery". However, capturing the essence of something as complex, fluid, and subjective as the illness career is a challenging endeavor. For the purposes of this research, the most simple and conservative estimates of "begin drug use", "quit drug use", "continue drug use", and "continue non-drug use" are used. These are not perfect measures of relapse or recovery, but they provide adequate information for examining patterns of drug use over the 18 months of the B-WISE Study. Daily drug use is also included in this research to allow for the examination of drug use severity, which is another important aspect of the illness career.

Additional research, both qualitative and quantitative, is needed to investigate perceptions of drug use and help-seeking, and the role of the social support system in shaping these beliefs among low-income African American women. Qualitative research could provide useful insights that might inform future quantitative research studies in this area. For example, open-ended questions added to the B-WISE follow-up instrument have revealed that participant attitudes toward marijuana are unique. Some participants do not perceive cannabis as a "drug" in the traditional sense, espousing favorable opinions about its effects, and minimizing its potential harmfulness. Knowing contextual information such as this is important when examining patterns of drug use in this population. Quantitative survey data may fail to measure the nuance of participants' subjective opinions regarding drugs, drug use, and treatment options. Further, qualitative research is needed to uncover how participants conceive of their own behavior and relationships. While quantitative data can identify relationships between variables and patterns at sample and population levels, qualitative research can reveal important subtleties, like individual intentions for behavior and the meaning these actions may take on in the real world. Social interactions are complicated and having informative quantitative and qualitative data is essential for validating and clarifying findings, extending theory, and generating new ways of understanding the connections between macro-, meso-, and micro- levels of analysis.

A major limitation of this study is that complex network measures – including health matters network size, level of discussion with health matters ties, and level of encouragement from network ties – were only added to the 18-month interview after follow-up collection was already underway. For this reason, these were only able to be

examined as outcomes and not predictors. Additionally, because it is impossible to measure networks prior to the Wave 1 interview, it is not possible to state how networks form among the women in this study – it is only possible to discuss how they changed or appear at follow-up. Other measures of social influence or integration in this research are only proxies or summary measures rather than true measures of egocentric network structure, function, and composition. For example, though perceived social support from family and friends emerge as important factors in drug use and treatment, additional research is needed to examine how specific types of social support (e.g. emotional, instrumental, etc.) and reciprocal demands from network members shape the dynamic relationship between support and the illness career. In short, though this study demonstrates that perceived social support matters in a number of ways, knowing exactly how, why, and under what conditions it matters for low-income African American women are important directions for future research efforts.

Finally, the B-WISE data lacks important measures of network structure that are relevant for understanding how network resources might be used. While this research includes measures of available resources like social support, an important aspect of networks research is also understanding how such resources "flow" through networks. Structurally, networks can be conducive to the exchange of information, material resources, and non-material resources (e.g. social capital), or they may constrain and limit the exchange of such resources. For example, if all members of an individual's personal network know one another and are close friends, this is an ideal environment for the rapid spread of information. However, though information may spread rapidly through such a close knit network, this network does not provide good access to novel information. That

is, ties are redundant in the sense that they tend to have the same information. Weak ties within an individual's personal network – acquaintances which are loosely associated with other network members – indicate access to a broader variety of resources than strong ties. As stated by network theorist Mark Granovetter, "…individuals with few weak ties will be deprived of information from distant parts of the social system and will be confined to the provincial news and views of their close friends" (Granovetter 1983: 202). For an individual considering seeking treatment for drug abuse or dependence, structural network factors such as these may have important implications on their understanding of potential treatment options, the resources with which they have to access such options, and their views toward treatments available to them. For B-WISE participants that were recruited while in prison, network structure and their position within networks may also have myriad effects on their drug use, help-seeking, and health trajectories upon release. Future research addressing this important limitation could clarify and expand a number of the findings presented in this study.

Implications & Future Research

Policy and Practice Implications

Ultimately, the findings of this research provide a number of novel contributions to existing literatures on drug use, health service utilization, social networks research, and critical race theory. As described in Chapter 1, the goal of this research was to systematically examine the relationships between core components of the Network Episode Model among a population of low-income African American women. Taken together, the findings of this research provide strong support for the NEM. Results clearly demonstrate that the social network system shapes patterns of drug use and help-seeking,

and is, in turn, influenced by characteristics and transitions in the illness career. This research also underscores the substantial ways intersecting racial, gender, and class identities influence social relationships, patterns of drug use, and treatment utilization, suggesting a need to better integrate theories of help-seeking with perspectives that focus on the unique standpoints and experiences of marginalized populations.

With respect to drug use and drug use help-seeking, the findings of this study have several important implications for prevention and treatment efforts. First, this research underscores the important role that children play in motivating treatment seeking. Acknowledging the importance of children in these women's lives by supplementing treatment services with parenting resources and even childcare may encourage greater utilization of drug-related treatment. As social support from friends is also an important resource that predicts quitting drug use and continuing non-drug use, substance abuse treatment services that work to build and maintain supportive, health-promoting relationships through pro-social training and activities may be particularly effective. By recognizing the importance of social connections in shaping patterns of substance abuse, substance abuse treatment programs that work to mobilize and enhance positive network resources and promote the acquisition of skills to build and maintain healthy support systems may improve their efficacy among this population of underserved women.

Further, given that findings indicate experiencing gendered racism predicts lower likelihood of quitting substance use and engaging in non-use over time, substance abuse treatment programs may benefit from incorporating teaching and practicing alterative coping techniques for diffusing experiences of gendered racism. Giving low-income

African American women tools to more effectively cope with and minimize the effects of chronic stressors associated with their status could encourage their sustained recovery. If effective, these coping strategies could also yield positive mental health and other benefits as well.

Finally, the results of the research emphasize the unfortunate impact that incarceration can have on fracturing women's social network system. These women often re-enter the community with smaller networks and less perceived support from friends. Though there patterns of drug use may not be as consistent upon their reentry, they face many obstacles to their sustained recovery after leaving prison, including the stigma associated with having been incarcerated and diminished job prospects. Greater use of diversion programs like Drug Court may be a suitable response to this problem. By sending women to treatment, rather than prison, and closely working with them to monitor their progress in this program and provide them with necessary auxiliary services to promote their success, such programs could have a number of positive societal benefits. Importantly, this may reduce the negative consequences of incarceration on protective features of low-income African American women's social networks.

Theoretical Implications

In addition to policy and practice implications, this research has important implications for theory. Broadly speaking, this study demonstrates that social processes and social networks change over time in response to adverse life events and health problems. In some instances, network resources may be activated, prompting ties to intervene and actively (e.g. social control) or more passively (e.g. normative influence) shape behaviors. However, this research reveals that network factors may also drive

negative behaviors, like drug use. Further, networks and social processes may be disrupted by adverse events or behaviors. These patterns may have particularly devastating implications for those who are in the most vulnerable and marginalized positions in society. In this location, individuals experience instability in a number of ways. They are exposed to a greater number of negative life events, they may lack resources to avoid or manage the adverse consequences these events, and, as is made clear by this research, such events may disrupt their networks in ways that contribute to further negative outcomes. That is, the volatility of their disadvantaged status may be reflected in their networks, which in turn, may foster further instability and shape adverse outcomes. With diminished exposure to positive normative influences and forces of social control to keep maladaptive behaviors like substance use in check, and a weaker social safety net to mitigate the effects of marginalized status, the consequences of these factors in conjunction on both individual and population health are substantial.

The purpose of stating these implications so strongly is **not** to promote the idea that the situation of those at the intersection of disadvantaged statuses is a hopeless one. Rather, the findings of research imply that social networks, do not simply make irrelevant one's location in the broader social structure and status hierarchy. It is important to recognize that status at the location of marginalized identities (including criminal justice and drug use status) shapes the structure, function, and role of social networks in significant and compelling ways that may place some women in a precarious location and limit their social mobility. Rather than conceptualizing of networks in isolation of race, gender, class, and other statuses, the impacts of these factors must be considered as they shape social processes and social networks in important ways. Factors like gendered

racism, exposure to violence, and criminal justice involvement which have a unique and significant impact on women of color must be incorporated into networks research if sociologists hope to make important connections between the micro, meso, and macro levels of social research.

Final Remarks

Though greater equality for African American and other racial and ethnic minorities came with the Civil Rights Movement, there is still important ground to be covered. Racial and ethnic health disparities in the United States which persist across the lifecourse represent an enduring public health challenge that is ripe for remediation. Lessening inequality broadly as a response to health disparities has excellent potential and represents a strategy that could find broad support from the public. Hopefully, legislation like the Patient Protection and Affordable Care Act will help to reduce health disparities and gaps in health service utilization among marginalized populations by promoting universal access to basic health services. In the meantime, researchers must assiduously continue their work to refine our understanding of social inequality and its effects on health. As medical sociologists continue to explore lifecourse factors using longitudinal and other data, investigating the ways these disparities persist and play out will be of paramount importance. Learning how disadvantage and privilege influence health across the lifecourse will be a crucial challenge for future researchers. This type of research is needed to inform the kind of long-term, integrative ameliorative approaches needed to improve the health and wellness of disadvantaged groups and individuals as they navigate health-related problems across the lifecourse.

The results of this study highlight the necessity of addressing the way multiply marginalized identities shape drug use, help-seeking, and the social network system. Though critical feminist and race scholars like Patricia Hill Collins and bell hooks have long recognized the importance of these intersecting identities and laid some of the groundwork for such work in other disciplines, in the coming years medical sociologists will have both the opportunity and responsibility to ask important questions regarding the effects of these intersecting, interwoven identities on health. Acknowledging the direct and indirect ways gendered racism operates, understanding how intersections of race, gender, class, criminal justice, and other statuses shape exposure to gendered racism and other forms of discrimination, and mapping the pathways between these adverse experiences and health outcomes in marginalized populations are absolutely imperative for health disparities research. More importantly, a research agenda with attention to these important experiences and the ways individuals adaptively navigate the margins and threats to their identity and personhood represents scholarship with real potential for addressing health disparities and improving quality of life.

REFERENCES

Aaron, Kaytura Felix, David Levine and Helen R. Burstin. 2003. "African American Church Participation and Health Care Practices." *Journal of General Internal Medicine* 18(11):908-13.

Ali, Mir M. and Debra S. Dwyer. 2010. "Social Network Effects in Alcohol Consumption among Adolescents." *Addictive Behaviors* 35(4):337-42.

Ali, Mir M., Aliaksandr Amialchuk and Song Gao. 2012. "Adolescent Weight Gain and Peer Social Networks: Is There a Contagion Effect?" *Applied Economics* 44(23):2969-83.

Andersen, Ronald M. 1968. *Behavioral Model of Families' Use of Health Services*. Chicago, Illinois: Center for Health Administration Studies, University of Chicago.

Andersen, Margaret L. and Patricia Hill Collins. 1995. *Race, Class, and Gender: An Anthology*. Belmont, CA: Wadsworth

Andersen, Ronald M. 1995. "Revisiting the Behavioral Model and Access to Medical Care: Does It Matter?" *Journal of Health and Social Behavior* 36(1):1-10.

Anderson, Lynda A. and Robert F. Dedrick. 1990. "Development of the Trust in Physician Scale: A Measure to Assess Interpersonal Trust in Patient-Physician Relationships." *Psychological Reports* 67(3):1091-100.

Andrews, Gavin and Scott Henderson. 2000. *Unmet Need in Psychiatry: Problems, Resources, Responses*. Cambridge, UK: Cambridge University Press.

Aschenbrenner, Joyce. 1975. *Lifelines: Black Families in Chicago*. New York, NY: Holt, Reinhart, & Winston.

Bachman, Jerald G., Patrick M. O'Malley, John E. Schulenberg, Lloyd D. Johnston, Alison L. Bryant and Alicia C. Merline. 2012. *The Decline of Substance Use in Young Adulthood: Changes in Social Activities, Roles, and Beliefs*. New York, NY: Psychology Press.

Badr, Hoda, Linda Acitelli, Steve Duck and Walter J. Carl. 2001. "Weaving Social Support and Relationships Together." in *Personal Relationships: Implications for Clinical and Community Psychology*, edited by B. R. Sarason and S. Duck. New York, NY: John Wiley.

Bandura, Albert. 1977. *Social Learning Theory*. Oxford, UK: Prentice-Hall.

Bass, David M. and Linda S. Noelker. 1987. "The Influence of Family Caregivers on Elders' Use of in-Home Services: An Expanded Conceptual Framework." *Journal of Health and Social Behavior* 28:184-96.

Beale, Frances M. 1979. "Double Jeopardy: To Be Black and Female." Pp. 90-100 in *The Black Woman*, edited by T. Cade. New York, NY: New American Library.

Bell, Derrick A. 1973. *Race, Racism, and American Law*. New York, NY: Little, Brown & Company.

Bendtsen, P., M. Lejman Dahlstrom and P. Bjurulf. 2002. "Sociodemographic Gender Differences in Patients Attending a Community-Based Alcohol Treatment Centre." *Addictive Behaviors* 27(1):21-33.

Bennett, Gary C., Macellus M. Merritt, John J. Sollers III, Christopher L. Edwards, Keith E. Whitfield, Dwayne T. Brandon and Reginald D. Tucker-Seeley. 2013. "Stress, Coping, and Health Outcomes among African-Americans." in *Race, Ethnicty, and*

Health: A Public Health Reader, edited by T. A. LaVeist and L. A. Isaac. San Francisco, Ca: Jossey-Bass.
Berdahl, Jennifer L. and Celia Moore. 2006. "Workplace Harassment: Double Jeopardy for Minority Women." *Journal of Applied Psychology* 91(2):426-36.
Berger, Peter L. and Thomas Luckmann. 1966. *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*. Garden City, NY: Anchor Books.
Berkman, Lisa F., Thomas Glass, Ian Brissette and Teresa E. Seeman. 2000. "From Social Integration to Health: Durkheim in the New Millennium." *Social Science & Medicine* 51(6):843-57.
Black, Michele C., Kathleen C. Basile, Matthew J. Breiding, Sharon G. Smith, Mikel L. Walters, Melissa T. Merrick, Jieru Chen and Mark R. Stevens. 2011. "The National Intimate Partner and Sexual Violence Survey: 2010 Summary Report." Vol. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.
Bonin, Jean-Pierre, Louise Fournier and Regis Blais. 2007. "Predictors of Mental Health Service Utilization by People Using Resources for Homeless People in Canada." *Psychiatric Services* 58:936-41.
Borgatti, Stephen P., Ajay Mehra, Daniel J. Brass and Guiseppe Labianca. 2009. "Network Analysis in the Social Sciences." *Science* 13(5916):892-95.
Borrell, Luisa N., David R. Jacobs Jr., David R. Williams, Mark J. Pletcher, Thomas K. Houston and Catarina I. Kiefe. 2007. "Self-Reported Racial Discrimination and Substance Use in Coronary Artery Risk Development in Adults Study." *Public Health & Epidemiology* 166(9):1068-79.
Bowleg, Lisa. 2008. "When Black + Lesbian + Woman ≠ Black Lesbian Woman: The Methodological Challenges of Qualitative and Quantitative Intersectionality Research." *Sex Roles* 59:312-25.
Boyd, Carol J. 1993. "The Antecedents of Women's Crack Cocaine Abuse: Family Substance Abuse, Sexual Abuse, Depression and Illicit Drug Use." *J Subst Abuse Treat* 10:433-38.
Braboy-Jackson, Pamela and David R. Williams. 2006. "The Intersection of Race, Gender, and Ses: Health Paradoxes." in *Gender, Race, Class, & Health: Intersectional Approaches*, edited by A. Schulz and L. Mullings. San Francisco, CA: Jossey-Bass.
Braunstein, Joel B., Noelle S. Sherber, Steven P Schulman, Eric L Ding and Neil R Powe. 2008. "Race, Medical Researcher Distrust, Percevied Harm, and Willingness Ot Participate in Cadiovascular Prevention Trials." *Medicine* 87(1):1-9.
Bronder, Ellen C., Suzette L .Speight, Karen M. Witherspoon and Anita J. Thomas. 2014. "John Henryism, Depression, and Perceived Social Support in Black Women." *The Journal of Black Psychology* 40(2):115-37.
Brown, Phil. 1995. "Naming and Framing: The Social Construction of Diagnosis and Illness." *Journal of Health and Social Behavior* 35:34-52.
Brown, Karin A. Elliott, Tyan Parker-Dominguez and Marcia Sorey. 2000. "Life Stress, Social Support, and Well-Being among College Educated African American Women." *Journal of Ethnic and Cultural Diversity in Social Work* 9(1-2):55-73.

Brown, Barry S., Kevin E. O'Grady, Eugene V. Farrell, Ilene S. Flechner and David N. Nurco. 2001. "Factor Associated with Frequency of 12-Step Attendance by Drug Abuse Clients." *American Journal of Drug and Alcohol Abuse* 27(1):147-60.

Brown, Diane R. 2003. "A Conceptual Model of Mental Well-Being for African American Women." in *In and out of Our Right Minds*, edited by D. R. Brown and V. M. Keith. New York: Columbia University Press.

Bureau, U.S. Census. 2011, "Age and Sex Composition in the United States 2011." http://www.census.gov/population/age/data/2011comp.html.

Bureau, U.S. Census. 2012a, "Income, Poverty, and Health Insurance Coverage in the United States: 2009" *Current Population Reports,* http://www.census.gov/compendia/statab/2012/tables/12s0691.pdf.

Bureau, U.S. Census. 2012b, "America's Families and Living Arrangements: 2012." http://www.census.gov/hhes/families/data/cps2012.html.

Burt, Ronald S. 1995. *Structural Holes: The Social Structure of Competition*. Cambridge, MA: Harvard University Press.

Burt, Ronald S. 2004. "Structural Holes and Good Ideas." *American Journal of Sociology* 110(2):349-99. doi: Doi 10.1086/421787.

Burton, Linda. 1996. "Intergenerational Patterns of Providing Care in African-American Families with Teenage Childbearers: Emergent Patterns in an Ethnographic Study." in *Adult Intergenerational Relations: Effects of Social Change*, edited by V. L. Bengtson, K. W. Schaie and L. M. Burton. New York, NY: Springer.

Cacioppo, John T. and Louise C. Hawkley. 2003. "Social Isolation and Health, with an Emphasis on Underlying Mechanisms." *Perspectives in Biology and Medicine* 46(3 Suppl.):S39-52.

CDC. 2012. "Sexual Violence: Facts at a Glance." Vol. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.

Chatters, Linda, Robert Joseph Taylor and Harold W. Neighbors. 1989. "Size of Informal Helper Network Mobilized During a Serious Personal Problem among Black American." *Journal of Marriage and the Family* 51(3):667-76.

Choo, Hae Yeon and Myra Marx Ferree. 2010. "Practicing Intersectionality in Sociological Research: A Critical Analysis of Inclusions, Interactions, and Institutions in the Study of Inequalities." *Sociological Theory* 28(2):129-49.

Clear, Todd R., Dina R. Rose and Judith A. Ryder. 2001. "Incarceration and the Community: The Problems of Removing and Returning Offenders." *Crime and Delinquency* 47(3):335-51.

Cohen, Sheldon. 1988. "Psychosocial Models of the Role of Social Support in the Etiology of Physical Disease." *Health Psychology* 7(3):269-97.

Cohen, Sheldon. 2004. "Social Relationships and Health." *American Psychologist* 59(8):676-84.

Collins, Patricia Hill. 1994. "Shifting the Center: Race, Class, and Feminist Theorizing About Motherhood." in *Mothering: Ideology, Experience, and Agency*, edited by E. N. Glenn, G. Chang and L. R. Forcey. New York, NY: Routledge.

Collins, Patricia Hill. 1999. "Producing the Mothers of the Nation: Race, Class, and Contemporary U.S. Population Policies." in *Women, Citizenship, and Difference*, edited by N. Yuval-Davis. London, UK: Zed Books.

Collins, Patricia Hill. 2000. *Black Feminist Thought: Knowledge, Consciousness, and the Politics of Empowerment* New York, NY: Routledge.
Conrad, Peter and Kristin K. Barker. 2010. "The Social Construction of Illness: Key Insights and Policy Implications." *Journal of Health and Social Behavior* 51(S):S67-S79.
Cornwell, Erin York and Linda J. Waite. 2009. "Social Disconnectedness, Perceived Isolation, and Health among Older Adults." *Journal of Health and Social Behavior* 50(1):31-48.
Cox, Karen. 2000. "Parenting the Second-Time around for Parents in Recovery: Parenting Class Using the Twelve-Step Recovery Model." *The Source* 10(1):11-14.
Crenshaw, Kimberle. 1989. "Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory, and Antiracist Politics." *The University of Chicago Legal Forum* 140:139-67.
Crenshaw, Kimberle. 1991. "Mapping the Margins: Intersectionality, Identity Politics, and Violence against Women of Color." *Stanford Law Review* 43:1241-99.
Cuadrez, Gloria Holguin and Lynet Uttal. 1999. "Intersectionality and in-Depth Interviews: Methodological Strategies for Analyzing Race, Class, and Gender." *Race, Class, & Gender* 6(3):156-86.
Cuffee, Yendelela L., J. Lee Hargraves, Milagros Rosal, Becky A. Briesacher, Antoinette Schoenthaler, Sharina Person, Sandral Hullett and Jeroan Allison. 2013. "Reported Racial Discrimination, Trust in Physicians, and Medication Adherence among Inner-City African Americans with Hypertension." *American Journal of Public Health* 103(11):e55-e62.
Daley, Dennis and Tad Gorske. 2000. "Improving Treatment Adherence for Mothers with Substance Abuse Problems." *The Source* 10(1):1-5.
Davey, Melissa A., Carl A. Latkin, Wei Hua, Karin E. Tobin and Steffanie Strathdee. 2007. "Individual and Social Network Factors That Predict Entry to Drug Treatment." *The American Journal on Addictions* 16(1):38-45.
Davey-Rothwell, Melissa A. and Carl Latkin. 2007. "Gender Differences in Social Network Influence among Injection Drug Users: Perceived Norms and Needle Sharing." *Journal of Urban Health* 84(5):691-703.
Dawson, Deborah A. 1996. "Gender Differences in the Probability of Alcohol Treatment." *Journal of Substance Abuse* 8(2):211-25.
Delgado, Richard. 1982. "Words That Wound: A Tort Action for Racial Insults, Epithets, and Name-Calling." *Harvard Civil Rights-Civil Liberties Law Review* 17:133-82.
Delgado, Richard and Jean Stefancic. 2000. *Critical Race Theory: The Cutting Edge*. Philadelphia, PA: Temple University Press.
Delgado, Richard and Jean Stefancic. 2012. *Critical Race Theory: An Introduction*. New York, NY: New York University Press.
DeNavas-Walt, Carmen, Bernadette D. Proctor and Jessica C. Smith. 2012, "Income, Poverty, and Health Insurance Coverage in Hte United States: 2011" *Current Population Reports,* Washington, D.C. (https://www.census.gov/prod/2012pubs/p60-243.pdf).

D'Onofrio, Gail. 2003. "Treatment for Alcohol and Other Drug Problems: Closing the Gap." *Annals of Emergency Medicine* 41(6):814-17. doi: Doi 10.1067/Mem.2003.190.
Durkheim, Emile. 1897 (1951). *Suicide: A Study in Sociology*. Glencoe, IL: Free Press.
Edmonds, Joyce K., Daniel Hruschka, H. Russell Bernard and Lynn Sibley. 2012. "Women's Social Networks and Birth Attendant Decisions: Application of the Network-Episode Model." *Social Science & Medicine* 74(3):452-9.
Ellison, Christopher G. 1990. "Family Ties, Friendships, and Subjective Well-Being among Black Americans." *Journal of Marriage and Family* 52(2):298-310.
Ennett, Susan T. and Karl E. Bauman. 1994. "The Contribution of Influence and Selection to Adolescent Peer Group Homogeneity: The Case of Adolescent Cigarette Smoking." *Journal of Personality and Social Psychology* 67(4):653-63.
Ernst, John M. and John T. Cacioppo. 1999. "Lonely Hearts: Psychological Perspectives on Loneliness." *Applied & Preventative Psychology* 8:1-22.
Festinger, Leon. 1954. "A Theory of Social Comparison Processes." *Human Relations* 7:117-40.
Ford, Chandra L. and Collins O. Airhihenbuwa. 2010. "Critical Race Theory, Race Equity, & Public Health: Toward Antiracism Praxis." *American Journal of Public Health* 100(S1):S30-S35.
Fowler, Dawnovise N. and Hope M. Hill. 2004. "Social Support and Spirituality as Culturally Relevant Factors in Coping among African American Women Survivors of Partner Abuse." *Violence Against Women* 10(11):1267-82.
Freeman, Alan D. 1978. "Legitimizing Racial Discrimination through Antidiscrimination Law: A Critical Review of Supreme Court Doctrine." *Minnesota Law Review* 63:1049-120.
Freeman, Alan D. 1981. "Truth and Mystification in Legal Scholarship." *The Yale Law Journal* 90(5):1229-37.
Friedson, Eliot 1970. *Professional Dominance*. Chicago, Illinois: Aldine.
Fujimoto, Kayo, Jennifer B. Unger and Thomas W. Valente. 2012. "A Network Method of Measuring Affiliation-Based Peer Influence: Assessing the Influences of Teammates' Smoking on Adolescent Smoking." *Child Development* 83(2):442-51.
Fujiwara, Takeo and Ichiro Kawachi. 2010. "Social Capital and Health." *American Journal of Preventive Medicine* 35(2):139-44.
Galea, Sandro, Arijit Nandi and David Vlahov. 2004. "The Social Epidemiology of Substance Use." *Epidemiologic Reviews* 26(1):36-52.
Gfoerer, Joseph. 1987. "Correlation between Drug Use by Teenagers and Drug Use by Older Family Members." *The American Journal of Drug and Alcohol Abuse* 13(1-2):95-108.
Gibbons, Frederick X., Hsui-Chen Yeh, Meg Gerrard, Michael J. Cleveland, Carolyn Cutrona, Ronald L. Simons and Gene H. Body. 2008. "Early Experience with Racial Discrimination and Coduct Disorder as Predictors of Subsequent Drug Use: A Critical Period Hypothesis." *Drug and Alcohol Depedence* 88(Suppl 1):S27-S37.
Giger, Joyce Newman, Susan J. Appel, Ruth Davidhizar and Claudia Davis. 2008. "Church and Sprituality in the Lives of the African American Community." *Journal of Transcultural Nursing* 19(4):375-83.

Goldstein, Joshua R. and Catherine T. Kenney. 2001. "Marriage Delayed or Marriage Forgone? New Cohort Forecasts of First Marriage for U.S. Women." *American Sociological Review* 66:206-519.
Granovetter, Mark. 1973. "The Strength of Weak Ties." *American Journal of Sociology* 78(6):1360-80.
Granovetter, Mark. 1983. "The Strength of Weak Ties: A Network Theory Revisited." *Sociological Theory* 1:201-33.
Green, Lawrence S. , Marshall K. Kreuter, Sigrid G. Deeds and Kay B. Partridge. 1980. *Health and Education Planning: A Diagnostic Approach*. Palo Alto, California: Mayfield.
Greenfield, Shelly F., Audrey J. Brooks, Susan M. Gordon, Carla A. Green, Frankie Kropp, R. Kathryn McHugh, Melissa Lincoln, Denis Hien and Gloria M. Miele. 2007. "Substance Abuse Treatment Entry, Retention, and Outcome in Women: A Review of the Literature." *Drug and Alcohol Depedence* 86(1):1-21.
Grekin, Emily R. 2012. "Perceived Racism and Alcohol Consequences among African American and Caucasian College Students." *Psychology of Addictive Behaviors* 26(4):924-30.
Grella, Christine E. and Vandana Joshi. 1999. "Gender Differences in Drug Treatment Careers among Clients in the National Drug Abuse Treatment Outcome Study." *The American Journal of Drug and Alcohol Abuse* 25(3):385-406.
Grella, Christine E. 2008. "From Generic to Gender-Responsive Treatment: Changes in Social Policies, Treatment Services, and Outcomes of Women in Substance Abuse Treatment." *J Psychoactive Drugs* Suppl 5:327-43.
Guendelman, Sylvia 1991. "Health Care Users Residing on the Mexican Border: What Factors Determine Choice of U.S. or Mexican Health System?". *Medical Care* 29:412-29.
Halbert, Chanita Hughes, Katrina Armstrong, Oscar H. Gandy Jr. and Lee Shaker. 2006. "Racial Differences in Trust in Health Care Providers." *Archives of Internal Medicine* 166(8):896-901.
Harrington, Michael, Jennifer Robinson, Shay-Lee Bolton, Jitender Sareen and James M. Bolton. 2011. "A Longitudinal Study of Risk Factors for Incident Drug Use in Adults: Findings from a Representative Sample of the U.S. Population." *Canadian Journal of Psychiatry* 56(11):686-95.
Hawkins, Wesley E., Carl Latkin, Wallace Mandel and Maria Oziemkowska. 1999. "Do Actions Speak Louder Than Words: Perceived Peer Influences on Needle Sharing and Cleaning in a Sample of Injection Drug Users." *AIDS Education and Prevention* 11(2):122-31.
Hays, William C. and Charles H. Mindel. 1973. "Extended Kinship Relations in Black and White Families." *Journal of Marriage and Family* 35(1):51-57.
Helleringer, Stephane and Hans-Peter Kohler. 2007. "Sexual Network Structure and the Spread of Hiv in Africa: Evidence from Likoma Island, Malawi." *AIDS* 21(17):2323-32.
Hochbaum, Godfrey M. 1958. *Public Participation in Medical Screening Program: A Sociopsychological Study*. Washington, DC: Public Health Service.
hooks, bell and Amalia Mesa-Bains. 2006. *Homegrown: Engaged Cultural Criticism*. Cambridge: South End Press.

Horwitz, Allan 1977. "Social Networks and Pathways to Psychiatric Treatment." *Social Forces* 56(1):86-105.
Horwitz, Allan. 1978. "Family, Kin, and Friend Networks in Psychiatric Help-Seeking." *Social Science and Medicine* 12:297-304.
Jackson, Fleda Mask, Mona Taylor Phillips, Carol J. Rowland Hogue and Tracy Y. Curry-Owens. 2001. "Examining the Burdens of Gendered Racism: Implication for Pregnancy Outcomes among College-Educated African American Women." *Maternal and Child Health Journal* 5(2):95-107.
Jackson, Fleda Mask 2007. "Race, Stress, and Social Support: Addressing the Crisis in Black Infant Mortality." Vol. Washington, DC: Joint Center for Political and Economic Studies.
James, Sherman A., David S. Strogatz, Steven B. Wing and Diane L Ramsey. 1987. "Socioeconomic Status, John Henryism, and Hypertension in Blacks and Whites ". *Public Health & Epidemiology* 126(4):664-73.
James, Sherman A. 1994. "John Henryism and the Health of African Americans." *Culture, Medicine, and Psychiatry* 18(2):163-82.
James, Sherman A. 1996. "The John Henryism Scale for Active Coping." Pp. 419-25 in *Handbook of Tests and Measurements for Black Populations*, Vol. 2, edited by R. L. Jones. Hampton, VA: Cobb & Henry Publishers.
Jarrett, Robin L. 1994. "Living Poor: Family Life among Single Parent, African American Women." *Social Problems* 41(1):30-49.
Jessup, Marty. 1997. "Addiction in Women: Prevalence, Profiles, and Meaning." *Journal of Obstetric, Gynecologic, and Neonatal Nursing* 26(4):449-58.
Johnson, Byron R., Sung Joon Jang, Spencer De Li and David Larson. 2000. "The 'Invisible Institution' and Black Youth Crime: The Church as an Agency of Local Social Control." *Journal of Youth and Adolescence* 29(4):479-98.
Jonas, Adam B., April M. Young, Carrie B. Oser, Carl G. Leukefeld and Jennifer R. Havens. 2012. "Oxycontin as Currency: Oxycontin Use and Increased Social Capital among Rural Appalachian Drug Users." *Social Science and Medicine* 74(10):1601-09.
Jones, Bryan D. 1999. "Bounded Rationality." *Annual Review of Political Science* 2:297-321.
Jones, Charisse and Kumea Shorter-Gooden. 2003. *Shifting: The Double Lives of Black Women in America*. New York, NY: Harper Collins.
Kadushin, Charles 1966. "The Friends and Supporters of Psychotherapy: On Social Circles in Urban Life." *American Journal of Sociology* 31(6):786-802.
Kawachi, Ichiro and Lisa F. Berkman. 2001. "Social Ties and Mental Health." *Journal of Urban Health* 78(3):458-67.
Kim, Junghyun, Jeong Yeob Han, Bret Shaw, Fiona McTavish and David Gustafson. 2010. "The Role of Social Support and Coping Strategies in Predictng Breast Cancer Patients' Emotional Well-Being: Testing Mediation and Moderation Models ". *Journal of Health Psychology* 15(4):543-52.
King, Kimberly R. 2003. "Racism or Sexism? Attributional Ambiguity and Simultaneous Membership in Multiple Oppressed Groups." *Journal of Applied Social Psychology* 33:223-47.

Kirzinger, Whitney K., Robin A. Cohen and Renee M. Gindi. 2012. "Health Care Access and Utilization among Young Adults Aged 19-25: Early Release of Estimates from the National Health Interview Survey, January-September 2011." Vol. http://www.cdc.gov/nchs/nhis/releases.htm. .

Kissman, Kris and Ophelia A. Torres. 2004. "Incarcerated Mothers: Mutual Support Groups Aimed at Reducing Substance Abuse Relapse and Recidivism." *Contemporary Family Therapy* 26(2):217-28.

Kline, Anna. 1996. "Pathways into Drug User Treatment: The Influence of Gender and Racial/Ethnic Identity." *Substance Use & Misuse* 31(3):323-42.

Klonoff, Elizabeth A. and Hope Landrine. 1995. "The Schedule of Sexist Events: A Measure of Lifetime and Recent Sexist Discrimination in Women's Lives." *Psychology of Women Quarterly* 19:439-72.

Knight, Danica Kalling, Paula E. Hood, Sarah M. Logan and Lois R. Chatham. 1999. "Residential Treatment for Women with Depedent Children: One Agency's Approach ". *J Psychoactive Drugs* 31(4):339-51.

Kohn, Laura P. and Tabbye M. Chavous. 2002. "How Far We Come - Where Should We Go? Representatives of the Next Generation of Prevention Researchers Respond to Biglan, Eddy, Ialongo, Roosa, and Sandler." *Prevention & Treatment* 5(1).

Kubany, Edward S. , Mary Beth Leisen, Aaron S. Kaplan, Susan B. Watson, Stephen N. Haynes, Julie A. Owens and Katie Burns. 2000. "Development and Preliminary Validation of a Brief Broad-Spectrum Measure of Trauma Exposure: The Traumatic Life Events Questionnaire." *Psychological Assessment* 12(2):210-24.

Landrine, Hope and Elizabeth A. Klonoff. 1996. "The Schedule of Racist Events: A Measure of Racial Discrimination and a Study of Its Negative Physical and Mental Health Consequences." *Journal of Black Psychology* 22(2):144-68.

Landrine, Hope, Elizabeth A. Klonoff, Irma Corral, Senaida Fernandez and Scott Roesch. 2006. "Conceptualizing and Measuring Ethnic Discrimination in Health Research ". *Journal of Behavioral Medicine* 29(1):79-94.

Langan, Neal P. and Bernadette M.M. Pelissier. 2001. "Gender Differences among Prisoners in Drug Treatment." *Journal of Substance Abuse* 13(3):291-301.

Laudet, Alexandre, Stephen Magura, R. Terry Furst, Neena Kumar and Shirley Whitney. 1999. "Male Partners of Substance-Abusing Women in Treatment: An Exploratory Study." *American Journal of Drug and Alcohol Abuse* 25(4):607-27.

Lin, Nan and Jeanne Westcott. 1991. "Marital Engagements/Disengagement, Social Networks, and Mental Health." Pp. 213-37 in *The Social Context of Coping*, edited by J. Eckenrode. New York, NY: Plenum.

Lin, Nan. 1999. "Building a Network Theory of Social Capital." *Connections* 22(1):28-51.

Lin, Nan, Xiaolan Ye and Walter M. Ensel. 1999. "Social Support and Depressed Mood: A Structural Analysis." *Journal of Health and Social Behavior* 40(4):344-59.

Lincoln, C. Eric and Lawrence H. Mamiya. 1990. *The Black Church in the African Ameircan Experience*. Durham, NC: Duke University Press.

Lincoln, Karen D. 2000. "Social Support, Negative Social Interactions, and Psychological Well-Being." *Social Service Review* 74(2):231-52.

Link, Bruce and Jo Phelan. 1995. "Social Conditions as Fundamental Social Causes of Disease." *Journal of Health and Social Behavior* 35(Extra Issue):80-94.
Lovasi, Gina S. , Jimi Adams and Peter S. Bearman. 2010. "Social Support, Sex, and Food: Social Networks and Health." in *Handbook of Medical Sociology*, edited by C. E. Bird, A. M. Fremont and S. Timmermans. Nashville, TN: Vanderbilt University Press.
Marsden, Peter V. and Noah E. Friedkin. 1994. "Network Studies of Social Influence." in *Social Network Analysis: Research in the Social and Behavioral Sciences*, edited by S. Wasserman and J. Galaskiewicz. Thousand Oaks, CA: Sage.
Mays, Vickie m., Cleopatra Howard Caldwell and James Sidney Jackson. 1996. "Mental Health Symptoms and Service Utilization Patterns of Help-Seeking among African American Women." Pp. 161-76 in *Mental Health in Black America*, edited by H. W. Neighbors and J. S. Jackson. Thousand Oaks, CA: Sage.
McAdoo, Harriet P. 2007. *Black Families, Fourth Edition*. Thousand Oaks, CA: Sage.
McKinlay, John B. . 1972. "Some Approaches and Problems in the Study of the Use of Services - an Overview." *Journal of Health and Social Behavior* 13(2):115-52.
McLellan, A. Thomas, David C. Lewis, Charles P. O'Brien and Herbert D. Kleber. 2000. "Drug Dependence, a Chronic Medical Illness: Implications for Treatment, Insurance, and Outcomes Evaluation." *Journal of the American Medical Association* 284(13):1689-95.
Mercken, Liesbeth, Christian Steglich, Philip Sinclair, Jo Holliday and Laurence Moore. 2012. "A Longitudinal Social Network Analysis of Peer Influence, Peer Selection, and Smoking Behavior among Adolescents in British Schools." *Health Psychology* 31(4):450-59.
Merikangas, Kathleen R., Bruce J. Rounsaville and Brigitte A. Prusoff. 1992. "Familial Factors in Vulnerability to Substance Abuse." Pp. 75-97 in *Vulnerability to Drug Abuse*, edited by M. D. Glantz and R. W. Pickens. Washington, DC: American Psychological Association.
Mullings, Leith. 1997. *On Our Own Terms: Race, Class, and Gender in the Lives of African American Women*. New York, NY: Routledge.
Mullings, Leith and Amy J. Schulz. 2006. "Intersectionality and Health: An Introduction." in *Gender, Race, Class, and Health: Intersectional Approaches*, edited by A. L. Schulz and L. Mullings. San Francisco, CA: Jossey-Bass.
Neighbors, Harold W. and James Jackson. 1984 "The Use of Informal and Formal Help: Four Patterns of Illness Behavior in the Black Community." *American Journal of Community Psychology* 12(6):629-44.
Novins, Douglas K., Paul Spicer, Alexandra Fickenscher and Bernice Pescosolido. 2012. "Pathways to Care: Narratives of American Indian Adolescents Entering Substance Abuse Treatment." *Social Science & Medicine* 74(12):2037-45.
Olafsdottir, Sigrun and Bernice A. Pescosolido. 2009. "Drawing the Line: The Cultural Cartography of Utilization Preferences for Mental Health Problems." *Journal of Health and Social Behavior* 50:228-44.
ONDCP, Office of National Drug Control Policy. 2012. "National Drug Control Strategy." Vol. Washington, DC: Executive Office of the President of hte United States.

Parsons, Talcott. 1951. "Social Structure and Dynamic Process: The Case of the Modern Medical Practice." in *The Social System*. London, England: Routledge & Kegan Paul Ltd.

Perron, Brian E., Orior P. Mowbray, Joseph E. Glass, Jorge Delva, Michael G. Vaughn and Mathew Owen Howard. 2009. "Differences in Service Utilization and Barriers among Blacks, Hispanics, and Whites with Drug Use Disorders." *Substance Abuse Treatment, Prevention, and Policy* 4(3).

Perry, Brea. 2006. "Understanding Social Network Disruption: The Case of Youth in Foster Care." *Social Problems* 53(3):371-91.

Perry, Brea, Kathi L. H. Harp and Carrie B. Oser. 2013. "Racial and Gender Discrimination in the Stress Process: Implications for African American Women's Health and Well-Being." *Sociological Perspectives* 56(1):25-48.

Perry, Brea and Bernice Pescosolido. 2014. "Social Network Activation: The Role of Health Discussion Partners in Recovery from Mental Illness." *Social Science & Medicine.* In Press.

Perry, Brea, Erin Pullen and Carrie Oser. 2012. "Too Much of a Good Thing? Psychosocial Resources, Gendered Racism, and Suicidal Ideation among Low Socioeconomic Status African American Women." *Social Psychology Quarterly* 75(4):334-59.

Pescosolido, Bernice 1991. "Illness Careers and Network Ties: A Conceptual Model of Utilization and Compliance." in *Advances in Medical Sociology*, Vol. 2, edited by G. Albrecht and J. Levy. Greenwich, CN: JAI.

Pescosolido, Bernice. 1992. "Beyond Rational Choice - the Social Dynamics of How People Seek Help." *American Journal of Sociology* 97(4):1096-138. doi: Doi 10.1086/229863.

Pescosolido, Bernice, Carol Brooks Gardner and Keri M. Lubell. 1998. "How People Get into Mental Health Services: Stories of Choice, Coercion and "Muddling through" from "First-Timers"." *Social Science & Medicine* 46(2):275-86.

Pescosolido, Bernice, Eric R. Wright, Margarita Alegría and Mildred Vera. 1998. "Social Networks and Patterns of Use among the Poor with Mental Health Problems in Puerto Rico." *Medical Care* 36(7):1057-72.

Pescosolido, Bernice A., Brea Perry, Scott J. Long, Jack K. Martin, John I. Nurnberger and Victor Hesselbrock. 2008. "Under the Influence of Genetic: How Transdisciplinarity Leads Us to Rethink Social Pathwats to Illness." *American Journal of Sociology* 114(S1):S171-S201.

Pescosolido, Bernice and Carol Boyer. 2010. "Understanding the Context and Dynamic Social Processes of Mental Health Treatment." in *A Handbook for the Study of Mental Health: Social Contexts, Theories, and Systems, 2nd Edition*, edited by A. V. Horwitz and T. L. Scheid. New York, NY: Cambridge University Press.

Pescosolido, Bernice A. 2010. "Social Network Theories, Findings and Challenges for Epidemiology, Health Services and Policy." *Exploring Interconnections: A Network Dynamics Workshop for Understanding and Preventing Adolescent and Young Adult Substance Abuse Meeting* NIDA Washington, DC. Unpublished Meeting Presentation.

Pescosolido, Bernice A. 2011. "Organizing the Sociological Landscape for the Next Decades of Health and Health Care Research: The Network Episode Model Iii-R

as a Cartographic Subfield Guide." in *Handbook of the Sociology of Health, Illness, and Healing: A Blueprint for the 21st Century*, edited by B. A. Pescosolido, J. K. Martin, J. D. McLeod and A. Rogers. New York, NY: Springer Science+Business Media, LLC.

Pescosolido, Bernice, Sigrun Olafsdottir, Peggy Thoits, Eric Wright and Brea Perry. Forthcoming. "Organizing the Sociological Landscape for the Next Decades of Health and Health Care Research: The Network Episode Model - Phase Iii as Cartographic Subfield Guide." in *The Handbook of the Sociology of Health, Illness, & Healing: Blueprint for the 21st Century*, edited by B. A. Pescosolido, J. K. Martin, J. D. McLeod and A. Rogers. New York, New York: Springer.

Peters, Roger H., Anne L. Strozier, Mary R. Murrin and William D. Kearns. 1997. "Treatment of Substance-Abusing Jail Inmates: Examination of Gender Differences." *J Subst Abuse Treat* 14(4):339-49.

Phillips, Kathryn A., Kathleen R. Morrison, Ronald Andersen and Lu Ann Aday. 1998. "Understanding the Context of Healthcare Utilization: Assessing Environmental and Provider-Related Variables in the Behavioral Model of Utilization." *HSR: Health Service Research* 33:571-96.

Portes, Alejandro, David Kyle and William W. Eaton. 1992. "Mental Illness and Help-Seeking Behavior among Mariel Cuban and Haitian Refugees in South Florida." *Journal of Health and Social Behavior* 33:283-98.

Rabe-Hesketh, Sophia, Anders Skrondal and Andrew Pickles. 2004. "Generalized Multilevel Structural Equation Modeling." *Psychometrics* 69(2):167-90.

Rabe-Hesketh, Sophia, Anders Skrondal and Andrew Pickles. 2005. "Maximum Likelihood Estimation of Limited and Discrete Dependent Variable Models with Nested Random Effects." *Journal of Econometrics* 128(2):301-23.

Reinherz, Helen Z., Rose M. Giaconia, Amy M. Carmola Hauf, Michelle S. Wasserman and Angela D. Paradis. 2000. "General and Specific Childhood Risk Factors for Depression and Drug Disorders by Early Adulthood." *Journal of the American Academy of Child and Adolescent Psychiatry* 39(2):223-31.

Ricketts, Erol. 1989. "The Origin of Black Female-Headed Families." *Focus* 12(1):32-36.

Robinson-Brown, Diane and Verna Keith. 2013. *In and out of Our Right Minds: The Mental Health of African American Women*. New York, NY: Columbia University Press

Rose, Dina R., Todd R. Clear and Judith A. Ryder. 2001. "Addressing the Unintended Consequences of Incarceration through Community-Oriented Services." *Corrections Management Quarterly* 5(3):69-78.

Rose, Dina R. and Todd R. Clear. 2003. "Incarceration, Renetry, and Social Capital: Social Networks in the Balance." in *Prisoners Once Removed: The Impact of Incarceration and Reentry on Children, Families, and Communities*, edited by J. Travis and M. Waul. Washington, DC: The Urban Institute.

Rosenstock, Irwin M. . 1960. "What Research in Motivation Suggests for Public Health." *American Journal of Public Health* 50:295-302.

Rosenstock, Irwin M. . 1966. "Why People Use Health Services." *The Milbank Memorial Fund Quarterly* 44:94-124.

SAMHSA. 2005. "Substance Abuse and Dependence among Women." Vol. *The NSDUH Report.* Rockville, MD: Substance Abuse and Mental Health Services Administration.
Sarkisian, Natalia and Naomi Gerstel. 2004. "Kin Support among Blacks and Whites: Race and Family Organization." *American Sociological Review* 69(6):812-37.
Schroeder, Jennifer R., Carl A. Latkin, Donald R. Hoover, Aaron D. Curry, Amy R. Knowlton and David D. Celentano. 2001. "Illicit Drug Use in One's Social Network and in One's Neighborhood Predicts Individual Heroin and Cocaine Use." *Annals of Epidemiology* 11(6):389-94.
Seeman, Teresa E. 1996. "Social Ties and Health: The Benefits of Social Integration." *Annals of Epidemiology* 6(5):442-51.
Silverstein, Merril and Vern L. Bengtson. 1997. "Intergenerational Solidarity and the Structure of Adult Child-Parent Relationships in American Families." *American Journal of Sociology* 103(2):429-60.
Simmel, Georg 1918 (1955). *Conflict and the Web of Group Affiliations*. Glencoe, IL: Free Press.
Simon, Herbert A. 1976. *Administrative Behavior*. New York, New York: The Free Press.
Simon, Herbert A. 2000. "Bounded Rationality in Social Science: Today and Tomorrow." *Mind & Society* 1(1):22-39.
Skaff, Marilyn M., John W. Finney and Rudolf H. Moos. 1999. "Gender Differences in Problem Drinking and Depression: Different "Vulnerabilities?"." *American Journal of Community Psychology* 27(1):25-54.
Smedley, Brian D., Adrienne Y. Stith and Alan R. Nelson, eds. 2003. *Unequal Treatment: Confronting Racial and Ethnic Disparities in Healthcare*. Washington, D.C.: National Academy of Sciences.
Smith, Kirsten P. and Nicholas A. Christakis. 2008. "Social Networks and Health." *Annual Review of Sociology* 34(1):405-29.
Snowden, Lonnie R. 2001. "Social Embeddedness and Psychological Well-Being among African Americans and Whites." *American Journal of Community Psychology* 29(4):519-36.
Southwick, Steven M., Meena Vythilingam and Dennis S. Charney. 2005. "The Psychobiology of Depression and Resilience to Stress: Implications for Prevention and Treatment." *Annual Review of Clinical Psychology* 1:255-91.
Strecher, Victor J. and Irwin M. Rosenstock. 1997. "The Health Belief Model." in *Cambridge Handbook of Psychology, Health, and Medicine*, edited by A. Baum, S. Newman, J. Weinman, R. West and C. McManus. New York, New York: Cambridge University Press.
Stroebe, Wolfgang and Margaret Stroebe. 1996. "The Social Psychology of Social Support." Pp. 597-621 in *Social Psychology: Handbook of Basic Principles*, edited by E. T. Higgins and A. W. Kruglanski. New York, NY: Guilford Press.
Sun, An-Pyng. 2007. "Relapse among Substance-Abusing Women: Components and Processes." *Substance Use & Misuse* 42(1):1-21.
Tanner, James L., William C. Cockerham and Joe L. Spaeth. 1983. "Predicting Physician Utilization." *Medical Care* 21(3):360-69.

Taylor, Robert Joseph and Linda M. Chatters. 1991. "Extended Family Networks of Older Black Adults." *Journal of Gerontology: Social Sciences* 46:S210-S17.
Taylor, Shelley E. 2007. "Social Support." in *Foundations of Health Psychology*, edited by H. S. Friedman and R. C. Silver. Oxford, UK: Oxford University Press.
Taylor, Shelley E. and Annette L. Stanton. 2007. "Coping Resources, Coping Processes, and Mental Health." *Annual Review of Clinical Psychology* 3:377-401.
Terrell, Francis and Sandra Terrell. 1996. "The Cultural Mistrust Inventory: Development, Findings, and Implications." Pp. 321-31 in *Handbook of Tests and Measurements for Black Populations*, Vol. 2, edited by R. L. Jones. Hampton, VA: Cobb & Henry Publishers.
Thoits, Peggy A. 1995. "Stress, Coping, and Social Support Processes: Where Are We? What Next?". *Journal of Health and Social Behavior* 35(Extra Issue):53-79.
Thoits, Peggy A. 2011. "Mechanisms Linking Social Ties and Support to Physical and Mental Health." *Journal of Health and Social Behavior* 52(2):145-61.
Thomas, Anita J., Karen M. Witherspoon and Suzette Speight. 2008. "Gendered Racism, Psychological Distress, and Coping Styles of African American Women." *Cultural Diversity and Ethnic Minority Psychology* 14(4):307-14.
Thomas, Anita J., Jason D. Hacker and Denada Hoxha. 2011. "Gendered Racial Identity of Black Young Women." *Sex Roles* 64:530-42.
Tracy, Elizabeth M. and David E. Biegel. 2006. "Personal Social Networks and Dual Diagnosis: A Literature Review and Implications for Practice and Future Research." *Journal of Dual Diagnosis* 2(2):59-8.
Tracy, Elizabeth M. and Toby C. Martin. 2007. "Children's Roles in the Social Networks of Women in Substance Abuse Treatment." *J Subst Abuse Treat* 32(1):81-88.
Tracy, Elizabeth M., Michelle R. Munson, Lance T. Peterson and Jerry E. Floersch. 2010. "Social Support: A Mixed Blessing for Women in Substance Abuse Treatment." *J Soc Work Pract Addict* 10(3):257-82.
Truman, Jennifer, Lynn LAngton and Michael Planty. 2013. "Criminal Victimization, 2012." Vol.: U.S. Department of Justice.
Tuchman, Ellen. 2010. "Women and Addiction: The Importance of Gender Issues in Substance Abuse Resarch." *Journal of Addictive Diseases* 29(2):127-38.
Tucker, Joan S., Suzanne L. Wenzel, Daniela Golinelli, Annie Jie Zhou and Harold D. Green. 2011. "Predictors of Substance Abuse Treatment Need and Receipt among Homeless Women." *J Subst Abuse Treat* 40(3):287-94.
Uchino, Bert N. 2004. *Social Support and Physical Health: Understanding the Health Consequences of Relationships*. New Haven, CT: Yale University Press.
Uchino, Bert N., Kimberly Bowen, McKenzie Carlisle and Wendy Birmingham. 2012. "Psychological Pathways Linking Social Support to Health Outcomes: A Visit with the "Ghosts" of Research Past, Present, and Future." *Social Science & Medicine* 74(7):949-57.
Umberson, Debra. 1987. "Family Status and Health Behaviors: Social Control as a Dimension of Social Integration." *Journal of Health and Social Behavior* 28(3):306-19.
Umberson, Debra. 1992. "Gender, Marital Status, and the Social Control of Health Behavior." *Social Science & Medicine* 34(8):907-17.

Umberson, Debra, Robert Crosnoe and Corinne Reczek. 2010. "Social Relationships and Health Behavior across the Life Course." *Annual Review of Sociology, Vol 36* 36:139-57.

Umberson, Debra and Jennifer Karas Montez. 2010. "Social Relationships and Health: A Flashpoint for Health Policy." *Journal of Health and Social Behavior* 51(S):S54-S66.

Vogel, David L., Nathaniel G. Wade, Stephen R. Wester, Lisa Larson and Ashley H. Hackler. 2007. "Seeking Help from a Mental Health Professional: The Influence of One's Social Network." *Journal of Clinical Psychology* 63(3):233-45.

Warren, Barbara Jones. 1997. "Depression, Stressful Life Events, Social Support, and Self-Esteem in Middle Class African American Women." *Archives of Psychiatric Nursing* 11(3):107-17.

Wasserman, David A., Anita L. Stewart and Kevin L. Delucchi. 2001. "Social Support and Abstinence from Opiates and Cocaine During Opioid Maintenance Treatment." *Drug and Alcohol Dependence* 65(1):65-75.

Weber, Lynn and Deborah Parra-Medina. 2003. "Intersectionality and Women's Health: Charting a Path to Eliminating Health Disparities." Pp. 181-230 in *Gender Perspective on Health and Medicine (Advances in Gender Research)*, Vol. 7, edited by M. T. Segal, V. Demos and J. J. Koenenfeld. Bingley, UK: Emerald Group Publishing Limited.

Whaley, Arthur. 2001. "Cultural Mistrust and Mental Health Services for African Americans: A Review and Meta-Analysis." *The Counseling Psychologist* 42(4):513-31.

Wheaton, Blair. 1985. "Models for the Stress-Buffering Functions of Coping Resources." *Journal of Health and Social Behavior* 26(4):352-64.

Wilson, Helen W., Briana A. Woods, Erin Emerson and Geri R. Donenberg. 2012. "Patterns of Violence Exposure and Sexual Risk in Low-Income, Urban African American Girls." *Psychology of Violence* 2(2):194-207.

Woodson, Kamilah M., Courtney Hives and Kathy Sanders-Phillips. 2010. "Violence Exposure and Health Related Risk among African American Adolescent Female Detainees: A Strategy for Reducing Recidivism." *Journal of Offender Rehabilitation* 49(8):571-84.

Zambrana, Ruth E. and Bonnie T. Dill. 2006. "Disparities in Latina Health: An Intersectional Analyses." Pp. 192-227 in *Race, Class, Gender, and Health*, edited by A. Schulz and L. Mullings. San Francisco, CA: Jossey-Bass.

Zimet, Gregory D., Nancy W. Dahlem, Sara G. Zimet and Gordon K. Farley. 1988. "The Multidimensional Scale of Perceived Social Support." *Journal of Personality Assessment* 52(1):30-41.

VITAE

ERIN L. PULLEN

EDUCATION

2014	Ph.D.	University of Kentucky, Sociology **Dissertation**: Social Networks, Drug Use, and Drug Abuse Help-Seeking: A Test of the Network Episode Model among African American Women **Committee**: Drs. Brea Perry (chair), Carrie Oser (co-chair), Claire Renzetti, and Carl Leukefeld
2010	M.A.	University of Kentucky, Sociology **Thesis**: Fundamental Social Causes of Drug Use in Appalachian Kentucky **Committee**: Drs. Brea Perry (chair), Carrie Oser (co-chair), and J. Matthew Webster
2008	B.S.	Michigan State University, Anthropology **Specialization**: Peace and Justice Studies

AWARDS & HONORS

2014	John A. O'Donnell Award for Outstanding Academic Performance, University of Kentucky.
2013	Behavioral Sciences and Center on Drug and Alcohol Research Outstanding Staff Member Award 2013. $1000.
2012	Doris Wilkinson Graduate Student Award for Outstanding Paper in Medical Sociology and Social Inequalities. $100.
2012	Student Travel Support Award, University of Kentucky Graduate School. $400.
2012	National Institute of Drug Abuse (NIDA) Women & Sex/Gender Travel Award. $750.
2010	Graduate Student Paper Award. American Sociological Association Section on Alcohol, Drugs, and Tobacco. Awarded at the ASA Annual Meeting, Atlanta, GA.
2010	Midwestern Association of Graduate Schools (MAGS) Distinguished Master's Thesis Award Nomination for the University of Kentucky.

2010	Howard Beers Summer Fellowship, University of Kentucky Department of Sociology. $2000.
2010	Student Travel Support Award, University of Kentucky Sociology Department. $300.
2010	Student Travel Support Award, University of Kentucky Graduate School. $300.

PEER REVIEWED PUBLICATIONS

Pullen, E., Perry, B., & Oser, C. *Forthcoming*, September 2014. African American Women's Preventative Care Usage: The Role of Social Networks and Racial Experiences and Attitudes. *Sociology of Health & Illness,* 36(7).

Pullen, E. & Oser, C. *Forthcoming*, 2014. Barriers to Substance Abuse Treatment in Rural and Urban Communities: A Counselor's Perspective. *Substance Use and Misuse.*

Stevens-Watkins, D., Perry, B., **Pullen, E.**, & Oser, C. *Forthcoming*, 2014. Examining the Effects of Racism, Sexism, and Stressful Life Events on Psychological Distress among African American Women. Accepted at *Cultural Diversity and Ethnic Minority Psychology.*

Oser, C., Biebel, E., **Pullen, E.**, & Harp, K. 2013. Counselor Burnout and Client Outcomes in Rural and Urban Substance Abuse Treatment: A Counselors' Perspective. *Journal of Psychoactive Drugs,* 45(1): 17-27.

Perry, B., **Pullen, E.**, & Oser, C. 2012. Too Much of a Good Thing: Psychosocial Resources, Gendered Racism, and Suicidal Ideation among Low-SES African American Women. *Social Psychology Quarterly* 75(4): 334-359.

Oser, C., Biebel, E., **Pullen, E.**, & Harp, K. 2011. The Influence of Rural and Urban Substance Abuse Treatment Counselor Characteristics on Client Outcomes. *Journal of Social Service Research,* 11(1): 1-13.

BOOK CHAPTERS & OTHER PUBLICATIONS

Perry, B., **Pullen, E.**, & Oser, C. 2014. Racial inequalities in health and wellbeing in the U.S.: Gendered racism and the experiences of African American women. In Claire M. Renzetti and Raquel K. Bergen (Eds.) *Understanding Diversity: Celebrating Difference, Challenging Inequality*. Boston, MA: Allyn and Bacon.

Pullen, E. 2010. "Book Review of *Missing Bodies: The Politics of Visibility.*" *Sociology of Health & Illness,* 32(6): 973-974.

PROFESSIONAL PRESENTATIONS

Pullen, E. & Oser, C. Substance Use and Help-Seeking Among Low Income African American Women: Testing the Network Episode Model. Oral presentation at the American Sociological Association Annual Meeting, San Francisco, California. Forthcoming August 2014.

Oser, C., **Pullen, E.**, Stevens-Watkins, D., Staton-Tindall, M., & Leukefeld, C. Intimate Partner Characteristics: Understanding their Association with Sexually Transmitted Infections among African American Women. Roundtable presentation at the American Sociological Association Annual Meeting in San Francisco, California. Forthcoming August 2014.

Pullen, E., & Oser, C. Predictors of Illicit Drug Use in Low-Income African American Women: A Multilevel Analysis of Demographic and Cultural Factors. Poster presentation at the College on Problems of Drug Dependence Annual Meeting, San Juan, Puerto Rico. June 2014.

Oser, C., **Pullen, E.**, Leukefeld, C., Stevens-Watkins, D., Staton-Tindall, M., & Havens, J. The Size of African-American Female's Health Networks: The Role of Drug and Criminal Histories. Poster presentation at the College on Problems of Drug Dependence Annual Meeting, San Juan, Puerto Rico. June 2014.

Pullen, E., & Oser, C. Barriers to Substance Abuse Treatment in Rural and Urban Communities: A Counselor's Perspective. Poster presentation at the Southern Sociological Society Annual Meeting, Atlanta, Georgia. April 2013.

Pullen, E., Perry, B., & Oser, C. African American Women's Preventative Care Usage: The Role of Social Networks and Racial Experiences and Attitudes. Round table presider and presenter at the American Sociological Association Annual Meeting, Denver, Colorado. August 2012.

Pullen, E., Oser, C., Jett, A., Stevens-Watkins, D., Havens, J., Staton-Tindall, M. & Leukefeld, C. HIV and HCV among African American Women across Criminal Justice Status. Oral Presentation at the Kentucky Conference on HIV/AIDS and Viral Hepatitis, Lexington, Kentucky. August 2012.

Pullen, E., Oser, C., & Perry, B. Correlates of Marijuana Use in African American Women: The Impact of Culturally Relevant Factors. Oral Presentation at the College on Problems of Drug Dependence Annual Meeting, Palm Springs, California. June 2012.

Oser, C., **Pullen, E.**, Stevens-Watkins, D., Havens, J., Staton-Tindall, M., & Leukefeld, C. African American Women's Tobacco & Marijuana Use: The Effects of Family History and Drug Use Risk Perceptions. Poster Presentation at the College on Problems of Drug Dependence Annual Meeting, Palm Springs, California. June 2012.

Perry, B. L., **Pullen, E.,** & Oser, C.B. The Role of Acculturation in the Stress Process: Gendered Racism, Psychosocial Resources, and Suicide among African American Women. Roundtable Presentation at the Eastern Sociological Society Meetings, New York, NY. February 2012.

Pullen, E., Oser, C., Biebel, E., & Harp, K. Rural and Urban Substance Abuse Treatment Counselor Burnout & Client Outcomes: A Counselor's Perspective. Oral Presentation at the Anthropologists and Sociologists of Kentucky Annual Meeting, Williamstown, Kentucky. October 2011.

Harp, K., Oser, C., Biebel, E., & **Pullen, E.** The Influence of Rural and Urban Substance Abuse Treatment Counselor Characteristics on Client Outcomes. Oral Presentation at the Anthropologists and Sociologists of Kentucky Annual Meeting, Williamstown, Kentucky. October 2011.

Pullen, E., Perry, B, & Webster, J. Rethinking the Cultural Cartography of Appalachia: Region as a Fundamental Social Cause of Drug Use. Poster Presentation at the Addiction Health Services Research Conference (AHSR), Lexington, Kentucky. October 2010.

Pullen, E. Kentucky Mountain Justice: A Qualitative Case Study. Oral Presentation and Session Convener at the Appalachian Research Symposium, Lexington, Kentucky. February 2010.

RESEARCH POSITIONS

2011 –	**Study Director**: "African American Female Drug Users: HIV, Health Disparities, & Criminality" (R01-DA022967, PI: Oser)
2011 –	**Study Director**: "Rural Drug Abuse Treatment: Organizations, Counselors, and Client Outcomes" (K01-DA021309, PI: Oser)
2010 – 2011	**Research Assistant**: "African American Female Drug Users: HIV, Health Disparities, & Criminality" (R01-DA022967, PI: Oser)
2010 – 2011	**Research Assistant**: "Rural Drug Abuse Treatment: Organizations, Counselors, and Client Outcomes" (K01-DA021309, PI: Oser)
2010	**Summer Fellowship** with Brea L. Perry (Department of Sociology, University of Kentucky)

2009	**Research Assistant**: "Drugged Driving in Alcohol Restricted Rural Appalachia" (PI: J. Matthew Webster)
2006 – 2008	**Research Assistant**: "What Can Biotechnology Learn from Nanotechnology? Social and Ethical Lessons for Nanoscience from the Debate over Agrifood Biotechnology and GMOs" (PI: Lawrence Busch; Michigan State University)

TEACHING POSITIONS

2014	**Invited Lecturer**, "Racial and Ethnic Health Disparities" Course: Race and Ethnic Relations Department of Sociology, University of Kentucky
2013	**Invited Lecturer**, "Stress Process and Health: An Overview" Course: General Psychology, Developmental Psychology Department of Psychology, University of Kentucky
2012	**Invited Lecturer**, "Secondary Data Analysis: A Gentle Introduction and Beginner's Example" Course: Sociological Research Methods (undergraduate) Department of Sociology, University of Kentucky
2009 – 2010	**Instructor** Department of Sociology, University of Kentucky • Remedial Reading Lab for Introduction to Sociology • Introduction to Sociology, Discussion Sections
2008 – 2009	**Teaching Assistant** Department of Sociology, University of Kentucky • Sociology of Gender (Dr. Ana Liberato) • Cultural Perspectives of Globalization (Dr. Patricia Ahmed) • Sociology of Mental Illness (Dr. Brea Perry) • Sociological Research Methods (Dr. Jim Hougland)
2008	**Teaching Assistant** Department of Anthropology, Michigan State University • Organizational Anthropology • Field Study in Organizational Anthropology

PROFESSIONAL AFFILIATIONS & SERVICE

Professional

2013	Special Issue Co-Editor, Contemporary Journal of Anthropology and Sociology (CJAS)
2013	Ad Hoc Reviewer for Social Problems and Journal of Drug Issues (JDI)
2011 –	Editorial Board Member, American Sociological Association, Alcohol, Drugs, & Tobacco Section (ADT)
2010 –	Member of American Sociological Association, Southern Sociological Society (SSS), College on Problems of Drug Dependence (CPDD), Society for the Study of Social Problems (SSSP)

Department

2013 – 2014	Staff Award Committee Member, Department of Behavioral Science/Center on Drug and Alcohol Research, University of Kentucky
2011 – 2014	Graduate Student Representative, Graduate Committee, Sociology Department, University of Kentucky
2010 – 2011	Graduate Student Representative, Faculty Meetings, Sociology Department, University of Kentucky
2010 – 2011	Secretary, Sociology Graduate Student Organization, Sociology Department, University of Kentucky
2009 – 2010	Advisory Board Member, Sociology Graduate Student Organization, Sociology Department, University of Kentucky
2009 – 2010	Graduate Student Representative, Policy Committee, Sociology Department, University of Kentucky

Other

2007 –	Member, Phi Beta Kappa, Michigan State University
2007 –	Member, Phi Kappa Phi, Michigan State University
2005 –	Member, National Society of Collegiate Scholars