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**Social Stressors and Personal Resources Associated with Perinatal  
Outcomes Among African American Women**

by

**Dawn Elaine Dailey**

DISSERTATION

Submitted in partial satisfaction of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

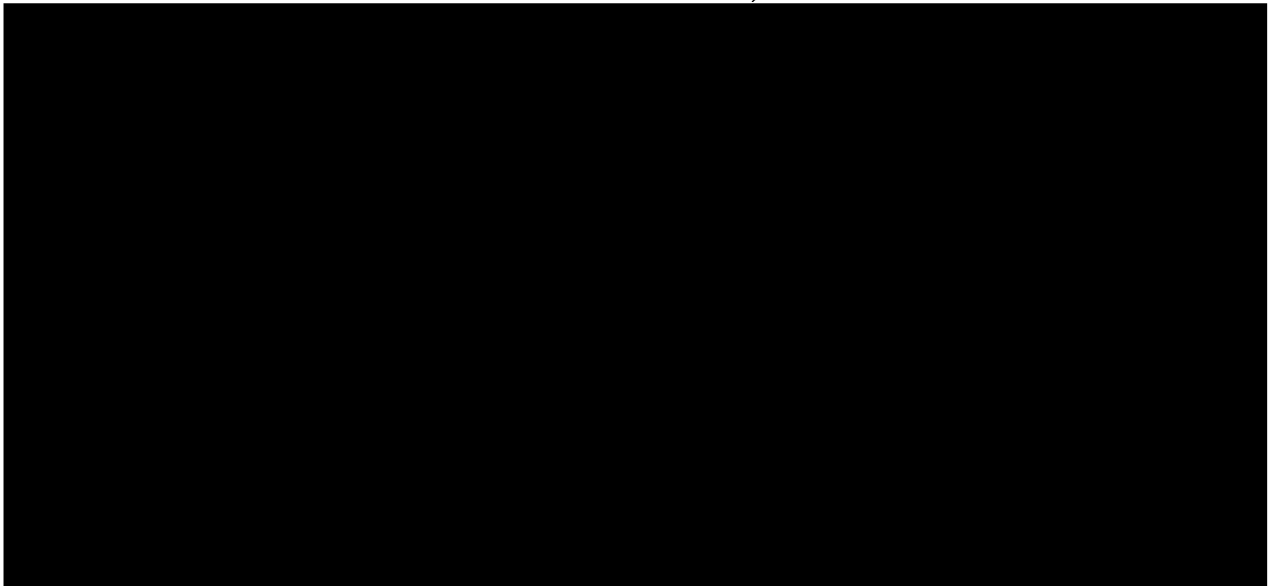
**Nursing**

in the

GRADUATE DIVISION

of the

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO



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Dawn Elaine Dailey

## Dedication

*A journey such as this is not one you achieve alone...*

To my husband and friend, Kenneth Dailey, for his love and support.  
I could not have made it through this journey without your strength and confidence.  
Thank you for gently caring for me and encouraging me to achieve my goals.

To my daughter Mariana for her joy, tolerance, and laughter.  
May we continue to inspire each other.

To my mother, Mercedes Anderson, for being an endless source of inspiration.  
God has blessed me with an awesome role model.

To my family members, church family, and friends for their prayers, emotional support,  
and constant words of encouragement.

In loving memory of my father, Stanley Anderson Sr., without him,  
I would not be the person I am today.



## Acknowledgements

I would like to extend a heartfelt thank you to the many people who have helped me along this incredible journey. To my advisors, committee members, and faculty: Kathryn Lee, Jane Norbeck, Sally Rankin, Anita Stewart, Howard Pinderhughes, and Janice Humphreys. Thank you for your guidance, words of wisdom, enthusiasm, and sharing of your extraordinary knowledge. I am grateful to you for the encouragement you provided throughout this doctoral journey. How fortunate I am to have benefited from your expertise and kindness.

To Pamela McCoy and Marsha Flakoll, committed nurses who keep the needs of their clients at the forefront. To the dedicated Healthy Start Prenatal Clinic staff whose excitement provided me with endless energy. A special thank you to Dianne Dunn Bowie for her endorsement and acknowledgement. To Itika Greene and Cheri Pies for believing in me and providing me with the opportunity to follow this path. Without your support none of my academic goals could have been accomplished. Mostly, I owe a debt of gratitude and wealth of appreciation to the many women who unselfishly shared their time and precious experiences.

This dissertation contains two papers that have been accepted for publication. Paper 1 is a reprint of material accepted by the *Journal of National Black Nurses Association* for publication. I would like to thank the National Black Nurses Association for granting permission to reprint this paper. Paper 2 is a reprint of material accepted by *Research in Nursing & Health* for publication. I would like to thank John Wiley and Sons, Incorporated for granting permission to reprint this article. The co-author listed in this publication supervised the research that formed the basis for this paper.

# Social Stressors and Personal Resources Associated with Perinatal Outcomes Among African American Women

Dawn E. Dailey

Perinatal health disparities are a prevalent problem in the United States. African Americans experience higher rates of preterm delivery, low birth weight, and infant mortality than the national average. Yet, reasons for these enduring disparities are not fully understood. Therefore, it is crucial to examine racial disparities from an intragroup perspective to identify distinct patterns and variables that may act as determinants of perinatal outcomes among African American women.

The overall aim of this dissertation was to broaden knowledge of predictors of perinatal outcomes in African Americans by examining stress and resource factors not routinely explored in perinatal health research along with other known correlates. A cohort of 119 pregnant women participated in this prospective study. Psychosocial stressors included discrimination, trauma exposure, generalized stress perception, and social conflict. Personal resources included spirituality, and social and reciprocal support. Descriptive, correlational, and regression analyses were used to analyze data.

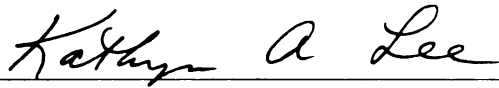
Average age of the 119 participants was  $25 \pm 5.4$  years. The women tended to be unemployed and single with low levels of education. Many of the women (55%) had at least 1 child. The average number of prenatal visits was  $9 \pm 3.5$  with total visits ranging from 1 to 17. Overall, 19% of the infants were low birth weight, and 21% were born prematurely.

There was a high prevalence of trauma exposure (87%) and discrimination (86%) in this sample. Race was the most cited reason for discrimination (56%). Yet, women

also felt that they were discriminated against because of their gender (44%), socioeconomic status (39%), and age (32%). Lifetime trauma exposure, tobacco use, number of prenatal visits, and discrimination due to age and physical ability were predictive of perinatal outcomes. Factors such as spirituality, social support, and generalized stress perception were unrelated to perinatal outcomes. Finally, other variables (socioeconomic, psychological, behavioral, and medical) associated with adverse perinatal outcomes in previous studies did not contribute to our model in this study.

By continuing to explore the social and personal experiences of African American women from a broader context, we will gain more insight into factors that contribute to racial disparities in perinatal health outcomes.

Approved:



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Kathryn A. Lee, RN, PhD, FAAN  
Dissertation Chairperson

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# Introduction

Health problems in our nation's communities are not uniformly distributed. Racial and ethnic disparities in health are a prevalent problem in the United States. National evidence consistently demonstrates that African Americans experience poorer perinatal outcomes. African Americans have the highest fetal, infant, and maternal mortality rates in the nation (Hoyert, Arias, Smith, Murphy, & Kochanek, 2001), and experience a higher rate of preterm births and low birth weight deliveries than the national average (Mathews, Menacker, & MacDorman, 2004). The causes for these enduring disparities remain unknown.

The goal of this dissertation was to explore correlates and predictors of perinatal experiences and outcomes among African American women. I specifically focused on stress and resource factors that have not been studied to a great extent in perinatal health research, and their association with psychological health, health behaviors, and medical conditions during pregnancy and pregnancy outcomes. Of particular interest were racism and lifetime trauma exposure as social stressors, and spirituality as a personal health-enhancing resource.

Paper 1 is a concept analysis of perceived racism and provides a framework that links race and racism to health outcomes in context with mediators that may influence this relationship. This paper, "Conceptualizing Perceived Racism and Its Effect on the Health of African Americans: Implications for Practice and Research", was submitted to the *Journal of National Black Nurses Association*. The paper is in press and permission was granted to reprint the manuscript in its submitted form.

Paper 2 is titled, "Perceptions of Racism and Birth Outcomes: A Meta-Analysis." This paper provides a meta-analytic review of the literature on racism and birth



outcomes. The purpose of the paper was to synthesize research to determine the degree to which racism is associated with gestational age and infant birth weight. This paper was submitted and is being revised based on reviewer comments.

Paper 3 is titled, “Psychometric Characteristics of the Spiritual Perspective Scale in Pregnant African American Women.” This paper assesses the psychometric properties of the scale including its variability, reliability, and construct validity, and establishes its appropriateness for use in samples of African American women. The paper has been accepted for publication and permission was obtained to reprint the manuscript in its accepted form.

Paper 4, entitled “Trauma Experiences and Health Outcomes in a Community – Based Sample of African American Women”, examines the association between lifetime trauma exposure and perinatal outcomes. Trauma is explored in a broad context that includes physical and sexual assaults, crime-related activities, natural and man-made disasters, and personal tragedies. This paper builds upon my interest to understand social experiences of African American women and how these experiences impact perinatal health.

The final paper, Paper 5, entitled “Social Stress and Personal Protective Factors as Predictors of Low Birth Weight in African American Women”, combines the concepts from the previous four papers. The aim of this paper was to determine the extent to which psychosocial stress (racism, trauma exposure, generalized stress perception, and social conflict), personal resources (spirituality and social support), and perinatal risk factors (health risk behaviors and medical conditions) predict infant birth weight.

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## **Paper 1**

# Conceptualizing Perceived Racism and Its Effect on the Health of African Americans: Implications for Practice and Research

Dailey, D. E. *Journal of National Black Nurses  
Association* (in press).

## Abstract

The focus on racial health disparities has resurged. Although reasons are complex, consequences of racism are potential contributing factors. This article aims to advance the concept of perceived racism as an area of focus for health disparity research by describing a framework for examining health outcomes associated with perceived racism. Perceived racism is defined as the subjective interpretation of an event, situation, or experience as negative, unjust, or undignified that solely occurs due to one's racial background. The framework establishes race as a determinant in health outcomes and depicts the multidimensional contexts of racism. The model identifies physical, psychological, and behavioral pathways affecting health outcomes and personal, cultural, and social resources as mediating factors. Perceived racism can potentially permeate the lives of African Americans and have profound impacts on health and well-being. The author utilized Norris' concept clarification model to explore the association between race, perceived racism, and health.

## Introduction

In recent years the scientific literature on health outcomes has seen a newly emerging focus on racial and ethnic disparities. African Americans in the United States suffer from the highest rates of mortality in health categories such as infant mortality, diabetes, HIV/AIDS, and cardiovascular disease; they are also likely to experience differential medical treatment in health care settings (Smedley, Stith, & Nelson, 2002). Although the reasons for such disparities in treatment and outcomes are complex and remain unclear, the consequences of racial discrimination, whether real or merely perceived, have been identified as a potentially significant factor contributing to their poor health outcomes (Jones, 2000; Krieger, Rowley, Herman, Avery, & Phillips, 1993; Williams, 1996; Williams, Neighbors, & Jackson, 2003).

African Americans have reported racial discrimination in a variety of situations related to the housing market, employment practices, and health and social services (Acevedo-Garcia, Lochner, Osypuk, & Subramanian, 2003; Darity, 2003). In each of these situations whether an action is intended to be racist is arguable; however, an often neglected critical element is the individual's perception that a negative outcome occurred because of the color of one's skin. If we focus on this perception of racism, it may have important implications for the widely documented adverse health outcomes among African Americans of all ages and social classes.

Various dimensions of racial and ethnic health disparities have become a focused priority for many national health agency agendas (Smedley et al., 2002; United States Department of Health and Human Services, 1998). Yet, seeking answers to this complex and seemingly pervasive problem requires clear conceptual understanding. Developing a

fuller contextual meaning of perceived racism will enhance interdisciplinary communication and influence the manner in which an appropriately defined concept is consistently applied in research, especially with studies seeking to unravel the specific factors associated with health disparities. The purpose of this article is to advance the concept of perceived racism through a review of current literature and present a conceptual model to guide practice and research. Norris' model (Norris, 1982; Rogers & Knafl, 1999) on concept clarification is used as a guiding framework.

### The Importance of Concept Clarification

Since concept clarification is an essential form of inquiry necessary to expand and develop knowledge in a discipline (Rogers & Knafl, 1999), clearly defined concepts are necessary for theory development and research utilization (Chinn & Kramer, 1995; Meleis, 1997). Yet, the temporal nature of concepts requires continuous and dynamic processes that respond to new knowledge, experiences, and perceptions (Meleis, 1997). As conceptual understanding may change over time, concepts that were seemingly once specified may require reexamination to assess and validate that its definition reflects contemporary meaning. Concepts are the building blocks of theory, and concept clarification is a major first strategy of theory development as it provides descriptions of phenomenon that can then be used to further the development of a well-defined scientific base of knowledge (Rogers & Knafl, 1999).

Clarification refines the contextual quality of concepts by discovering new meanings, expanding upon definitions, and identifying interrelatedness between its elements. Concept clarification is a "highly creative, rigorous, and intuitive process that can generate multiple useful meaning from a single concept" (Kramer, 1993, p. 406). As

a systematic method, it uses a variety of clinical and data sources and requires one to be immersed in a state of critical, reflective, and engaged thinking. This iterative process of clarification helps to unravel the many nuances that may have otherwise been hidden.

Norris identified the following five steps for concept clarification (1982):

1. Describe and explain the concept after observing and describing the concept as it is used in various disciplines.
2. Systematize observations and descriptions by reflectively thinking, examining and categorizing the qualities of the concepts.
3. Develop an operational definition.
4. Depict a conceptual model to graphically represent the synthesized concept and illustrate relationships.
5. Formulate hypotheses.

The process of concept clarification involves reviewing literature, identifying attributes, and comparing and contrasting properties, all of which leads to the emergence of a conceptual model that is used to generate and test hypotheses. The final construction of models requires an advanced level of synthesis from multiple sources and intellectual investment. Taking the time to gather these perspectives along with continuously generating and testing hypotheses is essential to uncover connections, build upon gaps, and identify evolved relationship. These factors, though often difficult to incorporate, can result in the emergence of a single comprehensive model as conceptual elements are refined and integrated. Concept clarification is an appropriate method to name and define the nuances of racism given its transformative and insidious nature (Porter & Barbee, 2004).

## Concept Clarification I: Observing and Describing the Concept

The first step in concept clarification is observing and describing the concept. Concepts can be previously observed phenomena, or be identified in clinical practice, through research investigations, or in natural situations and environments. After identifying the concept, new meaning builds as one repeatedly observes and describes the phenomena of interest. Throughout this initial discovery period, a variety of sources and disciplines are consulted to explore the concept from as many perspectives as possible. This analysis focuses on perceived racism, a concept that is proposed as a factor contributing to the pervasive health inequalities affecting African Americans.

### *Definitions of Perceived Racism*

#### *Dictionary Definitions*

Perceived racism itself is not defined by dictionary standards; however, the concept of perceived racism has been a focus in several disciplines over the years. According to the Oxford Dictionary (1989), the root word “race” comes from the Spanish “razza” which means of obscure origin. Webster’s New World College Dictionary (1999) defines racism as the belief or doctrine asserting racial differences in character, intelligence, etc, and the superiority of one race over another or others.

Perceive comes from the Latin “percipere” which means to take hold of, feel, or comprehend. Perceived, as defined by Webster’s New World College Dictionary (1999), means to become aware of through one of the senses. The term perceived racism has been defined in the psychological, nursing, and sociology literature.



### *Definition of Perceived Racism in the Health Care Literature*

Several definitions of perceived racism were found in the health care literature. In a study by Landrine and Klonoff (1996), perceived racism was defined as the culturally negative life events that happened to “African Americans because they are African American” (p.146). Murrell (1996) defined perceived racism as the “individual’s perception of differential and unjust treatment, experiences and attitudes” (p.45). Perceived racism has also been defined as the “subjective experience of prejudice or discrimination” (Clark, Anderson, Clark, & Williams, 1999, p.808).

Psychology, sociology, nursing, and public health were the main disciplines consulted to gather existing data on how the concept has been used in a variety of contexts. Since there are few resources discussing perceived racism as a concept, the root word “racism” is explored to provide a foundational background for the operational definition of perceived racism. Racism is not interchangeable with the concepts of stereotype, prejudice, and discrimination. Stereotype refers to fixed overgeneralized conceptions of others; prejudice pertains to irrational hatred of other groups; and discrimination refers to unfair treatment of others (Webster’s New World College Dictionary, 1999). The defining difference is that racism provides a “context for development and maintenance of – and endures, in part, due to stereotypes, prejudice, and discrimination” (Harrell, 2000, p.43). In addition, the latter three concepts can apply to non-dominant or dominant groups in the general population. Concept clarification is an evolutionary process. Prior to developing an operational definition of perceived racism and subsequent framework, attributes are explored as a next step in the systematic process of concept clarification.

## Concept Clarification II: Systematizing Observations

Systematizing observations is the second step in concept clarification. The properties of the concept are formed by establishing categories and identifying similarities and differences. The completion of this step adds to the scope and depth of the concept.

### *Distinct Properties of Racism*

Common to the definitions of racism is the centrality of power (Harrell, 2000). Fundamental to racism is the ideology of superiority that is manifested by categorizing and ranking groups according to skin color (Williams, 1996). Subsequent social and institutional policies are based on this hierarchy that evolved during European colonial expansion. It is well accepted in the literature that racism can adversely affect the health of minority groups (Williams, 1996). Racism is multidimensional, complex, and an elusive problem in U.S. society. Many conceptualizations of racism exist in the health literature. Several authors reported the impact that chronic racism has on the daily experiences of African American. Essed (1990) described the chronic nature of racism as living with the “threat of racism, means planning, almost everyday of one’s life, how to avoid or defend oneself against discrimination” (p.260). Utsey and Ponterotto (1996) expanded on this cumulative view of racism by stating, “new encounters are interpreted on the past experiences with racism, and knowledge about the systemic nature of racism” (p.490). Whereas Outlaw (1993) described that the results of being subjected to chronic racism cause African Americans to live in a heightened sense of awareness against which all situations are judged. Krieger (1990) suggested that one’s personal response to racism, whether passive or active, has strong implications for health. These descriptions

assert that racism is an ongoing cumulative stressor that elicits a variety of responses and shapes how African Americans assess and react to the many situations that they encounter.

Racism is pernicious and manifested at multiple societal levels. Several levels are described in the literature: (a) individual racism where racial discrimination occurs at the personal level, (b) institutional racism pertains to racial inequalities resulting from social and institutional policies and practices, and (c) cultural racism where the cultural beliefs and practices of a dominant group are viewed by society as superior to other groups (Jones, 2000). Additionally, collective racism occurs when organized dominant groups seek to restrict the rights of other groups (Utsey & Ponterotto, 1996).

While racism in the health care system, in most cases, has been categorized under institutionalized racism, several authors discussed unique issues associated with racism in health care. Mann and colleagues (1999) describe that African American women rationalized their experiences with long wait time, short visits with providers, not being listened to, and rudeness and insensitively as providers being too busy and doing the best they can. The women also described being grateful for what services they were given and somehow accepted the indifferent care because physicians and nurses were categorized as part of the healing profession. It has been hypothesized that individuals are motivated not to perceive racism among people of the helping professions whose job it is to be supportive and who may also be allies when racial discrimination occurs (Fischer & Shaw, 1999). However, it must be emphasized that forms of racism exists in health care systems and service delivery contributing to inequalities in health outcomes (Carlson & Chamberlain, 2004).

The literature, in itself, illustrates the need for clarifying the properties of racism. Findings from studies exploring perceived racism are difficult to synthesize due to the various conceptual descriptions of perceived racism. Perceived racism has been conceptualized according to frequency (Landrine & Klonoff, 1996), severity (Broman, Mavaddat, Hsu, 2000), presence (Thompson, 1996), and location (private or public) (Feagin, 1991). Nevertheless, the divergent focus among the studies illustrates that the body of knowledge surrounding perceived racism is evolving, and that further research is needed to continue to clarify the theoretical properties of this concept.

#### *Attributes of Racism*

Examining various characteristics leads to the further understanding of the critical attributes of a concept (Walker & Avant, 1995). Antecedents to racism described in the literature are personal characteristics and features of the social, political, and environmental climate. Racism is highly dependent on personal characteristics such as skin color, hair texture, and facial features (Harrell, 2000; Neal & Wilson, 1989; Williams, 1996). Political and environmental events in our society shape temporal awareness and put racism at the forefront of popular discussion. Racism-related tension may increase based on societal events (Harrell, 2000), for example the Rodney King verdict, O.J. Simpson trial, California's Proposition 186, and the recent bombings of the World Trade Center and subsequent war in the Middle East.

Consequences of racism are psychological and physiological. Physiological impacts of racism in health care research include hypertension, high blood pressure, stroke, and cardiovascular changes (Armstead, Lawler, Gorden, Cross, & Gibbons, 1989; Clark, 2000; Harrell, Hall, & Taliaferro, 2003; Krieger & Sidney, 1996; Utsey &

Ponterotto, 1996). Effects of chronic racism are hypothesized to affect the hypothalamic-pituitary-adrenal (HPA) stress response (Rich-Edwards et al., 2001). Additionally, racism impacts birth outcomes such as low birth weight and preterm deliveries (Collins et al., 2000; Rosenberg, Palmer, Wise, Horton, & Corwin, 2002). Racism has also been associated with negative psychological states such as depression, low self-esteem, poor academic performance, and lower levels of general happiness and life satisfaction (Murrell, 1996; Utsey & Ponterotto, 1996; Williams & Williams-Morris, 2000). Moreover, racism has been shown to foster negative health behaviors such as tobacco and alcohol use (Guthrie, Young, Williams, Boyd, & Kintner, 2002; Yen, Ragland, Greiner, & Fisher, 1999). The experiences of racism leads to long-term stressors, decreased quality of life, and poorer health outcomes ultimately affecting morbidity and mortality (Hummer, 1996).

In addition to psychological and physiological consequences, racism has economic and environmental consequences. Since African Americans are disproportionately represented in lower socioeconomic strata, they are more likely to experience unemployment, poor education, and live in impoverished neighborhoods (Darity, 2003; Hummer, 1996). Economic ramifications include inequalities in wealth, purchasing power, and occupational stability (Hummer, 1996).

#### *Mediating Factors Associated with Racism*

Several mediators appear to affect the impact of racism on health. The buffering effects of self-esteem and social support have been well described in the literature (Anderson, 1991; Fischer & Shaw, 1999; Landrine & Klonoff, 1996; Murrell, 1996; Utsey, Ponterotto, Reynolds, & Cancelli, 2000). Fisher and Shaw (1999) proposed racial

socialization as a significant mediator of perceived racism. Racial socialization refers to the process of preparing children for the realities of racism while instilling a positive sense of racial identity. Racial socialization is needed to raise physically and emotionally healthy children (Anderson, 1991). In a qualitative nursing study (Murrell, Smith, Gill, & Oxley, 1996) participants talked about the importance of teaching children about racism and their racial identity. Landrine and Klonoff (1996) discussed afrocentric social and political awareness from a psychology perspective as another mediating factor. This concept states that individuals immersed in the African American culture are keenly aware of the politics surrounding race and are more likely to experience fewer negative impacts of racist events. Cultural awareness, overall worldview, and spirituality have also been cited as mediators (Bowen-Reid & Harrell, 2002; Harrell, 2000).

#### *Appraisal as an Important Determinant for Perceived Racism*

Cognitive and emotional appraisal processes are significant to understanding perceived racism (Lazarus, 1999; McNeilly et al., 1996; Ward, 1993), and may account for the differences in how African American individuals can assess, categorize, and react to the same negative event or experience the event differently. This evaluative process may be an important determinant of adverse health outcomes. Cognitive appraisal is a key component supporting the idea of perceived racism as a viable concept, as it emphasizes that a person's reflection on a situation is crucial in determining their response (Lazarus & Folkman, 1984).

Although questions of what constitutes a racist event or environment exist, there is greater agreement that the manner in which an individual internalizes and processes an experience or observance is significant to their health (Broman et al., 2000) – thus the

importance of focusing on *perceived* racism. The concept of perceived racism recognizes the multifaceted, complex, and historically-rooted nature of racism, its shared cultural perspective among African Americans, and its dominance as a centrally organizing principle of the African American experience. Differential intragroup exposure and response, captured by perceived racism, may explain the wide variations in health outcomes among African Americans (Clark et al., 1999).

#### Concept Clarification III: Operational Definition

The ultimate goal of concept clarification is to develop an operational definition (Norris, 1982). Forming a definition is a cognitive activity that results from repeatedly thinking about, reviewing, and identifying patterns from the systematizing operations phase. Operationalizing the concept is an evolutionary process where the definition is rewritten and refined multiple times. Perceived racism is operationally defined as the subjective interpretation of an event, situation, or experience as negative, unjust, or undignified that occurs solely due to one's racial background.

#### Concept Clarification IV: Conceptual Model

The fourth stage of concept clarification is the construction of a conceptual model derived from the published literature. All concept clarification work should produce a model (Norris, 1982). A graphic representation of the concept distinguishing relationships among the components serves as a medium to convey the concept to others.

A model depicting the relationship between race and health outcomes is depicted in Figure 1. Central to this model is an individual's perception of an event as racist. This model establishes that race is an important determinant of adverse health outcomes

influenced by the impact that perceived racism has on the health and well-being of individuals.

The dotted lines surrounding the variable of race suggest that an individual interacts with and is influenced by the various contexts in which he or she is a part – sociocultural, environmental, socio-symbolic, institutional, political, and economic. Each of these arenas provides the context in which an individual is impacted by racism.

1. Sociocultural context is manifested through direct and vicarious experiences.

This context includes the impact of everyday racism, interaction with and expectations of other people and groups, and witnessing acts precipitated upon others.

2. Environmental context is manifested through an individual's physical and residential environment. This context includes racial isolation, level of social and neighborhood capital, safety, sanitation, proximity to and living in toxic environments, quality of housing, and corporate interest such as disproportionate alcohol and tobacco advertising in communities of color.

3. Socio-symbolic context is manifested through the images imbedded in society constructed to embody beliefs about a group that can potentially be degrading. This involves the transmission of negative images primarily through visual, audio, and print media, and art and science, such as disproportionate negative images of minority groups in news media and few positive minority group images on television.

4. Institutional context is manifested through the policies of an institution that limit opportunities for growth and grant differential access or fewer rights. This



context includes institutions such as the health care, judicial, and educational systems.

5. Political context is manifested in political debate and policies and public discussions. This context includes unequal representation in the political arena that affects critical issues such as funding decisions and legislative priorities.

6. Economic context is manifested by the inequities that limit economic growth. This context includes disproportionate unemployment rates, decreased purchasing power, lower salaries for comparable work, and poorer job security.

In the model, *Race* and *Negative Event* represent antecedents to perceived racism. For example being from a non-dominant racial group, such as African American, and the presence or perception of a negative event must precede the perception of racism. The cognitive and emotional assessment process follows the negative event and pertains to the intellectual and emotional activity that occurs for an individual to categorize the event as racist or otherwise. This appraisal activity impacts the intensity of the situation and the perception of a negative interaction.

Once an individual assesses the event as racist, health can be affected through several mechanisms. Physiologically, perceived racism can affect cardiovascular reactivity and stress response. Perceived racism can also affect individuals psychologically influencing mental health symptomatology. Finally, perceived racism can influence health behaviors such as patterns of tobacco and alcohol use. Each pathway has the potential of leading to adverse and differential health outcomes.

Certain mediators exist which influence the degree to which the experience, event, or situation affects the individual. These mediators may affect the ultimate outcome at multiple points along the continuum.

1. Cultural Resources encompass aspects that build upon a sense of identity and the establishment of linkages to one's cultural group such as racial socialization, racial identity, and afrocentric social and political awareness.
2. Social Resources encompass personal and community resources such as social support and access to community, religious, and social networks.
3. Personal Resources encompass personal characteristics, behaviors, and coping styles such as self-esteem, self-efficacy, spirituality, and health practices.

Each resource category can have positive or negative elements that affect the impact of a perceived event as racist. It is proposed that this pathway affects health outcomes (psychological and physical) and health behaviors, ultimately influencing racial disparities in morbidity and mortality.

Racism can be internalized and affect an individual without personal consciousness or knowledge. This pathway does not address the impact of racism on an individual who is unaware that he or she is experiencing racism – again illustrating the importance of *perceived* racism. This model also does not address the impact that negative events, which are not categorized as racism, have on individuals. Although important areas for scientific research, these alternative pathways require careful independent examination to determine the unique mechanisms by which they affect health outcomes, which may prove to converge with elements of a perceived racism and health conceptual model.

## Concept Clarification V: Hypothesis Testing

The final step of concept clarification is the formulation and testing of hypotheses. It is crucial that research continues to enable scientists and practitioners to fully understand the relationship between racism and adverse health outcomes and how this relationship impacts men, women, children, families and communities. Of particular interest is understanding why individuals who encounter racism experience differing health outcomes. Examining stressors, such as racism, that individual's experience, as well as exploring their personal strengths and resources, is paramount to understanding the mechanisms by which African Americans experience certain adverse health outcomes. Moreover, generating knowledge through hypothesis testing can provide information to improve health interventions, model health services, and develop social and community strategies to the improve health among African Americans.

## Discussion

### *Application of Conceptual Model*

This conceptual model derived from the process of clarification provides a framework to guide empirical studies aimed toward documenting the relationship between race and health outcomes situating the centrality of perceived racism as a major stressor. As critical as it is to identify variables, such as perceived racism that leads to adverse health outcomes it is just as important to learn how groups at risk adapt to the stressors to which they are exposed. Given the need to study racial disparities in health outcomes from a multifaceted approach, this model provides a framework to examine perceived racism and various characteristics (social, personal, and cultural) that may potentially mediate health.

### *Implications for Nursing Practice*

The conceptual model of perceived racism presents one mechanism by which race and racism in our society affect health outcomes for African Americans. As the conceptual model illustrates, perceived racism has the potential to permeate the lives of African Americans because of the many arenas where it is manifested. Offering an approach on how racism can adversely affect health, this conceptual model is useful for addressing other racial and ethnic health inequalities. Other forms of discrimination related to non-dominant gender, sexual orientation, disability, and age might be applicable in this model. The challenges for nurses serving African American populations are to recognize the pervasive nature of racism, to understand how it broadly affects individuals in our society, and to promote actions to combat it within health care systems, particularly during direct interaction with patients.

It is critical for nursing professionals first to understand the alarming health disparities in our communities and that scientific research continues to demonstrate African Americans suffer from poorer outcomes in most health categories. Evidence is accumulating that discrimination and perceived racism are significant contributors to the lack of adequate access to health care of African Americans. If advances are to occur in understanding the connections between psychological and physical health of African Americans, perceived racism must be recognized as a potential mediator in health care research.

### *Implications for Nursing Research*

Within the last decade the National Institutes of Health has taken measures to ensure that minorities are included in scientific studies that reflect the population within

an area or health problem. More nurse scientists are in research-based settings, positioning nurses to engage in research that includes populations reflecting our diverse society. From the broadest perspective, such research should continue to focus on health outcomes in various racial and ethnic groups from both national and international perspectives. More specifically, additional research is needed to further explore the connection between perceived racism and health outcomes.

Within this new research directive, a clearer and consistent operational definition of perceived racism would further the development of valid measures necessary to explore the relationship between perceived racism and psychological and physiological health outcomes. It is essential to understand how perceived racism affects health in order to promote effective interventions that are culturally appropriate to meet the diverse needs of all ethnic populations in our diverse society. To specifically understand characteristics of the patient, provider, and institution that contribute to inequities in care, researchers must first identify sources of racial and ethnic health disparities, understand ethical issues and barriers to eliminate disparities, and then develop intervention strategies (Smedley et al., 2002).

Endeavors to promote health care research that is inclusive of diverse racial and ethnic minorities, which extend beyond health disparity research, are crucial. Funding agencies should assure that funded research includes definitive plans to recruit diverse populations. Participatory research and other methodologies that promote community partnerships are strategies that can strengthen the recruitment of diverse populations. Moreover, research teams that are diverse in a broad sense can enrich perspectives and

generate new research approaches. Finally, efforts must continue to increase the number of underrepresented minorities among scientist and health care professionals.

### Conclusion

Racial and ethnic disparities in health care, health outcomes, and health care systems are a pervasive problem in our society. Empirical studies that include perceived racism as a variable are limited, yet the body of literature continues to grow. Perceived racism is a multidimensional concept and research on this concept is in its infancy. Therefore, methodologies are needed to continue to identify which facets of this socially constructed phenomenon are important determinants in health outcomes.

Although recognized as a problem for generations, the scientific quest to understand racism and its effect on health outcomes is an emerging field of inquiry. To answer the question of whether or not racism affects health, myriad of scientific approaches that integrate social and biological approaches are necessary. This is not a new question, but one generating renewed coverage and focus. Given the fact that racism is historically rooted, resulting from a socially produced and maintained phenomenon of racial superiority, it cannot be studied out of the context of broader societal, political, and economic forces.

As presented in this article, perceived racism is not only a plausible factor contributing to health disparities, but is also a viable mechanism to understand why non-dominant social groups exposed to a stressor experience disparities in health outcomes when compared to dominant social groups. Although this process was presented linearly, clarifying the concept of perceived racism is iterative and fluid. Each stage of this concept clarification process was revisited to review, elaborate, refine, and build upon

previous content. Racism has a profound impact on the lives of those whom it affects. Understanding the properties and manifestations of perceived racism can lead to the development of relevant theories that can be tested in nursing science, and these theories can then form the basis of effective and relevant nursing interventions aimed toward improving health outcomes.

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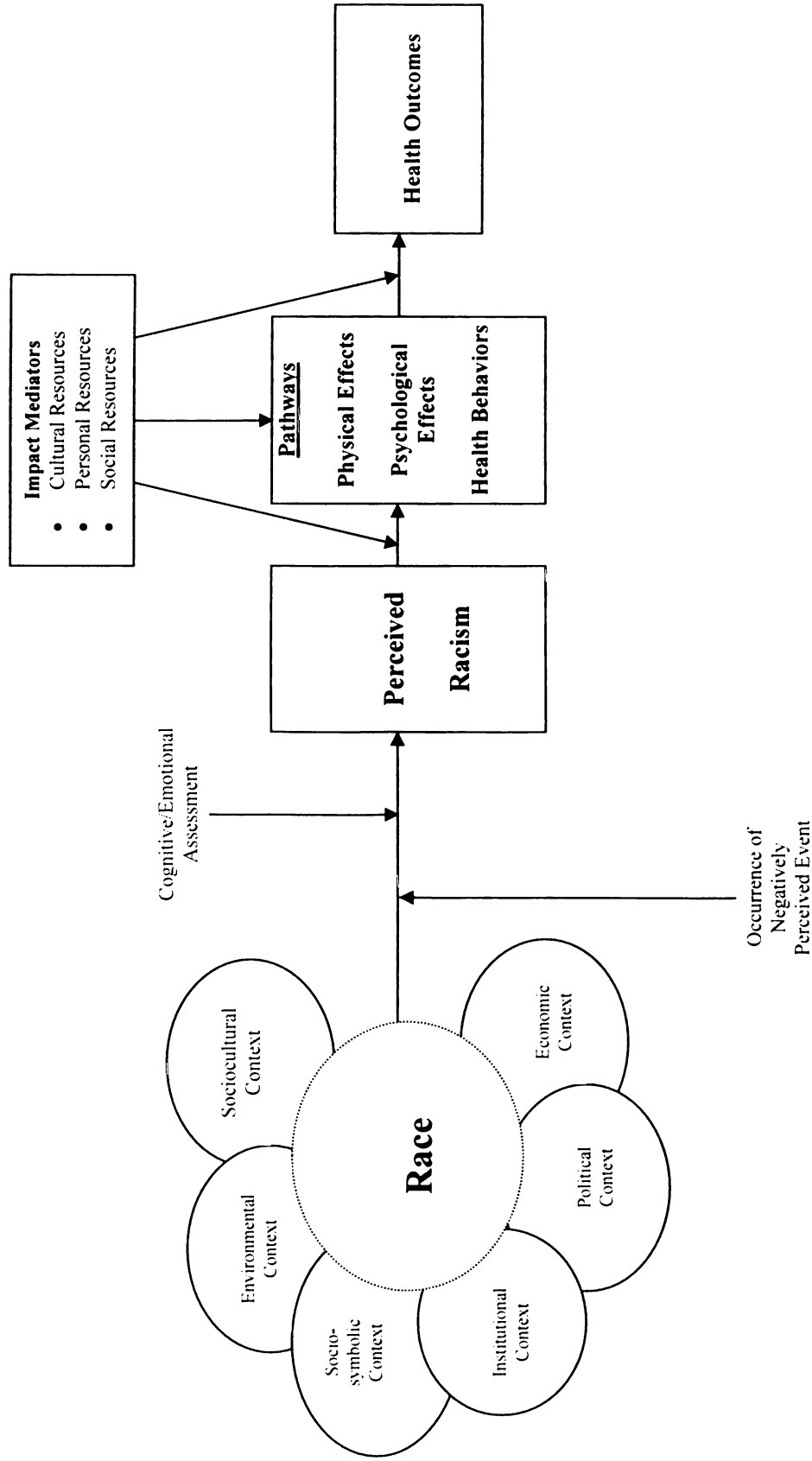
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Figure 1.

*The Relationship Between Race, Perceived Racism, and Health Outcomes*



## **Paper 2**

### **Perceptions of Racism and Birth Outcomes: A Meta-Analysis**

Dailey, D. E. & Lee, K. A.

## Abstract

Perceptions of racism as a social determinant of perinatal health is an emerging area of research and may have important implications for understanding the widely documented adverse birth outcomes of African Americans. A meta-analysis was performed to synthesize research findings examining the effects of perceived racism on birth outcomes. The outcomes assessed were infant birth weight and gestational age at time of delivery. Following an extensive computerized database search, ten studies that met inclusion criteria were identified. Four studies were subsequently eliminated for the following reasons: 1) method for measuring racism or the outcome data were not included, 2) lack of sufficient data to calculate an effect size, and 3) items used to measure racism could not clearly be categorized into specific domains of occurrence. Data were systematically abstracted and categorized according to birth weight and gestational age. Random and fixed effects models were used. The majority of research has examined differences in African American and Caucasian samples using within and between groups analysis. Perceived racism was a significant risk factor for poor birth outcomes in the majority of the studies. The effect was larger and more significant for infant birth weight than gestation age. Women who perceived racism in three or more domains had a higher risk for poor birth outcomes than women who reported racism in only one domain. We suggest that more studies using alternative methods to conceptualize and measure racism would expand current knowledge about the effect of perceived racism on perinatal health outcomes. Furthermore, future study designs should employ approaches using physiological stress indicators to broaden our understanding of mechanisms leading to adverse outcomes.



## Introduction

African Americans experience unequal outcomes across a broad range of health categories. One of the most persistent problems in American society is the excess rate of poor birth outcomes among African Americans (Lu & Halfon, 2003). Extensive epidemiological evidence documents racial variations in pregnancy outcomes indicating that African Americans experience a higher rate of low birth weight and preterm deliveries than other racial and ethnic groups (Mathews, Menacker, & MacDorman, 2004). Despite successful efforts to save infants earlier and despite technology that enables more of these babies to survive longer, medical advances have not eliminated these racial disparities. In fact, over the last several decades the disparity in infant mortality has widened between African Americans and Caucasians (Mathews et al., 2004). Birth weight and gestational age differences account for a large portion of the disparity in excess mortality rates between African American and Caucasian infants (Giscombe & Lobel, 2005). Moreover, low birth weight has been linked to the development of diabetes and cardiovascular disease in adulthood (Curhan et al., 1996; Rich-Edwards et al., 1997; Rich-Edwards et al., 1999). These long-term health sequelae make understanding the etiology of, and contributing factors for, adverse perinatal outcomes a societal and health care priority.

To further clinical knowledge of conditions that contribute to poor pregnancy outcomes, it is crucial that we understand determinants of perinatal health from biological, psychological, and socio-cultural perspectives. An emerging area of focus in perinatal health is racism as a social determinant of pregnancy outcomes (David & Collins, 1991; Rich-Edwards et al., 2001). Although studies examining the effects of

perceived racism on birth outcomes are increasing, there has been no evident attempt to summarize these findings. Therefore, the purpose of this study was to present a meta-analysis that synthesizes research on perceived racism and birth outcomes. The research question for this meta-analysis was: Do research studies find that perceived racism has a larger effect on gestational age or infant birth weight?

### *The Concept of Racism*

Over the last decade, there has been more scientific attention focused on racial discrimination and health. Racist practices exist in domains throughout U.S. society, and perceptions of racism are a potent stressor that negatively impacts the health of African Americans (Clark, Anderson, Clark, & Williams, 1999; Dailey, in press; Harrell, 2000). Racism is a complex interplay between sociopolitical, environmental, and interpersonal factors and has been defined by Harrell (2000) as:

A system of dominance, power, and privilege based on racial group designation: rooted in the historical oppression of a group defined or perceived by dominant-group members as inferior, deviant, or undesirable; and occurring in circumstances where members of the dominant group create or accept their societal privilege by maintaining structures, ideology, values, and behavior that have the intent or effect of leaving nondominant-group members relatively excluded from power, esteem, status, and/or equal access to societal resources (p. 43).

Myriad of circumstances exist where racism can penetrate the lives of African Americans and numerous conceptualizations of racism are present in the literature. Jones (2000) distinguishes between three types of racism: personally mediated, institutional,

and internalized. Personally mediated racism is defined as racism that occurs at the interpersonal level and involves subtle to blatant acts of racism perpetuated by individuals. Institutional racism pertains to racism that is embedded throughout the structures and processes in institutions and organizations throughout society. This type of racism results in differential access to services and goods that limit opportunity for groups of people based on the color of their skin. Internalized racism occurs when members of a stigmatized race accept the negative messages and views that have been perpetuated about their own abilities and worth. Other forms of racism include collective racism, when one group seeks to restrict the rights of another group (Utsey & Ponterotto, 1996), and cultural racism, when the cultural practices of a dominant group are viewed as superior to another group (Jones, 1997).

In addition, racism can be overt or subtle (Eberhardt & Fiske, 1998; Essed, 1990). Racism is also frequently described according to location of the event, frequency of occurrence, appraised severity, and behavioral-coping and emotional responses (Broman, Mavaddat, & Hsu, 2000; Feagin, 1991; Landrine & Klonoff, 1996; Thompson, 1996). Moreover, distinctions have been made between major life events and everyday racism (Essed, 1990; Utsey & Ponterotto, 1996).

### *Racism and Health*

Racism affects physical and psychological well-being, and influences the health practices of African Americans (Williams, 1999; Williams, Neighbors, & Jackson, 2003). Individuals who report higher levels of racism suffer from greater psychological distress, poorer self-esteem, lower levels of perceived health and satisfaction with life, and higher levels of anxiety and depressive symptomatology (Kessler, Mickelson, & Williams,

1999; Landrine & Klonoff, 1996; Ren, Amick, & Williams, 1999; Schultz et al., 2000; Utsey & Payne, 2002). Racism is also associated with adverse health behaviors such as tobacco and alcohol use (Guthrie, Young, Williams, Body, & Kintner, 2002; Yen, Ragland, Greiner, & Fisher, 1999). Moreover, racism negatively affects blood pressure and heart rate reactivity (Clark, 2000; Kreiger, 1990). It is crucial to emphasize that intentionality of an event as racist is arguable. However, of paramount concern is an individual's perception of an event as racist, which is the apparent mechanism that triggers psychological responses ultimately resulting in adverse health outcomes (Clark et al., 1999). In fact, perceived racism may be one of the missing links to expand our understanding of factors contributing to the disparity in poor birth outcomes among African Americans (Krieger, Rowley, Herman, Avery, & Phillips, 1993).

## Methods

### *Data Sources and Study Selection*

To select studies for this meta-analysis, a computerized search of five databases (PubMed, CINHALL, PsychINFO, SocAbstracts, and Digital Dissertations) was conducted using the terms racism and prejudice combined with the following key words: birth outcomes, pregnancy outcomes, preterm delivery, prematurity, low birth weight, and infant mortality. Literature from 1980 to the present was considered for this study to eliminate temporal differences in the conceptualization of perceived racism. Since research on the relationship between perceived racism and birth outcomes is in its infancy, it was anticipated that relatively few, if any, studies would exist in the literature published before 1980. To confirm this assumption, an expanded literature search before 1980 was done and revealed no studies on racism and birth outcomes. Studies were

limited to English language, humans, and women. The search identified 398 articles. The following types of articles were eliminated: literature reviews, qualitative study designs, commentaries, reports of research methodologies, duplicate studies, and studies that did not pertain to the topic of interest. After final review, nine studies were identified, including seven articles in peer-reviewed journals and two dissertations. Further review of reference lists and recent abstracts between 2000 and 2004 from national conferences on public health, sociology, and psychology revealed two additional studies (Table 1).

A total of two dissertations (Green, 1991; Parker-Dominguez, 2003), one conference abstract (Drisko, Shupe, & Wells, 2003), and eight published articles (Collins, David, Handler, Wall, & Andes, 2004; Collins, David, Symons, Handler, Wall, & Dwyer, 2000; Dole, Savitz, Hertz-Picciotto, Siega-Riz, McMahon, & Buekens, 2003; Dole, Savitz, Siega-Riz, Hertz-Picciotto, McMahon, & Buekens, 2004; Murrell, 1996; Mustillo, Krieger, Gunderson, Sidney, McCreath, & Kiefe, 2004; Rosenberg, Palmer, Wise, Horton, & Corwin, 2002; Shino, Rauh, Park, Lederman, & Zuskar, 1997) were identified (Table 1). One article included data published from one of the dissertations (Murrell, 1996). Since the author did not report the data on perceived racism and birth outcomes in the article, only the dissertation was maintained in the study sample (Green, 1991). Two articles reported on the same sample, each analyzing different aspects of the data from within and between group perspectives (Dole et al., 2003; Dole et al., 2004). Therefore, both articles were maintained in the sample for this meta-analysis. To clarify and obtain data from the conference abstract, the primary author was contacted and supplied data related to the study findings (Drisko et al., 2003).

### *Inclusion and Exclusion Criteria and Quality Review*

Only studies conducted with samples from the United States were considered in order to limit differing geographic experiences, interpretation, and sources of racism. Although racism is experienced globally, historical and geographical complexities in definition and experience may differ depending on the culture and context. Studies had to: a) use similar methods to measure perceived racism, in this case according to domain and frequency of occurrence, b) include birth weight or gestational age as the birth outcome, and c) report sufficient outcome data.

A quality scoring tool was developed to review each study based on guidelines discussed by Cook, Sacket, and Spitzer (1995). Each of the following areas was assessed: design, sampling method, sample size, data collection methods, instrument description and quality, inclusion of statistical elements, and presentation of the data. Item quality scores ranged from 0 (*absent*) to 3 (*high*). Total scores on the quality of a study ranged from 0 to 24.

### *Data Extraction and Effect Size Calculation*

Data from the studies were extracted using a standardized form developed by the researchers. The effect size was the odds ratio (OR) probability, with a 95% confidence interval (CI), of delivering a low birth weight or preterm infant for women who experienced perceived racism. ORs were categorized according to birth weight and gestational age outcomes. Significance was interpreted as an OR value with 95% CI that excluded 1.0. Both fixed effects (OR weighted by sample size) and more conservative random effects models were calculated. Homogeneity of the study results was calculated with the Q statistic.

## Results

From the ten studies reviewed for calculations of an effect size, four were subsequently eliminated for the following three reasons: 1) method for measuring racism and outcome data were not included (Shino et al., 1997), 2) lack of sufficient data to calculate an OR (Green, 1991; Parker-Dominguez, 2003), and 3) items used to measure racism could not clearly be categorized into specific domains of occurrence according to the study inclusion criteria (Drisko et al., 2003). Of the six remaining studies, quality scores ranged from 17 to 20 on the 24-point scale and no study was excluded based on quality of design or methods.

Characteristics for studies included in the meta-analysis are provided in Table 2. Three studies included only African American women (Collins et al., 2000; Collins et al., 2004; Rosenberg et al., 2002). Both African American and Caucasian women were included in another three studies (Dole et al., 2003; Dole et al., 2004; Mustillo et al., 2004); however, one study analyzed the outcomes separately for the two samples (Dole et al., 2004), whereas the other studies compared the two racial groups (Dole et al., 2003; Mustillo et al., 2004). Two studies provided outcome data only on birth weight (Collins et al., 2000; Collins et al., 2004), while another two studies only provided outcome data on gestational age (Dole et al., 2003; Dole et al., 2004). Perceived racism was examined in relationship to both birth weight and gestational age in two studies (Mustillo et al., 2004; Rosenberg et al., 2002).

Four studies used a tool to measure perceived racism that was developed by Krieger (1990). However, each study slightly adapted the tool by adding or eliminating specific domains where racism can be experienced (Table 3). Although this tool

measures internal and external response styles to racism as well as gender based discrimination, not all studies reported on this component. One study used a tool developed by Williams and colleagues (1997) to measure everyday, insidious experiences of discrimination as well as frequency of experiences of racism according to a list of domains (Rosenberg et al., 2002).

Racism was measured according to the location or domain where racism was experienced. Domains included: medical care, getting housing, at work, school, public, finding a job, police/courts, and neighborhood. The most common domains assessed were medical care and getting housing, followed by work environment, finding a job, and police/courts (Table 3). Three studies assessed perceived racism in the two domains of school and public, while two studies assessed neighborhood-level racism. Most researchers categorized perceived racism as occurring if the response was affirmative in at least one domain, while others defined perceived racism as occurring only if it occurred in at least three domains.

Perceived racism was a significant risk factor for poor birth outcomes in the majority of the studies. In Figure 1,  $OR > 1.0$  indicates risk for preterm delivery and younger gestational age at birth. Perceived racism was a significant predictor of preterm delivery in only two studies (Dole, 2004b; Mustillo, 2004a; Rosenberg, 2002c). There was also significant heterogeneity for these 10 study findings ( $Q = 20.15, p = .02$ ). Hence, the fixed effects model was significant ( $OR = 1.2$ ) while the more conservative random effects model was not significant since the 95% CI included 1.0.

Perceived racism had a larger and more significant effect on birth weight. In Figure 2,  $OR > 1$  indicates risk for low birth weight. Three of the six studies (Collins,



2004a; Collins, 2004b; Mustillo, 2004b) were significant and the random effects model and fixed effects models were identical (OR = 2.0). There was homogeneity for these study findings in relation to low birth weight ( $Q = 5.27, p > .05$ ).

For both perinatal outcomes, an interesting observation from the meta-analysis emerged. The manner in which racism was grouped for analysis affected the strength of the relationship. Studies with perceived racism dichotomized as occurring in 0 to 2 or 3 or more domains (Mustillo, 2004b) had the highest OR for preterm delivery when compared to studies where racism was dichotomized as occurring in 0 or only 1 domain (Figure 1). Likewise, studies with perceived racism dichotomized as occurring in 0 to 2 or 3 or more domains (Collins, 2004b; Mustillo, 2004b) had a greater risk of delivering low birth weight infants compared to studies in which racism was dichotomized as occurring in 0 or 1 domain (Figure 2).

## Discussion

Although racial disparities in perinatal outcomes have existed in U.S. society for many years, only recently has attention been focused on exploring the health impact of perceived racism. Racism is an elusive and insidious problem in society and must be considered as we strive to understand the health disparities that remain pervasive. This meta-analysis aimed to synthesize the existing body of literature on perceived racism and birth outcomes and some findings suggest that racism is a risk factor for poor birth outcomes. Moreover, findings from this meta-analysis suggest that the risk is more robust when examining birth weight as an outcome rather than gestational age as an outcome.

Findings from our meta-analysis indicate that perceived racism is associated with increased low birth weight as well as preterm delivery. The cumulative psychosocial stress of racism may trigger physiological mechanisms that underlie each outcome. By affecting neuroendocrine, vascular and immune functioning, chronic physiological stress is proposed as one pathway contributing to low birth weight and prematurity, and maternal stressors, including racism, are postulated to activate these physiological pathways (Hogue & Bremner, 2005; Stancil, Hertz-Picciotto, Schramm, & Watt-Morse, 2000; Wadhwa et al., 2001).

It has been well established that African Americans disproportionately experience racism (Feagin, 2001; Gyll, Matthews, & Bromberger, 2001; Kessler et al., 1999; Krieger, 1990; Watson, Scarinci, Klesges, Slawson, & Beech, 2002). Hence, we found that the relationship between racism and risk of adverse birth outcomes was stronger when comparing African American and White women (Mustillo, 2004a; Mustillo, 2004b). In addition to experiencing maternal stressors common to all women, African American women disproportionately experience the stress of racism when compared to Caucasian women possibly attributing to higher rates of adverse birth outcome in African American women (Dole et al., 2004; Rich-Edwards & Grizzard, 2005). However, more research is needed to elucidate racism as a distinct type of stressor, African American women's differential susceptibility to stress, and the resulting psychological and physiological sequelae.

Several issues for measurement consideration have emerged from this analysis. One issue is the role of acute versus cumulative exposure to racism. All of the studies in this meta-analysis used one of two tools that measured racism according to the number of

locations in which the experience occurred. Our findings indicate a stronger risk for low birth weight and preterm delivery when perceived racism is experienced in three or more domains, thus supporting a cumulative exposure framework in terms of number of incidents. The weathering hypothesis offers a plausible explanation for this finding (Geronimus, 2001). This hypothesis suggests that the cumulative effects of chronic stress over the lifetime of African American women, such as the repeated assaults of racism, cause African American women to be more susceptible to adverse health outcomes.

The manner in which the dimensions and domains of racism are defined is also of crucial importance. When exploring racism and health, how to best define racism must be carefully considered. Synthesizing research is challenging when different methods of measurement are used. Yet, scientific consensus on the conceptualization of racism has not been reached.

One limitation of the measures used in the six studies included in this meta-analysis is that individuals may be limited in terms of the domains in which they interact, resulting in the underreporting of racist experiences. For example, individuals who are retired, unemployed, unable to work, or working in their homes may not report racism when asked questions about racism at work. Likewise, individuals who have not interacted with law enforcement may not report experiences of racism when asked about police or the courts. Racism in both circumstances may be categorized as absent when in fact it has more to do with the sample of domains selected for measurement than presence and magnitude of the problem. Given this possible reporting discrepancy, it is difficult to determine if the domain frequency approach is a valid way in which to estimate the

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experiences of racism or if the domain frequency is an equivalent measure when conducting group comparisons.

Over the last decade a number of investigators have developed tools to measure perceived racism. Several of these tools offer an alternative conceptualization of racism as a source of chronic stress (Utsey, 1998). These tools attempt to tap the multidimensionality of racism by measuring a series of dimensions that including location, frequency, coping and behavioral responses (Krieger, Smith, Naishadham, Hartmen, & Barbeau, 2005; McNeilly et al., 1996), while others have developed tools based on cognitive stress appraisal frameworks (Landrine & Klonoff, 1996; Utsey & Ponterotto, 1996). Many of these tools have shown initial evidence of reliability and validity and should be considered in future perinatal health research endeavors to assess racism's impact on the physical and psychological well-being of African Americans.

Given the limited number of studies in this meta-analysis, the findings must be interpreted with caution. Although an attempt was made to identify non-published research, most of the studies reviewed in this meta-analysis were from published reports. In addition, several studies were eliminated, as sufficient data were not provided to calculate the odds ratio effect size and confidence intervals, including two studies reporting non-significant results, thereby possibly biasing the results.

### Conclusion

Racism is a complex social construct with deleterious effects on health and well-being. As research on racism and health continues to evolve, it is critical that researchers establish a clear conceptual basis to guide their methodologies. Future studies should seek to explore alternative methods to conceptualize and measure racism in perinatal

health research. This will enhance our knowledge of how best to measure racism in order to determine the extent of its impact on the health of mothers and their infants.

Although this meta-analysis expanded our understanding of the effects of racism on birth outcomes, only a limited number of studies exist and findings are conflicting. Additional research is warranted to corroborate the relationship between racism and birth outcomes and identify the mechanism by which racism influences perinatal health. If physiological stress response is the pathway triggered by experiences of racism, future study designs should employ approaches that measure aspects of physiological stress indicators, such as cortisol patterns, allele length, dexamethasone suppression, or cardiovascular reactivity, as well as measures of stress appraisal associated with perceived racism in a multitude of relevant and applicable domains.

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Table 1.

*Studies on Perceived Racism and Birth Outcomes*

| First Author, year     | Birth Outcome | Measure of Perceived Racism |
|------------------------|---------------|-----------------------------|
| Collins, 2000          | BW            | Krieger, 1990               |
| Collins, 2004          | BW            | Krieger, 1990               |
| Drisko, 2003           | BW, GA        | Green, 1990                 |
| Dole, 2003             | GA            | Krieger, 1990               |
| Dole, 2004             | GA            | Krieger, 1990               |
| Green, 1991*           | BW            | Green, 1990                 |
| Mustillo, 2004         | BW, GA        | Krieger, 1990               |
| Murrell, 1996*         | BW            | Green, 1990                 |
| Parker-Dominquez, 2003 | BW, GA        | Krieger, 1990               |
| Rosenberg, 2002        | BW, GA        | Williams 1997               |
| Shino, 1997            | BW            | Not specified               |

\*= same study

BW=birth weight, GA=gestational age

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Table 2. Study Characteristics

| First Author, year* | Design                      | Study period | Race/location              | Measure       | Domains   | Sample size Case/Controls | Outcome Source | Racism defined  | OR (95% CI)                                     |
|---------------------|-----------------------------|--------------|----------------------------|---------------|---|---------------------------|----------------|---|---|
| Collins, 2000       | Case-control Retrospective  | 1994-1996    | Black<br>IL                | Krieger 1990  | Medical care<br>Work<br>Getting housing<br>School<br>Public                                   | 85<br>25/60               | BW<br>NS       | ≥1 domain   | 1.9 (0.5-6.6)                                   |
| Collins, 2004       | Case-control Retrospective  | 1997-2000    | Black<br>IL                | Krieger 1990  | Medical care<br>Work<br>School<br>Finding a job<br>Public                                     | 312<br>104/208            | BW<br>MR       | ≥1 domain<br>≥3 domains                                 | 1.9 (1.2-3.1)<br>3.2 (1.5-6.6)                  |
| Dole, 2003          | Cohort Prospective          | 1996-2000    | Black<br>White<br>NC       | Krieger 1990  | Medical care<br>Getting housing<br>Finding a job<br>Police/court<br>Neighborhood              | 1,962<br>231/1731         | GA<br>MR       | 1 domain<br>> 1 domain                                  | 0.9 (0.6-1.4)<br>1.4 (1.0-2.0)                  |
| Dole, 2004          | Cohort Prospective          | 1996-2000    | Black<br>White<br>NC       | Krieger 1990  | Medical care<br>Getting housing<br>Finding a job<br>Police/court<br>Neighborhood              | 624 (Black)<br>83         | GA<br>MR       | 1 domain<br>> 1 domain                                  | 1.1 (0.6-2.1)<br>1.8 (1.1-2.9)                  |
| Mustillo, 2004      | Prospective Historical      | 1992-1995    | Black<br>White<br>4 states | Krieger 1990  | Medical care<br>Work<br>Getting housing<br>School<br>Public<br>Finding a job<br>Police/courts | 1,029 (White)<br>133      | GA<br>MR       | 1 domain<br>> 1 domain                                  | 0.8 (0.4-1.4)<br>Not enough                     |
|                     |                             |              |                            |               |   | 328<br>15/305             | BW<br>SR       | 1-2 domains<br>≥3 domains                               | 2.0 (0.5-8.3)<br>4.8 (1.5-15.4)                 |
| Rosenberg, 2002     | Cross-sectional Prospective | 1997-1999    | Black<br>National          | Williams 1997 | Work<br>In housing<br>Police  | 328<br>49/279             | GA<br>SR       | 1-2 domains<br>≥3 domains                               | 1.97 (0.9-4.4)<br>2.4 (1.03-5.7)                |
|                     |                             |              |                            |               |   | 4682<br>85/4597           | BW<br>SR       | 1 domain: job   | 1.4 (0.8-2.2)                                   |
|                     |                             |              |                            |               |   | 4766<br>422/4544          | GA<br>SR       | 1 domain (job)<br>1 domain (house)<br>1 domain (police) | 1.3 (1.1-1.6)<br>1.0 (0.8-1.3)<br>1.1 (0.9-1.4) |

BW= birth weight, GA= gestational age, NS= not specified, MR= medical record, SR= self-report

Table 3.

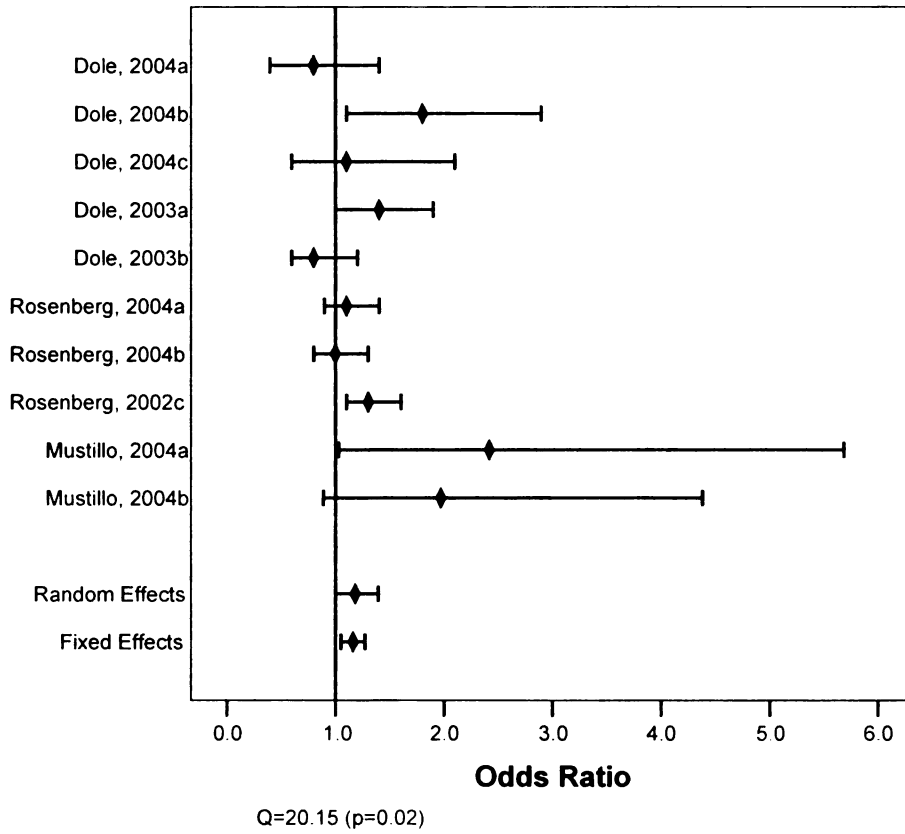
*Racism Domains Measured*

| Domain           | Authors*      | Number of studies |
|------------------|---------------|-------------------|
| Medical care     | 1, 2, 3, 4, 5 | 5                 |
| Getting housing  | 1, 3, 4, 5, 6 | 5                 |
| Work environment | 1, 2, 5, 6    | 4                 |
| Finding a job    | 2, 3, 4, 5    | 4                 |
| Police/courts    | 3, 4, 5, 6    | 4                 |
| School           | 1, 2, 5       | 3                 |
| Public           | 1, 2, 5       | 3                 |
| Neighborhood     | 3, 4          | 2                 |

\*1= Collins et al., 2000; 2= Collins et al., 2004; 3= Dole et al., 2003; 4= Dole et al., 2004; 5= Mustillo et al., 2004; 6= Rosenberg et al., 2002

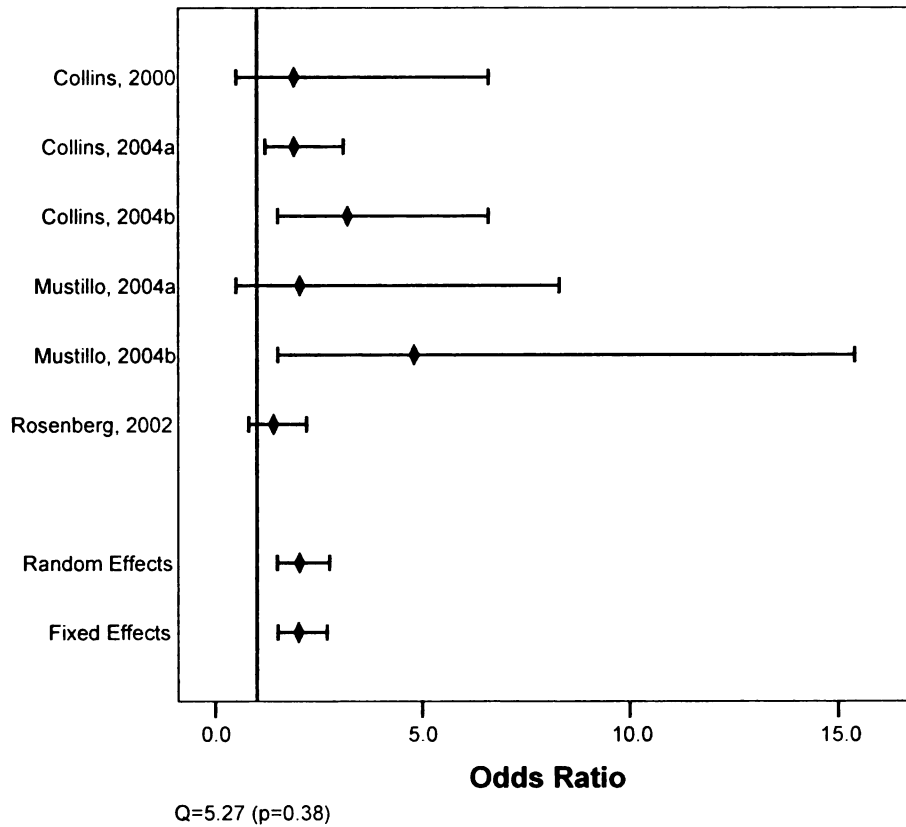
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**Figure 1. Perceived Racism and Gestational Age OR (95% CI)**





**Figure 2. Perceived Racism and Birth Weight OR (95%CI)**



### **Paper 3**

## **Psychometric Characteristics of the Spiritual Perspective Scale in Pregnant African American Women**

**Dailey, D. E. & Stewart, A. L. *Research in Nursing & Health***

**(in press).**

## Abstract

In health disparities research, studies focusing on the vulnerabilities of African Americans should be balanced by attempts to study resources and strengths within that community which may prove to influence health. One such resource is spirituality, yet few tools have been developed and tested using diverse populations. This study evaluated the psychometric qualities of the Spiritual Perspective Scale (SPS) in 102 African American women. Internal consistency reliability was high ( $r=0.91$ ). A significant difference in SPS mean scores was found between religious and non-religious women. The SPS correlated positively with church attendance, religiosity, and self-reported spirituality. As further evidence of construct validity, spirituality correlated negatively with depression, anxiety, and stress. Factor analysis revealed a two scale structure (spiritual beliefs, spiritual behaviors). The SPS functioned well in this sample. Results suggest that the SPS is an appropriate tool to use in clinical research to measure spirituality in pregnant African American women.

## Introduction

African American women experience poorer outcomes across a broad range of health conditions compared to other racial and ethnic groups in the United States. For example, African American women suffer from the highest fetal, infant, and maternal mortality rates in the nation (Hoyert, Arias, Smith, Murphy, & Kochanek, 2001). Researchers have yet to explain fully this racial disparity. Over the years, researchers have focused primarily on the identification of risk factors and stressors associated with adverse pregnancy outcomes with little attention focused on health-enhancing resources. Research addressing the vulnerabilities of African American women should include study of the cultural resources and strengths that may influence their pregnancy outcomes positively (Williams, 1997). Spirituality has recurrently been identified as such a resource (Heilemann, Lee, & Kury, 2002; Morgan, 1996).

Over the past few decades, there has been an increased interest in spirituality, particularly in nursing and other health sciences (Chiu, Emblen, Hofwegen, Sawatzky, & Meyerhoff, 2004; Greasley, Chiu, & Gartland, 2001; Mills, 2002). The terms *spirituality* and *religion* have often been used interchangeably (Thoresen & Harris, 2002). However, a growing number of Americans are identifying themselves as spiritual and differentiating between spirituality and religion (Mattis, 1997; Shahabi et al., 2002). Hout and Fischer (2002) analyzed data from the 1998 General Social Survey, a national survey of American adults conducted since 1973. They found that 67% of the respondents who identified themselves as spiritual stated that they were not religious. Zinnbauer and colleagues (1997) explored how 346 individuals defined their religiousness and spirituality. Ninety-five percent of the sample was White; most reported a higher rate of

spirituality than religiosity. Ninety percent of the participants identified themselves as spiritual, while only 78% self-identified as religious. Implications of both groups of researchers' findings is the importance of developing tools that are specific to measuring spirituality and sensitive enough to differentiate between spirituality and religiosity.

Although the link between spirituality and health is not well understood, accumulating evidence documents the positive influence that spirituality has on the health of women (Dessio et al., 2004; Musgrave, Allen, & Allen, 2002). Most studies of spirituality and women's health have been focused on chronic medical conditions. Researchers have found that, for women with chronic illnesses, spirituality is associated with psychological well-being and assists with coping with their illnesses (Gioiella, Berkman, & Robinson, 1998; Martin & Sachse, 2002; Reynolds, 2006; Simoni, Martone, & Kerwin, 2002). In addition, higher levels of spirituality are associated with lower levels of depression, anxiety, and stress (Boscaglia, Clarke, Jobling, & Quinn, 2005; Jesse & Reed, 2004; McCoubrie & Davies, 2006). Yet, regardless of health status, older women consistently report higher levels of spirituality than their younger counterparts (Gioiella et al.; Humphreys, 2000; Martin & Sachse; Romero et al., 2006).

Spirituality is a multidimensional concept that encompasses striving toward meaning, purpose, inspiration, and awe (Conner & Eller, 2004). Spirituality has been described as a quality that expands beyond religiosity, which pertains to the organized aspects of belief systems and worship practices (Conner & Eller; Newlin, Knafl, & Melkus, 2002). Elkins, Hedstrom, Hughes, Leaf, and Saunders (1988) defined spirituality as a:

Way of being and experiencing that comes about through awareness of transcendent, intrapersonal, and interpersonal dimensions, and that is characterized by certain identifiable values in regard to self, others, nature, life, and whatever one considers to be Ultimate. (p. 10)

This definition incorporates both Western and Eastern philosophical traditions and practices and is consistent with the meaning of spirituality to African American women (Newlin et al.). Spirituality plays a central role and powerfully influences virtually all aspects of the lives of many African American women (Mattis, 2000). It is a resource from which African American women draw personal strength and a fundamental foundation of their decision-making and behavior (Banks-Wallace & Parks, 2004; Newlin et al.; Van & Meleis, 2003).

Spirituality also plays an important role in relation to a woman's experiences during pregnancy (Jansen, 2006). Pregnancy and childbirth are significant periods of transition in women's lives when meanings and experiences may be shaped by their spiritual beliefs and behaviors (Mann, Abercrombie, DeJoseph, Norbeck, & Smith, 1999; Semenic, Callister, & Feldman, 2004). During pregnancy many women draw on their spirituality as a resource for coping and consolation (Jesse & Reed, 2004). Pregnant women also may find their spirituality to be a source of equanimity (Morgan, 1996). These qualities of spirituality could prove to enhance health, ultimately affecting pregnancy outcomes. Few researchers have explored spirituality and pregnancy experiences and outcomes. Yet, the examination of spirituality and its effect on health and well-being during pregnancy requires reliable and valid measures.

Spirituality has been measured with scales, such as the Spiritual Perspective Scale (SPS; Reed, 1987). A majority of these instruments were developed using predominantly White, religious, well-educated samples with limited attempts to assess psychometric properties in other populations. When deciding to use tools in diverse populations where limited information on psychometric characteristics is available, it is crucial to determine whether a tool developed with one group performs adequately across other groups, especially those that have been traditionally underrepresented in research (Stewart & Nápoles-Springer, 2000). Exploring psychometric equivalence helps ensure that tools used across diverse populations are measuring similar concepts of interest and meet acceptable psychometric standards, thereby, strengthening the interpretation of research findings.

The purpose of this study was to examine the psychometric properties of the SPS (Reed, 1987), including its variability, reliability, and construct validity in pregnant African American women. To assess construct validity, we examined four hypotheses: (a) women who report a religious affiliation will have a higher mean SPS score than women who report no religious affiliation; (b) the SPS will correlate positively with self-reported religiosity and church attendance and, most positively, with self-reported spirituality; (c) depression, anxiety, and stress will negatively, and perceived health will positively correlate, with the SPS; and (d) age will positively correlate with the SPS.

## Methods

### *Setting, Sample, Participants*

A convenience sample of African American women was recruited from two prenatal clinics located in northern California. Both clinics are operated by a local

county-sponsored government health care system. Pregnant women who self-identified as African American and over the age of 18 years were eligible to participate. This cross-sectional study is part of a larger prospective research project exploring perinatal symptom experiences and outcomes among African American women.

Of the 185 women identified as eligible to participate, 55% completed the survey. Approximately 23% could not be located because of incorrect or discontinued telephone numbers. Only 10% of the women declined to participate, and 12% who were interested in participating could not keep appointments that were arranged according to their preference. All 102 women participating in the study completed the SPS.

Demographic characteristics are shown in Table 1. Age ranged from 18 to 39 years ( $M=25$ ,  $SD=5.4$ ). The women tended to have low incomes and low levels of education, and most of the women were unemployed. Less than half of the women were married or in a committed relationship. When asked how long they could maintain their existing standard of living after losing all income, many responded less than one month. Over half of the women reported their health status as excellent or very good. All of the women were between 25 and 28 weeks gestation. Parity ranged from 1 to 9. Of the women who already had children, the number ranged from 1 to 5 with most (40%) having 1 to 2 children. A majority of the women reported a religious affiliation (78%). Of the women reporting a religious affiliation, Protestant was the most frequently reported. Most of the women attended church at least once per month, and less than half reported that they never attended church.



### *Procedure*

Approvals to conduct this study were obtained from required institutional review boards. Clinic nurses informed women about the study. Interested women were referred to the research nurse who screened each woman for eligibility. Women who met the selection criteria were invited to participate. After women consented to participate, names and telephone numbers were obtained, and appointments with the research nurse were scheduled at a convenient time for the participants. Each woman completed a self-administered questionnaire that contained a sociodemographic section and the study instruments. The survey took an average of 45 minutes to complete. Women were given \$25 after completing the questionnaire. Recruitment occurred between September 2004 and September 2005.

### *Measures*

*Spiritual Perspective Scale (SPS)*. The SPS is a 10-item tool designed to measure the extent to which individuals hold certain spiritual beliefs and engage in spiritually related behaviors (Reed, 1987). Although the SPS yields a single score and does not contain subscales, Reed categorized the items according to spiritual behaviors and beliefs. Four items pertain to the frequency of spiritual behaviors, such as “How often do you read spiritually-related material.” For behaviors, choices include: 1 (*not at all*), 2 (*less than once a year*), 3 (*about once a year*), 4 (*about once a month*), 5 (*about once a week*), and 6 (*about once a day*). Six items pertain to spiritual beliefs, such as “My spiritual views have had an influence upon my life.” For beliefs, choices include: 1 (*strongly disagree*), 2 (*disagree*), 3 (*disagree more than agree*), 4 (*agree more than disagree*), 5 (*agree*), and 6 (*strongly agree*). Only one belief item refers to God, namely,

“I frequently feel very close to God or a higher power in prayer, during public worship, or at important moments in my daily life.” Yet, this item also offers the term “or higher power” as an alternative. None of the items refers to a specific religion or church. Item responses are averaged into a single score that ranges from 1 to 6, with higher scores indicating a higher level of spirituality.

The SPS was originally developed and tested in an older, predominantly White sample consisting of 300 healthy, non-terminally ill, and terminally ill adults (Reed, 1987). The majority of the participants reported a religious affiliation. Internal consistency reliabilities for the three groups in the original study ranged from .93 to .95. A reliability coefficient was not reported on the three groups combined. Those who reported having a religious affiliation scored higher on the SPS, providing evidence of construct validity. As hypothesized, spirituality was positively correlated with the Index of Well-Being that measures satisfaction with life (Reed). As further evidence of construct validity, Humphreys (2000) reported, from her study of 50 women living in a battered women’s shelter, that women who scored higher on the SPS participated in a higher number of spiritual practices. In addition, age in this study was positively correlated with higher levels of spirituality. Furthermore, higher scores on the SPS were negatively correlated with symptoms of psychological distress. Jesse and Reed (2004) used the SPS in a sample of pregnant women, consisting of 119 predominantly White women (90%). Psychometric reporting was limited to the evaluation of internal consistency reliability with a Cronbach alpha coefficient of .91. Although used with diverse samples, no study was found using the tool with a sample of pregnant women who were predominantly African American.

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*Spirituality and religious measures.* Four single item measures were used to assess church attendance, religious affiliation, perceived level of religiosity, and perceived level of spirituality. Church attendance was assessed by asking women the number of times they attended church per month. They were also asked to identify their religious affiliation. Response choices included: no religion, Protestant, Catholic, Jewish, Muslim, Buddhism, Jehovah's Witness, Seventh Day Adventist, and other. If Protestant was selected, participants were cued to select a specific denomination, which included Methodist, Baptist, Church of God in Christ, Lutheran, or Pentecostal. Perceived level of religiosity was assessed using a single item (Fetzer Institute, 1999). Participants were asked: "How religious would you say you are?" Response choices ranged from 1 (*not at all religious*) to 5 (*very religious*). Perceived level of spirituality was also assessed using a single item (Fetzer Institute). Participants were asked: "How spiritual would you say you are?" Response choices ranged from 1 (*not at all spiritual*) to 5 (*very spiritual*).

*The Perceived Stress Scale (PSS).* The 10-item PSS measures global stress by assessing the degree to which individuals appraise situations in their life as stressful (Cohen, Kamarck, & Mermelstein, 1983). Items are measured using a 5-point scale with response choices from 0 (*never*) to 4 (*very often*). Total scores range from 0 to 40, with a higher score indicative of more perceived stress. Researchers have reported a coefficient alpha reliability of .78 in a probability sample of African American women (Cohen & Williamson, 1988). In the current study, the alpha reliability was .76. Evidence of construct and criterion validities have been reported (Cohen et al.; Cohen & Williams).

*The Center for Epidemiological Studies Depression Scale (CES-D).* The CES-D is a 20-item measure of depressive symptoms for use in the general population and one of

the most widely used scales to assess depressive symptomatology (Radloff, 1977). Four domains are measured: depressive affect, somatic symptoms, positive affect, and interpersonal relations. Participants respond to a 4-point scale with choices ranging from 0 (*rarely or none of the time*) to 3 (*most or all of the time*). After reverse scoring 4 items, item scores are summed to create a total score ranging from 0 to 60. Higher scores indicate higher levels of depressive symptoms. Cronbach alpha in a sample of 227 African Americans was .86 (Long Foley, Reed, Mutran, & DeVellis, 2002). Alpha reliability for the current study was .85. Content, construct, and criterion validities of the CES-D have been established (Radloff; Roberts, 1980).

*Profile of Moods States (POMS).* Anxiety was measured using the tension-anxiety subscale of the POMS (McNair, Lorr, & Droppleman, 1992), a commonly used measure of affective mood fluctuations. The tension-anxiety subscale has nine items and measures anxiety symptomatology. Items assess tension, shakiness, edginess, panic, uneasiness, restlessness, anxiety, and relaxation. Individuals respond to a 5-point scale with responses ranging from 0 (*not at all*) to 4 (*extremely*). A total score is calculated, with higher scores indicating higher levels of anxiety. Internal consistency reliability of the POMS tension-anxiety subscale was .87 in African American and White pregnant women (Mackey, Williams, & Tiller, 2000). Cronbach alpha was .60 in the current study. Construct validity of the POMS was established in a racially diverse sample of 594 U.S. adults (Nyenhuis, Yamamoto, Luchetta, Terrien, & Parmentier, 1999).

*General health.* Perceived health status was measured using a single-item self-report measure commonly included in health surveys. Participants were asked: "In

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general, would you say your health is...?" Response choices are *poor, fair, good, very good, and excellent*. A high score indicates better health.

#### *Data Analysis*

All forms were reviewed for completeness, legibility, and accuracy at the time of data collection. Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 13.0. Prior to analysis, data were checked for missing values and outliers. Descriptive statistics were used to summarize the study variables.

Psychometric characteristics of the SPS were assessed by evaluating variability, internal consistency reliability, and construct validity. Normality of the distribution was assessed by observing the range of scores, evaluating the frequency distributions and symmetry, and calculating the percentage of perfect scores. Scores that are distributed across the full range of values indicate that a tool has good variability within the specified group of individuals. In a normally distributed sample, the mean, median, and mode should be similar. Symmetry was assessed by calculating the skewness and kurtosis statistics. Skewness evaluates the skew of the distribution or if scores cluster on either side of the continuum. Values can range from negative to positive infinity. Kurtosis examines the extent to which distribution is peaked or flat and is another indicator of variability. Coefficients can range from  $-2$  to positive infinity. Skewness and kurtosis values  $< \pm 2.0$  represent a more normal distribution. Ceiling and floor effects indicate the percentage of individuals who report either the highest or lowest attainable score on the scale. A high percentage on one or both extremes suggests that the scale is not able to detect important differences within the sample at either end of the continuum.

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Internal consistency reliability estimates the extent to which individual items within a scale are correlated with the other scale items in a given sample. Reliability of the SPS was interpreted by calculating a Cronbach alpha coefficient. A reliability of at least .70 is considered sufficient for group comparisons (Nunnally & Bernstein, 1994). Item-scale correlations, an indicator of item convergence, assess the homogeneity of the tool and how well the items represent the construct of interest (McDowell & Newell, 1996). A corrected item-scale correlation greater than .30 is commonly used (Stewart, Hays, & Ware, 1992).

Construct validity provides information to determine the degree to which a tool is accurately measuring the variable of interest. To test construct validity, we explored hypothesized relationships between the SPS and self-reported religiosity, self-reported spirituality, and church attendance using Pearson product-moment correlations. A *t*-test was used to examine construct validity in relation to religious affiliation.

Construct validity was also explored to test hypothesized relationships with the health variables. Pearson product-moment correlations were calculated to examine how the SPS was associated with depression, anxiety, stress, and general health measures. Pearson product-moment correlation was also calculated to explore the hypothesized relationship between spirituality and age.

A factor analysis was done to explore the overall scale structure. Factor analysis provides a mechanism to assess the congruence between the empirical data and the theoretical foundation of the scale. Because no published data on factor analysis was identified, an exploratory factor analysis was conducted using principal axis factoring with a Varimax rotation. Kaiser-Meyer-Olin Measure of Sampling Adequacy (KMO) and

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Bartlett's Test of Sphericity were calculated to assess model assumptions. The final number of factors extracted was confirmed by applying the Kaiser-Guttman Rule and visually examining scree plots (Nunnally & Bernstein, 1994).

## Results

### *Variability*

Psychometric properties of the SPS are shown in Table 2. On a scale from 1 to 6, the mean score for the SPS was 4.36 ( $SD= 1.22$ ). Participants used the full range of possible responses providing good evidence of variability. The distribution approximated normal with a slight negative skew, indicating that participants responded more toward the higher end of the scale. Ceiling and floor effects were very low. The mean scores of the individual items ranged from 3.46 to 4.99 (Table 3). The item with the lowest mean score was a spiritual behavior item –“How often do you read spiritually-related materials” – while the item with the highest mean score was a spiritual belief item, “Forgiveness is an important part of my spirituality.” Items focusing on spiritual behaviors had mean scores ranging from 3.46 to 4.30, while items that focused on spiritual beliefs had mean scores ranging from 4.48 to 4.99.

### *Reliability*

Internal consistency reliability was high. All item-scale correlations exceeded the minimum criterion (Stewart et al., 1992).

### *Validity*

The SPS was correlated with other religious and spiritual measures as hypothesized (Table 4). The SPS correlated highest with the self-report spirituality measure, followed by self-reported religiosity and church attendance. In addition, the SPS

was positively correlated with age. As expected, the mean SPS score among women who reported a religious affiliation was significantly higher than women who reported no religious affiliation (Table 5).

Pearson product-moment correlations between spirituality (SPS), depression (CES-D), anxiety (POMS tension-anxiety subscale), and generalized stress (PSS) are presented in Table 4. Cronbach alpha coefficients for the CES-D and PSS were adequate with values of .85 and .76, respectively. The POMS tension-anxiety subscale had a low Cronbach alpha coefficient of .60. As hypothesized, spirituality was correlated negatively with depression, anxiety, and stress. The SPS was only slightly correlated with perceived health.

The factor analysis met the standards of the KMO (.85) and Bartlett's Test of Sphericity ( $p < .0001$ ), indicating that items were sufficiently intercorrelated to perform the procedure (Munro, 2001). The factor analysis revealed a two-factor structure extracting factors with an eigenvalue over 1.0. Factor loadings and eigenvalues are shown in Table 6. Factor 1 had an eigenvalue of 5.8, and Factor 2 had an eigenvalue of 1.4. Initial extraction revealed that both factors accounted for 72% of the variance with Factor 1 explaining 58% and Factor 2 explaining 14% of the variance. After rotation, Factor 1 and Factor 2 accounted for 36% and 30% of the variance, respectively. Extracted factors were confirmed after applying the Kaiser-Guttman Rule and visualizing the scree plot (Nunnally & Bernstein, 1994). Items loading high on Factor 1 consisted of the five items initially categorized as spiritual beliefs with rotated loading values ranging from .68 to .90. Items loading high on Factor 2 consisted of the four items categorized as spiritual behaviors with rotated loading values ranging from .62 to .83. One item – "Forgiveness is



an important part of my spirituality” – loaded moderately on both factors (beliefs=.42, behaviors=.50). This item had been initially categorized under spiritual beliefs.

Because the results of the factor analysis indicated two subscales – labeled spiritual behaviors and spiritual beliefs – Pearson product-moment correlations were repeated to analyze the relationship between the spiritual behaviors and beliefs subscales, the religious and spiritual measures, and the health variables (Table 4). Both subscales correlated similarly with the church attendance and spirituality measures, and with the SPS total score. The beliefs subscale, however, had a slightly higher correlation with religiosity and the behaviors subscale correlated slightly higher with depression, stress, and age.

#### Discussion

This is the first study of which we are aware that explores the psychometric properties of the SPS in a sample of pregnant African American women. Measures developed in a homogeneous sample should be tested to ensure they perform appropriately in other groups (Switzer, Wisniewski, Belle, Dew, & Schultz, 1999). Study results provide evidence of the reliability and validity of the SPS in African American women.

Internal consistency was high in this sample of pregnant African American women and our reliability estimate was the same as reported in another study of pregnant women (Jesse & Reed, 2004). Item-scale coefficients were above the minimum criteria, demonstrating the homogeneity of the scale items in measuring the construct of spirituality, and were similar to levels Reed (1987) reported. Overall, the results suggest that the SPS exhibits adequate evidence of internal consistency reliability.

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We also found preliminary evidence of construct validity, as all but one of our hypotheses were confirmed. As anticipated, the SPS was moderately correlated with other religious and spirituality measures. Although scientific debate continues, spirituality has been described as a broader concept that may or may not encompass aspects of religiosity (Humphreys, 2000; Kilpatrick et al., 2005; Thoresen & Harris, 2002); it is also not uncommon for the terms to be used interchangeably, implying that they represent the same concept (Mytko & Knight, 1999; Newlin et al., 2002; Thoresen & Harris). Yet, our finding of the stronger association with self-reported spirituality than with measures of religiosity suggest there is a conceptual difference between spirituality and religiosity.

Similar to other researchers' findings, our results revealed evidence that spirituality is negatively associated with psychological distress among African American women (Coleman & Holzemer, 1999; Simoni et al., 2002). Higher levels of spirituality were associated with lower levels of depression, anxiety, and stress. Although the exact mechanism is not known, spirituality may buffer the effect that adverse psychological symptoms have on health outcomes. Consistent with other investigators (Coleman & Holzemer; Simoni et al.), our findings corroborate previous research results and broaden their applicability by testing the measure using a sample of pregnant women. The reliability of the POMS tension anxiety subscale was somewhat low in this sample. Further analysis revealed that when one item, relaxed, was removed, the reliability increased to an adequate level. This is the only positively-worded emotion on the subscale, thus participants may have misinterpreted the response scale.

Of interest is our finding that spirituality negatively correlated with general health. In our sample, SPS scores increased with lower levels of perceived health. This finding is consistent with Conner and Eller (2004), who reported that higher spirituality scores were associated with poorer levels of health in 44 African American adults. One possible explanation for this finding is that, in times of crisis and distress, women are more likely to draw upon their personal strengths, such as spirituality, as a mechanism to cope.

Given that experiences during pregnancy transitions are influenced by a woman's spiritual perspective, we expected these women to be more cognizant of their spirituality and, therefore, to report relatively high levels. We found levels of spirituality to be similar to but slightly lower than levels in another sample of pregnant African American and White women ( $M=4.80$ ; Jesse & Reed, 2004). Yet, higher scores have been reported in other studies of African American women ( $M=5.73$  &  $5.66$ ; Connor & Eller, 2004; Martin, 1996). This may be because these studies included much older groups of individuals ( $M=76$  &  $56$  years), lending support to our hypothesis that levels of spirituality are influenced by age. Although outside of the context of our study, levels of spirituality are associated with other factors related to age, such as illness and chronic medical conditions, which also may account for this difference. Additional studies with pregnant African American women are needed in order to understand more fully the context of our findings.

Factor analysis revealed that items measuring spiritual beliefs and behaviors fell under separate factors, implying that spiritual beliefs and spiritual behaviors represent distinct components of spirituality. Yet, one item measuring forgiveness loaded the

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lowest (although adequately) on both factors with similar correlations, indicating that forgiveness measures an aspect of spirituality that is somewhat related to both behaviors and beliefs. Because Factor 1 accounted for over 50% of the variance, Reed's (1987) original conceptualization of a unidimensional measure eliciting a global score is supported. Our results also suggest, however, that the SPS could be scored as two subscales, with the spiritual beliefs subscale containing five items and the spiritual behaviors subscale containing four items. The fact that the pattern of correlations of these two subscales varied somewhat with the validity measures lends support to their distinctiveness. Spiritual behaviors and spiritual beliefs subscales may be tapping slightly different aspects of the construct of spirituality. Given this finding, their independent relationship to health outcomes should be explored further.

Our study had several limitations. Specifically, the sample size was small, non-random, and included women from a distinct geographic region. Even though the women self identified as African American, this group in itself is diverse, and findings may not pertain to all African American women. In addition, we cannot determine if findings apply to women of diverse socioeconomic levels, as the women in this study were predominantly low income. Furthermore, the scope of this study was limited to pregnant women; therefore, gender implications should not be inferred, and future research in this area is recommended.

### Conclusion

Evaluating the psychometric adequacy of tools in diverse populations requires a careful and thorough examination of variability, internal consistency, and validity. This study provides evidence that the SPS is an appropriate tool when used to measure levels

of spirituality in pregnant African American women, exhibiting strong properties with good variability, and adequate evidence of reliability and construct validity. Although the tool supported the factor structure Reed (1987) originally reported, exploratory factor analysis revealed an alternative structure when applied to pregnant African American women that is more reflective of the multidimensionality of spirituality. Further research is warranted to test the tool in other groups and to explore the relationship of spirituality to other health outcomes. Moreover, additional research is recommended to continue examining the structure of the tool using alternative methods of analysis. Accurate measurement of spirituality can advance understanding of its link to health, which can lead to the development and testing of nursing interventions to improve health and well-being.

11/11/17 10:00

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Table 1.

*Sample Characteristics (N=102)*

| Characteristics      | <i>n</i> | %    |
|----------------------|----------|------|
| Age (years)          |          |      |
| < 20                 | 19       | 18.6 |
| 20 to 24             | 41       | 40.2 |
| 25 to 29             | 25       | 24.5 |
| > 30                 | 17       | 16.7 |
| Monthly Income       |          |      |
| < \$1,000            | 45       | 44.1 |
| \$1,000-\$1,999      | 23       | 22.6 |
| \$2,000-\$2,999      | 18       | 17.6 |
| > \$3,000            | 9        | 8.8  |
| Unknown              | 7        | 6.9  |
| Educational Level    |          |      |
| < High school        | 25       | 24.5 |
| High school graduate | 33       | 32.3 |
| Some college         | 38       | 37.3 |
| College degree       | 6        | 5.9  |
| Employment status    |          |      |
| Full or part-time    | 35       | 34.3 |
| Unemployed           | 67       | 65.7 |

### Marital status

|                                |    |      |
|--------------------------------|----|------|
| Single                         | 51 | 50.0 |
| Married/Committed Relationship | 44 | 43.1 |
| Divorced/Separated/Widowed     | 7  | 6.9  |

### Maintain standard of living

|             |    |      |
|-------------|----|------|
| < 1 month   | 40 | 39.2 |
| 1-6 months  | 32 | 31.4 |
| 7-12 months | 3  | 2.9  |
| > 1 year    | 27 | 26.5 |

### Perceived Health Status

|                     |    |      |
|---------------------|----|------|
| Excellent/Very Good | 65 | 63.7 |
| Good                | 28 | 27.5 |
| Fair/Poor           | 8  | 7.8  |
| Missing             | 1  | 1    |

### Parity

|            |    |      |
|------------|----|------|
| Primiparas | 39 | 38.2 |
| Multiparas | 63 | 61.8 |

### Perceived Religiosity

|                              |    |      |
|------------------------------|----|------|
| Very/fairly religious        | 62 | 60.8 |
| Not too/not at all religious | 40 | 39.2 |

### Religious Affiliation

|            |    |      |
|------------|----|------|
| None       | 23 | 22.5 |
| Protestant | 58 | 56.9 |

|                                    |    |      |
|------------------------------------|----|------|
| Catholic                           | 10 | 9.8  |
| Other                              | 11 | 10.8 |
| <b>Church attendance (monthly)</b> |    |      |
| None                               | 43 | 42.2 |
| 1-2                                | 26 | 25.5 |
| 3-4                                | 23 | 22.5 |
| ≥ 5                                | 10 | 9.8  |
| <b>Perceived Spirituality</b>      |    |      |
| Very/fairly spiritual              | 66 | 64.7 |
| Not too/not at all spiritual       | 36 | 35.3 |

---

Table 2.

*Spiritual Perspective Scale (SPS) Descriptive Statistics and Reliability (N=102)*

| Scale Statistics                           |                         |
|--|-------------------------|
| Number of items                            | 10                      |
| Missing items                              | 0%                      |
| Mean (SD)                                  | 4.36 (1.22)             |
| Median                                     | 4.60                    |
| Skewness                                   | -0.62                   |
| Kurtosis                                   | -0.46                   |
| Possible range                             | 1-6                     |
| Observed range                             | 1-6                     |
| Floor effects %                            | 1%                      |
| Ceiling effects %                          | 5%                      |
| Direction high score                       | ↑ level of spirituality |
| Internal consistency reliability           | .91                     |
| Range of corrected item-total correlations | .54-.85                 |

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Table 3.

*Spiritual Perspective Scale (SPS) Item Means & Standard Deviations*

| SPS Item  | Mean | SD   |
|---|------|------|
| <b>Behaviors<sup>a</sup></b>                              |      |      |
| Q1. Discuss spiritual matters                             | 3.83 | 1.87 |
| Q2. Share issues of living according to spiritual beliefs | 3.73 | 1.88 |
| Q3. Read spiritually-related material                     | 3.46 | 1.76 |
| Q4. Engage in prayer or meditation                        | 4.30 | 1.93 |
| <b>Beliefs<sup>b</sup></b>                                |      |      |
| Q5. Forgiveness is important                              | 4.99 | 1.27 |
| Q6. Need guidance to make spiritual decisions             | 4.48 | 1.55 |
| Q7. Spirituality significant part of my life              | 4.62 | 1.58 |
| Q8. Feel close to God or a higher power                   | 4.81 | 1.46 |
| Q9. Spiritual views have influence on my life             | 4.75 | 1.41 |
| Q10. Spirituality answers question about meaning          | 4.66 | 1.45 |

<sup>a</sup> 1=*not at all*; 2=*less than once a year*; 3=*about once a year*; 4=*about once a month*; 5=*about once a week*; 6=*about once a day*.

<sup>b</sup> 1=*strongly disagree*; 2=*disagree*; 3=*disagree more than agree*; 4=*agree more than disagree*; 5=*agree*; 6=*strongly agree*.

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Table 4.

*Bivariate Correlations for Spiritual Perspective Scale (SPS) and Other Validity Measures*

|                                 | Spiritual Perspective Scale |                   |                 |
|---------------------------------|-----------------------------|-------------------|-----------------|
|                                 | Total Score                 | Behavior Subscale | Belief Subscale |
| Church attendance               | .45**                       | .40**             | .41**           |
| Religiosity                     | .61**                       | .50**             | .58**           |
| Spirituality (self-report item) | .71**                       | .62**             | .62**           |
| Age                             | .21*                        | .23*              | .13             |
| POMS anxiety/tension subscale   | -.23*                       | -.20              | -.23*           |
| CES-D                           | -.20*                       | -.22*             | -.14            |
| Perceived Stress Scale          | -.26*                       | -.29**            | -.18            |
| General health                  | -.13                        | -.11              | -.15            |
| SPS total score                 | --                          | .88**             | .90**           |
| SPS behavior subscale           | --                          | --                | .59**           |

Note. POMS= Profile of Mood States; CES-D= Center for Epidemiological Studies

Depression Scale

\*  $p < .05$ . \*\*  $p < .01$ .



Table 5.

*Spiritual Perspective Scale (SPS) Mean Differences By Religious Affiliation*

| Religious affiliation           | Spiritual Perspective Scale |                                   |                                 |
|---------------------------------|-----------------------------|-----------------------------------|---------------------------------|
|                                 | Total Score<br>Mean (SD)    | Behavior<br>Subscale<br>Mean (SD) | Belief<br>Subscale<br>Mean (SD) |
| No religious affiliation (n=23) | 3.64 (1.25)                 | 3.09 (1.46)                       | 3.87 (1.45)                     |
| Religious affiliation (n=79)    | 4.57 (1.14)                 | 4.05 (1.48)                       | 4.90 (1.20)                     |
| <i>t</i> -test                  | 3.4                         | 2.7                               | 3.4                             |
| <i>p</i> -value                 | .001                        | .007                              | .001                            |

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Table 6.

*Factor Loadings and Eigenvalues*

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Factor Analysis Correlations/Factor Loading of SPS Items and Factors

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| Items | Factor Loadings |            | Communalities |
|-------|-----------------|------------|---------------|
|       | One             | Two        |               |
| Q10   | <b>.90</b>      | .33        | .93           |
| Q8    | <b>.81</b>      | .05        | .66           |
| Q9    | <b>.80</b>      | .40        | .79           |
| Q7    | <b>.79</b>      | .49        | .86           |
| Q6    | <b>.68</b>      | .49        | .70           |
| Q1    | .16             | <b>.83</b> | .72           |
| Q3    | .29             | <b>.69</b> | .49           |
| Q4    | .17             | <b>.68</b> | .56           |
| Q2    | .29             | <b>.62</b> | .47           |
| Q5    | .42             | .50        | .42           |

---

Eigenvalues and Percent of Variance Explained

---

| Factor   | Eigenvalue | Cumulative Percent |
|----------|------------|--------------------|
| Factor 1 | 5.8        | 58                 |
| Factor 2 | 1.4        | 72                 |

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Extraction Method: Principal Axis Factor Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 3 iterations.

UNIVERSITY OF MINNESOTA

**Paper 4**

**Trauma Experiences and Health Outcomes in a Community-Based  
Sample of Pregnant African American Women**

Dailey, D. E., Humphreys, J., Rankin, S. H., & Lee, K. A.

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## Abstract

**Objective:** To explore lifetime trauma exposure in a community-based sample of pregnant African American women by examining its relationship to psychological symptomatology, health risk behaviors, and their perinatal outcomes. The life course perspective, which postulates that cumulative maternal life experiences affect perinatal experiences and outcomes, provides the basis for this study.

**Methods:** A cohort of 116 pregnant African American women was recruited to participate between September 2004 and September 2005. Each woman completed a questionnaire that assessed trauma exposure history and psychological symptomatology. Lifetime trauma exposure was measured using the Trauma History Questionnaire. Health risk behaviors and perinatal outcome data were obtained from maternal medical records.

**Results:** On average, women were  $25 \pm 5.4$  years old and experienced  $4.2 \pm 3.5$  traumatic events during their lifetime, with an overall prevalence of 87%. Crime-related events were the most commonly reported type of trauma. Number of trauma exposures was significantly associated with anxiety ( $p=.001$ ), stress ( $p=.004$ ), and depression ( $p=.004$ ). Women who used tobacco reported a higher number of lifetime trauma events than women who did not use tobacco ( $p=.03$ ). Lifetime exposures to trauma were associated with premature rupture of membranes ( $p=.04$ ) and longer length of maternal postpartum hospital stay ( $p=.02$ ). Trauma exposure and type of delivery accounted for 26% of the variance in length of maternal hospital stay ( $p<.001$ ).

**Conclusion:** Trauma exposure among African American women is common and associated with adverse perinatal health outcomes. The life course perspective provides a useful framework to explore experiences of trauma across the life span. The findings

support the need for future research that explores lifetime trauma and its contribution to the reproductive health and well-being of women.

## Introduction

Perinatal health disparities are a troubling public health problem in the United States (U.S.) with African Americans experiencing persistently high rates of adverse pregnancy outcomes (Hoyert, Arias, Smith, Murphy, & Kochanek, 2001). African American infants are more likely to be born too early, have lower birth weights, and die within their first year of life than infants of other races and ethnicities born in the U.S. (Mathews, Menacker, & MacDorman, 2004). African American women in the U.S. have the highest rates of low birth weight (13.4%) and preterm (17.6%) deliveries as compared to women of other races and ethnicities. Yet, the reasons for these enduring disparities are not fully understood. To eliminate perinatal health disparities, we must fully understand determinants leading to these unequal outcomes. Broadening knowledge of the personal experiences of African American women that impact health may have important clinical and public health implications.

Experiences of trauma have been documented as a health concern in the literature; yet rarely is trauma explored within the context of health disparity research. Although individuals throughout society experience trauma, exploring this experience from an intragroup perspective may reveal distinctive patterns. The life course perspective is emerging as an important framework to understand how differential exposure and life trajectories may contribute to existing disparities in perinatal health (Kuh, Ben-Shlomo, Lynch, Hallqvist, & Power, 2003; Lu & Halfon, 2003). Expanding beyond critical events during the prenatal period, this perspective postulates that to fully understand determinants of perinatal outcomes, research models must also take into account exposures to biological and social forces that occur over the duration of a woman's life



span. The interplay between personal health practices and cumulative life experiences affects the well-being and reproductive health outcomes of women. The life course perspective is the guiding framework for this study and provides a longitudinal context for exploring the effects of lifetime trauma experiences on perinatal health risk practices, psychological symptomatology, and perinatal outcomes.

### *Traumatic Stress and Health*

Trauma is defined as events involving “actual or threatened death or serious injury, or a threat to the physical integrity of self or others...” (American Psychiatric Association, 1994, pg. 424). The event may be directly experienced, witnessed, or only learned about after the fact. Trauma covers a broad range of events and commonly includes combat, violent crimes, intimate partner violence, physical attacks, sexual assaults, and natural and man-made disasters.

Exposure to trauma has been associated with physical and psychological problems. In a comprehensive review of studies on the health effects of trauma, Green and Kimerling (2004) concluded that individuals exposed to trauma are at risk for experiencing pain, infectious disease, fertility problems, neurological problems, musculoskeletal problems, and gastrointestinal disorders. Trauma is also associated with a variety of psychological symptoms, such as depression and anxiety (Briere & Jordan, 2004; Schnurr & Green, 2004). Rheingold, Acierno, and Resnick (2004) found that individuals who experienced various types of trauma are more likely to engage in adverse health behaviors such as tobacco, drug and alcohol use. Moreover, a growing number of researchers are documenting the link between experiences of trauma and increased health care utilization and cost (Walker, Newman, & Koss, 2004).

Trauma affects a spectrum of issues related to a person's health and well-being. A plausible biological mechanism is that exposure to cumulative stressors causes long term damage to the immune, neuroendocrine, and vascular systems responsible for coping with change and protecting the body from internal and external stress (McEwen, 2000). This process, also referred to as allostatic load, or the physiological breakdown in adaptation due to overuse and wear and tear from chronic stressful assaults, provides a viable explanation for how trauma precipitates changes in health status. Although researchers have reported associations between trauma and health, many of the studies have been limited to individuals recruited from specialty practice settings, most have focused solely on physical violence, and few studies have examined the experiences of racial and ethnic subgroups (Heilemann, Kury, & Lee, 2005; Humphreys, Sharps, & Campbell, 2005). While there is strong evidence that trauma exposure is linked to a multitude of physical and psychological symptoms, little is known about the relationship between trauma exposure, symptom experience, and outcomes that may be unique to specific groups of individuals.

Although historically categorized as an unusual event outside the normal range of experiences, trauma is currently recognized as a common human experience in the lives of women (Briere & Jordan, 2004; Schnurr & Green, 2004). In civilian U.S. adult women, almost 70% of the 4,008 surveyed reported experiencing at least one traumatic event (Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993). According to the National Comorbidity Survey, approximately 50% of the women in the U.S. have been exposed to at least one traumatic event (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Both studies corroborate the high trauma prevalence among women.

## *Trauma and Perinatal Health*

Exposure to trauma during pregnancy is detrimental to women and their developing fetuses (Curry, Perrin, & Wall, 1998; Newberger et al., 1992;). Previous studies report that the prevalence of violence during pregnancy ranges from 1% to 20% with most estimates between 4% and 8% (El Kady, Gilbert, Xing, & Smith, 2005; Gazmararian et al., 2000). The majority of research surrounding the perinatal period has focused on physical and sexual assaults. Physical violence during pregnancy is associated with a variety of perinatal complications such as antepartum hemorrhage, cesarean delivery, intrauterine growth retardation, and perinatal death (Cokkinides, Coker, Sanderson, Addy, & Bethea, 1999; Janssen et al., 2003; Rich-Edwards et al., 2001). Women who experience violence during pregnancy are at increased risk of preterm labor, preterm delivery, and low birth weight deliveries (Fernandez & Krueger, 1999; Murphy, Schei, Myhr, & Du Mont, 2001; Parker, McFarlane, & Soeken, 1994; Shumway et al., 1999). Although Collins and David (1997) found that African American women who live in neighborhoods with high crime rates are more likely to experience low birth weight deliveries, relatively few studies have focused on experiences of African American women or trauma outside the context of physical and sexual assaults. In addition, limited information is available on lifetime trauma experiences and perinatal outcomes (Seng, 2002). More research is needed to explore expanded contexts of trauma and intragroup experiences of pregnant women in order to understand the broad impact that it has on perinatal outcomes (Humphreys et al., 2005).

Therefore, the purpose of this study was to describe lifetime trauma experiences and health behaviors and outcomes among pregnant African American women receiving

prenatal care from urban health clinics and to examine relationships between trauma, psychological symptoms, health behaviors, and perinatal outcomes.

## Methods

### *Sample*

Data for this prospective study were collected from a cohort of 116 pregnant, African American women. Women were recruited from two prenatal clinics located in Northern California operated by a local county-sponsored health care system. Only women over the age of 18 years were eligible to participate if they were between 25 and 28 weeks gestation at the time of enrollment and data collection. The data reported here were collected as part of larger prospective study focusing on perinatal symptom experiences and outcomes among African American women.

### *Procedures*

Approval to conduct all procedures was obtained from required institutional review boards prior to initiating the study. Potential participants were screened for eligibility and those meeting eligibility criteria were invited to participate. Participants were recruited between September 2004 and September 2005.

The prenatal clinic nurses informed potential participants about the study during their prenatal appointments. Upon agreeing to participate, names and phone numbers were obtained and appointments with the researcher were scheduled at a convenient time for each participant. All appointments were located in a private office where participants completed a study questionnaire booklet. Participants received a \$25 gift card upon completion of the booklet and those who withdrew received a \$10 gift card. An average of 45 minutes was required to complete the questionnaire booklet that included a

sociodemographic section and the study instruments. Consent also included access to review medical records following delivery and hospital discharge.

### *Study Measures*

Each woman completed the self-reported questionnaire that contained sociodemographic questions about her age, income, perceived financial security, education, employment, marital status, and number of children. A series of standardized instruments were also administered to collect information on trauma experiences and psychological health. Health risk behaviors and medical risk factors were collected from the prenatal record. Perinatal outcome data were collected from the labor and delivery record.

### *Trauma Experiences*

Trauma experience was measured with the Trauma History Questionnaire (THQ), a 24-item inventory designed to assess an individual's lifetime history of exposure to traumatic events (Green, 1996). The THQ measures a range of traumatic experiences in the following areas: crime-related events, unwanted physical and sexual experiences, general disaster, and personal devastations. Participants indicate whether or not they ever experienced a specific event. For each item, participants also indicate the number of times and ages that the event occurred. Each event is scored 0 if the event did not occur and 1 if the event occurred. Endorsed items are summed for a total score that ranges from 0 to 24. Higher scores indicate more types of lifetime traumatic experiences. The THQ demonstrated good reliability in a test-retest study of 25 college women over a two to three month period (Green, 1996). Test-retest reliability coefficients ranged from .47 for "other serious injury" to 1.0 for "seen dead bodies."

## *Psychological Health*

*Generalized stress perception.* Global stress was measured using the 10-item Perceived Stress Scale (PSS) that assesses the degree to which individuals appraise situations in their life as stressful (Cohen & Williamson, 1988). Participants rate the frequency of symptoms in the past month using a 5-point scale of 0 (*never*) to 4 (*very often*). Several studies have demonstrated adequate reliability and validity when using the PSS in samples of pregnant women (Nelson et al., 2003; Rondo et al., 2003). The PSS demonstrated good internal consistency reliability (Cronbach alpha coefficient = .77) in this sample of women.

*Depressive symptoms.* The Center for Epidemiologic Studies Depression Scale (CES-D) consists of 20 items that measure current depressive symptomatology with an emphasis on depressive affect, somatic symptoms, positive affect, and interpersonal relations (Radloff, 1997). Participants indicate on a 4-point scale how many days during the prior week they experienced the emotions or behaviors indicated by each of the items with response choices ranging from 0 (*rarely or none of the time*) to 3 (*most or all of the time*). Reliability and validity of the CES-D has been well established (Roberts, 1980). The CES-D demonstrated excellent internal consistency reliability in this sample of women (Cronbach alpha coefficient = .85).

*Anxiety.* The 9-item tension-anxiety subscale of the Profile of Mood States was used to measure anxiety (McNair, Lorr, & Droppleman, 1992). Participants rate their level of anxiety over the past week using a 5-point scale of responses ranging from 0 (*not at all*) to 4 (*extremely*). The tension-anxiety subscale has demonstrated good psychometric properties when used with samples of pregnant African American women (Mackey,

Williams, & Tiller, 2000). Internal consistency reliability was .67 in this sample of women.

#### *Health Risk Behaviors*

To assess tobacco, alcohol, and drug use during pregnancy, prenatal medical records were reviewed. During the initial prenatal intake appointment, women were asked if they smoke cigarettes, drink alcohol, or use illegal drugs. Scores were dichotomized as “0” if the behavior was absent and “1” if the behavior was present.

#### *Medical Risk Factors*

Medical risk factors were obtained from the prenatal record and evaluated according to the presence (1) or absence (0) of any of the following conditions: anemia, pregnancy-induced hypertension, and infections during pregnancy.

#### *Perinatal Outcomes*

Perinatal outcome data were abstracted from the labor and delivery records. Infant outcomes included birth weight, gestational age, and length of hospital stay. Maternal outcomes included preterm labor, premature rupture of membranes (PROM), induction of labor, type of delivery (vaginal or cesarean), and length of hospital stay.

#### *Data Analysis*

All completed questionnaires were checked for accuracy and legibility at the time of data collection. The Statistical Package for the Social Sciences (SPSS) version 13.0 was used for data analysis. Descriptive statistics were used to summarize the sample characteristics. Frequencies were calculated to examine the prevalence distribution of trauma. Data were analyzed using Pearson product-moment correlations and independent *t*-test statistics.

## Results

Of the 161 women informed about the study, 32 did not keep appointments that were pre-arranged according to their preference, 9 declined to participate, 1 withdrew from the study, and 3 did not complete the trauma history questionnaire. Of the 119 women enrolled in the study, perinatal medical record outcome data were available for 116 women.

In the sample of 116 women with complete data, age ranged from 18 to 41 years with a mean of  $25 \pm 5.4$ , and all were between 25 and 28 weeks gestation when questionnaire booklets were completed. Average monthly household income was reported to be from \$1,000 to \$1,999. Almost half (45%) of the women were married, 23% had less than a high school education, and 65% were unemployed. A large number (38%) of women reported that they could maintain their standard of living for less than one month if there were to lose all sources of income (Table 1). A majority (54%) of the women already had children. The number of children ranged from 1 to 7 with the majority having 1 or 2 children. Almost all (89%) of the women described their health status as good, very good, or excellent.

Over a quarter (28%) of women entered prenatal care late after the first trimester. Women experienced a variety of health problems during their pregnancy: 58% were anemic, 16% were diagnosed with pregnancy-induced hypertension, and 48% developed an infection. Overall, 19% ( $n=22$ ) delivered low birth weight babies, 22% ( $n=25$ ) delivered preterm, and 5% experienced PROM. The average length of hospital stay at time of delivery was 72 hours for mothers (range = 13 hours to 25 days) and 151 hours for



the infants (range = 12 hours to 107 days). Four of the 116 women experienced a fetal demise.

Total THQ scores ranged from 0 to 15 traumatic events. On average, women reported experiencing  $4.3 \pm 3.5$  events during their lifetime. Types of traumatic events are described in Table 2. The most common category of trauma reported was crime-related violence including family or friend being murdered or killed (40%), seeing someone being killed or injured (32%), fearing they might be killed or seriously injured (24%), robberies (23%), and home burglaries while away from home (14%). Women also reported experiencing the serious illness of a significant other (51%), seeing dead bodies (32%), experiencing a serious accident (26%), being touched under force (23%), and forced sexual intercourse (22%).

Bivariate correlations for anxiety, stress, and depression, and trauma were calculated (Table 3). Number of lifetime traumas was moderately correlated with anxiety ( $r=.45, p=.001$ ), perceived stress ( $r=.27, p=.004$ ), and depressive symptoms ( $r=.27, p=.004$ ).

One or more detrimental health behaviors were reported in almost 25% of the women (Table 1); 23% reported using tobacco, 17% used illicit drugs, and 9% used alcohol. Statistically significant differences were found in mean number of traumas experienced between women who used tobacco as compared to women who did not use tobacco ( $t=2.25, p=.03$ ). Women who used tobacco reported an average of  $6 \pm 3.8$  trauma exposures compared to  $4 \pm 3.4$  trauma exposures among women who did not use tobacco. There were no significant mean group differences in THQ for alcohol or illicit drug use.

For perinatal outcomes, THQ scores were slightly correlated with length of maternal hospital stay ( $r=.24$ ;  $p=.02$ ). In addition, mean THQ scores were significantly higher for women who experienced PROM as compared to women who did not experience PROM ( $t=2.10$ ,  $p=.04$ ). Women who experienced PROM reported an average of  $7 \pm 5.3$  trauma exposures whereas women who did not experience PROM reported an average of  $4 \pm 3.3$  trauma exposures. No significant associations were found between lifetime experiences of trauma and infant birth weight, gestational age at delivery, preterm labor, induction of labor, length of infant hospital stay, or type of delivery.

Given the association between trauma and perinatal outcomes of PROM and length of maternal hospital stay, these associations warranted further examination. There was no significant difference in length of hospital stay between women who experienced PROM and women who did not experience PROM. The ability of lifetime trauma exposure to predict length of maternal hospital stay was then examined using linear regression. Due to the small number of women with the perinatal outcome of PROM ( $n=6$ ), we were not able to conduct further analysis.

After examining the relationships between length of maternal hospital stay and the other study variables, only type of delivery was associated, with the expected longer stay for cesarean birth compared to vaginal birth ( $t=3.83$ ;  $p=.001$ ). Multiple linear regression was used to examine the relationship between length of maternal hospital stay and trauma, after controlling for type of delivery. As seen in Table 4, type of delivery accounted for 23% of the variance in length of stay ( $p<.001$ ). After controlling for type of delivery, trauma exposure accounted for an additional 3% of the variance in length of maternal hospital stay.

## Discussion

To our knowledge, this is the first study to explore lifetime trauma experiences and perinatal outcomes in a community-based sample of low-income African American women. Our rates of low birth weight and preterm deliveries were higher than those reported for the U.S. population of African American women (Martin et al., 2005). Results indicate that traumatic events are common in the lives of urban African American women with 87% of the women in this study reporting at least one traumatic event in their young life.

Crime-related activities were the most commonly reported type of trauma. In our sample, four of the ten most frequently reported traumatic events were crime-related. This finding is consistent with research that has reported high incidences of violent crimes in urban, predominantly low-income communities of color (Horowitz, Weine, & Jekel, 1995; Overstreet & Braun, 2000; Randolph, Koblinsky, & Roberts, 1996). Horowitz, Weine, and Jekel (1995) coined the phrase “compounded community trauma” to describe prolonged and cumulative exposure to a multitude of violent events, including domestic violence and sexual assaults, both in and outside the home. To contextualize our findings, lifetime trauma experiences of other groups of women were compared with our results. In a study of 50 abused women, Humphreys, Lee, Neylam, and Marmar (2001) reported that the most prevalent traumatic events included serious injury, fear of being killed or seriously injured, personal attacks by family member or friends, and beatings. In a sample of 288 female college students, the highest frequency of reported traumatic events were serious injury of a significant other, natural disaster, and experiencing a serious accident (B.L. Green personal communication, May 2, 2005).

Based on extant literature, it is not surprising that abused women report more physical injuries, and women living in low socioeconomic areas report more crime-related activities. However, the differences in the type of trauma experienced by the various subgroups of women suggest that the context of a person's life experience is important when considering the nature and quantity of trauma exposure.

Post-traumatic stress disorder (PTSD) has been posited as the primary mechanism whereby lifetime trauma exposure affects health (Seng, 2002). Individuals who are diagnosed with PTSD are consistently reported to experience poorer health than those who are not diagnosed with PTSD (Beckham et al., 1998; Seng et al., 2001; Vedantham et al., 2001). It is suggested that PTSD mediates the relationship between trauma exposure and health through alterations in psychological (depression and anxiety), biological (stress and immune responses), behavioral (substance use and preventive health behaviors), and attentional (symptom perception and reporting) mechanisms (Schnurr & Green, 2004). As suggested by our findings, individuals who live and repeatedly interact in violent environments, which can be described as “war zones” within their community, may be at high risk for experiencing a multitude of deleterious health effects, such as post-traumatic stress symptoms. However, based on our data we were not able to explore PTSD as a potential mediator and further study is needed in this area.

Undoubtedly physical violence is a crucial area for health research and has a profound effect on the reproductive health of women (Gazmararian et al., 2000). However, our findings suggest that lifetime trauma is also an important area for further research and may help explain the racial and ethnic disparities in perinatal outcomes

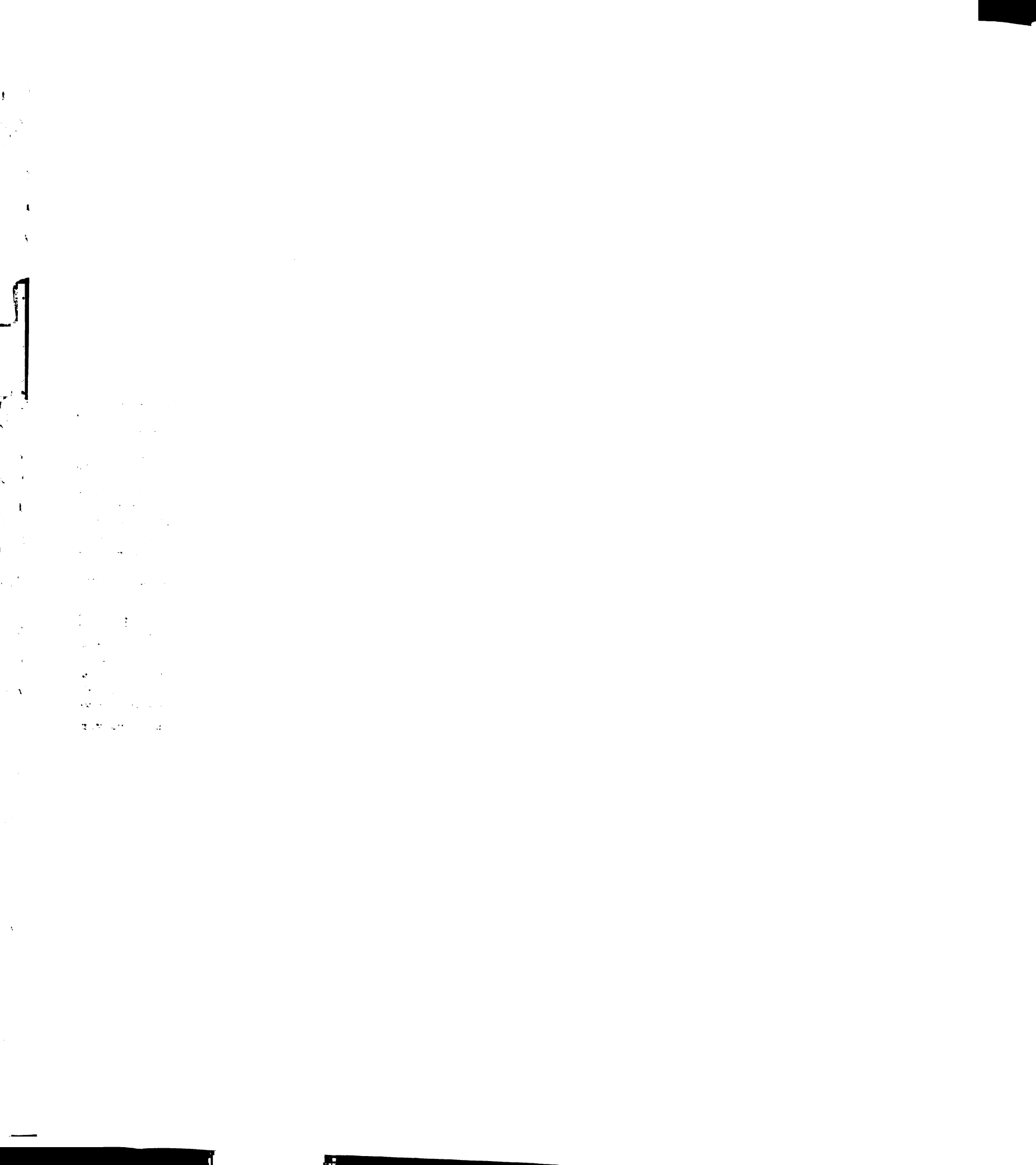
(Rich-Edwards et al., 2001; Tiedje, 2003). The high prevalence of lifetime trauma in our sample, support the plea of Humphreys et al. (2005) for continued studies to explore the context of traumatic experiences particularly among individuals living in impoverished communities. Personal strengths and resources that may mediate the detrimental effects of trauma exposure on health also need to be addressed (Heilemann et al., 2005). At the least, this will assist in the development of expanded prenatal psychosocial assessments that include screening for trauma exposure and the testing and implementing of effective interventions that build upon personal strengths and ameliorate the physical and psychological effects that these life experiences may have on health and well-being.

Our findings are consistent with those of other researchers who have reported association among trauma, adverse health behaviors, and psychological symptomatology (Curry et al., 1998; Felitti et al., 1998). In our study, lifetime trauma experience was associated with tobacco use, suggesting that individuals exposed to trauma are more likely to engage in negative health behaviors or attempts to self medicate. Unlike previous studies (Amaro, Fried, Cabral, & Zuckerman, 1990; Cokkinides et al., 1999; Curry et al., 1998; Janssen, et al., 2003) we did not find an association between trauma and alcohol or illicit drug use, which may be because women are more likely to stop using alcohol or drugs when they are pregnant. However, we did find an association between depressive symptoms, anxiety, and generalized stress perception similar to other investigators (Schnurr & Green, 2004). While there is strong evidence that trauma exposure is linked to symptom experiences, the nature of these relationships remains unclear. Questions also remain as to which aspects of trauma exposure have the most influence on symptom experience. We used a measure of frequency of lifetime traumatic

events, however, some authors suggest that the type of trauma exposure determines health outcomes, and still others hypothesize that it is timing of the traumatic exposure, severity of events, or the number of exposures that are most damaging to health (Ballard et al., 1998; Briere & Jordan, 2004; Kilpatrick, 2004). The manner in which trauma is defined is of crucial importance, yet scientific consensus has not been reached on how trauma should be conceptualized and measured.

We are the first to report an association between exposure to trauma and maternal length of hospital stay. Women who reported a higher number of trauma exposures were hospitalized longer even after controlling for type of delivery. The emerging body of trauma research suggests associations among trauma and health care utilization, costs, access to care, and service delivery (Walker et al., 2004). Although the reasons for this finding remain unclear, one possible explanation is that the cumulative effects of greater trauma exposure may cause women to be more physically vulnerable to conditions resulting from labor and delivery. It is also possible that unresolved psychological and emotional effects of trauma may alter women's symptom perception. Finally, postpartum hospitalization may simply provide women a level of respite from their current environmental situation. However, we did not explicitly address these issues in our research and any conclusion from our data should be made with caution until additional studies are conducted to corroborate our findings.

Number of trauma exposures was significantly related to PROM, but not preterm delivery or low birth weight. Research on trauma and perinatal outcomes remains inconclusive. While many investigators have reported an association between birth outcomes and trauma, mainly physical violence, others have reported no association



(Berenson, Wiemann, Wilkinson, Jones, & Anderson, 1994; Cokkinides et al., 1999; El Kady et al., 2005; Fernandez & Krueger, 1999; Grimstad, Schei, Backe, & Jacobsen, 1997; O'Campo, Gielen, Faden, & Kass, 1994; Parker et al., 1994; Shumway et al., 1999). Findings from these studies are difficult to interpret due to the multitude of ways in which trauma is measured (Gazmararian et al., 1996).

In conclusion, we were able to examine self-reported lifetime trauma experiences and perinatal outcomes in a convenience sample of pregnant African American women from two clinic populations in a single but broad geographical location. We found that African American women were more likely to experience crime-related events, and that trauma exposure was associated with PROM and longer length of maternal hospital stay. Routine prenatal screening for violence has been proposed and instituted in many clinical settings. However, trauma should be viewed from a broader context to include events beyond physical and sexual assaults with appropriate interventions designed to ameliorate the effects that these experiences have on the health and well-being of women. As future endeavors are undertaken to enhance our understanding of lifetime trauma and women's health outcomes, research is also needed to examine the role of culturally specific traumatic events, such as racism and discrimination. Cultural trauma in the form of discrimination and racism should be considered as we strive to advance knowledge of how trauma contributes to health disparities.



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Table 1.

*Characteristics of Participants (N=116)*

| Characteristics                    | <i>n</i> | %   |
|------------------------------------|----------|-----|
| <b>Age (years)</b>                 |          |     |
| < 20                               | 20       | 17% |
| 20 to 24                           | 50       | 42% |
| 25 to 29                           | 30       | 25% |
| >30                                | 19       | 16% |
| <b>Monthly Income (dollars)</b>    |          |     |
| < 1,000                            | 51       | 44% |
| 1,000-1,999                        | 29       | 25% |
| 2,000-2,999                        | 20       | 17% |
| >3,000                             | 10       | 9%  |
| Unknown                            | 6        | 5%  |
| <b>Educational Level</b>           |          |     |
| < High school                      | 27       | 23% |
| High school graduate               | 39       | 34% |
| Some college                       | 50       | 43% |
| <b>Employment Status</b>           |          |     |
| Full or part-time                  | 41       | 35% |
| Unemployed                         | 75       | 65% |
| <b>Marital status</b>              |          |     |
| Single                             | 56       | 48% |
| Married/Committed Relationship     | 52       | 45% |
| Divorce/Separated/Widowed          | 8        | 7%  |
| <b>Maintain Standard of Living</b> |          |     |
| < 1 month                          | 44       | 38% |
| 1 to 6 months                      | 36       | 31% |
| 7 to 12 months                     | 5        | 4%  |
| > 1 year                           | 31       | 27% |
| <b>Other Children</b>              |          |     |
| None                               | 53       | 46% |
| 1                                  | 25       | 22% |
| 2                                  | 17       | 15% |
| 3                                  | 13       | 11% |
| 4 or more                          | 8        | 7%  |



Table 1 continued

| Characteristic                 | <i>n</i> | %   |
|--------------------------------|----------|-----|
| <b>Health Risk Behaviors</b>   |          |     |
| Alcohol                        | 10       | 9%  |
| Illicit drugs                  | 20       | 17% |
| Tobacco                        | 27       | 23% |
| <b>Medical Risks</b>           |          |     |
| Anemia                         | 67       | 58% |
| Pregnancy-induced hypertension | 18       | 16% |
| Infections                     | 56       | 48% |
| <b>Perinatal Outcomes</b>      |          |     |
| Premature rupture of membranes | 6        | 5%  |
| Preterm labor                  | 26       | 22% |
| Induction of labor             | 22       | 19% |
| Cesarean delivery              | 33       | 28% |
| Preterm delivery < 37 weeks    | 26       | 22% |
| Birth Weight < 2500 grams      | 22       | 19% |
| Fetal deaths                   | 4        | 3%  |
| <b>Length of Hospital Stay</b> |          |     |
| Mother > 72 hours              | 36       | 31% |
| Infant > 72 hours              | 31       | 27% |

Table 2.

*Prevalence of Trauma Events (N=116)*

| Type of Trauma                      | n  | %  |
|-------------------------------------|----|----|
| Serious illness (significant other) | 59 | 51 |
| Family/friend murdered/killed       | 47 | 40 |
| Seen dead body                      | 37 | 32 |
| Seen someone killed/injured         | 37 | 32 |
| Serious accident                    | 31 | 26 |
| Feared killing/injury               | 28 | 24 |
| Touched under force                 | 27 | 23 |
| Robbed                              | 27 | 23 |
| Natural disaster                    | 26 | 22 |
| Forced sex                          | 26 | 22 |
| Death of family/friend              | 23 | 20 |
| Break into home (not present)       | 16 | 14 |
| Attacked without weapon             | 15 | 13 |
| Serious injury                      | 14 | 12 |
| Mugged                              | 14 | 12 |
| Other stressful event               | 13 | 11 |
| Attacked with weapon                | 11 | 10 |
| Beaten                              | 12 | 10 |
| Toxic exposure                      | 10 | 9  |
| Man-made disaster                   | 10 | 9  |
| Break-in home (present)             | 8  | 7  |
| Other forced sex                    | 6  | 5  |
| Serious illness (self)              | 5  | 4  |
| Combat                              | 0  | 0  |

Table 3.

*Correlations Among Trauma Experience and Psychological Health Variables (N=116)*

| Variable                         | Anxiety | Depressive symptoms | Stress |
|----------------------------------|---------|---------------------|--------|
| Trauma Experience <sup>a</sup>   | .45**   | .27**               | .27**  |
| Anxiety <sup>b</sup>             | -       | .68**               | .53**  |
| Depressive symptoms <sup>c</sup> |         | -                   | .69**  |
| Stress <sup>d</sup>              |         |                     | -      |

Note. a=Trauma History Questionnaire; b=Profile of Mood States; c=Center for Epidemiological Studies Depression Scale; d= Perceived Stress Scale

\*\* $p < .01$ .

Table 4.

*Multiple Regression Summary for Trauma Exposure and Type of Delivery Predicting Length of Maternal Hospital Stay (N=109)*

| <b>Source</b>    | <b>R<sup>2</sup></b> | <b>Beta</b> | <b>sr<sup>2</sup></b> | <b>df</b> | <b>F</b> | <b>p</b> |
|------------------|----------------------|-------------|-----------------------|-----------|----------|----------|
| Overall          | .262                 |             |                       | 2,106     | 18.78    | .04      |
| Type of Delivery |                      | .46         | .23                   | 1,107     | 32.32    | <.001    |
| Trauma Exposure  |                      | .17         | .03                   | 1,106     | 4.26     | .04      |

## **Paper 5**

# **Social Stress and Personal Protective Factors as Predictors of Low Birth Weight in African American Women**

**Dailey, D. E.**

## Abstract

African Americans experience the highest rate of low birth weight (LBW) in the United States. Understanding factors related to LBW are crucial to eliminating the racial health disparity gap. Yet, reasons for these enduring disparities are not fully understood. The overall aim of this study was to broaden knowledge of predictors of LBW in African Americans by examining stress and resource factors that have not been routinely explored in perinatal health research along with other known correlates. A cohort of 116 pregnant women was recruited to participate in this prospective study. Psychosocial stressors included discrimination, trauma exposure, generalized stress perception, and social conflict. Personal resources include spirituality, and social and reciprocal support. Descriptive, correlational, and regression analyses were used to analyze data. Average age of the participants was  $25 \pm 5.4$  years. The women tended to be unemployed and single with low levels of education. Overall, 15% of the infants were low birth weight, and four women experienced a fetal demise. Women reported a high prevalence of trauma exposure (87%) and discrimination (86%). Race was the most cited reason for discrimination (56%). Yet, women also felt that they were discriminated against because of their gender (44%), socioeconomic status (39%), and age (32%). Tobacco use, number of prenatal visits, and discrimination due to age and physical ability were predictive of birth weight ( $R^2 = .25; p \leq .001$ ). Factors such as spirituality, social support, and perceived stress were unrelated to birth weight. Finally, other variables previously associated with low birth weight did not contribute to the model. By continuing to explore the social and personal experiences of African American women from a broader

context, we will gain more insight into the factors that contribute to the pervasive racial disparities in perinatal health.

## Introduction

Since the United States (U.S.) began collecting vital statistics information on infant mortality, the infant mortality rate has consistently declined over the decades (MacDorman & Rosenberg, 1993). However, the rate of decline between specific races varies with African American infants experiencing a slower decline than Caucasian infants. In fact, despite the favorable improvements over the years, the racial disparity gap has widened. In 1940, the mortality rate ratio between African American and Caucasian infants was 1.71, and by 2002 this gap had widened to 2.38 with an African American infant over two times more likely to die in the first year of life than a Caucasian infant (Hoyert, 1996; Mathews, Menacker, & MacDorman, 2004). Low birth weight is a significant determinant of the excess mortality rate among African American infants (Alexander, Tompkins, Allen, & Hulsey, 1999). The current rate of low birth weight deliveries in the U.S. is 6.9% for Caucasians and 13.4% for African Americans (Martin et al., 2005). Understanding factors related to low birth weight are crucial to eliminating the racial health disparity gap.

The majority of research related to birth weight outcomes has focused on the identification of risk factors and socioeconomic indicators. Research to broaden knowledge of predictors of birth outcomes should also include resource and strength factors that may have a protective function. Therefore, the aim of this study was to determine the extent to which psychosocial stressors, personal resources, and perinatal risk factors predict infant birth weight in a prospective study of urban African American women.



## *Review of Literature*

### *Psychosocial Stressors*

Mounting evidence suggests that psychosocial stress influences birth outcomes (Parker-Dominquez, Dunkel-Schetter, Mancuso, Rini, & Hobel, 2005). Psychosocial stressors can have a direct impact on birth outcomes by altering physiological functioning (Hobel, Dunkel-Schetter, Roesch, Castro, & Arora, 1999; Wadhwa, Sandman, Porto, Dunkel-Schetter, & Garite, 1993). Stress can also indirectly affect birth outcomes by influencing negative health behaviors such as tobacco and alcohol use (Stancil, Hertz-Picciotto, Schramm, & Watt-Morse, 2000). Psychosocial stress is commonly conceptualized using generalized frameworks that assess daily hassles, major life events, stress appraisal, and stress perception (Cohen, Kessler, & Gordon, 1997). However, stress from cumulative exposure to racism and trauma over the course of a lifetime is an emerging area for research on stress and pregnancy (Geronimus, 2001; Hogue & Bremner, 2005; Lu & Halfon, 2003; Rich-Edwards et al., 2001).

*Race-Related Stress.* Racism is a chronic stressor that adversely impacts the health and well-being of African Americans (Williams, Neighbors, & Jackson, 2003). A growing number of scientists have investigated the relationships between racism and birth outcomes. In a study of 312 low-income African American women, Collins, David, Handler, Wall, and Andes (2004) reported that women who experienced racism were more likely to deliver low birth weight infants. In another study of 4,766 African American women, Rosenberg, Palmer, Wise, Horton, and Corwin (2002) found that racial discrimination experienced on the job was related to low birth weight deliveries.

Likewise, other investigators have also reported associations between racial discrimination and low birth weight (Collins et al., 2000; Mustillo et al., 2004).

*Traumatic stress.* Traumatic experiences, fear, and violence can affect the reproductive health of women (Rich-Edwards et al., 2001). Evidence in the literature demonstrates an association between violence and poor birth outcomes (Fernandez & Krueger, 1999; Murphy, Schei, Myhr, & Du Mont, 2001; Parker, McFarlane, & Soeken, 1994; Shumway et al., 1999). However, most of these studies have been limited to assessing violence that occurs during pregnancy. In addition, many studies have solely focused on intimate partner violence and physical and sexual assaults, not taking into account broader contexts of violence that may reveal distinct patterns in subgroups of women. Although Collins and David (1997) found that African American women who lived in neighborhoods with high crime rates were more likely to experience low birth weight deliveries, relatively few studies have used predominantly African American samples or explored lifetime trauma experiences (Humphreys, Sharps, & Campbell, 2005; Seng, 2002).

#### *Personal Resources*

As critical as it is to identify factors that may lead to poor birth outcomes, it is just as important to learn how women at risk adapt to the negative influence that they may experience in their environments. Therefore, research on stress should be balanced by efforts to study personal resources that may mediate stressful experiences and prove to protect health. Personal resources are defined as cultural, social, and individual factors that enhance health and well-being. It is well documented that social support is a resource that influences infant birth weight (Hodnette & Fredericks, 2005). Supportive

networks contribute to the well-being of African American women during pregnancy and buffer the impact of stress (Cohen & Willis, 1985; Mann, Abercrombie, DeJoseph, Norbeck, & Smith, 1999; Morgan, 1996;). Studies consistently show that women with higher levels of perceived social support are at less risk for delivering low birth weight infants (Collins, Dunkel-Schetter, Lobel, & Scrimshaw, 1993; Dunkel-Schetter, Sagrestano, Feldman, & Killingsworth, 1996; Hodnette & Fredericks, 2005; Hoffman & Hatch, 1996; Norbeck & Anderson, 1989).

*Spirituality.* Spirituality is suggested as another parameter of personal resources that may explain birth weight variations. Spirituality is purported to play an important role in the lives of African American women and has a positive effect on physical and psychological well-being (Dailey & Stewart, 2006; Mattis, 2000; Morgan, 1996; Musgrave, Easley-Allen, & Allen, 2002; Mytko & Knight, 1999; Van & Meleis, 2003). Spirituality is a personal resource for women during the perinatal period that provides a source for coping and equanimity (Morgan, 1996; Van & Meleis, 2003). Spirituality may also protect against the negative effects that stressors, such as racism and discrimination, have on health outcomes. Jesse and Reed's (2004) study of 120 pregnant Appalachian women focused on the effects of spirituality and psychosocial well-being on health risk behaviors. They found that spirituality was positively related to social support and self-esteem, and negatively related to frequency of tobacco use. In a study of 155 African Americans, Bowen-Reid and Harrell (2002) found that racism and spirituality were independent predictors of psychological health. Even more striking was their finding that spirituality was a significant mediator of racism and psychological health, accounting for up to 30% of the variance in health outcomes. This finding supports the need to further

study spirituality as a positive contributor to health outcomes and as a potential buffer to the negative effects of racism. Despite findings indicating a promising relationship between spirituality and health, further inquiry is needed to determine the relationship between spirituality and birth outcomes such as low birth weight (Heilemann, Lee, & Kury, 2002; Jesse & Reed, 2004).

### *Perinatal Risk Factors*

Numerous researchers have studied several sets of variables associated with birth outcomes including medical conditions, socioeconomic status, and health behavior practices. Risk factors for low birth weight include pregnancy-induced hypertension, and prenatal care utilization as well as tobacco, alcohol and drug use (Institute of Medicine, 1985; Lasker, Coyle, Li, & Ortynsky, 2005). Maternal socioeconomic factors such as income, education, and marital status are also known correlates of infant birth weight (Singh & Yu, 1996). Yet, when examined together these risk factors still do not fully account for the disproportionate rates of low birth weight African American infants experience suggesting the need to explore emerging factors and their contribution to birth weight outcomes (Giscombe & Lobel, 2005).

## Methods

### *Sample*

A prospective design was used to collect data from a convenience sample of African American women receiving prenatal care at either of two urban clinics operated by a county-sponsored health care system in Northern California. The clinics serve a large percentage of pregnant African American women, ranging from 25% to 40%. Approximately 70 new prenatal clients are scheduled each month with the majority on

Medicaid. African American women over the age of 18 years, expecting a singleton birth, and between 25 and 28 weeks gestation at the time of data collection were eligible to participate.

### *Procedures*

Approval was obtained from required institutional review boards prior to initiating the study. Prenatal clinic coordinators shared information about the study with eligible women during their prenatal visits and notified the researcher of women who were interested in the study. After verifying eligibility, those women meeting the selection criteria were invited to participate and an interview was scheduled at a time convenient for the participant. Women were recruited between September 2004 and September 2005. Interviews were conducted in a private office. Most participants required approximately 45 minutes to complete the questionnaire booklet and upon completion were given a \$25 gift card. Those who were unable to complete the booklet were given a \$10 gift card. Participants also consented to accessing their medical record for birth outcome data following delivery and hospital discharge.

Of the 161 women identified as eligible to participate, 32 did not keep appointments that were pre-arranged according to their preference, 9 declined to participate, 4 had a stillbirth and thus no infant data in their medical record, and 1 withdrew from the study. Perinatal outcome data from their medical records were available for 116 of the 119 women consenting to participate. Women with multiple gestations were excluded from the analysis resulting in a final sample size of 108.

### *Study Measures*

The study booklet included a demographic section and the study instruments. Standardized instruments were used to collect information on psychosocial stressors and personal resources. Perinatal medical conditions and health behavior practices were collected from the perinatal record. Infant's birth weight was collected from the labor and delivery record. A summary of study variables is presented in Table 1.

#### *Psychosocial Stressors*

*Discrimination.* The Everyday Discrimination Scale (EDS) (Forman, Williams, and Jackson, 1997) is designed to measure the presence, frequency, and source of chronic and routine experiences of race-related discrimination. It consists of nine items with a scale stem asking participants: "In your day-to-day life, how often have any of the following things happened to you." Responses range from 1 (never) to 6 (almost every day). The total EDS score is the sum of the individual items. Scores range from 9 to 54 with higher scores indicating higher frequency of discrimination. If the participant responds affirmatively to any item, the individual is prompted to identify if race was the reason for the discrimination, along with other choices that include gender, age, religion, physical appearance, sexual orientation, socioeconomic status, nationality, or physical disability. Response choices were dichotomized as 0 (factor not present) or 1 (factor present). The measure demonstrated good internal consistency with a Cronbach alpha coefficient of .87 in a sample of 120 African Americans (Clark, Coleman, & Novak, 2004).

*Traumatic Stress.* Lifetime trauma exposure was assessed using the Trauma History Questionnaire (THQ), a 24-item inventory that assesses an individual's lifetime

history of exposure to traumatic events (Green, 1996). The THQ measures trauma experiences in the following areas: unwanted physical and sexual experiences, crime-related events, general disaster, and personal tragedy. For each item, participants indicate whether or not they experienced a specific event and the number of times and age at which the event occurred. Each event is scored 0 (the event did not occur) or 1 (the event occurred). Item points are summed for a total score that ranges from 0 to 24 with higher scores indicative of more types of lifetime trauma exposure. Researchers have reported mean scores of  $4.0 \pm 2.8$  in female college students (Mendelsohn & Sewell, 2004),  $4.9 \pm 4.3$  in low-income Mexican American women (Heilemann, Kury, & Lee, 2005), and  $8.1 \pm 4.6$  in battered women (Humphreys, Lee, Neylam, & Marmar, 2001). Test-retest study of 25 college women demonstrated fairly good stability over a two to three month period (Green, 1996). Test-retest reliability coefficients ranged from .47 to 1.0. A more detailed discussion of their trauma experience is reported elsewhere (Dailey, Humphreys, Rankin, & Lee, 2006).

*Generalized Stress Perception.* The Perceived Stress Scale (PSS) is a 10-item scale that measures the degree to which individuals find their lives unpredictable, uncontrollable, or overloaded during the last month (Cohen & Williamson, 1988). Participants rate their level of stress over the last month using a 5-point scale with responses ranging from 0 (never) to 4 (very often). Some items are reverse coded to control for response bias. A total score is derived from summing the items and ranges from 0 to 40. A higher score is indicative of more perceived stress. Reliability and validity of the PSS has been well established with a Cronbach alpha coefficient of .78 in

a probability sample of U.S. adults and mean of 14.7 ( $SD=7.2$ ) among African Americans (Cohen & Williamson, 1988).

### *Personal Resources*

*Spirituality.* The Spiritual Perspective Scale (SPS) measures the extent to which individuals hold certain spiritual beliefs and engage in spiritually related behaviors (Reed, 1987). Each participant responds to a 10-item scale with response choices ranging from a frequency of 1 (not at all) to 6 (about once a day) and a level of agreement from 1 (strongly disagree) to 6 (strongly agree). Item responses are averaged to create a total score ranging from 1 to 6. Higher scores are indicative of greater spiritual perspectives. The SPS has demonstrated good internal consistency reliability of .91 and mean score of  $4.8 \pm .95$  in a sample of 120 pregnant low-income African American and Caucasian women (Jesse & Reed, 2004).

*Social Support.* The Interpersonal Relationship Inventory (IPRI) is a 39-item instrument developed to measure social support, reciprocity, and conflict within interpersonal relationship networks (Tilden, Nelson, & May, 1990). The IPRI has three subscales: 1) *social support*, defined as the perceived availability or enactment of helping behaviors by members of one's network, 2) *reciprocity*, defined as the perceived availability of an exchange or returning of emotional or tangible services, and 3) *conflict*, defined as perceived discord caused by the presence or absence of behaviors of others. Although conceptually measured as part of the IPRI, conflict was considered a psychosocial stressor since it measures the negative aspects of the type of support an individual receives from her social network. Each subscale contains 13 items using a 5-point response scale, with responses ranging from 1 (strongly disagree) to 5 (strongly



agree) or 1 (never) to 5 (very often). Item response choices are summed to create a score for each subscale. Total scores range from 13 to 65 for each subscale. Each subscale demonstrated good internal consistency ranging from .85 to .90 in a sample of 30 pregnant women (Tilden et al., 1990) with mean scores of 4.33 (support), 3.99 (reciprocity), and 2.51 (conflict) using a 1 to 5 range for the means rather than the total score.

### *Socioeconomic Status*

Several measures were used to approximate socioeconomic status (SES): income, education, marital status, and employment status. Monthly income categories in dollars ranged on an 8-point scale from 0 to over 6,000 in thousand dollar increments. Educational levels were less than high school, high school graduate/general education degree, some college, and college graduate. Marital status was classified as married (married or committed relationship) or not married (single, divorced, widowed, or separated). Employment status was categorized as working (part-time or full-time) and not working (student, homemaker or not working). Age was measured in years.

### *Perinatal Health Behaviors and Medical Conditions*

Current tobacco, alcohol, and drug use were obtained from the prenatal record and evaluated according to the absence (0) or presence (1) of the behavior. Number of prenatal visits was abstracted from the prenatal record following the infant's delivery. Prenatal records were reviewed to assess medical conditions during pregnancy. These conditions included pregnancy-induced hypertension, gestational diabetes, infection, bacterial vaginosis, and anemia. Each condition was dichotomized and coded as 1 if the condition was present or 0 if the condition was absent.

### *Birth Outcome*

Labor and delivery records were reviewed to obtain infant birth weight in grams. Birth weight was a continuous variable used in the analysis as the dependent outcome variable.

### *Data Analysis*

Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 13.0. To summarize study variables, descriptive statistics were used. Pearson product-moment correlation coefficients and *t*-test statistics were calculated to determine the relationships and which variables to enter into the regression model. Multiple regression analysis was used to identify significant predictors of birth weight.

### *Results*

Table 1 summarizes the study variables. In this sample of 108 women, ages ranged from 18 to 41 years ( $M=25$ ,  $SD=5.3$ ). The women tended to be unemployed and single with low levels of education. Approximately half (44%) of the women were married and 65% were unemployed. Average monthly household income was between \$1,000 and \$1,999. Many of the women (54%) already had at least one child.

Medical conditions and health behaviors during pregnancy varied among the women. A majority of the women were anemic (58%), nearly half (49%) developed an infection during pregnancy and 26% entered prenatal care after the first trimester. The prevalence of pregnancy-induced hypertension was 16%, gestational diabetes was 7%, and bacterial vaginosis was 44%. Overall, 15% ( $n=16$ ) of the infants were low birth weight. Four women experienced a fetal demise. The average number of prenatal visits

was 10 ( $SD=3.5$ ) and total visits ranged from 1 to 17. While few women used alcohol (9%), 18% used illegal substances and 23% smoked cigarettes.

Approximately 86% of the women experienced discrimination and their experiences are presented in Table 2. Overall, the most commonly reported type of experience was “people acting as if they are better” (65%), followed by “being treated with less courtesy” (62%) and “being treated with less respect” (61%). On a weekly basis common occurrences included: “people acting as if they are better” (18%), “treated as if not smart” (14%), “being called names or insulted” (11%), and “being treated with less courtesy” (11%). Women attributed these experiences to a variety of reasons (Table 3). Race was the most frequent reason cited for discrimination (56%). Yet, a number of women felt that they were discriminated against because of their gender (44%), education/income level (39%), age (32%), and weight/height (28%). Women also cited other aspects of their physical appearance, nationality/ancestry, sexual orientation, religion, and physical disability as additional reasons.

Measures of central tendency for the psychosocial stressors (discrimination, traumatic experiences, generalized stress perception, and social conflict) and personal resources (spirituality, social support, and reciprocity) are presented in Table 1. Pearson product-moment correlations were calculated to examine the subscale correlations for the psychosocial stress and personal resource measures (Table 4). Significant correlations existed among all the psychosocial stress measures. This was also the case among the personal resource measures. When comparing the correlations between the psychosocial stress and personal resource measures, significant relationships existed between discrimination, perceived stress, social support, and reciprocity. Social support was

inversely related to levels of stress ( $r=-.37, p<.001$ ) and extent of discrimination ( $r=-.20, p=.04$ ). Social reciprocity was also inversely related to level of stress ( $r=-.26, p=.01$ ) and extent of discrimination ( $r=-.22; p=.03$ ).

To test the theoretical model of predictors of birth weight, univariate relationships among the predictor and outcome variables were first examined for significance. The variables that were associated with birth weight included tobacco use, prenatal visits, and discrimination due to age, religion and physical disability. The variables were entered into a hierarchical multiple regression model in two steps with birth weight as the outcome variable. Step 1 consisted of the simultaneous entry of the variables known to correlate with birth outcomes, which included tobacco use and number of prenatal care visits. To test the additional contribution of discrimination as a stressor, step 2 consisted of the stepwise entry of three reasons for discrimination that were associated with birth weight: age, religion, and physical disability. The overall model (Table 5) was significant in predicting birth weight ( $F_{(4,99)}=8.08, p<.001$ ), with 25% of the variance in birth weight explained by tobacco use, number of prenatal visits, and discrimination due to age and physical disability. Discrimination due to religion did not enter into the model. Number of prenatal visits accounted for the most variance in birth weight ( $sr^2=.10, p\leq.001$ ). Resources such as spirituality and social support were unrelated to birth weight. Generalized stress perception, social conflict, and traumatic experiences also did not relate to birth weight in this sample.

## Discussion

In this study, we tested an expanded model of predictors of birth weight that included discrimination, lifetime trauma exposure, and spirituality in addition to

traditionally studied social, economic, medical, and behavioral determinants of infant birth weight in low-income African American women. The mean birth weight in our study was higher than the U.S. average ( $3,122 \pm 631$  grams) for African American women (Martin et al., 2005). However, our average remains substantially lower (156 grams) than the overall national average ( $3,325 \pm 571$  grams), and there was 3% higher rate of low birth weight deliveries in this sample (15%) than in the U.S. population of African American women (12%).

Contrary to what was hypothesized, racial discrimination was common, but did not significantly contribute to low birth weight in our model. Feeling discriminated against because of age or physical ability, however less common, were significant factors in the model. Although several investigators have reported associations between racism and birth weight, the findings are difficult to compare due to the different ways that racism was conceptualized in each study. We used a tool that measures everyday racial discrimination to tap the subtle, elusive, and insidious qualities of racism. Racism has also been conceptualized according to appraisal and location of occurrence. Given the complex and multidimensional qualities of racism, scientific consensus has not been reached on how to best measure the construct of racism.

Findings of particular interest were related to perceived reasons for discrimination. Although race was the most frequently cited reason, many women also felt that discriminatory practices were a result of their gender, socioeconomic status, or age. In fact, we found that discrimination because of age was predictive of positive birth weight outcomes. Women in this sample who felt discriminated against due to their age were younger than women who did not report discrimination due to age. While studies

report that African American women of advanced maternal age are more likely to have low birth weight infants, we found no association between maternal age and infant birth weight (Buescher & Mittal, 2006; Collins, Simon, Jackson, & Drolet, 2006; Geronimus, 1996). Contrary to what this finding would imply, the protective reproductive quality of age may outweigh the potential negative psychological effects that discrimination due to age may cause (Geronimus, 1992). Nevertheless, the varied reasons for discrimination that women identified suggest that individual perceptions are contextual and future research exploring discrimination and women's health should be broadened to examine multiple types of discrimination. Moreover, research is also needed to explore how women define their social environments, identify reasons for discrimination, and respond to categories by which they are defined in society.

In our sample of women, trauma was not a predictor of birth weight. A number of investigators have reported associations between trauma experienced during pregnancy and infant birth weight (El Kady, Gilbert, Xing, & Smith, 2005; Fernandez & Krueger, 1999; Parker et al., 1994). Yet, relationships are not well understood, as many investigators have also reported no association between trauma and birth weight (Cokkinides, Coker, Sanderson, Addy, & Bethea, 1999; Shumway et al., 1999). Trauma has also been linked to other birth outcomes such as preterm labor, preterm delivery, abruption, premature rupture of membranes, and length of maternal hospital stay (Dailey et al., 2006; El Kady et al., 2005; Fernandez & Krueger, 1999; Shumway et al., 1999), suggesting that birth weight might not be the outcome with the most predictive value. Due to the different ways that investigators have conceptualized trauma, research findings are challenging to compare and in most instances trauma has been limited to

physical assaults. Moreover, it is difficult to compare previous studies or draw any conclusion from our study findings because we are one of the few investigators to explore lifetime trauma from a broad context of experiences ranging from crime-related events and natural and personal disasters to physical assaults. Lifetime trauma experience and perinatal outcomes is an emerging area of inquiry warranting further examinations.

Contrary to our hypothesis, we found no association between spirituality and birth weight. Religiosity and spirituality have been described as interrelated constructs and the mechanism of their effect on health is not fully understood. The tool used in this study addressed beliefs and practices, but not level of involvement from an organizational context. Religious congregations, by design, aim to foster connectedness and interaction among members (Hill & Pargament, 2003). Organizational aspects of religion may enhance health through improved health behaviors (Koenig, McCullough, & Larson, 2001), support received from church networks (Taylor & Chatters, 1988), and tranquil environments that promote positive emotions (Holt & McClure, 2006). Religious involvement provides a level of support beneficial to health (Taylor & Chatters, 1988), and we suggest that, in addition to spirituality, future research on birth outcomes include measures of religiosity that may capture its salutary effects.

Not to our surprise, our findings are consistent with other researchers who have found that tobacco use is a robust risk factor for low birth weight, which has been repeatedly corroborated in the literature (Institute of Medicine, 1985). However, we did not find the same association with alcohol or drug use. This may be due to the small number of women in the study who reported using either of these substances.

We found that number of prenatal visits was the strongest predictor of birth weight. A plausible explanation is that the prenatal clinics where the women received care were following the Comprehensive Perinatal Services Program (CPSP) guidelines developed by the California Department of Health Services (Korenbrodt, Gill, Clayson, & Patterson, 1995). The guidelines stipulate that women receive periodic psychosocial risk assessments and supportive services throughout their pregnancy in addition to routine prenatal care. Although numbers of psychosocial assessment and intervention visits were not collected as part of this study, women were recruited for this present study during their initial CPSP intake visit indicating that each woman received at least one psychosocial encounter. In a study of 3,467 low-income women, Wilkinson, Korenbrot, and Greene (1998) reported that women who received at least one psychosocial encounter each trimester were significantly less likely to deliver infants with low birth weight. In addition, women interviewed in focus groups about CPSP services stated that the psychosocial services reduced their personal stress (Wilkinson et al., 1998). The education, support, and intervention that women received in these particular clinic settings may have mediated the negative effects that stress exposure has on their health, but the 15% rate of low birth weight was similar to the 12% national rate. The possible benefit of prenatal psychosocial support services may explain, in part, our findings that other measured constructs of social support and perceived stress were not as associative as prenatal visits.

We were able to prospectively study determinants of infant birth weight in a sample of urban African American women. However, findings should be interpreted with caution. The small, convenience sample of women is not representative of all



African American women in the U.S. Although women self-identified as African American, it must be emphasized that women of African American descent are within themselves a diverse group. Therefore, our findings cannot be generalized to the population of African American women throughout the U.S.

In conclusion, this research aimed to expand knowledge about predictors of birth outcomes by examining a research model that included broader definitions of stress and strength factors. Our findings suggest that prenatal care and smoking cessation are modalities associated with birth weight outcomes for African Americans and that comprehensive psychosocial assessments and interventions may help to ameliorate the effects of stressful circumstances that women encounter within their social or discriminatory environments. By continuing to explore the social and personal experiences of African American women with relevant, consistent, and valid measures, we will gain more insight into the factors that contribute to the pervasive racial disparities in perinatal health.

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Table 1.

*Study Variables (N=108)*

| <b>Variable</b>                | <b>Description (range)</b>                                      | <b>Mean ± SD or Frequency (%)</b> |
|--------------------------------|---|-----------------------------------|
| Infant Birth Weight            | Grams (830-4750)  | 3194 ± 660.3                      |
| <b>PREDICTORS</b>              |   |                                   |
| <b>Socioeconomic</b>           |   |                                   |
| Age                            | Years (18-41)   | 25 ± 5.3                          |
| Income (monthly)               | < \$ 1,000  | 47 (44%)                          |
| Employment                     | Working   | 38 (35%)                          |
| Marital Status                 | Married/committed relationship                                  | 47 (44%)                          |
| Education                      | < High school   | 25 (23%)                          |
| <b>Psychosocial Stressors</b>  |   |                                   |
| Discrimination                 | Everyday Discrimination Scale (9-54)                            | 43.6 ± 8.9                        |
| Trauma Experiences             | Trauma History Questionnaire (0-24)                             | 4.3 ± 3.4                         |
| Perceived Stress               | Perceived Stress Scale (0-40)                                   | 17.3 ± 6.9                        |
| Social Conflict                | Interpersonal Relationship Inventory Conflict (13-65)           | 35.6 ± 10.8                       |
| <b>Personal Resources</b>      |   |                                   |
| Spirituality                   | Spiritual Perspective Scale (1-6)                               | 4.5 ± 1.2                         |
| Social Support                 | Interpersonal Relationship Inventory:<br>Social Support (13-65) | 50.8 ± 9.3                        |
|                                | Reciprocity (13-65)   | 48.5 ± 7.5                        |
| <b>Health Practices</b>        |   |                                   |
| Tobacco Use                    | Current   | 25 (23%)                          |
| Alcohol Use                    | Current   | 10 (9%)                           |
| Illicit Drug Use               | Current   | 19 (18%)                          |
| Prenatal Visits                | Number of visits (1-17)   | 9.6 ± 3.5                         |
| <b>Medical Conditions</b>      |   |                                   |
| Anemia                         | Yes/no  | 63 (58%)                          |
| Infections                     | Yes/no  | 53 (49%)                          |
| Pregnancy-induced hypertension | Yes/no  | 17 (16%)                          |
| Gestational Diabetes           | Yes/no  | 7 (7%)                            |
| Bacterial Vaginosis            | Yes/no  | 48 (44%)                          |

Table 2.

*Experiences of Discrimination (N=108)*

| Discrimination             | Prevalence |         |
|----------------------------|------------|---------|
|                            | ≥ weekly   | Overall |
| 1. Better than you are     | 18%        | 65%     |
| 2. Less courtesy           | 11%        | 62%     |
| 3. Less respect            | 7%         | 61%     |
| 4. Poorer service          | 7%         | 52%     |
| 5. Not smart               | 14%        | 51%     |
| 6. Think you are dishonest | 7%         | 44%     |
| 7. Called names/insulted   | 11%        | 44%     |
| 8. Afraid of you           | 10%        | 43%     |
| 9. Threatened/harassed     | 3%         | 22%     |

Table 3.

*Perceived Reasons for Discrimination (N=108)*

| Reason                               | N  | %   |
|--------------------------------------|----|-----|
| Race                                 | 60 | 56% |
| Gender                               | 47 | 44% |
| Education or Income Level            | 42 | 39% |
| Age                                  | 35 | 32% |
| Height or Weight                     | 30 | 28% |
| Other Aspects of Physical Appearance | 27 | 25% |
| Nationality or Ancestry              | 18 | 17% |
| Sexual Orientation                   | 11 | 10% |
| Religion                             | 10 | 9%  |
| Physical Ability                     | 8  | 7%  |

Table 4.

*Correlation Coefficients for Discrimination, Stress, Trauma, Support, and Spirituality  
(N=108)*

| Scale/ Subscale              | 1 | 2     | 3     | 4     | 5      | 6      | 7     |
|------------------------------|---|-------|-------|-------|--------|--------|-------|
| 1. Everyday Racism (EDS)     | - | .39** | .24*  | .37** | -.22*  | -.20** | -.01  |
| 2. Perceived Stress (PSS)    |   | -     | .28** | .63** | -.26** | -.37** | -.11  |
| 3. Trauma Experiences (THQ)  |   |       | -     | .34** | .11    | -.01   | .13   |
| 4. Social Conflict (IPRI)    |   |       |       | -     | -.08   | -.16   | .01   |
| 5. Social Reciprocity (IPRI) |   |       |       |       | -      | .81**  | .37** |
| 6. Social Support (IPRI)     |   |       |       |       |        | -      | .33** |
| 7. Spirituality (SPS)        |   |       |       |       |        |        | -     |

Note. EDS = Everyday Discrimination Scale; PSS = Perceived Stress Scale; THQ = Trauma History Questionnaire; IPRI = Interpersonal Relationship Inventory; SPS = Spiritual Perspective Scale

\* p<.05; \*\*p<.01

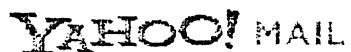
Table 5.

*Multiple Regression Summary for Predictors of Birth Weight (N=104)*

| <b>Source</b>                             | <b>R<sup>2</sup></b> | <b>Beta</b> | <b>sr<sup>2</sup></b> | <b>df</b> | <b>F</b> | <b>p</b> |
|---|----------------------|-------------|-----------------------|-----------|----------|----------|
| Overall                                   | .25                  |             |                       | 4,99      | 8.08     | ≤.001    |
| Tobacco                                   |                      | -.152       | .051                  | 1,102     |          | .05      |
| Prenatal Visits                           |                      | .317        | .100                  | 1,101     |          | ≤.001    |
| Discrimination Due to<br>Physical Ability |                      | -.327       | .063                  | 1,100     |          | ≤.001    |
| Discrimination Due to Age                 |                      | .256        | .032                  | 1,99      |          | .04      |

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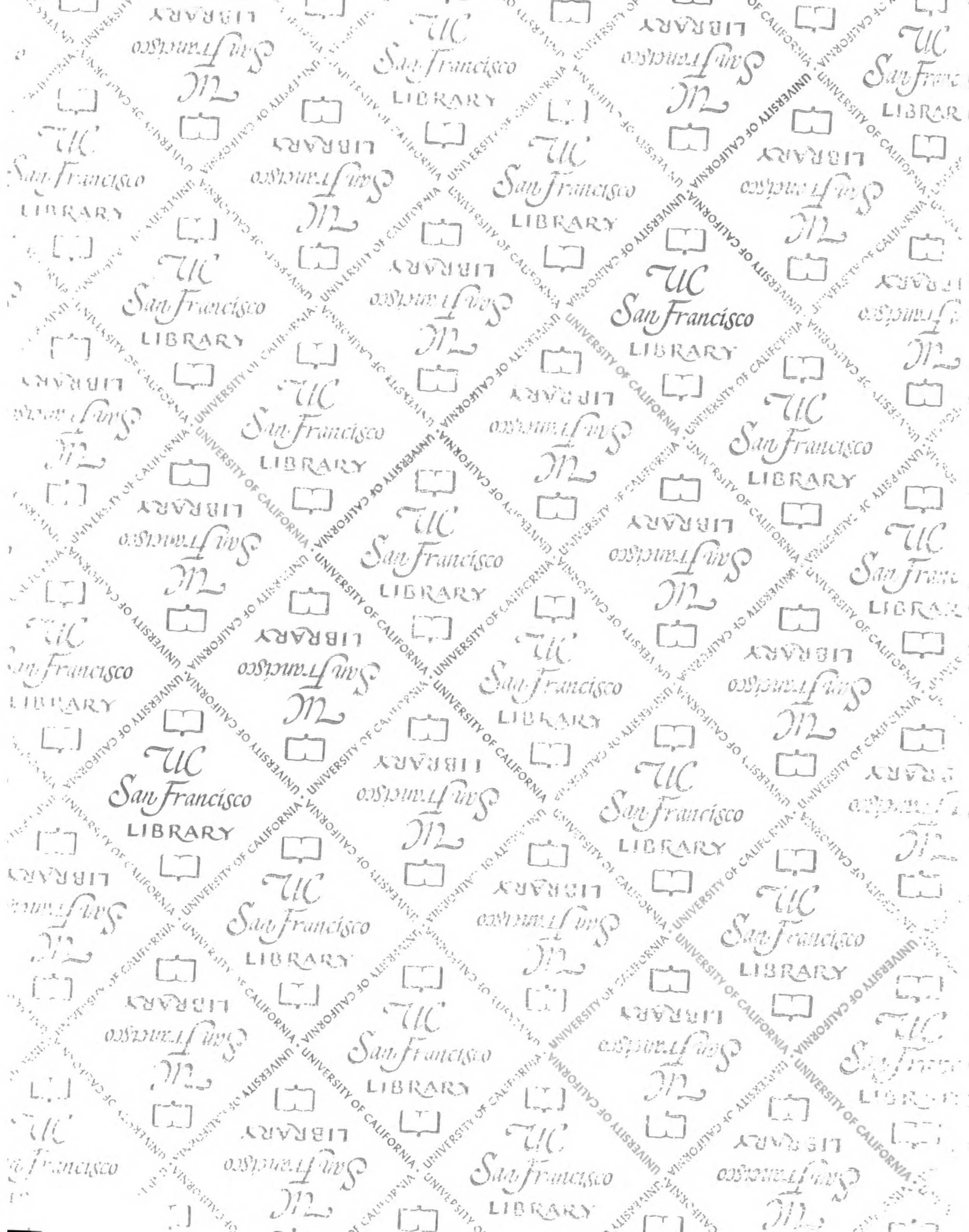
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 A14\_Book\_Author:  
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 A16\_Journal\_Month: In press Jan/Feb  
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