ABSTRACT

Health Disparities in India: The Role of Gender, Family, and Culture

Samuel M. Stroope, Ph.D.

Mentor: Paul Froese, Ph.D.

This dissertation examines how cultural contexts play a role in gender differences in health in India. After an introductory chapter, chapter two asks whether the extent of dowry practice perception in local communities is linked to wider gender gaps in illness. Hierarchical regression models indicate that increases in community dowry practice are associated with increases in three morbidity outcomes for women and also greater gender gaps in health. Unexpectedly, two morbidity outcomes also increase for men in dowry communities.

Chapter three focuses on the multidimensionality of gender and examines how different dimensions of gender at the community level are related to women's self-rated health. Results show that marriage and gender segregation dimensions of gender are associated with poor health. The most variance is explained by a measure of gender segregation, male-first eating order. This finding suggests that cultural practices deeply embedded in the intimate relationships within families and day-to-day life are the ones which most accurately reveal the degree to which culture is ingrained. It also implies that

such deep cultural practices of gender segregation are more important than other forms of gender segregation for women's health.

The fourth chapter analyzes gender differences in hypertension using individual-level and household-level variables and also focusing on the multidimensionality of gender (economic, segregation, and empowerment dimensions). The moderating roles of different dimensions of gender and differences in men's and women's hypertension are tested. Support is found in the case of gender segregation and empowerment. Specifically, gender differences in hypertension are exacerbated in households that seclude women and restrict women's household decision making. These measures are associated with greater hypertension for women, but in the case of women's seclusion, reduced hypertension for men.

Chapter five, considers the utility of the theoretical approach taken in the dissertation, especially its utility in related areas of population health research. This chapter explores implications of the empirical chapters for research that extends beyond the Indian context and sets out potentially fruitful directions for future research.

Health Disparities in India: The Role of Gender, Family, and Culture

by

Samuel M. Stroope, B.A., M.A.

A Dissertation

Approved by the Department of Sociology

_____
Charles M. Tolbert II, Ph.D., Chairperson

Submitted to the Graduate Faculty of
Baylor University in Partial Fulfillment of the
Requirements for the Degree
of
Doctor of Philosophy

Approved by the Dissertation Committee

_____
Paul Froese, Ph.D., Chairperson

_____
F. Carson Menchken, Ph.D.

_____
Jerry Z. Park, Ph.D.

_____
Martha Gault Sherman, Ph.D.

_____
Jeff Levin, Ph.D.

Accepted by the Graduate School
May 2013

_____
J. Larry Lyon, Ph.D., Dean

Page bearing signatures is kept on file in the Graduate School.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGMENTS

I have found that writing a dissertation—and graduate school in general—is not unlike the years I spent skateboarding as a young person. I was a better skater when I skated with my friends. Alone, I had less energy, motivation, and guts to try hard tricks. In the process of writing this dissertation, I have been motivated, energized, and emboldened by family and friends to whom I am indebted—writing a dissertation in sociology is itself a sociological story.

From the start of graduate school Paul Froese has been a generous and skilled mentor. He closely read almost every paper I've written (often more than once), offered incisive theoretical feedback, and believed in my ideas—he gave me a long leash to explore a variety of theories and topics, and always gave me the benefit of the doubt. When I was discouraged, I always came out of his office feeling like a million bucks, which helped me feel like I could keep going. One of the things for which I am most thankful to Paul was his habit of being sensitive to the fact that I am a human being with limited time and energy. His feedback on my work was practical in that he seemed to keep this fact in mind, focusing on big things rather than small things. I don't know that I could have done this without Paul.

Charlie Tolbert and Carson Mencken have been mentors I also couldn't have done without. Their expert analytic mentoring truly empowered me to go out and find the right data and use the right techniques to answer the questions I wanted to ask. In addition to cultivating a love of quantitative methods, they propelled me professionally and only

I have been fortunate to have overlapped for a year with Jeremy Uecker and had the privilege of serving as his research assistant. I've learned a great deal as a researcher from Jeremy in a short amount of time and he has been incredibly generous to me in reading manuscripts, CVs, job application letters, and generally being a sounding board. I'm indebted, Jeremy.

Chris Pieper, thank you for reading my dissertation chapter on dowry and encouraging me to draw more heavily on the work of William Sewell. This was timely and invaluable feedback.

Sharon Tate's unceasing work in serving me along the way (especially while on the job market), freed me to spend more time on research and less on administrative duties. Thank you, Sharon.

I've had the privilege of working alongside many wonderful peers. I'll not forget those early semesters and long graduate seminar discussions and saber rattling with Paul Castronova, Aryeh Weinberg, and Shanna Granstra, some of the smartest people I've ever had the privilege of taking classes with. Shanna, thanks for staying to the end. Buster Smith, Clay Polson, Joseph Baker, Jared Maier, Ashley Palmer, Jeremy Rhodes, and Alessandra Gonzalez were my grad student exemplars—people I wanted to be like. Thanks for your example and untold hours of help in getting acclimated to sociology. Joseph, Andrew, and Scott, it's been a lot of fun collaborating. Andrew, you'll never know what an example your positive outlook, generous help, and daily hard work were to me. Thanks is due to Phillip Connor for being partly responsible for getting me into sociology and for helping me decide to focus on India in my dissertation. Thanks to Chris Scheitle for advising me to focus in on my interest in health. Jenna, Lindsay, Josh,

The person that I want to thank most is my wife, Jessica Lynne Stroope, for her loving support and untold sacrifices through these years of graduate school. You strongly encouraged me to pursue doctoral work in sociology when I was doubtful, you valued what I was doing at times when I felt others didn't, time and time again you brought me out of my low places of handwringing pessimism and discouragement, and you helped me maintain (some) balance amid my times of obsession with my writing or puzzling out data problems. Many of the ideas that I've put on paper have come out of our intermittent conversations over making dinner or taking walks in the cemetery, on the Bear Trail, or along the Brazos River. I am lucky to be married to someone with as much smarts as you. If there is anyone I could not have completed this program and dissertation without, it is you. Finishing this thing is yours as much as mine. Hopefully I will also be a better father to our children for having studied sociology.

To Jessica

CHAPTER ONE

Introduction

This dissertation focuses on cultural elements of social life and their linkages to health and illness. Within the realm of culture, the dissertation focuses on gender and family practices and the mental schemas that go along with them—how these cultural elements operate to influence health. Practices and schemas may be present at both the individual level and at the community level. It is widely accepted that cultural aspects of human life as well as social context contribute to health. For instance, varying beliefs regarding sexual intercourse and condoms can affect the general extent of condom use and the kinds of sexual partners that use condoms. As well, condom beliefs and the availability of condoms can vary across the policy environments which condition them (Tavory & Swidler, 2009). Social scientists that study culture and its consequences have constructed nuanced conceptual tools for understanding cultural phenomena. One prominent contemporary example is found in the work of social theorists working under the banner of "structuration theory" or the "duality of structure" (Giddens, 1984; Sewell, 2005). Lamont's introductory chapter in *Successful Societies: How Institutions and Culture Affect Health* examines the role of culture in health (Hall & Lamont, 2009). Lamont focuses on cultural repertoires that buffer the health-damaging effects of discrimination. She does not, however, devote attention to discrimination itself at individual and community levels, as a cultural influence. Although a growing literature exists on the health effects of discrimination—some based on gender, but much more based on race (Krieger, 2000; for reviews, see Williams & Mohammed, 2009; Williams

1

& Sternthal, 2010)—to my knowledge, none of this work utilizes cultural frameworks for understanding the sources and maintenance of various forms of discrimination. Cultural frameworks hold the potential of providing satisfying explanations of how cultural effects operate in human social life. In attempting to contribute to these issues, in this dissertation I draw from diverse social scientists' work on the cultural nature of social structure as it manifests at individual and community levels—especially the theoretical model of "the duality of structure"—and a variety of pathways by which culture conditions health. While I develop this research in the context of gender and health in contemporary India, this work has implications for gender and health in other contexts. Additionally, it has implications for bringing the importance of culture into sharper focus along other axes of health disparity such as race, ethnicity, religion, and socioeconomic status.

Why focus on gender disparities in India? India is a major trading partner with a variety of nations including the United States. A significant proportion of the world's population lives in India and a large proportion of the world's older adults live in India. India is undergoing a transition from a nation with high levels of infectious diseases to a nation with a large burden of chronic diseases and debilitating conditions. Without a program such as Medicare, older Indians are at the mercy of their families and members of their communities in terms of care in old age. These informal caregiving environments are important inputs to the health of India's growing older population. These social inputs to health are also important contributors to health in midlife and young adulthood—i.e., these social inputs also set the stage for the kinds of health profiles experienced in later life. These family and community effects on health in the

general adult population are the focus of this dissertation, especially understanding the cultural dimensions of family and community influences centered around gender.

Gender Differences in Health

The relationship between gender and health is complex and paradoxical; although women usually live longer than men, women tend to suffer from higher rates of illness than men—"women get sicker but men die quicker" (Nathanson, 1977). This general pattern, which was found to have broad support globally (Mathers, Sadana, Salomon, Murray, & Lopez, 2001; WHO, 2000), has been referred to as a the "gender paradox" in health (for a review, see Macintyre, Hunt, & Sweeting, 1996; Verbrugge, 1985). With regard to mortality, men have higher rates of mortality than women across age groups (Owens, 2002; Verbrugge & Wingard, 1987).[1] Before implantation in the womb, males have greater vulnerability (Pedersen, 1980). Males' more rapid growth in the womb in concert with compensatory placental growth in late gestation when compared to females has led researchers to argue that even in the womb "boys live dangerously" (Eriksson, Kajantie, Osmond, Thornburg, & Barker, 2010).

Morbidity is more mixed. The gender paradox in health has been most challenged on the side of morbidity where patterns are more complex and depending on the age group and condition, may not support a pattern of greater women's sickness. Even the idea that a paradox exists has been challenged. It may not be so paradoxical that in the United States, for example, men and women have the same leading causes of death but women's cardiovascular disease risk increases after menopause (Verbrugge & Wingard, 1987). Men have a higher rate of life-threatening illnesses at younger ages (e.g.,

---

[1] Some exceptions to this pattern exist under the age of five in select countries.

cerebrovascular disease) and women have a greater tendency to have infectious diseases and chronic debilitating conditions (e.g., migraines) with which women live for a greater number of years than men (Verbrugge, 1989). Specifically, according to the United States National Center of Health Statistics (2006), men tend to suffer from more life-threatening chronic illnesses including cancer, coronary heart disease, kidney disease, cerebrovascular disease, emphysema, atherosclerosis, and cirrhosis of the liver. Women experience acute conditions including gastroenteritis, upper respiratory infections, and more chronic debilitating conditions such as rheumatologic disorders and autoimmune diseases. As well, women have more disease such as arthritis, thyroid conditions, anemia, eczema, migraines, and gallbladder conditions. Clearly, whether women are sicker or men are sicker depends on the type of condition. Patterns at the intersection of gender, morbidity, and mortality are said to need regular analysis and monitoring across time and contexts (Macintyre et al., 1996).

What drives gender differences in health? A complex set of factors have been proposed to explain health differences, including biological and social factors. Biological differences that lead to health differences include those such as males' early rapid growth noted above. In addition to biological factors, social factors can also shape health. The linking of individual health to social conditions dates at least back to the writings of the nineteenth century sociologist, Emile Durkheim (1951). Social factors shape health through the various ways that humans follow expectations and beliefs regarding the behavior of women and men and organize society in ways that that provide opportunities and constraints to men's and women's behavior. These include beliefs about health behaviors, the organization of work and residence, and the various ways that social

4

relationships and interactions provide social support or social stress (Berkman & Glass, 2000). Some influences on differences between men's and women's health are both thoroughly biological and social in nature. The issue of risks posed by women's reproductive health is an important example. Social locations can mediate or condition health behaviors and exposure to health risks (Bird & Rieker, 1999), indeed "social factors can overrule or even negate biological propensities" (Baunach, 2003, p. 332). Social factors can stabilize, amplify, or even negate biological sources of health differences between women and men (Bird & Rieker, 2008).

Focusing on social determinants of health and gender, a growing body of contemporary research indicates that differences in men's and women's health may stem from their different locations in social space. With these different societal locations come different roles, opportunities, and resources that can affect health (Blau, Brinton, & Grusky, 2006). Gender can have *direct* impacts on health in how it distributes material resources such as money, which can be used to maintain health. Also, socioeconomic deprivation can be a *direct* source of health problems through the chronic stress that it puts on the body and the ways that chronic stress leads to disease (McEwen, 2002). Also, gender can also have *indirect* effects on health; with socioeconomic status comes not only money, but social roles and psychosocial factors such as self-esteem and beliefs about one's control over one's life—all mental elements that can have important negative or positive implications for mental and physical health outcomes (Rieker & Bird, 2000). Gender-based health differences may also be rooted in men's and women's differing patterns of self-reporting health even though observed health may not differ. This may partly be due to men's beliefs regarding masculine strength and men's stoicism with

regard to their health may lead men to be reticent with regard to reporting health problems in surveys or be unaware of the state of their health. In other words, health differences might be due to a social construction rather than actually health disparities. However, some recent evidence supports the conclusion that the pattern of women's worse self-rated health in comparison to that of men is found not to depend on differential *reporting* of health between women and men (Case & Paxson, 2005). An additional social determinant of gender gaps in health has to do with the fact that men have received much more medical research and so we know relatively less about women's health, which potentially decreases the effectiveness of medical treatment for women (Krieger, 2000; Read & Gorman, 2010).

Culture and Health

An important understudied social driver of health is culture. Although health researchers have invoked culture, rarely has health research utilized the theoretical attention that has been paid in recent decades with regard to culture, at times referred to as "the cultural turn" (Sewell, 2005). Below, I will pick up this idea of culture as a source of health.

When conceptualizing community culture, contemporary cultural social theory can provide some useful tools—especially "the duality of structure" framework (Sewell, 1992). First, the word "culture" has a number of meanings. Older ideas about culture (primarily from anthropology) understood culture like a container. If an individual was in the container, he or she followed its beliefs, norms, and behaviors (for a discussion of this literature, see Sewell, 2005). Another view understands culture as fragmented and used by people as a repertoire or toolkit (Swidler, 1986). Yet another view pits culture

6

against structure (Vaisey, 2007). In this paper, I follow a view of culture that draws upon strengths from all of the above views. I do not pit structure against culture, but rather see structure as unified, yet having a "duality." In other words, structure has both material and schematic elements that may be thoroughly cultural in nature (Sewell, 1992, 2005).

The duality of structure framework was developed by Giddens (1984) and Sewell (1992) and has been applied to a variety of areas, including demographic processes (Johnson-Hanks, Bachrach, Morgan, & Kohler, 2011). As noted above, this framework sees social structure as a duality made up of schemas and materials. Schemas include mental things such as beliefs, rubrics, stereotypes, social roles, taken-for-granted categorizations, perceptions, and behavioral scripts. Johnson-Hanks et al. (2011) provide the example of a child learning various categories of animals. At first the child may refer to a humming bird as a "bug," but after enough correction by people around the child, the child will learn to attach the category of "bird" to a humming bird. Schemas are mental things that people use to make sense of the world, motivate actions, account for actions, and evaluate others' actions. Sewell and others argue that schemas can become widely shared in a local community. Sewell writes that schemas are "rules of etiquette, or aesthetic norms, or such recipes for group action as the … democratic vote, or a set of equivalences between wet and dry, female and male, nature and culture, private and public, or the body as metaphor for hierarchy, or the notion that the human being is composed of a body and soul…" (Sewell, 2005, p. 131). Schemas need materials to maintain them. As Sewell argues above, if a schema goes on too long without a material to sustain it, it will not last.

Materials are things that humans can perceive. Materials may be things such as objects, practices, audible words, facial expressions, or visible texts. In this theory, materials are perceivable things that also come with one or more schemas. In the above example, a humming bird is a material to which is attached the schema, "bird" and possibly other schemas. Materials may be deployed by people, for instance, in order to achieve a goal or in order to increase power. For example, a job candidate may wear a suit and tie to a job interview in order to convey confidence, power, and an image of professionalism.

A "duality of structure" framework would suggest that schemas and materials must be thought of together as a schema-material interplay. As Polletta (2006, p. 13) describes, schemas may be abstractions, but they are also put into practice in perceivable form: "Schemas are logics or models of action and interaction. They are enacted in formal rules, rituals, and routines, as well as in stories." The schema-material interplay in social contexts both enables and constrains individuals whose lives unfold in those contexts.

Family, Culture, and Health

Johnson-Hanks et al. (2011, p. 5) note that some schemas may be "more or less visceral" than others: "some schemas are only cognitive—they are mental dispositions or attitudes—whereas others also entail a set of physical feelings. The aura of closeness that ritual bedtime reading imbues in a father and child; the stomach-churning discomfort of witnessing a child being harshly punished; the solemn hopefulness of wedding vows: the schemas that shape these experiences are intensely physical, and the physicality matters for how the schemas are deployed in action." Family (and gender) is a "particularly

culturally dense" domain of life where "legal, religious, emotive, and economic logics overlay one another" (Johnson-Hanks et al., 2011, pp. 2, 4).

Family relationships may be important sources of support in the face of illnesses such as depression, but researchers have also found that family relations themselves may be the source of individuals' depression (Hinton, 2012). Family relations can cut both ways when it comes to health. One way of unraveling how family relations shape health is to look at family relations and interactions through a cultural lens. What roles operate in families? What norms? What beliefs? What practices? It is not enough to measure marital status, family structure, or living arrangements and their links to health. Clearly, various family relationships may be infused with different expectations and habits of behavior—different cultural content. The structure of family ties may look similar on the surface, but may differ dramatically with regard to content. This content may have important implications for health and gender differences in health.

One famous example from research from the United States is the health implications of the "second shift." Briefly, Hochschild (1990) argues that more American women have entered the workforce. However, men's attitudes toward marriage and unpaid household and family responsibilities and work have not kept pace with the changes in women's participation in paid work. Reflective of this, Hochschild reports how in families where both husband and wife work, the majority of the daily or frequent work related to children and the household is done by wives. Men tend to do infrequent and occasional projects that can be scheduled at times convenient to men such as home repair, lawn mowing, and car maintenance. Given women's involvement in daily, time-intensive and time-sensitive tasks such as food preparation and child care, a kind of

inequality in leisure time and time for relaxation is the result. These greater levels of

work for women and deficits in time for recuperation can make women more vulnerable

to disease and sickness. In addition to harmful effects on women's health and wellbeing,

women's increased stress and potentially increased vulnerability to illness and disease

has negative effects on men. These also have negative economic effects on families (e.g.,

medical costs), businesses (e.g., reduced performance and more days ill), and society as a

whole (e.g., reduced overall economic performance and greater medical costs).

Measuring the Duality of Structure and Health

Practically, can quantitative researchers use a duality of structure model as they

collect data about people and the world and try to understand cultural determinants of

health? Most existing surveys collect data on some materials, and some datasets allow for

the addition of a variety of materials at the aggregate level. For instance, datasets may

include or allow for the inclusion of measures at the neighborhood, zip code, or county

level (e.g., the availability of daycare centers, chiropractors, health food stores, or the

density of billboards for high-alcohol content beverages). Many existing surveys collect

data on attitudes, beliefs, and values. These all seek to measure schemas, even if these

may be imperfect ways of measuring schemas. Whether or not it is desirable to measure

schemas separately from materials depends on a given research question. To be precise,

responses to survey question about beliefs and values are always actually materials

because they are perceivable responses. One approach would be to concede this fact and

focus on measuring materials and using theory and prior research to infer schemas that go

along with materials (for an example from the sociology of religion, see Hoffmann &

Bartkowski, 2008). Focusing on macro-level effects, some research on religion and

health has taken this approach, although without necessarily using a duality of structure framework (Blanchard, Bartkowski, Matthews, & Kerley, 2008). These approaches are useful, given the paucity of research on cultural effects in the area of population health. A relatively limited amount of attention has been given to how culture at the community level influences health of individuals. Researchers have looked at community level effects of culture on mortality rates (Blanchard et al., 2008), and some studies have focused on national religious culture effects on individual health (Huijts & Kraaykamp, 2011), but no studies that I am aware of study subnational level cultural effects on health while controlling for individual-level characteristics. Also, research on the variation of gender disparities in health across contexts is sparse. More specifically, literature searches produce no studies examining gender disparities in health focusing on cultural community characteristics theorized to influence women and men differently, while controlling for individual-level characteristics.

The approach above—measuring materials and using theory and prior research to infer schemas—is the approach taken in this dissertation. I measure a variety of family and gender practices (materials), both and household and aggregate levels, and use theory and prior research to infer schemas that are carried by the various material practices.

Chapters

In the analytic chapters of this dissertation, I use files from the 2005 India Human Development Survey (IHDS). The IHDS was funded by grants from the National Institutes of Health. Coordinated by investigators from the University of Maryland and the National Council of Applied Economic Research, New Delhi, the IHDS is a nationally representative survey of 41,554 households in 1,503 villages, and 971 urban

11

blocks across 383 districts in India. The IHDS was administered in 2004 and 2005 and was conducted in local languages in all Indian states and union territories, excluding Lakshadweep and Andaman and Nicobar Islands (Desai, Dubey, et al., 2010). Two one-hour face-to-face interviews covered information on households and household members. Male-female pairs of interviewers interviewed one ever-married woman aged 15-49 and a male (usually household head) in the household, with women interviewing women and men interviewing men. The IHDS has a response rate of 92% and compares favorably with the 2001 Census of India, the 2004-2005 National Sample Survey, and the 2005-2006 National Family Health Survey III. I use responses from several IHDS data files: (1) household-level information (e.g., caste, religion, SES); (2) responses from approximately 27,000 ever married women aged 25-49 (e.g., gender relations, self-rated health); (3) responses pertaining to approximately 100,000 male and female household members which I limit to household members age 18 and older (e.g., age, gender, education, shot-term morbidity, number of days ill with short-term morbidity, long-term morbidity); (4) village information file; and (5) medical facility survey file. Data were obtained from the Inter-university Consortium for Political and Social Research. Additional information about the IHDS is available at www.ihds.umd.edu.

Chapter two asks whether the perception of dowry giving frequency in local communities is linked to wider gender gaps in illness. The chapter analyzes gender differences in three morbidity dependent variables using community-level perception of dowry as the focal predictor. The dependent variables are acute illness, number of days ill in last month, and chronic illness. Acute illness is reported by 10% of the sample and is a dichotomous variable that measures whether the respondent had a fever, cough, or

diarrhea in the last month (1 = yes; 0 = no). The proportion of women (.122) reporting

having had one of these acute illnesses is significantly larger than the proportion of men

(.07). The number of days ill in the last month is a heavily right-skewed variable and the

overall variance is considerably larger than the mean (.82); hence in regression analysis, I

fit a negative binomial model to the data with the number of days ill modeled as a count

variable for each person (range = 0-30). Women (1.008) report a significantly higher

number of days with an acute illness in the last month as compared with their male

counterparts (.635). Finally, chronic illness, a binary indicator, is reported by roughly 5%

of respondents with a slightly higher and statistically significant proportion of women

(.052) reporting chronic illness than men (.04). Chronic illness is coded as one if the

respondent had ever been diagnosed with hypertension, heart disease, or diabetes. The

analyses in this chapter use multilevel modeling techniques because (1) I am in part

interested in geographic variation in the theoretical predictor and outcome while holding

individual characteristics constant, (2) the focal predictor is theorized and measured at the

level of the geographic unit, and (3) individuals and their illness outcomes are nested

within geographic units. To measure the characteristics of community contexts in this

chapter (as well as in chapter three), I focus on Indian districts as the geographic unit.

The use of districts in research on India is useful in part because districts are important

administrative units and in many cases indicate historically and culturally meaningful

boundaries (Malhotra, Vanneman, & Kishor, 1995). Because urban and rural contexts

differ dramatically in India, I follow the approach of IHDS principal investigator and

researchers (Desai & Andrist, 2010; Desai & Wu, 2010) and partition urban and rural

areas of districts. For simplicity, the resultant 488 units are referred to as "communities."

Community-level measures are created by aggregating household and individual-level variables (Desai & Andrist, 2010).

Chapter three focuses on the multidimensionality of gender and examines how different dimensions of gender at the community level are related to women's self-rated health. Specifically, the chapter focuses on different dimensions of gender at the community level and effects on self-rated health of ever married women age 25-49. This chapter only focuses women of this age group and marital background because self-rated health was only asked of a subsample of these ever married women. These items pertaining to different dimensions of gender were selected by IHDS principal investigators based on face validity and the literature on gender in South Asia. These items have also been used in prior research, some at the household/individual level and some at the community level. I focus on two dimensions: (1) *marriage* (dowry, wedding expenses); and (2) *gender segregation* (mobility restrictions index, seclusion [e.g., veiling], male-first eating). I follow the approach of prior research in constructing these gender variables, but whereas prior work explored links between these variables and marriage timing (Desai & Andrist, 2010), and reproductive health care (Desai & Wu, 2010), in this dissertation I take a different approach and analyze associations with self-reported health and morbidity measures. For the same reasons noted in the discussion of chapter two, multilevel modeling will also be used in this chapter.

The fourth chapter analyzes gender differences in diagnosed hypertension using individual-level and household-level variables. IHDS interviewers asked a knowledgeable respondent in each household whether household members had been diagnosed with hypertension by a physician in the last year. Household members who

had been diagnosed with hypertension (including those cured) are coded as 1 (0 = not diagnosed with hypertension). Hypertension is more prevalent ($p<.0001$) among women (23 per 1,000) than men (15 per 1,000). When the dependent variable in logistic regression has such low prevalence or when interacting several dichotomous independent variables, all cases may have the same event status and cause problems. Therefore, I will fit a logistic regression model to the data using Firth's penalized likelihood approach in SAS 9.2 (Firth, 1993; Heinze, 2006).

The conclusion, chapter five, will step back from empirical findings and consider the utility of the theoretical approach taken in the dissertation, especially its utility in other areas of population health research. The conclusion chapter sets out potentially fruitful directions for future research stemming from the use of a material-schema duality of structure model of culture in the context of population health.

CHAPTER TWO

Dowry and Disease: Cultural Context, Gender, and Health in India

International forums have highlighted gender as an important axis of health disparity (United Nations, 2005; World Health Organization & United Nations Population Fund, 2007). The relationship between gender and health is complex and paradoxical; although women usually live longer than men, women tend to suffer from higher rates of illness than men. This gender paradox in health has been most widely researched in developed countries (Verbrugge, 1985) and less researched in developing countries. The role of community context in shaping linkages between gender and health has received relatively limited attention (Bird & Rieker, 2008, pp. 117–145; Read & Gorman, 2010, p. 381). Socioeconomic determinants and a variety of psychosocial stressors have featured prominently in gender and health research, however relatively less work has been done to explore cultural factors linking gender and health such as cultural practices, schemas, and identities, especially as they relate to community contexts. This gap in knowledge is noteworthy because of the importance of cultural symbols, beliefs, practices, and institutions for the study of gender.

Using a "duality of structure" model (Sewell, 1992), this study draws on recent theoretical developments, exploring intersections between community context, gender, and health. Following the lead of others (Giddens, 1984; Johnson-Hanks et al., 2011; Sewell, 1992), I contend that social structure is made up of both material and schematic elements; these elements are mutually constituted and should not be divorced or set against each other in a "culture" vs. "structure" fashion. Rather, the combined material-

schema interplay makes up what we think of as "culture" and the repeated patterns we refer to as "structure." What are schemas? To be clear, the schematic side of social structure refers to mental frameworks such as beliefs, heuristics, or worldviews that individuals or groups of people use to construe reality and organize behavior. For example, a schema that goes along dowry is one that construes women as burdensome, as giving a daughter and her dowry is financially burdensome. The material side of social structure refers to any perceivable things such as physical objects, outward practices, or spoken words. Materials always instantiate one or more schema. In short, the material-schema elements work as the building blocks of the world's structures. Given this understanding, health is best understood as a function of the material-schema elements of broader community contexts in which health and health disparity unfolds. I hope to illustrate that bringing material-schema structure into relief in the analysis of gender and health can offer a cultural understanding of what researchers mean when they say that community contexts can shape the health of women and men.

This study takes the practice of dowry-giving in India to illustrate the usefulness of examining material-schematic structures in the context of gender and health. I rely on a Sewell's (1992) general theoretical framework, further developed by Johnson-Hanks and colleagues (2011) to argue that the material-schema structure of dowry practice in local communities shape health in three main ways. First, dowry has a direct effect on the comparative costs of sons and daughters, for example, and hence on differential resources and opportunities. Second, dowry serves as a "reservoir of meaning," carrying and instantiating gender schemas in a community. These schemas are transposed onto various spheres of life, shaping the social interactions and life experiences of men and

17

women. Third, schemas and materials combine to constitute individuals' identities, important health-influencing resources.

India provides an important setting in which to examine these intersections. India is the world's second largest developing country. India also provides a useful case for examining community structure, gender, and health because of the variations in gender hierarchy across the country (Chakraborty & Kim, 2010; Dyson & Moore, 1983). This study contributes to a research examining gender, culture, and health in developing countries. Although prior literature links dowry to gender discrimination in India (Kingdon, 2002), this study is the first to document a relationship between dowry-practice in communities and health. Using India Human Development Survey-2005 data on approximately 101,900 men and women located within 488 community contexts, I examine links between community dowry and gender differences acute illness, number of days with acute illness and chronic illness. A variety of issues remain unstudied at the intersection of community contexts, gender, and health (Read & Gorman, 2010). Examining the moderating role of community culture in relationships between gender and health is an important piece in the larger puzzle of understanding the drivers of social disparities in health, both in developing and developed societies.

Background

Community Structures and Gender Differences in Health

Although men typically die younger and face more life-threatening diseases than women, women tend to have higher morbidity rates in many societies (Bird & Rieker, 2008; Case & Paxson, 2005; Verbrugge, 1985). One important connection between gender and health is socio-economic status. Compared to men, women tend not to

18

possess the same levels of control over socio-economic resources that help avert poor health (Huisman, Kunst, & Mackenbach, 2003; McDonough & Walters, 2001; Phelan, Link, Diez-Roux, Kawachi, & Levin, 2004; Ross & Bird, 1994; Walters, McDonough, & Strohschein, 2002). Another key link between gender and health revolves around psychosocial factors. In comparison to men, women tend to lead lives characterized by more stressful life events, depression, and lower self-esteem and sense of control (Denton, Prus, & Walters, 2004; Forthofer, Janz, Dodge, & Clark, 2001; Hopcroft & Bradley, 2007; Nazroo, Edwards, & Brown, 1998; Read & Gorman, 2010; Rieker & Bird, 2000; Thoits, 1995). While socio-economic status in part maps onto health through psychosocial processes, other forces such as gender discrimination and social identity also shape health via psychosocial processes (Bird & Rieker, 2008; Read & Gorman, 2010).

Community context provides an additional layer at the intersection of gender and health. Gender is as much a social context or system of social arrangements as it is an individual characteristic (Dodoo & Frost, 2008; Koenig, Ahmed, Hossain, & Mozumder, 2003; Mason & Smith, 2000). A long-standing research literature has examined how health is shaped by the environments in which people live (for a review, see Patrick & Wizicker, 1995). While some research has documented gender differences in contextual effects on health (Ellaway & Macintyre, 2001; Stafford, Cummins, Macintyre, Ellaway, & Marmot, 2005), overall there has been relatively little investigation into how community contexts shape differences between men and women's health (for a review, see Bird & Rieker, 2008, pp. 117–145; Read & Gorman, 2010, p. 381). Some studies have largely focused on features of community contexts that influence all residents, in

many cases finding greater contextual effects on women's physical health than that of men (Ellaway & Macintyre, 2001). In large part, studies have examined elements of the built environment (e.g., quality of housing) and other characteristics such as community social capital, violent crime, and socio-economic status (LeClere, Rogers, & Peters, 1997; Stafford et al., 2005; Sundquist et al., 2006). Although these community factors may affect the health of all residents, the importance of various community factors may be different for men and women.

Community factors may function differently for women and men for a variety of reasons. Women may live with more chronic stress and anxiety in high crime neighborhoods. This may stem in part because in addition to fearing crimes that men face and possibly experiencing more intense fear of crime, women are also more likely to be fearful of and victims of specific crimes such as sexual assault. Fear of sexual assault has a great likelihood of endocrine response (Bird & Rieker, 2008, p. 128; Rountree & Land, 1996). Clearly such contexts may reduce women's physical activity outside of the home. Additionally, women may be more attune to threats to safety due to higher levels of caring for children or relatives with disabilities. While psychological distress associated with such community conditions may translate into physical health vulnerabilities, living in such neighborhoods may also impact women's physical exercise because public spaces are also more likely to be male dominated in high-crime locales and in addition to fearing walking outdoors because of crime, there is the added fear of being sexualized by groups of men (Ross, 1993). These examples suggest that some community factors may be particularly relevant to women because of community members' schemas (e.g., gender role schemas) and material practices (e.g., sexual

harassment of women) (Ellaway & Macintyre, 2001). In these ways, women's health may be affected differently than men's health, not necessarily because of women's greater contact with the community environment, but because of gendered practices, symbols, habits of thought, resource allocations, and opportunities woven into the fabric of the local community. These effects of community may directly affect health or indirectly affect health through emotional or cognitive processes (Read & Gorman, 2010, p. 381).

Recent advances in social theory can help provide a framework for organizing some of the above community dynamics. Structuration theory, pioneered by Giddens (1984) and further developed by Sewell (1992, 2005) and Johnson-Hanks et al. (2011), argues that meanings and materials are symbiotically constructed and determined. That is, both mental schemas and perceptible material objects/practices comprise a duality of structure that patterns human behavior and experiences. Further, both mental schemas and perceptible materials should be understood as *structure*, what I refer to in this study as "material-schema structure." Schemas include mental things such as beliefs, rubrics, stereotypes, social roles, taken-for-granted categorizations, perceptions, and behavior scripts that people use to construct worldviews, decide what is worth doing, legitimate things done, and judge other people's behavior (Johnson-Hanks et al., 2011, pp. 4–6; also see Sewell, 2005, p. 131). Materials are perceptible things such as objects, practices, institutions, audible utterances, and visible emotional responses. A schema may be attached to one or many materials and all materials are infused with at least one schema (Johnson-Hanks et al., 2011). Materials may be deployed by people, for instance, in order to achieve a goal or in order to increase power. The interplay of materials and

schemas—material-schema structure—both enables and constrains individuals whose lives unfold in the context of these structures.

Individuals "internalize existing schemas from their public manifestations in materials. As the perceptible incarnation of structure, materials ground schemas in the world" (Johnson-Hanks et al., 2011, p. 12). "Schemas can also become widely shared by a community of interacting individuals and in this sense they exist at the macro-level ('in the world', separate from any individual) as instantiated in the elements of a language, symbolic artifacts, or institutional forms *and practices*. At this level, they are embodied in materials..." (Johnson-Hanks et al., 2011, p. 32 emphasis added). Recent research on community context effects points to how material-schema elements that comprise community structures can shape a variety of behaviors (e.g., Harding, 2007; Harris & Cheng, 2005). For instance, although not directly referencing structuration theory, researchers have long used measures of neighborhood disorder and dilapidation (e.g., "broken windows") as indirect measures of schemas of social disorganization (Johnson-Hanks et al., 2011, p. 147; Sampson & Raudenbush, 1999). Local disorder (and associated material practice of non-maintenance) is said to carry a schema indicating local residents do not take control of public spaces and the illegal activities that take place within those public spaces.

A variety of mechanisms may be at work linking material-schema structures to health outcomes. Materials may directly influence health by shaping the organization of local resources. With regard to schemas, humans use schemas in order to more efficiently perceive, remember, and make decisions. Health outcomes may be affected indirectly through individuals' own schemas and those patterning the decisions and

behavior of people in the surrounding community. Finally, the material-schema interplay also becomes embodied in individuals' social identities and as such, their ability to cope with constrained options and social stress. Below, I argue that the differential influence on women's and men's health of material-schema structures can be usefully illustrated in the case of dowry practice in India.

Dowry in India: A Material-Schema Structure of Community Context

Dowry in India provides an illustration of the usefulness of studying community context, gender, and health through a cultural lens which focuses on the material-schema duality of structure. India is among the world's leaders in terms of the size of the gender gap in health, ranked third out of 134 countries in recent research (Hausmann, Tyson, & Zahidi, 2010). The differences in health status between males and females stem not just from individual-level factors, but—as I will argue below—also from the material-schema duality of structure woven into the fabric of local communities and the consequences this holds for the life experiences of women and men.

Briefly, the patrilineal joint-family and social status hierarchies are important backdrops to dowry practice in India (Skinner, 1997). Despite the liberalization of India's economy and availability of global media, patrilineal joint-families, arranged marriage, and dowry continue to play a major role in women and men's lives in contemporary India (Derné, 2008). Marriage in India tends to be hypergamous; brides join the families of grooms of higher status. Dowry is often an important component in this process. Dowry is given from the bride's family to the groom and his family. What motivates dowry? What schemas sustain the practice? At one time concentrated among upper caste Indians but now common in other groups, dowry provides a tool for people

"to challenge and redefine the structures and criteria of [caste] status that [dowry] supports," while at the same time securing prestige for one's self and family (Roulet, 1996, p. 93; Srinivas, 1977; S. Srinivasan, 2005). Marriage of a daughter to "a bridegroom of as high a personal and family position, within the caste span of possible spouses, as their own resources and reputation can provide" (i.e., dowry payment), is the "best" way for families to both solidify and increase social honor (Mandelbaum, 1988, pp. 24, 68; Roulet, 1996). In fact, using dowry to arrange the respectable marriage of a daughter, and munificently performing dowry-giving in the process, may be the "conclusive seal and signet of success" for households in India (Mandelbaum, 1988, p. 121).

There are several reasons that dowry-practice in a community—a community-level *material*—shapes the distribution of gender *schemas* in a community. As an institutionalized cultural practice, dowry serves as a "reservoir of meaning" and carries and instantiates gender schemas regarding girls and women. For instance, one schema maintains that women are a *burden* and dowry payment must be made in order to marry off the daughter and so that the groom's family will take on the burden of a new female in the household. Ethnographic research bears out the schema that bride-receiving families receive (at times demand) dowry payment for receiving a bride into their household in order to offset the burden they are taking on (Mandelbaum, 1988; Miller, 1981). A related schema holds that women are a kind of *commodity* or chattel to be traded by households. In fact, dowry has been described as an institution concerned with exchange between groups of male kinsmen (Skinner, 1997). In this way, dowry may represent an instrumental schema regarding women.

Community Dowry, Gender, and Health

How do communities with high frequency of dowry shape the health of women and men? First, following from the idea that materials may directly influence health "without the mediation of schemas" (Johnson-Hanks et al., 2011, p. 40), I propose that communities with high frequency of dowry may have a *direct* relationship with individuals' health. For example, if a parent in a community with high frequency of dowry wants to buy an orthopedic health resource such as high-quality leather shoes for a daughter, such shoes may be unavailable or difficult to find. Merchants might say: "Customers simply don't spend that much money on girls' shoes and so we don't carry those kinds of shoes for girls." Because there are no or few high-quality girl's shoes locally available, girls will be less likely to receive this resource regardless of whether a parent shopping for a daughter's shoes has internalized a schema that devalues females. In dowry-practicing households, if large sums of money must be spent in the future on a daughter's dowry, less is available for other present needs, which in turn will diminish the demand and availability of such resources in the community's broader market. Other health-related resources and opportunities may be constrained in a similarly direct way by community-level dowry practice.

Second, as dowry-related schemas are *transposed* onto other spheres of life, these schemas influence community members' social interactions with women in a variety of domains and social settings. That is, people carry schemas into a range of life situations as they interact with women, including women outside of their family (e.g., servants, laborers, women in the bazaar, clients, etc.). The transposition of schemas may be deliberate; it may also be taken-for-granted, unconscious, and automatic (Tinkler, Li, &

Mollborn, 2007). Women and girls living their lives in communities with high frequency of dowry with such shared schemas will experience greater daily wear and tear—worse treatment at the hands of community members, greater hassles, and less cooperation in securing basic needs and accomplishing goals. These unabating daily experiences increase the likelihood of chronic stress and associated physical health problems (Hawkley et al., 2005; Hertzman & Frank, 2005). One of the main psychosocial pathways through which social interactions and experiences lead to physical health problems is through physiological response to stressors. While this stress response is helpful in the short term, long-term repeated physiological response to stressors produces vulnerability to a variety of health problems such as hypertension, as one example, through allostatic load (McEwen, 2002). The pernicious health effects exist in part because the body is not given adequate time to recover from its stress response before another response occurs. In general, regardless of whether women are members of dowry-practicing families, women in communities with high frequency of dowry-giving live in greater subordination, lack of cooperation, and chronic stress than women elsewhere, which may have consequences for their physical health. Their health may also be conditioned by chronic stress produced by the anticipation of the above experiences of strain.

Third, women's *identity* will be influenced as women come to internalize schemas supported by dowry practice. The material-schema structures become embodied in individuals' social identities, shaping their ability to cope with constrained options and social stress. As an "individual-level counterpart to 'structure,'" social identities also have a duality; a schema will not produce an identity unless the schema is ratified with

material expression, and a material behavior will not produce an identity unless it is accompanied by a schema (Johnson-Hanks et al., 2011, p. 14). If communities with high frequency of dowry maintain local schemas of "burden" or "chattel," women in such communities may have a diminished sense of worth and self-esteem, resources useful in buffering the health effects of chronic stress. Women experiencing ongoing stress and constrained options in the context of their communities, or facing the threat of these, will have fewer resources with which to cope with these health-damaging influences. To be sure, not all women will internalize dominant schemas as thoroughly as others. Nevertheless, they must still negotiate their sense of self in reference to the dominant gender schemas in the community.

This study's first hypothesis is based on the above discussion: *Women residing in communities with higher frequency of dowry giving will have greater odds of chronic and acute illness and more days with acute illness as compared to women in other communities.*

Thus far I have focused on women's health. In the case of men's health, community dowry practice may prove beneficial.   Regardless of whether men give or take dowry themselves, men in communities with high frequency of dowry live lives in reference to the prevailing local material-schema structures. As in the example of local markets for high quality shoes for girls and boys, rather than experience constrained choices, boys (and men) experience expanded options in communities with high frequency of dowry. In other words, such communities enable men to have expanded opportunities and lead men to encounter experiences and resources which benefit them. Additionally, given that the schemas of which dowry is a carrier predispose men to feel

that they can devalue, commodify, or differentially treat women, women may respond to their treatment by men in the community in constrained and depleted ways that reinforce for men their view of women's lower status and weakness in comparison to men's higher status and strength—a kind of self-fulfilling expectation (Hedström & Swedberg, 1998, p. 18). The main point here is that men in communities with high frequency of dowry may have frequent interactions with women that reinforce for men their power, higher status, and strength in comparison to the women they interact with in public or private. Folding these points together, this overall state of affairs should lead men to have greater ease in accomplishing daily tasks and goals, lower levels of chronic stress, and greater resources, including health-buffering resource of self-esteem. This set of factors should reduce men's vulnerability to sickness and disease in communities with high frequency of dowry.

The above discussion leads to the second hypothesis: *Men residing in communities with higher frequency of dowry giving will have lower odds of chronic and acute illness and fewer days with acute illness as compared to men in other communities.*

Taken together, the above arguments concerning community context and the health of women and men lead to the third hypothesis: *The gender gap in the odds of chronic and acute illness and number of days with acute illness will widen as the community-level frequency of dowry giving increases.*

Data and Methods

To test hypotheses I use data from the India Human Development Survey, 2005 (IHDS). The 2005 IHDS was funded by grants provided by the National Institutes of Health. Coordinated by investigators from the University of Maryland and the National

Council of Applied Economic Research, New Delhi, the IHDS is a national survey of 41,554 households across 33 states and union territories in India administered in 2004 and 2005 (Desai, Vanneman, & National Council of Applied Economic Research, 2010). The study was conducted in local languages in all Indian states and union territories, excluding Lakshadweep and Andaman and Nicobar Islands[1], and across 383 districts, 1,503 villages, and 971 urban blocks (Desai, Dubey, et al., 2010). Two one-hour face-to-face interviews covered information on households and household members. Male-female pairs of interviewers interviewed a woman aged 15-49 who had ever married and a male (usually household head) in the household, with women interviewing women and men interviewing men. The IHDS has a response rate of 92% and compares favorably with the 2001 Census of India, the 2004-2005 National Sample Survey, and the 2005-2006 National Family Health Survey III. The IHDS collected morbidity information for members of surveyed households.

This study uses data on questions answered by 101,912 men and women aged 25 and above who had complete responses on all study variables. To measure the characteristics of community contexts, I focus on districts. The use of districts in research on India is useful in part because districts are important administrative units and indicate historically and culturally meaningful geographic boundaries (Malhotra et al., 1995). Because urban and rural contexts differ dramatically in India, I follow the approach of the IHDS principal investigator (Desai & Andrist, 2010; Desai & Wu, 2010) and partition urban and rural areas of districts and construct contextual variables by

---

[1] These excluded territories comprise below one percent of the population of India.

aggregating household and individual-level data. For simplicity, the resultant 488

contextual units and variables are referred to as "communities" or "community contexts."

Response Measures

This study examines three health outcomes: acute illness, number of days ill in

last month, and chronic illness. Seen in Table 2.1, for all three health outcomes, I report

the weighted mean or proportion from the full sample and that of women and men

separately. *Acute illness* is reported by 10% of the sample and is a dichotomous variable

Table 2.1

Weighted Means or Proportions for Dependent Variables by Gender

Variable	Full Sample	Women	Men
Acute illness (N = 101,912)	0.10	0.12	0.07***
Number of days with acute illness in last month (N = 101,905)	0.82	1.01	0.64***
Chronic illness (N = 101,912)	0.05	0.05	0.04***

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed)
Note: Significance tests indicate whether a value for males significantly differs from that of females.

that measures whether the respondent had a fever, cough, or diarrhea in the last month (1

= yes; 0 = no). The proportion of women (.122) reporting having had one of these minor

illnesses is significantly larger than the proportion of men (.07). Acute illness is analyzed

using hierarchical logistic regression. The number of *days ill* in the last month is a

heavily right-skewed variable and the overall variance is considerably larger than the

mean (.82); hence in regression analysis below, I fit a hierarchical negative binomial

model to the data with the number of days ill modeled as a count variable for each person

(range = 0-30). Women (1.008) report a significantly higher number of days with a

minor illness in the last month as compared with their male counterparts (.635). Finally,

chronic illness, a binary indicator, is coded as one if the respondent had ever been

diagnosed with hypertension, heart disease, or diabetes. Chronic illness is reported by

5% of respondents with a slightly higher and statistically significant proportion of women (.052) reporting chronic illness than men (.04). Hierarchical logistic regression is used to analyze chronic illness.

I elected to use the binary variable coding strategy for acute and chronic illness and present results from logistic regression models because (a) ancillary count models (not shown) with dependent variables measured as the number of acute or chronic conditions do not produce meaningfully different results than binary logistic regression results, and (c) logistic regression results are more readily interpretable for a wider audience.

Independent Measures

Means and proportions for independent variables are presented in Table 2.2. Descriptive statistics use a sampling weight constructed by IHDS investigators. All community-level variables are aggregated from lower-level responses. This study's focal independent variables are community-level frequency of dowry giving and gender (1 = female; 0 = male). While it is possible that self-reports of health may differ by gender even though actual health does not differ, some recent evidence supports the conclusion that the pattern of women's worse self-rated health in comparison to that of men is found not to depend on differential reporting of health between women and men (Case & Paxson, 2005). In part due to the Dowry Prohibition Act, reliable national information on dowry giving is famously hard to gather. In collecting dowry data, the IHDS did not directly ask respondents about their households' dowry practices because of the illegal and sensitive nature of dowry in India. Instead, the IHDS collected information about

Table 2.2

Weighted Means or Proportions and Standard Deviations for Independent Variables

Variable	Mean/Proportion	Standard Deviation
Individual level (*N* = 101,912)		
Socio-religious community		
Brahmin	0.06	15.63
Forward caste	0.17	25.08
OBC	0.36	32.32
Dalit	0.20	27.05
Adivasi	0.07	17.18
Muslim	0.11	21.02
Christian	0.01	7.50
Other religion	0.02	8.44
Female	0.50	33.60
Age	43.67	951.02
Marriage	0.84	24.44
Number of children	2.32	130.99
No. persons in household	6.02	206.22
Assets of household	11.91	412.77
Educational attainment		
None	0.44	33.36
1 - 5 years	0.16	24.54
6 - 9 years	0.18	26.03
10 - 12 years	0.15	23.74
College	0.07	17.31
Health facility	0.87	22.32
Residence		
Metro	0.10	20.52
Urban slum	0.02	8.40
Other urban	0.19	26.60
High infrastructure village	0.32	31.27
Low infrastructure village	0.37	32.43
Community level (*N* = 488)		
Waiting time for medical care	22.51	876.41
Highest female education in household	4.26	175.76
Electricity usage	11.58	467.98
Wages	0.19	5.40
Community dowry	0.22	16.64

Note: State dummies suppressed for brevity.

respondents' assessment of dowry practice in their communities (Desai, Dubey, et al.,

2010). The prevalence of subjective affirmations of dowry practice in an individual's

community is an important factor because it measures average awareness of the giving of

dowry items which is well-suited to the mechanisms proposed in this paper because schemas are sustained by *perceptible* material practices (Johnson-Hanks et al., 2011; Sewell, 2005). To gather information on perceptions of the frequency dowry giving in communities, interviewers asked ever-married women: "Generally in your community for a family like yours, is [item] given as a gift at the time of the daughter's marriage?" At the individual level, dowry practice comes from a dichotomous variable coded as one if the respondent answered affirmatively to any of the following large durable goods given as dowry, goods commonly associated with dowry: television, car, scooter, or refrigerator. This variable is aggregated to the community level, and is used to measure community-level frequency of dowry giving (standard deviation = 16.6; range = 0 - 1). For simplicity, this measure of the proportion of families noting the prevalence of perceivable dowry-giving in their communities is referred to as "community dowry" or "frequency of dowry in communities." "High dowry communities" refers to communities with high values of this measure. Community dowry is not a marker of low community socioeconomic status or lack of community development. Community-level dowry is positively correlated with community-level socioeconomic and development measures (e.g., mean household assets [b=.418 ;p=<.0001], mean highest degree earned in household [b=.293 ;p=<.0001]; mean hours of electricity per day [b=.081 ;p<.10]).

I also include a number of other control variables at the community level. Waiting time for medical care is aggregated from a variable measuring the number of minutes spent waiting during the respondent's last visit to a healer, clinic, or hospital for a minor illness such as a fever cough/cold or diarrhea. The measure of highest female education in the household is aggregated from household data. Electricity usage is

aggregated from the number of hours of electricity per day reported in household data. A question asked women whether or not they engage in wage employment, with which I aggregate to produce the community-level women's wage labor measure.

In addition to the respondents' gender, a variety of covariates are controlled at the individual level. Socio-religious community membership is coded as a series of eight binary variables: Brahmin, forward caste, other backward caste, scheduled caste, Adivasi, Muslim, Other (Sikh, Jain, and Buddhist), and Christian. Age is an important correlate of morbidity (Gorman & Read, 2006). Marital status is controlled (1 = married), as is number of children. The size of the household is measured as the number of persons living in the household. A household asset index of 30 items is included as a measure of socioeconomic status (see Desai, Dubey, et al., 2010). An important control variable is whether the respondent is in an endogamous marriage (i.e., married to a blood relative or person from the same village). This is because endogamy and matrilocality are associated with lower levels of isolation and greater power for women (Collins, 1975, p. 240). Educational attainment is measured in years as a series of dummy variables: none, 1 to 5, 6 to 9, 10 to 12, and college or above. To tap the availability of health care, I include a dichotomous indicator of whether one of the following exists in the respondent's village (urban residents are coded as one): primary health center, health subcenter, private hospital, community health center, government health center, government maternity center, government disease facility, private midwife, other government medical facility, private trained doctor, or private untrained doctor. Eighty-five percent reported having at least one of these health facilities. Urban/rural residence is controlled with a series of dummy variables: major metro area (Delhi, Mumbai,

34

Kolkata, Chennai, Bangalore, or Hyderabad), urban slum, other urban area, rural

residents living in villages with low levels of infrastructural development, and rural areas

of high infrastructural development. High infrastructure villages are defined as those

with at least one of the following facilities: electricity, paved road, grocery store, bazaar,

bank, post office, police station, bus stop, or mobile access to telephone and landline

(Desai & Wu, 2010). The nature of the data allows not only the introduction of

individual-level and community-level variables, but also a series of state binary variable

controls (not displayed for the sake of brevity)—an important introduction given regional

differences in health (Desai, Dubey, et al., 2010).

Analysis

Since gender is not limited individual-level attributes, but is also comprised of

broader social arrangements and cultural contexts, this study focuses on community-level

contextual effects. To measure contextual effects, I use multilevel modeling. Unlike

single-level regression, hierarchical linear modeling appropriately produces estimates of

standard errors of contextual measures, uses the correct degrees of freedom for contextual

units, and corrects for correlated errors among persons in the same contextual units.

Specifically, to estimate variation in health outcomes between and within communities,

also adjusting for nonindependence stemming from clustering within communities

(Raudenbush & Bryk, 2002). After taking into account individual-level effects, between-

community analyses regress the community average health scores on the characteristics

of communities, such as community dowry practice. In this way, not only are person-

level effects on health estimated, but also the effects on health differences in the

aggregation of information between communities. In other words, contextual effects are

35

estimated simultaneously with individual-level effects, which is necessary given this study's multilevel conceptualization of culture and gender. The results presented are based on unweighted models since the stratified nature of the sample is taken into account in multilevel modeling. The PROC GLIMMIX procedure in SAS 9.2 is used to estimate models.

<p style="text-align:center">Results</p>

Analysis of acute illness, a dichotomous indicator, is conducted using multilevel logistic regression. Calculating an approximate intra-class correlation coefficient (ICC) for a null logistic multilevel model determines that the correlation in acute illness between two randomly selected individuals in the same randomly chosen community is .113. In other words, 11.3% of the total variance in acute illness can be attributed to the community in which individuals reside. The first model in Table 2.3 presents the results of acute illness regressed on the interaction of gender by community-level dowry prevalence, in addition to other individual-level and community-level independent control variables. In this model, the main effect of being female is significant and positive (in the first panel), the main effect of dowry prevalence is significant and positive (in the middle panel), and the cross-level interaction of female by dowry prevalence is significant and positive (bottom panel). The results for acute illness are consistent with hypotheses 1 and 3. Figure 2.1 clarifies this cross-level interaction, indicating that the gender gap in acute illness exists at all levels of community dowry. However, as community dowry incre particularly wide at high levels of community dowry. Predicted probabilities provide a ases, the gender gap widens and becomes more granular picture. The gender gap in acute illness increases by 107.9% moving from

Table 2.3
Unstandardized Coefficients from Multilevel Models

	Acute Illness	Days Ill	Chronic Illness
Intercept	-3.178 ***	-0.881 ***	-4.925 ***
Individual level			
Socio-religious community (forward caste = reference)			
Brahmin	0.077	0.125	-0.039
Other Backwards Caste	0.038	0.030	-0.121 *
Dalit	0.035 *	0.079	-0.148 *
Adivasi	-0.136	-0.149	-0.552 ***
Muslim	0.051	0.007	-0.006
Other religion	0.075	0.048	-0.074
Christian	0.269 *	0.144	-0.012
Female	0.636 ***	0.563 ***	0.392 ***
Age	0.011 ***	0.015 ***	0.058 ***
Marriage	0.080 *	0.044	0.339 ***
Number of children	0.009	0.011	0.028 **
No. persons in household	-0.122 ***	-0.073 ***	-0.067 ***
Assets of household	-0.027 ***	-0.037 ***	0.074 ***
Educational attainment (none = reference)			
1 - 5 years	0.016	0.008	0.287 ***
6 - 9 years	-0.037	-0.153 **	0.233 ***
10 - 12 years	-0.161 ***	-0.262 ***	0.141 *
College	-0.243 ***	-0.314 **	0.010
Health facility	-0.106 **	-0.087	0.043
Residence (metro = reference)			
Urban slum	0.301	0.430	0.571 *
Other urban	0.418 **	0.368 *	0.464 **
High infrastructure village	0.596 ***	0.669 ***	0.653 **
Low infrastructure village	0.530 ***	0.595 **	0.449 *
Community level			
Waiting time for medical care	0.012 ***	0.018 ***	0.013 ***
Highest female education in household	-0.011	-0.017	0.060 **
Electricity hours	-0.021 **	-0.015	0.022 *
Wages	0.420	0.496	1.649 *
Community dowry	0.662 **	0.774 ***	0.013
Cross-level interaction (Individual X Community)			
Female X Community dowry	0.349 ***	0.382 **	0.370 **
N (Individual-level; Community-level)	(101,912; 488)	(101,905; 488)	(101,912; 488)

* *p* < .05; ** *p* < .01; *** *p* < .001 (two-tailed)

Note: All models control for state dummies. Results suppressed for brevity.

a low dowry community (one standard deviation below the mean) to a high dowry

community (one standard deviation above the mean). Going from minimum to maximum

values of community dowry, the gender gap grows by 242.4%. It is also worth noting,

inconsistent with hypothesis 2 that the probability of acute illness for men also increases

Community Dowry (Mean-Centered)
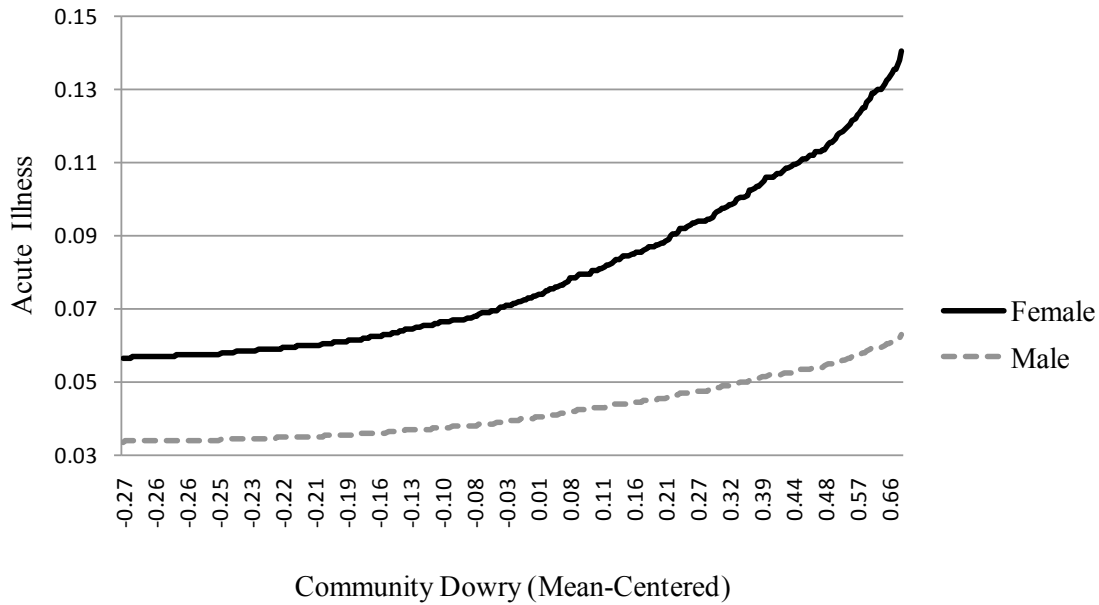
Figure 2.1. Predicted Probabilities: Acute Illness

as community dowry frequency increases, although this increase is small in comparison

to the increase for women. I will return to these counterintuitive results in the discussion

section.

The second health outcome is the number of days ill in the last month. A Poisson

model is not used since it assumes the mean and the variance of the dependent variable to

be about the same (for days ill, the overall variance is 52,337.57 and the mean is .82). A

multilevel negative binomial model is fit to the data. According to the ICC of a null

model, 17.3% of the variance of days ill can be attributed to community-level

characteristics. The second model of Table 2.2 shows that net of individual and

community-level controls, the main effects of female and dowry prevalence and the

female by dowry prevalence cross-level interaction effect are all positive and significant.

The model indicates that as the prevalence of dowry increases, being female is associated

with an increased incident rate of days ill in the last month. Also, contrary to hypothesis

2, as the community frequency of dowry increases, being male is associated with an

increased incident rate of days ill in the last month. This is a smaller increased rate than

that of women. Again, this unexpected result will be revisited in the discussion section.

There is a gender gap in the number of days ill at all levels of dowry prevalence, but the

gender gap widens in high dowry communities. Judging from predicted values, when

comparing a low dowry community (one SD below the mean) to a high dowry

community (one SD above the mean), the days ill gender gap is 70.6% greater. Going

from a community with the minimum prevalence of dowry to the maximum prevalence

of dowry, the gender gap in days ill increases by 116.5%. In sum, these results lend

support to hypotheses 1 and 3, but not hypothesis 2. These relationships are shown in

Figure 2.2.
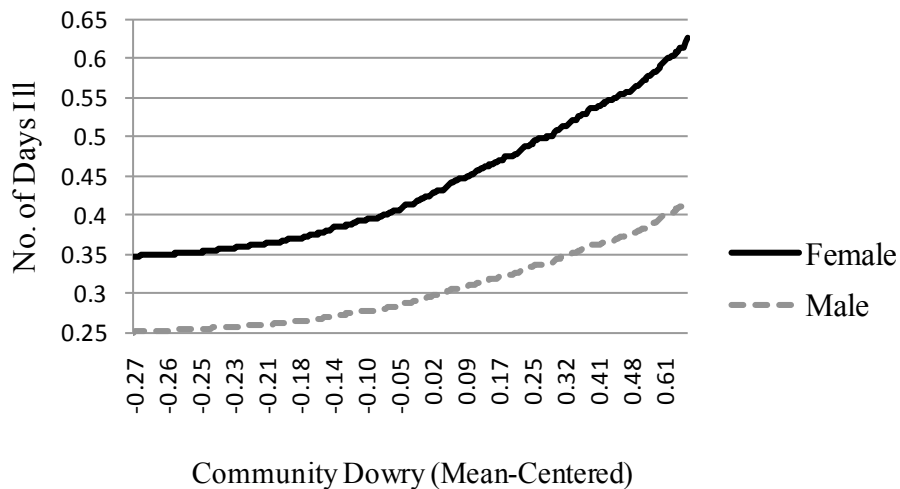
Figure 2.2. Predicted Values: Days Ill in Last Month

The final health outcome is chronic illness. Calculating from the results of an

empty multilevel model, the approximate ICC for an empty binary logistic multilevel

model suggests that the correlation in chronic illness between two randomly selected

individuals in the same randomly selected community is .258. In other words, 25.8% of

the total variance in chronic illness can be attributed to the community in which

individuals reside. The third model in Table 2.2 displays the results of a multilevel

binary logistic regression of chronic illness on the interaction effect of interest and

control variables at individual and community levels. The main effect for female is

positive and significant. There is, however, no significant main effect for dowry

prevalence. The cross-level interaction between female and dowry prevalence is positive

and significant, indicating that as community dowry prevalence increases, being female is

associated with increased odds of chronic illness. Figure 2.3 shows that even in

communities with the lowest prevalence of dowry, a chronic illness gap between men and

women remains. As the prevalence of dowry rises, women become increasingly likely to
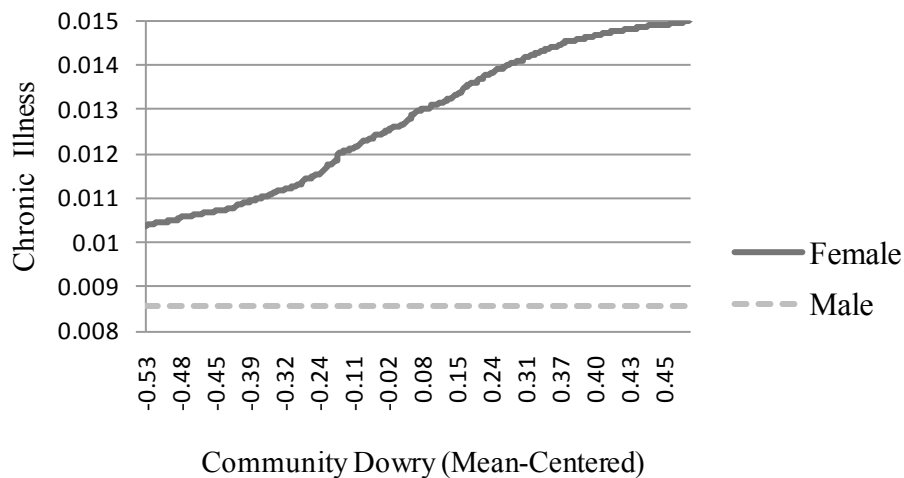
Figure 2.3. Predicted Probabilities: Chronic Illness

report suffering from chronic illness. Men's chronic illness does not appear to be

conditioned by dowry prevalence. Looking at Figure 2.3 in tandem with predicted

probabilities, the chronic illness gender gap increases by 92.7% when comparing a low

dowry community to high dowry community. Going from a community with the smallest

prevalence of dowry to a community with the largest prevalence of dowry results in the

40

size of the chronic illness gender gap expanding by 176.5%—a considerable widening. While the percentage change is large, the change in absolute terms is small in the case of chronic illness and number of days ill. Hypotheses 1 and 3 are supported in the chronic illness model, but hypothesis 2 is not supported.

Summary and Discussion

Despite growing research on community contexts and health, relatively little is understood regarding how community context (especially cultural elements in communities) works to shape differences in the physical health of women and men. Less still has been done to consider community-level factors that are differentially important for women's and men's health in developing countries. This study advances knowledge of the relationship between community context, gender, and health by using national multilevel data from a major developing country to examine how a salient cultural practice—dowry—relates to the physical health of women and men. Taking a theoretical framework regarding how the material-schema structure of communities pattern the constraints and capabilities that shape individuals' life experiences, this study applies this framework to understanding relationships between dowry, gender, and health. Results show that not only do women report more health problems in communities with high frequency of dowry, but surprisingly men also fare worse in terms of acute illness (but not chronic illness) in communities with high frequency of dowry compared to other communities. There are also consistently wider morbidity gaps between men and women in communities with high frequency of dowry.

This study's first hypothesis, that *women residing in communities with high frequency of dowry will exhibit increased odds of illness and greater number of days ill*

41

as compared to women in other communities, is supported using three indicators of morbidity (acute illness, number of days with acute illness, and chronic illness). The three models reveal a consistent story with relatively similar patterns among health outcomes. Comparing results for chronic illness and acute illness, the pattern of findings suggests that the effects of community dowry do not seem to depend on the severity of women's morbidity, at least among the measures of morbidity examined in this study. Community dowry is associated with elevated levels of acute illness, number of days ill, as well as chronic illness for women. These results consistently support the idea that communities with high frequency of dowry work themselves into the lives of women in ways that increase susceptibility to a variety of physical health problems.

Before moving on, additional implications of the results for men are worth bearing in mind. Although acute illness and number of days ill are higher for men in communities with high frequency of dowry as compared to other communities, the increase is small compared to that of women compared across these community contexts. In other words, the effects for men are relatively modest compared to those found among women. Additionally, it is acute illness and number of days with acute illness that are significantly tied to community dowry, not chronic illness. These results indicate that, although community dowry may work its way into the lives of men, the effects of being in such contexts for men are smaller and do not become entrenched in men's lives such that they become vulnerable to chronic diseases. Fewer health-damaging mechanisms may be at work for men. To take one mechanism, it is unlikely that men will feel devalued since dowry does not carry a schema of lower status for men; sen will retain higher levels of self-esteem as a coping resource in the absence of a schema of low status

for men. The pattern for women differs in this regard and is consistent with the idea that community dowry shapes women's experiences in ways that increase women's vulnerability to chronic illness. The pattern of findings in this study underscores the need for multilevel longitudinal research that can help untangle the degree to which specific cultural elements in community contexts may have a stronger or more enduring effect on women than men over time. Like many studies relying on available cross-sectional multilevel data, the inability to measure change over time is a limitation in the present study.

A second hypothesis in this study is motivated by how community dowry benefits the health of men. In short, if community dowry frequency expands men's access to opportunities and reinforces men's higher status, it stands to reason that men's health is protected in communities with high frequency of dowry. No support is found for the study's second hypothesis motivated by these arguments. The odds of acute illness and the number of days with acute illness increase for men in communities with high frequency of dowry as compared to other communities. However, the increases are smaller compared to those of women. The number of days ill with acute illness increases similarly for men compared to women, but the increase is smaller for men. In the case of chronic illness, community dowry is positively associated with morbidity for men, but the association is not statistically significant. Across these health outcomes, there is no evidence that community dowry has protective effects for men. Instead, we see the unexpected pattern that community dowry is positively related to health problems for men and in the case of acute illness and number of days with acute illness, the relationship is statistically significant.

The findings regarding dowry and men's illness are contrary to expectations and suggest a need to reconsider how the material-schema structure of communities related to dowry are connected to men's physical health. Men's opportunities and status may be bolstered by dowry. However, women's deprivation and devaluation brings with it risks that women are driven to challenge this state of affairs (Raheja & Gold, 1994). As men exert dominance in communities with high frequency of dowry, men may also experience frequent stressful interactions with women, or not benefit from interactions with women, including female family members. Regardless of whether men give or take dowry themselves, men in communities with high frequency of dowry live lives in reference to the dominant gender schemas of their community. Given that the schemas of which dowry is a carrier predispose men to devalue, commodify, differentially treat, or relate in other unbeneficial ways with women, women may respond to their treatment by men in the community in ways that cause heightened difficulty, stress, and reduced social support for men. Men may also have more stressful relations with other men due to dowry expenses, dowry negotiations, and inter-family strain long after dowry is given (Mandelbaum, 1988). Effects on men may also be indirect; men may encounter difficulties in marrying a woman they want to marry because her parents cannot pay enough dowry. Men may also end up marrying a woman who is a poor match because her parents arranged the marriage to secure a larger dowry rather than consider the bride and groom's preferences. The dowry system can have very pernicious effects on men and cause a great deal of stress for them, although the effects may not be as severe as those for women. This overall state of affairs should lead to increased vulnerability to

44

sickness for men in communities with high frequency of dowry. These explanations are speculative, and the findings of this study deserve further research.

This study's third hypothesis, that gender gaps in morbidity should be larger in communities with high frequency of dowry, is supported using three indicators of morbidity (acute illness, number of days with acute illness, and chronic illness). Comparing the communities with the lowest levels of dowry practice to communities with the highest levels of dowry practice reveals that increases in the size of the morbidity gap between men and women from one type of community to the other are sizeable. While the gender gap increase is considerable in the case of number of days ill, the widening of the gender gap is larger in the case of chronic illness, and the most pronounced for acute illness. This pattern suggests that communities with high frequency of dowry are not simply associated with long periods of minor illness, but are associated with greater odds of being sick at all, including suffering from chronic conditions. Further, while women in communities with high frequency of dowry are more likely to report suffering from chronic illness, the prevalence of dowry does not appear to matter for the chronic illness of their male counterparts. These results support the idea that communities with higher levels of dowry practice cultivate contexts of marked health disparity between men and women.

This study contributes to research on community context, gender, and health by illustrating the moderating role of community context, while holding constant important household and individual-level factors. Relying on a "duality of structure" framework (Giddens, 1984; Johnson-Hanks et al., 2011; Sewell, 1992), this study argues that material-schema structures of communities come to shape the health of women and men

in direct and indirect ways. Criminological and social demographic research has fruitfully illustrated the importance of schema-material structures in which actors are embedded (Harding, 2007; Harris & Cheng, 2005; Kirk & Papachristos, 2011; Kirk, 2008). Research on health has examined links between material-schema elements of community structure (e.g., community disorder) and individuals' health (Ross & Mirowsky, 2001; Wallace, forthcoming). However, to date, researchers have not applied a material-schema framework to research on community contexts and gender disparities in health. This study makes a contribution by illustrating that women's health may be affected more strongly than men's because of cultural practices in the community such as dowry and its concomitant schemas. While material-schema structures may organize life in a variety of ways, I argue that dowry in India is a case where a cultural practice constrains opportunities for women and carries schemas of gender and prestige that come to affect women's health in more deleterious ways as compared to men's health. Future applications of a material-schema framework to population health could take a variety of possible directions. Regarding the specific topic of this paper, several processes linking dowry to health have been argued. Researchers could measure and test whether specific links account for the interplay between community dowry and health. For example, what schema or schemas in a community are most closely fused with dowry? Of these schemas, which do the greatest mediation of the effect of community dowry on health? Additionally, measures of stress and stressors could help illuminate the extent to which daily life and specific events mediate dowry-disease links.

More generally, this study intersects with research on the important role of cultural context in differentially shaping the lives of women and men (Moore &

Vanneman, 2003). The findings of this study build on this work by focusing attention on the material-schema duality of structure and extend it to the area of gender disparities in health. Simultaneously examining the interplay between material-schema elements of community context, gender, and health may present potentially fruitful research directions in both developing and developed societies. Most simply, the present study indicates that various cultural elements of community context might condition associations between gender and health. While not necessarily using a material-schema framework, US literature on race and health makes similar arguments with regard to the multidimensionality of race, discrimination, and health (Williams & Mohammed, 2009). Similar to recent advances in this literature, one potentially fruitful approach includes measuring symbolically-charged material elements in local contexts that serve as reservoirs of discriminatory schemas (Whitbeck, Adams, Hoyt, & Chen, 2004). Research on sexist practices or material objects in the workplace or other contexts and their differential links to women's and men's health would also constitute possible applications for future research in a variety of contexts.

In a more speculative vein, material practices may particularly affect gender differences in health when they are bound up with the pursuit of gendered symbols of prestige. In India, dowry is an important symbol of prestige. Elsewhere, other symbols may be important. Clearly, gendered cultural ideals of physical appearance may drive health-damaging behaviors (Bird & Rieker, 2008, p. 5). The results of the present study suggest that additional insights may be gained by also exploring the degree to which cultural ideals and displays of gender are associated with health in ways that go beyond individuals' own health behaviors. For instance, the masculinity and health literature

argues that contexts where men pursue gendered symbolic markers of prestige may carry serious implications for the health of other men. However, men's prestigious performances of masculinity may also create significant health costs for the health of women (Payne, 2006, p. 4). Likewise, men may be affected by contexts where women pursue gendered prestige goals. The degree to which heightened pursuit of gender-related prestige is associated with individuals' constrained opportunities, social stress, and self-conceptions deserves further investigation.

This study joins other research in drawing attention to the spread of dowry practice across India as a policy concern. Public attitudes concerning dowry are somewhat mixed in the general population, but more negative among women as compared to men (P. Srinivasan & Lee, 2004). Dowry has received government sanction since the 1960s as well as considerable anti-dowry social movement attention (Purkayastha, Subramaniam, Desai, & Bose, 2003). "Costly dowries" have long been implicated as a contributor to imbalanced sex ratios in India (Attané & Guilmoto, 2007; Dyson, 2012, p. 446) and domestic violence (Bloch & Rao, 2002; Rao, 1997). This study adds to this literature by providing new evidence concerning the deleterious role dowry may play in the disease burden among adults in Indian society. I argue that community dowry practice works its way into the lives of people, affecting their physical health. Interestingly, although effects appear stronger for women, men also seem to suffer in communities with high frequency of dowry, at least in terms of acute illness. It is also noteworthy that in no instances is community dowry associated with better health for men. This lack of evidence for a health benefit for men suggests that although male members of families may engage in the giving and receiving of dowry in order to benefit

48

(e.g., by garnering honor and prestige), in general the prevalence of these dowry exchanges in communities does not work for the good of men's health. While it is possible that there may be some male winners, on average, men appear to lose. This finding has implications for groups wishing to enlist greater numbers of men in efforts at popular and policy levels toward the curtailment of dowry practice in India.

In sum, this study's results highlight the importance examining how the material-schema structures of communities may differentially shape the life experiences of subordinate and dominant groups in communities. By identifying material-schema elements salient to different groups within communities, researchers may develop a more contextualized and holistic understanding of social determinants of health disparities across various positions in social space. Health disparities between women and men reflect one of many patterns of inequality specifically related to gender. The differential effects of community structure on women and men is an important line of inquiry because, like race, gender is not simply an individual attribute but is also made up of social arrangements in human communities. Taking the duality of community structure into account helps us better understand relationships between social context and patterns of human inequity.

CHAPTER THREE

Men's Honor and Women's Health: Cultural Context, Dimensions of Gender, and
Women's Self-Rated Health in India

The role of community contexts in population health has received considerable
attention. Within this research on community and health, a small but growing literature
looks at how community contexts may uniquely shape women's health, often finding
community contexts to play a greater role in women's health than that of men (Read &
Gorman, 2010). Most studies focus on community social capital and socioeconomic
deprivation, yet little attention has been paid to how community culture (i.e., norms,
symbols, beliefs) affects the health of women. This lack of attention to culture is
surprising given the importance of culture for understanding variations in gender roles,
norms, and beliefs, especially in the context of less-developed countries. Female health
disadvantages in developing countries have been repeatedly documented (Caldwell,
1986; Santow, 1995).[1] Studies on community effects in developing countries have
focused on reproductive health, child health, and mortality, with relatively little work
done on general health in adult populations (Bloom, Wypij, & Das Gupta, 2001).
Regarding culture, significant research has examined how the patrilineal family systems
and associated cultural practices traditional norms and shapes differential young female
mortality, especially in India (Dyson & Moore, 1983) and China (Lavely, Li, & Li,

---

[1] For simplicity, categories such as "developing countries," "developing world,"
and "industrialized countries" are used. This usage is not meant to ignore the fact that
countries and regions of the world exist on a continuum and a variety of "developing
countries" are rapidly developing and are similar to many industrialized countries across
a variety of characteristics.

2001). Demographic research on culture and gender in India has drawn attention to the multidimensionality of gender (Desai & Andrist, 2010; Mason, 1986). The present study seeks to unravel the various cultural dimensions of community contexts pertaining to gender, examining their importance for adult women's health. Particular attention is given to the importance of marriage and gender segregation dimensions gender for women's health.

Prompted by these issues, this study uses a previously developed multilevel theoretical model of culture to develop and test hypotheses concerning how different dimensions of gender in communities are related to women's self-rated health. National data on 23,474 ever-married women aged 25-49 are analyzed from the India Human Development Survey-2005. This study builds on prior community context, gender, and research on self-rated health that typically (a) focuses on wealthy countries, rather than emerging developing countries such as India, (b) in India, focuses on children or older adults or reproductive health rather than general health of young and midlife women, (c) does not use large national samples, and (d) overlooks the role of culture and multiple dimensions of gender in women's health.

Background

Gender and Health in India

Women in India tend to report a higher prevalence of non-fatal diseases and conditions compared to men. India is among the world's leaders in terms of the size of the gender gap in health, ranked third out of 134 countries in recent research (Hausmann et al., 2010). The differences in health status between males and females stem not simply from individual-level factors, but—as I will argue below—also from the cultural fabric of

51

local communities and the consequences these cultural contexts hold for the life experiences of women and men. India provides a useful case for examining cultural context, gender, and health because of the geographic variation in gender stratification and gender-related cultural norms across India, including areas of relatively pronounced male dominance (Chakraborty & Kim, 2010; Dyson & Moore, 1983).

Cultural contexts in India shape the gender-based distribution of resources and psychosocial pressures and stress, all of which contribute to women's overall health status. The ways in which these cultural context organize women's lives have less to do with issues of work-life balance that feature prominently in many industrialized settings such as the U.S.; cultural context effects in India have more to do with the various ways that men, family relations, and broader communities shape women's experiences.

Before moving on, it is worth providing background for the various cultural practices in view. Briefly, in many communities across India, as in other developing world contexts, social honor and prestige are tethered to gender (Dube, 2001; Srinivas, 1977). As one example, dowry practice provides a tool with which "to challenge and redefine the structures and criteria of status that [dowry] supports," while at the same time securing prestige for one's self and family (Roulet, 1996, p. 93; Srinivas, 1977; S. Srinivasan, 2005). Marriage of a daughter to "a bridegroom of as high a personal and family position, within the caste span of possible spouses, as their own resources and reputation can provide" (i.e., dowry payment), is the "best" way for families to both solidify and increase social honor (Mandelbaum, 1988, pp. 24, 68; Roulet, 1996). In short, a variety of gender-related cultural practices in India are at the same time tools of social status attainment. In other words, women are the "custodians" of the status of

households and their members (Srinivas, 1977, p. 229), especially men; as Mandelbaum (1988, p. 19) argues, "honor is the key good for these men, and their honor is balanced on the heads of the women."

Because gender is a multidimensional phenomenon (Collins, Chafetz, Blumberg, Coltrane, & Turner, 1993), the arguments below move along two dimensions of gender—gender segregation and marriage—as they are germane to the Indian context. Additionally, I focus on the role of social structure in shaping daily social interactions and experiences in women's lives.

Gender Segregation

One of the most visible ways that gender relations are ordered in communities and in households in many parts of India is gender segregation. Gender segregation tends to reinforce a general climate of female subordination. Patterns of gender segregation and subordination in the local community support and are supported by gender segregation and subordination in the home through symbolical enactments. To illustrate the starkness of gender segregation in some contexts, anthropologist Ann Grodzins Gold recounts in her field work in a North Indian village, "which was indeed a sexually segregated society," her astonishment at local women's description of men as if men were "an alien species" (Raheja & Gold, 1994, pp. xxix, xxvii). This deeply-embedded gender segregation takes a variety of public and private forms across India, including the restriction of public movement for women, women's seclusion, and the practice of women eating after men at mealtimes.

Immobility and Seclusion

Much of India's population lives in communities where streets, bazaars, and other public spaces are understood as the domain of men's free movement and recreation, not women's (Derné, 1995, p. 26). Women may not be allowed to go out, not go out alone, and if young perhaps not be allowed out in public spaces at all. If women do go out, it should be for the sake of the household, not for personal needs such as visiting friends or other forms of recreation (Derné, 1995). Part of what underlies such a gendered view of public and private space is a construal of women as *not needing* regular recreation, pleasure, or freedom. Men are construed as those meant to enjoy recreation and relaxation in public spaces (Derné, 1995). Since women are thought to serve the household, the collective, there is less reason for women to go out into public places, places of recreation. Another argument reasons that in terms of women's resources, immobility is associated with inhibiting women's opportunities to benefit from a variety of social institutions, which may include health institutions, organizations, and access to knowledge about health (Youssef, 1982). Relatedly, restricting women's mobility as well as the seclusion of women are ways women's demeanor is monitored and controlled. As such, the voice of women is also less likely to be heard in public institutions when women are restricted from free public movement, interaction, and communication (Ahmed-Ghosh, 2004). Both the practices of physical immobility and seclusion[2] are

---

[2] Some argue that practices such as seclusion are not necessarily linked to subordination. This is argued because it is possible that women may exercise considerable power, especially within the family, while at the same time practicing acts of seclusion. Furthermore, female seclusion may provide considerable prestige and benefits in communities where seclusion translates into considerable symbolic value. But it is unclear whether such prestige and benefit goes to the woman practicing seclusion or whether the benefit goes to the family.

motivated in part by households' desire to acquire or maintain prestige (Mandelbaum, 1988). A family's reputation can be hurt through the perception of a female household member's inappropriate contact with a male, even if the interaction is simply platonic (Caldwell, Reddy, & Caldwell, 1983).

Male-First Eating Order

Women and girls habitually eat last in sixty six percent of households in India.[3] Patterns of segregation and subordination in the local community support and are supported by symbolical enactments, of which male-first eating order is an especially important form, in part due to its regularity and early onset in life. Between the ages of five to ten, gendered "gastronomic deference" is enforced and girls are trained to eat as future "little wives" and boys to eat as future husbands (Appadurai, 1981, p. 498). In many cases, a wife eats her husband's leftover food, and other women in the household eat leftovers separately after male household members have eaten (Chakravarty, 1972, p. 37; Khare, 1976a, p. 8; Lamb, 2000, pp. 33–34). Even in well-off peasant families, women are left to consume the food that adult male family members leave after men have had their fill (Chen, Huq, & D'Souza, 1981).

Marriage

Marriage and its and connection to the social status of extended families is an important backdrop to women's lives in India (Skinner, 1997). Despite the liberalization of India's economy and availability of global media, patrilineal joint-families, arranged marriage, and dowry continue to play a major role in women and men's lives in contemporary India (Derné, 2008). According to the 2001 Indian census, over 95% of

---

[3]Author's calculation based on IHDS 2005.

women are married by age 25 and about 95% of marriages are arranged (Desai, Dubey, et al., 2010). Individuals' marriage decisions are often tethered to family and caste networks, whose social status is elevated or lowered by the characteristics of the person married and by the prestigious manner in which various aspects of the marriage and its ceremonies are conducted (Bloch, Rao, & Desai, 2004). Two important aspects in the Indian context are dowry and wedding expenditures.

Dowry

Dowry in India has been described as an institution concerned with exchange of goods and women between groups of male kinsmen (Skinner, 1997). Providing dowry in the course of arranging the respectable marriage of a daughter may be the "conclusive seal and signet of success" for households in many parts of India (Mandelbaum, 1988, p. 121). Marriage in India tends to be hypergamous; brides join the families of grooms of higher status. Dowry is often an important component in this process. Dowry is given from the bridal household to groom's household. Ethnographers report that bride-receiving families often receive (at times demand) dowry payment for receiving a bride into their household in order to offset the perceived burden of adding a new household member (Mandelbaum, 1988; Miller, 1981). Although illegal since 1965, dowry has spread to new social groups in India (Caldwell et al., 1983) and dowry payments have seen significant inflation over time (Anderson, 2003). The value of a dowry averages 68% of total assets before marriage and can run as high as six times a bridal family's annual income (Deolalikar & Rao, 1998).

Wedding Expenditures

Like dowry, wedding expenses in India are often large and are thought to have increased over time (Bloch et al. 2004). Social status is conferred upon both families through conspicuous displays at weddings. Through such visible expenditures, families display high status tastes and assert their membership in higher-status groups and their distinction from lower-status groups (Bloch et al., 2004). The bride-giving family may also simply want to indirectly purchase the future welfare of their daughter in the groom's household through such expenditures, but it is possible that climbing the status hierarchy is a strong motivating factor (Roulet, 1996).

Mechanisms Linking Cultural Context to Women's Health

Accounts of women's lives often do not adequately take into account the extent to which gender in not simply an individual characteristic but also a contextual characteristic that is bound up in gender-related cultural beliefs and practices widely shared in a community context (Hirschman, 1985). The cultural contexts in which individuals live their lives can directly as well as indirectly shape health through mental and emotional pathways, that vary for men and women (Macintyre & Ellaway, 2003; Read & Gorman, 2010). Women, especially in less-developed countries, are often situated within broad social nexuses and cultural contexts that can shape a variety of life experiences, including illness (Dodoo & Frost, 2008).

How might cultural contexts shape the unfolding of women's health in India? Following the lead of others (Giddens, 1984; Johnson-Hanks et al., 2011; Sewell, 1992), I contend that social structure is made up of a material-schema interplay. This interplay makes up what we think of as "culture" and the repeated patterns we refer to as

57

"structure." What are *schemas*? To be clear, the schematic side of social structure refers to mental frameworks such as beliefs, heuristics, or worldviews that individuals or groups of people use to construe reality and organize behavior. Schemas are always present in concrete objects or actions. For example, a schema that goes along with dowry practice is one that construes women as burdensome, since giving a daughter and her dowry is financially burdensome. The *material* side of the material-schema duality of social structure refers to any *perceivable* things such as physical objects, outward practices, or spoken words. The perceivable materials of dowry include such things as dowry-related gossip, songs sung about dowry, verbal and non-verbal communication at the time of dowry negotiations, and the physical acts of giving and receiving dowry-related objects such as jewelry and electronics. These are all examples of "materials," but is important to keep in mind that materials always instantiate one or more schemas. In this case receiving a dowry, a dowry-related material may carry the schema that the burden of an additional female household member is being offset. Taken together, such material-schema interplays work to pattern the world's social structures (Giddens, 1984; Johnson-Hanks et al., 2011; Sewell, 2005).

Given this understanding, I argue that the material-schema duality of social structures can constrain and enable individuals' health in several ways. Material-schema structures shape the conditions of social interactions, stressors, and opportunities available to individuals as they experience the world around them. Shared local understandings, behaviors, and social interactions surrounding gender are sustained by the ongoing presence of material-schema structures. In these ways, health is best understood as a function not just of the material-schema characteristics of individuals and

their interactions, but of the material-schema elements of broader community contexts in which health and health disparity unfolds.

How might the "material" side of material-schema cultural contexts particularly affect health? Following from the idea that materials may directly influence health "without the mediation of schemas" (Johnson-Hanks et al., 2011, p. 40), communities with high frequency of dowry should shape individuals' health *directly*. Dowry has a direct effect on the comparative costs of sons and daughters and hence on differential resources and opportunities available to men and women. As a brief illustration, if a parent in a community with high frequency of dowry wants to buy high-quality leather shoes for a daughter, such shoes may be unavailable or difficult to find. Merchants might explain: "We only have that kind of shoe for boys. Customers simply don't spend that much money on girls' shoes and so we don't carry those kinds of shoes for girls." Because there are no or few high-quality girls' shoes locally available, girls will be less likely to receive this resource regardless of whether a parent shopping for a daughter's shoes has internalized a schema that devalues females. In dowry-practicing households, if large sums of money must be spent in the future on a daughter's dowry, less is available for other present needs, which in turn will diminish the demand and availability of such resources in the market for shoes in the broader community. Here an example is given of community dowry practice linked to constrained access to an orthopedic health resource. Other health-related resources and opportunities may be constrained in a similarly direct way by community-level culture, affecting the resources women have to maintain health.

Community schemas may also shape health. For instance, high levels of women's immobility in a community reinforces local schemas holding that women's place is not in public spaces, and so when women go into male-dominated public spaces, they are subject to scrutiny, sustained gazes, sexual harassment, and a variety of stressors (Derné, 2000, pp. 155–56, 2008, p. 177). This manner of sustained daily wear and tear is known to have consequences for health (Hawkley et al., 2005). For example, male-first eating serves as a "reservoir of meaning," carrying and instantiating schemas in a community, including schemas of gender difference and male superiority. As schemas tied to male-first eating are *transposed* onto other spheres of life, these schemas influence community members' social interactions with women in a variety of domains and social settings. That is, people carry schemas into a range of life situations as they interact with women, including women outside of their family (e.g., servants, laborers, women in the bazaar, clients, etc.). The transposition of schemas may be deliberate; it may also be taken-for-granted, unconscious, and automatic (Tinkler et al., 2007). Women and girls living their lives in communities with such shared schemas will experience greater daily wear and tear—worse treatment at the hands of community members, greater hassles, and less cooperation in securing basic needs and accomplishing goals. These unabating daily insults, threats, and experiences increase the likelihood of chronic stress and lower thresholds for a variety of acute and chronic health conditions (Hawkley et al., 2005; Hertzman & Frank, 2005).

One of the main psychosocial pathways through which social interactions and experiences lead to health problems is through physiological response to stress. While the body's stress response is helpful in the short term (e.g., providing energy in order to

flee danger), repeated and extended activations of the body's stress response (allostatic load) can increase the likelihood of a variety of health problems (McEwen, 2002). Repeated activation of the stress response may take place due to an individual's anticipation of danger or threats, revisiting stressful memories, or even imagining stressful scenarios. The pernicious health effects of repeated and extended stress response activation exist in part because the body is not given adequate time to recover from its stress response before another response occurs. A variety of forms of the body's long-term maintenance of itself (e.g., digestion and growth) are repeatedly set aside for extended periods of time in favor of responding to stress. In general, regardless of whether women are members of households that engage in practices such as male-first eating, women residing in communities where a culture of gender discrimination holds sway will live in greater subordination, lack of cooperation, and chronic stress than women elsewhere, resulting in higher odds of sickness.

The above arguments regarding cultural context, gender segregation and marriage-related dimensions of gender, material/schema pathways, and the effects of stress on bodily functioning lead the following hypotheses.

H1: *Increased community-level gender segregation in the forms of women's immobility, seclusion, and male-first eating will be associated with poor health for women.*

H2: *Increased community-level marriage practices in the forms of dowry-giving, and wedding expenditures will be associated with poor health for women.*

Data and Methods

Personal and household characteristics are known to be associated with the health of women. In addition, the prevalence of salient cultural practices and beliefs pertaining to women should affect women's well-being and health. To investigate this possibility, I use data from the India Human Development Survey, 2005 (IHDS). The 2005 IHDS was funded by grants provided by the National Institutes of Health. Coordinated by investigators from the University of Maryland and the National Council of Applied Economic Research, New Delhi, the IHDS is a national survey of 41,554 households across 33 states and union territories in India administered in 2004 and 2005 (Desai, Vanneman, et al., 2010). The study was conducted in local languages in all Indian states and union territories, excluding Lakshadweep and Andaman and Nicobar Islands.[4] (Desai, Dubey, et al., 2010). The IHDS has a response rate of 92% and compares favorably with the 2001 Census of India, the 2004-2005 National Sample Survey, and the 2005-2006 National Family Health Survey III. The present study uses data on questions answered by 23,474 ever-married women ages 25 to 49 in face-to-face interviews with a female IHDS interviewer. To measure the characteristics of community contexts, I focus on districts. The use of districts in research on India is useful in part because districts are important administrative units and in many cases indicate historically and culturally meaningful boundaries (Malhotra et al., 1995). Because urban and rural contexts differ dramatically in India, I follow the approach of IHDS principal investigator and colleagues (Desai & Andrist, 2010; Desai & Wu, 2010) and partition urban and rural

---

[4] These excluded territories account for less than one percent of India's population.

areas of districts. For simplicity, the resultant 486 units are referred to as "districts." District-level measures are created by aggregating household and individual-level data.

Response Measure

Self-reported health is a powerful health indicator. It is among the strongest predictors of mortality, physical health, functional health status, mental health, healthcare utilization, and subjective well-being (Idler & Benyamini, 1997). Utilized by the World Health Organization and others as a reliable and valid measure of overall health, self-rated health includes biological, social, and psychological dimensions of a person's view of his or her health (De Bruin, Picavet, & Nassikov, 1996; Ferraro & Farmer, 1999). Researchers have found that self-assessed health is a valid indicator as assessed through its inverse association with socioeconomic status using national samples in the 1995-1996 and 2004 Indian National Sample Survey and the 1998-1999 Indian National Family Health Survey (Subramanian, Subramanyam, Selvaraj, & Kawachi, 2009). To measure self-rated health, ever-married women were asked by IHDS interviewers to rate their health: "In general, would you say your own health is: (1) "very good," (2) "good," (3) "ok," (4) "poor," or (5) "very poor" (mean = 2.3; SD = 53.7; range =1-5).

Explanatory Measures

I use several indicators pertaining to marriage and gender segregation utilized in literature on women in India (Desai & Andrist, 2010). *Male-first eating order* equals 1 if women eat separately or eat after men have eaten when the family takes its main meal (mean = .32; range = 0-1). District-level segregated commensality has a mean of .30 (range = 0-1). District-level *women's mobility restrictions* comes from questions that asked whether the woman must seek permission from a senior member of the family to

visit a health clinic, bazaar/grocery store, or friends/relatives. The average of the number

of places is taken and aggregated to the district level (mean = .80; range = 0-2.67).

Women's seclusion is coded as 1 if the respondent practices veiling or concealing herself

when men not closely related to her visit the home, often including the father-in-law for a

time (mean = 53; range = 0-1). Fifty-three percent of married women in districts veil or

conceal themselves on average (range 0-1). To gather information on *dowry practice*,

IHDS interviewers asked respondents: "Generally in your community for a family like

yours, is [item] given as a gift at the time of the daughter's marriage?" Dowry practice is

a dichotomous variable coded as one if the respondent answered affirmatively to any of

the following large durable goods given as dowry: TV, car, scooter, or refrigerator (mean

= .24). Aggregated to the district level, dowry practice represents the prevalence of

dowry practice (mean = .29; range = 0-1). The bridal family's wedding expenditures is

included both at the individual level and the district level. This item is logged due to

skewness (mean = 11.08; district-level mean = 11.16).

Control Measures

  The two socio-religious groups that ever-married women aged 25-49 belong to in

greatest numbers are other backwards castes (36%) and Dalit (22%). Unless otherwise

indicated, demographic information is roughly the same for ever-married women and all

women ages 25-49. Women aged 25-49 have a mean age of 35; on average came to live

with their husbands around age 17 and a half[5]; 91% are married; and have had on average

3.18 children (2.84 for all women). Eleven percent of ever-married women are in an

---

   [5] This measure is used because in parts of India girls are married years before
cohabitating with the husband, thus age at cohabitation better reflects the timing of
transfer to the environment of the husband and his family.

endogamous marriage (i.e., married to a blood relative or man from their natal village). Fifty-six percent of women answered affirmatively when asked whether, in their community, a daughter is married to a cousin or a man from her natal village (this item is labeled as "community endogamy"). This is an important control variable because endogamy and matrilocality are associated with greater power for women (Collins, 1975, p. 240). Position within the household is broken into the following: female head, 6%; wife of head, 77%; daughter-in-law, 15%, and other position, 3%. Four years is the average total amount of education for women. The highest educational attainment for any woman in the household is also controlled (mean = 4.43; district-level mean = 4.85). The average household asset index score is 11.62. Ten percent of households receive government housing aid, 4% employ a servant, and 72% have a vent in the kitchen.

In order to control for different sanitary practices, I include a series of binary variables indicating the manner of washing done after defecation: do not wash, 1%; use water only, 20%; use mud or ash only, 33%; or use soap, 45%. To tap the availability of health care, I include a dichotomous indicator of whether one of the following exists in the respondent's village (urban residents are assumed to have one of these facilities nearby): primary health center, health subcenter, private hospital, community health center, government health center, government maternity center, government disease facility, private midwife, other government medical facility, private trained doctor, or private untrained doctor. Eighty-five percent reported having at least one of these health facilities. Twelve percent of households reside in a major metro area (Delhi, Mumbai, Kolkata, Chennai, Bangalore, or Hyderabad), 2% in an urban slum, 20% in another type of urban area, and over half of households reside in a rural context (66%). Rural

residents are divided into those living in villages with low levels of infrastructural development (36% of all households) and high infrastructural development (30% of all households) (Desai & Wu, 2010). High infrastructure villages are defined as those with at least one of the following facilities: electricity, paved road, grocery store, bazaar, bank, post office, police station, bus stop, or mobile access to telephone and landline.

Other control variables include the following. The district average of electricity usage is taken from the number of hours of electricity per day reported by respondents. IHDS interviewers asked how many minutes the respondent must wait for medical treatment when visiting a clinic, hospital, or healer for a minor illness. This item is aggregated to the district level (mean = 21). I also include a binary variable coded as 1 if the woman has access to cash at the time of the interview (mean = .85; district-level mean = .84). The nature of the data allows not only the introduction of individual-level and community-level variables, but also a series of state binary variable controls (not displayed for the sake of brevity).

Table 3.1 presents descriptive statistics. Unless otherwise indicated, descriptive statistics are for ever-married female respondents ages 25-49 and the characteristics of their households. Statistics for other measures are indicated as for all women ages 25-49. Descriptive statistics use a sampling weight constructed by IHDS investigators.

Analytic Method

Since gender is not limited individual-level attributes, but is also comprised of broader social arrangements and cultural contexts, this study focuses on the community-level contextual effects of different dimensions of gender. To assess contextual effects, I

Table 3.1.
Descriptive Statistics for Variables Included in Analyses

Variable	Mean/Proportion	Standard Deviation
Individual-Level Measures		
Self-assessed poor health	2.30	0.80
Age	35.31	7.99
Age at cohabitation	17.68	3.20
Number of births	3.18	1.78
Endogamous marriage	0.11	0.31
Educational attainment	4.02	4.81
Highest female education in household	4.43	5.00
Assets of household	11.62	6.19
Housing aid	0.10	0.28
Servant	0.04	0.20
Vent	0.72	0.44
Manner of washing		
Do not wash	0.01	0.09
Water only	0.20	0.38
Mud/ash	0.33	0.46
Soap	0.45	0.50
Health facility	0.85	0.32
Residence		
Metro	0.12	0.30
Urban slum	0.02	0.13
Other urban	0.20	0.44
High infrastructure village	0.30	0.46
Low infrastructure village	0.36	0.47
Cash access	0.85	0.37
Women's seclusion	0.53	0.50
Male-first eating order	0.32	0.46
Wedding expenditure (logged)	11.08	0.98
Dowry	0.24	0.45
District-Level Measures		
Highest female education in household	4.85	2.68
Electricity hours	13.01	6.76
Medical care waiting time	20.61	12.36
Cash access	0.84	0.17
Women's immobility	0.80	0.59
Seclusion of women	0.53	0.35
Male-first eating order	0.31	0.29
Wedding expenditure (logged)	11.16	0.64
Dowry	0.29	0.28

Note: For brevity, socioreligious group, marital status and state dummy variable statistics are suppressed. Data are weighted.

use hierarchical linear modeling. Unlike single-level regression, hierarchical linear modeling appropriately produces estimates of standard errors of contextual measures, uses the correct degrees of freedom for contextual units, and corrects for correlated errors among persons in the same contextual units. Specifically, I estimate variation in health outcomes between and within districts, also adjusting for nonindependence stemming from clustering within districts (Raudenbush & Bryk, 2002).[6] After taking into account individual-level effects, between-district analyses regress the district average health scores on the characteristics of districts, such as the prevalence of dowry practice in the district. In this way, not only are person-level effects on health estimated, but also the effects of differences in the aggregation of information between districts on health. In other words, contextual effects are estimated simultaneously with individual-level effects, which is necessary given this study's multilevel conceptualization of culture and gender. The results presented are based on unweighted models since the stratified nature of the sample is taken into account in multilevel modeling. Models are estimated using PROC GLIMMIX in SAS 9.2.

Results

Analyses of self-rated poor health among ever-married women are conducted using multilevel linear regression. Calculating an intra-class correlation coefficient (ICC) from a null model indicates that 30% of the variation in poor health is due to the district

---

[6] Although results are consistent whether hierarchical linear modeling or hierarchical ordered logistic modeling is used, I use linear modeling because (a) Monte Carlo simulation indicates that beyond 5-7 points on the outcome variable, linear and ordered logit results are almost the same, (b) the spread of omitted variable bias is better contained in linear modeling compared to ordered logit modeling (P. D. Allison & SAS Institute, 1995, p. 236; P. D. Allison, 1987), and (c) betas in linear modeling are more readily interpretable for a wider audience compared to the need in ordered logit modeling to specify probabilities at specific levels for other predictor variables.

of residence (see table 3, M0). Table 3.2 presents individual and contextual effects on self-assessed poor health. In comparison with forward caste women, being an Adivasi woman is negatively associated with poor health. Not surprisingly, as age increases, poor health also increases. Higher age at cohabitation with husband is negatively associated with poor health. Women who report having given birth to more children also report higher levels of poor health. In comparison to wives of household heads, being a female household head or "other" household position is associated with poor health. Both increased years of educational attainment and greater household assets are negatively related to poor health. In comparison to washing oneself with mud or ash, the only category of washing with protective effects against poor health are washing with soap or not washing at all. Unsurprisingly, as proximity to a health care facility increases, poor health decreases. Living in an urban slum is the only place of residence associated with higher levels of poor health compared to metro area residence. Women who have access to cash report lower levels of poor health. Also at the individual level, perception of dowry practice in one's community and household wedding expenditures are both negatively associated with poor health.

Hypothesis 1 expected that high prevalence of gender segregation at the district level, as seen by increased segregated commensality and mobility restrictions, will be associated with poor health outcomes for women. The results in Table 3.2 support this hypothesis. As the district prevalence of segregated commensality rises, so too does poor health for women. Specifically, with each percent increase in district segregated commensality, the level of poor health increases by one third of a category in the five point indicator. In terms of the magnitude of the effect, segregated commensality

Table 3.2.
Multilevel Model of Self-Assessed Poor Health

Variable	b	SE	
Intercept	1.937	0.457	***
Individual level			
Age	0.008	0.001	***
Age at cohabitation	-0.005	0.002	**
Number of children	0.018	0.003	***
Endogamous marriage	0.023	0.016	
Educational attainment	-0.005	0.002	*
Highest female education in household	0.002	0.002	
Assets of household	-0.004	0.001	**
Housing aid	-0.010	0.017	
Servant	-0.002	0.023	
Vent	-0.009	0.011	
Manner of washing after defecating (mud/ash = ref)			
Do not wash	-0.228	0.056	***
Water only	-0.036	0.019	
Soap	-0.093	0.014	***
Health facility	-0.051	0.017	**
Residence (metro = ref)			
Urban slum	0.267	0.088	**
Other urban	0.151	0.078	
High infrastructure village	0.161	0.086	
Low infrastructure village	0.106	0.086	
Cash access	-0.117	0.014	***
Women's seclusion	0.015	0.013	
Male-first eating order	-0.016	0.012	
Wedding expenditures (logged)	-0.032	0.007	***
Dowry	-0.089	0.014	***
District level			
Highest female education in household	-0.009	0.011	
Electricity hours	0.003	0.004	
Medical care waiting time	0.010	0.001	***
Cash access	0.257	0.129	*
Women's seclusion	-0.111	0.072	
Women's immobility	0.133	0.037	***
Male-first eating order	0.307	0.080	***
Wedding expenditures (logged)	0.010	0.042	
Dowry	0.412	0.095	***

Note: Individual $N = 23,474$; District $N = 486$. All models control for caste and state dummies; results suppressed for brevity.

$*p < .05$; $**p < .01$; $***p < .001$ (two-tailed).

prevalence ranks as the fifth largest effect in comparison to all other individual and

contextual effects in the model.[7] Other support for hypothesis 1 is found in the

statistically significant effect of community-level women's mobility restrictions, which

ranks in the top third in terms of size of standardized coefficients in the model.

Hypothesis 2 predicted that community-level marriage indicators at the district level

(dowry and wedding expenditures) will be related to poor health for women. In support

of hypothesis 2, among community-level marriage indicators, there is a statistically

significant association between dowry practice and poor health. In terms of the

magnitude of effect, district-level dowry practice is substantial—its standardized

coefficient is the third largest in the entire model. It is important to reiterate that these

contextual effects are net of important attributes such as socioeconomic status, state

residence, local infrastructure, and sanitation habits, among other factors. Other

statistically significant district-level variables are the positive effects of average waiting

time and women's cash access.

Table 3.3 serves to further evaluate the importance of different dimensions of

gender in communities by comparing explained variance in models with and without

different dimensions of gender. The values presented indicate variance at individual and

contextual levels, the intra-class correlation, explained variance at individual and

contextual levels, and total explained variance. After the variance in poor health

explained by individual ($R^2_{total} = .162$) and contextual ($R^2_{total} = .179$) level control

variables, Models 3 and 4 compare the explained variances of poor health when different

blocks of theoretical variables are included. Gender segregation ($R^2_{total} = .188$)

---

[7] Linear regression standardized coefficients are calculated (unstandardized
coefficient x standard deviation of variable / standard deviation of response variable).

Table 3.3.
Model Comparisons

Variable	M0	M1	M2	M3	M4	M5
Control variables (individual)		X	X	X	X	X
Control variables (contextual)			X	X	X	X
Gender segregation variables (contextual)				X		X
Marriage practice variables (contextual)					X	X
Self-assessed health models						
Individual variance	0.457	0.441	0.441	0.441	0.441	0.441
Contextual variance	0.194	0.104	0.093	0.087	0.089	0.083
Intra-class correlation coefficient	0.298					
R^2 (individual)		0.034	0.034	0.034	0.034	0.034
R^2 (contextual)		0.462	0.520	0.552	0.541	0.572
R^2 (total)		0.162	0.179	0.188	0.185	0.195
-2 Log Likelihood	49611.16	48548.27	48501.85	48476.09	48481.9	48453.26
Akaike information criterion	49617.2	48662.3	48623.9	48604.1	48607.9	48585.3
Bayesian information criterion	49629.7	48900.9	48879.2	48872	48871.6	48861.6

contributes only slightly more than marriage practices (R^2_{total} = .185) to the explanation of

poor health. The difference is not substantial and may be due in part to the fact there are

three gender segregation variables and two marriage practice variables. I cautiously

summarize that gender segregation is only slightly more important for self-rated health

than marriage factors. In the end, both elements contribute differently, and combined,

boost the total R^2 from .179 (model 2) to .195 in the full model (model 5).

Discussion

In this study, I have tried to advance our understanding of the contextual and

gendered sources of women's health in a developing society by using new national

multilevel data from India, the home of roughly one out of six people in the world. I use

a national sample of 23,474 ever-married women in India (aged 25-49) who self-reported

their overall health. Decades of research have documented ongoing gender-based health

inequities in India. Researchers have also examined the variation in health status among girls and women in India. Considerable work finds that excess female infant mortality varies with regional gender norms in India (Dyson & Moore, 1983). However, in India as elsewhere, limited attention has been devoted to how women's overall health is tied to community contexts (Read & Gorman, 2010). Still less focus has also been given to how multiple additional dimensions of gender might differentially contribute to the overall health of women (Collins et al., 1993). This study sheds new light on the gender and health literature by using a multidimensional conception of gender operationalized at the community level to examine whether an array of gendered cultural practices are linked to poor health for women. I find evidence for the effects of both gender segregation and marriage dimensions of gender. There are especially strong effects for male-first eating order and dowry-giving.

In the case of gender segregation, women's seclusion does not appear to be linked to health. The other two gender segregation indicators, women's mobility restrictions and eating order, are positively associated with self-related health such that increases in these indicators are associated with reporting worse health. The size of the eating order effect is the larger of the two gender segregation effects. These results suggest that mobility restrictions and especially eating order are elements of cultural contexts deleterious for women's health. In one sense, the greater effect size of eating order is somewhat surprising given that mobility restrictions and seclusion are arguably more public practices and household eating order a more private practice. But in another sense, eating order may tap a "deep segregation" occurring in relative privacy between members of a household. One can imagine simply going along with gender segregation in public

73

but a deeper measure of beliefs about gender distinctions and inequality may be found in practices within the household, when the doors are closed. In fact, public decorum surrounding gender may be more easily and consistently maintained when gender is habitually practiced in private. This finding suggests that cultural practices deeply embedded in the intimate relationships within families and day-to-day life are the ones which most accurately reveal the degree to which culture is ingrained in the surrounding community. It also implies that such deep cultural practices of gender segregation are more important than other forms of gender segregation in relation to women's health.

What are the origins of male-first eating order and why might its prevalence in a community context harm women's health? One schema in South Asia holds that persons are continuously vulnerable to "moral and physiological transformation in transacting with other persons" (Appadurai, 1981, p. 507; Khare, 1976b; Marriot, 1976). Semen, blood, saliva, and food from a person of lower rank can pollute a person of higher rank, and so men fear exchanging fluids with women, including their wives. Because of her lower ritual status, a wife is able to absorb the semen of her husband—as well, she should also eat his leftover scraps, and other women in the household should eat leftovers separately after male household members have eaten (Chakravarty, 1972, p. 37; Khare, 1976a, p. 8; Lamb, 2000, pp. 33–34; see also Michaels, 2004, pp. 180–184). In many households, young children are treated like gods and so others may eat with or after children regardless of gender and other rank. However, between the ages of five to ten, gendered "gastronomic deference" is enforced and girls are trained to eat as future "little wives" and boys to eat as future husbands (Appadurai, 1981, p. 498). Gender scholars reason that regular social interaction between men and women of unequal roles is an

important way that schemas of inequality emerge and are also regularly refreshed (West & Zimmerman, 1987; Ridgeway & Smith-Lovin, 1999, pp. 204–205). The frequency and regularity of intra-household male-first eating order makes it "well suited to bear the load of everyday social discourse" including beliefs of gender distinction, inferiority, and superiority. Further, "whenever food is exchanged in one domain, it carries some of the meanings of its roles into other domains" (Appadurai, 1981, pp. 494, 509; Kakar, 1981, p. 119). A girl or woman in a community where people's gender schemas are daily deepened in the household and then carried into other domains and institutions likely experiences greater challenges because almost everywhere she turns she faces perceptions of the superiority of men compared to her lower status. A lower perception of women may also lead community members to be less obligated to cooperate with a woman seeking to accomplish everyday tasks, attain goals, or obtain needed information. To the degree that a woman internalizes beliefs about her lower status or worthiness, her capabilities for coping with difficult challenges may also be diminished (e.g., low self-esteem and resilience). The end result is that out of the combination of heightened challenges and reduced capabilities comes sustained wear and tear (e.g., stress, anxiety, anger, frustration, depression), increasing the vulnerability of her health.

Turning to the marriage dimension, although community wedding expenditures is not significantly associated with health, support is found for the hypothesized relationship in the case of dowry. Community dowry performs as predicted in relation to self-rated health, with increases in community dowry associated with increasing levels of poor health. These results suggest that the marriage practice of dowry-giving cultivates environments where the well-being of girls and women are vulnerable. Through dowry,

girls and women are tethered to crucial financial and symbolic costs and benefits for households. These dynamics inform the gender order of broader community contexts and, in turn, impact the unfolding of women's lives in these contexts. These findings indicate a need for ongoing attention by researchers, not least because dowry has seen inflation over time and diffusion across Indian social groups and geographic regions. This trend exists even as more social groups and regions are concomitantly brought under modernizing influences (Anderson, 2003; Andrist, 2008; Rao, 1993).

In comparing the importance of gender segregation versus marriage dimensions of gender for health, both are important. The gender segregation dimension is somewhat more important than marriage dimensions for self-rated poor health for women. However, it is important to note that the difference is slight and should be treated cautiously. Since these differences in importance are never large and there are more indicators of gender segregation, any extrapolations from these differences would be speculative. Future research incorporating more indicators might allow more precise comparison. For example, measures of dowry-related experiences before and after marriage could add greater precision. In the end, both dimensions contribute, and together explain more of the variation in women's health status. Comparison of the ranking of standardized coefficients sheds further light on the relative importance of indicators within gender segregation and marriage dimensions of community culture. Judged by the ranking of effect sizes, dowry practice is the single most important of the theoretical indicators, which adds to a growing scholarship on the effects of dowry, but now assessed as a contextual effect on the health of women.

Although this analysis specifies various inputs to health, the dimensions of gender in cultural contexts discussed here should not ultimately be understood as isolated factors, but rather as components of a larger underlying system of patriarchy with varying degrees of integration and intensity across India (Dyson & Moore, 1983). Furthermore, many of these factors are not unique to India. Dowry, wedding expenditure, male-first eating order, and mobility restrictions on women are all elements interwoven, albeit in many different ways, in patrilineal family systems (especially joint family systems) that have been prevalent in a belt of societies stretching across East and West Asia to Eastern Europe and North Africa (Skinner, 1997, pp. 58–59). However, norms emanating from marriage exogamy and patrilocality customary in South and East Asia accentuate the isolation and lack of social support and protection experienced by women across these contexts (Skinner, 1997, pp. 59, 81). Nevertheless, within societies with patrilineal joint family systems, the Indian subcontinent is noteworthy for its rigorous cultural practices pertaining to gender (Mandelbaum, 1988).

In sum, this study is supportive of the contention that women's health status is robustly tied to cultural context, through both gender segregation and marriage practice dimensions of gender in community contexts. The ideas developed here and the findings presented also set out puzzles for future research. Do the effects of gendered environments on health grow as girls and women make their journeys across the life course? Deprivations and stressors in early life should make girls more vulnerable to illness and contribute to poorer health in childhood and set the stage for diminished health leading into adulthood (Hayward & Gorman, 2004). Further research using panel data and contextual measures of gender in India is needed to isolate the influence of

different dimensions of cultural contexts on girls' and women's health at different stages of life and the degree to which effects are path dependent. Future research could also develop measures of various dimensions of gender relevant to the specific gendered practices of other societies, particularly other societies in transition where gender norms are adapting to globalizing forces. Along with studies of other societies, a variety of directions for future research present themselves. But with salient and widespread gendered practices and one-sixth of humanity living inside its borders, India is a central case for the study of gender, context, and health. For now, this study brings cultural context and gender more directly into our understanding of health.

CHAPTER FOUR

Balanced on the Heads of Women?:
Gender, Seclusion, Empowerment, and Hypertension Among Adults in India

Hypertension is an important risk factor for kidney disease, coronary heart disease, stroke, heart attack, and heart failure. It is estimated that roughly one in four people in the world is hypertensive (Kearney et al., 2005). Though biological factors, lifestyle behaviors, and heredity play a role in the occurrence of hypertension, so too do social factors such as social support, socioeconomic status, race/ethnicity, and socioecologic stress (James & Kleinbaum, 1976; Krieger & Sidney, 1996; Morenoff et al., 2007; Pickering, 1999). Gender is another important social factor linked to hypertension (Vögele, Jarvis, & Cheeseman, 1997). Gender encompasses varieties of roles, norms, and constraints which may differently shape men's and women's health.

Analyses of gender show that gender is multidimensional and different dimensions vary across and within societies (Collins et al., 1993; Mason, 1986). Gender is rarely measured as a multidimensional concept in empirical research and the effects of gender's multidimensionality on health is not well understood. Despite broad patterns that women live longer than men, yet spend more of their lives in sickness, prior research cautions that we should seek to better examine and explain how gender is linked to specific health conditions (Macintyre et al., 1996). Though considerable research has examined the social determinants of hypertension, the extent to which different dimensions of gender shape hypertension is not well understood.

Female health disadvantages in developing countries[1] have been repeatedly documented (Caldwell, 1986; Santow, 1995), although less attention has been paid to chronic conditions such as hypertension. Understanding links between gender and hypertension in developing world contexts is particularly needed. The majority of the world's population lives in developing nations and as populations in many developing countries have increased life expectancy, conditions such as hypertension are becoming an increasing concern. More people in industrializing countries currently are hypertensive than in industrialized countries and the prevalence of hypertension in developing world populations is increasing more rapidly than in developed countries (Kearney et al., 2005). Population health research in developing countries has tended to focus on reproductive health, child health, and mortality, with relatively little work done on general health in adult populations of both women and men (Bloom et al., 2001). In the case of India, relatively few population-based studies have examined chronic health conditions among adult men and women and the sources—particularly cultural sources— of differences between them. Significant research has examined how patrilineal family systems and norms and shape differential young female mortality in countries such as India (Dyson & Moore, 1983) and China (Lavely et al., 2001). Although often not explicitly elaborated, these studies many times imply that culture plays a role in the links between gender and health. Demographic research on culture and gender in India has drawn attention to the multidimensionality of gender (Desai & Andrist, 2010; Mason,

---

[1] For simplicity, categories such as "developing countries," "developing world," and "industrialized countries" are used. This usage is not meant to ignore the fact that countries and regions of the world exist on a continuum and a variety of "developing countries" are rapidly developing and are similar to many industrialized countries across a variety of characteristics.

1986). The present study seeks to disentangle dimensions of gender, examining their differential effects on women's and men's hypertension. Though there has been considerable writing on gender in developing countries such as India, the extent to which different dimensions of gender relate to men and women's chronic conditions such as hypertension in the general adult population remain relatively unknown.

Prompted by these issues, this study uses a cultural explanatory framework to develop and test hypotheses concerning how different dimensions of gender have differential effects on hypertension for women and men. This study analyzes national data from the India Human Development Survey-2005 on 99,830 women and men and builds on prior gender and health research that typically (a) focuses on wealthy countries, rather than emerging developing countries such as India, (b) in India, mainly focuses on children and reproductive health rather than chronic conditions in the general adult population, (c) does not use large national samples, and (d) overlooks the role of culture and multiple dimensions of gender in gender differences in chronic conditions.

Background

Hypertension and Dimensions of Gender in India

Hypertension is a growing public health concern in developing countries such as India (Kearney et al., 2005). Twenty-four percent of coronary heart disease deaths in India and 57% of stroke deaths in India are linked to hypertension (Rodgers, Lawes, & MacMahon, 2000). Hypertension has seen significant increases in both urban and rural areas of the country (Gupta, 2004). In addition to health behaviors such as alcohol use, researchers have identified a variety of sociodemographic correlates of hypertension in India: urban residence, educational attainment, southern residence, age, and being female

81

(Das, Sanyal, & Basu, 2005; Gupta et al., 2011). Hypertension is more prevalent among younger men than younger women, but starting in middle age hypertension is more prevalent among women than men (Isles, 2000). Midlife family stress is posited as a source of the increased prevalence of hypertension in women (Isles, 2000).

Social contexts can lead to hypertension through physiological responses to stressors. Humans, along with all other vertebrate animals, have a general physiological stress response that rapidly prepares the body to flee or fight threat (i.e., fight-or-flight response). For humans, this general response is somewhat outdated given that most humans now live in environments where such physical survival responses (e.g., fleeing a tiger) are not frequently necessary. Indeed, the stress response can be deleterious given that humans activate it for purely psychological reasons such as traffic stress, financial worry, relational strain, or stressful memories. While physiological stress responses (allostatic responses) may be helpful in a short term crisis, long-term exposure to adversities and repeated activation of the body's general stress response (allostatic load) leads to dysregulation of the overall patterning of the stress response. Such stress-response dysregulation produces vulnerability to a variety of health problems such as hypertension (Seeman, Singer, Rowe, Horwitz, & McEwen, 1997). A variety of labels have been used in reference to allostatic load including "biological risk profile," or "weathering" (Geronimus, 1992).

How do social conditions of the kind outlined in this study lead to hypertension via allostatic load? Chronic stress—ongoing and repeated adversity and repeated perceptions of threat—has several pathways to elevated blood pressure through the hypothalamus, which controls physiological stress response. A stressor (e.g., unexpected

82

incident or perceived threat) is directly identified by the hypothalamus and may be interpreted by the cerebral cortex. Alternatively, the cerebral cortex interprets and identifies stressors, communicates to the limbic system, which then communicates to the hypothalamus. At this point, two main pathways lead from the hypothalamus to blood pressure. First, part of the body's autonomic nervous system—the sympathetic nervous system—is activated and causes epinephrine to be produced, a hormone involved in turning up blood pressure. Second, there is the hypothalamus-pituitary-adrenal (HPA) axis response. The hypothalamus sends messages to the pituitary gland, telling it to activate the adrenal gland to secrete epinephrine hormones in order to heighten blood pressure. The pituitary gland also produces cortisol, which heightens blood pressure by sensitizing blood vessels to the influence of epinephrine. Additionally, in anticipation of intense bleeding (i.e., following a tiger attack), the body's stress response produces fibrinogen, which enhances blood clotting. Fibrinogen is a contributor to elevated blood pressure (Barr, 2008, pp. 74–81; McEwen, 1998, 2002; Seeman, McEwen, Rowe, & Singer, 2001).

Why should the body increase blood pressure following perceived threat in the first place? Elevated blood pressure is an important physiological survival reaction to stressors because it helps provide a burst survival activity—it helps ensure that increased oxygen is available to the lungs, brain, and bigger muscles involved in running or fighting (e.g., thigh muscles). Blood pressure levels can become chronically elevated in recurring conditions of adversity or become increasingly slow to decline (McEwen, 2002).

Different chronic stressors for men and women may come from arrangements, practices, and interactions that emanate from within the household context. Stressors may also come from social interactions and social contexts beyond the household (Mason, 1986). Individuals' coping resources help them buffer the effects of stress and protect against disease. Important resources for stemming and coping with hypertension include having a sense of control in life and self-esteem. These coping resources may be shaped differently for women and men by their social contexts and social interactions. Stress, sense of control, and self-esteem, may also stem from economic resources. Economic resources may also directly impact hypertension, for example, because of individuals' ability to pay for medical care.

How does culture factor into this equation? The importance of culture for gender disparities in health appears patent given the varieties of roles, norms, and beliefs undergirding variations in gender relations across time and space. A useful cultural framework for examining health draws from a model of the "duality of structure" first developed by Giddens (1984), extended by Sewell (1992), and adapted to population research by Johnson-Hanks and colleagues (2011). This framework argues that social structures are made up of an interplay of *schemas*, which are beliefs or rules for action, and *materials*, which are cultural practices or objects used to obtain goals or power. This cultural framework allows for a complex understand of practices such as the seclusion of women. Seclusion is not only a physical action of men's control of women, but also a practice that carries with it a variety of schemas including construals of women as passive and men as aggressive. Taken together, such material-schema interplays work to pattern the world's social structures. Given this understanding, the material-schema duality of

social structures can constrain and enable individuals' health in a variety of ways just as they do for demographic behaviors such as the decision to use condoms (Johnson-Hanks et al., 2011; Tavory & Swidler, 2009). Material-schema structures shape the conditions of social interactions, stressors, and opportunities available to individuals as they experience the world around them. Beliefs, behaviors, and social interactions surrounding gender are sustained by the ongoing presence of material-schema structures. In these ways, human health is understood as a function of material-schema structures in which health and health disparity unfold. However, these structures are complex and must take into account the many varieties of material practices that exist and the schemas these practices instantiate.

Relatedly, demographic research on culture and gender in India has drawn attention to the multidimensionality of gender (Desai & Andrist, 2010; Mason, 1986). Given the multidimensionality of gender, different dimensions of gender may shape how stressors and coping resources lead to hypertension among women and men. Different dimensions of gender may overlap in some contexts, but diverge from one another in other contexts (Collins et al., 1993; Mason, 1986). Below I follow prior gender literature on India and tack along three dimensions of gender as they are germane to the Indian context**:** (1) economic production, (2) gender segregation, and (3) women's empowerment.

Economic Production

One of the most widely analyzed social determinants of health is socioeconomic status, often referred to as a "fundamental cause" of health (Phelan et al., 2004). Research suggests that socioeconomic factors play a direct role (resources) and indirect

role (psychosocial effects) in the relationship between gender and health through women's low earnings, low levels of employment, sense of control, and self-esteem, in addition to women's greater adversity, stress, and depression (Huisman et al., 2003; McDonough & Walters, 2001; Meyer & Pavalko, 1996; Phelan et al., 2004; Read & Gorman, 2011; Rieker & Bird, 2000; Ross & Bird, 1994; Walters et al., 2002). As in many other societies, women in India are socioeconomically disadvantaged in comparison to their male counterparts. Indian women have long been distanced from plough agriculture which has traditionally been controlled by men. As well, land and property have been historically passed down to male relations (Skinner, 1997). Women have had low levels of power and status and have been constrained because of their distance from economic production (Collins, 1975; Miller, 1981). Important forms of economic production such as wage employment increase women's status in communities and households, elicit better treatment from others, provide a greater sense of control, provide more economic independence from men, and increase women's ability to use resources to benefit their health. Further, findings in some contexts suggest that the beneficial health effects of paid employment are greater for women than men (Denton et al., 2004). This discussion leads to hypothesis 1: *Economic production (measured as wage employment) will attenuate women's greater odds of hypertension.*

Gender Segregation

In India, gender is often tightly bound up in families' ability to maintain or increase their social status. One of the main ways to enhance social status is by emulating higher status groups. In India, this process has been referred to as "Sanskritization"—social groups with lower social rank seek to emulate and associate

86

themselves with higher status groups, especially the so-called higher castes (Srinivas, 1952). Historically, a key characteristic of high status groups' honor has been women's modesty and deference, which in India is frequently attached to the social institution of *purdah* (meaning "curtain"), hereafter referred to as "seclusion" (Mandelbaum, 1988). Seclusion is practiced among Hindus, Muslims, and other groups in India. Women may seclude themselves in a variety of ways: covering their face with a shawl when in the presence of men, wearing a full *burqa*, lowering their voices and eyes in the presence of men, and/or remaining in separate rooms or behind a screen when unrelated men are present (Mandelbaum, 1988). Restricting women's mobility outside the home is another closely related way that modesty and propriety are publically displayed and gender is performed (Derné, 1995). Another example of gender segregation in India is the intra-household practice of male-first eating (Appadurai, 1981).

There are several ways in which such patterns of gender segregation can set up women for greater vulnerability to developing hypertension. First, seclusion and mobility restrictions increase the likelihood of hypertension by limiting physical activity. One of the benefits of physical activity is reduction in the risk of hypertension. Limiting women's mobility and the number of places outside and within the home in which women may freely move, and increasing the number of places in which women must limit their contact and visibility to men can result in decreased physical activity for women. Additionally, dress and demeanor associated with seclusion reduces women's ability to sustain physical activity because of visibility difficulties, difficulties in keeping a *dupata* (shawl) modestly positioned, and the fact that vigorous physical activity violates the ideal of appearing restrained and modest.

Second, practicing seclusion also increases women's stress. The disapproval and stress that women experience if they frequently go outside the home or engage in vigorous physical activity reduces the likelihood that seclusion-practicing women will engage in physical activity. This also means that there is the possibility that women will experience stress whether in the presence of men or women, because they know that their dress and demeanor is subject to evaluation in a variety of situations and social interactions. Strict control of women's appearance and demeanor increases the stress women experience in relation to men in particular. American anthropologist Raheja (Raheja & Gold, 1994, p. xxi) describes the internalization of such feelings: "I soon began to feel incompletely clothed if my head wasn't covered, and I often felt uncomfortable in the company of men who weren't known to me." Ironically, seclusion may also incite sexual harassment to the extent that it reinforces the idea that women are passive and men are aggressive (Derné, 2000, pp. 155–56, 2008, p. 177).

Third, a communication barrier is maintained such that women are inhibited from directly interacting with community institutions. For example, it becomes difficult to bargain for products, press for medical information or care, or request legal help. Seclusion often means that women must go through male relatives in order to interact with other men in positions of authority.

Fourth, gender segregation reduces women's coping resources such as self-esteem. Practices such as male-first eating reinforce for both women *and* men the cultural rule of men's dominance, superiority, and worthiness relative to women. Repeated symbolic enactments of male dominance in the household reinforce and strengthen female deference to male authority and privilege in other spheres and men's

confidence in the appropriateness of their dominance and privilege (Andrist, 2008; Appadurai, 1981, pp. 494, 509; Kakar, 1981, p. 119). This in turn reinforces beliefs concerning male superiority for men as well as women themselves. Male dominance should make women more vulnerable to hypertension through creating more daily challenges for women and diminishing self-esteem and a sense of control in life. The above background leads to hypothesis 2: *Gender differences in hypertension will be larger in households exhibiting greater gender segregation (measured as women's seclusion, male-first eating, and women's immobility) and smaller in households exhibiting less gender segregation.*

While gender segregation mechanisms should lead to hypertension for women, there are reasons to expect that gender performance should protect men from hypertension and an absence of gender performance should lead to hypertension for men. If the performance of gender through practices such as seclusion protect household status, and household status is a major point of anxiety for men, not performing gender through practices such as seclusion should produce stress for men (Mandelbaum, 1988). In other words, "honor is the key good for these men, and their honor is balanced on the heads of the women" (Mandelbaum, 1988, p. 19). A man may feel himself defiled or that his masculinity is bruised in the eyes of other men when household women do not practice seclusion and his wife and other female relatives are exposed to the gaze of other men. This is in part because in the Indian subcontinent, looking can be understood as a form of touching (Babb, 1981; Eck, 1981, p. 9; Michaels, 2004, pp. 231–232). Hypothesis 3 states: *In households exhibiting greater gender segregation (measured as women's*

seclusion, male-first eating, and women's immobility) men will be less likely to be

hypertensive than men in households exhibiting less gender segregation.

Women's Empowerment

The combination of high levels of responsibility and low control is known to be deleterious for health (Lennon & Rosenfield, 1992). In India, women frequently have the ongoing responsibility of serving the family, yet in many households, women do not great decision-making power over their own lives and regarding family affairs. Further, women's power is limited in terms of family resources which are often not made available to women, and if they are, women may not have decision-making power of them (Bloom et al., 2001; Mason & Smith, 2000; Mason, 1986, pp. 292–3). The link between low *access* to resources and poor health has been well-established in the gender and health literature (Bird & Rieker, 1999). As one example, if a woman does not have access to money, a family or husband must believe that she truly needs money for the sake of health care before she can seek medical attention. Even if a woman has access to money, she may not have sufficient *control* over the money to spend it in ways that protect her health. Control over resources is closely related to another aspect of women's empowerment in households—*decision making*. Women may have greater or lesser degrees of say in decisions such as how many children to have, when to seek medical attention for children, or what food to eat. Beyond the direct ways in which lack of decision making limits women's ability to manage their own health, there are also psychosocial pathways linking decision making and health. In addition to diminishing perceived control, lower levels of decision making can simultaneously increase stress and reduce coping resources such as self-esteem (Denton et al., 2004; Rieker & Bird, 2000).

These factors are associated with increased depression (Rosenberg, Schooler, &
Schoenbach, 1989), which longitudinal studies have found to be a risk factor for
hypertension (Bosworth, Bartash, Olsen, & Steffens, 2003; Davidson, Jonas, Dixon, &
Markovitz, 2000). The above points lead to hypothesis 4: *Gender differences in
hypertension will be smaller in households exhibiting greater women's empowerment
(resource access, resource control, and household decision making) and larger in
households exhibiting less women's empowerment.*

Interviews with men in India reveal that being under or part of the authority of
groups of male relations in households is a significant source of well-being for men
(Derné, 2009). Greater women's empowerment, or the threat of it, erodes men's sense of
well-being in many cases (Derné, 2009). In Derne's (1995) ethnographic analysis of
family life in Banaras, India women's empowerment is a source of friction in families.
Men are often caught in middle, between their wives desire for greater empowerment and
their parents and relatives desire to maintain authority. Such family tensions and treats to
a deep source of men's sense of well-being may work to place considerable and ongoing
stress on men, setting the stage for vulnerability to hypertension. Further, if greater
women's empowerment places household symbolic status and men's sense of self-worth
in jeopardy, then women's empowerment should have effects on men's anxiety and stress
levels. Hypothesis 5 follows from these arguments: *In households with greater women's
empowerment (resource access, resource control, and household decision making) men
will be more likely to be hypertensive than men in households with less women's
empowerment.*

91

Data and Methods

To test hypotheses, I use data from the India Human Development Survey, 2005 (IHDS). The IHDS was funded by grants from the National Institutes of Health and coordinated by investigators from the University of Maryland and the National Council of Applied Economic Research, New Delhi. Administered in 2004 and 2005, the IHDS is a national survey of 41,554 households across 33 states and union territories in India (Desai, Vanneman, et al., 2010). It was conducted in local languages in all Indian states and union territories, excluding Lakshadweep and Andaman and Nicobar Islands (Desai, Dubey, et al., 2010).[2] Two one-hour face-to-face interviews covered information on households and household members. Male-female pairs of interviewers interviewed one woman between the ages of 15-49 who had ever been married and a male (usually household head) in the household, with women interviewing women and men interviewing men. The IHDS has a response rate of 92% and compares favorably with the 2001 Census of India, the 2004-2005 National Sample Survey, and the 2005-2006 National Family Health Survey III. The analyses in this study use data on 99,474 male and female household members aged 18 and above who resided in households with information on gender relations provided by an ever married woman and had complete responses on all study variables. Simple statistics on analytic measures are shown in Appendix 1. Data were obtained from the Inter-university Consortium for Political and Social Research. Additional information about the IHDS is available at www.ihds.umd.edu.

---

[2] These excluded territories account for less than one percent of the population of India.

Dependent Variable

IHDS interviewers asked an ever married female respondent in each household whether household members had been diagnosed with hypertension by a physician in the last year. Household members who had been diagnosed with hypertension (including those cured) are coded as 1 (0 = not diagnosed with hypertension). As seen in Figure 4.1 using weighted data, hypertension is more prevalent ($p<.0001$) among women (23 per 1,000) than men (15 per 1,000). When the dependent variable in logistic regression has such low prevalence in the sample or when interacting several dichotomous independent variables as in this study, all cases may have the same event status and cause problems. Therefore, I fit a logistic regression model to the data using Firth's penalized likelihood approach in SAS 9.2 (Firth, 1993; Heinze, 2006).

Independent Measures

This study's focal independent variables are female (1 = female, 0 = male) and several measures tapping different dimensions of gender. First, as a measure of *economic opportunity*, a dummy variable for whether or not the individual is employed in wage work is included (1 = employed in wage labor). Second, three variables pertaining to *gender segregation* come from female respondents in households. Women's seclusion is a dummy variable coded as 1 if the responded indicated that she practices seclusion (*purdah, ghungat*, or, *pallu*). Eating order is a dummy variable that comes from a question that asked: "When your family takes the main meal, do women usually eat with the men, do women eat first by themselves or do men eat first?" Responses are coded as one if women in the household eat after men have eaten when the main meal is taken. Women's immobility is a count variable (range = 0-3) comprised of questions that asked
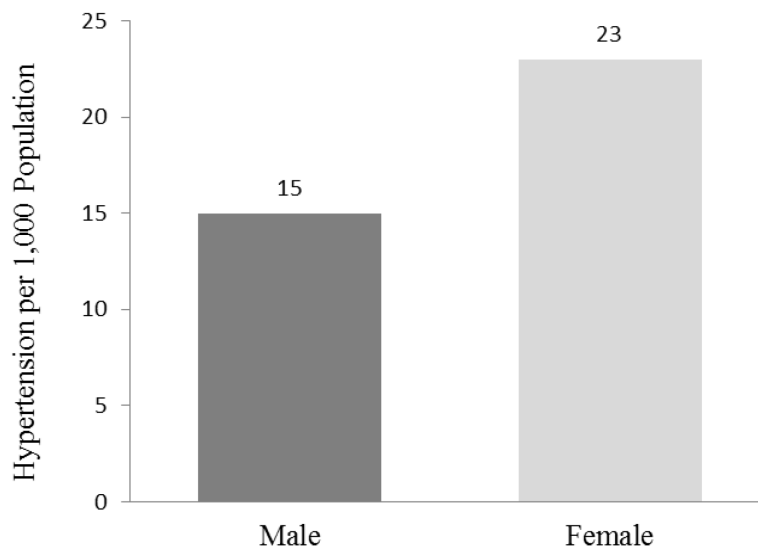
Figure 4.1. Diagnosed Hypertension by Sex

whether the woman must seek permission from a senior member of the family to visit a health clinic, bazaar/grocery store, or friends/relatives.

Third, three measures of *women's empowerment* are used, which come from questions asked of an ever married woman in each household. Decision making (range: 0-5) is a count variable indicating the number of household decisions the female respondent has any say in: (1) cooking and dietary decisions, (2) large purchases, (3) number of children to have, (4) at what point to seek medical attention for a sick child, and (5) the arranging of children's marriages. Resource control is a binary item that measures whether or not the woman's name is on the rental papers or home title (1 = yes, 0 = no). Resource access is a binary measure coded as 1 if the woman has access to cash at the time of the interview. These items pertaining to different dimensions of gender were selected by IHDS principal investigators based on the literature on gender in South Asia and face validity, and have been used in prior research (e.g., Desai & Andrist, 2010).

94

Controls for a variety of important factors include demographic variables such as age, age-squared, and marital status (married = 1, else 0). Also controlled is the number of married females that live in the household.[3] Socio-religious community membership is coded as a system of binary variables: upper caste, OBC, scheduled caste, Adivasi (i.e., scheduled tribe), Muslim, Other (Sikh, Christian, Jain, and Buddhist). A household asset index of 30 items is included as socioeconomic status indicator.[4] Educational attainment is measured using a binary variable series: none, 1 to 5, 6 to 9, 10 to 12, and college or above.[5] Electricity usage indicates the number of hours of electricity per day reported. The type of urban/rural residence is measured as a series of dummy variables: major metro area (Delhi, Mumbai, Kolkata, Chennai, Bangalore, or Hyderabad), urban slum, other urban area, rural residents living in villages with low levels of infrastructural development, and rural areas of high infrastructural development. Following prior work using the IHDS (e.g., Desai & Wu, 2010), high infrastructure villages are defined as those with at least one of the following facilities: electricity, paved road, grocery store, bazaar, bank, post office, police station, bus stop, or mobile access to telephone and landline.

To tap the availability of health care, I use a binary measure of whether one of the following exists in the respondent's village (urban residents are coded as one): primary health center, health subcenter, private hospital, community health center, government

---

[3]In ancillary analyses, the number of persons in the household and the number of children were controlled, with no meaningful impact on this paper's conclusions.

[4]Controlling for household per capita expenditures (logged) and income does not change the conclusions of this study. These variables were not used for the sake of simplicity and because they have some missing values.

[5]Controlling for literacy does not change findings.

health center, government maternity center, government disease facility, private midwife, other government medical facility, private trained doctor, or private untrained doctor. The analysis includes dummy variables for whether the individual uses any of three substances (1 = sometimes/daily, 0 = no): (1) smoke (cigarettes, *bidi*, or *hukkah*); (2) chew (chewing tobacco); and (3) drink (alcohol). Finally, following prior research using the IHDS (e.g., Desai & Andrist, 2010), a series of state dummy variables is controlled in all models but not displayed for the sake of brevity. In order to reduce the possibility of multicollinearity and for the ease of post-estimation analysis, all count, ordinal, and interval variables are mean centered. To check for multicollinearity, I produce variance inflation factor scores in OLS regression (see P. Allison, 2001). In the baseline model, all VIFs are below 6. VIFs above 4 are the urban and rural dummies. Excluding these variables in the final model does not meaningfully change results; interaction term significance levels remain the same, as do the direction and approximate size of coefficients. Additionally, examination of a correlation matrix with all analytic predictors shows that all correlations are less than .7. Multicollinearity problems were not evident in analyses. Descriptive statistics are presented in Table 4.1.

Results

The results in Table 4.2 do not provide support for hypothesis 1 which states that the difference in hypertension between men and women will be smaller when women engage in wage employment. Hypothesis 2 states that the effects of gender segregation in households should vary by gender. The interaction of female by seclusion is significant and provides support for hypothesis 2. This interaction effect is depicted in Figure 4.2. Women who are members of households where women's seclusion is practiced have

Table 4.1.
Descriptive Statistics

Variable	Mean or Proportion
Female	0.505
Wage Employment	0.296
Seclusion	0.562
Eating Order	0.378
Immobility	1.190
Decision Making	4.019
Resource Control	0.140
Resource Access	0.819
Age	37.445
Married	0.785
Number of Married Females	1.567
Socio-Religious Community	
Muslim	0.115
Forward Caste	0.221
Other Backward Caste	0.362
Scheduled Caste	0.210
Adivasi	0.065
Other	0.026
Assets	12.055
Education	
None	0.387
1-5 Standard	0.154
6-9 Standard	0.211
10-12 Standard	0.173
College Graduate	0.075
Electricity Hours	11.648
Residence	
Metro	0.104
Urban Slum	0.017
Other Urban Area	0.196
Developed Village	0.310
Least-Developed Village	0.371
Health Facility	0.870
Smoke	0.147
Chew	0.160
Drink	0.083

Note: State variables are not displayed for the sake of space.

Table 4.2

Coefficients from Firth's Penalized Likelihood Logistic Regression Predicting Diagnosed Hypertension (n = 99,830)

Variable	Coeff.	SE
Intercept	-5.379	0.247 ***
Female	0.364	0.130 **
Wage Employment	0.017	0.082
Seclusion	-0.287	0.090 **
Eating Order	-0.200	0.097 *
Immobility	0.031	0.033
Decision Making	-0.027	0.028
Resource Control	0.273	0.102 **
Resource Access	-0.238	0.102 *
Female X Wage Employment	0.016	0.129
Female X Seclusion	0.432	0.106 ***
Female X Eating Order	0.016	0.119
Female X Immobility	-0.011	0.042
Female X Decision Making	-0.082	0.034 *
Female X Resource Control	-0.249	0.132
Female X Resource Access	0.123	0.125
Age	0.106	0.004 ***
Age X Age	-0.002	<0.001 ***
Married	0.232	0.073 **
Number of Married Females	-0.251	0.037 ***
Socio-Religious Community (Muslim = Reference)		
Forward Caste	-0.091	0.090
Other Backward Caste	-0.173	0.088 *
Scheduled Caste	-0.257	0.099 **
Adivasi	-0.505	0.185 **
Other	0.108	0.126
Assets	0.067	0.006 ***
Education (None = Reference)		
1-5 Standard	0.307	0.074 ***
6-9 Standard	0.314	0.077 ***
10-12 Standard	0.013	0.091
College Graduate	0.021	0.114
Electricity Hours	0.025	0.004 ***
Residence (Metro = Reference)		
Urban Slum	0.163	0.213
Other Urban Area	0.199	0.091 *
Developed Village	0.094	0.099
Least-Developed Village	-0.064	0.110
Health Facility	-0.005	0.102
Smoke	-0.173	0.091
Chew	0.026	0.085
Drink	-0.077	0.119

Note: All count, ordinal, and interval variables are mean centered. The model includes, but does not display, controls for state dummy variables.
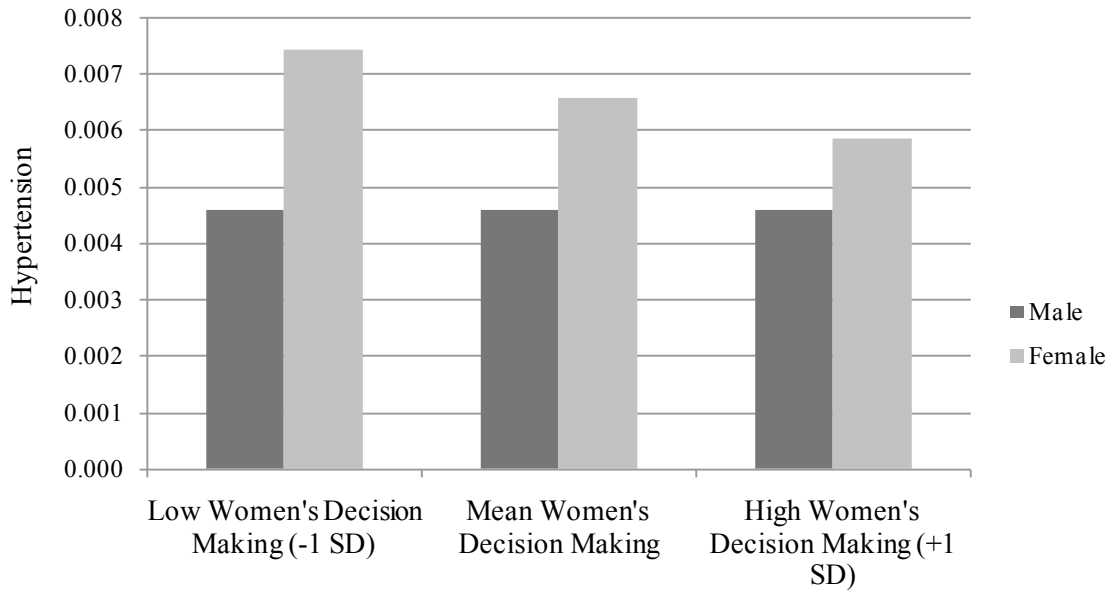*p < .05. **p < .01. ***p < .001.

Figure 4.2. Predicted Probabilities: Decision Making and Hypertension

greater odds of being diagnosed with hypertension than women in households where women are not secluded. The odds ratio for women is exp(.364 + -.287 + .432) = 1.66 going from a nonsecluding household to a secluding household. Put differently, the odds of a women being diagnosed hypertensive are increased by 66% when households seclude women. The ratio of these odds ratios (women over men) is 1.66/.75 = 2.22. In other words, in seclusion households, the odds of women being diagnosed with hypertension are about 2.2 times greater than those of men. A gender gap in hypertension exists in both nonseclusion and seclusion households, but the gender gap clearly widens in seclusion households, specifically by 54% (2.22/1.43=1.54)—a considerable widening. As seen in model 1 of Table 4.3, when other interaction terms are removed from the model, the widening of the hypertension gender gap across seclusion/nonseclusion households is relatively similar to the model in Table 4.3. In model 1 of Table 4.3, the gender gap grows by 62% (2.46/1.52=1.62) going from

99

Table 4.3

Coefficients from Firth's Penalized Likelihood Logistic Regression Predicting
Diagnosed Hypertension (n = 99,830)

Variable	M1		M2	
	Coeff.	SE	Coeff.	SE
Intercept	-5.411	0.238 ***	-5.501	0.238 ***
Female	0.420	0.075 ***	0.587	0.066 ***
Seclusion	-0.317	0.089 ***		
Decision Making			-0.015	0.027
Female X Seclusion	0.480	0.101 ***		
Female X Decision Making			-0.102	0.033 **

Note: All count, ordinal, and interval variables are mean centered. Models include, but do not display, all variables in table 1 excluding interaction terms.
*$p<.05$. **$p<.01$. ***$p<.001$.

nonseclusion to seclusion households. For men, the opposite pattern is observed. Men who are members of households where women's seclusion is practiced are less likely to be diagnosed with hypertension than their male counterparts in households where women are not secluded. This finding supports hypothesis 3—men in seclusion households will be less likely to be hypertensive than men in nonseclusion households. The results show that, for men, the odds ratio is exp(-.287) = .75 going from households not practicing women's seclusion to households practicing women's seclusion. In other words, there is a 25% reduction in the odds of hypertension diagnosis for men in secluding households as compared to nonsecluding households.

Hypothesis 4 stated that the effects of women's empowerment in households would differ for men and women. The interaction of female by decision making was significant and provides support for hypothesis 4. This interaction effect is depicted in Figure 4.3. Women who are members of households where women have little household decision making are significantly more likely to be diagnosed with hypertension (odds
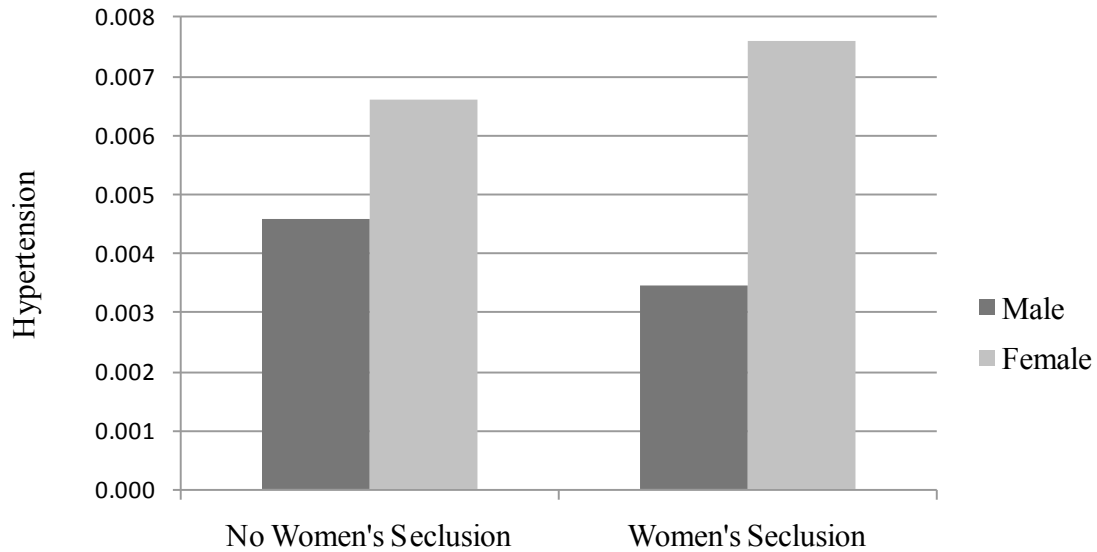
Figure 4.3. Predicted Probabilities: Seclusion and Hypertension

ratio = 1.44 [exp(.364)]) than their male counterparts, and the difference between men and women decreases with each unit increase in household decision making (odds ratio = 1.33 [exp(.364 - .082)]). Put differently, the gender gap in the odds of being diagnosed with hypertension grows by roughly 1.44/1.33 = 9% going from high decision making households to low decision making households—a substantial increase. As seen in model 2 of Table 4.2, when other interaction terms are removed from the model, the change in the hypertension gender gap across household levels of decision making is similar to the model in Table 4.2. The gender gap shrinks by exp(.587)/exp(.587 - .102) = 11% with a one unit increase in household decision making. Turning to hypothesis 5— men in high decision making households would be more likely to be hypertensive than men in low decision making households—no support was found for this hypothesis. Men's hypertension does not appear to vary with increasing levels of household decision making.

Discussion and Conclusion

This study seeks to advance our knowledge of gender and hypertension by examining multiple dimensions of gender using national data from India on men and women. Many studies have documented differences in hypertension between men and women, including studies in India, but the role of culture has largely been left underappreciated in this prior work. This study tries to fill this gap in research by asking whether gender-related cultural practices are differentially linked to men's and women's hypertension. In examining this issue, this study uses a cultural explanatory framework, the "duality of structure" (Sewell, 1992)—and its attention to material-schema interplays—to understand links between cultural practices and gender differences in hypertension. Using national data, the moderating roles of economic, gender segregation, and empowerment factors in gender differences in hypertension are tested. Support is found in the case of gender segregation and empowerment. Specifically, gender differences in hypertension are exacerbated in households that seclude women and restrict women's household decision making.

In this study, fewer men report being diagnosed with hypertension compared to women. Analyzing how this gender disparity varies according to different dimensions of gender, this study finds no gender differences for economic dimension of gender, but reveals a story about gender segregation and a story about women's empowerment. Specifically, this study identifies factors in India that help explain variations in hypertension between men and women—women's seclusion and women's household decision making. First, prior research suggests that wage employment should reduce women's hypertension and narrow the gender gap in hypertension. No evidence was

found for this hypothesis. The prior research concerning the moderating role of wage employment for women was conducted in developed countries such as Canada. Wage employment may operate differently in developing world contexts such as India. This study outlined wage employment mechanisms that operate to reduce hypertension. However, there may be other wage employment mechanisms in developing country contexts such as India that operate to increase hypertension. For example, in some highly traditional contexts, domestic tensions may erupt due to women's employment. Such mechanisms could cancel out other beneficial effects of employment. In this way, the material-schema interplay may be one of antagonism, where a material (employment) maps onto multiple conflicting schemas, in this case schemas of autonomy and schemas of threat to a prevailing social order.

This study finds a smaller hypertension gender gap in households that do not seclude women and a larger gap in households that seclude women. Further, women in seclusion households are more likely be diagnosed with hypertension compared to women in nonseclusion households. For men, this pattern is reversed. Men in households that seclude women are less hypertensive than men in households that do not seclude. These findings provide support for the idea that although in these data men appear to have a health advantage in terms of hypertension, men's advantage is enlarged in households that seclude women, apparently at the cost of women's health. For women, this pattern may tap restricted physical activity, increased challenges in accomplishing daily goals, constrained opportunities for communication and influence, and diminished coping resources. Ironically, seclusion may also partly reflect increases in chronic stress. Consistent with a "duality of structure" framework, as one possible

example, practices of seclusion and deference instantiate and reinforce schemas that men are "aggressive and uncontrollable" and women are "passive and compromising," which ironically can foster sexual harassment (Abraham, 2001, p. 134; Derné, 2008, p. 177). Ethnographic work from India reports that from the teen years on, this harassment may involve being regularly "slapped on bottoms, being touched on the breasts, being whistled at, being deliberately brushed against, [and] receiving catcalls or sexually suggestive comments" (Puri, 1999, p. 87), resulting in "feeling seriously threatened" (Abraham, 2001, p. 138; Derné, 2000, pp. 155–56, 2008, p. 177; Puri, 1999, p. 75). Further, "being constantly watched and surveyed by men in public" cultivates a "feeling of resentment" (Parameswaran, 1997) and a defensive posture which constrains women's opportunities, reduces effectiveness in eliciting men's cooperation in achieving basic goals, and increases stress. Consequences of gender discrimination in these forms can create vulnerabilities to chronic conditions over time. Future research should devote attention to probing the extent to which these various mechanisms underlie the importance of seclusion for women's hyptertension.

Also interesting, there appears to be a protective effect on health for men in households where women are secluded. This finding lends support to the idea that although seclusion harms women's health, the cultural prestige stemming from seclusion is associated with protective effects on men's health. This may be because women's seclusion relieves many Indian men of anxiety and stress. American Anthropologist, Rajeha, describes an enlightening interaction with men of the family that hosted her (took her as their "daughter and sister") during her ethnographic research in their village. Seeing her off, the men said "Thank God nothing happened," in an expression of relief

that she had not dishonored them during her stay (Raheja & Gold, 1994, p. xxi). Men see the repute of the women of their households as a point of vulnerability for their honor and their worries can be to some extent relaxed when the women of their households practice seclusion. For these men, women's seclusion carries both an interpretive schema for construing the status of women and a tool for performing their masculine honor and the prestige and reputation that this preserves in their own eyes and those of onlookers. Men whose female family members do not seclude and are more exposed to the public male gaze and experience chronic stress, producing greater susceptibility to high blood pressure.

Men's health advantage in hypertension is reduced in households with greater empowerment of women through women's decision making in household matters. Women in households where women have a say in decision making are less likely to be diagnosed with hypertension than women in households where women have lower levels of decision making. Men appear equally likely to be diagnosed with hypertension in either household context. With a duality of structure model in view, if women's decision making is a material practice that is less perceivable, it may be the case that even if there accompanying schemas that threaten men, if the schemes are not instantiated in a public way, there is little anxiety and stress for men. These empirical findings and arguments suggest that men can give women high levels of household decision making without hurting their own health, at least in terms of hypertension. Regarding women, these results provide support to prior literature arguing that combining the kinds of high levels of responsibility and demanding lives that Indian women lead with limited say in life's decisions is health damaging (Lennon & Rosenfield, 1992). For women, it should matter

less if a material practice and schemas of empowerment are visible to the public, rather whether women themselves practice and instantiate material-schema structures of empowerment.

Taking these seclusion and decision making findings together, further implications can be drawn by thinking of women's seclusion as a public act and women's decision making as a private negotiation that takes place behind closed doors. One implication is that it may be important to consider the public or private nature of health-shaping aspects of gender. For who is gender practiced? Who is the audience? Who benefits from gender materials and schemas? Who suffers? Those who would seek to transform traditional practices should perhaps exercise caution especially in the case of more public-oriented gendered behaviors. These strands of gender may be tethered to the health of men and women in opposing ways. At the least, when a public practice such as seclusion is curbed, there may be a need for additional social support to help buffer vulnerable groups from health-damaging effects (in this case, men in households where seclusion is practiced). On the other hand, changes in private practices such as greater intra-household decision making for women may prove less complicated because they seem to only result in neutral or positive effects on hypertension.

This study is not without limitations. First, because the data on individual men and women in this study are cross-sectional, I cannot rule out the possibility that hypertension is driving gender indicators. For example, poor health may lead some women to involve themselves less in household decisions. Although such reverse causation is a possibility in these data, it is somewhat unlikely given the fact that the key

independent variables (seclusion and decision making) are measured at the household level and not at the level of the individual.

Despite limitations, this study extends knowledge concerning the relationship between culture and gender differences in hypertension in India. Additionally, this study disentangles the importance of several dimensions of gender as they pertain to health. Interventions to improve the disease burden of hypertension in the population often focus on diet, substance use, and physical activity. Stress is also brought into discussions. This study highlights the multidimensionality of gender—as material-schema structures—and their role as inputs to hypertension. As a backdrop to findings, this paper argues that certain practices leading to gender-based health differences are tethered to a deep-seated concern for social honor. This insight is important because, as the data suggest, altering some gendered practices without adjusting the motivating status systems of social honor may not produce the wholly positive health effects intended. For now, it seems clear that different dimensions of gender weave themselves into the health of men and women in complex and sometimes conflicting ways.

CHAPTER FIVE

Conclusion

This dissertation is focused on the intersection of gender, family, culture and health, both at the level of individuals and communities. Though research from a variety of contexts suggests complex gender differences in health, there remains much to be understood regarding the potential role of culture—both at individual and areal levels—in influencing health differences between women and men. In this dissertation, I attempted to take a small step in examining these issues by, (a) analyzing gender and health at individual and contextual levels, at times simultaneously, (b) focusing on India, a national context with pronounced gender hierarchies that vary across local contexts, and (c) measuring the effects of salient cultural practices that vary in their prevalence across local contexts of India. The chapters of this dissertation explore the extent to which these cultural elements contribute to health and reduce or widen gender-based health disparities in India.

Chapter two uses Sewell's "duality of structure" model (Sewell, 1992) to understand differences in health outcomes related to dowry-practice. This chapter asks whether the extent of dowry practice perception in local communities is linked to wider gender gaps in illness. Results indicate that increases in community dowry practice are linked to increases in all morbidity outcomes for women and also greater gender gaps in health. These results are consistent with arguments that dowry practice tends to constrain women's opportunities, produces chronic stress, and cultivates identities that fail to buffer the health effects of noxious community contexts. I explore a variety of arguments

related to how dowry might have direct or indirect effects on health. Unexpectedly, two acute illness indicators also increase for men in dowry communities, suggesting that gender-biased cultural contexts can have surprising and unintended ramifications. Implications of these findings and potentially fruitful directions for future research are discussed.

Chapter three also draws on a duality of structure framework of culture and focuses on the multidimensionality of gender. The chapter examines how different dimensions of gender at the community level are related to women's self-rated health. Particular attention is given to the importance of marriage and gender segregation dimensions of gender for women's health. Results show that marriage-related and gender segregation-related dimensions of gender are associated with increases in poor health. Of these two dimensions of gender, the most variance in self-rated health is explained by a measure of gender segregation—male-first eating order. This finding suggests that cultural practices deeply embedded in the intimate relationships within families and day-to-day life are the ones which may most accurately reveal the degree to which culture is ingrained in intimate activities of daily life. These results also imply that such deep cultural practices of gender segregation are more important than other forms of gender segregation for women's health.

The fourth chapter analyzes gender differences in diagnosed hypertension using individual-level and household-level variables. This chapter also uses the duality of structure framework to understand links between different dimensions of gender— economic, gender segregation, and women's empowerment—and gender differences in hypertension. The analysis in this chapter tests for moderating roles of different

dimensions of gender and differences in men's and women's hypertension. Moderating

effects are found in the cases of gender segregation and women's empowerment.

Specifically, gender differences in hypertension are exacerbated in households that

seclude women and restrict women's household decision making. These measures are

associated with greater hypertension for women, but in the case of women's seclusion,

reduced hypertension for men. In the case of seclusion and women's hypertension, the

results may tap restricted physical activity, increased challenges in accomplishing daily

goals, constrained opportunities for communication and influence, and diminished coping

resources. Seclusion may also partly reflect increases in chronic stress. Consequences of

gender discrimination in these forms can create vulnerabilities to chronic conditions over

time. Future research should devote attention to probing the extent to which these

various mechanisms underlie the importance of seclusion for women's hyptertension.

Why would men in households that seclude women be less hypertensive than men

in households that do not seclude women? The cultural prestige stemming from seclusion

may have protective effects on men's health. This may be because women's seclusion

relieves many Indian men of anxiety and stress. Men whose female family members do

not seclude and are more exposed to the public male gaze and experience chronic stress,

producing greater susceptibility to high blood pressure.

Turning to the effects of household decision making, women in households where

women have a say in decision making are less likely to be diagnosed with hypertension

than women in households where women have lower levels of decision making. This

finding provides support to prior literature arguing that combining the kinds of high

110

levels of responsibility and demanding lives that Indian women lead with limited

autonomy in life's decisions is health damaging (Lennon & Rosenfield, 1992).

The above empirical chapters shed new light on relationships between culture,

community, and gender differences in health in India. The chapters bring into relief the

importance of several dimensions of gender as pertaining to chronic and acute illness

outcomes, as well as women's general subjective evaluations of their health.

Interventions to improve the disease burden in India tend to focus on health behaviors,

socio-economic factors, and food and medical care access. The role of stress is also

brought into discussions. This dissertation seeks to contribute to this prior research by

focusing on the multidimensionality of gender—as material-schema structures—and their

role as health inputs. I also argue certain practices leading to gender-based health

differences are tethered to a deep-seated concern for social honor—a strong theme in

prior social science research from India (Mandelbaum, 1988; Srinivas, 1952, 1977). This

point is important because, as chapter four suggests, altering some gendered practices

without adjusting the motivating status systems of social honor may not produce the

wholly positive health effects intended. For now, it seems clear that different dimensions

of gender weave themselves into the health of men and women in robust, complex, and

sometimes opposing ways. Attention to the maintenance of cultural practices and their

levels of concentration in communities can help policymakers identify subpopulations

that are vulnerable to health problems. Such analyses may also serve to suggest policies

intent on educating the public regarding the benefits and potential costs of various

cultural practices such as dowry-giving. Additionally, these chapters highlight the

importance of studying the social sources and mechanisms which maintain and spread such cultural practices. I take up a discussion of this last point below.

The Formation of Broadly-shared Schemas in Community Contexts

Much of the dissertation has focused on community-level material-schema structures and health. One important limitation to the dissertation is that there is no sustained discussion of the diffusion of schemas within communities. How do mental schemas become community-level properties? Below, I outline how schematic and material components of social structure unfold in communities. Attention is given to the case of dowry and accompanying schemas.

Schemas spread throughout a community primarily through exposure to and interaction with human and non-human material embodiments, enactments, and instances of schemas (Johnson-Hanks et al., 2011). Briefly, there are three main ways schemas spread: (1) learning, (2) identity formation, and (3) transposition. First, people come to inductively *learn* schemas through repeated exposure to instances of schemas and through explicit teaching of schemas. Schemas are especially likely to be learned when an individual is surrounded by and interacts with others who instantiate the schema in perceptible material form (Johnson-Hanks et al., 2011, p. 7). In many parts of India, from a young age people are surrounded by narratives, practices, rituals, songs, and verbal expressions that convey lower status for females, or a taken-for-granted view that investments in girls and women is wasteful. An instance of the latter schema can be seen in adages such as, "bringing up a daughter is like watering a plant in another's courtyard" (Attané & Guilmoto, 2007; Dube, 1988, p. 12), or poignant metaphors for a daughter as a "'bird of the courtyard' who dips in only to snatch some grain and then disappear"

(Miller, 1981, p. 105). Marriage ceremonies are often occasions for the expression of grief on the part of the bride and her family because clashing schemas of love for the bride and schemas of female devaluation are both expressed concurrently. These schemas are illustrated by laments sung at the time of marriages in areas where dowry practice is common: "My child, had you been a son you would have lived with us and ploughed the field and looked after us. I would have served you hot rice. But now you are being sent out of the house like a corpse" (Dube, 1988, p. 12). Such gender schemas are learned at young ages through wedding songs, rituals, and dowry-related talk in households and communities. In other words, these schemas are collectively shaped and learned through social interaction. Although counter schemas may exist and may even be relatively prevalent, these counter schemas are more likely to be clandestine or subtle (Raheja & Gold, 1994), thus leaving a higher frequency of exposure to dowry-related schemas.[1]

Second, individuals' *identities* come to correspond to, organize, and are constructed out of material-schema structures in the world around them. Individual people inhabit specific social positions and live out everyday life and its experiences in the context of the material-schema structures that go along with their social positions. "Over time, [individuals] appropriate the structures' constituent schemas, by storing ideas, meaning, and values in the brain, and their constituent materials, by cultivating abilities, knowledge, and behavioral repertoires" (Johnson-Hanks et al., 2011, p. 15). Structures in the world "inculcate [individuals] with particular habits, hopes, and views of the self" (Johnson-Hanks et al., 2011, p. 14). The above process is especially true in the

---

[1] See Harding (2007) for an example of the muted effects of clandestine schemas.

case of social identities, that is, identification with a group or category such as "girl" or "woman" (Johnson-Hanks et al., 2011, p. 47). This is not to say that individuals have no say in the development of their identities. Women in India, for example, often use performative materials such as folk songs to construct identities that belie full subordination (Raheja & Gold, 1994). Nevertheless, individuals' ranges of identities are limited in terms of the materials and schemas available to them. In the main, identities come to embody the material-schema structures in the surrounding world.

Third, schemas spread and become widely entrenched in a community through *transposition*. A major characteristic of schemas is their transposability—schemas are schematic, underspecified, and so applicable and transposable across a range of real-life situations (Johnson-Hanks et al., 2011, p. 47). As the consciousness of more and more members of a community is structured by prevailing gender schemas, these schemas bleed into other schemas, institutions, and spheres of life. This makes the taken-for-grantedness of female subordination, devaluation, and divestment seem appropriate (Andrist, 2008; Appadurai, 1981, pp. 494, 509; Kakar, 1981, p. 119). For instance, if a "women as chattel" schema—an instrumental schema—embedded in affinal alliance bargains culminating in dowry provision, this same schema, when transposed, may commodify women and girls in other settings such as public interactions in bazaars or devalue women in the course of medical diagnosis, health care provision, or allocations of health-promoting resources such as food and rest.

Future Research: Implications of Prestige

One implication of this dissertation pertains to the fact that several of the cultural practices in communities (e.g., dowry and seclusion) are not only capturing something

114

about local conditions of gender discrimination, but are also about local status systems or prestige systems. In other words, prestige schemas are part of what motivate discrimination, discrimination that shapes health. Specifically, gendered schemas can be bound up in prestige and this can have health implications. The connection between prestige goals and gendered schemas is not limited to the Indian context. The masculinity and health literature is relevant here. To the extent that there are masculine ideals of self-reliance and stoicism, these may impact willingness on the part of men to discuss health problems with physicians and to interact with the health care system (Payne, 2006). Health care seeking behavior, a material, may carry with it a schema of dependence or weakness. These ideas lead to the following question. To what extent are men's stoicism and self-reliance also markers of prestige and social status and how does this prestige operate as a driver of health behavior and health status?

A variety of other connections between prestige schemas, materials, and health can be made. How does a cultural connection between thinness and prestige drive smoking? Health scholars argue that the idea that some individuals start smoking or fail to quit smoking is motivated by a desire to become thin or out of a fear of gaining weight. Incidentally, people are not wrong. Not only is there a documented perceived weight gain associated with smoking cessation, there are also objective links between smoking cessation and weight gain (Kasteridis & Yen, 2012). We can ask the question, to what extent are there strong associations between the material fact of being thin on the one hand and prestige and social status on the other? To what extent can the material-schema duality of thinness-prestige drive the health behavior of smoking?

115

These concepts also map onto the idea of "biological expressions of gender discrimination" (Krieger, 2000). The idea here is there are biological expressions of gender that may have little or nothing to do with biological sex differences. For instance, lower levels of funding for girls' athletic programs influence girls' fitness regimes and physical build (Krieger, 2000). The framework employed in this dissertation, the duality of structure, sheds light on this idea because it suggests that athletic programs and their funding are materials. These materials both have schemas that motivate how these materials are organized and carry with them schemas that have consequences for biological expression. The existence of the material of gender-biased athletic funding sustains schemas regarding gender that shape males' and females' exercise patterns and physical build. These patterns can have long-lasting effects in terms of health behaviors as people live into old age, a time in life when lack of muscle strength is known to be a major factor in women's health span and overall quality of life.

By the same logic, there are a variety of other experiences of discrimination across a range of statuses that can have biological expression—race, social class, or other characteristics such as religion. People can come to embody and biologically express social experiences from conception to death across a wide spectrum of morbidity outcomes and mortality. The extent to which quality of educational opportunities are differentially distributed according to race in the United States is an important example underscored in recent research (Montez, Hummer, & Hayward, 2012; Williams & Sternthal, 2010).

To provide a somewhat related application of how schemas can impact health behaviors, consider condom use and HIV/AIDS. Recent work has examined the kinds of

cultural narratives that accompany condom usage in Malawi (Tavory & Swidler, 2009). This work has brought into relief one of the challenges in promoting condom utilization in that context; there are a variety of dominant schemas that are attached to condom use. Condoms come with the schema that the sexual encounter in which condoms are used is somehow "dirty." That is, prostitutes or "barmaids" use condoms, or condoms are for sexual encounters between people that do not trust each other. There are a variety of schemas that condom use calls up such as a lack of trust or that the encounter is one of illicit sex. Another schema that is attached to condom use that Swidler's research highlights pertains to different conceptions of what is pleasurable about sex itself and how these schemas differ in interesting and important ways in comparison to dominant schemas about what is pleasurable about sex in the West. Central to what is pleasurable about sex in the West is physical friction; in Malawi it is mingling of bodily fluids. Condom schemas in Malawi are instantiated with sayings such as, "You don't eat a sweet with its wrapper on."

Future Research: Religion and Health

The last decades have seen a burgeoning literature around the role of religion in health and illness (Ellison & Levin, 1998; Levin & Markides, 1985). Religion, for instance, can be used as a resource with which to buffer the effects of discrimination on health. Although there may be a dominant gender ideology in a social context, women may have other beliefs that buffer the effects of gender discrimination. Among a variety of cultural resources used to cope with discrimination, women in India may also use religion (Raheja & Gold, 1994). This comports with findings from new research on women in Kuwait that finds that feminism can use religious tools in the context of an

overall religiously conservative and male-dominated cultural climate (González, 2013).

Future research should examine religion as a coping resource specifically related to

buffering discrimination in India. Recent work utilizes tools from cultural sociology to

shed light on how cultural repertoires are used as a buffer against racial discrimination

(Hall & Lamont, 2009). There is also the potential to use cultural sociology to build on

insights from work on religion as a coping resource in the context of a variety of health-

damaging effects (e.g. Pargament, 1997). Focusing on religion as a buffer to

discrimination and combining cultural frameworks could provide fruitful extensions of

research at these intersections. Religion may also reduce discrimination at the macro-

level through religious movements focused on social equality and community service

(e.g., Stark, 1996). In India, religion has played a role in major anti-caste and women's

movements (Venugopal, 1990). In this dissertation, if some of the determinants of poor

health examined in this dissertation are taken to be religious in nature (e.g., women's

seclusion and male-first eating), these effects could be considered more in line with

religion-health research highlighting the "dark side" of religion (e.g., Blanchard et al.,

2008). One exception is the protective effects of women's seclusion on male

hypertension. Although the bulk of empirical studies find that religion is protective of

health, studies also find that religion can have negative effects on health or no significant

relationship with health (Ellison & Hummer, 2010, p. 434). For example, recent research

finds that religious alienation is associated with increases in depressive symptoms

(Froese & Draper, n.d.). To be sure, there exists a complex relationship between religion

and health—some might say a religious paradox. At times religion may contribute to

health problems by legitimating inequities; at other times religion may protect health by

providing resources with which to cope with life's trials. Similar to culture, religion is a

double-edged sword.

BIBLIOGRAPHY

Abraham, L. (2001). Redrawing the Lakshman Rekha: Gender differences and cultural constructions in youth sexuality in urban India. *South Asia: Journal of South Asian Studies*, *24*, 133–156.

Ahmed-Ghosh, H. (2004). Chattels of society: Domestic Violence in India. *Violence against women*, *10*, 94.

Allison, P. (2001). *Logistic regression using the SAS system: Theory and application.* New York: John Wiley.

Allison, P. D. (1987). Introducing a Disturbance into Logit and Probit Regression Models. *Sociological Methods & Research*, *15*, 355–374.

Allison, P. D., & SAS Institute. (1995). *Survival analysis using the SAS system : a practical guide*. Cary, NC: SAS Institute.

Anderson, S. (2003). Why dowry payments declined with modernization in Europe but are rising in India. *Journal of Political Economy*, *111*, 269–310.

Andrist, L. (2008). *Social Capital's Dark Side and Patriarchy in India*. Presented at the Annual Meetings of the Population Association of America, New Orleans.

Appadurai, A. (1981). Gastro-Politics in Hindu South Asia. *American Ethnologist*, *8*, 494–511.

Attané, I., & Guilmoto, C. Z. (Eds.). (2007). *Watering the neighbour's garden the growing demographic female deficit in Asia*. Paris: Committee for international cooperation in national research in demography (CICRED).

Babb, L. A. (1981). Glancing: Visual Interaction in Hinduism. *Journal of Anthropological Research*, *37*, 387–401.

Barr, D. A. (2008). *Health disparities in the United States: social class, race, ethnicity, and health*. Baltimore: Johns Hopkins University Press.

Baunach, D. M. (2003). Gender, Mortality, and Corporeal Inequality. *Sociological Spectrum*, *23*, 331–358.

Berkman, L. F., & Glass, T. A. (2000). Social integration, social networks, social support, and health. In L. F. Berkman & I. Kawachi (Eds.), *Social epidemiology* (pp. 131–173). New York: Oxford University Press.

Bird, C. E., & Rieker, P. P. (1999). Gender matters: an integrated model for understanding men's and women's health. *Social Science & Medicine*, *48*, 745–755.

Bird, C. E., & Rieker, P. P. (2008). *Gender and health: the effects of constrained choices and social policies*. New York: Cambridge University Press.

Blanchard, T. C., Bartkowski, J. P., Matthews, T. L., & Kerley, K. R. (2008). Faith, Morality and Mortality: The Ecological Impact of Religion on Population Health. *Social Forces*, *86*, 1591–1620.

Blau, F. D., Brinton, M. C., & Grusky, D. B. (2006). *The declining significance of gender?* New York: Russell Sage Foundation.

Bloch, F., & Rao, V. (2002). Terror as a bargaining instrument: A case study of dowry violence in rural India. *American Economic Review*, *92*, 1029–1043.

Bloch, F., Rao, V., & Desai, S. (2004). Wedding Celebrations as Conspicuous Consumption: Signaling Social Status in Rural India. *The Journal of Human Resources*, *39*, 675–695.

Bloom, S. S., Wypij, D., & Das Gupta, M. (2001). Dimensions of Women's Autonomy and the Influence on Maternal Health Care Utilization in a North Indian City. *Demography*, *38*, 67–78.

Bosworth, H. B., Bartash, R. M., Olsen, M. K., & Steffens, D. C. (2003). The association of psychosocial factors and depression with hypertension among older adults. *International Journal of Geriatric Psychiatry*, *18*, 1142–1148.

Caldwell, J. C. (1986). Routes to Low Mortality in Poor Countries. *Population and Development Review*, *12*, 171–220.

Caldwell, J. C., Reddy, P. H., & Caldwell, P. (1983). The Causes of Marriage Change in South India. *Population Studies*, *37*, 343–361.

Case, A., & Paxson, C. (2005). Sex differences in morbidity and mortality. *Demography*, *42*, 189–214.

Chakraborty, T., & Kim, S. (2010). Kinship institutions and sex ratios in India. *Demography*, *47*, 989–1012.

Chakravarty, I. (1972). *Saga of Indian Food: a historical and cultural survey*. New Delhi: Sterling.

Chen, L. C., Huq, E., & D'Souza, S. (1981). Sex Bias in the Family Allocation of Food and Health Care in Rural Bangladesh. *Population and Development Review*, *7*, 55–70.

121

Collins, R. (1975). *Conflict sociology: toward an explanatory science.* New York: Academic Press.

Collins, R., Chafetz, J. S., Blumberg, R. L., Coltrane, S., & Turner, J. H. (1993). Toward an Integrated Theory of Gender Stratification. *Sociological Perspectives*, *36*, 185–216.

Das, S. K., Sanyal, K., & Basu, A. (2005). Study of urban community survey in India: growing trend of high prevalence of hypertension in a developing country. *International Journal of Medical Sciences*, *2*, 70–78.

Davidson, K., Jonas, B. S., Dixon, K. E., & Markovitz, J. H. (2000). Do Depression Symptoms Predict Early Hypertension Incidence in Young Adults in the CARDIA Study? *Arch Intern Med*, *160*, 1495–1500.

De Bruin, A., Picavet, H. S. J., & Nassikov, A. (1996). *health interview survey: towards international harmonization of methods and instruments*. WHO: Regional Publications European Series.

Denton, M., Prus, S., & Walters, V. (2004). Gender differences in health: a Canadian study of the psychosocial, structural and behavioural determinants of health. *Social Science & Medicine*, *58*, 2585–2600.

Deolalikar, A. B., & Rao, V. (1998). The Demand for Dowries and Bride Characteristics in Marriage: Empirical Estimates for Rural South Central India. In K. R. Maithreyi, R. M. Sudershan, & A. Shariff (Eds.), *Gender, Population and Development*. Oxford: Oxford University Press.

Derné, S. (1995). *Culture in Action: Family Life, Emotion, & Male Dominance in Banaras*. Albany, NY: State University of New York Press.

Derné, S. (2000). *Movies, masculinity, and modernity: an ethnography of men's filmgoing in India*. Greenwood Press.

Derné, S. (2008). *Globalization on the Ground: New Media and the Transformation of Culture, Class, and Gender in India*. Los Angeles: Sage Publications.

Derné, S. (2009). Well-being: lessons from india. In G. Mathews & C. Izquierdo (Eds.), *Pursuits of happiness: well-being in anthropological perspective* (pp. 127–146). New York: Berghahn Books.

Desai, S., & Andrist, L. (2010). Gender Scripts and Age at Marriage in India. *Demography*, *47*, 667–687.

Desai, S., Dubey, A., Joshi, B., Sen, M., Shariff, A., & Vanneman, R. D. (2010). *Human Development in India: Challenges for a Society in Transition*. New York: Oxford University Press.

Desai, S., Vanneman, R., & National Council of Applied Economic Research. (2010). India Human Development Survey (IHDS), 2005. Inter-university Consortium for Political and Social Research (ICPSR) [distributor]. Retrieved from http://dx.doi.org/10.3886/ICPSR22626.v8

Desai, S., & Wu, L. (2010). Structured Inequalities—Factors Associated with Spatial Disparities in Maternity Care in India. *Margin: The Journal of Applied Economic Research*, *4*, 293 –319.

Dodoo, F. N.-A., & Frost, A. E. (2008). Gender in African Population Research: The Fertility/Reproductive Health Example. *Annual Review of Sociology*, *34*, 431–452.

Dube, L. (1988). On the Construction of Gender: Hindu Girls in Patrilineal India. *Economic and Political Weekly*, *23*, WS11–WS19.

Dube, L. (2001). *Anthropological Explorations in Gender: Intersecting Fields*. New Delhi: SAGE Publications.

Durkheim, E. (1951). *Suicide*. (J. A. Spaulding & G. Simpson, Trans.). New York: Free Press.

Dyson, T. (2012). Causes and Consequences of Skewed Sex Ratios. *Annual Review of Sociology*, *38*, 443–461.

Dyson, T., & Moore, M. (1983). On kinship structure, female autonomy, and demographic behavior in India. *Population and development review*, 35–60.

Eck, D. L. (1981). *Darsan: Seeing the divine light in India*. Chambersburg, PA: Anima Books.

Ellaway, A., & Macintyre, S. (2001). Women in their place: Gender and perceptions of neighborhoods and health in the West of Scotland. In I. Dyck, N. D. Lewis, & S. McLafferty (Eds.), *Geographies of women's health* (pp. 265–281). New York: Routledge.

Ellison, C. G., & Hummer, R. A. (2010). *Religion, families, and health population-based research in the United States*. New Brunswick, N.J.: Rutgers University Press.

Ellison, C. G., & Levin, J. S. (1998). The Religion-Health Connection: Evidence, Theory, and Future Directions. *Health Education & Behavior*, *25*, 700 –720.

Eriksson, J. G., Kajantie, E., Osmond, C., Thornburg, K., & Barker, D. J. P. (2010). Boys live dangerously in the womb. *American Journal of Human Biology*, *22*, 330–335.

Ferraro, K. F., & Farmer, M. M. (1999). Utility of Health Data from Social Surveys: Is There a Gold Standard for Measuring Morbidity? *American Sociological Review*, *64*, 303–315.

Firth, D. (1993). Bias Reduction of Maximum Likelihood Estimates. *Biometrika, 80*, 27–38.

Forthofer, M. S., Janz, N. K., Dodge, J. A., & Clark, N. M. (2001). Gender differences in the associations of self esteem, stress and social support with functional health status among older adults with heart disease. *Journal of Women & Aging, 13*, 19–37.

Froese, P., & Draper, S. (n.d.). Alienation: Negative Images of Macroreality.

Geronimus, A. T. (1992). The weathering hypothesis and the health of African-American women and infants: evidence and speculations. *Ethnicity & disease, 2*, 207–221.

Giddens, A. (1984). *The constitution of society: outline of the theory of structuration*. Berkeley: University of California Press.

González, A. L. (2013). *Islamic Feminism in Kuwait: The Politics and Paradoxes*. Palgrave Macmillan.

Gorman, B. K., & Read, J. G. (2006). Gender Disparities in Adult Health: An Examination of Three Measures of Morbidity. *Journal of Health and Social Behavior, 47*, 95 –110.

Gupta, R. (2004). Trends in hypertension epidemiology in India. *Journal of Human Hypertension, 18*, 73–78.

Gupta, R., Pandey, R. M., Misra, A., Agrawal, A., Misra, P., Dey, S., … Guptha, S. (2011). High prevalence and low awareness, treatment and control of hypertension in Asian Indian women. *Journal of Human Hypertension*. doi:10.1038/jhh.2011.79

Hall, P. A., & Lamont, M. (2009). *Successful Societies: How Institutions and Culture Affect Health*. New York: Cambridge University Press.

Harding, D. J. (2007). Cultural Context, Sexual Behavior, and Romantic Relationships in Disadvantaged Neighborhoods. *American Sociological Review, 72*, 341 –364.

Harris, K., & Cheng, M. (2005). Family structure role models and the context of nonmarital childbearing.

Hausmann, R., Tyson, L. D., & Zahidi, S. (2010). *The global gender gap report 2010*. World Economic Forum. Retrieved from http://www.weforum.org/pdf/gendergap/report2010.pdf

Hawkley, L. C., Berntson, G. G., Engeland, C. G., Marucha, P. T., Masi, C. M., & Cacioppo, J. T. (2005). Stress, Aging, and Resilience: Can Accrued Wear and Tear Be Slowed? *Canadian Psychology*, *46*, 115–125.

Hayward, M. D., & Gorman, B. K. (2004). The Long Arm of Childhood: The Influence of Early-Life Social Conditions on Men's Mortality. *Demography*, *41*, 87–107.

Heinze, G. (2006). A comparative investigation of methods for logistic regression with separated or nearly separated data. *Statistics in Medicine*, *25*, 4216–4226.

Hertzman, C., & Frank, J. (2005). Biological pathways linking social environment, development, and health. In J. Heymann, C. Hertzman, M. L. Barer, & R. G. Evans (Eds.), *Healthier Societies: From Analysis to Action*. New York: Oxford University Press.

Hinton, L. (2012, September 13). *Combining qualitative and quantitative methods in research on depression in older Latinos: Results from the Men's Health and Aging Study (MeHAS)*. Presented at the The 2012 International Conference on Aging in the Americas, University of Southern California, Los Angeles, CA.

Hirschman, C. (1985). Premarital socioeconomic roles and the timing of family formation: a comparative study of five Asian societies. *Demography*, *22*, 35–59.

Hochschild, A. R. (1990). *The second shift: working parents and the revolution*. New York: Avon Books.

Hoffmann, J. E., & Bartkowski, J. E. (2008). Gender, Religious Tradition and Biblical Literalism. *Social Forces*, *86*, 1245–1272.

Hopcroft, R. L., & Bradley, D. B. (2007). The Sex Difference in Depression Across 29 Countries. *Social Forces*, *85*, 1483 –1507.

Huijts, T., & Kraaykamp, G. (2011). Religious Involvement, Religious Context, and Self-Assessed Health in Europe. *Journal of Health and Social Behavior*, *52*, 91–106.

Huisman, M., Kunst, A. E., & Mackenbach, J. P. (2003). Socioeconomic inequalities in morbidity among the elderly; a European overview. *Social Science & Medicine*, *57*, 861–873.

Idler, E. L., & Benyamini, Y. (1997). Self-rated health and mortality: a review of twenty-seven community studies. *Journal of Health and Social Behavior*, *38*, 21–37.

Isles, C. S. (2000). Prevalence, epidemiology and pathology of hypertension. In D. A. Warrell (Ed.), *Oxford Textbook of Medicine* (4th ed., pp. 1153–1160). Oxford: Oxford University Press.

James, S. A., & Kleinbaum, D. G. (1976). Socioecologic stress and hypertension related mortality rates in North Carolina. *American Journal of Public Health*, *66*, 354–358.

Johnson-Hanks, J., Bachrach, C. A., Morgan, S. P., & Kohler, H.-P. (2011). *Understanding family change and variation: toward a theory of conjunctural action*. New York: Springer.

Kakar, S. (1981). *The inner world: a psycho-analytic study of childhood and society in India*. (2nd ed.). Delhi: Oxford University Press.

Kasteridis, P., & Yen, S. T. (2012). Smoking cessation and body weight: evidence from the Behavioral Risk Factor Surveillance Survey. *Health services research*, *47*, 1580–1602.

Kearney, P. M., Whelton, M., Reynolds, K., Muntner, P., Whelton, P. K., & He, J. (2005). Global burden of hypertension: analysis of worldwide data. *Lancet*, *365*, 217–223.

Khare, R. S. (1976a). *The Hindu hearth and home*. New Delhi: Vikas.

Khare, R. S. (1976b). *Culture and reality: essays on the Hindu system of managing foods*. Simla: Indian Institute of Advanced Study.

Kingdon, G. G. (2002). The Gender Gap in Educational Attainment in India: How Much Can Be Explained? *Journal of Development Studies*, *39*, 25–53.

Kirk, D. S. (2008). The neighborhood context of racial and ethnic disparities in arrest. *Demography*, *45*, 55–77.

Kirk, D. S., & Papachristos, A. V. (2011). Cultural mechanisms and the persistence of neighborhood violence. *American Journal of Sociology*, *116*, 1190–1233.

Koenig, M. A., Ahmed, S., Hossain, M. B., & Mozumder, A. B. M. K. A. (2003). Women's Status and Domestic Violence in Rural Bangladesh: Individual- and Community-Level Effects. *Demography*, *40*, 269–288.

Krieger, N. (2000). Discrimination and Health. In L. F. Berkman & I. Kawachi (Eds.), *Social epidemiology* (pp. 36–75). New York: Oxford University Press.

Krieger, N., & Sidney, S. (1996). Racial discrimination and blood pressure: the CARDIA Study of young black and white adults. *American Journal of Public Health*, *86*, 1370–1378.

Lamb, S. (2000). *White saris and sweet mangoes: aging, gender, and body in North India*. University of California Press.

Lavely, W., Li, J., & Li, J. (2001). Sex Preference for Children in a Meifu Li Community in Hainan, China. *Population Studies*, *55*, 319–329.

LeClere, F. B., Rogers, R. G., & Peters, K. D. (1997). Ethnicity and Mortality in the United States: Individual and Community Correlates. *Social Forces*, *76*, 169–198.

Lennon, M. C., & Rosenfield, S. (1992). Women and Mental Health: The Interaction of Job and Family Conditions. *Journal of Health and Social Behavior*, *33*, 316–327.

Levin, J. S., & Markides, K. S. (1985). Religion and Health in Mexican-Americans. *Journal of Religion & Health*, *24*, 60–69.

Macintyre, S., & Ellaway, A. (2003). Neighborhoods and health: an overview. In I. Kawachi & L. F. Berkman (Eds.), *Neighborhoods and Health* (pp. 20–44). New York: Oxford University Press.

Macintyre, S., Hunt, K., & Sweeting, H. (1996). Gender differences in health: Are things really as simple as they seem? *Social Science & Medicine*, *42*, 617–624.

Malhotra, A., Vanneman, R., & Kishor, S. (1995). Fertility, Dimensions of Patriarchy, and Development in India. *Population and Development Review*, *21*, 281–305.

Mandelbaum, D. (1988). *Women's seclusion and men's honor: Sex roles in North India, Bangladesh and Pakistan*. Tucson: University of Arizona Press.

Marriot, M. (1976). Hindu Transactions: Diversity without Dualism. In B. Kapferer (Ed.), *Transaction and meaning : directions in the anthropology of exchange and symbolic behavior ed. by Bruce Kapferer*. (pp. 109–142). Philadelphia: Institute for the Study of Human Issues.

Mason, K. O. (1986). The Status of Women: Conceptual and Methodological Issues in Demographic Studies. *Sociological Forum*, *1*, 284–300.

Mason, K. O., & Smith, H. L. (2000). Husbands' versus Wives' Fertility Goals and Use of Contraception: The Influence of Gender Context in Five Asian Countries. *Demography*, *37*, 299–311.

Mathers, C. D., Sadana, R., Salomon, J. A., Murray, C. J. L., & Lopez, A. D. (2001). Healthy life expectancy in 191 countries, 1999. *Lancet*, *357*, 1685–1690.

McDonough, P., & Walters, V. (2001). Gender and health: reassessing patterns and explanations. *Social Science & Medicine*, *52*, 547–559.

McEwen, B. S. (1998). Protective and Damaging Effects of Stress Mediators. *New England Journal of Medicine*, *338*, 171–179.

McEwen, B. S. (2002). *The End of Stress as We Know It*. Washington, D.C: Joseph Henry Press.

Meyer, M. H., & Pavalko, E. K. (1996). Family, Work, and Access to Health Insurance Among Mature Women. *Journal of Health and Social Behavior*, *37*, 311–325.

Michaels, A. (2004). *Hinduism: Past and Present*. Princeton, N.J.: Princeton University Press.

Miller, B. D. (1981). *The Endangered Sex: Neglect of Female Children in Rural North India*. Ithaca, NY: Cornell University Press.

Montez, J., Hummer, R., & Hayward, M. (2012). Educational Attainment and Adult Mortality in the United States: A Systematic Analysis of Functional Form. *Demography*, *49*, 315–336.

Moore, L. M., & Vanneman, R. (2003). Context matters: Effects of the proportion of fundamentalists on gender attitudes. *Social Forces*, *82*, 115–139.

Morenoff, J. D., House, J. S., Hansen, B. B., Williams, D. R., Kaplan, G. A., & Hunte, H. E. (2007). Understanding social disparities in hypertension prevalence, awareness, treatment, and control: The role of neighborhood context. *Social Science & Medicine*, *65*, 1853–1866.

Nathanson, C. A. (1977). Sex, illness, and medical care: A review of data, theory, and method. *Social Science & Medicine (1967)*, *11*, 13–25.

National Center for Health Statistics. (2006). *Health United States, 2005*. Hyattsville, MD: Public Health Service.

Nazroo, J. Y., Edwards, A. C., & Brown, G. W. (1998). Gender differences in the prevalence of depression: artefact, alternative disorders, biology or roles? *Sociology of Health & Illness*, *20*, 312–330.

Owens, I. P. F. (2002). Sex differences in mortality rate. *Science*, *297*, 2008–2009.

Parameswaran, R. (1997). *Public Images, Private Pleasures: Romance Reading at the Intersection of Gender, Class, and National Identities in Urban India*. University of Iowa.

Pargament, K. I. (1997). *The Psychology of Religion and Coping: Theory, Research, Practice* (1st ed.). The Guilford Press.

Patrick, D., & Wizicker, T. M. (1995). Community and health. In B. Amick, S. Levine, A. R. Tarlov, & D. C. Walsh (Eds.), *Society and health* (pp. 46–92). New York: Oxford University Press.

Payne, S. (2006). *The Health of Men And Women*. Polity.

128

Pedersen, J. F. (1980). Ultrasound evidence of sexual difference in fetal size in first trimester. *British Medical Journal*, *281*, 1253.

Phelan, J. C., Link, B. G., Diez-Roux, A., Kawachi, I., & Levin, B. (2004). "Fundamental causes" of social inequalities in mortality: a test of the theory. *Journal of Health and Social Behavior*, *45*, 265.

Pickering, T. (1999). Cardiovascular pathways: socioeconomic status and stress effects on hypertension and cardiovascular function. *Annals of the New York Academy of Sciences*, *896*, 262–277.

Polletta, F. (2006). *It was like a fever storytelling in protest and politics*. Chicago: University of Chicago Press.

Puri, J. (1999). *Woman, body, desire in post-colonial India: narratives of gender and sexuality*. Psychology Press.

Purkayastha, B., Subramaniam, M., Desai, M., & Bose, S. (2003). The Study of Gender in India: A Partial Review. *Gender and Society*, *17*, 503–524.

Raheja, G. G., & Gold, A. G. (1994). *Listen to the heron's words: reimagining gender and kinship in North India*. Berkeley: University of California Press.

Rao, V. (1993). Dowry "inflation"in rural India: A statistical investigation. *Population Studies*, *47*, 283–293.

Rao, V. (1997). Wife-beating in rural South India: A qualitative and econometric analysis. *Social Science & Medicine*, *44*, 1169–1180.

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical Linear Models: Applications and Data Analysis Methods* (Vol. 2nd). Newbury Park, CA: Sage.

Read, J. G., & Gorman, B. K. (2010). Gender and Health Inequality. *Annual Review of Sociology*, *36*, 371–386.

Read, J. G., & Gorman, B. K. (2011). Gender and Health Revisited. In B. A. Pescosolido, J. K. Martin, J. D. McLeod, & A. Rogers (Eds.), *Handbook of the Sociology of Health, Illness, and Healing* (pp. 411–429). Springer New York.

Ridgeway, C. L., & Smith-Lovin, L. (1999). The Gender System and Interaction. *Annual Review of Sociology*, *25*, 191–216.

Rieker, P. P., & Bird, C. E. (2000). Sociological explanations of gender differences in mental and physical health. In C. E. Bird, P. Conrad, & A. M. Fremont (Eds.), *Handbook of Medical Sociology* (pp. 98–113). Upper Saddle River, NJ: Prentice Hall.

Rodgers, A., Lawes, C., & MacMahon, S. (2000). Reducing the global burden of blood pressure-related cardiovascular disease. *Journal of Hypertension. Supplement: Official Journal of the International Society of Hypertension*, *18*, S3–6.

Rosenberg, M., Schooler, C., & Schoenbach, C. (1989). Self-Esteem and Adolescent Problems: Modeling Reciprocal Effects. *American Sociological Review*, *54*, 1004–1018.

Ross, C. E. (1993). Fear of victimization and health. *Journal of Quantitative Criminology*, *9*, 159–175.

Ross, C. E., & Bird, C. E. (1994). Sex stratification and health lifestyle: consequences for men's and women's perceived health. *Journal of Health and Social Behavior*, *35*, 161–178.

Ross, C. E., & Mirowsky, J. (2001). Neighborhood Disadvantage, Disorder, and Health. *Journal of Health and Social Behavior*, *42*, 258–276.

Roulet, M. (1996). Dowry and prestige in north India. *Contributions to Indian Sociology*, *30*, 89–107.

Rountree, P. W., & Land, K. C. (1996). Perceived Risk versus Fear of Crime: Empirical Evidence of Conceptually Distinct Reactions in Survey Data. *Social Forces*, *74*, 1353–1376.

Sampson, R. J., & Raudenbush, S. W. (1999). Systematic Social Observation of Public Spaces: A New Look at Disorder in Urban Neighborhoods. *American Journal of Sociology*, *105*, 603–651.

Santow, G. (1995). Social roles and physical health: The case of female disadvantage in poor countries. *Social Science & Medicine*, *40*, 147–161.

Seeman, T. E., McEwen, B. S., Rowe, J. W., & Singer, B. H. (2001). Allostatic load as a marker of cumulative biological risk: MacArthur studies of successful aging. *Proceedings of the National Academy of Sciences of the United States of America*, *98*, 4770–4775.

Seeman, T. E., Singer, B. H., Rowe, J. W., Horwitz, R. I., & McEwen, B. S. (1997). Price of adaptation--allostatic load and its health consequences. MacArthur studies of successful aging. *Archives of internal medicine*, *157*, 2259–2268.

Sewell, W. H. (1992). A Theory of Structure: Duality, Agency, and Transformation. *American Journal of Sociology*, *98*, 1–29.

Sewell, W. H. (2005). *Logics of history: social theory and social transformation*. Chicago: University of Chicago Press.

Skinner, G. W. (1997). Family Systems and Demographic Processes. In D. I. Kertzer & T. E. Fricke (Eds.), *Anthropological demography: toward a new synthesis*. Chicago, IL: University of Chicago Press.

Srinivas, M. N. (1952). *Religion and society among the Coorgs of South India*. Oxford: Clarendon Press.

Srinivas, M. N. (1977). The Changing Position of Indian Women. *Man*, *12*, 221–238.

Srinivasan, P., & Lee, G. R. (2004). The dowry system in Northern India: Women's attitudes and social change. *Journal of Marriage and Family*, *66*, 1108–1117.

Srinivasan, S. (2005). Daughters or dowries? The changing nature of dowry practices in south India. *World Development*, *33*, 593–615.

Stafford, M., Cummins, S., Macintyre, S., Ellaway, A., & Marmot, M. (2005). Gender differences in the associations between health and neighbourhood environment. *Social Science & Medicine*, *60*, 1681–1692.

Stark, R. (1996). *The Rise of Christianity: A Sociologist Reconsiders History*. Princeton University Press.

Subramanian, S. V., Subramanyam, M. A., Selvaraj, S., & Kawachi, I. (2009). Are self-reports of health and morbidities in developing countries misleading? Evidence from India. *Social Science & Medicine*, *68*, 260–265.

Sundquist, K., Theobald, H., Yang, M., Li, X., Johansson, S.-E., & Sundquist, J. (2006). Neighborhood violent crime and unemployment increase the risk of coronary heart disease: A multilevel study in an urban setting. *Social Science & Medicine*, *62*, 2061–2071.

Swidler, A. (1986). Culture in Action: Symbols and Strategies. *American Sociological Review*, *51*, 273–86.

Tavory, I., & Swidler, A. (2009). Condom Semiotics: Meaning and Condom Use in Rural Malawi. *American Sociological Review*, *74*, 171–189.

Thoits, P. A. (1995). Stress, coping, and social support processes: Where are we? What next? *Journal of health and social behavior*, *35*, 53–79.

Tinkler, J. E., Li, Y. E., & Mollborn, S. (2007). Can Legal Interventions Change Beliefs? The Effect of Exposure to Sexual Harassment Policy on Men's Gender Beliefs. *Social Psychology Quarterly*, *70*, 480–494.

United Nations. (2005). *UN Millennium Project. Taking Action: Achieving Gender Equality and Empowering Women*. New York: United Nations.

Vaisey, S. (2007). Structure, culture, and community: The search for belonging in 50 urban communes. *American Sociological Review*, *72*, 851–873.

Venugopal, C. N. (1990). Reformist Sects and the Sociology of Religion in India. *Sociological Analysis*, *51*, S77.

Verbrugge, L. M. (1985). Gender and Health: An Update on Hypotheses and Evidence. *Journal of Health and Social Behavior*, *26*, 156–182.

Verbrugge, L. M. (1989). The twain meet: empirical explanations of sex differences in health and mortality. *Journal of Health and Social Behavior*, 282–304.

Verbrugge, L. M., & Wingard, D. L. (1987). Sex differentials in health and mortality. *Women & health*, *12*, 103–145.

Vögele, C., Jarvis, A., & Cheeseman, K. (1997). Anger suppression, reactivity, and hypertension risk: Gender makes a difference. *Annals of Behavioral Medicine*, *19*, 61–69.

Wallace, D. (forthcoming). Examining Fear and Stress as Mediators Between Disorder Perceptions and Personal Health, Depression, and Anxiety. *Social Science Research*. doi:10.1016/j.ssresearch.2012.06.005

Walters, V., McDonough, P., & Strohschein, L. (2002). The influence of work, household structure, and social, personal and material resources on gender differences in health: an analysis of the 1994 Canadian National Population Health Survey. *Social Science & Medicine*, *54*, 677–692.

West, C., & Zimmerman, D. H. (1987). Doing gender. *Gender & society*, *1*, 125.

Whitbeck, L. B., Adams, G. W., Hoyt, D. R., & Chen, X. (2004). Conceptualizing and measuring historical trauma among American Indian people. *American Journal of Community Psychology*, *33*, 119–130.

WHO. (2000). *World Health Report*. Geneva: WHO.

Williams, D. R., & Mohammed, S. (2009). Discrimination and racial disparities in health: evidence and needed research. *Journal of Behavioral Medicine*, *32*, 20–47.

Williams, D. R., & Sternthal, M. (2010). Understanding Racial-Ethnic Disparities in Health Sociological Contributions. *Journal of Health and Social Behavior*, *51*, S15–S27.

World Health Organization, & United Nations Population Fund. (2007). *Women, ageing, and health: a framework for action: focus on gender.* Geneva: World Health Organization.

Youssef, N. H. (1982). The interrelationships between the division of labour in the household, women's roles and their impact on fertility. In R. Anker, M. Buvinic, & N. H. Youseff (Eds.), *Women's Roles and Population Trends in the Third World* (pp. 173–201). London: Croom Helm.