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# Getting to the Doctor: BPSS Factors of Health Care Utilization in Fragile Families

Veronica P. Kuhn

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LOMA LINDA UNIVERSITY  
School of Behavioral Health  
in conjunction with the  
Faculty of Graduate Studies

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Getting to the Doctor:  
BPSS Factors of Health Care Utilization in Fragile Families

by

Veronica P. Kuhn

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A Dissertation submitted in partial satisfaction of  
the requirements for the degree  
Doctor of Philosophy in Marital and Family Therapy

---

December 2015

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Each person whose signature appears below certifies that this dissertation in his/her opinion is adequate, in scope and quality, as a dissertation for the degree Doctor of Philosophy.

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## ACKNOWLEDGEMENTS

As I reflect on the culmination of my doctoral education I am filled with an outpouring of gratitude for all of the support and guidance that has been provided to me. This dissertation is a milestone in my academic career. I have been fortunate throughout this process to challenge my every ability as a scholar. I am sincerely grateful to the many people who guided and supported me throughout the research and production of this manuscript.

I would first like to thank Dr. Brian Distelberg who offered unwavering support throughout my doctoral education and in the development and production of this dissertation. Dr. Distelberg continually challenged me to stretch and grow as a statistician and writer while also supporting and offering guidance as I navigated academia and family life. I appreciate all of our conversations that have helped shape and develop not only this dissertation but my program of research and professional identity. I also owe Dr. Jackie Williams-Reade special thanks for being an important mentor in my development as a Medical Family Therapist. My clinical abilities, teaching and scholarship have been deeply influenced by your mentorship. I appreciate greatly your willingness to engage in challenging conversation with a thoughtfulness that helped move my dissertation forward. I would also like to Dr. Winetta Oloo and Dr. Sarah Woods for giving their time to this process and providing thoughtful and important feedback that has shaped this research. With sincerest gratitude I would also like to thank my research assistant Elsie Lobo who not only contributed to the writing of this manuscript but also in serving as a sounding board when this process felt lonely.

This dissertation would not have been possible if it were not for my family. Words cannot express my gratitude. To my husband, Jeff, thank you for taking this risk with me and staying strong when I was ready to give up. To my parents, there will never be enough thank yous in the world to express the gratitude I feel. To my sweet Amelia Rose, you have read more peer reviewed journals in your 18 months of life than most babies, thank you for forcing me slow down and be present in every moment with you.

Lastly I would like to thank the tribe of mothers who surrounded me and supported me during this process. To the Wednesday group, you have showed me the many faces of motherhood and allowed me to be part of a conversation that challenges dominant discourses around what it means to be a caring, loving and present mother. To my fellow PhD mamas, the territories we have traveled often felt new and uncharted, I am grateful to have had you all on this journey.

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## ABBREVIATIONS

APIM	Actor-Partner Independence Model
BPS Model	Biopsychosocial Model
BPSS Model	Biopsychosocial-Spiritual Model
CFI	Comparative fit index
CLPC	Cross-lagged Panel Correlations
FFCW Study	Fragile Families and Child Well-Being Study
FF	Fragile Family
LM Test	Lagrange Multiplier test
RMSEA	Root mean squared error of approximation
SEM	Structural Equation Modeling

## ABSTRACT OF THE DISSERTATION

Getting to the Doctor: BPSS Factors of Health Care Utilization in Fragile Families

By

Veronica P. Kuhn

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Dr. Brian Distelberg, Chairperson

The number of fragile families where a child is born to unwed parents has increased greatly over the past half-century and now represents a diverse population in the United States (Ventura, 2009). These families, who are predominantly African American and Hispanic (Hummer & Hamilton, 2010) and are more likely to live in poverty and experience poorer health, face significant barriers to access and utilize health care services (De Marco & De Marco, 2009; Williams, 2008). Limited research exists on how these facets of the illness experience might differ for fragile families whose resources are limited prior to illness. The Biopsychosocial Spiritual Model asserts that illness is impacted by biological, psychological, social, and spiritual facets of family life (Engel, 1977; Wright, Watson, & Bell, 1996). This model was originally developed as an assessment tool to aid in the diagnosis and treatment planning process (Engel, 1977) and as a result is limited in its application to issues like health access and utilization that may occur prior to symptom onset or illness diagnosis and treatment. The Family Systems-Genetic Illness Model expands the Biopsychosocial-Spiritual model to include the time period prior to illness diagnosis (Rolland & Williams, 2005). Using data from the Fragile Families and Child Wellbeing study (Reichman, Teitler, Garfinkel, & McLanahan, 2001), structural equation modeling and actor-partner interdependence models will be employed

to test two theoretical models. The first model proposes to identify how biological, psychological, social, and spiritual facets impact the health care utilization of fragile families. The second model will examine the impact of biopsychosocial-spiritual factors (identified in model one) on health care utilization of fragile families over time.

# **CHAPTER ONE**

## **INTRODUCTION**

This dissertation aims to examine the role of biological, psychological, social, and spiritual factors on health care utilization in fragile families. Medical family therapists use the Biopsychosocial-Spiritual Model to understand the interaction between one's health, biological, psychological, social, and spiritual factors of families (Hodgson, Lamson & Reese, 2007; McDaniel, Hepworth & Doherty, 1992). According to the biopsychosocial model (Engel, 1977) and medical family therapy (McDaniel, Hepworth & Doherty, 1992), biological, psychological, social, and spiritual aspects can impact health behaviors, such as treatment compliance, but there is some evidence that “fragile families” or those families where a child is born to an unwed parents may experience these biopsychosocial-spiritual factors differently than other types of families due to accessibility of resources compared to non-fragile families. The purpose of this study is to identify the effect of biopsychosocial-spiritual factors on health care utilization in fragile families.

### **Background**

The Biopsychosocial Model developed out of the Biomedical Model in the late 1970's. George Engel (1977) presented this model in an effort to improve on the reductionistic Biomedical Model that was the dominant framework used by physicians at the time. The Biomedical Model assumed that disease could be fully accounted for by considering deviations from measurable biological norms. This model failed to allow opportunities for consideration of psychological, social, or behavioral dimensions of

illness (Engel, 1977). Because of this limitation, two belief systems were dominant in medicine. Reductionists believed that all behavioral occurrences must be considered in terms of deviations in physical chemistry and exclusionists believed that whatever was not explained in biological or chemical terms must be excluded from categories of disease or illness (Engel, 1977).

Engel (1977) argued in response to these two positions by asserting that the individual is seen as part of a whole system. This system includes all internal and external environments, from cellular and genetic components to the individual's family, and larger society. Prior to Engel's (1977) model the biomedical model was the mainframe from which health care professionals viewed disease. This model only focused on physical influences and processes of illness. Thus, Engel argued that levels of social context impact individuals as much as any physical condition. There has since been a significant amount of literature and research that focuses on the link between relationship processes and health outcomes (Carr & Springer, 2010).

A diverse group of care providers including physicians and mental health providers use George Engel's (1977) Biopsychosocial Model to explain the various dimensions individuals experience during illness (Borrell-Carrio, Suchman & Epstein, 2004; McDaniel, Doherty & Hepworth, 2014). The systemic perspectives within the model have helped guide physicians when working with individuals and families are dealing with medical problems (McDaniel, Hepworth & Doherty, 1992; McDaniel, Doherty & Hepworth, 2014; Tyndall, Hodgson, Lamson, White, & Knight, 2014). Furthermore, the specialty field of medical family therapy was established on the foundation of this model. In general McDaniel and colleagues (1992) conceptualize



medical family therapy as a biopsychosocial systems model that promotes collaboration between mental health providers and other health professionals. A significant body of research has been published on the application of the Biopsychosocial Model in a variety of medical settings (e.g., Prest & Robinson, 2006; Phelps et al., 2009; McDaniel, 1995) and applied to a variety of health issues (e.g., Walker, Jackson, & Littlejohn, 2003; Lutgendorf & Costanzo, 2002; Nicholas, Molloy, & Brooker, 2006). Medical Family Therapists have also contributed to the growth of the Biopsychosocial Model (e.g., Hodgson, Lamson, & Reese, 2007; Prest & Robinson, 2006).

Although the original Biopsychosocial Model was extremely helpful in advancing the medical family therapy field and health care in general, the field of medical family therapy has more recently extended this model to include issues of spirituality (Hodgson, Lamson, & Reese, 2007; Prest & Robinson, 2006; Wright, Watson & Bell, 1996). This development added to the three original realms (biological, psychological, and social) presented by Engel (1977) and combined them with Wright, Watson & Bell's (1996) work, which brought an awareness to illness beliefs and the role of spirituality. This new Biopsychosocial-Spiritual Model, similar to Engel's (1977) model, has received attention as an assessment tool and clinical intervention, but significantly less attention as a framework for research.

Although an extension to the original Biopsychosocial Model, the Biopsychosocial-Spiritual Model differs in that it more readily includes contextually informed treatments and interventions to address illness and disease processes (Hodgson et al., 2007). This new model expands past a single identified patient and encourages the inclusion of individuals from multiple or larger systems in practice (i.e. family,

community/religious groups, other medical or mental health professionals). Furthermore it highlights the crucial role of spirituality in health and health care.

Although the importance of spirituality in health care is relevant across all populations and healthcare settings, it may be particularly important among marginalized populations. These individuals frequently access clinics located in areas with concentrated populations of specific minority or ethnic groups (DeLeon, Giesting & Kenkel, 2003; Rizzo, Mizrahi, & Kirkland, 2005) that may have unique health beliefs. Therefore, it is important for physicians in these clinics to have broad knowledge about community beliefs and to also be sensitive to individual belief systems that may impact where and how community members access health care services.

### ***Fragile Families Longitudinal Study***

The Fragile Families and Child Wellbeing Study is a longitudinal cohort study of nearly 4,700 American children run by Princeton and Columbia Universities (Reichman, Teitler, Garfinkel, & McLanahan, 2001). The families in this study came from 75 hospitals and consisted of a stratified random sample of 20 cities across the United States between 1998 and 2000. The stratification was not geographic, but rather based on policy environments and labor market conditions in different cities (Reichman et al., 2001). The study uses an oversample of non-marital births (3600 non-marital, 1100 marital), which are referred to by the authors as “fragile families.” Fragile families are more likely to face significant barriers including limited parental resources, increased parental mental health issues, unstable parental relationship quality, poorer parenting quality, and decreased father involvement that have been shown to negatively impact child wellbeing

(Waldfogel, Craigie, & Brooks-Gunn, 2010) and may pose barriers to health care access and utilization.

The Fragile Families and Child Wellbeing Study also set out to better understand the role of fathers in these families. Specifically the study sought to evaluate the impact of fathers in the following areas: (1) The conditions and capabilities of unmarried parents; (2) The nature of the relationships between unmarried parents; (3) How children born into these families fare; and (4) How policies and environmental conditions affect families and children (Reichman et al., 2001).

Preliminary research of mothers health behaviors utilizing the baseline interviews conducted in the hospital following the birth of the focal child found that in general fathers have the ability to positively influence mothers health behaviors, specifically seeking out prenatal health care which in turn benefits birth outcomes (Teitler, 2001). While the benefits of father involvement on mother and child health outcomes are widely documented (e.g., Markson & Fiese, 2000; Teitler, 2001; Waldfogel, Craigie, Brooks-Gunn, 2010) the research on this population has not yet examined the father's health outcomes or the varying factors that impact these parents in accessing health care. Research has also yet to examine the health care utilization patterns within the families.

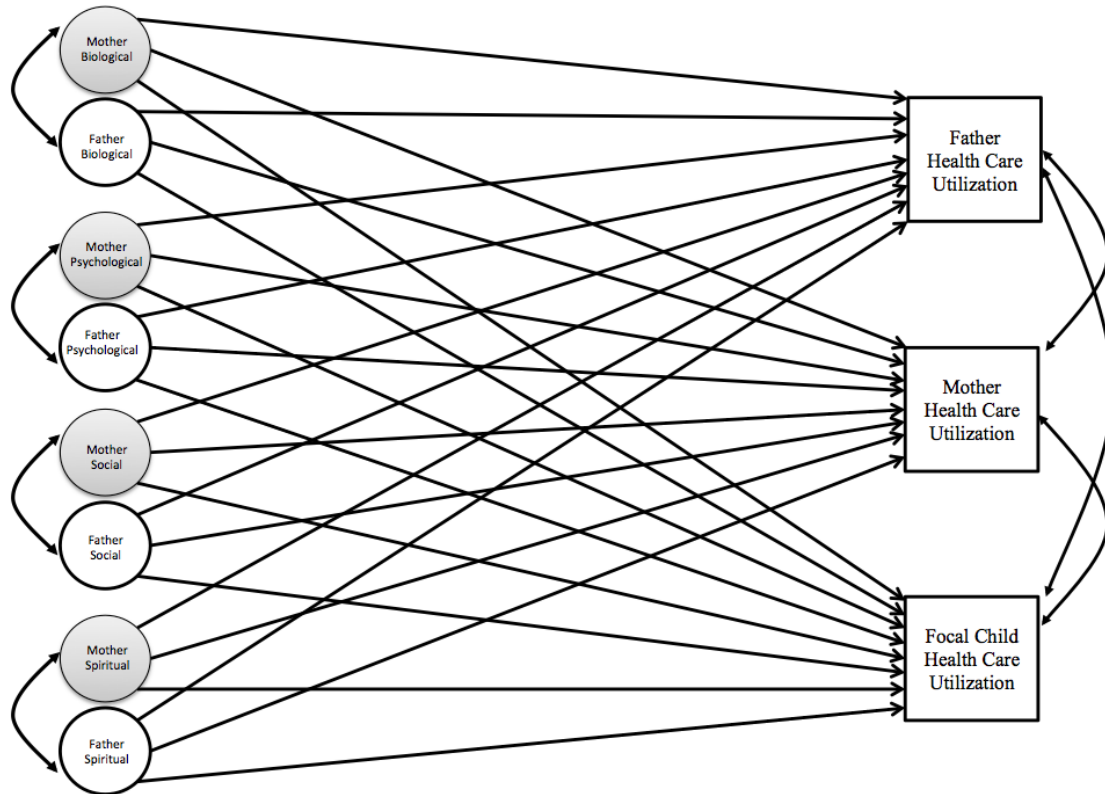
### **Purpose of the Present Study**

This dissertation will identify and examine biopsychosocial-spiritual factors that impact health care utilization in these fragile families. Since father involvement has been shown to have a positive influence on mother's health behavior, I will build on these original findings to better understand parents' characteristics in the biopsychosocial-

spiritual context. This study will specifically focus on how the biopsychosocial-spiritual constructs apply to fragile families who are more likely to experience poverty and health issues due to social determinants of health (Williams, 2008) & health care utilization.

### **Objectives**

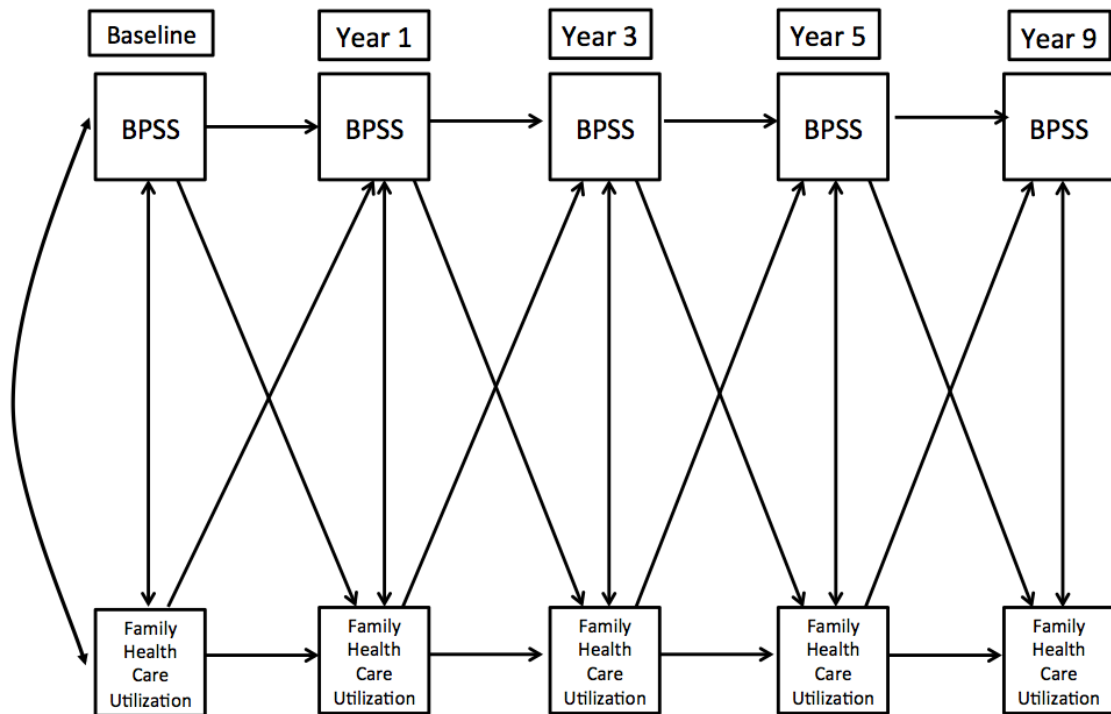
The first objective of this study is to identify whether biological, psychological, social, and spiritual facets impact the health care utilization of fragile families (Figure 1). Social determinants of health such as poverty, access to resources and limited social support have shown to be influential to an adult's health (Waldfoegel, Craigie, & Brooks-Gunn, 2010; Williams, 2008). Similarly the biopsychosocial-spiritual framework has been widely used in a variety of medical settings (e.g., McDaniel, 1995; Phelps, et al., 2009; Prest & Robinson, 2006) and collaborative practices based in the medical family therapy tradition have been implemented with low-income populations in federally qualified health clinics (see Begley et. al, 2008; Freeman, 2007) with limited research on how these facets of the illness experience might differ for fragile families whose resources are limited prior to illness. This study will specifically look at how these factors influence health care utilization. We are going to test the hypothesis that biopsychosocial-spiritual factors of fragile families will impact the utilization of health care services. We are also going to examine how dyadic influences between parent's affects biopsychosocial-spiritual factors and health care utilization within the context of fragile families.



*Figure 1.* Theoretical Model for the Direct Effect of Biopsychosocial-Spiritual Factors on Health Care Utilization

The second objective of this study is to examine the impact of biopsychosocial-spiritual factors (identified in aim one) on health care utilization of fragile families over time (Figure 2). Current research suggests that interaction of fathers within fragile families diminishes over time (Waldfogel, Craigie, & Brooks-Gunn, 2010). This is important as father engagement is a direct predictor of healthcare utilization (Kuhn, Freitas, France, & Distelberg, 2014). Therefore, while overall we know that father engagement predicts healthcare utilization in fragile families, we do not know how the biopsychosocial-spiritual factors specifically affect the family's utilization, or how father engagement might vary over time. Additionally this study will move beyond the typical definition of engagement to examine at a deeper level the role of all biopsychosocial-

spiritual factors. In this regard, we hypothesize that the change in parents' relationship overtime, influenced by fathers' diminished engagement, will change how biopsychosocial-spiritual factors influence health care utilization of fragile families longitudinally.



*Figure 2.* Theoretical Model for the Longitudinal Effect of Biopsychosocial-Spiritual Factors on Health Care Utilization

To summarize, this research intended to achieve the following aims and corresponding hypothesis:

AIM 1: Testing the multi-dimensionality of the Biopsychosocial-spiritual factors.

H1: Biopsychosocial-spiritual factors will predict health care utilization of fragile families.

H2: Father and mother biopsychosocial-spiritual factor will covary within dyads in year three.

AIM 2: Testing the longitudinal and dyadic relationships of the biopsychosocial-spiritual factors and health care utilization of fragile families.

H1: Biopsychosocial-spiritual factors within an actor will predict successive years (e.g. father bio Wave I will predict Father bio Wave 2 etc).

H2: Father and mother biopsychosocial-spiritual factors will covary within dyads and within waves.

H3: Biopsychosocial-spiritual factors will predict health care utilization of fragile families.

### **Rationale**

In 2007 nearly 40 percent of all U.S. births were to unwed parents (Ventura, 2009). These births occurred most often among African American and Hispanic families, who were also more likely to live in poverty (Hummer & Hamilton, 2010; Waldfogel, Craigie, & Brooks-Gunn, 2010). Minority populations and those living in poverty experience poorer health and frequently delay medical treatment (Burton, & Bromell, 2010; Cunningham, Clancy, Cohen, & Wilets, 1995; De Marco & De Marco, 2009; Hill, Ross, & Angel, 2005; McCally et al., 1998; Williams, 2008). In a review of findings from the Fragile Families and Child Wellbeing Study, Waldfogel and colleagues (2010) reported that research overwhelmingly finds that children born into fragile families fare worse than their peers born into married families. Key mechanisms that were identified included: “parental resources, parental mental health, parental relationship quality and father involvement” (Waldfogel et al., 2010, p. 89). These mechanisms not only affect

developmental outcomes of the child but also impact health and health behaviors like utilization of medical services for all members of the family. As such, children born to fragile families have an increased likelihood of obesity, asthma, hospitalizations, and accidents or injuries. Additionally mother's assessment of child's health is less favorable for these families (Waldfogel et al., 2010). Similarly, parents in these families are more likely to experience poor health with limited access to health insurance and other social support services (Burton & Bromell, 2010; De Marco & De Marco, 2009).

Social isolation can be a common experience for fragile families, which impacts these families' abilities to access and utilize medical services (De Marco & De Marco, 2009). While these families may be delaying or not accessing medical services, they are accessing other public assistance services like TANF, WIC, and Medicaid. De Marco and De Marco (2009) found in their study of welfare beneficiaries younger, uneducated, unemployed, unmarried recipients with the highest rates of social isolation were the highest utilizers of social services. Those individuals who were older, educated, employed or married were least likely to access social services the authors believe due to the social support embedded in these areas (i.e., family, friends, co-workers, spouse). Other studies that have examined health care utilization have reported similar findings, in this case, fragile families with higher levels of social support have medical service utilization (Teitler, 2001). As De Marco and De Marco (2009) point out these families are accessing other services outside of medical care, which may provide opportunities for intervention aimed at improving access and utilization of healthcare resources. These interventions however must be holistic in their consideration of the multiple components and varying ecological systems that impact access and utilization of fragile families.



Medical Family Therapists with their systemic, biopsychosocial-spiritual training may be ideal service providers to bridge the gap between social services and health care. However, to date limited research has identified biopsychosocial-spiritual factors impacting health care utilizations. Also, this research tends focus on evaluating a singular factor (e.g., social, spiritual only) and utilization, not multi BPS factors in one study. This dissertation proposes to fill that gap using secondary data from the Fragile Families and Child Wellbeing Study. The larger sample size, multi-informant, and longitudinal design of this study lends itself to systemic and predictive methodologies that can begin to fill this gap in medical family therapy research.

## CHAPTER TWO

### CONCEPTUAL FRAMEWORK

There is an increasing body of research that identifies a strong relationship between socioeconomic status and health (e.g., Burton & Bromell, 2010; Cunningham, Clancy, Cohen, & Wilets, 1995; De Marco & De Marco, 2009; Hill, Ross, & Angel, 2005; McCally et al., 2008; Rizzo, Mizrahi, & Kirkland, 2005). Poverty, race, citizenship status, and age are all noted factors in disproportionate levels of disease and health outcomes combined (Rizzo, Mizrahi, & Kirkland, 2005). Researchers are also considering determinants of health such as residential segregation and concentration of poverty (Williams, 2008). These determinants of health not only impact disease processes, but also health behaviors, including utilization of medical services. To this end, Rizzo and colleagues (2005) suggest that health care settings address the psychosocial needs of patients, or risks associated with negative health issues that are due to (1) obstacles preventing early medical treatment, (2) impediment of medical treatment compliance, (3) functioning as an environmental trigger exacerbating symptoms of stress based illness (i.e., diabetes and asthma) or, (4) reducing effectiveness of medication interventions. In other words, health care utilization and health outcomes are influenced by biopsychosocial-spiritual factors that go beyond the biological medical model and must be considered when investigating health care access and utilization.

In this light, a diverse group of healthcare providers including physicians and mental health professionals have adopted George Engel's (1977) Biopsychosocial Model to explain the biological, psychological, and social dimensions individuals experience during illness (Borrell-Carrio, Suchman, & Epstein, 2004; McDaniel, Doherty, &

Hepworth, 2014). Additionally, the field of medical family therapy is established on the foundation of these same biopsychosocial and systemic assumptions (McDaniel, Hepworth & Doherty, 1992; McDaniel, Doherty & Hepworth, 2014; Tyndall, Hodgson, Lamson, White & Knight, 2014). More specifically, McDaniel and colleagues (1992) conceptualize medical family therapy as a biopsychosocial systems model that promotes collaboration between mental health providers and other health professionals. A significant body of research has been published on the application of the Biopsychosocial Model in a variety of medical settings (e.g., McDaniel, 1995; Phelps, et al., 2009; Prest & Robinson, 2006) and applied to a variety of health issues (e.g., Lutgendorf & Costanzo, 2002; Nicholas, Molloy and Brooker, 2006; Walker, Jackson & Littlejohn, 2003).

While the application of the Biopsychosocial Model has been a significant step forward in the field of medical family therapy and medicine, it does have a few limitations. First, the application of the model has too often focused on assessment and treatment and fails to address the period of time prior to illness diagnosis that might include accessing and utilizing services. In addition, while the Biopsychosocial Model considers social context typically in the form of an individual's social support resources, it is rarely viewed in relationship to a family's or individual's larger social context, especially issues of socioeconomic status.

In order to reduce health disparities and improve health outcomes through increased access and utilization of health services for families living in poverty, the field's research must advance past the application of the Biopsychosocial Model as a treatment model and include larger societal factors that limit prevention, access and utilization.

To fully understand the application of the Biopsychosocial-Spiritual Model in access and utilization we must first explore the various biopsychosocial models that exist today. For this study, it is important to ground our exploration in a framework that takes into account not only the micro level processes within health care utilization, but also the macro level influences due to context and spirituality. The Biopsychosocial-Spiritual Model postulates that illness is impacted by biological, psychological, social, and spiritual facets of family life (Engel, 1977; Wright, Watson, & Bell, 1996). Similarly, the Family Systems Genetic Illness Model (Rolland, 2006; Rolland & Williams, 2005) provides us with a biopsychosocial-systemic orientation, which we can draw on to examine the time period prior to diagnosis and larger macrosystem contextual issues.

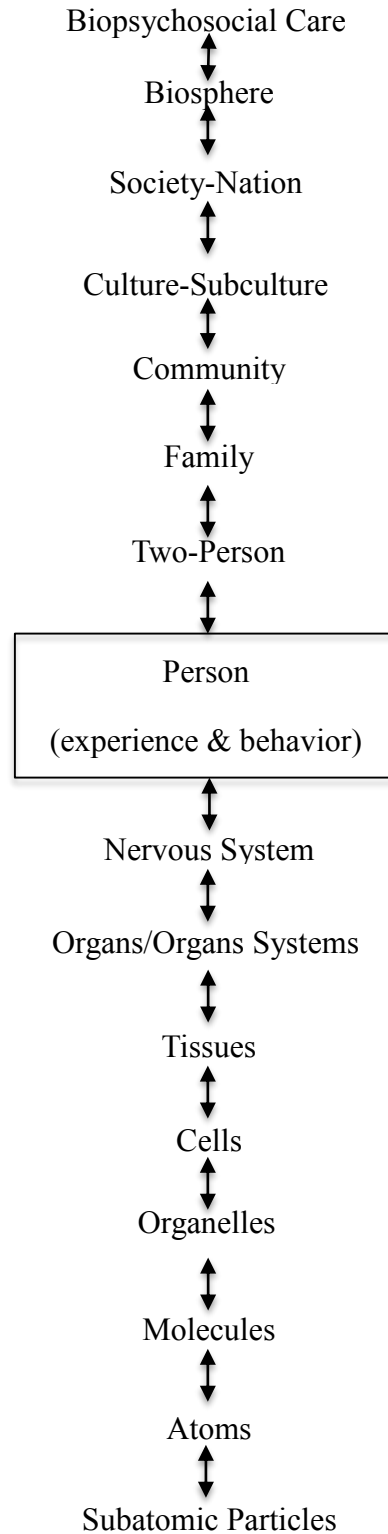
### **From Biomedical to Biopsychosocial Model**

The Biopsychosocial Model was developed out of the Biomedical Model in the late 1970's. George Engel presented this model in an effort to improve on the reductionistic Biomedical Model which was the dominant framework used by physicians at the time (Engel, 1977). Concurrent with the development of Engel's (1977) model, a shift was occurring in the field of science from limited analytic and reductionistic paradigms to more contextual and cross-disciplinary endeavors (Borrell-Carrio, Suchman, & Epstein, 2004).

The Biomedical Model assumed that disease could be fully accounted for by considering deviations from measurable biological norms. This model allows little space for consideration to psychological, social, or behavioral dimensions of illness (Engel, 1977). To that end, biomedical practitioners became either reductionists or exclusionists.

Reductionists believed all behavioral occurrences must be considered in terms of deviations in physical chemistry. Exclusionists believed that whatever was not explainable in biological or chemical ways must be excluded from categories of disease or illness (Engel, 1977).

In reaction to this limited view point Engel (1977) argued that in order for physicians to fully understand disease and formulate health care treatment, the patient's context and system must be considered. In this light Engel's model was grounded in General Systems Theory (Von Bertalanffy, 1969). The original intention for Engel's model was to be a descriptive model, used to understand the patient's illness experience for the purpose of expanding the diagnostic process from the biomedical lens to a broader biopsychosocial lens (Epstein & Borrell-Carrio, 2005). Figure 1 below is a visual representation of Engel's model.



*Figure 1. Systems Hierarchy. From “The Clinical Application of the Biopsychosocial Model,” by G. L. Engel, 1980, *American Journal of Psychiatry*, 137, p. 537.*

Engel's model has continued to serve as a predominant framework for family medicine providers (McDaniel, Campbell, & Seaburn, 1989; Prest & Robinson, 2006; Steinglass, 2006) and Medical Family Therapists (Bischoff, Springer, Felix, & Hollist, 2011; McDaniel, Hepworth, & Doherty, 1992). Although within these fields the model has experienced expansion beyond Engel's original theory, most notably the inclusion of spirituality (Hodgson, Lamson, & Reese, 2007; Prest & Robinson, 2006; Wright, Watson, & Bell, 1996). This expansion combines Engel's (1977) original ideas with those of Wright, Watson, & Bell (1996). In this case Wright, Watson, and Bell's work brought an awareness to illness beliefs through the lens of spirituality.

The adoption of the Biopsychosocial Model within the field of family therapy (McDaniel, Hepworth, & Doherty, 1992; McDaniel, Doherty, & Hepworth, 2014) and its expansion to include spirituality (Wright, Watson, & Bell, 1996) have contributed to a more ecological perspective that accounts for the reciprocal nature of various systemic levels (Prest & Robinson, 2006). For example, Engel's original model focused on varying levels in an effort to intervene at the individual level. Family therapists brought a newer emphasis on the systemic component of the model, expanding it past a single identified patient and encouraging inclusion of individuals from multiple or larger systems around the patient (i.e., family, community/religious groups, other medical or mental health professionals).

### **The Biopsychosocial-Spiritual Model**

The Biopsychosocial-Spiritual model, although not developed specifically to address health care access and utilization, is a holistic model of assessment for family

health experiences. Using the biopsychosocial-spiritual as a conceptual framework for this study allows us to view the health care access and utilization of fragile families within their unique biological, psychological, social, and spiritual contexts. Medical Family Therapists use the biopsychosocial-spiritual model to better understand the unique facets that impact a family's health experience in an effort to improve their health experiences. A better understanding of the concepts of the model allows for holistic and collaborative efforts among mental health and medical providers. The biopsychosocial-spiritual model is based in a systems theory, which is important as utilization and access requires a multi-dimensional and interdependent understanding of fragile families.

### *Systems Theory*

Medical family therapy was designed out of the need for an approach that placed central importance on the systemic relationships of families and health (McDaniel, Hepworth, & Doherty, 1992; McDaniel, Doherty, & Hepworth, 2014). The systems view of families and health is one in which all parts of the system are viewed to be forever interacting, adapting, and changing (Mendenhall, Pratt, Phelps, & Baird, 2012). When applied to medical family therapy, Mendenhall and colleagues (2012) suggest that as researchers we can honor our systemic heritage and offer unique contributions by considering the complex and reciprocal impacts on a patient's health, interpersonal relationships, family systems, and healthcare systems. It is with this systemic lens that we can better understand the complex relationship of each aspect of the biopsychosocial-spiritual model.



### ***Biological Aspects***

The biological aspect is often described as the physical health, genetics, and biochemistry pieces that influence health and health behaviors (Prest and Robinson, 2006). Health care access and utilization for fragile families are, in part, biological experiences. These families are more likely to be in need of increased access to health care due to health disparities that result in increased occurrence of illnesses like asthma, hypertension and diabetes (DeLeon, Giesting, & Kenkel, 2003; Williams & Collins, 1995). However in light of these biomedical issues these marginalized populations are more likely to delay treatment or seek out emergency room services that are unable to provide the necessary follow-up care to improve quality of life and reduce disparities of health (Hamilton, Hummer, You, & Padilla, 2006).

### ***Psychological Aspects***

Families who are continually under a great deal of stress both within their home or their community may face greater barriers to accessing health care. The psychological aspect of the biopsychosocial-spiritual model considers personality, temperament, and co-morbid conditions (Prest & Robinson, 2006). For fragile families the home environment and the multiple stressors associated with living in poverty contribute to an increased likelihood of mental health issues and behavioral problems. Education level and immigrant status also increase the likelihood of mental health issues and, for children, lagged cognitive development (Park, Fertig, & Allison, 2011). These same issues may also impact access and utilization of medical services. For example, in a national study of depression researchers found that Black and Hispanic populations were

the least likely to receive treatment (psychotherapy or pharmacotherapy) (González, Vega, Williams, Tarraf, West, & Neighbors, 2010).

### *Social Aspects*

From a relational perspective, health care access and utilization are viewed as part of an interactional pattern within the context of situational and developmental circumstance. The social aspect encompasses familial, community, sociocultural factors, and environmental context (Hodgson, Lamson, & Reese, 2007; Prest & Robinson, 2006). Social support has been shown to significantly impact the ability for families to access health services (De Marco & De Marco, 2009; Park, Fertig, & Allison, 2011; Teitler, 2001). Additionally, race/ethnicity (Williams & Collins, 1995), age (Park, Fertig, & Allison, 2011), income level (Williams, 2008), education (Park, Fertig, & Allison, 2011), and neighborhood (De Marco & De Marco, 2009) have also been found to contribute to access and utilization of health care.

### *Spiritual Aspects*

An increasing amount of literature supports the importance of considering the role of religion and spirituality in the assessment and treatment of health issues (see George, Larson, Koenig, & McCullough, 2000). Hodgson and colleagues (2007) define spirituality as “the beliefs and meaning that patients and family members ascribe to an illness” (p.4). In a review of spirituality and health literature, George and colleagues (2000) highlight that religion can reduce the likelihood of disease and disability with the strongest predictor being the attendance of religious services. Additionally spirituality

can aid in the prevention of mental illness and substance abuse and may improve recovery from such issues as well (George, Larson, Koenig, & McCullough, 2000). The authors postulate that the mechanisms that impact the association between health and spirituality include health behaviors, social support, and coherence hypothesis or a sense of meaning to an individual life. A sense of coherence and meaning provide individuals a way to understand their role in the universe, purpose of life, and an opportunity to develop the courage to withstand suffering. George and colleagues (2000) punctuate that a sense of coherence or meaning is not exclusively positive, in that a prominent component of the coherence hypothesis is that individuals suffer greatly. While the stress of suffering can impact one's health, a sense of meaning can act as a buffer to the risks that suffering has on health and wellbeing.

While the Biopsychosocial-Spiritual model has been helpful in the practice setting, it also has direct applications to understanding access and utilization. Although the Biopsychosocial-Spiritual model is an extension of the biopsychosocial model, and shares much in common with the MFT field, Tyndall and colleagues (2014) note that it is much less referenced in comparison to the original Biopsychosocial Model. And as such as received only limited empirical exploration. This limitation is concerning as this theory has important clinical implications for Marriage and Family Therapists and Medical Family Therapists alike. The Biopsychosocial-Spiritual Model provides an important framework to health practitioners, which can be used to better understand a family's health experiences. Without a broader expansion of the Biopsychosocial Spiritual Model the current literature continues to focuses on the biological and

psychological facets often overlooking the importance of larger contextual and spiritual issues so common in fragile families.

Additionally, although the Biopsychosocial-Spiritual model has many strengths in practice and in conceptualization of MedFT work, the model does not address the time period prior to illness diagnosis which would be relevant to issues of health access and utilization. Therefore it is necessary to integrate into this model a model that helps expand the focus to prevention and issues of utilization and access. Although the Biopsychosocial Spiritual Model is limited in this regard, the Family Systems-Illness and Genetic Illness Model (Rolland et al., 2006) can help extend the Biopsychosocial Spiritual Model and provide added insight in the issue of access and utilization.

### **Family Systems-Illness Model and Genetic Illness Model**

The Family Systems-Genetic Illness model can expand the Biopsychosocial-Spiritual model to include the time period prior to illness diagnosis or onset, in other words prevention, access and utilization (Rolland & Williams, 2005). This model more clearly elaborates on the interplay of micro and macro level systems often discussed in the biopsychosocial-spiritual model. Although not developed specifically to address health care access and utilization, the model is a contextually relevant model of family systems health (Rolland, 1994; Rolland & Williams, 2005).

The Biopsychosocial Model has been used as the metaframework informing the development of the Family Systems-Illness Model (Rolland, 1994) and more recently the Family Systems Genetic Illness Model (Rolland & Williams, 2005). Rolland and Williams (2005) use a biopsychosocial and systems orientation to propose a Family

Systems-Genetic Illness model that includes prediagnosis phases of illness in the context of genetic testing. Rolland and Williams's (2005) model addresses two limitations of a traditional biomedical model. First, their developmental systemic model conceptualizes disorders in a way that "organizes similarities and differences over the disease course so that the type and degree of psychosocial demands are usefully highlighted" (Rolland & Williams, 2005, p. 4). This includes the "psychosocial demands on individuals and their families, along with emerging evidence for complex gene-environmental interactions" (Rolland & Williams, 2005, p. 4). Moreover their model addresses the dimension of time through the consideration of unfolding of illness-related developmental tasks over the entire course of disease with the addition of the "nonsymptomatic period of living with knowledge of the genetic risk" (Rolland & Williams, 2005, p. 5).

The Family Systems-Genetic Illness Model was developed in response to advances in genomic research and considers family therapy interventions for individuals who are at risk for genetic illness before, during, or after the onset of symptoms. This is in contrast to Engel's (1977) original model that only considered health when it deviated from the norm (Rolland & Williams, 2005).

Although at face value genetic testing and this type of focus may not seem altogether related to prevention and issues of access and utilization, there are a number of factors within this model that do help inform this study. First, Rolland and Williams (2005) note that the benefit of genetics tests for cancer is not to catch all incidences of cancer, as this is not likely, but to catch those that can be caught. In this way, the biopsychosocial foundation of the Family Systems-Genetic Illness Model considers psychosocial implications for prevention medicine. During the period of time prior to

symptom onset the model suggests for interventions that examine the psychosocial impact on the patient and their family along with considerations about how the disease onset or treatment recommendations may impact the patient psychosocially (Rolland & Williams, 2005). Similar to genetic testing that can signal the likelihood of certain health issues, we know that individuals living in poverty are at greater risk for certain medical issues (e.g. increased body mass index, hypertension, and asthma) and increased risk of harmful health behaviors such as tobacco use and reduced physical activity (Lewis, Myhra, & Walker, 2014). The Family Systems-Genetic Illness Model provides an example of how to address these issues before illness onset. An example would be, in a community health clinic setting, addressing tobacco use with all patients and developing smoking cessation programs to promote discontinuation of tobacco use. Another example would be, including assessment tools that inquire about health behaviors. Similar to results from genetics tests, this information can provide useful information to health professionals and opportunities for conversations about illness prevention and connecting patients with supportive services to make important lifestyle changes that can improve health outcomes.

### **Conclusion**

As Rolland and Williams (2005) commented that the generation of family systems medicine research must move beyond reactive diagnostics and treatment models to a more proactive predictive and prevention model. Additionally, if policy will ever become effective at closing the health disparities gap we must move past a simplistic descriptive account of categorized barriers to access health care. Instead, research should

focus on exploring and explaining how social determinants of health impact biological, psychological, social, and spiritual processes that produce health behaviors and illness beliefs that impact health care utilization. However, with its current constructs the Biopsychosocial Model only offers a partial picture of the impact of health disparities on health care utilization. To expose the true breadth and diversity of individual and family experiences the next generation of the Biopsychosocial Model must broaden its central constructs to include a larger contextual perspective.

The Biopsychosocial-Spiritual Model along with Family Systems-Genetic Illness Model provides a useful foundation on which to build investigations of health care utilization and other health disparities. In this paper, I recommend that the Biopsychosocial-Spiritual Model may benefit from a greater focus on the social and spiritual facets as they pertain to health care utilization among fragile families. The Family Systems-Genetic Illness Model aids in this goal through its consideration of health prior to illness or symptom onset and its focus on the interplay of micro and macro level systems.

## **CHAPTER THREE**

### **REVIEW OF THE LITERATURE**

The purpose of this literature review is to provide the reader with an overview of the research on the effect of biopsychosocial-spiritual stress on health care utilization as well as the current literature on health utilization of fragile families. This review will also discuss applications of the biopsychosocial-spiritual model to fragile families and health care utilization as well as current gaps and limitations within the existing literature, which this study seeks to address. This chapter focuses on the research available for both parent and child health care utilization, although this study will evaluate only the parent health care utilization.

#### ***Health Care Utilization***

Recent findings suggest that the number of people worldwide living in poverty continues to increase (McCally et al., 1998). While the overall rate of poverty in the United States is slowly declining, the rate of children living in poverty continues to increase (DeNavas-Walt, Proctor, & Smith 2008). This is concerning when we consider that health care utilization is largely impacted by socioeconomic influences like income. According to Healthy People (2010), barriers to health care include (1) financial barriers such as lack of insurance, inadequate service to cover needed services or inability to cover services outside of health insurance programs (co-pays, deductibles, etc.), (2) structural barriers that include a lack of care providers, specialists, and other providers or as well as facilities and, (3) personal barriers that may include cultural or spiritual



differences, language barriers, limited health education (not knowing what to do or when to seek care), and concerns about confidentiality or discrimination.

Given that the number one barrier is health care insurance, and it is yet to be determined how the Affordable Care Act will impact health care utilization, previous research of Medicaid expansion can be helpful in understanding this limitation. From the previous Medicaid research we know that even this service left many eligible children from low-income families uninsured (Angel, Frias & Hill, 2005). This means that, even if families have access to health insurance, there may be barriers to enrollment. These barriers to insurance may then impact health care utilization. This growing concern about health access has resulted in research that is considering determinants of health such as residential segregation and concentration of poverty (Williams, 2008). To date no research exists that explicitly considers all facets of the biopsychosocial-spiritual model on health care access and utilization and only a limited amount of research considered health care access and utilization of fragile families. What follows is a presentation of research on health care access and utilization as it pertains to each aspect of the biopsychosocial-spiritual model.

### ***Biological***

Health care access and utilization are at least in part influenced by physical health, genetics and biochemistry facets. Biological facets as identified by self-report of medical conditions (such as asthma, diabetes, and hypertension) and engagement of behaviors that impact health (i.e., smoking and substance use) can either hinder or improve access and utilization of health services for fragile families. Having health insurance increases the

likelihood of regular medical visits and improved health. Moreover, those insured are less likely to delay treatment for illness or injury (Albrecht, Clarke, & Miller, 1998; Kaiser Family Foundation, 2003). Beyond health insurance, individuals living in poverty may face substantial barriers to healthcare that are compounded by significant health problems.

Overall families living in poverty have significantly worse access to quality healthcare services and as a result have poorer health outcomes. Low-income families are more likely to receive healthcare services through community based clinics. Families who frequent community health clinics have significantly worse health particularly for conditions like hypertension, asthma, diabetes, and mental disorders as compared to individuals who receive care from offices of private care providers (DeLeon, Giesting, & Kenkel, 2003). Additionally, minority families and those families living in poverty are twice as likely to experience serious illness and premature death compared to those not living in poverty (Wilkinson & Marmot, 2003). For example, Williams (2008) found that African Americans are at a higher risk for delayed diagnosis or initial treatment, poor or infrequent medical care, and failure to manage chronic disease. Additionally these poor health outcomes affect the children in these families also. Children in fragile families experienced notably higher occurrence of asthma (Park, Fertig, & Allison, 2011). In addition, fragile families that experienced homelessness reported greater occurrences of physical disability, 7-8% compared to 2-3% of children who were not homeless (Park, Fertig, & Allison, 2011). These families also reported an increased use of emergency room services (Park, Fertig, & Allison, 2011).

While fragile families experience poorer health it is not the same across all racial groups and as a result these differences among racial groups influences health care utilization differently. For example, children of immigrant mothers appeared to be in better health: children in these families are less likely to have asthma, behavioral problems, and emergency room visits. However, these immigrant families are also more likely to have health insurance (Park, Fertig, & Allison, 2011). For those families who were enrolled in Medicaid, mothers were at increased likelihood to report physical disability and increased use of emergency rooms. This may speak to the fact that a lack of insurance may inhibit the diagnosis of illness and deter families from seeking out medical services. For example, Park and colleagues (2011) found that children of fragile families with low birth weight were found to experience poor health including asthma and increased likelihood of hospitalization.

Also, substance use disorders have a direct impact on biological domains of health (for example greater medical morbidity). In terms of healthcare utilization, addictive disorders may lead to inconsistent utilization of healthcare resources and crisis situations (Ford, Trestman, Steinberg, Tennen, & Allen, 2004). Specific to the Fragile Families and Child Wellbeing Study, mothers that were younger and with lower levels of education, reported the highest prevalence of prenatal drug use, prenatal smoking, prenatal alcohol use, and mental health problems and also these families were the least likely to receive prenatal care, resulting in thier children having low birth weights (Teitler, 2001).

### *Psychological*

A significant amount of research has explored the relationships between psychological factors and health care utilization behaviors. Personality, temperament and co-morbid conditions all can impact an individual's health experience. Individuals with mental health problems frequently present in primary care settings with physical complaints and generate disproportionately high health care costs (Ford et al., 2004). Moreover somewhere between 50-85% of full or subclinical psychiatric disorders remain undetected and undertreated (Ford et al., 2004). But not all psychiatric disorders result in similar patterns of utilization. Ford and colleagues (2004) report that individuals with anxiety utilized primary medical care services more frequently than those with depressive disorders. However, both conditions result in high utilization of specialty outpatient care in comparison to other Axis I issues. The authors believe these relationships exist due to increased likelihood of somatization or stress related illnesses (Ford et al., 2004).

Mental illnesses like depression and anxiety are significantly more common for individuals living in poverty due to exposure to stress and discrimination (Williams, 2008). Similarly, significant stress over time may result in mental health issues. For example a study of fragile families who experience varying degrees of homelessness, found that those families who experienced homelessness or those who "doubled up" by living with friends, family, or other families were more likely to have a pre-pregnancy mental health diagnosis (Park, Fertig, & Allison, 2011). Furthermore, children from these families were also more likely to experience increased emotional distress and elevated frequency of emergency room visits or hospitalizations (Park, Fertig, & Allison, 2011).

## *Social*

Familial and community support along with sociocultural factors and environmental context can both positively and negatively affect health care utilization. In general social support increases access and utilization of health care services (Park, Fertig, & Allison, 2011; Teitler, 2001). However, social factors can also pose significant barriers to access and utilization.

Beyond a family's direct access to insurance, those who are uninsured or underinsured frequently use community based social services that have been shown to increase the wellbeing of low income and minority families (De Marco & De Marco, 2009). In their research of neighborhood impacts on use of nutrition, health, and welfare programs, De Marco and De Marco (2009) found that individual and neighborhood characteristics were the most predictive of utilization. Specifically, increased social support, neighborhood trust and cohesion, and decreased neighborhood disorder like unemployment, teen pregnancy, abandoned houses, and gang activity were found to reduce utilization of nutrition, health, and welfare programs due to families finding support from other avenues like friends and family (De Marco & De Marco, 2009).

Although neighborhood and social environments affect health outcomes, some individual characteristics interact with social characteristics and provide families with better social network characteristics (Distelberg & Taylor, 2013). For example, age, education, employment, and marital status are related to better use and access of social services (De Marco & De Marco, 2009; Park, Fertig, & Allison, 2011). Specifically, those who are unmarried, unemployed, and younger accessed the greatest number of social services including TANF, WIC, Medicaid, Social Security Insurance, and

emergency food services. The authors postulate this is because older, better educated, employed, and married individuals have a greater pool of social resources of friends, family, co-workers that they can draw on for support thus reducing their need for public assistance services. At a macro level the authors found that participants with greater perceived neighborhood disorder (for example, gang activity and increased teen pregnancy) more frequently accessed public assistance. The authors point out that these findings are related to prior research that found that increased neighborhood disorder is associated with negative influences on health (De Marco & De Marco, 2009; Hill, Ross, & Angel, 2005; Robert, 1998).

Additionally, in the largest assisted housing program experiment in the U.S. it was proven that families that live in economically diverse neighborhoods (rather than neighborhoods with concentrated poverty) have significantly better health outcomes (Fauth, Leventhal, & Brooks-Gunn, 2008; Leventhal & Brooks-Gunn, 2003).

Unfortunately, for fragile families who reside neighborhoods with high rates of poverty, other community level factors (i.e. high crime, concentration of poverty, poor education, employment opportunities, and insufficient access to housing, food, and clothing) have been identified as determinants for poor health outcomes (Hill, Ross, & Angel, 2005).

The social facet of the Biopsychosocial-Spiritual Model also considers sociocultural aspects of one's life, like culture and ethnicity, which impact the health experience. There appears to be a direct connection between health disparities, social support, and race and ethnicity. In other words, race and ethnicity are crucial when talking about healthcare access and utilization. For example, Hamilton and colleagues (2006) used data from baseline, and year three of the Fragile Families study to examine

health insurance and health care utilization of U.S. born Mexican-American children. Similar to the research of Teitler (2001), Hamilton et.al (2006) used a cross sectional design to examine outcome variables at year three but used information from prior years for some demographic information. From this study large disparities in access and utilization of health care for children were noted. The authors note that the most striking finding from their research is the presence of disparities in health insurance coverage at very early ages of the children. Specifically, Mexican-American children born to immigrant women were considerably more likely to be uninsured compared to their white peers even when socioeconomic and sociodemographic differences were controlled. In regards to health care utilization these children reported the lowest number of doctor visits and were less likely to visit the emergency room. Meaning that children with foreign-born mothers experience lower levels of health care utilization. Similarly, Black and third generation Mexican American children experience the highest rates of emergency room visits. This suggests that these families are relying on emergency services instead of regular doctor care during times of illness or injury. (Hamilton, Hummer, You, & Padilla, 2006). This study focused on child level factors and did not examine many parental level factors, however, the study did support the notion that racial and ethnic disparities in children's access to health care could be explained by social factors directly related to race and ethnicity such as income, education, employment, and relationship status (Hamilton, Hummer, You, & Padilla, 2006).

### *Spiritual*

Spirituality and religion impacts access and health care in many ways (George,

Larson, Koenig, & McCullough, 2000). In general, spiritual beliefs and practices provide an opportunity to foster a more positive outlook that can serve as a base for meaning making and aid in coping (Prest & Robinson, 2006). African American and Latinos are more likely to report a formal, religious, or spiritual affiliation compared to their white (non-Hispanic) peers (Sutton & Parks, 2013). While these groups are represented across many religious affiliations these faith groups offer opportunity for increasing access and utilization. As Sutton and Parks (2013) point out, many religious writings offer doctrine that may support illness prevention. In their study of HIV/AIDS service delivery, Sutton and Parks found that both doctrine and faith-based organizations that include non-profits can not only impact health behaviors but, by offering health services like screening tests, can reduce the barriers to accessing health care.

Additionally, there have been studies that have looked at health behaviors in relationship to spirituality. Within these studies, health behaviors were found to be determined by one's locus of control when it came to health related matters specifically, the extent to which an individual was able to control health related matters or if they viewed a higher power as the source of control (Jurkowski, Kurlanska and Ramos, 2010; Marshall & Archibald, 2015). Additionally these studies found that there are varying degree to which people felt God, themselves or a combination of both were responsible for health outcomes. Unfortunately, spirituality can have its limits when it comes to health care utilization. These studies have noted that some individuals give total responsibility to God's authority when it comes to health, and therefore underutilize health care resources (Marshall & Archibald, 2015). While spirituality can go too far, some studies show a more collaborative relationship with spirituality. For example, in a



study of Hispanic women, most women felt that they were partners with God and that they and God each had a role to contribute to health (Jurkowski et al., 2010). This was also true for some members of an Afro-Caribbean population who felt they had a shared sense of responsibility and were therefore more likely to access health care (Marshall & Archibald, 2015). For all of the people in these studies, their spirituality and relationship with God played an important role in their decisions to access health care.

More closely related to this dissertation research, Katerndahl (2008) undertook research on the impact of the spiritual factor of the Biopsychosocial-Spiritual Model on interactions with health services and life satisfaction. In this research three hundred and fifty adults were surveyed in the waiting rooms of two clinics in San Antonio Texas. The Biopsychosocial Spiritual Inventory (BioPSSI) and Health Care Utilization Questionnaire were used and conclusions from the study showed a significant relationship between spirituality (as measured by peacefulness, reason for living, life productivity, peace of mind, sense of purpose, ability to reach down into oneself for comfort, and sense of harmony within oneself) and higher rates of utilization of primary care visits (greater than 4), ambulatory services (greater than 8), and polypharmacology use (5 or more prescribed medications) (Katerndahl, 2008).

The Biopsychosocial-Spiritual Model in combination with systems theory allows for examination of the interplay of the above-mentioned categories. As we can see here for fragile families, the marrying of physical health issues and limited resources results in multiple and interrelated medical, social, and mental health problems that can be inefficient when addressed in isolation. As such, a holistic approach to address these issues is preferred (DeLeon, Giesting, & Kenkel, 2003).

## **BPSS Model and Utilization**

Recent health reforms are changing the face of healthcare consumers and although the Biopsychosocial Model has been helpful in the above mentioned domains, it lacks important schemas and constructs that would include a more ecological lens to allow for a broader variety of contextual influences to be considered in both health care access and utilization. Additionally, while the original model proposed to consider the contextual influences in diagnosis there appears to be minimal attention paid to how the ecosystems for which medical, psychological, social, and spiritual dimensions are nested within each other (Mullins, Chaney, & Frank, 1996). When we consider family therapy application for minority families and those living in poverty we must close this theoretical gap.

Utilization of services is largely affected by social contexts that can contribute to health disparities. Evidence has accrued to illustrate the link between ecology and health care utilization. Some models have expanded patient care to include a more ecological approach. As Mullins and colleagues (1996) articulate, this has been achieved through “assumption that the patient-larger (hospital) system is embedded in the context of an even larger macro- or ecosystem.” Currently the Biopsychosocial Model is often represented by concurrent points of intervention at biological, psychological, and social dimensions. This is useful, however, it fails to account for the ecosystems for which these dimensions are nested in (Mullins, Chaney, & Frank, 1996). Epstein and Borrell-Carrio (2005) highlight that the Biopsychosocial Model includes a hierarchy of natural systems but this model is an incomplete model and is amenable to scientific inquiry. In some cases the hierarchy might be a hierarchy based on the situation but not all levels are

equally emphasized. In this case, it has been suggested that practitioners of the Biopsychosocial Model should approach a patient's situation with sensitivity to their initial social conditions to allow for consideration of both who the patient is and in what situation they find themselves (Epstein & Borrell-Carrio, 2005).

Similar to Engel (1977), Medical Family Therapists have drawn on Systems Theory to propose a shift in medical care that accounts for interactions between body (biological), mind (psychological), and the larger world around us (social) (e.g. Hodgson, Lamson, & Reese, 2007; McDaniel, Hepworth, & Doherty, 1992; Tyndall, Hodgson, Lamson, White, & Knight, 2014). However it is not sufficient to address these areas independently, rather clinicians attend to them simultaneously (Borrell-Carrio, Suchman, & Epstein, 2004). A critique of Engel's seminal work is the weight placed on incorporating biological, social, and psychological aspects of illness with considerably less discussion and specificity about how social inequities impact health (Lewis, Myhra, & Walker, 2014).

If policy will ever become effective at closing the health disparities gap we must move past a simplistic descriptive account of categorized barriers to access health care. Instead, research should focus on exploring and explaining how social determinants of health impact biological, psychological, social, and spiritual processes that produce health behaviors and illness beliefs that impact health care utilization.

### **Conclusion**

Research on health care access and utilization of fragile families has failed to examine the impact social and spiritual influences have on the use of health services. Additionally no current research examines how these influences impact access and

utilization over time. For fragile families, the aspects of the Biopsychosocial-Spiritual Model may prove to be influential in understanding how these family's access and utilization health care services. As such, this level of understand can help influence interventions and services so that fragile families may have greater frequency and quality of access.

## **CHAPTER FOUR**

### **METHODOLOGY**

This study utilizes a quantitative methodology to test the study hypotheses. As mentioned previously, in addition to providing the framework for this study, the BPSS helped derive the research questions that guide this study and the analysis. Specifically this study will evaluate the following research questions:

a) What biological, psychological, social, and spiritual aspects significantly impact health care utilization of fragile families?

b) How do biopsychosocial-spiritual factors impact health care utilization of fragile families over time?

This study will use structural equation modeling (SEM) to test a conceptual model that represents the BPSS to evaluate access as well as a modeling process that will explore the changes in BPPS factors longitudinally. This dissertation will use the publishable paper format. This study of Fragile Families will take place in two phases representing separate publishable studies. Each article will stand in place of the traditional results and discussion sections of the dissertation. This will ensure that the results of this study will be accessible for dissemination to researchers and, importantly, family therapists working with fragile families. In Phase I the relationships between biopsychosocial-spiritual factors and health care utilization will be tested using structural equation modeling. In Phase II cross-lagged modeling will be used to test whether the relationships between biopsychosocial-spiritual factors and health care utilization change over time. This method section will be organized in terms of the two papers that will result from this study (Phase I = Paper I, and Phase II = Paper II).

## **Methodology**

This study uses Fragile Families and Child Wellbeing Study (FFCW Study) at Princeton and Columbia Universities (Reichman et. al., 2001). The FFCW Study is a longitudinal cohort study of nearly 4,700 American children run by Princeton and Columbia Universities (Reichman et. al., 2001). It is funded by government agencies including the Eunice Kennedy Shriver National Institute of Child Health and Human Development (R01-HD-36916 and 5P30-HD-32030), the National Science Foundation and the U.S. Department of Health and Human Services (Office of the Assistant Secretary for Planning and Evaluation and Administration for Children and Families). The study refers to unmarried parents and their children as “fragile families.” Fragile families in this study are defined as families with an increased likelihood of breaking up and living in poverty. And specifically families that gave birth to a child when the biological parents were not married. The study offers an oversampling of low-income families due to the study’s sampling method (using urban center hospitals to identify families). The core FFCW study was designed to address four questions (1) What are the conditions and capabilities of unmarried parents, especially fathers?; (2) What is the nature of the relationships between unmarried parents?; (3) How do children born into these families fare?; and (4) How do policies and environmental conditions affect families and children? (Reichman et. al., 2001).

## ***Recruitment***

New parents were identified and recruited in the hospital shortly following the birth of their child. Recruitment of families for the study occurred in 75 hospitals.

Reichman and colleagues (2001) report that the families in this study consist of a stratified random sample of 20 cities across the United States. The baseline year began in 1998 and six follow up waves were collected over nine years. The stratification was not geographical but was according to policy environments. To that end, the study uses an oversample of non-marital births (3600 non-marital, 1100 marital). Characteristics of the sample in comparison to the U.S. population at the time of the initial wave in 1998 are found in Table 1 below.

Table 1. *Sample Characteristics Compared to U.S. Population*

	FFCWS	United States in 1998
White Non-Hispanic	8%	40%
Black Non-Hispanic	69%	32%
Hispanic	19%	24%
Other	4%	4%
US-Born	87%	83%
At Least HS Graduate	59%	56%

*Note.* Adapted from “Fragile Families: Sample and Design” by N. Reichman, J. Teitler, I. Garfinkel, S. McLanahan, 2001, *Children & Youth Services Review*, p. 324.

The baseline questionnaire for parents included inquiry on (1) prenatal care, (2) mother-father relationships, (3) expectations about fathers’ rights and responsibilities, (4) attitudes toward marriage, (5) parents health, (6) social support and extended kin, (7) knowledge about local policies and community resources, and (8) education, employment, and income. Follow-up interviews included additional inquiry about (1)

access to and use of healthcare and childcare services, (2) experiences with local welfare and child support agencies, (3) parental conflict and domestic violence, and (4) child health and wellbeing (Reichman, Teitler, Garfinkel, & McLanahan, 2001). The interviews consisted of over 100 questions and took approximately 1 hour to complete.

Parents were excluded from the study if: 1) they planned to place the child up for adoption, 2) the father of the baby was deceased at the time of birth, 3) the couple did not speak English or Spanish sufficiently to complete the interview, 4) the mother was too ill to complete the interview (or the baby was too ill for the mother to complete the interview), and 4) the baby died before the interview could take place. Additionally, many hospitals did not allow interviewing of parents who were under 18 years of age (in these cases a mother was not interviewed if she or the baby's father were under 18).

### ***Pre-analysis Data Screening***

Prior to modeling the data to address the two study aims the data will be screened for patterns of missing data. Specifically, the data will be tested for missing completely at random, missing at random, or missing systematically. Following this analysis the appropriate modifications for both univariate and multivariate assumptions associated with SEM will be employed (Kline, 2011; Tabachnick & Fidell, 2007).

### ***Analytic Strategy***

The hypothesized relationship between variables in Phase I will be tested with structural equation modeling (SEM), specifically structured regression. The longitudinal hypothesis in Phase II will be tested using cross-lagged panel models. EQS (Bentler,



2006) will be used to run both the structured regression and cross-lagged model analysis. This method is appropriate when theory dictates specific explanatory relationships between variables (Raykov & Marcoulides, 2006). Both models will be used to confirm (or disconfirm) those relationships (Kline, 2011).

Before building the SEM models, the validity of each measurement model will be tested by fitting the measurement model foundation of the proposed structured regression model (Kline, 2011). Some of the measures that will be used in this study have not been tested in other studies. Therefore items thought to theoretically represent the four facets of the Biopsychosocial-Spiritual Model will be tested for applicable use in this study. These are addressed below in more detail.

### *Measures*

For the purpose of this study measures were derived conceptually and in alignment with the biopsychosocial-spiritual model. Each scale used in this study is described below in detail with information available from the literature on reliability and validity when available. For measures not previously utilized and tested, a rationale for choosing the pool of items is described. Table 2 below provides examples of items that will be used within each of the four domains. Due to the variability of questions between waves, the following table is a summary of the items, however this dissertation will begin by first identifying the exact items within each phase. For a thorough outline of all possible measures that can be derived from the FFCW study see:

<http://www.fragilefamilies.princeton.edu/documentation.asp>

## **Biological**

A participant's biological factor will be assessed by measures of health-related behavior used in previous FFCW publications (see Teitler, 2001). The measure includes questions pertaining to frequency of cigarette smoking, alcohol consumption, and drug use. Additionally, questions of respondents' perceived health will be included such as; "in general, how is your health," with response options including excellent, very good, good, fair, and poor. Also, questions of diagnosed health issues such as, "has a medical provider ever told you have asthma?" and "are you currently taking medication for any of the following conditions?" will be included. A mean composite measure of biology will be created from these items by summing the responses. Higher scores on this measure will indicate poorer biological health and the presence of illness.

## **Psychological**

Psychological factors in this study will be measured using Mental Health Scale for Depression, Mental Health Scale for Generalized Anxiety Disorder and respondents self-report of substance use disorder. Questions measuring depression and generalized anxiety disorder are derived from the Composite International Diagnostic Interview-Short Form (CIDI-SF), Section A (Kessler et al., 1998). The short form of the CIDI interview takes a portion of the full set of CIDI questions and generates from the responses the probability that the respondent would meet criteria for depression or anxiety if given a full CIDI interview. The CIDI questions are consistent with the Diagnostic and Statistical Manual of Mental Disorders –Fourth Edition (DSM-IV; APA, 1994). The CIDI is a

standardized instrument for assessment of mental disorders intended for use in epidemiological, cross-cultural, and other research studies.

## **Social**

The purpose of the social/environmental facet of the biopsychosocial-spiritual framework is meant to understand social support and environmental conditions that may impact a person's health and wellbeing (Hodgson, Lamson, & Reese, 2007). As such social/environmental factors in this study will be measured using items consistent with social and environmental pathways identified as possible links between family structure and child-wellbeing in fragile families (Waldfoegel, Craigie, & Brooks-Gunn, 2010). These pathways include: parental resources, parental relationship quality, parenting quality, and involvement. Items will be chosen based on the findings of Waldfoegel and colleagues (2010). For example, income, education, housing situation, residential mobility, public assistance receipt, social, and familial support (i.e., frequency child sees grandparents) will be used to reflect parental resources. Parental relationship quality will be measured using the Multidimensional Support Scale (MDSS). Parenting quality and involvement will be measured using scales from Child Development Supplement (Parent Survey) and Early Head Start (Parent Interview).

## **Spiritual**

Spirituality is known to be a source of strength and hope for patient and family members (Hodgson, Lamson, & Reese, 2007). This will be measured using multiple self-rated questions regarding the respondent's religious identification and engagement with

religious services, attachment to racial or ethnic heritage and participation in cultural practices.

### **Healthcare Utilization**

Healthcare Utilization will be measured using multiple self-report questions that assess the use of preventative (prenatal care, well child visits) and emergent medical care services along with questions to assess the use of relationship counseling.

Refer to Table 2 for a list of the possible items for each construct, including those from previously validated instruments.

Table 2. Map of Items Included for Analysis.

<i>Survey wave</i>	Baseline		One-year		Three-year		Five year		Nine-year	
<i>Respondent</i>	Mother	Father	Mother	Father	Mother	Father	Mother	Father	Mother	Father
<i>Item/Topic</i>										
<b>BIOPSYCHOSOCIAL-SPIRITUAL VARIABLES</b>										
<b>Biological</b>										
<i>Childs Health</i>			X	X	X	X	X	X	PCG	
<i>Respondents health</i>	X	X	X	X	X	X	X	X	X	X
<i>Respondent has asthma</i>									X	X
<i>Cigarette smoking (respondent)</i>	X	X	X	X			X	X	X	X
<i>Respondents alcohol consumption</i>	X	X	X	X	X	X	X	X	X	X
<i>Respondents substance use</i>	X	X	X	X	X	X	X	X	X	X
<i>Physical conditions (respondent)</i>	X	X	X	X	X	X	X	X	X	X
<b>Psychological</b>										
<i>Depression (respondent)</i>		X	X	X	X	X	X	X	X	X
<i>Generalized anxiety disorder</i>		X	X	X	X	X	X	X	X	X
<i>Mental conditions (respondent)</i>	X	X	X	X	X	X	X	X	X	X
<b>Social</b>										
<i>Immigration status</i>	X	X	X	X	*	*	*	*	X	X
<i>Race/Ethnicity</i>	X	X	X	X	*	*	*	*	X	X
<i>Education</i>	X	X	X	X	X	X			X	X
<i>Income</i>	X	X	X	X	X	X	X	X	X	X
<i>Current housing situation</i>	X	X	X	X	X	X	X	X	X	X
<i>Neighborhood quality</i>	X	X	X	X			X	X	PCG	
<i>Residential mobility</i>	X	X	X	X	X	X	X	X	X	X
<i>Public assistance receipt</i>	X	X	X	X	X	X	X	X	X	X
<i>Preschool/pre k/day care programs</i>							X	X		
<i>Relationships quality (other parent)</i>	X	X	X	X	X	X	X	X	X	X
<i>Parenting attitudes &amp; Skills</i>		X	X	X	X	X	X	X	X	X
<i>Respondent's contact with child</i>		X		X		X		X	X	X
<i>Perceived support</i>	X	X	X	X	X	X	X	X	X	X
<i>Support received</i>	X	X	X	X	X	X			X	X

	<i>Support received/could have received in past 12 months (other than other parent)</i>							X	X	X	X
	<i>Relationship with respondents biological parents at date of interview</i>			X	X			X	X		
	<i>Frequency child sees grandparents</i>			X	X	X	X	X	X	X	X
<b>Spiritual</b>											
	<i>Religion</i>	X	X	X	X	X	X			X	X
<b>HEALTHCARE UTILIZATION VARIABLES</b>											
	<i>Prenatal care</i>	X									
	<i>Number of Well-baby visits</i>			X	X						
	<i>Child doctor visits due to illness, injury</i>			X	X						
	<i>Overnight stays in hospital (child)</i>			X	X	X	X	X	X		
	<i>Mother-father relationship counseling</i>					X	X	X	X		
	<i>Respondents ER use</i>					X	X	X	X	X	X
	<i>Respondents overnight hospital stay</i>					X	X	X	X	X	X
	<i>ER visit for child</i>			X	X			X	X		PCG

\*=Asked only if no previous interview completed with respondent

*Note.* Adapted from “Map Of Items Included In Five Waves Of The Fragile Families Core Interviews ” retrieved from [http://www.fragilefamilies.princeton.edu/documentation/year9/ff\\_fivewaves\\_coreqmap.pdf](http://www.fragilefamilies.princeton.edu/documentation/year9/ff_fivewaves_coreqmap.pdf)

## **Testing Measurement Models**

Once appropriate items for each measurement are determined, the measurement model of each observed and latent variable will be tested using EQS (Bentler, 2006) and the method outlined in Kline (2011). The contribution of each scale item will be assessed and only items that load substantially to the specified factor (e.g.,  $\alpha < .40$ ) will be retained. The factor structure of each variable will be tested using indicators of model fit including: chi-square, CFI, and RMSEA. The structure of succeeding models will be determined by areas of misspecification by examining the absolute correlation residuals (which should be  $r < .10$ ). The best measurement model will be determined through the lens of parsimony that will be assessed with model fit statistics.

## ***Structural Equation Modeling***

After assessing the measurement model, the structured portion of the model will be fit. The use of structural equation modeling allows us to test our biopsychosocial-spiritual hypothesis, while also examining the relationships between our variables. It also allows us to examine pathways on a dyadic level. This can be performed using the mother and father report as a dyad by utilizing the Actor-Partner Independence Model (APIM) (Kenny, Kashy, & Cook, 2006).

## **Phase I**

The measurement model using data from year 3 will first be tested including measures of the biopsychosocial-spiritual framework, and health care utilization. This phase of the research process is key because it will serve as the building block for future

models in Phase II. To that end, the process of selecting of variables was informed by both conceptual fit to the biopsychosocial-spiritual framework and availability of variables through out all waves of data and between partners. Meaning that the same measures needed to be available at time point 1 and 2, and also for both mothers and fathers. Finally, because of the nature of secondary data, we attempted to use standardized measures when available in the Fragile Families and Child Wellbeing data. For example, the CIDI inventories were used to measure depression and anxiety and Multidimensional Support Scale (MDSS) for measurements of parental relationship quality.

Biopsychosocial-spiritual measures (defined above) will be loaded separately as latent variables for each of the four factors. For example observes variables for biology will include cigarette/drug/alcohol consumption; perceived health; diagnosis of health issue. Upon review of model fit we will examine latent factors and remove those items that do not load significantly to the factor. For example if “perceived health” is not a significant latent variable to the biological factor it will be removed. After the measures are validated, the direct model will be tested first for the ability of the biopsychosocial-spiritual domains’ abilities to directly affect the health care utilization (Figure 1). The developed model will be estimated to determine the best fitting model. Goodness of fit statistics (Chi-square, RMSEA, and CFI) will be used to determine the best fitting model. Utilizing SEM will allow us to examine the relationship between biopsychosocial-spiritual factors on health care utilizations based on both mother and father report.



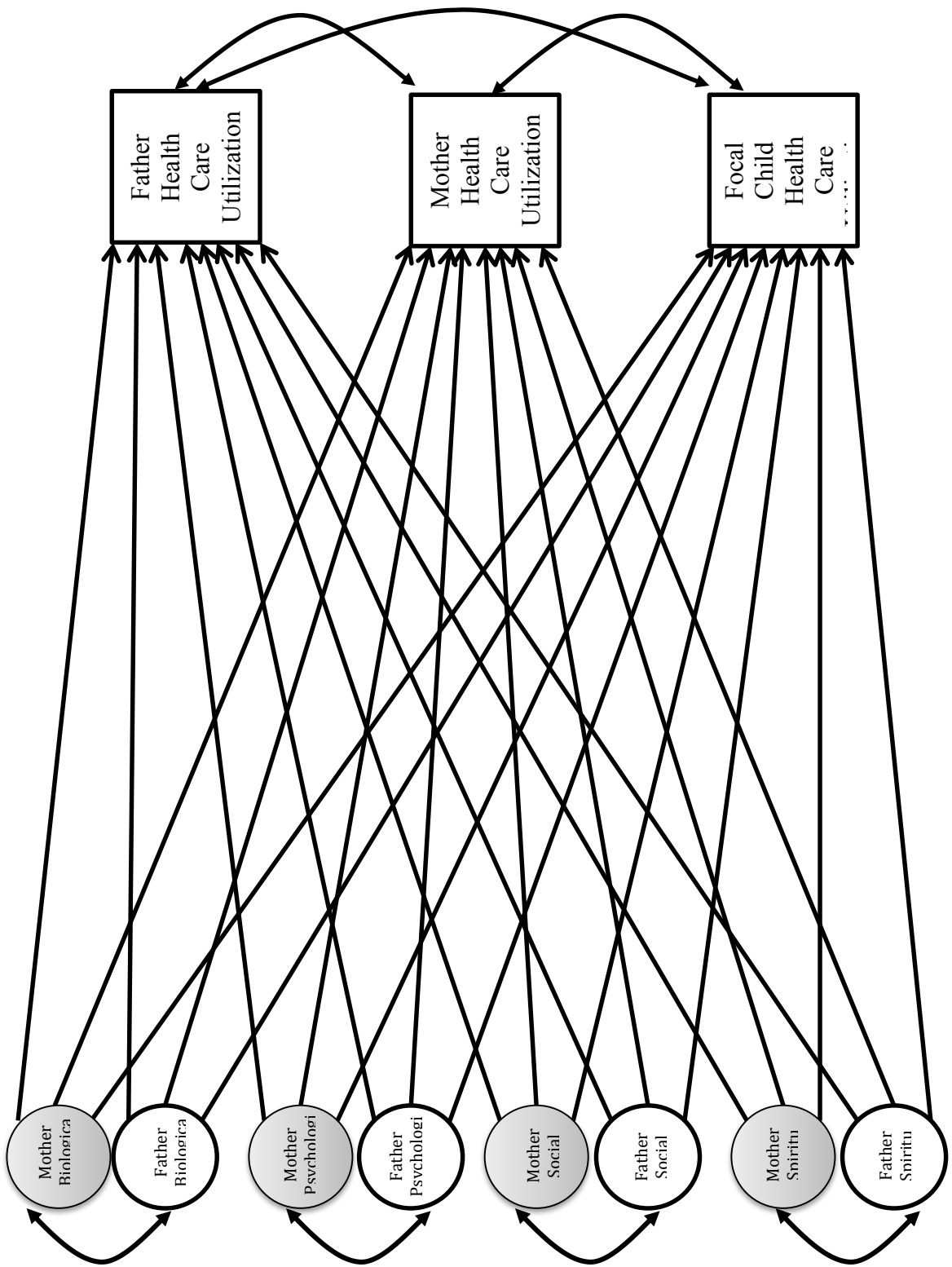


Figure 1. Theoretical Model for the Direct Effect of Biopsychosocial-Spiritual Factors on Health Care Utilization

### *Cross-Lagged Panel Correlations*

The use of cross-lagged panel correlations (CLPC) allows us to test the relationship between biopsychosocial-spiritual factors and health care utilization over time (Kenny, 1979).

#### **Phase II**

After verifying the adequacy of the measurement model (Phase I) we will evaluate the complete model, including the structural associations among biopsychosocial-spiritual and health care utilization variables over time (Figure 2). First we will estimate a model that includes cross-lagged effects linking biopsychosocial-spiritual and health care utilization at adjacent waves of data. This first freely estimated model (Phase I) will address the exploratory nature of our research question, if biopsychosocial-spiritual factors affect health care utilization. If we find that the biopsychosocial-spiritual factors are found to be predictive of utilization then we will move forward with analysis that examines if these factors predict utilization over time or are they more influential at certain periods of the child life (i.e., when the child is older versus when the child is younger). The following constraints are more or less post hoc evaluations assuming the freed model provides support for the initial hypothesis that biopsychosocial-spiritual factors impact health care utilization. Stability effects across waves for the same construct will be constrained to be equal (e.g., the affect of baseline health care utilization on health care utilization at year 1 will be set equal to the affect of year 1 health care utilization on year 3 of health care utilization). Additionally cross-lagged effects of biopsychosocial-spiritual factors on health care utilization will be

constrained to be equal (e.g., affects of baseline health care utilization on year 2 BPSS was set equal to the affect of year 2 health care utilization on year 4 BPSS) and vice versa (i.e., affects of BPSS on health care utilization). Next, we will modify the structural model following recommended model modification procedures (Kline, 2011). This will be accomplished by removing non-significant parameter estimates in order to obtain the most parsimonious model possible (Kline, 2011). We will perform each modification, changing one estimate at a time and re-estimating the model. Chi-square and goodness of fit statistics (RMSEA, CFI, AIC) will determine which is best.

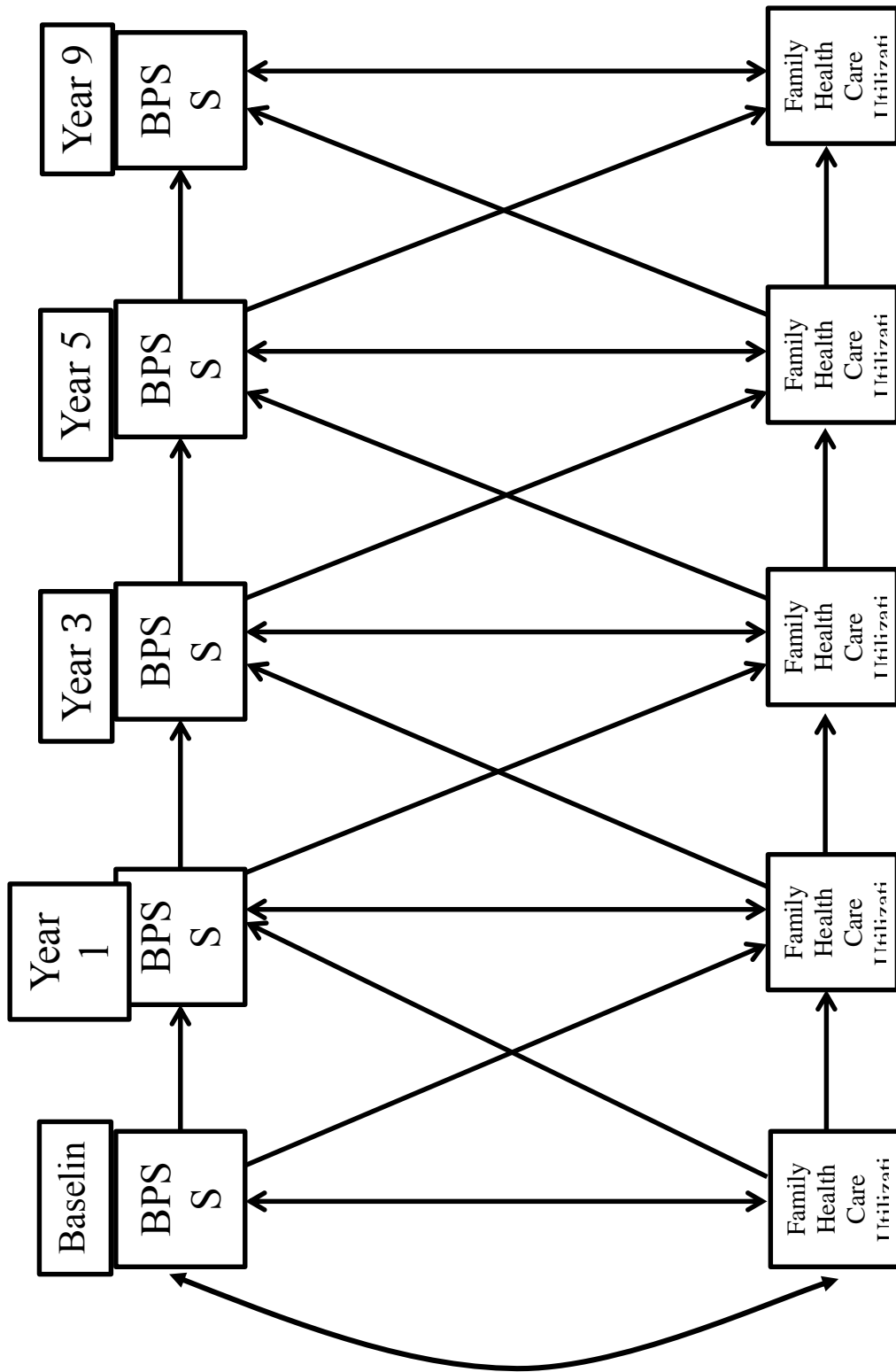


Figure 2. Theoretical Model for the Longitudinal Effect of Biopsychosocial-Spiritual Factors on Health Case Utilization

**CHAPTER FIVE**

**WHAT REALLY KEEPS THE DOCTOR AWAY?**

**BIOPSYCHOSOCIAL-SPIRITUAL PATHS TO**

**HEALTHCARE UTILIZATION OF FRAGILE FAMILIES**

**Abstract**

This study tests the biopsychosocial-spiritual (BPSS) model and its application to fragile families health utilization behaviors. The BPSS model was not developed specifically to address health care utilization; it is a holistic model that considers biological psychological, social and spiritual factors that impact family health experiences and can be useful in understanding utilization issues. Unfortunately, there have been few reported studies that test or validate the full conceptual BPSS model and none that consider the model as it related to utilization behaviors. This study used data from mothers and fathers from a single wave (year three) of the Fragile Families and Child Wellbeing Study (n=4845). Latent constructs were developed to measure the four factors of the BPSS model. Additionally a composite variable of health care utilization was developed based on participant's reports of medical visits, emergency room and overnight stays in the hospital. Structural equation modeling indicated a good fit of the data to the full model ( $\chi^2(559) = 2485.8676, p < .001, CFI = 0.82, RMSEA = 0.043$ ) as well as the factor's abilities to directly predict utilization ( $\chi^2(571) = 2499.3670, p < .001, CFI = 0.82, RMSEA = 0.043$ ). Specifically, the biological factors predicted health care utilization for mothers ( $\beta = .26, p < .05$ ) and fathers ( $\beta = .39, p < .05$ ). The psychological factor predicted utilization for mothers ( $\beta = .12, p < .05$ ) while spirituality was a significant predictor of utilization for fathers ( $\beta = .08, p < .05$ ). Significant covariance relationships

were estimated between the parent's BPSS factors, suggesting that parental BPSS factors are interdependent. Findings are consistent with previous research of health care utilization and suggest the important consideration of dyadic influence of BPSS factors on fragile families utilization.

## Introduction

The Biomedical Model assumed that disease could be fully accounted for by considering deviations from measurable biological norms. This model allows little space for consideration to psychological, social, or behavioral dimensions of illness (Engel, 1977). To that end, biomedical practitioners became either reductionists or exclusionists. Reductionists believed all behavioral occurrences must be considered in terms of deviations in physical chemistry. Exclusionists believed that whatever was not explainable in biological or chemical ways must be excluded from categories of disease or illness (Engel, 1977).

The Biopsychosocial Model was developed out of the Biomedical Model in the late 1970's. George Engel presented this model in an effort to improve on the reductionist Biomedical Model (Engel, 1977). In reaction to the limited scope of the Biomedical model, Engel (1977) argued that in order for physicians to fully understand disease and formulate health care treatment, the patient's context and system must be considered. In this light, Engel's model was grounded in General Systems Theory (Von Bertalanffy, 1969). The original intention for Engel's model was to be a descriptive model, used to understand the patient's illness experience for the purpose of expanding the diagnostic process from the biomedical lens to a broader biopsychosocial lens (Epstein & Borrell-Carrio, 2005).

Engel's model has continued to serve as a predominant framework for family medicine providers (McDaniel, Campbell, & Seaburn, 1989; Prest & Robinson, 2006; Steinglass, 2006) and Medical Family Therapists (Bischoff, Springer, Felix, & Hollist, 2011; McDaniel, Hepworth, & Doherty, 1992, 2014). Within these fields, the model has

experienced expansion beyond Engel's original theory, most notably the inclusion of spirituality (Hodgson, Lamson, & Reese, 2007; Prest & Robinson, 2006; Wright, Watson, & Bell, 1996). This expansion combines Engel's (1977) original ideas with those of Wright, Watson, & Bell (1996), whose work brought awareness to illness beliefs through the lens of spirituality.

Therefore, today with the biopsychosocial and spiritual inclusion in the medical model, the current Biopsychosocial-Spiritual (BPSS) model has contributed to a more ecological perspective, dependent on assumptions from general systems theory and the reciprocal nature of various nested systemic levels (Prest & Robinson, 2006). For example, Engel's original model focused on varying levels (e.g. biological, psychological, social) in an effort to intervene at the individual level. Family therapists, on the other hand, brought a newer emphasis on the systemic component of the model, expanding it past a single identified patient and encouraging inclusion of individuals from multiple or larger systems around the patient (i.e., family, community/religious groups, other medical or mental health professionals) (McDaniel, Hepworth, & Doherty, 1992, 2014).

Although the BPSS model was not developed specifically to address health care access and utilization issues, it is a holistic model for family health experiences and can be useful in understanding access and utilization issues. Unfortunately, there have been few reported studies that test or validate the full conceptual BPSS model. There is, however, research relevant to components of the model.



## **Background**

### ***The Expanded BPS Model: Incorporating Spirituality***

The BPSS model is based in a systems theory. Because of this, the systemic interdependence of ecological levels is important, along with the unique influence of each level. To that end, in order to understand the BPSS model, we must understand each domain (bio, psycho, social, spiritual) as well as the systemic interdependence among each domain.

First, from a systemic lens, families and their health are one in which all parts of the system are viewed to be forever interacting, adapting, and changing (Mendenhall, Pratt, Phelps, & Baird, 2012). It is with this systemic lens that we can better understand the complex relationship of each aspect of the biopsychosocial-spiritual model. Secondly, the biological aspect of the BPSS model often describes physical health, genetics, and biochemistry as pieces that influence health and health behaviors (Prest and Robinson, 2006). Health care access and utilization for fragile families are then, in part, biological experiences. Fragile families are more likely to be in need of increased access to health care due to health disparities that result in increased occurrence of illnesses like asthma, hypertension and diabetes (DeLeon, Giesting, & Kenkel, 2003; Williams & Collins, 1995). However, in light of these biomedical issues, these marginalized populations are more likely to delay treatment or seek out emergency room services that are unable to provide the necessary follow-up care to improve quality of life and reduce disparities of health (Hamilton, Hummer, You, & Padilla, 2006).

The psychological aspect of the biopsychosocial-spiritual model considers personality, temperament, and co-morbid conditions (Prest & Robinson, 2006). For

fragile families, the home environment and the multiple stressors associated with living in poverty contribute to an increased likelihood of mental health issues and behavioral problems. Education level and immigrant status also increase the likelihood of mental health issues and, for children, lagged cognitive development (Park, Fertig, & Allison, 2011). These same issues may also impact access and utilization of medical services. In a national study of depression, researchers found that Black and Hispanic populations were the least likely to receive treatment (psychotherapy or pharmacotherapy) (González, Vega, Williams, Tarraf, West, & Neighbors, 2010). This is significant to the fragile family population as these families are more likely to identify as Black or Hispanic.

From a relational perspective, health care access and utilization are viewed as part of an interactional pattern within the context of situational and developmental circumstance. The social aspect encompasses familial, community, sociocultural factors, and environmental context (Hodgson, Lamson, & Reese, 2007; Prest & Robinson, 2006). Social support has been shown to significantly impact the ability for families to access health services (De Marco & De Marco, 2009; Park, Fertig, & Allison, 2011; Teitler, 2001). Additionally, race/ethnicity (Williams & Collins, 1995), age (Park, Fertig, & Allison, 2011), income level (Williams, 2008), education (Park, Fertig, & Allison, 2011), and neighborhood characteristics (De Marco & De Marco, 2009) have also been found to contribute to access and utilization of health care.

Finally, an increasing amount of literature supports the importance of considering the role of religion and spirituality in the assessment and treatment of health issues (see George, Larson, Koenig, & McCullough, 2000). Hodgson and colleagues (2007) define spirituality as “the beliefs and meaning that patients and family members ascribe to an

illness” (p.4). In a review of spirituality and health literature, George and colleagues (2000) highlight that religion can reduce the likelihood of disease and disability with the strongest predictor being the attendance of religious services. Additionally, spirituality can aid in the prevention of mental illness and substance abuse and may improve recovery from such issues as well (George, Larson, Koenig, & McCullough, 2000). These authors postulate that the mechanisms that impact the association between health and spirituality include health behaviors, social support, and coherence hypothesis or a sense of meaning to an individual life. A sense of coherence and meaning provide individuals a way to understand their role in the universe, purpose of life, and an opportunity to develop the courage to withstand suffering. George and colleagues (2000) punctuate that a sense of coherence or meaning is not exclusively positive, in that a prominent component of the coherence hypothesis is that individuals suffer greatly. While the stress of suffering can impact one’s health, a sense of meaning can act as a buffer to the risks that suffering has on health and wellbeing.

Although the Biopsychosocial-Spiritual model has many strengths in practice and in conceptualization of therapists working with families and illness (McDaniel, Hepworth, & Doherty, 1992, 2014), the model does not address the time period prior to illness diagnosis, which would be relevant to issues of health access and utilization. Specifically, the BPSS model is traditionally used as an assessment tool once a patient arrives to care to better understand the constellation of symptomology to aid in the diagnostic process, but does not consider the days, weeks or months prior to this point. Additionally, although the Biopsychosocial-Spiritual Model provides an important framework to health practitioners to better understand a family’s health experiences, it

tends to overlook the importance of larger contextual and spiritual issues so common in fragile families and healthcare access.

### ***Larger Ecological Contextual Issues in Health Care Utilization***

There is an increasing body of research that identifies a strong relationship between socioeconomic status and health (e.g., Burton, & Bromell, 2010; Cunningham, Clancy, Cohen, & Wilets, 1995; De Marco & De Marco, 2009; Hill, Ross, & Angel, 2005; McCally et al., 2008; Rizzo, Mizrahi, & Kirkland, 2005). These strong relationships may also be relevant to fragile families as they are more likely to be of minority status and lower socioeconomic status and tend to have similar barriers to health. Poverty, race, citizenship status, and age are all noted factors in disproportionate levels of disease and health outcomes combined (Rizzo, Mizrahi, & Kirkland, 2005). Researchers are also considering determinants of health such as residential segregation and concentration of poverty (Williams, 2008). These determinants of health not only impact disease processes, but also health behaviors including utilization of medical services. To this end, Rizzo and colleagues (2005) suggest that health care settings address the psychosocial needs of patients, or risks associated with negative health issues that are due to (1) obstacles preventing early medical treatment, (2) impediment of medical treatment compliance, (3) functioning as an environmental trigger exacerbating symptoms of stress based illness (i.e., diabetes and asthma) or, (4) reducing effectiveness of medication interventions. In other words, health care utilization and health outcomes are influenced by biopsychosocial-spiritual factors that go beyond the biological medical model and must be considered when investigating health care access and utilization.

In order to reduce health disparities and improve health outcomes through increased access and utilization of health services for families living in poverty the field's research must advance the Biopsychosocial Model to ensure that larger societal factors that limit prevention, access and utilization are considered an essential component of health services. This study grounds its exploration in a framework that takes into account not only the micro level processes within health care utilization, but also the macro level influences due to context and spirituality. In this case the Biopsychosocial-Spiritual Model postulates that illness is impacted by biological, psychological, social, and spiritual facets of family life (Engel, 1977; Wright, Watson, & Bell, 1996).

To fully understand the application of the Biopsychosocial-Spiritual Model in access and utilization, we must first explore the various biopsychosocial models that exist today. Unfortunately, the BPSS Model has not been tested as a conceptual framework. First, the model has not been tested to determine whether there are four distinct interdependent domains, whether they may reflect one latent biological construct, or whether there may be more constructs not yet discussed. Secondly, it has not yet been determined whether this model, with the proper latent structure, can be used to understand variations in health services access or utilization.

The family systems genetic illness model (Rolland, 2006; Rolland & Williams, 2005) provides us with a biopsychosocial-systemic orientation, which we can draw on to examine the time period prior to diagnosis and larger macrosystem contextual issues. This model more clearly elaborates on the interplay of micro and macro level systems often discussed in the biopsychosocial-spiritual model. Rolland and Williams (2005) use a biopsychosocial and systems orientation to propose a Family Systems-Genetic Illness

model that includes prediagnosis phases of illness in the context of genetic testing.

Rolland and Williams's (2005) model addresses two limitations of a traditional biomedical model. First their developmental systemic model conceptualizes disorders in a way that "organizes similarities and differences over the disease course so that the type and degree of psychosocial demands are usefully highlighted" (Rolland & Williams, 2005, p. 4). This includes the "psychosocial demands on individuals and their families, along with emerging evidence for complex gene-environmental interactions" (Rolland & Williams, 2005, p. 4). Moreover their model addresses the dimension of time through the consideration of unfolding of illness- related developmental tasks over the entire course of disease with the addition of the "nonsymptomatic period of living with knowledge of the genetic risk" (Rolland & Williams, 2005, p. 5).

Although at face value genetic testing, and this type of focus, may not seem altogether related to prevention and issues of access and utilization, there are a number of factors within this model that do help inform this study. First, Rolland and Williams (2005) note that the benefit of genetics tests for cancer is not to catch all incidences of cancer, as this is not likely, but to catch those that can be caught. In this way, the biopsychosocial foundation of the Family Systems-Genetic Illness Model considers psychosocial implications for prevention medicine. During the period of time prior to symptom onset the model suggests for interventions that examine the psychosocial impact on the patient and their family along with considerations about how the disease onset or treatment recommendations may impact the patient psychosocially (Rolland & Williams, 2005). Similar to genetic testing that can signal the likelihood of certain health issues, we know that individuals living in poverty are at greater risk for certain medical

issues (e.g. increased body mass index, hypertension, and asthma) and increased risk of harmful health behaviors such as tobacco use and reduced physical activity (Lewis, Myhra, & Walker, 2014). The Family Systems-Genetic Illness Model provides an example of how to address these issues before illness onset. An example would be, in a community health clinic setting, addressing tobacco use with all patients and developing smoking cessation programs to promote discontinuation of tobacco use. Another example would be, including assessment tools that inquire about health behaviors. Similar to results from genetics tests, this information can provide useful information to health professionals and opportunities for conversations about illness prevention and connecting patients with supportive services to make important lifestyle changes that can improve health outcomes.

The goal of the present study was twofold: 1) to better understand how BPSS factors apply in regards to health care utilization of fragile families, 2) to identify key BPSS pathways. The identification of key BPSS pathways to health utilization can provide practical information to inform intervention development. For example, if we found that the social factor increased health care utilization this could inform therapeutic interventions at the social level. We intended to test the multi-dimensionality of the BPSS model using the FFCW study. This is significant because these families are more likely to live in poverty and experience health disparities (Waldfogel, Craigie, & Brooks-Gunn, 2010). Additionally, they are more likely to experience difficulties accessing health insurance and have unique barriers to accessing health care services (see: Angel, Frias & Hill, 2005; Park, Fertig, & Allison, 2011; Teitler, 2001).

## Methods

This study uses Fragile Families and Child Wellbeing Study (FFCW Study) (Reichman et. al., 2001). The FFCW Study is a longitudinal cohort study of nearly 4,700 American children run by Princeton and Columbia Universities (Reichman et. al., 2001). FFCW is was funded by government and private agencies including the Eunice Kennedy Shriver National Institute of Child Health and Human Development (R01-HD-36916 and 5P30-HD-32030), National Science Foundation and the U.S. Department of Health and Human Services (Office of the Assistant Secretary for Planning and Evaluation and Administration for Children and Families). Fragile families in this study are defined as families with an increased likelihood of breaking up and living in poverty, and specifically families that gave birth to a child when the biological parents were not married. The study offers an oversampling of low-income families due to the study's sampling method (using urban center hospitals to identify families). The core FFCW study was designed to address four questions (1) What are the conditions and capabilities of unmarried parents, (with a special emphasis on fathers)?; (2) What is the nature of the relationships between unmarried parents?; (3) How do children born into these families fare?; and (4) How do policies and environmental conditions affect families and children? (REF)

Families were invited into the study through hospitals. Specifically the study personnel identified non-married families in the hospital, shortly following the birth of their child. Recruitment of families for the study occurred in 75 hospitals. Reichman and colleagues (2001) report that the families in this study consist of a stratified random sample of 20 cities across the United States. The baseline year began in 1998 and six



follow up waves were collected over nine years. The stratification was not geographical but was according to policy environments. To that end, the study uses an oversample of non-marital births (3600 non-marital, 1100 marital). Characteristics of the sample in comparison to the U.S. population at the time of the initial wave in 1998 are found in Table 1 below.

Table 1. *Sample Characteristics Compared to U.S. Population*

	FFCWS	United States in 1998
White Non-Hispanic	8%	40%
Black Non-Hispanic	69%	32%
Hispanic	19%	24%
Other	4%	4%
US-Born	87%	83%
At Least HS Graduate	59%	56%

*Note.* Adapted from “Fragile Families: Sample and Design” by N. Reichman, J. Teitler, I. Garfinkel, S. McLanahan, 2001, *Children & Youth Services Review*, p. 324.

The baseline questionnaire for parents included inquiry on (1) prenatal care, (2) mother-father relationships, (3) expectations about fathers’ rights and responsibilities, (4) attitudes toward marriage, (5) parents health, (6) social support and extended kin, (7) knowledge about local policies and community resources, and (8) education, employment, and income. Follow-up interviews included additional inquiry about (1) access to and use of healthcare and childcare services, (2) experiences with local welfare and child support agencies, (3) parental conflict and domestic violence, and (4) child

health and wellbeing (Reichman, Teitler, Garfinkel, & McLanahan, 2001). The interviews consisted of over 100 questions and took approximately 1 hour to complete.

Parents were excluded from the study if: 1) they planned to place the child up for adoption, 2) the father of the baby was deceased at the time of birth, 3) the couple did not speak English or Spanish sufficiently to complete the interview, 4) the mother was too ill to complete the interview (or the baby was too ill for the mother to complete the interview), and 4) the baby died before the interview could take place. Additionally, many hospitals did not allow interviewing of parents who were under 18 years of age (in these cases a mother was not interviewed if she or the baby's father were under 18).

### *Variables and Measures*

This study uses cross-sectional data from adult participants in year three of the FFCW dataset for demographic information and model testing. A description of the BPSS factors and how they were constructed is provided below. All measures described below were identified based on conceptual fit to the biopsychosocial framework and availability of variables between partners and across all years of data. Additionally, when available we used standardized measures to develop latent constructs, for example, the CIDI was used to measure depression and the Multidimensional Support Scale (MDSS) for measurements of parental relationship quality. These measures were then loaded on to their respective factors as individual latent variables.

## **Biological**

A participant's biological factor was made up of five indicators. Three of these were measures of health-related behavior used in previous FFCW publications (see Teitler, 2001). The measure includes questions pertaining to frequency of cigarette smoking, alcohol consumption, and drug use. The other two were questions of respondents' perceived health were included such as; "in general, how is your health," with response options including excellent, very good, good, fair, and poor. Also, questions of diagnosed health issues such as, "are you currently taking medication for any of the following conditions?" are included. A mean composite measure of latent factors were created from these items by summing the responses. Higher scores on this measure indicate poorer biological health and the presence of illness.

## **Psychological**

In this study, the psychological factor was created using three indicators. Scores for the Mental Health Scale for Depression, Mental Health Scale for Generalized Anxiety Disorder and self-report of use of mental health services were used as indicators under the psychological factor. More specifically, depression and generalized anxiety items were derived from the Composite International Diagnostic Interview-Short Form (CIDI-SF), Section A (Kessler et al., 1998). The short form of the CIDI interview takes a portion of the full set of CIDI questions and generates from the responses the probability that the respondent would meet criteria for depression or anxiety if given a full CIDI interview. The CIDI questions are consistent with the Diagnostic and Statistical Manual of Mental Disorders –Fourth Edition (DSM-IV; APA, 1994). The CIDI is a standardized

instrument for assessment of mental disorders intended for use in epidemiological, cross-cultural, and other research studies.

### **Social**

The social factors in this study were measured using items consistent with social and environmental pathways identified as possible links between family structure and child-wellbeing in fragile families (Waldfogel, Craigie, & Brooks-Gunn, 2010). These pathways include: parental resources, parental relationship quality, parenting quality, and involvement. For example, public assistance receipt, social, and familial support (i.e., frequency child sees grandparents) will be used to reflect parental resources. Parental relationship quality was measured using the Multidimensional Support Scale (MDSS). Parenting quality and involvement will be measured using scales from Child Development Supplement (Parent Survey) and Early Head Start (Parent Interview).

### **Spirituality**

A participant's spirituality was measured using three self-rated questions regarding the respondent's religious identification and engagement with religious services. The questions were as follows: Religious faith is guide for way I treat my family(4 point scale, strongly agree-strongly disagree); How often do you attend religious services? (7 point scale, never-everyday); Since child's birth, had any religious experience that transformed your life? (yes/no).

## **Healthcare Utilization**

In this study, healthcare utilization was measured using multiple self-report questions that assess the use of health care services. Questions included How many times gone to ER because of your own injury/illness in last year?, In past year, how many times have you stayed overnight/gone to emergency room?, In past year, have you stayed overnight at hospital/gone to emergency room? For these questions participants report the number of times they had interacted with the health care system. Additionally questions were asked about participants comfort level talking their doctor and available of physicians (i.e., do you feel you could talk to doctor if you wanted to?). Participants responded based on a four point scale ranging from strongly disagree to strongly agree. A composite variable was created by adding up the values of these questions with high values indicating higher utilization of services.

## **Pre-analysis Data Screening**

Prior to modeling the data to address the two study aims the data was screened for patterns of missing data. Specifically, the data was tested for missing completely at random, missing at random, or missing systematically. Across the variables missing ranged from 11% to 26%. The missing data was considered to be missing at random and therefore full information maximum likelihood imputation was applied in EQS (Bentler, 2006). Following this analysis we screened the data for univariate and multivariate assumptions associated with structural equation modeling (SEM; Kline, 2011; Tabachnick & Fidell, 2007). Due to moderate issues of skewness and kurtosis the natural log was used for the following variables: mother medication use, alcohol use, anxiety,

depression, mental health treatment, health care utilization; fathers medication use, alcohol use, drug use, anxiety, depression, mental health treatment, and health care utilization. Additionally for severe non-normality issues, the log was use for mother drug use. Because some variables continued to be skewed, for example Mother's reported substance use remained non-normally distributed, with skewness of 5.575 ( $SE=.035$ ) and kurtosis of 36.087 ( $SE=.070$ ), we used non-robust goodness of fit statistics were examined.

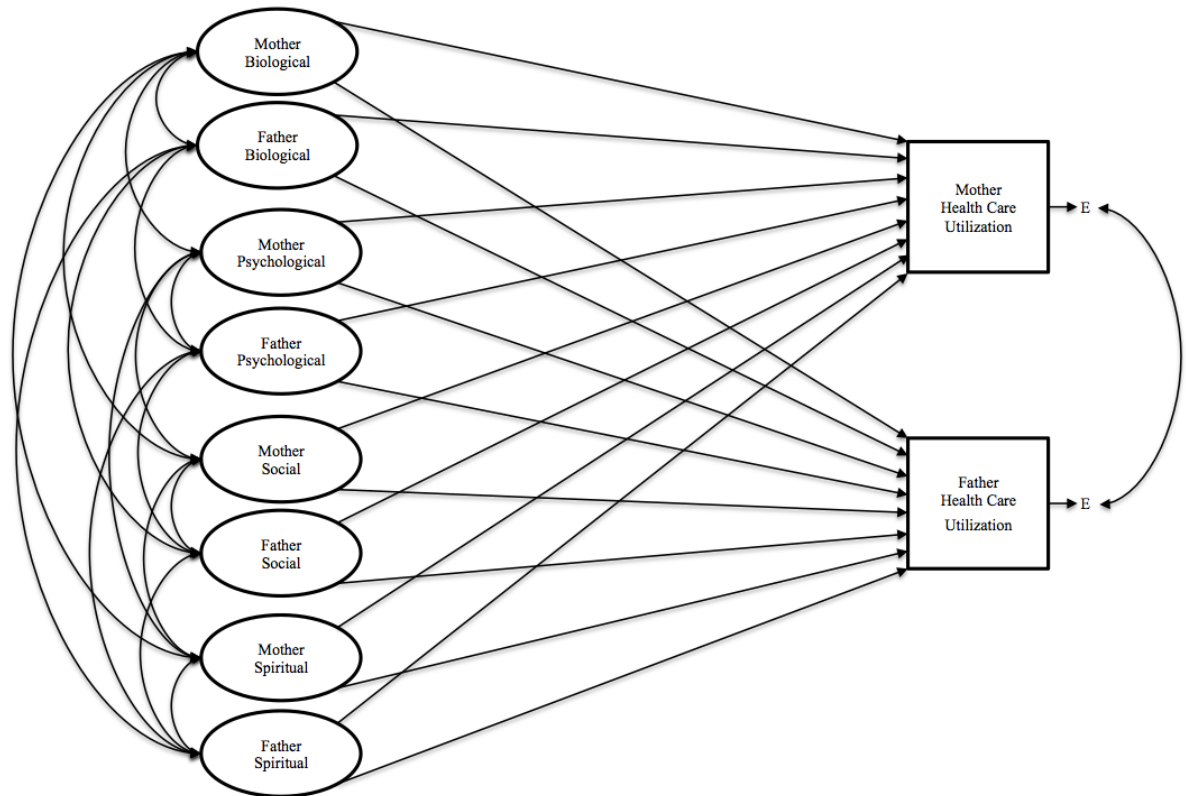
Multiple measures of model fit were accessed for each model. These include chi-square goodness of fit, the comparative fit index (CFI), and the root mean squared error of approximation (RMSEA). For the purpose of this research we used robust results. Standard rules of thumb for the goodness of fit stats were applied (Kline, 2011) to determine "good fit." These include CFI and GFI scores larger than .90 and RMSEA point estimates below 0.05, as well as 90% CI below .05. Nesting was tested first by assuring that the new model fit, followed by  $\chi^2\Delta$  test to determine whether the new or additional constraints produces a tau equivalent fit.

### **Analytic Strategy**

EQS (Bentler, 2006) was used to fit the SEM models in the analysis. The analysis began by testing the validity of the measurement model (Kline, 2011). Following subsequent modifications from this step (as noted below), we then fit the structured model.

The structured model was built to represent the four facets of the Biopsychosocial-Spiritual Model (see figure 1 above). We then added predictive pathways from

these four factors to the outcomes measures of healthcare utilization. The analysis followed recommendations for testing structured regression models in a nesting process to determine the best or most tenable as well as parsimonious fit (Byrne, 2013; Kline, 2011; Raykov & Marcoulides, 2006). In addition, the data were dyadic (both biological father and mother completed measures). Therefore we also followed guidelines for actor-partner interdependence modeling (Kenny, Kashy, & Cook, 2006).



*Figure 1.* Theoretical Model for the Direct Effect of BPSS Factors on Health Case Utilization

The modeling process was directed by two research questions and required two

steps/models, each adding additional constraints. As such, we began by fitting the first or full model, which is presented in figure 1. This model resulted in a poor fit, we used the Lagrange Multiplier test (LM test) to identify improvement to the measurement model. Based on evaluation of LM test results, we chose to covary error terms for four of the “social” latent constructs for figure 1. It is likely that the social factor presented in this model may reflect two different ecological levels. Rather than dividing them into latent factors we choose to parallel the BPSS framework and stay with one factor for social and as result covaried the factors instead of separating them. We estimated this model and it produced an acceptable fitting model. We then trimmed the model removing non-significant pathways between BPSS factors and health care utilization variables. Additionally, all latent variables were reviewed for significance; all latent factors loaded significantly and all latent factors were retained for the final model (See figure 2 for final model).

## **Results**

### ***Demographics***

The Demographics characteristics of the sample and health care utilization findings are presented in Table 2.



Table 2. *Demographic Characteristics of the Sample*

	<b>Mothers</b>	<b>Fathers</b>	
Age	<b>% (n)</b>	<b>% (n)</b>	
16-20	3.2 (19)	1.3 (45)	
21-30	64.9 (2727)	52.2 (1705)	
31-40	27.6 (1161)	35.3 (1153)	
41+	4.3 (185)	11.2 (370)	
Ethnicity			
White, non-Hispanic	21.1 (1030)	18.4 (894)	
Black, non-Hispanic	47.6 (2326)	49.4 (2407)	
Hispanic	27.3 (1336)	27.8 (1354)	
Other	4 (194)	4.4 (216)	
US Citizen			
Yes	99.1 (4162)	97.4 (3193)	
No	0.9 (36)	2.6 (86)	
Income			
Less than \$5,000	13.2 (556)	9 (297)	
\$5,001-10,000	12 (506)	6.3 (207)	
\$10,001-15,000	10.7 (451)	8 (264)	
\$15,001-20,000	9.1 (381)	8.3 (275)	
\$20,001-25,000	8.6 (360)	6.5 (216)	
\$25,001-30,000	8.2 (344)	9.1 (301)	
\$30,001-40,000	10.1 (426)	12.9 (427)	
\$40,001-60,000	12.3 (519)	17.3 (572)	
More than \$60,000	15.7 (662)	22.4 (740)	
Marital Status (Per mother report)			
Married	32.2 (1353)		
Romantic cohabitating	19.5 (819)		
Romantic some visit	2.4 (99)		
Romantic no visit	3.2 (133)		
Separated/widowed/ Divorced	6.4 (268)		
Friends	17.5 (733)		
No relationship	18.6 (783)		
Dad unknown	0.3 (11)		
Healthcare Utilization	<b>M (SD)</b>	<b>M (SD)</b>	
	0.74 (2.04)	0.74 (1.60)	<i>t</i> (5932)= 0.0213, <i>p</i> >.05

The families in this study displayed a wide range of utilization of health care services (See Table 2 above). A two tailed paired samples t test revealed no difference between mother ( $m=0.74$ ,  $s=2.04$ ) and father ( $m=0.74$ ,  $s=1.60$ ) health care utilization behaviors,  $t(2966)=-0.022$ ,  $p=.982$ .

### ***Bivariate Correlations***

Bivariate correlations at the factor level were tested prior to analysis (Table 3). All four Biopsychosocial-Spiritual factor correlations for mothers were low to moderately correlated with the exception of mother psychological and spiritual factors and social and spiritual factors which were not found to have statistically significant correlations. For the fathers, we found that a number of BPSS factors were positively correlated i.e., biological and psychological ( $r=0.73$ ,  $p<.05$ ), and social and spiritual ( $r=0.10$ ,  $p<.05$ ). However, psychological and spiritual factors did not prove to have a statistically significant correlation.

As displayed in Table 3, a number of factors between the parental dyads were significantly correlated with one another. These correlations were low to moderate in nature. As seen in both the individual correlations of the mothers and fathers, the relationships between psychological and spiritual factors were all non-significant. Additionally social and spiritual factors were also statistically non-significant.

Table 3. *Correlations Between BPSS Factors*

	f1	f2	f3	f4	f5	f6	f7
f1 Mother biology							
f2 Father biology	<b>0.11</b>						
f3 Mother psychology	<b>0.59</b>	0.08					
f4 Father psychology	<b>0.08</b>	<b>0.73</b>	<b>0.19</b>				
f5 Mother social	<b>-0.17</b>	<b>-0.17</b>	<b>-0.27</b>	<b>-0.25</b>			
f6 Father social	<b>-0.10</b>	<b>-0.24</b>	<b>-0.17</b>	<b>-0.28</b>	<b>0.87</b>		
f7 Mother spiritual	<b>-0.10</b>	-0.06	-0.04	-0.01	0.03	-0.01	
f8 Father spiritual	-0.02	<b>-0.27</b>	-0.03	-0.02	0.03	<b>0.10</b>	<b>0.54</b>

Note: **bold numbers signify p-value less than .05**

### *Testing the Full BPSS Model*

Our first attempt at running the full BPSS model did not produce an adequate fit and in fact would not converge. To better understand what was preventing the model from converging and produce a better fitting model we evaluated results from the Lagrange Multiplier test (LM test). LM test results identified that model fit would significantly improve if the social factor items were re-specified. Specifically that the measured items for relationships within the family (i.e., parental relationship quality) and items for social resources external to the family (i.e., access to childcare) should be divided out into separate latent factors. In response to these findings we chose to covary error terms for the related items Rather than split the items into different factors. This decision was based on the desire to mirror the BPSS model, rather than extend it conceptually.

### **Model 1: Full Model**

The model presented in Figure 1 was fit first and had a good fit to the data,  $\chi^2$

(559)= 2485.8676,  $p < .001$ , CFI= 0.82, RMSEA= 0.043. In addition, four of the eight direct paths from the BPSS factors to utilization were significant. Significant direct pathways to mother health utilization included Mother's Biology ( $\beta = .294$ ,  $B = .595$ ,  $SE = .119$ ,  $t = 5.016$ ,  $p < .05$ ) and Mother's Psychology ( $\beta = .102$ ,  $B = .719$ ,  $SE = .356$ ,  $t = 2.019$ ,  $p < .05$ ). Significant direct effects for fathers included; Father's Biology ( $\beta = -.056$ ,  $B = 3.115$ ,  $SE = .847$ ,  $t = 3.676$ ,  $p < .05$ ) and Father's Spirituality ( $\beta = .169$ ,  $B = .133$ ,  $SE = .055$ ,  $t = 2.426$ ,  $p < .05$ ).

## **Model 2: Testing Significant BPSS Direct Effects**

The second model constrained the non-significant direct pathways to 0 (Mother's social and spiritual and Father's psychosocial and social). This model produced an acceptable level of fit,  $\chi^2(571) = 2499.3670$ ,  $p < .001$ , CFI= 0.82, RMSEA= 0.043. Therefore these constraints proved to be tenable as the chi-square change between Model 1 and the current model was non-significant ( $\Delta\chi^2(df) = 1.12495(12)$ ).

Within this parsimonious model there was a decrease in health care utilization based on both parent's biological factors, however it is interesting to note that health care utilization increased based on mothers psychological factors ( $\beta = .120$ ,  $B = .874$ ,  $SE = .293$ ,  $t = 2.886$ ,  $p < .05$ ), and the father's spirituality factor ( $\beta = .083$ ,  $B = .065$ ,  $SE = .023$ ,  $t = 2.823$ ,  $p < .05$ ). Congruent with the previous model all BPSS factors were covaried in keeping with the APIM assumption of interdependence. For mothers, all factors were significantly correlated to her biology however social and psychological factors did not prove to be correlated with spirituality ( $\beta = -.03$ ,  $p > .05$ ). In the case of fathers, all factors were significantly correlated with the exception of father psychology and spiritual.

Between parents all factors were significantly correlated except mother and father biology ( $\beta = .03, p > .05$ ). The resulting model is depicted in Figure 2.

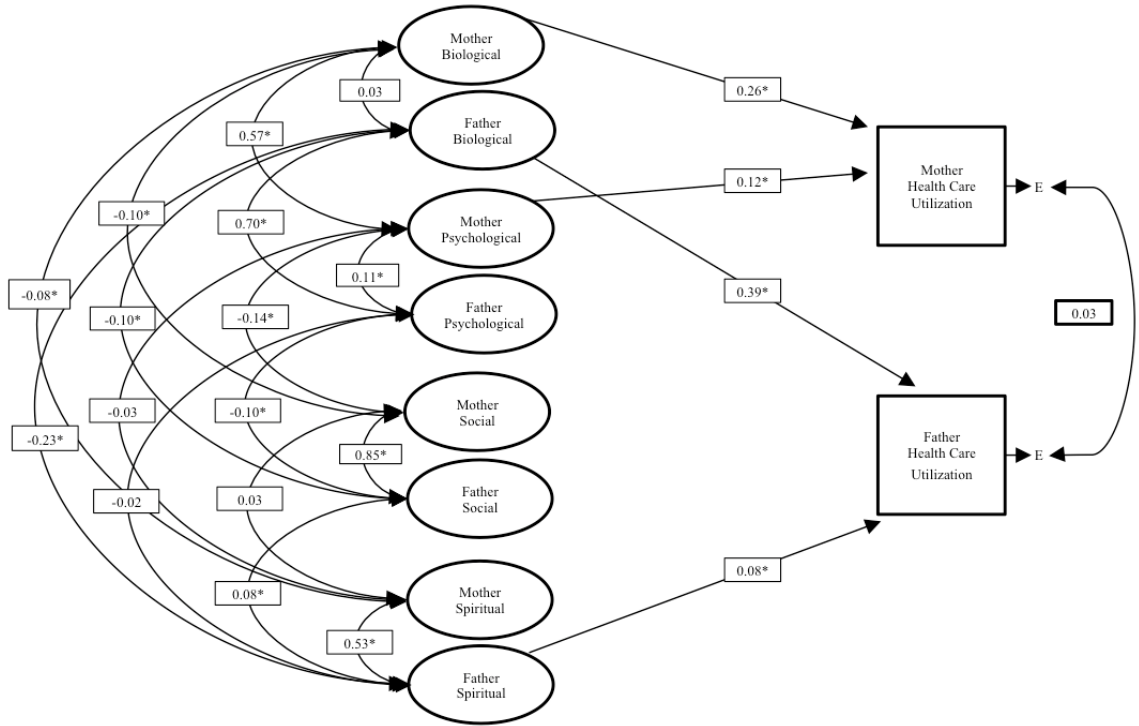


Figure 2. Direct Effect of BPSS Factors on Health Case Utilization. Significance at  $*p < .05$

## Discussion

The purpose of this study was to test the BPSS model as it related to health care utilizations. The Fragile Families and Child Wellbeing (FFCW) dataset was used to test our hypothesis that there are four interrelated domains (biological, psychological, social, and spiritual) and that they can be used to further understand health care utilization. Overall, the results lend partial support to our hypothesis, while also having important ecological implications and unique gender differences on healthcare utilization.

First, it was found that mother's biological factors and father's biological factors had a direct effect on healthcare utilization. Given that this factor was made up of latent constructs such as health and various types of substance use, it is logical that these directly effect utilization. As the addition of illness and substance use can result in poorer health that increases the need for health resources. Although this finding lend evidence to the traditional biomedical model framework, it is important to point out that the biological factors alone do not fully explain the variance in healthcare utilization. Mother's psychological and father spiritual factors were also found to have direct impact on utilization. This is important as it challenges current biomedical models that might limit intervention to only the biological level. These findings support more integrated practices of health care like the work of McDaniel and colleagues (1992, 2014) that would support the integration of larger contexts like psychology and spirituality into medical treatment.

Additionally, it was found that all of the other factors, in both mothers and fathers, had significant correlations with the biological factor, suggesting that these factors play a significant role in utilization. More specifically, the psychological, spiritual and social factors were all found to correlate with the biological factors for both mothers and father. Additionally, each of the father's factors significantly correlated with one another, with the exception of psychological and spiritual. These results demonstrated the extent of interrelatedness among these factors, supporting the ecological view that wellbeing in certain areas is related to wellbeing in other areas (Mendenhall, Pratt, Phelps, & Baird, 2012).

In addition this study suggests that there is dyadic relationship between mothers and fathers in the BPSS model. Specifically, there are significance between mothers and father covariances between the psychological, social and spiritual variables. Interestingly, mothers and fathers biological factors did not have a significant correlation with each other. This supports the assumption that BPSS factors are for the most part interdependent. These findings are consistent with the Family Systems-Genetic Illness model that expand the Biopsychosocial-Spiritual model. Rolland and colleagues (2005) in their model more clearly elaborates on the interplay of micro and macro level systems often discussed in the biopsychosocial-spiritual model while also considering the interplay within families. Although not developed specifically to address health care access and utilization, the model is a contextually relevant model of family systems health (Rolland, 1994; Rolland & Williams, 2005).

The last significant findings in this study are the unique direct effects on healthcare utilization by gender. Specifically, mothers psychological factor and fathers spiritual factor had a direct effect on healthcare utilization. Although it is not yet clear why mother's psychological factors and father's spirituality directly impact their healthcare utilization, it is to consider this potential gender difference in the BPSS and utilization. These unique gender effects further supports the theme throughout this study that trends in healthcare utilization are dependent on much larger contextual factors than solely what exists within the biology of a person (Rolland, 2006). To date a significant amount of research exists that examines that gender differences between men and women (see: Green & Pope 1999; Oksuzyan, Juel, Vaupel, & Christensen, 2008). This area of research finds that women are higher utilizers of health care services but typically men

experience more health problems (Green & Pope 1999; Oksuzyan, Juel, Vaupel, & Christensen, 2008). These studies however rarely consider how contextual factors are at play with in gender. For example in our current study it was interesting to consider that psychological factors were more significant for mothers and spiritual factors for fathers. Further research in exploring how these BPSS factors interplay with gender would great contribute to our understanding of gender differences in health care utilization.

Together, these findings provide strong evidence for the BPSS model and how it informs healthcare utilization in fragile families. The combination of findings here, with the direct effects of biology on healthcare utilization, the relationships of psychological, social and spiritual factors to biology, the interrelationship of mothers and fathers factors, as well as the unique gender effects, all provided significant evidence that the biomedical model is not sufficient, when we consider fragile families and utilization. By looking at the whole person, including their psychological, social, and spiritual factors, their relationships, and the larger social context impacting fragile families, the possibilities for intervention and support increases tremendously.

### **Limitations and Future Research**

Although we believe there are many strengths to this study, the results should be view in relationship to some notable limitations. First, this study focused on fragile families (families where the parents are not married at the time of child's birth), these families are more likely to be of minority status and low income (Waldfogel, Craigie & Brooks-Gunn, 2010). Therefore the BPSS empirical investigation would benefit from similar studies within high SES families.



Additionally, this study relied on existing measures and secondary data analysis. This limited the breadth and deep of measures in the study, especially in regards to the robust conceptual definitions used in the BPSS. A future study with the intent of collecting data specific to the BPSS model should use better measurements to reflect each domain more comprehensively. Although we note that the fragile families and child wellbeing study taps a wide range of health utilization behavior.

### **Conclusion**

The findings in this study support the ecological and interdependent nature of the BPSS model. They also are consistent with theoretical conceptualizations presented by Engel (1980) in his original model and the Family Systems-Genetic Illness Model, which expands the Biopsychosocial-Spiritual model to include the time period prior to illness diagnosis (Rolland & Williams, 2005). The link between biological, psychological, social and spiritual factors is pivotal in terms of connecting theoretical ideas with the needs of fragile families. Such multilevel integrated models can bring into play rich and diverse literatures in order to investigate family relational-mind-body interactions. Also, such models can be potentially useful in the examination environmental ecological factors underlying health care utilization behaviors.

### ***Clinical Implications***

A better understanding of the BPSS model can support program development with regards to the relationship between family relations and health care utilization. The results of such investigations could lay the foundation for focused interventions and

prevention studies that not only allow for experimental testing of the hypothesized BPSS pathways but also provide a deeper knowledge regarding effective interventions that promote and support barriers healthcare utilization.

The current findings suggest that due to the relationship between parent's health care utilization behaviors, interventions that target one member of the family may not necessarily translate to utilizations changes of all family members. Furthermore, the BPSS model, as supported by this study, suggests that targeting psychological, social and spiritual factors of families may possibly have beneficial impacts on health care utilization behavior. Until we can more clearly identify the pathways of health care utilization, we suggest that the most effective outcome would likely be gained by multidimensional and multidisciplinary approaches to increasing assess and utilization. Furthermore, targeting mothers and fathers independently and conjointly simultaneously during a BPSS assessment could influence health care utilization behavior by identifying how the couple influences one another and how individual's factors could be addressed.

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**CHAPTER SIX**  
**THE EVOLVING NEEDS OF FRAGILE FAMILIES IN**  
**ACCESSING HEALTH CARE:**  
**A BIOPSYCHOSOCIAL-SPIRITUAL MODEL**

**Abstract**

This study tests the biopsychosocial-spiritual (BPSS) model and its application to health utilization behaviors in fragile families over time. The BPSS model considers biological psychological, social and spiritual factors that impact family health experiences and, although not developed to address healthcare utilization, can be useful in understanding utilization issues. Unfortunately, there have been few reported studies that test or validate the full conceptual BPSS model and none that consider the model as it related to utilization behaviors. To empirically investigate the interdependence of the BPSS model overtime, this study used data from mothers and fathers over four waves (years one, three, five and nine) of the Fragile Families and Child Wellbeing Study (n=2845). Latent constructs were developed to measure the four factors of the BPSS model. Additionally a composite variable of health care utilization was developed based on participant's reports of medical visits, emergency room and overnight stays in the hospital. Structural equation modeling indicated an acceptable fit to the data ( $\chi^2$  (993)= 14140.461,  $p < .001$ , CFI= 0.75, RMSEA= 0.068). Specifically, at all time points, biological factors in both mothers and fathers significantly predicted health care utilization. Psychological factors in both mothers and fathers for all time points, except fathers at year one, also significantly predicted healthcare utilization. Social factors were less consistent in their prediction of healthcare utilization, but were found to be

significant for both mothers and fathers at differing time points. Significant covariances were found for the majority of mother and father variables across all years. Findings provide further evidence to support the inclusion of mental health care in biomedical health services and to support the need for relationship interventions between parents to improve BPSS factors, which then impact health care utilization behaviors.



## **Introduction**

In 2007, nearly 40 percent of all U.S. births were to unwed parents (Ventura, 2009). These births occurred most often among African American and Hispanic families, who are also more likely to live in poverty (Hummer & Hamilton, 2010; Waldfogel, Craigie & Brooks-Gunn, 2010). Minority populations and those living in poverty experience poorer health and frequently delay medical treatment (Burton, & Bromell, 2010; Cunningham, Clancy, Cohen, & Wilets, 1995; De Marco & De Marco, 2009; Hill, Ross, & Angel, 2005; McCally et al., 1998; Williams, 2008). Even with efforts to insure fragile families and provide better access to healthcare services, low-income families still drastically underuse medical services (Angel, Friad & Hill, 2005). This study seeks to dig deeper into this issue using the framework of the Biopsychosocial-Spiritual (BPSS) Model. The Biopsychosocial Spiritual Model asserts that illness is impacted by biological, psychological, social, and spiritual facets of family life (Engel, 1977; Wright, Watson & Bell, 1996). In order to gain a deeper understanding of issues of healthcare utilization in fragile families, we will use the Fragile Families and Child Wellbeing (FFCW) data set to further look at how the different factors of the BPSS play a role in healthcare utilization over time. Empirically investigating the interdependence of the BPSS model overtime will have important implications that can inform interventions that improve health care access and utilization.

### ***Fragile Families and Healthcare Utilization***

Fragile families, as defined by the Fragile Families and Child Wellbeing Study (FFCW Study), are families in which the parents were not married at the time of the

child's birth (Reichman et. al., 2001). In a review of findings from the FFCW study, Waldfogel, Craigie, & Brooks-Gunn (2010) found that parents in fragile families are at increased risk of living in poverty, experience health disparities and housing instability, while their children are more likely to have educational disparities, greater frequencies of chronic illnesses such as asthma and generally fare worse than peers born into married families. Given the variety of contextual factors that impact these families, it is important to address health disparities in order to support these fragile families and reduce unfair and unjust health care barriers (Williams, 2008).

Furthermore, and specific to the focus of this study, current studies of fragile families health care utilization behaviors have identified that these families are more likely to postpone care or not receive care at all due to a variety of factors including parental relationship quality, citizenship status and homelessness and residential instability (Hamilton, Hummer, You, & Padilla, 2006; Park, Fertig, & Allison, 2011; Teitler, 2001). Given the efforts put into healthcare reforms and increasing access to healthcare services, such as through the Affordable Care Act, it is concerning that families continue to have barriers to healthcare utilization (De Marco & De Marco 2009). With this in mind, it is important that healthcare utilization is looked at through a more comprehensive lens, taking into account a variety of factors beyond just biological health and having access to health care.

Without consideration of contextual factors, service providers are unable to help these families improve health care access. To date, there have been several findings that support the need to look at family contextual factors when looking at outcomes in fragile families. For example, parental resources, parent mental health, parental relationship

quality and father involvement have all been found to explain the connection between family structure and child wellbeing. Additionally, welfare beneficiaries that were younger, uneducated, unemployed, unmarried recipients with the highest rates of social isolation were the highest utilizers of social services, conversely, those individuals who were older, educated, employed or married were least likely to access social services. These researchers suggest this phenomenon is due to social support resources available to the latter group (i.e., family, friends, co-workers, spouse).

Therefore, it is necessary that interventions aimed at improving healthcare access for fragile families include a more holistic and multidimensional scope. Unfortunately there is limited research on the topic within the area of health care utilization. Additionally, there is minimal guidance as to how to apply a holistic model of health care utilization for fragile families. To our knowledge only one other study approaches a more holistic approach. In this case Katerndahl (2008) undertook research with low-income Hispanic patients who were patients at a health clinic. The study examined the impact of spirituality, on interactions with health services and life satisfaction. Results from this study identified that deficits on the spiritual factors were related to “extreme” use of health care services and life satisfaction. Although limited in scope, this supports the need to explore healthcare utilization from a larger multidimensional lens, specifically we apply the BPSS.

### ***The Biopsychosocial-Spiritual Model***

The BPSS model provides a framework that offers a multidimensional frame, which can be applied to help understand healthcare utilization in fragile families. The

BPSS model has been used by a diverse group of care providers including physicians and mental health providers to explain the biological, psychological, social and spiritual dimensions individuals experience during illness. The original biopsychosocial model (BPS model), developed by Engel, provides a more holistic approach to care (1977). It also is unique in that it considers the role of social influences (along with other influences) on illness processes. The BPS model asserts that the individual should be seen as part of a whole system. This system includes all internal and external environments, from cellular and genetic components to the individual's family, and larger society (Engel, 1977). Thus, Engel argued that levels of social context impact individuals as much as any physical condition.

More recently, scholars expanded the model to include spirituality (Hodgson, Lamson & Reese, 2007; Prest & Robinson, 2006; Wright, Watson & Bell, 1996). The resulting BPSS model offers a systemic perspectives to help guide physicians when working with individuals and families dealing with medical problems (McDaniel, Hepworth & Doherty, 1992; McDaniel, Doherty & Hepworth, 2014; Tyndall, Hodgson, Lamson, White, & Knight, 2014). Although the BPSS model was not developed to be used in research, it does provide helpful guidance, in that it considers, and organizes the various factors associated with health care utilization in fragile families.

### ***Furthering the BPSS Model***

Although the BPSS is helpful, there are two main limitations with the BPSS model. First, the current BPSS model lacks the important schemas and constructs that would be suggested from a larger ecological lens (Mullins, Chaney, & Frank, 1996). This

limitation prevents a broader consideration of contextual influences around families and health. Research of fragile families and similar populations (i.e., those of minority status or lower socioeconomic status) points to contextual issues as a key feature maintaining disparities of health (i.e., Williams, 2008) as such, further development of the BPSS constructs could in turn further develop the model's ability to explain the interplay of contextual influences at varying levels within the individual and family systems.

Secondly, there has been little research to date that has validated this model, its factors and its framework of understanding illness or healthcare utilization. The research that currently exists examines the impact of a single factor (see: Katerndahl, 2008) on utilization. While this model does consider some interactions between the specified factor (spirituality) and other BPSS factors, it does not consider how the factors may be interconnected at multiple levels, as this study only considered how factors relate to the spiritual factor. This study will take a more comprehensive approach and consider the BPSS model in its entirety to better understand the interplay between factors and between parents. Using the various measures in the FFCW study that pertain to the biological, psychological, social and spiritual factors, this study seeks to further the evidence of these four factors as distinct, but related factors in understanding healthcare utilization.

## **Methods**

### ***Participants and Study Design***

This study uses data from four waves of the Fragile Families and Child Wellbeing Study (FFCW Study) (Reichman et. al., 2001). The FFCW Study is a longitudinal cohort study (Reichman et. al., 2001) funded by government and private agencies including the

Eunice Kennedy Shriver National Institute of Child Health and Human Development (R01-HD-36916 and 5P30-HD-32030), National Science Foundation and the U.S. Department of Health and Human Services (Office of the Assistant Secretary for Planning and Evaluation and Administration for Children and Families). This longitudinal study of nearly 4700 children and their families has completed 5 waves of interviews. The baseline interview was completed in the hospital within days of the birth of the focal child. The study used a multi-informant method that included interviews with each biological parent, the primary care giver (if other than a biological parent), child (beginning at year 9), schoolteachers and childcare surveys, in home observations, and home visit workbook (Reichman et. al., 2001). For the purpose of the present study, only biological parent interviews were used for this analysis.

The study refers to unmarried parents and their children as “fragile families.” Fragile families are defined as those families that gave birth to a child when the biological parents were not married. Urban center hospitals were targeted for recruitment and the study used an oversampling of low-income families. The core FFCW study was designed to address four questions (1) What are the conditions and capabilities of unmarried parents, especially fathers?; (2) What is the nature of the relationships between unmarried parents?; (3) How do children born into these families fare?; and (4) How do policies and environmental conditions affect families and children? (Reichman et. al., 2001).

For the purpose of this study we used four waves of data (years 1, 3, 5 and 9). The baseline interview (year 0) was excluded from this study due to inconsistencies in the study design. Specifically, fathers were not asked questions in the first wave (e.g. no

psychological for fathers) that were crucial to the measures used to approximate the BPSS factors in the analysis. In addition we only included families where both parents were assessed within at least 3 or more time points. Therefore 2,845 families were included in the analysis.

### *Measures*

The study measures are based on BPSS factors and weighting identified in Kuhn and colleagues (In Preparation). More specifically a previous study identified multiple measures within the FFCW that conceptually approximated factors in the BPSS model. This previous study evaluated these measures and the underlying latent structure of these measures. The resulting model provided guidance for creating a three factor model (BPS) including relevant weights needs to create a total scale score for each of the bio-psycho-social factors within each of the four waves.

### **Biological**

A participant's biological factor was assessed by measures of health-related behavior used in previous FFCW publications (see Teitler, 2001). The measure includes questions pertaining to frequency of alcohol consumption, and drug use, but also self-reported perceptions of health. Also included were items that measured whether the participant regularly took medication for health problems or experienced health problems that restricted or prevented the ability to work. Responses included: diabetes, asthma, high blood pressure, pain, seizure/epilepsy, heart disease, back problems or "other."

Using the weightings from our previous study (see Kuhn et al., In Preparation) the higher scores on the total score of this measure indicate poorer biological health.

Changes in questions between data years were addressed using the move-back method. At year one, no questions were asked regarding participant's medication use. Since these questions were asked within all preceding years, we used the following year (year three) at year one.

### **Psychological**

The psychological factor in this study is measured using Mental Health Scale for Depression, Mental Health Scale for Generalized Anxiety Disorder, respondents self-report of receipt of mental health services for "personal problems." Questions measuring depression and generalized anxiety disorder are derived from the Composite International Diagnostic Interview-Short Form (CIDI-SF), Section A (Kessler et al., 1998). The short form of the CIDI interview takes a portion of the full set of CIDI questions and generates from the responses the probability that the respondent would meet criteria for depression or anxiety if given a full CIDI interview. The CIDI questions are consistent with the Diagnostic and Statistical Manual of Mental Disorders –Fourth Edition (DSM-IV; APA, 1994). The self reported question asked, "In the past 12 months, did you receive counseling/therapy/treatment for personal problems?" Participants had the option to select all answers that applied; responses included were this counseling or therapy for: depression, anxiety, attention problems, alcohol problems, drug use, or anything else. Higher scores on this measure indicate increased level of mental symptoms and use of mental health services levels.



Due to changes in questions from year to year the move-forward, move-back method was used for items when they were not included on wave. For example, at year five, no questions were asked regarding participant's anxiety symptoms. Since these questions were asked within all preceding years, we used the prior year (year three) in year five. Similarly the move back method was used at year one for psychological factor in which case responses from the following year (year three) were used.

## **Social**

The social factor of the BPSS framework is meant to understand social support and environmental conditions that may impact a person's health and wellbeing (Hodgson, Lamson, & Reese, 2007). As such, social and environmental factors in this study were measured using items consistent with social and environmental pathways identified as possible links between family structure and child-wellbeing in fragile families (Waldfogel, Craigie, & Brooks-Gunn, 2010). These pathways include: parental resources, parental relationship quality, parenting quality, and involvement. Access to resources (i.e., childcare, health insurance), public assistance receipt, social, and familial support (i.e., frequency child sees grandparents) were used to reflect parental resources. Parental relationship quality was measured using the Multidimensional Support Scale (MDSS). Parenting quality and involvement were measured using scales from Child Development Supplement (Parent Survey) and Early Head Start (Parent Interview).. The parenting involvement measure was structure the same at each wave but questions changed based on developmental needs of child. For example in the final year when child was 9 year old parents were asked if they ate meals with their child and helped with

homework. Higher scores on this measure indicate increased level of parenting and relationship quality and access to recourses.

The move-forward method was used for items when they were not included for a specific wave. For the social factor, health insurance was asked at every time point except the final wave (year 9). As a result we used participant's responses from the prior year (year 5).

### **Spirituality**

Spirituality was measured using multiple self-rated questions regarding the respondent's religious identification and engagement with religious services and presence of religious experiences that transformed their life. Three questions were used in the measure, they are as follows: my religious faith is an important guide for my daily life; (4 point scale strongly disagree to strongly agree); How often do you attend religious services (7 point scale: 0=never 7=everyday); and a yes-no question asking "Since the last interview, did you have a religious experience experience/s that transformed your life?" Higher scores on this measure indicate increased level of religious affiliation and engagement.

As mentioned in the psychological factor section, changes in questions from wave to wave required some modifications prior to analysis. The move back method was used at year one for spiritual factor. No questions were asked regarding spirituality at year 1 as a result we used case responses from the following year (year three) at year 1.

## **Healthcare Utilization**

Healthcare utilization was measured using multiple self-report questions that assess the use of medical care services including primary care medical visits, emergency room services and overnight stays in the hospital. For example: have you talked to a doctor about how you are doing; do you feel you could talk to your doctor if you wanted to; in the past year have you stayed overnight in the hospital or gone to the emergency room?; how many times have you stayed overnight in the hospital in the past year?; how many times have you gone to the emergency room because your own illness/injury in the past year? Higher scores on this measure indicate increased level of utilization.

### ***Pre-analysis Data Screening***

Prior to beginning the modeling process, the data was screened for patterns of missing data. Specifically, the data was tested for missing completely at random, missing at random, or missing systematically. We determined that the data was missing at random. Missing data was between 14% and 19.1 % for any single items, and therefore a full information maximum likelihood imputation in the SEM software EQS was employed. In addition the data was screened for its ability to conform to both univariate and multivariate assumptions associated with SEM (Kline, 2011; Tabachnick & Fidell, 2007).

### ***Analytic Strategy***

The analysis followed guidelines for dyadic cross-lagged pathway modeling in Structural Equation model (SEM) (Kenny, Kashy, & Cook, 2006). The model utilized

the raw data correlation matrix and models were estimated using EQS (Bentler, 2006). Three model fit indices were used to examine the fit of the models: chi-square goodness of fit, the comparative fit index (CFI) and the root-mean-square error of approximation (RMSEA). We began by testing the full four-factor model where all mother and father BPSS factors, across all four years were modeled to predict the utilization factors within the same year. In addition we included the autoregression pathways within actors to account for within actor measurement error, and across partner covariances to account for partner interdependence. When fitting this full model the models failed to converge. Upon further investigation it was noted that the social factor was a poor fit for the model. Therefore we applied the recommendations from the previous study (Kuhn, et al, In Preparation) and divided the social factor into two levels. One for internal familial supports, for example relationship between biological parents, and one for external exosystem relationships and resources, for example ability to borrow varying amounts of money or secure a bank loan. The conceptual model is represented in figure 1 below. This modified, five factor, model was fit again. And the final model presented in the results section was trimmed to only the significant pathways within this final model (see Figure 2).

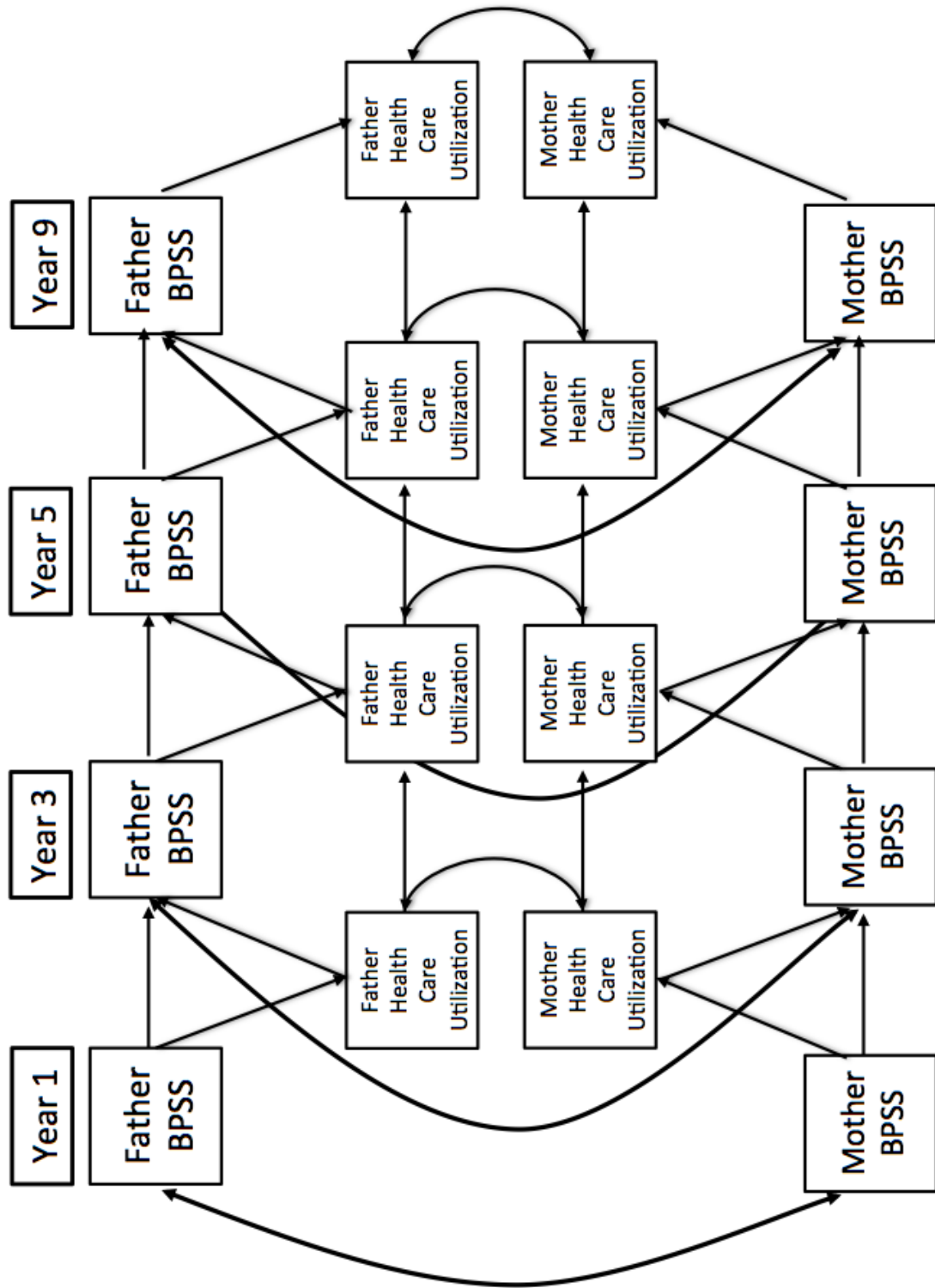


Figure 1. Theoretical Model for the Longitudinal Effect of Biopsychosocial-Spiritual Factors on Health Case Utilization

## Results

The Demographics characteristics of the sample and health care utilization findings are presented in Table 1. Demographic results are based on year 1 surveys. At this time point the majority of parents are between 21 and 30 years old and identify as black, non-Hispanic. Approximately two thirds of the mother's in our sample reported being married (36%) or co-habiting (31%) with child's biological father. T-test comparisons indicate that there is no significant difference between mother and fathers in their health care utilization,  $t(2844) = 4.699$ ,  $p < .000$ .

Descriptive statistics for BPSS factors and health care utilization are presented in Tables 2. Health care utilization along with Biological, and psychological factors presented a considerable number of significant correlations where social 1, social 2 and spirituality demonstrated significant correlations for each parent but had considerably less significant correlations between mother and father factors over time, meaning by year nine, mother and father had very few across partner significantly correlated factors.

Table 1. *Demographic Characteristics of the Sample*

	Mothers	Fathers	
Age	% (n)	% (n)	
16-20	14.8(413)	6.3(166)	
21-30	59.5(1661)	54.8(1453)	
31-40	23.5(653)	30.9(821)	
41+	2.4(8)	8(210)	
Ethnicity			
White, non-Hispanic	34(950)	22(625)	
Black, non-Hispanic	47.4(1323)	47.8(1361)	
Hispanic	26.2(741)	26(739)	
Other	18.5(517)	4.1(117)	
US Citizen			
Yes	92.8(2640)	92.6(2634)	
No	7.2(205)	7.4(211)	
Income			
Less than \$5,000	7.1(401)	4.5(232)	
\$5,001-10,000	5(308)	4(226)	
\$10,001-15,000	6.4(299)	5.8(248)	
\$15,001-20,000	5.6(250)	6(244)	
\$20,001-25,000	5.7(231)	5.2(212)	
\$25,001-30,000	5(212)	7.4(245)	
\$30,001-40,000	7.8(280)	9.4(336)	
\$40,001-60,000	10.8(392)	12.9(393)	
More than \$60,000	11.9(420)	16(513)	
Marital Status (per mother report)			
Married	36(1103)		
Romantic cohabitating	31.3(873)		
Romantic some visit	4.1(113)		
Romantic no visit	5.5(153)		
Separated/widowed/divorced	1.8(49)		
Friends	12.5(347)		
No relationship	8.9(248)		
Dad unknown	.0(1)		
Healthcare Utilization	<b>M (SD)</b>	<b>M (SD)</b>	
	.20(.50)	.14(.42)	$t(2844) = 4.699, p < .000$

***Final Cross-Lagged Model of BPSS Factors and Health Care Utilization***

The full cross-lagged model was estimated to have an acceptable fit to the data,  $\chi^2$  (944) = 14090.293,  $p < .001$ , CFI = 0.75, RMSEA = 0.070. After removing non-significant pathways, with the exception of covariance and autoregressions pathways, the model produced slight improvement in fit  $\chi^2$  (993) = 14140.461,  $p < .001$ , CFI = 0.75, RMSEA = 0.068.



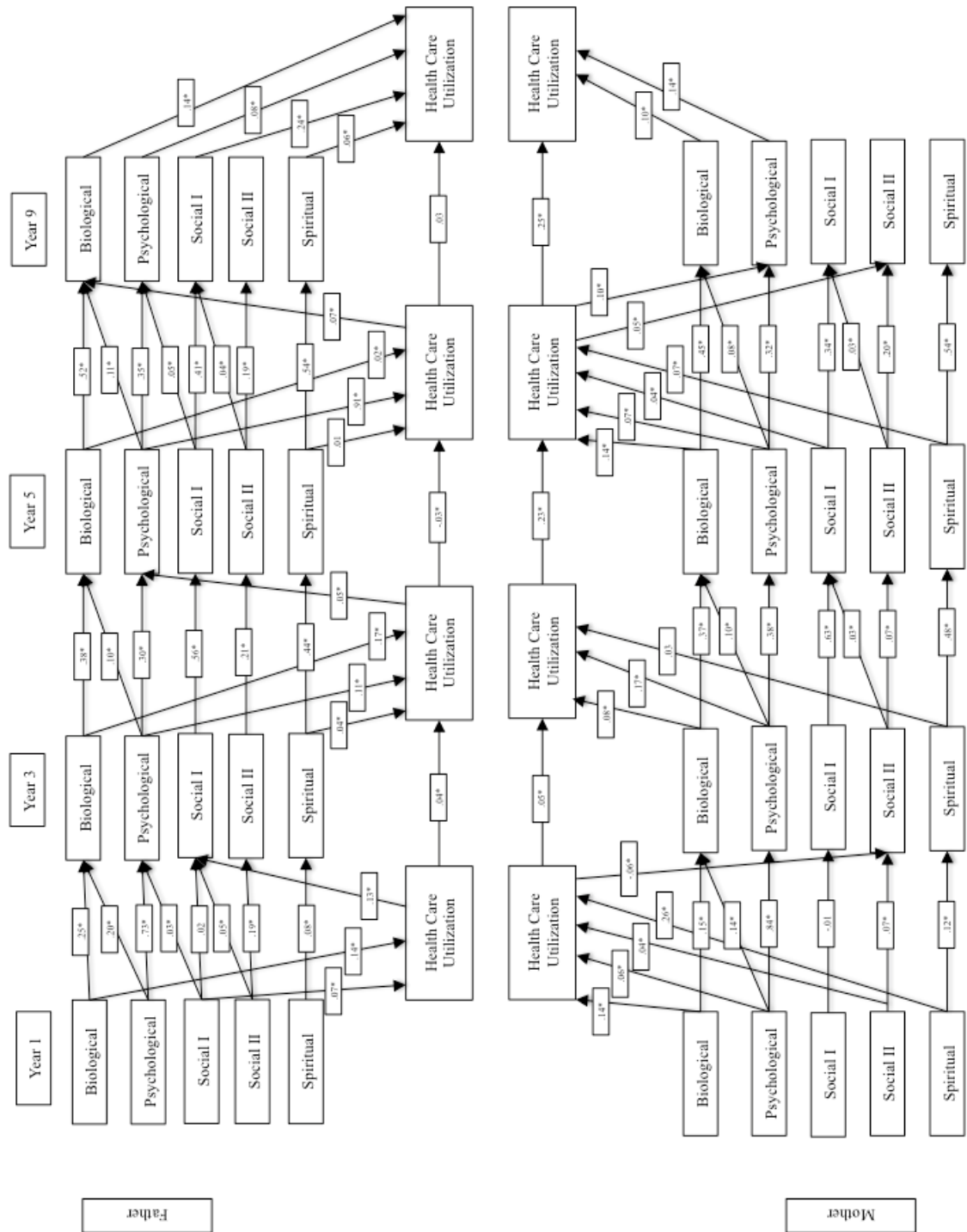


Figure 2. Trimmed Model for the Longitudinal Effect of Biopsychosocial-Spiritual Factors on Health Care Utilization  
 Note. All parent variables were covaried (within actor and between partner covariance) during analysis.

## **Predicting Health Care Utilization**

For both parents, biological factors at all time point significantly predicted health care utilization. Therefore, parents that reported poorer health were more likely to utilize health care services. Similarly, the psychological factors for both parents significantly predicted health care utilization. Specifically as psychological symptoms increased, health utilization also increased. The only exception to this was for fathers at year one, at this time point father psychological factors did not significantly predict health care utilization.

While the biological and psychological factors were consistent at all time points and across genders, the other factors (social I, social II and spiritual) were not as consistent. Social 2 was not found to have a direct effect on father's health care utilization at any time point. However, Social 1 was a significant predictor of father's health care utilization at year 2 ( $\beta = .068$ ,  $B = .068$ ,  $SE = .019$ ,  $t = 3.670$ ,  $p < .05$ ), and year 9 ( $\beta = .240$ ,  $B = .243$ ,  $SE = .018$ ,  $t = 13.419$ ,  $p < .05$ ). Additionally, fathers' health care utilization at year one predicted Social 1 at year three ( $\beta = .131$ ,  $B = .131$ ,  $SE = .018$ ,  $t = 7.087$ ,  $p < .05$ ). For mothers, Social 2 was a significant predictor of health care utilization at year 2 ( $\beta = .042$ ,  $B = .042$ ,  $SE = .018$ ,  $t = 2.362$ ,  $p < .05$ ) and health care utilization at year 4 predicted Social 2 at year 5 ( $\beta = .049$ ,  $B = .049$ ,  $SE = .018$ ,  $t = 2.689$ ,  $p < .05$ ). In addition to predicting health care utilization we were also curious about the relationship between BPSS factors between time points.

## **Predicting Biopsychosocial-Spiritual Factors**

Within the BPSS model it was identified that psychological variables for both

mother and father predicted biological factors the following year. Specifically if a parent scored high on psychological factor they would have an increased biological score the following interview year. Similarly, and specifically for fathers, Social 1 was found to predict psychological factors between year one and year three ( $\beta = .028$ ,  $B = .029$ ,  $SE = .013$ ,  $t = 2.260$ ,  $p < .05$ ), and year five to year nine ( $\beta = -.045$ ,  $B = -.045$ ,  $SE = .017$ ,  $t = -2.630$ ,  $p < .05$ ), social 2 predicted social 1 between year one and year three ( $\beta = .054$ ,  $B = .054$ ,  $SE = .018$ ,  $t = 2.944$ ,  $p < .05$ ), and year five and year nine ( $\beta = .042$ ,  $B = .042$ ,  $SE = .016$ ,  $t = 2.640$ ,  $p < .05$ ). With the exception of biology to psychology, this pattern was present for mothers. For mothers, year-to-year BPSS factors did not prove to have a significant direct effect on the proceeding year.

### **APIM Covariance Effects**

In general, the majority of mother and father variables were significantly covaried across all years. Meaning that Mother's biological factor at year one was significantly covaried with fathers biological factor at the same time point, the same is true for psychological, social and spiritual. Where the covariance was not significant however was between mother and father Biological and social 2 factors at year three. Additionally within each parent some BPSS factors were not significantly covaried. Most notable are the covariance between social 1 and social 2. These factors were only significantly related at year three for mothers and year nine for fathers, all other years were non-significant. Additionally for fathers, psychological and social 1 factors were not significantly covaried at any of the four time points.

## Discussion

The purpose of the present study was to understand how BPSS factors impact health care utilization and how these pathways change overtime for Fragile Families. Our study contributes to the existing literature of the BPSS model through quantitatively testing its pathways as they related to health care utilization. To our knowledge only one other study exists that quantitatively exams the BPSS model as it related to health care utilization (see Katerndahl, 2008). The work of Katerndahl undertook research that examined impact of the spiritual factor of the Biopsychosocial-Spiritual Model on interactions with health services and life satisfaction.

The findings from this study reveal how health care utilization is influenced and predicted by BPSS factors of fragile families. Although each facet of the BPSS model has been well studied in terms of marginalized population and specifically fragile families (see: De Marco & De Marco, 2009; Teitler, 2001; Hamilton, Hummer, You, & Padilla, 2006; Park, Fertig, & Allison, 2011), less is known about how the BPSS factors interact with one another, between parents and over time to predict health care utilization.

The results of this study suggest three general conclusions. First, consistent with previous findings biological and psychological factors were found to be related for both parents and across all time periods, as psychological symptoms worsen we see an increase in the biological factors. While these findings are not new, they provide continued support for models of integrated care that offer both physical and mental health services (see McDaniel, Doherty, & Hepworth, 2014). Secondly, in addition we also identified that biological and psychological factors were related between parents, meaning that as one parent experiences improvements in their biological factor, their

partner would also experience improvements, the same is true for the psychological factor. This finding further supports the need for relational interventions, although it would be important to note that this may not necessarily mean more traditional courses of couples therapy as, in line with the fragile families population, these families can experience frequent coupling and uncoupling during their child's lifetime (Reichman et. al., 2001).

Lastly, and important to note, are the ecological nesting of factor effects within the BPSS. In general, and noted above, biological and psychological factors tended to have consistent predictive and direct relationships with utilization. But the spiritual and social factors tended to offer indirect effects on utilization through either mediational or moderational effects on biological or psychological factors. Furthermore there are significant differences between mother and father. For mothers, Spirituality was positively related to health care utilization, meaning that as a mother reported increased identification and engagement in spiritual community her health care utilization also increased. Similarly the Social 2 factor was found to be significant. This factor measured health insurance and access to physical and monetary resources. Therefore, as these resources increased, mothers were more likely to utilize health care services. These findings are similar to those of De Marco & De Marco, 2009 and Park, Fertig, & Allison, (2011) who identified that similar factors were related to improved use and access of social services. Additionally Angel, and colleagues (2005) identified that resources like health insurance were significant barriers to accessing health care, so it would make sense that those who have insurance as reported in Social 2 would have increased utilization. Comparatively fathers, spirituality and social 1 were commonly found to be significant

predictors of health care utilization. Specifically as fathers reported increased scores on the spirituality measure their health care utilization also increased. These findings are similar with findings of George and colleagues (2000) who identify a significant relationship between spirituality and health care utilization. Interestingly these authors identify social support embedded in spirituality as a mechanism that impacts the association between health and spirituality. These findings combined may explain the connection we see in our model between spiritual and social support and why both factors were commonly significant predictors of health care utilization for fathers.

### **Limitations and Clinical Implications**

To our knowledge, this study is among the first to use a repeated and longitudinal assessment of BPSS factors for the purpose of measuring health care utilization behaviors. As an initial effort to ascertain how BPSS factors change across time, this study was necessarily limited. Foremost among these limitations is the recognition that the latent constructs used to develop the BPSS factors were not exhaustive of all items that may be considered in the BPSS model. Indeed, our measures were limited due to their development based on a preexisting Fragile Families and Child Wellbeing data. It is noteworthy that we were able to use dyadic measures for each wave of data, which allowed for a more relational analysis that has yet to be explored in the BPSS or health care utilization literature.

In addition, we included a variety of health care utilization variables both emergent and preventative; as a result we cannot determine if the utilization behavior was positive, preventative services or more negative and costly emergent care. Currently

literature in health care utilization typically make a distinction between these two types of use but for the purpose of this preliminary study we chose to combine these two types to look at general utilization behaviors.

Despite these limitations, this is the first study, to our knowledge, that examined the dyadic and across time reciprocal relations between fragile families BPSS factors and health care utilization behavior. Clarifying the dyadic, across-time relations between BPSS factors and health care utilization is important given that the BPSS model is commonly used in healthcare settings (Engel, 1977; McDaniel, Doherty, & Hepworth, 2014) and may serve as useful framework for program development to reduce disparities in health within fragile families. In broad terms, the current findings provide initial evidence of a dynamic and transactional relation between fragile families parents, BPSS factors and health care utilization behaviors than previously known. These findings contribute to contemporary literature on the application of BPSS model (e.g., McDaniel, Doherty, & Hepworth, 2014; Mullins, Chaney, & Frank, 1996; Rolland & Williams, 2005) by specifying these associations at an ecological and dyadic level for fragile families. Indeed, the consequences of BPSS factors on health care utilization have been rarely studied and their interconnectedness is poorly understood. The current findings confirm that, similar to other populations, biological and psychological factors are interdependent for each parent and between mother and father as well. Conversely there are individual differences between parents that should not be overlooked, like the importance of the social 1 factor for fathers and social 2 and spiritual factors for mothers. Professionals who use the BPSS model or work with fragile families might benefit from understanding both the dyadic relationships of BPSS factors and individuals factors that

predict health care utilization behaviors to support families in improve BPSS factors and utilization behaviors.

### *Clinical Implications*

Overall, our findings provide further evidence of the applicability of the BPSS framework to support families as they interact with health systems and provides support for the integration of medical and mental health professionals. In addition, our correlational findings (1) support the inclusion of mental health care in biomedical health services (2) support the need for relational interventions between parents to improve BPSS factors and in turn impact health care utilization behaviors. A necessary next step for this model is to test systemic prevention and intention efforts, targeting varying levels of BPSS model framework specifically targeted at health care utilization. Shedding light on how intervening in family process could impact health care utilization and how changes in utilization behaviors could improve health outcome is critical. Family based treatments are likely to positively impact psychological well being which based on our findings could impact biological processes which was a significant predictor of health care utilization for both parents in fragile families. This line of research may lead to the decrease in disparities of health and improved utilizations of healthcare services. The present study supports approaching the BPSS model with an ecological perspective that considers how each factor is nested within the other and how they interact at varying contextual levels. Future research that highlights how the BPSS model relates the different types of health care utilization will provide additional knowledge about how to best intervene in and support fragile families.



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## CHAPTER SEVEN

### SUMMARY AND MODIFICATIONS

The purpose of this study was to examine the role of biological, psychological, social and spiritual factors on health care utilization in fragile families. The BPSS model is commonly used to understand the interaction between one's health and biological, psychological, social and spiritual factors (McDaniel, Hepworth & Doherty, 1992; Hodgson, Lamson & Reese, 2007). The presented research was divided into two overall aims. The primary aim of the study was intended to provide a cross-sectional understanding of how BPSS factors impact health care utilization for fragile families. Findings from this primary aim were then used in aim two to understand how the BPSS factors change over time. This research is particularly significant, as there exists some evidence that fragile families, those families where a child is born to unwed parents, may experience BPSS factors differently than other family compositions.

#### **Meta findings of Publishable Papers**

The first objective in this study identified how biological, psychological, social, and spiritual facets impact the health care utilization of fragile families (see Chapter 5). This study identified four significant pathways that predict health care utilization. For both parents the biological factor, measured by medication use, substance and alcohol use and diagnosis of medical condition by health professional, provide to be a significant predictor of each parents respective utilization of health care services. Furthermore, for mothers, psychological factors were found to significantly predict utilizations and for fathers, spiritual factors determined health care utilization. While individually this

information is useful, what was more interesting is the systemic relationship between the parents BPSS factors. Specifically, mother and father psychological, social, and spiritual factors were significantly correlated meaning for example, as mother's psychological wellbeing decreased so did the father's and vice-a-versa. Additionally, all BPSS factors were related back to the preceding factor, father's psychological factor was correlated to biological factors, social was also correlated to biological and so on. This ecological structure of significant correlations in combination with significant direct pathways from parent's biological factors to utilization demonstrates a nested relationship with the BPSS model, which was originally presented by Engel (1977) and McDaniel and colleagues (2014) . Because of this, the findings from paper I are consistent with current literature, which suggests that social determinants of health like poverty, access to resources, and limited social support are influential to individual's health behaviors (Williams, 2008; Waldfogel, Craigie & Brooks-Gunn, 2010).

These findings carried through to our second objective for this dissertation research. Similar to the cross-sectional model presented in objective one, the longitudinal analysis found that BPSS factors were related between parents and for both parents the biological factor play an important role in health care utilization. We also identified that psychological factors for both parents were significant to health care utilization behavior. While these factors worked independently to predict on health care utilization there were also relationships between the parents, for example mother and father biological and psychological factors were found to be related to one another. Meaning that as fathers biological factors improved so would mothers.

The biopsychosocial framework has been widely accepted in a variety of medical settings (e.g., Prest & Robinson, 2006; Phelps, et al., 2009; McDaniel, 1995) and collaborative practices based in the medical family therapy tradition have been implemented with low-income populations in federally qualified health clinics (see Begley, et. al, 2008; Freeman, 2007) with limited research on how these facets of the illness experience might differ for fragile families whose resources are limited prior to illness. Our current findings, and specifically the relationship between biological and psychological factors for individual parents and their relationship across partners, support the need for integration of medical doctoral and mental health professionals. These integrative care practices not only improve each of these respective factors but also have implications for promoting changes in health care utilization.

Everything up to this point has been consistent with current literature on the topic of fragile families however, it is important to note that our study did not reflect father's disengagement over time. Waldfogel, Craigie and Brooks-Gunn, (2010) reported that father involvement diminishes over time for fragile families. While we were not testing the engagement of fathers, we were able to identify with our longitudinal dyadic analysis mother and father BPSS factors were significantly correlated at each time point. This is significant because even if contact between mother and father diminishes these parents continue to influence one another.

Findings from this dissertation contribute to the growing body of literature that has identified a strong relationship between socioeconomic factors and health behaviors (e.g., Burton, & Bromell, 2010; Cunningham, Clancy, Cohen, & Wilets, 1995; De Marco & De Marco, 2009; Hill, Ross, & Angel, 2005; McCally et al., 2008; Rizzo, Mizrahi &

Kirkland, 2005). Determinants of health like poverty, race, combined with complex social, emotional, and environmental needs not only impact disease processes, but also health behaviors including utilization of medical services (Williams, 2008; Rizzo, Mizrahi & Kirkland, 2005).

Our findings support the biopsychosocial model (Engel, 1977) assertion that the individual is seen as part of a whole and larger system. This system as we found here includes an ecological interconnectedness of internal and external environments, from cellular and genetic make-up to the individual's family, and larger society. Engel's (1977) original propositions have been supported by a significant amount of literature and research that focused on the link between relationship processes and health outcomes (see: Fincham & Beach, 2010).

The research objectives outlined above and in prior chapters of this dissertation remained consistent throughout the proposal and research process. However, minor changes were made in the analytic process due to unforeseen issues with the fragile families data set. These modifications are outlined below.

### **Discussion of Modifications Made from Original Proposal**

The Fragile Families and Child Well-being Study set out to better understand the role of fathers in families where a child is born to an unwed mother. Because of shifts in funding sources during the research there were discrepancies from wave to wave in terms of variable accessibility. Most prominently for this current study was the availability of health care utilization variables. This issue was twofold; first child health care utilization was not collected at each wave. In response to the lack of consistent measures of child

health care utilization, I chose to exclude the measure of child health care utilization. Additionally, the decision was made to combine all types of health care utilization, instead of dividing utilization by emergent and preventative. This decision was mainly determined based on the fact the preventative measures of health care were not consistent at each time point. For example, at baseline, mothers were asked about prenatal medical visits and at year one the focus was on postpartum follow-up appointments and well-baby visits whereas subsequent years did not inquire about these types of visits. The variables that were selected to measure health care utilization inquired more broadly about the number of times seen by doctor and about use of emergency medical visits and overnight hospital stays.

Another significant change was the decision to split the social factor of the BPSS model. The social factors in this study were measured using items consistent with social and environmental pathways identified as possible links between family structure and child-wellbeing in fragile families (Waldfogel, Craigie, & Brooks-Gunn, 2010). These pathways included: parental resources, parental relationship quality, parenting quality, and involvement. During the testing of hypothesis 1 we faced significant difficulty fitting a model due to issues with the social variable. Upon deeper inquiry with the LM test it was identified that latent factors within the model were not related. Specifically, parent-parent and parent-child relationships were not related to recourses like access to health insurance and childcare. For the purpose of testing the second longitudinal hypothesis we made the decision to divide the social variable to reflect relational components of the social factor like parent-parent and parent-child relationship and resource components of the factor for example access to childcare and insurance.



The last notable change made to the research process was the decision to exclude the baseline wave of data in paper II. This decision was made due to differences in questions asked between parents. Specifically at this baseline, recruitment interview fathers were not asked depression or anxiety inventories. Additionally, no questions regarding spirituality were asked during this wave of data.

### **Conclusion**

As presented in the current chapter, this dissertation made significant contributions to the current literature and supports the need for continued integrative practices to support fragile families. As eluded to in the modifications section, this dissertation was not without some limitations. These limitations and future actions in research and practice will be discussed in the following chapter.

## **CHAPTER EIGHT**

### **NEXT STEPS AND CONCLUSION**

#### **Limitations**

Our research was intended to explore health care utilization behaviors of fragile families. For the purpose of the larger Fragile Families and Child Wellbeing Study, participants were recruited in the hospital within days of delivering their child. As a result the sample is reflective of those individuals who chose hospital births over other types of birth locations for example, birth centers or home births. Those women who experienced medical complications during delivery and were too ill to participate were also not included in the study. This might limit generalizability as these individuals may have different health care utilization behaviors. Additionally, the exclusion of these women creates homogeneity in the health of the female participants in the sample, as all women were well enough post delivery to participate in the study.

The use of secondary data was also limiting in providing accessibility to a wide range of factors that could be reflective of the BPSS model. For example, there was a limited number of items available to construct the factor for spirituality. Health care utilization also had a limited variables and as a result we were unable to parcel apart different types of health care utilization for example, emergency room services or urgent care compared to preventative services like annual check-ups and well child visits. As mentioned in the section on modifications in Chapter 7 the baseline survey was excluded from our analysis due to the limited and differing variables between mother and father surveys. The inclusion of this data, had it been accessible, may have provided additional support for the relationship between BPSS factors and health care utilization.

The final concern that we faced during the process of our analysis was due to attrition at year 9. Our longitudinal analysis included only those participants who participated in 3 or more waves, in review of the data and in talking to other fragile families scholars attrition is a concern particularly at year 9. As a result those individuals included in our study who participated in 3 or more waves may reflect a different or sub population of the larger fragile families data set. This continued engagement from both parents in the study may also be related to the significant BPSS correlations between parents. It could be hypothesized that those parents who are accessible from wave to wave by interviews may also be more accessible to the co-parent whether or not they are in a romantic relationship at any given time. This accessibility may in turn provide a platform for influencing one another's BPSS factors.

As with any study we should be cautious about the generalizability of this research presented in this dissertation. As I outline in this section there are limitations to take into account particularly surrounding the fact that the longitudinal portion of this study used a subsample of the larger Fragile Families and Child Wellbeing Study. Considering these limitations this research raised interesting considerations for future practice and research.

### **Next Steps: Future Practice and Research**

The findings of this study have important implications for clinical practice with families and family health education. The topic of health care utilization may not be on the radar of many family therapists and educators. Our findings support the mind-body connection presented in the literature (see: McDaniel, Doherty, & Hepworth, 2014) and

also the ecological relationship between BPSS factors and health care utilization behaviors (Engel, 1977; Healthy People 2010). These results though somewhat limited provide a starting point for a program of research that can inform both program development and public policy.

In both objectives being tested in this dissertation we did not find a significant relationship between mother and father health care utilization, however as we examined the BPSS factors in more depth we identified an interconnectedness between parents factors that would support the need for systemic interventions, however, continued exploration is needed. This study only examined a single child and their biological parents. What we are not able to understand in this study is what happens in families where there are multiple children with different biological fathers?

Additionally, this research was informed by a BPSS framework, during the course of the research I wondered if families who would be considered “fragile families” would agree with the identified factors as determinants for health care utilization. These questions open up the opportunity for community engaged research that could better understand and identify from a community perspective the important aspects in health care utilization behavior. Additionally this community-based approach would allow for a more nuanced understanding of the different types of health care utilized and why some services maybe over or under used.

### **Personal Reflections and Program of Research**

My entrance into the academic job market has paralleled this dissertation process. Additionally over the past two years I have become more involved in a variety of

professional organizations. All of these experiences provide me an opportunity to reflect about development as an academic and scholar and my original intention for pursuing doctoral education.

To date my program of research has been focused on the family process of multi-stressed and at risk families with the goal of developing evidenced based therapy practices to support families particularly in the early years of parenting. My program of research thus far has utilized the Fragile Families and Child Wellbeing Study to quantitatively understand how varying types of couple relationships (i.e., married, cohabitating or single) impact child social and educational factors and family health care access and utilization. These publications utilized multivariate and dyadic analysis methods (see: Kuhn, V. P., Freitas, C., France, B., & Distelberg, B. 2014; Kuhn, V. P., Distelberg, B., Lobo, E., Williams-Reade, J., Woods, S.B., & Oloo, W.A., In Preparation A; Kuhn, V. P., Distelberg, B., Lobo, E., Williams-Reade, J., Woods, S.B., & Oloo, W.A., In Preparation B). Additionally, I have made scholarly contributions that qualitatively explore working with couples from a Socio-Emotional Relationship approach. First understanding how to better serve couples where one or both partners experience childhood trauma and second to contribute to literature on how therapists develop contextually conscious clinical choices.

Moving forward with my program of research I hope to continue to research how multi-stressed families navigate earlier parenthood specifically as it pertains to health care utilization and health decisions. I also intend to modify preexisting attachment based therapeutic approaches to better serve fragile families as they journey through pregnancy and into parenthood. To this end my program of research will be strengthened by

collaborations between marriage and family therapists, child development experts, family life educators, and health professionals. I also plan to partner with local community agencies that serve this population (i.e., women's health centers, child welfare services and welfare to work programs). I believe this body of research is desirable to external funding sources. To date I have experience writing grant and fellowship applications and was awarded The Family Process Institute New Writers Fellowship. In the future I plan to continue to pursue external funding and explore both local and national funding sources including First 5, American Association for University Women, new scholar funding like the National Institute for Health Career Development (K) Award.

The intersection of my quantitative research with qualitative research focused on gender and power in combination with an interest in socially justice research and program development has lead me to more meta-conversations about how do scholars engage in quantitative research methodologies in a way that is not limiting or impose upon already marginalized populations. To this end I hope that my future quantitative research will be challenging and explore new ways to approach research and provide a guide or framework for other scholars.

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