

**THE DEVELOPMENT OF A TOOL TO ASSESS INDIVIDUAL  
PROVIDER'S CULTURAL COMPETENCE**

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## **ABSTRACT**

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The Development of a Tool to Assess Individual Provider's Cultural Competence  
(Under the direction of Bruce J. Fried)

This study examined the validity of the policy-driven notion that patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency represent four distinct but related domains of patient experience of care. Guided by the quality of the service experience framework, I proposed an alternative conceptualization that these domains are empirically highly related with each other and can be conceptualized as the one-dimensional construct of patient experience of the interpersonal aspects of care.

Twenty-four items from the Commonwealth Fund 2001 Health Care Quality Survey were identified as measures of the four domains. Two measurement models -- four-factor and one-factor models -- were developed to represent the alternative conceptualizations. Using structural equation modeling techniques, data drawn from the Commonwealth Fund 2001 Health Care Quality Survey were analyzed to examine the factor structure underlying these items.

Findings provide strong evidence that patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency are empirically highly related and can be conceptualized as a one-dimensional construct. This one-domain conceptualization holds across males and females and across four racial/ethnic groups for the English-proficient population. It also holds for the non-English speaking/Limited English-

proficient population. Construct validity of this one-domain conceptualization was supported by evidence of positive association between measures of the four domains and measures of access to care and healthcare outcomes. Drawing upon the quality of the service experience framework, I conclude that the four domains -- patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency -- can be conceptualized as the patient experience of the interpersonal aspects of care. The measures of the four domains form a 10-item and 11-item one-dimensional scale for English-proficient and non-English speaking/Limited English-proficient populations, respectively. This scale demonstrated adequate internal consistency reliability.

Taken together, the consistency of findings suggests that the one-domain conceptualization of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency is valid and has considerable generality. Policymakers and program developers and evaluators should define, conceptualize, and measure the four domains as the patient experience of the interpersonal aspects of care. Future studies should replicate the validity of this one-domain conceptualization and examine the dimensionality and psychometric properties of the scale.

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Yes, my dissertation research involved countless hours of reading, thinking, analyzing, writing, and revising my work. Yes, the support and guidance of loved ones and committee members has been crucial during these years. Yes, it has been a difficult journey, much longer than I expected and I am delighted to have reached the finish line!

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## **PREFACE**

In January 2003, I proposed my dissertation research study with the goal to understand the concept and measurement of cultural competency and to develop a tool to assess individual provider's cultural competence. Over the course of this study, it became clear that there is much variation and ambiguity about the definition and conceptualization of cultural competency in the health services literature. Furthermore, a vast majority of publications uses two or more of the terms -- patient centeredness, patient-doctor communication, patient-doctor relationship, and cultural competency -- interchangeably, yet there is no conceptualization about their relationships. This adds to the ambiguity in defining, conceptualizing, and measuring cultural competency. A concise, valid, and widely agreed upon definition of cultural competency was essential to operationalizing the construct and the development of a valid and reliable tool. Hence, I reached the conclusion that it is essential to understand the constructs of patient centeredness, patient-doctor communication, and patient-doctor relationship and their interrelationships with each other and with the construct of cultural competency in order to define and measure cultural competency and to develop a tool to assess individual provider's cultural competency.

In December 2003, the Agency for Healthcare Research and Quality, the United States' lead federal agency for research on health care quality, costs, outcomes, and patient safety, published the first National Healthcare Disparities and Quality Reports. These reports were the result of a first-of-its-kind national comprehensive effort to measure differences in access to, use, and quality of healthcare services in order to eliminate health and health care

disparities and improve health care quality. This effort involved the identification, selection, and development of measures through a broad consensus process whereby experts convened and deliberated with the goal of producing high quality measures to monitor and evaluate nation's performance in health care. Measures, consistent with the Federal guidelines and publications, and representing the most scientifically sound (valid and reliable) and clinically important markers were selected with input of all agencies within the Department of Health and Human Services, the Institute of Medicine, and a variety of stakeholders including the public, health care professionals, etc.

Definitions and measures of the constructs of patient centeredness, patient-doctor communication, patient-doctor relationship, and cultural competency were included in these reports. These constructs were conceptualized as four distinct but related domains of patient experience of care and their measures were said to overlap each other to a certain extent. However, these reports did not provide any theoretical and/or empirical evidence in support of this four-domain conceptualization and the validity and reliability of measures.

It was clear that conducting a study to examine the validity of the four-domain conceptualization and the scientific soundness of the measures of patient centeredness, patient-doctor communication, patient-doctor relationship, and cultural competency would provide an excellent opportunity to understand these constructs and their interrelationships with each other. My committee members were flexible, open, and supportive of this study and approved my proposal to refocus my research. This dissertation provides information to improve our understanding about the constructs and measures of patient centeredness, patient-doctor communication, patient-doctor relationship, and cultural competency.

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## **CHAPTER I**

### **INTRODUCTION**

This study examined the validity of the policy-driven notion that patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency represent four distinct but related domains of patient experience of care. Guided by the quality of the service experience framework, I proposed and tested an alternative conceptualization that these domains are empirically highly related with each other and can be conceptualized as the one-dimensional construct of patient experience of the interpersonal aspects of care.

#### ***1.1 Background***

Literature describing, documenting, and discussing widespread disparities in health and health care by racial, ethnic, socioeconomic, and geographic groups in the United States has grown exponentially during the past two decades. This literature has been instrumental in highlighting the urgency and importance of undertaking efforts to eliminate these disparities. Wide varieties of efforts and strategies have been developed, recommended, and implemented across the healthcare delivery system to approach the challenge to improve access to and quality of healthcare services and reduce and eliminate health and healthcare disparities. These include strengthening of patient-doctor relationship, enhancing patient-doctor communication, delivering culturally and linguistically competent health care, increasing patient participation in treatment and decision making, integrating cross-cultural education into the training of current and future health professionals, increasing the

proportion of racial and ethnic minorities among health professionals, promoting the use of evidence-based guidelines and electronic medical records. Additionally, a vital effort to eliminate health and healthcare disparities is the systematic collection, analysis, and reporting of health care data to guide policymakers, researchers, healthcare delivery organizations, health professionals training and education programs and the public discern the areas of greatest need, monitor trends in disparities and areas of improvements, and identify successful efforts for addressing those needs. Systematic collection, analysis, and reporting of health care data requires the development of the necessary infrastructure for measuring differences in and monitoring access to, use and quality of healthcare services by various populations. The National Healthcare Disparities and Quality Reports (NHDR, 2003, 2004, 2005, 2006, 2007; NHQR, 2003, 2004, 2005, 2006, 2007) serve as the road map and cornerstone of this infrastructure.

### **1.2 The National Healthcare Disparities and Quality Reports**

The National Healthcare Disparities and Quality Reports were developed by the Agency for Healthcare Research and Quality (AHRQ) in response to a Congressional mandate. In 1999, as part of a national effort to eliminate health and healthcare disparities and improve access to and quality of healthcare services, the United States Congress required AHRQ, the lead federal agency for research on health care quality, costs, outcomes, and patient safety, to prepare and submit an annual report on prevailing disparities in healthcare delivery as they relate to racial and socioeconomic factors in priority populations. To meet this requirement, AHRQ, undertook a first-of-its-kind national comprehensive effort to measure differences in access to, use and quality of healthcare services by various

populations in order to eliminate health and health care disparities and to improve access to, use and quality of healthcare services for all Americans.

This effort involved the identification, selection, and development of measures through a broad consensus process whereby experts convened and deliberated with the goal of selecting high quality measures to monitor and evaluate nation's performance in healthcare. This effort culminated in the first National Healthcare Disparities and Quality Reports (NHDR, 2003; NHQR, 2003) in December 2003. These reports present data on a broad set of performance measures including indicators of use of services, access to health care, and effectiveness of services for seven clinical conditions, including cancer, diabetes, end-stage renal disease, heart disease, HIV and AIDS, mental health, and respiratory disease as well as data on maternal and child health, nursing home and home health care, patient safety, timeliness, and domains of patient experience of care including patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency. Since the first reports, the Agency of Healthcare Research and Quality has compiled and released four annual National Healthcare Disparities and Quality Reports (NHDR, 2004, 2005, 2006, 2007; NHQR, 2004, 2005, 2006, 2007). Thus, these reports represent first-of-its-kind comprehensive, extensive, and ongoing effort in the nation's history to compile data on valid and reliable measures of access to, use and quality of healthcare services in order to measure and monitor disparities in health and healthcare.

Since their first release to the Congress and the public in December 2003, the National Healthcare Disparities and Quality Reports have been of widespread interest, have gained widespread acceptance and use from a wide range of stakeholders, and hence, are having significant policy and programmatic influence. The reports provide policymakers

with snapshots of disparities and quality of care in the United States and assessments of change over time. These assist policymakers' understanding of disparities in health and healthcare outcomes, access to and quality of care and guide their efforts to monitor progress of national initiatives to improve health care for all Americans. The data serve as the roadmap for the Department of Health and Human Services and its agencies to evaluate the success of the country's significant and extensive commitment to reducing disparities in health and healthcare and improving access to and quality of healthcare services for all Americans. The Agency for Healthcare Research and Quality and other federal, state, local governmental and non-governmental research, academic, and philanthropic organizations are using these data to compare state performance, guide funding decisions, and design and evaluate interventions. Health care organizations across United States are using these data to guide and monitor their efforts to improve health and healthcare of populations they serve. Providers and payers are applying some of the measures used to create these reports to their own data to assess their performance relative to national benchmarks. In sum, the National Healthcare Disparities and Quality Reports are, as envisioned, serving as the roadmap and cornerstone of the infrastructure for measuring differences in and monitoring access to, use and quality of healthcare services by various populations.

In light of this widespread use and ongoing policy and programmatic influence, the importance of ensuring the scientific soundness (i.e., validity and reliability) of measures, clarity of definitions and conceptualization, accuracy and clarity of the data and overall findings of these reports can not be overstated. To this end, the AHRQ undertook significant efforts to reduce technical errors, ensure accuracy and clarity, solicited and received assistance and input from a wide range of internal and external stakeholders. Measures

representing the most scientifically sound and clinically important markers relevant to studying health and healthcare disparities and consistent with other federal publications and efforts, most notably Health People 2010, were selected with input of scientists from all agencies within the Department of Health and Human Services, the Institute of Medicine, and a variety of stakeholders including the public, health care professionals, advocates, researchers, academicians, professional organizations, licensing and credentialing bodies, healthcare delivery organizations, and quality assurance organizations among others. These stakeholders also defined and conceptualized the relationships between these measures, and defined racial and socioeconomic factors and priority populations for subgroup analysis of the data.

Additionally, the first reports discussed methodological challenges related to definitions, measurement, and data inherent in measuring disparities in health and healthcare. The primary challenge was to define each term including the term disparities since definitions vary widely. Having a consistent and widely agreed upon definition and conceptualization of each construct facilitates the reporting of the concept and is essential to measuring progress toward improving it. Selection of valid and reliable measures of the construct guide the standardization of data collection and monitoring efforts and is a prerequisite to ensure that valid and reliable data are collected and reported in a comparable fashion across the NHDR and NHQR and across reports over time. This is essential to monitor and integrate activities to reduce disparities and improve access to, use and quality of healthcare across United States. The first reports clearly assert that the reports addressed these and other challenges posed by inconsistent definitions, measurement problems, and

variations in data collection and reporting efforts that characterized the field prior to their publication (NHDR, 2003; NHQR, 2003).

For subsequent reports, the AHRQ has refined some measures, identified core measures and created composite measures for simplification and ease of reporting while maintaining scientific soundness (NHDR, 2004, 2005, 2006 and 2007; NHQR, 2004, 2005, 2006, 2007). Researchers have evaluated the reports and identified challenges with definitions, conceptualization, and measurement several constructs (Herbert, Sisk, & Howell, 2008; Bilheimer & Sisk, 2008; Moy, Dayton, & Clancy, 2005; Moy et al., 2006; Siegel, Moy, & Burstin, 2004). Such evaluations offer guidance to improve the validity and reliability of the data presented in the National Healthcare Disparities and Quality Reports.

### **1.3 Patient Centeredness, Patient-Doctor Relationship, Patient-Doctor Communication, and Cultural Competency**

In the first National Healthcare Disparities and Quality Reports, the constructs of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency are conceptualized as representing four distinct but related domains of patient experience of care and their measures are said to overlap each other to a certain extent (NHDR, 2003; NHQR, 2003). The conceptualization and measures of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency included in the National Healthcare Disparities and Quality Reports are an important contribution to the literature defining, conceptualizing, and measuring these constructs. These reports represent the first ever conceptualization of the four constructs from the patients' perspective rather than from the perspective of academician, researcher, provider, and healthcare delivery organization. Prior to the publication of these reports, the four constructs and their definitions were used interchangeably, as can be seen by reviewing definitions presented in

Table 1.1. There was no explicit conceptualization and no empirical examination of their relationships.

### **Patient Centeredness**

The concept of patient centeredness has a long history. It originated in the late 1960s as a way to characterize how physicians should interact and communicate with patients on a more personal level and places the patient as the fundamental focus of health care delivery. Despite its long history, patient-centeredness is a troublesome and difficult concept which is poorly understood and variously defined.

Patient centeredness has been widely accepted as a fundamental dimension of quality health care. Mead and Bower (2000a) in their review of the literature on patient centeredness identify five key dimensions: a focus on illness rather than disease; a focus on the specific individual's experience of the illness; sharing power and responsibility so that the patient is an active participant rather than a passive recipient of care; a therapeutic alliance between doctor and patient; and the doctor's, as well as the patient's, emotional responses and experiences being part of that alliance or relationship. The National Healthcare Disparities and Quality Reports (NHDR, 2003; NHQR, 2003) identify patient centeredness as one of four domains of patient experience of care. Patient-centeredness is defined as health care that establishes a partnership among practitioners, patients and their families (when appropriate) to ensure that decisions respect patients' wants, needs, and preferences and that patients have the education and support they need to make decisions and participate in their own care (NHQR, 2004, 2005, 2006). It encompasses qualities of compassion, empathy, and responsiveness to meet the needs, values, and expressed preferences of the individual patient (Institute of Medicine, 2001) to ensure that provider instructions are properly understood and followed (NHDR, 2003). It relies on building a patient-doctor relationship, improve patient-



doctor communication, foster a positive atmosphere, and promote patients to actively participate in patient-doctor interactions (Stewart et al., 2000).

The reports state that patient centeredness is a difficult concept to measure (NHDR 2003; NHQR 2003). Greater conceptual specificity and simplification of the concept are required for meaningful and reliable measurement (Mead & Bower, 2000b). Prior to the NHDR and NHQR, there were no agreed upon measures of patient centeredness. Four measures of patient centeredness: patient assessment of how often their provider listened carefully, explained things clearly, respected what they had to say, and spent enough time with them are included in the first two NHQR (2003, 2004). In the subsequent reports (NHQR, 2005; NHQR, 2006), two additional measures are included: a composite score calculated using the earlier four measures and a measure assessing patient experience of whether the doctor treated the patient with courtesy and respect.

### **Patient-Doctor Relationship**

The concept of patient-doctor relationship has a very long history. The origin of the construct of patient-doctor relationship can be traced back to work of Henderson (1935) in a classic paper entitled "The doctor and patient as a social system", the central thesis of which is that through their relationship the physician and patient eventually reach a state of interdependent balance. This view was taken further by a social scientist, Talcott Parsons (1951), who viewed the relative social positions of the doctor and the patient -- the powerful and the relatively powerless -- as a therapeutic asymmetry that enables the physician to influence patient recovery. During the past five decades since Parsons' functionalist, role-based approach, the patient-doctor relationship has evolved and identified as a central element of high quality care.

The National Healthcare Disparities and Quality Reports (NHDR, 2003; NHQR, 2003) include patient-doctor relationship as one of the four domains of patient experience of care. According to the NHDR (2004), the patient-provider relationship should include mutual respect, trust, confidence, understanding, and shared decision-making. Relationships that lack these dimensions may limit the clinician's ability to provide care and the patient's willingness and ability to follow the clinician's recommendations. This ultimately can lower the quality of care. Along with patient-doctor communication, patient-doctor relationship is identified as a key aspect of patient-centered care (NHDR, 2003; NHQR, 2003).

Prior to the publication of the NHDR and NHQR, there were no agreed upon measures of patient-doctor relationship. The NHDR 2003 include seven measures of patient-doctor relationship including patient experience with satisfaction with quality of care received from provider; confidence in provider's help when they have a medical problem; whether physician spent enough time with them; overall rating of health care in the past year; treated with a great deal of dignity and respect; and involved as much as wanted in decision-making.

### **Patient-Doctor Communication**

Communication is a cornerstone of high quality doctor-patient interaction and essential to ensure the delivery of effective health care services. Patient-doctor communication has been conceptualized as both a skill and as a way of being mindful "in relation" to the other (Zoppi & Epstein, 2002). Along with patient-doctor relationship, patient-doctor communication is identified as a key aspect of patient-centered care (NHDR, 2003; NHQR, 2003). Good patient-provider communication is one where the patient is heard

and respected, gets the needed information, and fully participates in decision-making concerning care (NHQR, 2003).

There are no agreed upon measures of patient-doctor communication. The NHDR (2003) measures patient-doctor communication using six measures, five individual measures: patient experience of how often the physician listened carefully, gave needed information about health/health care, asked about medications and treatments other doctors may give, explained things clearly, showed respect for what the patient had to say, and one composite measure: one or more indicators of poor communication at their last visit that the patient had questions that they did not ask. The NHDR (2004, 2005) includes three additional measures of patient-doctor communication including patient experience of whether physician treated patient with courtesy, respect, and dignity; whether physician spent enough time with the patient; and a composite measure calculated using patient assessment of how often their provider listened carefully, explained things clearly, respected what they had to say, and spent enough time with them.

### **Cultural Competence**

The origin of the construct of cultural competence can be traced back to 1978 when Kleinman (Kleinman, Eisenberg, & Good, 1978) stated,

“... The clinical social science approach emphasizes the distinction between disease and illness and cultural influences on the ways clinical reality is conflictly construed in the ethno medical models of patients and the biomedical models of practitioners. The relevance of such research extends beyond special clinical concerns arising from ethnic differences to ubiquitous problems that result from cultural influences on all aspects of health care.”

Since then, decades of research in the fields of psychology, social work, medical, and nursing has shown that language and culture influence and underlie patients' beliefs, choices, preferences, lifestyle and behaviors, care-seeking practices, response to diagnoses and

treatment. This research resulted in a greater appreciation for the impact of culture on health and health care services delivery. The term cultural competence was first coined by Cross and colleagues (1989) as a result of their work at the Georgetown University Child Development Center.

There are various terms to refer to cultural competency and much ambiguity about the meaning and definitions of these terms. For example, the terms cultural awareness, cultural sensitivity, cultural competence, cultural humility, cultural empathy, cross-cultural competence, intercultural competence, transcultural competence, and multicultural competence are frequently and interchangeably used. Of these, cultural competence is the most commonly used term. Numerous definitions of cultural competency have been developed and in frequent use. However, concise and useful definitions are hardly available (Tucker et al., 2003). Most definitions are variants of the following definition developed by Cross and colleagues (1989):

Culture is defined broadly and refers to integrated patterns of human behavior that include the language, thoughts, communications, actions, customs, beliefs, assumptions, values, reasoning and institutions of racial, ethnic, religious, or social groups. Competence implies having the capacity to function effectively as an individual within the context of the cultural beliefs, behaviors, and needs presented by the patient. Cultural and linguistic competence is a set of congruent behaviors, attitudes, structures, and policies that come together in a system, agency, or among professionals and enables that system, agency, or those professionals to work effectively in cross-cultural situations.

The National Healthcare Disparities Report (NHDR, 2003) identifies cultural competence as one aspect of access to care along with patient-doctor communication and patient-doctor relationship. According to the NHDR (2003), cultural competency implies an awareness of health beliefs and behaviors, disease prevention and incidence, and treatment outcomes for different population groups (Lavizzo-Mourey & Mackenzie, 1996) including ethnic and

racial, linguistic as well as differing educational levels and physical abilities (Healthy People 2010).

There are no agreed-upon measures of cultural competence (Cross et al., 1989; Health Resources and Services Administration, 2001; American Institutes of Research, 2002; Fortier, 1999; Office of Minority Health, 2001). The National Healthcare Disparities Report (NHDR, 2003; NHDR, 2004) measures cultural competency using three indicators including patients' experience of whether they felt treated with disrespect because of their race or ethnicity; whether patient believes he/she would have received better care if he/she were from different race/ethnicity; and patient experience of whether doctor understands his/her background and values.

As reported at the beginning of this section, in the first National Healthcare Disparities and Quality Reports, the constructs of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency are conceptualized as representing four distinct but related domains of patient experience of care and their measures are said to overlap each other to a certain extent (NHDR, 2003; NHQR, 2003). However, the reports do not present theoretical and/or empirical evidence supporting the validity of this four-domain conceptualization. Furthermore, the reports do not provide empirical evidence supporting the reliability and validity of the measures except that the face and content validity of the measures can be inferred based on the fact that input from experts and a wide variety of stakeholders was solicited and integrated during the process of measure selection. In the subsequent reports, the terms patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency and some of their measures are used interchangeably (NHDR, 2004, 2005, 2006, 2007; NHQR, 2004, 2005,

2006, 2007). Using the terms interchangeably and lack of evidence on validity and reliability of measures undermines the efforts to measure and track patient experience of care to monitor improvements and guide interventions in these four domains.

As discussed in the preceding section, having a consistent and widely agreed upon definition and conceptualization of each construct, including patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency, facilitates the reporting of the concept and is essential to measuring progress toward improving it. Selection of valid and reliable measures of the construct guides the standardization of data collection and monitoring efforts and is a prerequisite to ensure that valid and reliable data are collected and reported in a comparable fashion across the NHDR and NHQR and across reports over time. This is essential to monitor and integrate activities to reduce disparities and improve access to, use and quality of healthcare across United States. Since the reports are widely used and have significant policy and programmatic influence, it is important to evaluate the validity of the four-domain conceptualization and empirically examine the reliability and validity of the measures of each construct.

To this end, the present study was undertaken to empirically examine the validity of the conceptualization and measures of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency included in the first National Healthcare Disparities and Quality Reports (NHDR, 2003; NHQR, 2003). The results of this study will provide evidence to advance knowledge about the conceptualization and measurement of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency and improve the validity and reliability of

measuring these constructs on an ongoing basis as part of NHDR and NHQR's efforts to monitor and eliminate health and healthcare disparities in patient experience of care.

#### **1.4 Study Aims**

The specific aims of the study were:

- 1) To test the validity of the current policy-driven notion that patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency represent four distinct but related domains of patient experience of care;
- 2) To counter pose a theory guided proposal that the four domains are highly interrelated with each other and can be conceptualized as the one-dimensional construct of the patient experience of the interpersonal aspects of care;
- 3) To empirically compare the two conceptualizations of patient experience of care by analyzing the factor structure underlying measures of the four domains of patient experience of care;
- 4) To assess and describe the psychometric properties (validity and reliability) of the resulting scale(s); and
- 5) To explore the policy and programmatic implications of the resulting conceptualization of patient experience of care.

#### **1.5 Quality of the Service Experience Framework**

For the current study, I suggest that the literature defining and measuring the quality of service experience provides insights to guide our understanding of the relationships between the four constructs. Guided by Bruce (1990)'s quality of the service experience framework, the present study proposes an integrated way of conceptualizing and assessing the four domains -- patient centeredness, patient-doctor relationship, patient-doctor

communication, and cultural competency -- of patient experience of care. Bruce (1990) framework provided a theoretical basis to conceptualize that the constructs of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency are highly related with each other and that they can be conceptualized as the patient experience of the interpersonal aspects of care.

The quality of the service experience framework was conceived by researchers at the Population Council to identify the fundamental elements in family planning and reproductive health programs when quality became a central concern of the international family planning and reproductive health-care community. It is based on Donabedian's work on quality of care (1980, 1988) and reviews conducted by the National Academy of Sciences during the 1980s to document and analyze family planning programs and define and measure their effectiveness. Figure 1.1 presents the quality of the service experience framework (Bruce, 1990). The framework conceptualizes that quality of service experience (shown in the centre in Figure 1.1) has six distinct but interrelated elements reflecting patients' experience of services. These include choice of method, information given to the client, technical competence, client-provider interpersonal relations, mechanisms to ensure continuity, and constellation of services. The extent to which these six elements are achieved depends on common background factors and program policies, operations and management styles, resource limits, the structure of the program. The framework conceptualizes that with the same inputs (shown on the left side in Figure 1.1), improvements in the quality of service experience leads to better impacts in the form of health and health care outcomes (shown on the right side in Figure 1.1).



Since its publication, the framework has been used to guide research focusing on quality of family planning services in various countries including Botswana, Burkina Faso, Côte d'Ivoire, Egypt, Ghana, India, Honduras, Pakistan, Bangladesh, Kenya, Madagascar, Nigeria, Senegal, South Africa, Tanzania, Uganda, Zambia, Zanzibar, and Zimbabwe. This research has contributed to identifying factors that hinder or help the provision of high-quality care, and guided policymakers, program managers, and providers make changes to improve the quality of family planning services (Bruce, 1990; Mavalankar & Sharma, 1999; Costello et al., 2001; Tanassi, 2004; Haddad et al., 2000; Speizer & Bollen, 2000; Rider & Perrin, 2002; Iezzoni et al., 2003; Wickizer et al., 2004; Kassebaum & Eaglen, 1999; Attree, 2001; Teutsch, 2003; Gerteis et al., 1993; Jain, Bruce, & Mensch, 1992; Shapiro, Hollinghead, & Morrison 2002). As a result, the framework has been credited for making the issue of quality a central concern of the international family planning and reproductive health-care community.

The interpersonal relations element is the personal dimension of service and is defined as the degree of empathy, trust/rapport, (safety, confidentiality, privacy), courtesy, appropriateness of staff and sensitivity of the staff/provider to the client's needs (Bruce, 1990). It is a well-established construct valid across patient from culturally and ethnically diverse backgrounds. It has well-accepted measures including the extent to which the doctor listened to what the patient said; explained things carefully; allowed the patient to discuss questions about treatment; involved the patient in decision making; treated the patient with dignity and respect; spent enough time with the patient; and patient's confidence and trust in the doctor. I conclude that the definition of the interpersonal relations element of the Bruce framework and its measures overlap with the definitions and measures of patient

centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency. This study does not concern with understanding or measuring the interpersonal aspects of care or validating the Bruce framework but, instead, capitalizes on the available evidence on the definition and measures of the interpersonal relations element of the Bruce framework to propose and understand the interrelationships among the four domains of patient experience of care. Bruce framework's utility in this study is that it helps to support and inform my proposal that the domains of patient-centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency are empirically highly related with each other (rather than distinct and related) and can be conceptualized as the one-dimensional construct of patient experience of the interpersonal aspects of care.

### **1.6 Gender, Race and Ethnicity**

Disparities in the quality of patient experience of care received by racial and ethnic minority patients compared to the nonHispanic White patients have been well documented. Disparities in the quality of patient experience of care between males and females are less well known. In order to avoid erroneous or misleading conclusions about the validity of the conceptualization of patient experience of care across gender and racial/ethnic groups, it is important to assess the relevance and equivalence of this conceptualization across these important patient characteristics. It is critical to examine if there are differences in how individuals from various racial and ethnic groups and males and females vary in their conceptualization of patient experience of care. Hence, individual's gender and race/ethnicity were included in the study to assess cross-cultural validity of the one-domain vs. four-domain conceptualization of patient experience of care.

### **1.7 Access to Care and Health Care Outcomes**

Figure 1.2 presents the conceptual framework used to examine the construct validity of the proposed one-domain conceptualization underlying the four domains of patient experience of care. Validation of the one-domain conceptualization involved assessment of the magnitude, direction, and significance of correlation between a) the measures of patient experience of care and measures of choice in place of care, usual source of care and length of relationship with usual source of care, insurance status and b) the measures of patient experience of care and measures of compliance with care, satisfaction with care, confidence in future care, and delay / postponement / foregone needed care. As shown in this figure, I suggest that three access to care measures and four health care outcome measures are positively associated with measures of four domains of patient experience of care.

Access to healthcare services is an important prerequisite to patient's receipt of quality care. Patients who experience barriers to accessing health care services as measured by lack of or discontinuity with health insurance coverage report experiencing difficulty communicating with their physicians, cultural and linguistic barriers during their physician visit, and feeling treated with disrespect when receiving care (Doty, 2003a; Doty, 2003b; Collins et al., 2002a; Ensign & Panke, 2002; Zambrana et al., 2004; Reschovsky, Kempber, & Tu, 2000; Epstein, Taylor, & Seage, 1985). Hence, I conceptualize that individuals with health insurance coverage would have higher interpersonal relations score compared to those with no health insurance or discontinuity with health insurance coverage.

Patients who report not having a regular doctor experience difficulty communicating with their physician, face cultural and linguistic barriers during their physician visit, and feel treated with disrespect when receiving care (Collins et al., 2002a). Patients who report

greater continuity of care with their usual source of care report higher confidence in their doctor and greater satisfaction with the concern shown by their physician, and having their health questions answered (Donahue, Ashkin, & Pathman, 2005). Longer term relationship between a patient and physician (Thom & Campbell, 1997; Thom, 2001; Kao et al., 1998; Thom et al., 1999; Mainous et al., 2001; Doescher et al., 2000) is associated with higher levels of trust between a patient and the doctor. Hence, a positive and significant association between interpersonal relations factor and usual source of care and length of relationship is supported by prior empirical evidence.

Patients with greater amount of choice in their selection of physicians have been shown to report higher levels of trust in their physician than patients with no or little amount of choice (Kao et al., 1998; Reschovsky, Kemper, & Tu, 2000; Mechanic & Schlesinger, 1996; Forrest et al., 2002; Haas et al., 2003; Hunt, Gaba, & Lavizzo-Mourey, 2005). Hence, I expected a positive and significant association between interpersonal relations and the extent of choice in the place of care where they seek care.

Bruce (1990) and Donabedian (1980, 1988)'s conceptualization of quality of care suggest that patient experience of the interpersonal aspects of care improves patient satisfaction, compliance with care, confidence in seeking care in the future, and less delay/postponing / foregoing of needed care. Various studies have provided evidence that at least some aspect of patient experience of care has positive consequences on health outcomes such as satisfaction with care, compliance with care, and utilization of care (Stewart et al., 2000; Stewart et al., 1995). Patients' positive experience with their physician, including the receipt of culturally appropriate services and treatment recommendations, good relationship, trust, and communication, being treated with respect and dignity has been shown to be

empirically associated with better compliance with care (Donabedian, 1980; Office of Minority Health, 2001; Rivadeneyra et al., 2000; Hall & Dornan, 1998; Stewart et al., 1995; Thom & Tirado, 2000; Kleinman, Eisenberg, & Good, 1978; Beach et al., 2005), and satisfaction with care (Donabedian, 1980, Lewin et al., 2001; Garrouette et al., 2004; Cooper-Patrick et al., 1999; Meredith et al., 2001; Betancourt, Carrillo, & Green, 1999; Safran et al., 1998; Keating et al., 2002; Grumbach et al., 1999; Thom, Hall, & Pawson, 2004; Thom et al., 2002; Hall & Dornan, 1988; Wade & Bernstein, 1991; Thom & Tirado, 2000). (Bruce, 1990; Donabedian, 1980). In light of this, I conceptualized that patients' experience with interpersonal aspects of care will be positively associated with their compliance with care, satisfaction with care, confidence in seeking care in the future and less delay/postponing/foregoing of needed care.

### **1.8 Research Questions and Study Hypotheses**

**Research Question 1:** What are the relationships among the measures of four domains -- patient centeredness, patient doctor relationship, patient-doctor communication, and cultural competency -- of patient experience of care?

**Research Question 2:** What is the dimensionality of the scale(s) measuring the four domains of patient experience of care?

**Hypothesis 1:** The four domains of patient experience of care -- patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency -- are empirically highly related with each other.

**Hypothesis 2:** Patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency can be conceptualized as a one-dimensional concept of patient experience of the interpersonal aspects of care.

**Research Question 3:** Are males and females the same with respect to the measurement of patient experience of care? Does the resulting factor structure underlying the measures of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency hold across gender?

**Hypothesis 3:** The factor structure underlying the measures of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency is the same for males and females.

**Research Question 4:** Are four racial/ethnic groups homogeneous with respect to the measurement of patient experience of care? Does the resulting factor structure underlying the measures of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency hold across racial/ethnic groups?

**Hypothesis 4:** The factor structure underlying the measures of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency is the same across four racial and ethnic groups.

**Research Question 5:** Are the domain(s) of patient experience of care and three access to care measures (usual source of care and length of relationship with the usual source of care, choice in the place of care, and insurance status) associated in a manner predicted by theory and prior empirical evidence?

**Hypothesis 5:** Individuals who report having a better experience of care with their physician will also have better access to care (have a usual source of care, have a longer-term relationship with the usual source of care, have a choice in their place of care, and have continuous insurance coverage).

**Research Question 6:** Are the domains(s) of patient experience of care and four health care outcomes (overall satisfaction with quality of care, compliance with care, confidence in seeking future care, and no delay/postponing of care) associated in a manner predicted by theory and prior empirical evidence?

**Hypothesis 6:** Individuals who report having a better experience of care with their physician will be more likely to report experiencing more favorable health care outcomes (higher satisfaction with quality of care, better compliance with care, greater confidence in seeking future care, and less likely to report that they had delayed/postponed/foregone care).

## **CHAPTER II**

### **RESEARCH DESIGN AND METHODOLOGY**

This chapter discusses the research design and methodology employed to answer the research questions and test the study hypotheses presented in the first chapter. First, I discuss the data source, the sampling approach, and the data collection procedures. Second, I provide a description of the variables and measures of patient centeredness, patient-doctor relationship, patient-doctor communication, cultural competency, and interpersonal relations included in this study. Finally, I present in detail the analytical steps undertaken to answer the research questions.

This study was reviewed and approved by the Institutional Review Board for the Protection of Human Subjects at the School of Public Health, University of North Carolina at Chapel Hill.

#### ***2.1 Data Source***

The present study uses cross-sectional data from the Commonwealth Fund 2001 Health Care Quality Survey, a nationally representative survey of the U.S. adult population. In addition, the survey included data from an additional Asian sample. The survey was funded by the Commonwealth Fund (CMWF) and consisted of 25-minute telephone interview conducted with a sample of adults age 18 and over during April 30 through November 5, 2001. Respondents were interviewed in one of six languages based on their preference (English, Spanish, Mandarin, Cantonese, Vietnamese, or Korean). The survey



questionnaire was designed by the CMWF in collaboration with the Princeton Survey Research Associates (PSRA) to gather individual-level information on the health care experiences of respondents, including information on health status, use of preventive services, experience with their doctor, a range of health care quality issues (e.g., quality of patient-doctor communication, satisfaction with care), access to care issues (e.g., insurance coverage, utilization of care), and compliance with care. Furthermore, demographic questions regarding age, gender, race, ethnicity, country of birth, region of residence, primary language spoken at home, income, employment status, marital status, and household composition were asked of all respondents.

### **2.1.1 Survey Questionnaire**

The survey was designed in English, with a majority of questions selected or adapted from existing federal surveys including the National Health Interview Survey, Medical Expenditure Panel Survey, Medicare Current Beneficiary Survey, and National Consumer Assessment of Health Plan Survey Benchmarking Database (Doty, 2005). A few questions were selected from other surveys (California Health Interview Survey (CHIS), 2003; The Henry J. Kaiser Family Foundation (KFF), 1999; American Board of Internal Medicine, 2003; American Council for Graduate Medical Education (ACGME), 2005; Community Tracking Survey, 2000; International Health Perspectives, 2004). Only a handful of new questions were generated to address topics that were of unique interest to the CMWF (Doty, 2005).

The questionnaire was pretested with a small number of respondents from a random-digit dialing (RDD) sample. Pretest interviews were conducted by experienced interviewers who were presumed to be the best judge of the quality of the answers received and the degree

to which respondents understood the questions. Pretest interviews were monitored by PSRA and CMWF staff. Changes were made to the screening procedures, question wording, and question order based on problems identified during the pretest interviews. A total of 97 items were included in the final English language version of the questionnaire, available at <http://www.cmwf.org>. This questionnaire was then translated into Spanish by Princeton Data Source, LLC and into Mandarin, Cantonese, Vietnamese, and Korean by Interviewing Service of America, Inc.

### **2.1.2 Data Collection Procedures and Sampling Design**

Data were collected by the Princeton Survey Research Associates and the Interviewing Service of America. The data collection procedures and sampling design, described next, draw heavily upon the survey methodology report developed by the CMWF (Ho, 2005). The survey consisted of 25-minute telephone interviews conducted with a sample of adults aged 18 and over using a fully programmed Computer Assisted Telephone Interview instrument. Princeton Data Source conducted the English and Spanish language interviews; Interviewing Service of America conducted interviews in Mandarin, Cantonese, Vietnamese, and Korean languages. Respondents were offered no incentives for their participation in the survey.

Two sampling approaches were employed to select the respondents. First, a stratified minority sample design was used to gather data from a nationally representative sample of noninstitutionalized adults age 18 and older living in a household with a telephone in the continental U.S. This sample was designed to generalize to the U.S. adult population age 18 and older and to allow separate analyses of responses by non-Hispanic White, African American, Hispanic, and Asian households.

The sample was provided by Survey Sampling, Inc. according to PSRA's specifications. The sample was drawn using standard list-assisted RDD methodology. Telephone numbers from area code-exchange combinations with higher than average densities of minority (African American, Hispanic, and Asian) households were drawn disproportionately. The sample was divided into six strata or sub-samples based on densities of African American, Hispanic, and Asian households. Within each stratum, every active block of telephone numbers (area code + exchange + two-digit block number) containing one or more residential directory listings was equally likely to be selected; after selection two more digits were added randomly to complete the phone number. This method guaranteed coverage of every assigned phone number regardless of whether that number was directory listed, unlisted, or too new to be listed. The selected numbers were compared against business directories and matching numbers were purged. At the non-business numbers, up to 20 attempts were made to contact a person. Calls were staggered over times of day and days of the week to maximize the chance of making contact with potential respondents. Each household received at least one daytime call in an attempt to find someone at home. In each contacted household, interviewers conducted an interview with a randomly selected adult household member.

An additional 394 households identified through a nationwide demographic tracking survey as having an Asian/Asian American or African American family member were also interviewed. A short 10-minute demographic survey asked about household composition including number of children, the age and sex of adult household members, the race and ethnicity of the respondent, and the total household income. Of the 394 households contacted, 225 resulted in an interview with an Asian/Asian American (including Native

Hawaiian or other Pacific Islander) household member, 96 with an African American household member, and 73 with a respondent of some other race.

To check for possible systematic differences stemming from the use of two different RDD sampling frames (stratified minority sample and demographic survey sample), PSRA conducted statistical comparisons between responses from each. No systematic differences were observed. Similarly, no systematic differences were found in responses between respondents who were interviewed prior to the tragic events of September 11, 2001 and those who participated after. A total of 6,722 adults were interviewed; this represented 54.3% response rate. Using American Association for Public Opinion Research standards, PSRA calculated this response rate by taking the product of three component rates: contact rate (the proportion of working numbers where a request for interview was made), cooperation rate (the proportion of contacted numbers where a consent for interview was initially obtained versus those refused), and completion rate (the proportion of initially cooperating and eligible interviews that were completed). Of the 6,722 adults, 3911 identified themselves as non-Hispanic White, 1037 as African American, 1153 as Hispanic, and 621 as Asian. To correct for the disproportionate sampling design, a weight variable generated by using the U.S. Census Bureau's March 2001 Current Population Survey to adjust for age, sex, race/ethnicity, education, marital status, household size, and geographic region is included in the dataset. The resulting weighted sample is representative of the 193 million adults age 18 and older who lived in households with telephone in the continental United States in 2001.

The second sampling approach involved interviewing a sample of Chinese, Vietnamese, and Korean respondents to supplement data for the Asian sample in the nationally representative sample. This supplemental sample was compiled by Survey

Sampling, Inc. Respondents were selected by calling households with Asian surnames. Respondents in this Asian supplemental sample are not representative of the entire population of Chinese, Vietnamese, or Korean in the US, but are illustrative of these groups. Eight hundred and eighty eight individuals were interviewed; this represented 44% response rate. Of the 888 adults, 376 identified themselves as Chinese, 245 as Vietnamese, and 267 as Korean.

### **2.1.3 Study Sample**

Data used in the present study were drawn from both the nationally representative and Asian supplemental sample. I refer to these two samples as Sample 1 and Sample 2, respectively. Figure 2.1 is a schematic presentation of the study sample selection process and presents size of Sample 1 and Sample 2. Since this study focused on patient experience of care during a health care visit, the study sample was restricted to adults who reported a health care visit during the two years prior to their participation in the survey. Adults who did not have a health care visit as reported by their non-affirmative response to two successive questions were excluded from the study. The first question was: “In the last 12 months, have you (a) visited a doctor or medical clinic for any reason, including check-ups or visits to the emergency room or hospital outpatient department, or (b) been admitted to the hospital?” Respondents who did not respond affirmatively to the first question were asked “And, have you visited a doctor or medical clinic for any reason, including check-ups or visits to the emergency room or hospital, in the last two years?” Response categories for both questions included, ‘yes,’ ‘no,’ and ‘don’t know.’ Excluding respondents who did not have a health care visit in the two years prior to their participation in the survey resulted in an eligible

study sample of 6,008 (88.72% of 6,772 Sample 1 respondents) and 717 (80.74% of 888 Sample 2 respondents), respectively.

Each study sample was further divided into two groups: English-proficient (Group 1) and non-English speaking/limited English-proficient (Group 2) adults based on two variables: the language of interview (English vs. Non-English) and fluency in English (as assessed by the interviewer and reported in the dataset). Group 1 included adults who responded in English *and* were English-proficient; Group 2 included all others. Table 2.1 presents data on the number of respondents by language of interview and fluency in the language of interview. In both samples, the vast majority responded in English *and* were English-proficient (5,578 of 6,008 in study sample 1; 404 of 717 in study sample 2). Twenty-three adults in study sample 1 and nine in study sample 2 responded in English but were not fluent in English, and thus were included in Group 2. Among the 407 non-English speakers in study sample 1, majority (340) responded in Spanish, the rest responded in Mandarin/Cantonese (35), Vietnamese (18), or Korean (14). Among the 303 non-English speakers in study sample 2, 117 responded in Mandarin/Cantonese, 110 responded in Vietnamese, and 76 responded in Korean.

As presented in Table 2.1, the English-proficient adults in Sample 1 were the largest group (N=5,578). For analysis, this group was further divided into two groups: a validation Sample 1-Group 1A (N=2,784) and a calibration Sample 1-Group 1B (N=2,794). The remaining three groups: non-English speaking/limited-English proficient Sample 1-Group 2 (N=430); the English proficient Sample 2-Group 1 (N=404); and the non-English speaking/limited-English proficient Sample 2-Group 2 (N=313) were relatively small and were not divided into validation and calibration samples. Thus, the nationally representative

sample was divided into three groups and the Asian supplemental sample was divided into two groups.

#### **2.1.4 Missing Data**

Not every adult in the five groups answered every survey question included in this study. Only respondents with complete data on all study variables were retained in the study. For Sample 1, analysis conducted by the CMWF provided initial evidence that there were no systematic differences between the cases with missing data and cases with complete data (Doty, 2005) and hence Sample 1 data were assumed to be missing at random, i.e., cases with missing values were assumed to be a simple random sub-sample of the full sample. For Sample 2, no information on the pattern of cases with missing values was available from CMWF (Doty, 2005).

Listwise deletion was employed to exclude cases with missing values on any of the study variables for all five groups. Listwise deletion has an important advantage. As is the case with Sample 1, under the assumption that data are assumed to be missing at random, listwise deletion leads to unbiased parameter estimates. Since the respondents in Sample 2 were selected using a nonrandom sampling strategy, irrespective of the pattern of cases with missing values, findings based on analysis of Sample 2 data are descriptive and lack generalizability to the Asian population in the United States (Ho, 2005). Hence, listwise deletion to exclude cases with missing values from Sample 2 did not pose any additional limitations to the already limited generalizability of findings for this sample. Listwise deletion resulted in a substantial decrease in the sample size for the non-English speaking/limited-English proficient Sample 1-Group 2 and the non-English speaking/limited-English proficient Sample 2-Group 2.

### **2.1.5 Study Sample Size**

As stated in the previous section, adults with complete data for all study variables were retained in the study. Figure 2.1 is a schematic presentation of the study sample selection process and outcome. Table 2.2 presents the size of each sample in a tabular format. Of the 2,794 adults in the calibration Sample 1-Group 1A, 2,496 (89.33%) had complete data. Of the 2,784 adults in the validation Sample 1-Group 1B, 2,510 (90.16%) had complete data. Of the 430 adults in the Sample 1-Group 2, 344 (80%) had complete data. Of the 404 adults in Sample 2-Group 1, 341 (84.41%) had complete data. Of the 313 adults in Sample 2-Group 2, 208 (66.45%) had complete data. Since a third of the Sample 2-Group 2 adults (the non-English speaking/limited English-proficient adults in the Asian supplemental sample) had values missing on one or more of the study variables, analytical procedures would have produced unstable estimates for this group. Hence, this group was excluded from further analysis.

For the remainder of this document, Sample 1-Group 1A refers to the English-proficient nationally representative calibration sample (N= 2,496); Sample 1-Group 1B refers to the English-proficient nationally representative validation sample (N=2,510); Sample 1-Group 2 refers to the non-English speaking/limited English-proficient nationally representative sample (N=344); and Sample 2-Group 1 refers to the English-proficient Asian supplemental sample (N=341). Thus, data from these four samples were analyzed to answer the research questions. Sample 1-Group 1A served as the calibration sample for the nationally representative English-proficient population; Sample 1-Group 1B served as the validation sample for the nationally representative English-proficient population; Sample 1-Group 2 served as the calibration sample for the nationally representative non-English



speaking/limited English-proficient (mostly Spanish speaking) population; and Sample 2-Group 1 served as the calibration sample for the English-proficient Asian population.

### **2.1.6 Determining the Adequacy of Sample Size**

While there are no absolute standards in the Structural Equation Modeling literature for sufficient statistical power to obtain stable estimates, generally, the factor pattern that emerges from analysis of data from a large sample is more stable than that emerging from a smaller sample (DeVellis, 2003). Tinsely & Tinsely (1987) suggest a ratio of 5 to 10 cases per item up to 300 subjects. Comrey (1973) classifies a sample of 100 as poor, 200 as fair, 300 as good, 500 as very good, and 1000 as excellent, although Comrey (1988) suggests that a sample size of 200 is adequate in most cases of factor analysis involving 40 or less items. Suggested criteria also include having a minimum of 10:1 ratio (Bentler & Chau, 1987) and 5:1 ratio of cases to parameters (Bentler, 1995).

In the present study, Sample 1-Group 2 is the smallest sample ( $n=344$ ) with the highest number of estimated parameters. Hence, I focus the discussion of power analysis for this sample. The confirmed factor model for this sample included 11 indicators, one factor, and four correlated measurement errors. Twenty-six parameters were estimated (10 factor loadings, 11 error variances, 4 error covariances, and one factor variance). Using the 10:1 criterion (Bentler & Chau, 1987), a sample size of 260 is adequate to obtain stable results when using factor analysis. The size of this sample was 344, thus the ratio of sample size to number of estimated parameters was 13.23. Thus, the sample size is adequate to obtain stable estimates for Sample 1-Group 2. Because this sample was the smallest with the highest number of estimated parameters, I concluded that the remaining three samples had more than adequate number of cases to obtain stable estimates when using factor analysis.

The relatively small size of Sample 1-Group 2 (n=344) and Sample 2-Group 1 (n=341) meant that the size of males and females, and four racial/ethnic groups was inadequate to obtain stable estimates when conducting multiple-group factor analysis. Hence, multiple-group factor analyses to assess the validity of the factor model across gender and racial/ethnic groups were limited to Sample 1-Group 1A, the English-proficient group from the nationally representative sample. In order to have adequate sample size for each racial/ethnic group in these two samples, respondents who self-identified themselves as Asian (175) and other (138) were combined to form a single category, “other” (313).

## **2.2 Measurement of Study Variables**

Details about the variables and how they were operationalized are presented next.

### **2.2.1 Patient Centeredness, Patient-Doctor Relationship, Patient-Doctor Communication, Cultural Competency**

Twenty-four items were identified from the Commonwealth Fund 2001 Health Care Quality Survey as measures of the four domains of patient experience of care -- patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency. These items were primarily selected as measures of these domains as identified by the National Healthcare Disparities and Quality Reports (NHDR, 2003; NHDR, 2004; NHDR, 2005; NHDR, 2006; NHDR, 2007; NHQR, 2003; NHQR, 2004; NHQR, 2005; NHQR 2006; NHQR, 2007), and secondarily by the literature defining and measuring these domains.

Each of the 24 items is widely accepted and widely used measure of one or more of the four domains of patient experience of care. A nationwide consensus panel of health services researchers, policymakers, patient advocates, and quality improvement experts on behalf of the Agency for Healthcare Research and Quality identified these items as measures

of one or more of the four domains of patient experience of care (NHDR, 2003; NHQR, 2003). According to this panel's conclusions, each item meets the criteria of importance, scientific soundness, feasibility, and clinical significance. For the present study, these conclusions provided evidence supporting the face and content validity of each item as a measure of one or more of the four domains of patient experience of care.

Table 2.3 lists the questions (item number indicates the question number in the Commonwealth Fund 2001 Health Care Quality Survey), response categories, and domain(s) that each item is a measure of and evidence in support of the selection of each item as a measure of the four domains of patient experience of care.

### **Patient Centeredness**

Eleven items from the Commonwealth Fund 2001 Health Care Quality Survey were included as measures of patient centeredness. Table 2.3 lists these items, response categories, and evidence supporting the selection of each item as a measure of patient centeredness. Selection of these items was guided by the National Healthcare Disparities and Quality Reports (NHDR, 2003; NHDR, 2004; NHDR, 2005; NHDR, 2006; NHDR, 2007; NHQR, 2003; NHQR, 2004; NHQR, 2005; NHQR 2006; NHQR, 2007) as well as literature conceptualizing, defining, and measuring patient centered care and listed in Table 2.3 (column 5). Each item assesses various attributes of patient centeredness, including, the extent to which the doctor listened to what the patient had to say; extent to which the doctor explained things carefully; extent to which the doctor treated the patient with dignity and respect; extent to which the doctor involved the patient in decision making; extent to which the doctor spent enough time with them; extent to which the patient's preference to involve

friend/relative during visit was met; and extent to which the patient had a problem in understanding the doctor due to a language difference.

### **Patient-Doctor Relationship**

Patient-doctor relationship was measured by 11 items from the Commonwealth Fund 2001 Health Care Quality Survey. Each item measured various attributes of patient's relationship with his/her doctor. Selection of items was guided by the National Healthcare Disparities and Quality Reports (NHDR, 2003; NHDR, 2004; NHDR, 2005; NHDR, 2006; NHDR, 2007; NHQR, 2003; NHQR, 2004; NHQR, 2005; NHQR 2006; NHQR, 2007) as well as the literature conceptualizing, defining, and measuring patient-doctor relationship and listed in Table 2.3 (column 5). The measures included patient's wanting to discuss questions about care or treatment, but not doing so; the patient's confidence and trust in the doctor; extent to which the doctor treated the patient with dignity and respect; extent to which the doctor involved the patient in decision making; extent to which the doctor spent enough time with them; whether the doctor understands background and values; whether the patient believes that the doctor looks down upon the patient and his/her lifestyle; patient's perception of disrespect or unfair treatment due to ability to pay/type of health insurance; patient's perception of disrespect or unfair treatment because of English- language ability; patient's perception of disrespect or unfair treatment due to race or ethnic background, and patient's perception of disrespect or unfair treatment due to gender.

### **Patient-Doctor Communication**

Patient-doctor communication was measured by 22 items from the Commonwealth Fund 2001 Health Care Quality Survey. Each item measured various attributes of patient experience with communication with his/her doctor. Selection of items as measures of

patient-doctor communication was guided by National Healthcare Disparities and Quality Reports (NHDR, 2003; NHDR, 2004; NHDR, 2005; NHDR, 2006; NHDR, 2007; NHQR, 2003; NHQR, 2004; NHQR, 2005; NHQR 2006; NHQR, 2007) as well as the literature conceptualizing, defining, and measuring patient-doctor communication and listed in Table 2.3 (column 5). The measures included extent to which the doctor listened to what the patient had to say; extent to which the doctor explained things carefully; patient's wanting to discuss questions about care or treatment, but not doing so; patient's confidence and trust in the doctor; extent to which the doctor treated the patient with dignity and respect; extent to which the doctor involved the patient in decision making; extent to which the doctor spent enough time with them; extent to which the patient's preference to involve friend/relative during visit was met; whether the doctor understands background and values; whether the patient believes that the doctor looks down upon the patient and his/her lifestyle; extent to which the patient understands health information given by doctor; patient's perception of disrespect or unfair treatment due to ability to pay/type of health insurance; patient's perception of disrespect or unfair treatment because of English-language ability; patient's perception of disrespect or unfair treatment due to race or ethnic background; patient's perception of disrespect or unfair treatment due to gender; whether the patient told the doctor about his/her use of alternative care; and extent to which the patient had a problem in understanding the doctor due to language difference.

### **Cultural Competency**

Cultural competency was measured by 14 items from the Commonwealth Fund 2001 Health Care Quality Survey. Each item measured various attributes of patient experience with the cultural competency of his/her doctor during a health care visit. Selection of items

as measures of cultural competency was guided by National Healthcare Disparities and Quality Reports (NHDR, 2003; NHDR, 2004; NHDR, 2005; NHDR, 2006; NHDR, 2007; NHQR, 2003; NHQR, 2004; NHQR, 2005; NHQR 2006; NHQR, 2007) as well as the literature conceptualizing, defining, and measuring cultural competency and listed in Table 2.3 (column 5). Measures included the extent to which the doctor involved the patient in decision making; whether the doctor understands background and values; whether the patient believes that the doctor looks down upon the patient and his/her lifestyle; extent to which the patient understands health information given by doctor; patient's perception of disrespect or unfair treatment due to ability to pay/type of health insurance; patient's perception of disrespect or unfair treatment because of English-language ability; patient's perception of disrespect or unfair treatment due to race or ethnic background; patient's perception of disrespect or unfair treatment due to gender; whether the patient believes that care would be better if he/she were of a different race / ethnicity; whether the patient believes that care would be better if he/she were of a different gender; and extent to which the patient had a problem in understanding the doctor due to language difference.

Seven (20, 21, 23, 24, 25, 26, and 32a) of the 24 items were recoded such that a higher score represents that the patient reported a "positive" experience on the domain(s) of interest and a lower score indicates that the patient reported a "less positive" or "negative" experience on the domain(s) of interest as measured by the item. Several items were recoded and combined into a single item. Items 30 and 31 were recoded and combined to form item 30; items 57 and 59 were recoded and combined to form item 59. Due to significant overlap in the wording of four items (40a, 40b, 40c, and 40d) and conceptual evidence that a combined measure capturing patient perception of disrespect or unfair treatment due to any

reason is a better measure of patient experience of care than is each item individually (Smedley et al., 2003; Schwartz, Woloshin, & Welch, 1999; Schulman et al., 1999; Weisse et al., 2001; Van Ryn & Burke, 2000), a combined variable (40) was created and included in the analysis in place of the four separate items. Four items (74, 75, 76, and 77) were combined to form a single item measuring patient experience of problems in understanding their doctor due to language difference with the doctor (74). Each of the four items was first recoded to form a dichotomized variable. The recoded items were then combined to form five categories to capture patient experience of problems in understanding their doctor due to language difference with the doctor and included as a measure of patient centeredness, patient-doctor communication, and cultural competency. As a result, 16 items were included in the analysis as measures of four domains of patient experience of care.

Using these 16 items, a measurement model was developed delineating the relationships between the items (observed variables/indicators) and the underlying four latent constructs/unobserved variables they were postulated to measure according to the National Healthcare Disparities and Quality Reports (NHDR, 2003; NHDR, 2004; NHDR, 2005; NHDR, 2006; NHDR, 2007; NHQR, 2003; NHQR, 2004; NHQR, 2005; NHQR 2006; NHQR, 2007). This measurement model representing the four-domain conceptualization of patient experience of care is discussed next.

### **2.2.2 Confirmatory Factor Model: Four-Factor Conceptualization of Patient Experience of Care**

Figure 2.2 presents schematic relationship between measures (items from the Commonwealth Fund 2001 Healthcare Quality Survey) and four domains of patient experiences / perceptions of care identified based on the National Healthcare Disparities and Quality Reports (NHDR, 2003; NHDR, 2004; NHQR, 2003; NHQR, 2004). Figure 2.3 is a

schematic of this measurement model depicting the four-domain conceptualization of patient experience of care based on the National Healthcare Disparities and Quality Reports (NHDR, 2005; NHDR, 2006; NHDR, 2007; NHQR, 2005; NHQR, 2006; NHQR, 2007). This model depicts proposed relationships between the four domains of patient experience of care (latent constructs/unobserved variables) and their measures (observed variables/indicators) (Table 2.3). A confirmatory rather than an exploratory model was specified since the number of latent and observed variables, the structure of relationships among these variables, and covariances among latent factors were postulated based on the available theoretical and empirical evidence.

Observed variables are represented by squares at the bottom and latent variables are represented by circles at the top of Figure 2.2 and Figure 2.3. A straight arrow from a latent variable to an observed variable indicates the causal effect of the latent factor on the observed variable. This model specifies the covariation among the 16 observed variables in terms of the four latent factors they measure. All observed variables were assumed to be effects of one or more latent variables. Not all observed variables have links to all latent factors. For example, item 20 was postulated to be affected by patient centeredness and patient-doctor communication; item 42b was postulated to be affected by patient-doctor relationship and cultural competency but not by patient centeredness and patient-doctor communication; and items 23, 33b, and 59 were postulated to be affected by only one factor. Seven observed variables (20, 21, 24, 25, 26, 30, and 74) were included as measures of patient centeredness. Ten observed variables (22, 23, 24, 25, 26, 32a, 32b, 40, 42a, and 42b) were included as measures of patient-doctor relationship. Twelve observed variables (20, 21, 22, 24, 26, 30, 32a, 32b, 33b, 40, 59, and 74) were included as measures of patient-doctor



communication. Nine observed variables (25, 26, 30, 32a, 32b, 40, 42a, 42b, and 74) were included as measures of cultural competency. Each observed variable was assumed to have an error term, the unique factor, represented by  $e_i$  at the bottom of the figure. All latent factors were assumed to be correlated. Curved arrows between two latent factors indicate correlation between two latent factors.

The measurement model presented in Figure 2.2 and Figure 2.3 specifies that:

1. All items are correlated with each other.
2. All four latent factors are correlated with each other.

### **2.2.3 Patient Experience of the Interpersonal Aspects of Care**

Twenty-four items were identified from the Commonwealth Fund 2001 Health Care Quality Survey as measures of patient experience of interpersonal aspects of care. This item identification was guided by literature conceptualizing, defining, and measuring the interpersonal aspects of care from the patient's perspective (Bruce, 1990; Mavalankar & Sharma, 1999; Costello et al., 2001; Tanassi, 2004; Salber, 1975; Haddad et al., 2000; American Board of Internal Medicine, 2003; Speizer & Bollen, 2000; Rider & Perrin, 2002; Iezzoni et al., 2003; Wickizer et al., 2004; National Board of Medical Examiners, 2005; Kassebaum & Eaglen, 1999; Purtilo, 1990; Payer, 1989; Attree, 2001; Teutsch, 2003). This literature spans research conducted in many countries to define the domain and identify the measures of patient experience of interpersonal aspects of care. Table 2.3 lists these items. Each item measures an attribute of patient experience of interpersonal aspects of care.

The measures included (20) extent to which the doctor listened to what the patient had to say; (21) extent to which the doctor explained things carefully; (22) the patient's wanting to discuss questions about care or treatment, but not doing so; (23) the patient's

confidence and trust in the doctor; (24) extent to which the doctor treated the patient with dignity and respect; (25) extent to which the doctor involved the patient in decision making; (26) extent to which the doctor spent enough time with them; (30-31) extent to which the patient's preference to involve friend/relative during visit was met; (32a) whether the doctor understands background and values; (32b) whether the patient believes that the doctor looks down upon the patient and his/her lifestyle; (33b) extent to which the patient understands health information given by doctor; (40a) the patient's perception of disrespect or unfair treatment due to ability to pay/type of health insurance; (40b) the patient's perception of disrespect or unfair treatment because of English- language ability; (40c) the patient's perception of disrespect or unfair treatment due to race or ethnic background; and (40d) the patient's perception of disrespect or unfair treatment due to gender; (42a) whether the patient believes that care would be better if were of a different race / ethnicity; (42b) whether the patient believes that care would be better if were of a different gender; (57, 59) whether the patient told the doctor about his/her use of alternative care; and (74-77) extent to which the patient had a problem in understanding the doctor due to a language difference. After recoding these items, 16 items were included as measures of patient experience of the interpersonal aspects of care. A confirmatory factor model of the one-domain conceptualization of patient experience of interpersonal aspects of care showing proposed relationships between the factor and its measures is presented next.

#### **2.2.4 Confirmatory Factor Model: One-Factor Conceptualization of Patient Experience of the Interpersonal Aspects of Care**

The one-factor model showing the relationship between the interpersonal relations factor and its measures is presented in Figure 2.4. This model delineates relationship

between observed variables (indicators) and the underlying latent construct patient experience of the interpersonal aspects of care.

This measurement model specifies that:

1. All items are correlated with each other.
2. A common factor patient experience of the interpersonal aspects of care underlies these items.

In addition to conducting confirmatory factor analyses to assess the validity of alternative conceptualizations of patient experience of care (four-factor model presented in Figure 2.2 and Figure 2.3 vs. one-factor model presented in Figure 2.4), the empirical examination of the validity of the resulting factor solution involved assessing cross-cultural and construct validity of the factor model using structural equation modeling techniques. Variables used to examine the cross-cultural and construct validity of the factor model are presented next.

### **2.2.5 Variables to Examine Cross-Cultural Validity of the Scale**

#### **Gender and Race/Ethnicity**

Individual's gender and race/ethnicity are fundamental aspects of his/her culture. Hence, the nature and significance of the factor(s) across gender and racial/ethnic groups were examined to assess the relevance, equivalence, and cross-cultural validity of the scale across gender and racial/ethnic groups. Individual's gender was based on interviewer assessment (female or male). Individual's race/ethnicity was created by combining individual's response to two questions, one about his/her race and another about his/her ethnicity. All individuals were assigned to one of four racial/ethnic categories (nonHispanic White, nonHispanic Black, Hispanic, Other).

## **2.2.6 Variables to Examine Construct Validity of the Scale**

### **Access to Care Measures as Predictors of Patient Experience of Care**

Construct validity (Cronbach & Meehl, 1955) is concerned with the theoretical relationship of a variable to other variables. It is examined by assessing the extent to which a measure of a construct “behaves” the way that the construct it purports to measure should behave with regard to established measures of other constructs (DeVellis, 2003). Construct validity of the latent factor(s) of patient experience of care was assessed by examining the magnitude, direction, and significance of correlation between the measures of the latent factors and measures of three access to care variables.

As presented in Chapter I, three access to care measures -- choice in place of care, usual source of care and length of relationship with usual source of care, and insurance status -- known to be theoretically associated with patient experience of care were used to assess construct validity of the factor solution. Items from the Commonwealth Fund 2001 Health Care Quality Survey were selected as measures of choice in place of care, usual source of care and length of relationship with usual source of care, and insurance status. Table 2.4 presents these items and response categories. All items are well accepted and widely used to measure these three access to care variables.

### **Health Care Outcome Measures as Outcomes of Patient Experience of Care**

Construct validity of the latent variables of patient experience of care was also assessed by examining the magnitude, direction, and significance of correlation between the measures of the latent factors and measures of four health care outcome variables known to be theoretically associated with patient experience of care.

As presented in Chapter I, individual's compliance with care, satisfaction with care, confidence in future care, and delay / postponement / foregone needed care have been theoretically associated with patient experience with the interpersonal aspects of care. Hence, these four constructs were included as outcome variables to test the construct validity of the scale(s) measuring patient experience of care. Items from the Commonwealth Fund 2001 Health Care Quality Survey were selected as measures of these four health care outcome variables. Table 2.5 presents these items and response categories. All items are well accepted and widely used to measure these four health care outcome variables.

### **2.2.7 Control Variables**

The construct validity of the scale using access to care and health care outcome measures was conducted by controlling for individual characteristics such as age, education, gender, race/ethnicity, nativity, and health status. These characteristics have been shown to be associated with patient experience of care, patient access to care, and patient health care outcomes. Statistically controlling for the effects of these individual characteristics reduced the likelihood of erroneously inferring the hypothesized relationship between patient access to care, patient experience of care, and patient health care outcomes. Individual's income was not included as a control variable since a large number of respondents did not provide this information.

The assessment of age was based on self-reported age and each individual was classified into one of five categories (18-29 years old, 30-39 years, 40-49 years old, 50-64 years old, 65 years and over). The assessment of education was based on self-reported education and each individual was classified into four categories (high school incomplete, high school diploma but no college, some college or technical, college graduate or more).

Gender was measured based on interviewer assessment (female, male). Race/ethnicity was measured as a composite of individual's response to two questions, one about race and another about ethnicity. Race/ethnicity was recoded into five categories (nonHispanic White, nonHispanic Black, Hispanic, Asian, Other). Nativity status was measured as a composite of individual's response to two questions, one about place of birth and second about length of time in the US. Respondents were classified into four mutually exclusive categories (US born, foreign-born who had been in the US for more than 10 years, foreign-born who had been in the US for 5-10 years, foreign-born who had been in the US less than 5 years). Health status was measured based on self-report and recoded into three categories (excellent/very good, good, fair/poor).

Since language barriers have been shown to have a negative impact on the quality of patient experience of care (Office of Minority Health, 2001; Crane, 1997; Carrasquillo et al., 1999; Weech-Maldonado et al., 2001; Morales et al., 1999; David & Rhee, 1998), individuals in each sample were categorized into two groups (Group 1 is English-proficient and Group 2 is non-English speaking/limited English-proficient) on the basis of two variables: the language of interview (English vs. Non-English) and respondent's fluency in English language assessed by the interviewer.

### **2.3 Data Analysis**

All analyses were conducted using SPSS 11.5 and Mplus<sup>®</sup> version 3.12 (Muthén & Muthén, 2004). Mplus<sup>®</sup> is a relatively new statistical modeling framework, which uses latent variables and provides researchers with a flexible tool to perform advanced multivariate statistical analysis, including multivariate regression, factor analysis, and structural equation modeling. It has special modeling capabilities for different types of data including binary,

continuous, ordered categorical (ordinal), and unordered categorical (nominal) variables, regardless of whether the variables are observed or latent, independent, intervening or dependent (Muthén & Muthén, 2004). The program allows use of sampling weights and clustering to analyze complex data. It also allows the examination of consistency of a model across multiple groups, i.e., allows one to conduct multiple group analysis to test for measurement invariance of a factor model across groups. For categorical outcomes (indicators), like the ones used in this study, it uses weighted least squares estimation procedures providing robust estimation of standard errors and robust chi-square tests of model fit, thus taking into account the non-normality of observed variables.

### **2.3.1 Analytical Steps**

Separate analyses were conducted using data from four samples (three calibration samples and one validation sample) to examine the reliability of the measures and validity of the four-factor model and to answer study research questions and to test study hypotheses. Because the data were collected using a complex sampling methodology, all analyses were conducted using weighted data.

Structural equation modeling (SEM) was the primary data analysis technique employed. A SEM model is a hybrid of a measurement model and a structural model. A measurement model delineates the relationships between items (observed variables/indicators) and the underlying latent construct/unobserved variable they are postulated to measure. A structural model defines direct and indirect links between latent constructs.

To assess the relationship between latent variables and their indicators, confirmatory factor analysis (CFA), which is a special case of structural equation modeling, was the data

analysis technique employed. Confirmatory factor analysis is a measurement modeling method used to evaluate measurement models (Bollen, 1989) in situations where the dimensionality of a set of variables is hypothesized based on prior research. CFA allowed the empirical examination of hypothesized relationships between the indicators and latent variables, correlation among errors, and covariance among factor(s). A flexible approach allowing respecification of the measurement model guided by the results at each step was employed. In order to minimize the possibility of making poor analytical decisions inherent in using a flexible approach and to ensure best possible decisions to guide the analysis at every step, common sense and conceptual understanding combined with substantive knowledge and empirical evidence played a critical role (Bollen, 1989). This analytical approach can be viewed as exploratory within a confirmatory factor analysis framework. Multiple-group CFA was employed to determine the consistency of the factor models across gender and racial and ethnic groups. Structural equation modeling was performed to test the construct validity of the factor models by specifying the relationships among the latent constructs of patient experience of care, and their predictors (patient access to care), and their outcomes (patient health care outcomes).

Cronbach's (1951) coefficient alphas were computed to measure the internal consistency of the items as measures of the latent factors in the model. Theoretically, Cronbach's alpha can take on values from 0.0 to 1.0. A high alpha is desirable since it reflects that the items are homogeneous, and that they measure the same underlying construct. Hence, they can be used as a scale as opposed to as discrete items to measure the underlying construct(s). Different methodologists recommend different values as the acceptable level of alpha. Nunnally (1978) suggests Cronbach's alpha of 0.70 as an



acceptable value, DeVellis (2003) suggests 0.70 to 0.80 as a respectable value, and 0.80 to 0.90 as very good. Item-scale correlation and the gain (loss) in internal consistency reliability resulting from dropping each item were also examined. An item with low or negative item-total correlation and gain or minimal loss in Cronbach's alpha resulting from dropping the item can be seen as not contributing significantly to the scale's homogeneity and to the measurement of the construct.

The first step in the analysis was to assess descriptive statistics for each item included in the analysis.

### **Descriptive Statistics**

Analyses were performed using SPSS 11.5 to describe the socio-demographic profile of the four samples. Socio-demographic variables (e.g., gender, age, race, ethnicity, education, income, marital status, family work status, family status), language of interview, a variable capturing place of birth and length of time in the United States, place of residence (urban, suburban, and rural), and census region (Northeast, Midwest, South, and West) were included to describe the samples. Two measures of respondent's health were included: overall health status and presence or absence of chronic disease. Descriptive analysis was also performed for the measures of patient centeredness, patient-doctor relationship, patient-doctor communication, cultural competency, three access to care variables, and four health care outcomes.

The analytical steps undertaken to answer the research questions can be divided into five phases. These steps were sequential in nature, meaning subsequent analytical steps were guided by the results of the preceding step(s), which is consistent with studies employing

confirmatory factor analyses within an exploratory framework. The analytical steps are presented next.

Analytical steps to answer the research questions (1 and 2) and to test associated hypotheses (1 and 2) comprised phase one and phase two.

**Research Question 1:** What are the relationships among the measures of four domains -- patient centeredness, patient doctor relationship, patient-doctor communication, and cultural competency -- of patient experience of care?

**Research Question 2:** What is the dimensionality of the scale(s) measuring the four domains of patient experience of care?

**Hypothesis 1:** The four domains of patient experience of care -- patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency -- are empirically highly related with each other.

**Hypothesis 2:** Patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency can be conceptualized as a one-dimensional concept of patient experience of the interpersonal aspects of care.

Phase one of the analysis, described next, used data from three calibration samples (English-proficient nationally representative sample (Sample 1-Group 1A), non-English speaking/limited English-proficient nationally representative sample (Sample 1-Group 2), and English proficient Asian sample (Sample 2-Group 1)) to answer research questions 1 and 2.

### **Internal Consistency Reliability**

The first step during phase one was to calculate Cronbach's alpha to estimate the internal consistency reliability of items as measures of all four constructs. Separate analyses

were conducted for the three calibration samples (Sample 1-Group 1A, Sample 1-Group 2, and Sample 2-Group 1). Cronbach's alpha for each measure, item-total correlation for each item, and the gain (loss) in internal consistency reliability of the scale resulting from dropping an item were reviewed. An item with low or negative item-total correlation and gain or minimal loss in Cronbach's alpha was taken as evidence that it was not contributing significantly to the measure's homogeneity. Cronbach's alpha was highest for the patient centeredness factor and varied somewhat across the three samples (0.75, 0.69, and 0.68 for Sample 1-Group 1A, Sample 1-Group 2, and Sample 2-Group 1, respectively). Cronbach's alpha was the lowest for the cultural competency factor (0.32, 0.48, and 0.31 for Sample 1-Group 1A, Sample 1-Group 2, and Sample 2-Group 1, respectively). For all three samples, five items (30, 33b, 42a, 42b, 59) showed very low item-total correlation (ranged from a low of 0.057 to a high of 0.167). There was a sizable gain in coefficient alpha for each measure when these items were dropped. Based on these findings, these five items were identified as poor measures of the four constructs across all three samples and were identified as candidates for exclusion from the factor model.

### **Confirmatory Factor Analysis**

Confirmatory factors analyses were performed to examine the validity of the two measurement models to test the extent to which the correlations among the measures of four domains of patient experience of care could be explained by four related but distinct factors (Figure 2.2 and Figure 2.3) vs. a common factor (Figure 2.4). Separate analyses were conducted using data for the three calibration samples.

I employed a "piecewise model fitting" strategy to conduct CFA (Bollen, 1989). This involved using a step-by-step process to estimate the components of the four-factor model in

an attempt to isolate the sources of misspecification. First, confirmatory factor analysis was performed to determine the validity of the four separate measurement models, one for each of the four latent constructs before estimating the full four-factor measurement model. For example, using Sample 1-Group 1A data, I estimated the factor model for patient centeredness and its six indicators and evaluated the results to assess model and component-fit measures.

For this analysis, the latent variables were assumed to be continuous. All observed variables were treated as categorical or binary variables and assumed to be effects of the latent variable (Bollen, 2002). Given the categorical nature of the indicators, each measurement model was estimated using weighted least square parameter estimates using a diagonal weight matrix with standard errors and mean- and variance-adjusted chi-square test statistic that use a full weight matrix (WLSMV), an estimator recommended for use for nonnormally distributed categorical data (Bollen, 1989; Muthén & Muthén, 2004). The WLSMV estimator is consistent, asymptotically unbiased, and asymptotically efficient (Bollen, 1989).

After the estimation step, the results of CFA were examined to assess the fit of the model to the data. Given the lack of consensus on the best measure of fit, results were examined on the basis of multiple measures of fit to give a more complete evaluation of model fit to the data. Two levels of fit were examined: (1) overall model fit, and (2) component level fit (Bollen, 1989).

The chi-square statistic and four fit indices were used as measures of overall model fit. The chi-square goodness-of-fit statistic tests the null hypothesis that the theorized model is a good fit to the data. A good-fitting model yields a small and non-significant chi-square

value at  $\alpha = 0.05$ , i.e., one fails to reject the null hypothesis that the model is a good fit to the data, whereas a large and significant value of the chi-square statistic, relative to its degrees of freedom, leads to rejection of the null and provides evidence that the theorized model is not a good description of the data (Hu & Bentler, 1998). However, the size of the chi-square statistic depends not only on model adequacy but also is sensitive to the sample size; a large sample has been shown to produce a significant chi-square value, pointing to the rejection of the null hypothesis (Bollen, 1989). Thus, it is very common for a well fitting model not to fit according to the chi-square goodness of fit statistic. Hence, caution is warranted in using the chi-square goodness-of-fit statistic in evaluating model adequacy (Jöreskog, 1978; Hu & Bentler, 1998; Bollen, 1989). For the present study, because of the large sample sizes, the chi-square statistic was likely to be significant leading to the rejection of null hypothesis, especially for Sample 1-Group 1A. Hence, four additional fit indices were used to quantify the degree of fit along a continuum and to supplement the chi-square test.

The fit indices included the comparative fit index (CFI) (Bentler, 1989; Bentler, 1990), the Tucker-Lewis Index (TLI) (Tucker & Lewis, 1973; Bentler & Bonett, 1980), the root-mean-square error of approximation (RMSEA) (Steiger & Lind, 1980; Steiger, 1989), and the standardized root-mean-square residual (SRMR) (Jöreskog & Sorbom, 1981; Bentler, 1995). The cutoff criteria for the fit indices employed for this study were as follows: values of  $CFI \geq 0.95$ ,  $TLI \geq 0.95$ ,  $RMSEA \leq 0.06$ , and  $SRMR < 0.08$  were taken as an indication of an excellent model fit (Yu, 2002; Hu & Bentler 1998).

Additionally, I examined the component level fit for the model (Bollen, 1989). This included a) strength of intercorrelations between the observed variables; b) significance (calculated by dividing the parameter estimate by the standard error of the parameter

estimate: a statistical test with an approximately normal distribution in large samples; the critical value for a two-tailed test at the  $\alpha=0.05$  level is an absolute value greater than 1.96), sign, and magnitude of standardized factor loadings for each indicator (estimate of the direct effect of the factor on the indicator); and c) the squared multiple correlations ( $R^2$  values) of the indicators (amount of variance of an indicator that is uniquely attributable to/explained by the latent construct). I also examined the amount of common variance among the indicators explained by the latent factor.

Results from these analyses were reviewed to assess elements of component-level fit of the model to the data. Findings were utilized to respecify the model (Bollen, 1989). If an indicator had low or negative correlation with other items in the model, insignificant and weak factor loading, or exhibited low  $R^2$  value, it was considered a poor measure of the underlying latent variable. Item performance was assessed across measurement models in each sample to identify items that were functioning poorly in the models. Items 30, 33b, 42a, 42b, and 59 (the same items that were identified as poor measures according to internal consistency reliability analysis) showed low correlation with other items, had low factor loadings, and had low  $R^2$  values; therefore, these items exhibited characteristics that would deem them poor measures of the underlying latent variables. Each item was evaluated for its conceptual contribution to the measurement model and the consequences of dropping the item. In light of this evidence, a decision was made to drop these five items from further analyses.

Next, combinations of two factors were estimated and the results were evaluated using overall model fit and component fit measures. For example, using Sample 1-Group 1A data, a two-factor model for patient centeredness and its six indicators, and patient-doctor

relationship and its eight indicators (Figure 2.2 and Figure 2.3) was estimated and results were evaluated to assess the validity of two-factor model. This procedure was continued until a full four-factor model (with 10 indicators for Sample 1-Group 1A and Sample 2-Group 2, and with 11 indicators for Sample 2-Group 1) with uncorrelated measurement errors was estimated for each sample. The hypothesis compared the fit of the model allowing all variables to correlate and the factors to covary to a baseline model assuming all observed variables to be uncorrelated. Results of the CFA were evaluated to assess the sign and significance of the parameter estimate, residuals for each indicator, and correlation with other items. Results showed that for items 32b and 40, the underlying factors were explaining less variance than they were for the remaining eight items in the model. However, both these items had significant factor loadings and moderate level of correlation with other items, offering evidence that they were acceptable indicators of the underlying factors. Furthermore, since items 32b (whether the patient felt that the doctor looked down on him/her), and 40 (whether the patient perceived disrespect or unfair treatment) measured critical attributes of patient experience of care, a decision was made to retain these items for conceptual reasons.

Results of the four-factor CFA indicated high correlation between three of the four factors. Correlation between patient centeredness and patient-doctor relationship, patient-doctor relationship and patient-doctor communication, and patient centeredness and patient-doctor communication was high ranging from 0.85 to 0.92 across all three samples. This high correlation was taken as evidence that the three factors (patient centeredness, patient-doctor relationship and patient-doctor communication) were measuring the same construct. This evidence guided the respecification of the model after combining these three factors

(patient centeredness, patient-doctor communication and patient-doctor relationship) into one factor.

Next, the two-factor model was specified and estimated. This two-factor model showed an adequate fit to the data for all three calibration samples based on the criteria of overall model and component fit. The correlation between the two factors was greater than 0.50 for all three samples. This moderate correlation did not provide evidence to combine the two factors into a single factor. However, further review of the results revealed that only item 40 had a significant loading on the second factor (cultural competency) across all three samples. Review of the frequency distribution of responses to item 40 provided evidence that this item was being endorsed by 10% of adults in Sample 1-Group 1A, and 20% of adults in Sample 1-Group 2 and Sample 2-Group 1. In light of this, the two-factor model can be interpreted to mean that for 90% of adults in Sample 1-Group 1A, a one-factor model underlies the measures, while a two-factor model is a better fit to the data for the remaining 10% of adults. For Sample 1-Group 2 and Sample 2-Group 1, it meant that for 80% adults the one-factor structure accounted for all of the variance in the model while the two-factor structure held for the remaining 20% adults.

Consequently, I specified a one-factor model and compared the results with the two-factor model for each sample. This one-factor model showed an adequate fit to the data for all three samples. The amount of variance in each indicator explained by the underlying factor, the magnitude and significance of factor loadings, and the amount of common variance explained in the indicators by the factor did not change meaningfully between the one-factor and two-factor models. As a result, given its simplicity, parsimony, applicability to the full sample, and in light of the apriori conceptualization that the relationships between



the four distinct but related domains of patient experience of care can be represented by a single construct, the one-factor solution was selected in favor of the two-factor solution. Next, the one-factor model was respecified with correlated error terms (Figure 2.5). This measurement model differs from the model presented in Figure 2.4 in two ways: 1) it has five fewer items (30, 33b, 42a, 42b, and 59) since these items were dropped as reported earlier, and 2) it incorporates correlated measurement error terms. The curved arrows between error terms of two observed variables indicate that these error terms were assumed to be correlated. Several pairs of unique factors were assumed to be correlated guided by substantive (errors in two items were assumed to be correlated if the content or wording of the items was similar) and methodological considerations (if two items were located sequentially in the survey, or if the response categories for two items were similar). Measurement error terms for items 20 and 21, items 25 and 26, items 32a and 32b, items 32b and 40, items 23 and 24, items 21 and 22, items 24 and 32b, items 21 and 74, items 22 and 74, and items 25 and 74 were postulated to be correlated. This one-factor model with correlated errors was estimated. Correlated measurement errors tested the possibility that indicator variables correlate not only because they are caused by a common factor, but also because of common or correlated unmeasured variables. Correlated errors found to be significant were retained in the model.

Next, this one-factor model with correlated measurement errors was compared to the more parsimonious one-factor model with uncorrelated error terms. The one-factor model with correlated error terms was a better fitting model and hence, was selected over the one-factor model with uncorrelated error terms. This one-factor solution was consistent with the theory-driven conceptualization and research hypotheses that the four domains of patient

experience of care -- patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency -- could be represented by a single construct patient experience of the interpersonal aspects of care.

Once the best fitting factor model underlying the measures of patient experience of care was identified, Cronbach's alpha was computed for the 10 items retained for the English-proficient samples (Sample 1-Group 1A, and Sample 2-Group 1), and 11 items retained for the non-English/limited English proficient sample (Sample 1-Group 2). Internal consistency reliability of these items was examined to assess how well the items measured the same underlying factor for each sample. This concluded the analytical steps undertaken to empirically examine the two alternative conceptualizations of patient experience of care -- policy-driven four-dimensional vs. theory-driven one-dimensional -- using confirmatory factor analysis techniques.

During the second phase of analysis, I examined the validity of the factor solution obtained during the first phase. Sample 1-Group 1B was set aside to validate the findings for the English-proficient nationally representative calibration sample (Sample 1-Group 1A). Additionally, data from Sample 1-Group 1A and Sample 1-Group 1B were combined to form Sample 1-Group 1 and these data were analyzed to obtain stable estimates for the English-proficient nationally representative population. Smaller size of the remaining two samples (Sample 1-Group 2 and Sample 2-Group 1) precluded me from conducting analysis to validate the results for these two samples.

During phase two, I examined the validity of the one-factor solution obtained from the first phase using data from the validation sample of English-proficient adults from the nationally representative sample (Sample 1-Group 1B). Results were reviewed using the

overall model fit and component fit measures. Next, to obtain stable parameter estimates using the factor analytic procedure, a one-factor model with correlated errors was estimated using Sample 1-Group 1 data (data from Sample 1-Group 1A + Sample 1-Group 1B = Sample 1-Group 1: all English-proficient adults from the nationally representative sample, n=5006). Results were reviewed using the overall model fit and component fit measures to test the hypothesis that a one-factor model is a good fit to these data. The results of these analyses confirmed the validity of the one-factor solution obtained from the first phase of analysis. Cronbach's alpha was computed and reviewed to determine the internal consistency reliability of the items for the two samples (Sample 1-Group 1B and Sample 1-Group 1). Item-scale correlation and gain (loss) in alpha from dropping an item were examined to assess the performance of each item as a measure of the underlying factor.

The results from first and second phase confirmed that a one-factor model fits the data for all five samples. Cronbach's alpha was moderate to high for all five samples indicating that the measures of patient experience of care are homogeneous. All items demonstrated moderate to high item-total correlation indicating that they are acceptable measures of the same underlying construct and can be used as a scale. Hence, I concluded that these items measuring patient experience of care form a one-dimensional scale.

Next, I reviewed the content of the 10 items for the English-proficient samples and 11 items for the non-English speaking/limited English proficient sample retained in the factor model in order to define the meaning of the underlying latent variable (DeVellis, 1991; Nunally, 1978). When reviewing the items of a scale developed using confirmatory factor model, the process of interpreting and defining the meaning of the underlying factor(s) is focused on determining if the theme(s) that emerge from the review of the items match the

researchers' a priori expectations, which are grounded in the empirical literature, insights, and theory. The Bruce (1990) quality of the service experience framework, and evidence from the literature on quality of service experience and the interpersonal aspects of care (Gerteis et al., 1993; Jain, Bruce, & Mensch, 1992; Spiezer & Bollen, 2000; Donabedian, 1988; Ensign, 2004; Mavalankar & Sharma, 1999; Tanassi, 2004; Salber, 1975; Shapiro, Hollinghead, & Morrison 2002; Haddad et al., 2000; American Board of Internal Medicine, 2003; ACGME, 2005; Rider & Perrin, 2002; Iezzoni et al., 2003; Wickizer et al., 2004; National Board of Medical Examiners, 2005; Kassebaum & Eaglen, 1999; Purtilo, 1990; Teutsch, 2003) had originally guided the proposal for the alternative conceptualization that a common factor underlies these items. This proposal guided the conclusion that the 10 and 11 items measure patient experience of the interpersonal aspects of care. The one-dimensional scale, thus developed, could be referred to as the patient rating of interpersonal aspects of care (PRIAC).

### **Analysis of Scale(s) Scores**

During the third phase of analysis, each individual's responses to the items retained in the scale were linearly summed to calculate scale scores. Separate analyses were conducted for all five samples. The resulting scale score represents patient rating of interpersonal aspects of care (PRIAC). Both the average score and standard deviation for each sample were calculated. Distribution of individual scores for the PRIAC scale was calculated and examined for each sample.

### **Multiple Group Confirmatory Factor Analysis**

In the fourth phase, analysis was conducted to examine the cross-cultural validity of the one-factor solution across males and females and across four racial/ethnic groups for the

English-proficient sample. This analysis was undertaken to test whether the pattern of relationships among the measures of four domains of patient experience of care holds equally well across gender and racial and ethnic groups using data from Sample 1-Group 1A (the English-proficient nationally representative calibration sample). Evidence that the common factor is being measured similarly across gender and four racial and ethnic groups would provide evidence for cross-cultural validity of the one-factor solution. It would mean that future analysis examining the relationships between patient experience of care and its theoretically or empirically suggested predictors and outcomes need not be conducted separately for males and females or for racial and ethnic groups.

Analysis was conducted to answer the research questions (3 and 4) and to test the associated study hypotheses (3 and 4).

**Research Question 3:** Are males and females the same with respect to the measurement of patient experience of care? Does the resulting factor structure underlying the measures of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency hold across gender?

**Hypothesis 3:** The factor structure underlying the measures of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency is the same for males and females.

**Research Question 4:** Are four racial/ethnic groups homogeneous with respect to the measurement of patient experience of care? Does the resulting factor structure underlying the measures of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency hold across racial/ethnic groups?

**Hypothesis 4:** The factor structure underlying the measures of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency is the same across four racial and ethnic groups.

Multiple group confirmatory factor analyses were conducted to assess whether the one-factor structure holds across gender and across racial and ethnic groups. First, the validity of the one-factor solution (the one-dimensional scale measuring interpersonal relations) across males and females was examined. Testing for invariance in the factor structure across males and females involved testing for similarity in model form and parameter values (Bollen, 1989). Evidence that the factor loadings for the indicators, and means and variances of the latent variable vary for males and females would suggest that the factor is being measured differently for males and females. This would mean that the indicators do not measure patient experience of care equally well across gender.

In testing for invariance or equivalency of factor structure across gender, I first tested for non-equivalency of the factor structure underlying the indicators across males and females. A one-factor model was estimated simultaneously for males and females using Sample 1-Group 1A data without restricting any of the parameters to have the same values across the two groups. This procedure represented the least demanding test of comparability between the factor models of males and females, allowing me to determine whether the factor model has the same form (i.e., the number of factors, pattern of loadings, parameter estimates,  $R^2$ s are equal) across the two groups (Bollen, 1989). The one-factor model showed an excellent fit to the data for both males and females; hence, I proceeded with the second step in multiple group confirmatory factor analysis.

I assessed whether the one-factor model with equality constraints on the coefficients linking the latent variables to the observed variables (thresholds and factor loadings) fits the data for males and females. Confirmatory factor analysis was performed using Sample 1-Group 1A data by specifying a one-factor model and using gender as the grouping variable. I examined the hypothesis that the factor loading parameter estimates (thresholds and factor loadings for all indicators) are equal across males and females. The results of this constrained model were compared with the results of the unconstrained model (from CFA conducted in Phase one using Sample 1-Group 1A data). The fit of the constrained model was not significantly worse than the unconstrained model, hence, I concluded that indicators are valid measures of the underlying factor for males and females.

Next, I tested the most restrictive hypothesis that all parameter matrices and the factor structure are equal in males and females. A fully constrained model was estimated by holding thresholds, factor loadings, and correlated errors equal across males and females. Comparison of the nested constrained model and chi-square difference test to compare the relative fit of these three models was not feasible since the analysis used WLSMV estimator (Muthén & Muthén, 2004). Results testing each hypothesis were evaluated using goodness-of fit measures to assess if the hypothesis of equivalency of factor structure and measurement invariance across males and females was supported by results of multiple-group CFA. Results were also reviewed to assess the degree of invariance best matched the data. If the fit of the most restrictive model with equality constraints to the data for males and females was deemed not significantly different from the unconstrained and less restrictive models, the conclusion would be that the indicators measure patient experience of care equally well across males and females.

Once the analysis to examine factor structure invariance across gender was completed, multiple-group confirmatory factor analysis was conducted to determine whether the one-factor structure holds across four racial/ethnic groups (Non-Hispanic White, Non-Hispanic Black, Hispanics, and “Other”). Analysis was conducted using Sample 1-Group 1A data and steps undertaken to examine the factor structure invariance across gender were repeated for the four racial/ethnic groups.

Once the one-factor measurement model was deemed valid and fitting the data for all five samples as well as across gender and racial/ethnic groups for Sample 1-Group 1A (the English-proficient calibration sample), I proceeded to evaluate the construct validity of the one-factor model and the one-dimensional scale in measuring patient experience of care.

### **Structural Equation Modeling to Test Construct Validity**

In the fifth and final phase of analysis, the validity of the one-dimensional scale (and the one-factor model) was evaluated to answer research questions (5 and 6) and test the associated hypotheses (5 and 6).

**Research Question 5:** Are the domain(s) of patient experience of care and three access to care measures (usual source of care and length of relationship with the usual source of care, choice in the place of care, and insurance status) associated in a manner predicted by theory and prior empirical evidence?

**Hypothesis 5:** Individuals who report having a better experience of care with their physician will also have better access to care (have a usual source of care, have a longer-term relationship with the usual source of care, have a choice in their place of care, and have continuous insurance coverage).



**Research Question 6:** Are the domains(s) of patient experience of care and four health care outcomes (overall satisfaction with quality of care, compliance with care, confidence in seeking future care, and no delay/postponing of care) associated in a manner predicted by theory and prior empirical evidence?

**Hypothesis 6:** Individuals who report having a better experience of care with their physician will be more likely to report experiencing more favorable health care outcomes (higher satisfaction with quality of care, better compliance with care, greater confidence in seeking future care, and less likely to report that they had delayed/postponed/foregone care).

Scale validation involved examining the construct validity of the scale. Construct validity (Cronbach & Meehl, 1955) is concerned with the theoretical relationship of a variable to other variables and is examined by assessing the extent to which a measure “behaves” the way that the construct it purports to measure should behave with regard to established measures of other constructs (DeVellis, 2003). Construct validity of the scale was assessed by examining the magnitude, direction, and significance of correlation between a) the measures of patient experience of care and measures of access to care (choice in place of care, usual source of care and length of relationship with usual source of care, insurance status), and b) the measures of patient experience of care and measures of health care outcomes (compliance with care, satisfaction with care, confidence in future care, delay / postponement / foregone needed care), as predicted by theory and prior empirical evidence.

Construct validity of the one-factor model and the scale measuring patient experience of care was examined by employing structural equation modeling. A fully hypothesized model (Figure 1.2) showing cross-sectional linkages between predictors and outcomes of patient experience of care was estimated using SEM. Structural Equation Modeling allowed

the simultaneous testing of relationships among predictor variables (measures of three access to care variables), patient rating of interpersonal aspects of care and outcome variables (measures of four health care outcomes) while controlling for the effects of demographic variables known to be associated with patient rating of interpersonal aspects of care. Separate analyses were conducted for all five samples (Sample 1-Group 1A, Sample 1-Group 1B, Sample 1-Group 1, Sample 1-Group 2, Sample 2-Group 1).

First, a SEM with the three access to care measures (continuity of care, continuity of insurance, and choice in source of care) as determinants/predictors of patient experience of care factor was estimated. Results were examined to determine the extent to which empirical correlation of the patient experience of care factor with continuity of care, continuity of insurance, and choice in the place of care matched with the predicted patterns. A positive and significant standardized regression coefficient for each access to care measure was taken as evidence of construct validity. Evidence supporting the a priori hypotheses that individuals who report having better experience of care with their physician will also have better access to care (continuity of care, continuity of insurance, and choice in the place of care) indicated construct validity of the one-dimensional scale and the one-factor structure of patient experience of care.

Next, the SEM was estimated with the four health care outcome measures (satisfaction with quality of care, confidence in getting needed care in the future, no delay / postponement / foregoing of care, compliance with treatment recommendations) entered as outcomes of patient experience of care factor. Results were examined to determine the extent to which empirical correlation of the patient experience of care factor with satisfaction with quality of care, confidence in getting needed care in the future, no delay / postponement

/ foregoing of care, and compliance with treatment recommendations matched with the predicted patterns. Positive and significant standardized regression coefficient for the PRIAC scale score with each of the four health care outcomes measures (overall satisfaction with the quality of care, compliance with care, confidence in getting good medical care in the future, and delay / postponement / foregone needed care) was indicative of construct validity of the one-dimensional scale and the one- factor structure of patient experience of care.

The final step in the analysis was to estimate the full model with three access to care variables as predictors of patient experience of care, and patient experience of care as predictor of four health care outcomes, after controlling for the effects of individual characteristics (age, education, gender, race/ethnicity, nativity, and health status). Results were examined to see if the theoretically hypothesized relationships between access to care measures and patient experience of care, and patient experience of care and health care outcome measures, are supported after controlling for individual characteristics.

## **CHAPTER III**

### **RESULTS**

The study results are presented in this chapter in four sections. First, I present characteristics of the four study samples. Second, I present results supporting the validity and reliability of the one-factor conceptualization of patient experience of care. Third, I present results from the assessment of cross-cultural and construct validity of the scale measuring patient experience of care. Finally, I conclude by summarizing key results.

#### ***3.1 Descriptive Statistics***

##### **3.1.1 Demographic Characteristics**

Statistics are presented for all socio-demographic variables to describe the demographic profile of all four study samples (Table 3.1). I present this information in two ways: 1) sample characteristics, and 2) corresponding estimates for the U.S. population (weighted proportions) for each sample. Table 3.1 presents demographic characteristics and the general health profile. Table 3.2 presents the corresponding proportions for the U.S. population. Next, I describe the English-proficient nationally representative samples (Sample 1-Group 1A, the calibration sample, and Sample 1-Group 1B, the validation sample), followed by the non-English speaking/limited English-proficient sample (Sample 1-Group 2), and then describe the English-proficient Asian sample (Sample 2-Group 1).

### **Sample 1-Group 1A and Sample 1-Group 1B, Sample Characteristics**

Columns 2 and 5 in Table 3.1 present information on the demographic characteristics of 2,496 adults in Sample 1-Group 1A (calibration sample drawn from the English-proficient nationally representative sample), and 2,510 adults in Sample 1-Group 1B (validation sample drawn from the English-proficient nationally representative sample). Sample 1-Group 1A and Sample 1-Group 1B are two random samples drawn from one sample; so, by design, the respondents in these two samples are equivalent. Sixty-nine percent of respondents in these two samples lived in either the South or the West, and the rest lived in the Northeast or the Midwest at the time of the survey. For both samples, a vast majority resided in urban (~45.5%) or suburban (~42%) areas. All respondents were interviewed in English. A vast majority (~84%) of respondents in both samples was native-born and another 11% had lived in the U.S. for over 10 years at the time of the survey. A very small minority (~2%) had been in the U.S. for less than 10 years; only 0.5% chose not to report their place of birth and the duration of time they had been in the U.S.

For both samples, over half (~58%) identified themselves as non-Hispanic white, and about 17% reported being non-Hispanic black. For Sample 1-Group 1A, 12.5% self-identified themselves as Hispanic; the remaining 7% and 5.5% were categorized as Asian and “other” categories, respectively, for this study. For Sample 1-Group 1B, 10.4% self-identified themselves as Hispanic; the remaining 8.4% and 6.7% were categorized as Asian and “other” categories, respectively. Forty percent were under 40 years of age while ~16% were 65 years and older. Over half (56% and 59.3%, respectively) were females. About 30% had completed college, another ~28% had attended some college or technical school, about 30% had a high school diploma but no college, and 12% had not completed high

school. About a quarter in both samples (26.5% and 24.8%, respectively) were married and had children, an additional 14% were single and had children; 27% reported having never been married. Three-fourths (77.5% and 76.5%) of the respondents were living in a household with at least one full-time or part-time worker, the remaining 22.4% and 23.4% in each sample were living in a household with no workers in the family. About a fifth (20.2% and 19.3%, respectively) reported a family income of  $\geq$  \$75,000 per year; 14.5% and 16.4% didn't know or refused to report their income; and another 15.9% and 16.7% in each sample reported that their family income was under \$20,000.

In terms of their health, one of seven adults in Sample 1-Group 1A (14.8%) and Group 1B (13.9%) rated their health as fair or poor, and one of two adults (~52%) reported having a chronic disease, defined by a self-report of: a) having been diagnosed by a doctor in the five years prior to the survey as having one or more of seven chronic diseases (high blood pressure, heart disease, cancer, diabetes, anxiety/depression, obesity, asthma), or b) being prevented to a great or a fair extent from participating in daily activities due to a health problem or disability. In summary, Sample 1-Group 1A (calibration sample) and Sample 1-Group 1B (validation sample) respondents, both from the English-proficient nationally representative sample, were similar on demographic characteristics and general health profile measures.

### **Sample 1-Group 1A and Sample 1-Group 1B, Population Characteristics**

As presented in Table 3.2, column 2 and column 5, the Sample 1-Group 1A and Sample 1-Group 1B study populations were predominantly non-Hispanic white (75.6% and 72.2, respectively), all responded to the survey in English. Over a third (37.6% and 34.4%) were living in the South, an additional 20.8% and 22.2% were living in the West,

approximately a quarter were living in the Midwest, and under 20% were living in the northeast. All but 21% were residing in either urban (~31%) or suburban (~48%) areas. Most (~91%) were native-born; an additional 7-8% reported having been in the U.S. for five or more years. About 40% were under 40 years of age, and over half (56% and 59.3%) were females. Over half (55.7% and 58.2%) of these survey populations had attended some college; 12% had not completed high school. A little over 30% were married and had children, an additional 11% were single and had children; 19% reported having never been married. Three-fourths (77.6% and 76.6%) were living in a household with at least one full-time or part-time worker, the remaining 22.3% and 23.2% in each survey population were living in a household with no workers in the family. Eighteen percent reported a family income of  $\geq$  \$75,000 per year; about 16% did not know or refused to report their income; and another 15.4% and 16.8% in each survey population reported that their family income was under \$20,000. In terms of their health, 16.4% and 14% of these two populations reported being in fair or poor health; 55.4% and 53.4% reported having a chronic disease.

### **Sample 1-Group 2, Sample Characteristics**

Table 3.1, column 3 presents information on demographic characteristics and general health profile for the Sample 1-Group 2, the non-English speaking/limited English-proficient sample from the nationally representative sample. Of the 344 adults, a vast majority (75.9%) responded to the survey in Spanish. Another 10.2% responded in Mandarin/Cantonese, 4.1% in Korean, and 5.2% in Vietnamese. The vast majority (85.8%) reported being Hispanic; the remainder were Asian (12.8%) and less than 1% reported being white, black or other. Over half (55.2%) lived in the West, a quarter (24.7%) lived in the South, 15.7% lived in the Northeast and under 5% lived in the Midwest at the time of the survey. Most resided in

urban (55.2%) or suburban (40.4%) areas. While only 8.4% adults were U.S. born, another 58.4% and 17.4% had lived in the U.S. for over 10 years and 5-10 years, respectively, at the time of the survey. Fourteen percent had been in the U.S. for less than 5 years; 1.7% chose not to report on their place of birth and the duration of time they had been in the U.S. Over half (54.7%) were under 40 years of age, an additional third (34.9%) were 40-64 years of age, and less than 10% were over 65 years of age. Over two-thirds were females (68.9%). Adults in this sample were the least educated among all four samples included in this study, under half (45.6%) not having completed high school, and an additional quarter (24.7%) having completed high school but not attended any college. A little over a quarter (27.9%) had either attended some or completed college. About half of the sample (48.8%) were married and had children, and an additional 18% were single and had children; 17% reported having never been married. Eighty-one percent of the sample lived in a household with at least one full-time or part-time worker; the remaining were living in a household with no workers in the family. Only 2.3% reported a family income of  $\geq$  \$75,000 per year; 31.4% did not know or refused to report their income; and another 29.4% reported that their family income was under \$20,000.

Adults in this sample reported the lowest levels of health among all four samples. Over a third (38.1%) rated their health as fair or poor. However, similar to the English-proficient nationally representative samples, half of the adults reported having a chronic disease.

### **Sample 1-Group 2, Population Characteristics**

As presented in Table 3.2, column 3, the non-English speaking/limited English-proficient population lived predominantly in the West (42.1%) or the South (36.1%); most



(89.8%) resided in urban or suburban areas. A vast majority (78.4%) responded to the survey in Spanish and self-identified themselves as Hispanic (93.7%). While only 9.1% of this survey population was US-born, an additional 72.3 had been in the US for five or more years. Over half (53.9%) of the total population was under 40 years of age, and about two-thirds (62%) were females. A vast majority of this population had not attended any college (77.1%). Forty-seven percent were married and had children, an additional 17.1% were single and had children, and 16.6% reported having never been married. Most (71%) were living in a household with at least one full-time worker; an additional 10.5% were living in household with part-time workers. A third (31.9%) reported a family income of < \$20,000; 27.2% didn't know or refused to report their income. In terms of their health, over a third (37.5%) reported being in fair or poor health; 51.1% reported having a chronic disease.

### **Sample 2-Group 1, Sample Characteristics**

Table 3.1, Column 4 presents information on Sample 2-Group 1, the English-proficient Asian sample. This is, by design, a mostly Asian (98.2%) sample. Of the 341 adults, about a third resided in the West (32.6%), about a quarter resided in the Northeast (27.6%) or the South (26.7%), and only 13.2% resided in the Midwest. Almost all lived in suburban (57.8%) and urban (40.8%) areas; only 1.5% lived in rural areas. While only one of five (21.7%) were native-born, another 69% had been in the U.S. for over five years. Overall, this was a young sample, with 65% respondents under age 40 years, another 30% under age 65 years, and only 3.5% over age 65 years. This sample was split equally across gender (52.2% female). Adults in this sample were highly educated: 86.6% had attended or completed college, another 11% had a high school diploma, and only 1.5% had not completed high school. About a third of the respondents (34.6%) were married and had

children; an additional 11.7% were single and had children; 39.9% reported having never been married. Eighty-five percent of the sample lived in a household with at least one full-time or part-time worker; the remaining were living in a household with no workers in the family. About thirty-two percent reported a family income of  $\geq$  \$75,000 per year; 17.9% didn't know or refused to report their income; and only 6.7% reported that their family income was under \$ 20,000. In terms of their health, 12% rated their health as fair or poor; and 37.5% reported having a chronic disease.

### **Sample 2-Group 1, Population Characteristics**

As presented in Table 3.2, column 4, this population was predominantly Asian (98.5%), living in the West (41.3%) or the South (22.5%), almost all resided in either urban (38.9%) or suburban (60%) areas. While only 20.8% were native-born, an additional 70.4% reported having been in the U.S. for five or more years. About two-thirds (63.9%) of the survey population was under 40 years of age, and about half (51.7%) were females. A vast majority had attended some college (84.7%). Thirty seven percent were married and had children, an additional 13% were single and had children, and 38.1% reported having never been married. Three-fourths (74.5%) were living in a household with at least one full-time worker; an additional 9% were living in household with part-time workers. A third (32.3%) reported a family income of  $\geq$  \$75,000 per year; 18.9% didn't know or refused to report their income. In terms of their health, 12.4% of the total population reported being in fair or poor health; 41.2% reported having a chronic disease.

In conclusion, from the information presented in Table 3.1 and 3.2, it is evident that, as expected, the calibration and the validation sample of the English-proficient nationally representative study samples (Sample 1-Group 1A and Sample 1-Group 1B, respectively) did

not differ on any demographic characteristics. Sample 1-Group 1A and Sample 1-Group 1B were predominantly non-Hispanic White, and are demographically representative of the English-proficient U.S. population in 2000. Across the four study populations, a majority of respondents resided in urban or suburban areas and only a small minority resided in rural areas at the time of the survey. Furthermore, a majority reported that they were US-born or had been in the US for more than 10 years. All respondents except those in Sample 1-Group 2 were interviewed in English. Sample 1-Group 2 population was largely Spanish-speaking, Hispanic, young, and female. This population compared to the other three (Sample 1-Group 1A, Sample 1-Group 1B, and Sample 2-Group 1) was least educated, had the highest proportion of adults earning less than \$20,000 and lowest proportion of adults earning more than \$75,000. By design, all of Sample 2-Group 1 respondents were interviewed in English and almost all were Asian (98.2%). This population was young, highly educated, had the highest proportion earning over \$75,000, and had the highest proportion reporting having never been married.

### **3.1.2 Access to Care and Health Care Outcomes Measures**

Descriptive statistics for the three access to care variables and four health care outcome variables are presented in this section for all four samples. I present this information in two ways: 1) sample characteristics, and 2) corresponding estimates for the U.S. population (weighted proportions). Figures 3.1, 3.3, 3.5, and 3.7 present access to care measures for the four study samples. Figures 3.2, 3.4, 3.6, and 3.8 present corresponding estimates on access to care measures for the U.S. population. Figures 3.9, 3.11, 3.13, and 3.15 present data on healthcare outcome measures for the four study samples. Figures 3.10,

3.12, 3.14, and 3.16 present corresponding estimates on healthcare outcome measures for the U.S. population.

### **Sample 1-Group 1A and Sample 1-Group 1B, Sample Characteristics**

Adults in the two English-proficient nationally representative samples were similar on four commonly used measures of access to health care: usual place of care, choice in place of care, having a regular doctor and continuity of care with the regular doctor, and continuity of insurance coverage (Figures 3.1, 3.3., 3.5, and 3.6). Over three-fourths (78.6% and 79.6% in Sample 1-Group 1A and Sample 1-Group 1B, respectively) reported that they go to a doctor's office / private clinic when they are sick or need health care; 5.9% and 4.9% (about 1 of 20) reported having no regular place where they seek care, or that the emergency room is their usual source of care. A little under half in both samples (48.5% and 49.8%) reported having a great deal of choice in where they go for medical care; an additional 31.8% and 30.6% reported having some choice, while about 20% reported having very little or no choice at all. Eighteen percent of adults in both samples said they had no regular doctor.

Approximately a third said they had been seeking care from the same doctor for more than five years, an additional 20% had been seeking care from the same doctor for about three to five years, and the rest, 28%, had been seeking care from the same doctor for less than two years. Approximately one in five (19%) lacked health insurance coverage for all or part of the year prior to the survey, and the remaining 81% had continuous coverage.

Adults in the two samples were also similar in their response to four health care outcomes: satisfaction with quality of health care services, confidence in their ability to get good medical care in the future, compliance with care, and delay or postponement or not seeking needed care (Figures 3.9, 3.11, 3.13, and 3.15). With respect to their satisfaction

with the quality of health care services they had received, about 60% and 32% reported being very or somewhat satisfied, respectively; the remainder (8%) reported being somewhat or very dissatisfied. Although all respondents included in this study had visited a health care provider during the two years prior to their participation in the survey, the number of adults reporting confidence in their ability to get good medical care in the future when they need it was quite low. Only 47% reported they were very confident, about 38% reported being somewhat confident; the remaining 15% reported being not too confident or not at all confident. In terms of compliance, one in four adults reported that there had been a time during two years prior to the survey when they had not followed their doctor's advice. Finally, one in five reported that they had delayed, postponed or foregone needed medical care during the 12 months prior to the survey. In summary, Sample 1-Group 1A (calibration sample) and Sample 1-Group 1B (validation sample) respondents, both from the English-proficient nationally representative sample, were similar on access to care, and health care outcomes measures.

### **Sample 1-Group 1A and Sample 1-Group 1B, Population Characteristics**

The two English-proficient nationally representative sample populations -- Sample 1-Group 1A and Sample 1-Group 1B -- were similar in terms of their access to health care services (Figures 3.10, 3.12, 3.14, and 3.16). Over six percent (6.39% and 6.15%, respectively) reported having no regular source of care or having sought care at the hospital emergency room. About 16% and 18%, respectively, reported having very little or no choice in where they went for care. About 16% and 18%, respectively, reported not having a regular doctor. About eighteen percent in each group reported having no insurance at the time of the survey or discontinuity in health insurance over the year prior to their

participation in the survey. In terms of their health care outcomes, only 9.1% and 7.2% of the total population reported being somewhat or very dissatisfied with the quality of health care they had received during two years prior to their participation in the survey. However, 13.2% and 14.1% of the total population stated that they were not very confident or not at all confident that they can easily get good medical care when they need it in the future.

Approximately one quarter (25% and 24.4%, respectively) reported they had not complied with their doctor's recommendations. A fifth (20.1% and 20.5%, respectively) reported they had either postponed, delayed or foregone seeking needed medical care during the 12 months prior to their participation in the survey.

### **Sample 1-Group 2, Sample Characteristics**

As presented in Figures 3.1, 3.3, 3.5, and 3.7, of the non-English speaking/limited English-proficient nationally representative sample, only half (50.6%) reported that they go to a doctor's office / private clinic when they are sick or need health care. Another third (32%) reported they go to a community health center or public health clinic for care. One of ten reported having no regular source of care, or that the emergency room is their usual source of care. Furthermore, 42.7% reported having a great deal of choice in where they go for medical care, an additional 22.4% reported having some choice, while a third (34.8%) reported having very little or no choice. Under half of the adults (44.8%) said they had no regular doctor, and an additional 22.4% had been seeking care from the same doctor for less than two years. Approximately, 14 percent said they had been seeking care from the same doctor for more than five years; only one in five (19.2%) reported seeking care from the same doctor for about three to five years. Over half (51%) lacked health insurance coverage

for all or part of the year prior to the survey, while the remaining 49% had continuous coverage.

As presented in Figures 3.9, 3.11, 3.13, and 3.15, when assessing their satisfaction with the quality of health care services they had received, about 54.1% and 36% reported being very or somewhat satisfied, respectively; the remainder (9.9%) reported being somewhat or very dissatisfied. Although all respondents had received health care services during the two years prior to their participation in the survey, their confidence in their ability to get good medical care in the future when they need it was quite low. Only a third (34.9%) reported they were very confident, another 42.7% reported being somewhat confident, and the remaining 22.4% reported being not too confident or not at all confident. In terms of compliance, one of five reported that there had been a time during the two years prior to the survey when they had not followed their doctor's advice (20.1%). Similarly, one of five reported that they had delayed, postponed or foregone needed medical care during the 12 months prior to the survey (18.3%).

### **Sample 1-Group 2, Population Characteristics**

Among the four study populations, this non-English speaking/limited English-proficient population reported having the worst access to health care services. As presented in Figures 3.2, 3.4, 3.6, and 3.8, 12.81% reported having no regular source of care or that they sought care at the hospital emergency room; 39.7% reported having very little or no choice in where they went for care; over half (52.7%) had no regular doctor; and an additional 19.8% had been seeing the same doctor for two years or less. Over half (52.1%) reported having no insurance at the time of or discontinuity in health insurance over the year prior to their participation in the survey. In terms of health care outcomes, as presented in

Figures 3.10, 3.12, 3.14, and 3.16, only 9.4% reported being somewhat or very dissatisfied with the quality of health care they had received during two years prior to their participation in the survey, and 29.1% stated that they were not very confident or not at all confident that they can easily get good medical care when they need it in the future. Twenty-one percent reported they had not complied with their doctor's recommended care, and 19.1% reported they had either postponed, delayed or foregone seeking needed medical care during the 12 months prior to their participation in the survey.

### **Sample 2-Group 1, Sample Characteristics**

Among the English-proficient Asian sample, as presented in Figures 3.1, 3.3., 3.5, and 3.7, 82% reported that they go to a doctor's office / private clinic when they are sick or need health care; 3% reported having no regular source of care, or that the emergency room is their usual source of care. Only 36.7% reported having a great deal of choice in where they go for medical care. An additional 40.8% reported having some choice, while 22.6% reported having very little or no choice. Approximately, a quarter (23.5%) said they had no regular doctor, and a third (33.1%) had been seeking care from the same doctor for less than two years. Twenty-seven percent said they had been seeking care from the same doctor for more than five years. An additional 16.1% reported seeking care from the same doctor for about three to five years. Similar to the English-proficient nationally representative samples, nearly one in five (19%) lacked health insurance coverage for all or part of the year prior to the survey; the remaining 81% had continuous coverage.

When rating the satisfaction with quality of health care services they had received, about 38.4% and 52.5% reported being very or somewhat satisfied; the remainder (9.1%) reported being somewhat or very dissatisfied (Figure 3.9). Although all respondents had



received health care services during the two years prior to their participation in the survey, their confidence in their ability to get good medical care in the future when they need it was quite low (Figure 3.11). Only 37% reported they were very confident, another 47.8% reported being somewhat confident, and the remaining 15.2% reported being not very confident or not at all confident. In terms of compliance, one in four reported that there had been a time during two years prior to the survey when they had not followed their doctor's advice (Figure 3.13). Thirteen percent reported that they had delayed, postponed or foregone needed medical care during the 12 months prior to the survey (Figure 3.15).

### **Sample 2-Group 1, Population Characteristics**

This English-proficient Asian sample population was similar to the English-proficient nationally representative Sample 1-Group 1 A and Sample 1-Group 1 B populations in terms of their access to health care services. Only 2.71% reported having no regular source of care or that they sought care at the hospital emergency room (Figure 3.2). Twenty-two percent reported having very little or no choice in where they went for care and having no regular doctor (Figure 3.4). An additional 31.8% had been seeing the same doctor for two years or less (Figure 3.6). About twenty percent reported having no insurance at the time of or discontinuity in health insurance over the year prior to their participation in the survey (Figure 3.8).

In terms of their health care outcomes, only 8.6% reported being somewhat or very dissatisfied with the quality of health care they had received during two years prior to their participation in the survey (Figure 3.10), while 14.5% stated that they were not very confident or not at all confident that they can easily get good medical care when they need it in the future (Figure 3.12). Twenty-two percent reported they had not complied with their

doctor's recommendations (Figure 3.14), and 13.1% reported they had either postponed, delayed or foregone seeking needed medical care during the 12 months prior to their participation in the survey (Figure 3.16).

In conclusion, Figures 3.1 to 3.16 show that the calibration and the validation sample of the English-proficient nationally representative study samples (Sample 1-Group 1A and Sample 1-Group 1B, respectively) were similar on access to care and healthcare outcome measures. The non-English speaking/limited English proficient Sample 1-Group 2 population reported the lowest level of access to health care services and reported the worst health care outcomes compared to the other three English-proficient populations.

### **3.2 *Evaluating the Conceptualization of Patient Experience of Care: Results of Confirmatory Factor Analysis***

The purpose of the confirmatory factor analyses was to determine the validity of two alternative a priori conceptualizations of patient experience of care. Results presented next provide evidence supporting hypotheses 1 and 2 and answer research questions 1 and 2.

**Research Question 1:** What are the relationships among the measures of four domains -- patient centeredness, patient doctor relationship, patient-doctor communication, and cultural competency -- of patient experience of care?

**Research Question 2:** What is the dimensionality of the scale(s) measuring the four domains of patient experience of care?

**Hypothesis 1:** The four domains of patient experience of care -- patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency -- are empirically highly related with each other.

**Hypothesis 2:** Patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency can be conceptualized as a one-dimensional concept of patient experience of the interpersonal aspects of care.

Confirmatory factor analysis was performed to empirically test the validity of the current policy-driven notion that patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency are four distinct but related domains of patient experience of care. As outlined in chapter II, before testing the validity of the full four-factor measurement model representing the policy-driven notion, CFA was performed separately on four latent constructs: patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency. Results from these earlier steps of CFA on each of the four constructs were presented earlier (Section 2.4) and hence are not repeated here. In this section, I present evidence on the fit of the components of the measurement model offering strong support for the theory-driven proposal that patient experience of care is a one-dimensional concept.

### **3.2.1 Evidence from Three Calibration Samples**

The summary and component fit measures confirmed that a one-factor model with correlated measurement errors was a good to excellent fit to the data for all three calibration samples (English-proficient Sample 1-Group 1A and Sample 2-Group 1; non-English speaking/limited English proficient Sample 1-Group 2). Tables 3.3 to 3.8 present information on the fit of the components of the one-factor measurement model for these three samples providing initial evidence supporting hypotheses 1 and 2.

The inter-item correlations for the three calibration samples (Sample 1-Group 1A, Sample 1-Group 2, and Sample 2-Group 1) are presented in Tables 3.3, 3.4, and 3.5,

respectively. Positive inter-item correlations between measures of the four dimensions of patient experience of care offer initial evidence in support of the hypothesis that the four postulated dimensions of patient experience of care -- patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency -- are highly interrelated (Hypothesis 1). All inter-item correlations were positive and thus, in the expected direction, and the vast majority were moderate to high in magnitude. For Sample 1-Group 1A, the nationally representative English-proficient sample, the inter-item correlations ranged from 0.252 to 0.721 (Table 3.3). For Sample 1-Group 2, the nationally representative non-English speaking/limited English proficient sample, the inter-item correlations ranged from 0.085 to 0.733 (Table 3.4). For Sample 1-Group 2, the English-proficient Asian sample, the inter-item correlations ranged from 0.028 to 0.685 (Table 3.5).

These correlations show a consistent pattern across all three calibration samples. The lowest correlations are between items 2 (doctor explained things carefully) and 10 (perception of disrespect or unfair treatment due to any reason) for Sample 1-Group 1A (0.252), items 4 (confidence and trust in doctor) and 10 (perception of disrespect or unfair treatment due to any reason) (0.085) for Sample 1-Group 2, and items 4 (confidence and trust in doctor) and 9 (feel that doctor looks down) for Sample 2-Group 1 (0.028).

The overall fit measures suggest an excellent fit of the one-factor model to the data across all three samples compared to the baseline model which treats all observed indicators as uncorrelated. This one-factor model allows all indicators to load on a single common factor and allows some measurement errors to correlate. Table 3.6 presents these overall fit measures (chi-square statistic and fit indices) for each of the three calibration samples. For all statistical tests, I used  $\alpha = 0.05$  level to determine the statistical significance of the results.

The chi-square test of fit for the model was significant for Sample 1-Group 1 A,  $\chi^2$  (df=26, N=2496) = 69.446,  $P=0.000$ , rejecting the hypothesis that the one-factor model was consistent with the data for this sample. However, the sample size (N=2,496) provided sufficient power to detect even minor deviations from a perfect fit; this is expected given the large sample size. The  $\chi^2$ : df ratio (2.67), and CFI (0.986), TLI (0.993), RMSEA (0.026), and SRMR (0.032) all indicated that a one-factor model fits the Sample 1-Group 1 A data (Hypothesis 2). The chi-square test of fit for the one-factor model was nonsignificant for the non-English speaking/limited English-proficient Sample 1-Group 2,  $\chi^2$  (df=17, N=344) = 29.228,  $P=0.0325$  indicating that the one-factor model was consistent with the data for this sample (Hypothesis 2). The chi-square test of fit for the one-factor model was nonsignificant for the English-proficient Asian Sample 2-Group 1,  $\chi^2$  (df=21, N=341) = 32.078,  $P=0.0575$  indicating that the one-factor model was consistent with the data for this sample (Hypothesis 2). The  $\chi^2$ : df ratio (1.719 and 1.528), CFI (0.967 and 0.986), TLI (0.963 and 0.987), RMSEA (0.046 and 0.039), and SRMR (0.094 and 0.057), respectively, provides additional support for the hypothesis that a one-factor model shows an excellent fit to the Sample 1-Group 2 and Sample 2-Group 1 data (Hypothesis 2). In sum, overall fit measures indicates a very good fit of the one-factor model with correlated measurement errors to the data for all three calibration samples (Sample 1-Group 1A, Sample 1-Group 2, and Sample 2-Group 1).

The component fit measures, i.e., the factor loading estimates, standardized factor loadings, and  $R^2$  values associated with each indicator, are reported in Table 3.7 for the three calibration samples. The sign and magnitude of the parameter estimates (standardized factor loadings of each indicator) and the amount of variance in each indicator explained by the factor ( $R^2$  values) showed no abnormalities and looked quite good for most indicators across

the three samples. All items across the three samples had positive and significant standardized factor loadings at the 0.05 level. As shown in Table 3.7, for all three samples, the scale of the factor was set to be the same as indicator 1, hence the factor loading coefficient for this indicator was set to one. Since the indicators are influenced directly by only one latent variable, the standardized factor loading for each indicator was examined. The standardized factor loadings were interpreted as correlations and their squared values signified the proportion of explained variance. For example, the standardized factor loading of “doctor listened” for Sample 1-Group 1A is 0.801, which means that  $0.801^2$ , or 64.2% of its variance is shared with the underlying factor.

For the non-English speaking/limited English-proficient Sample 1-Group 2, the factor loading for indicator 11 (problems in understanding due to language difference) was positive (0.366) and significant at the 0.05 level. This means that  $0.366^2$  or 13.4% of its variance is shared with the common factor. Thus, indicator 11 which measures problems in understanding due to language difference contributes to the measurement of the underlying factor for this sample.

The standardized factor loadings for the items ranged from 0.428 to 0.815 for Sample 1-Group 1A, from 0.263 to 0.828 for Sample 1-Group 2, and from 0.219 to 0.794 for Sample 2-Group 1. The largest loadings were obtained for indicators 1 (doctor listened), 4 (confidence and trust in doctor), 5 (treated with dignity and respect), 6 (involvement in decision making), and 7 (doctor spent enough time). Indicator 5 (treated with dignity and respect) shared the highest amount of variance with the underlying factor for Sample 1-Group 1A (0.815) and Sample 1-Group 2 (0.828). Indicator 7 (doctor spent enough time) shared the highest amount of variance with the factor for Sample 2-Group 1 (0.630). For

almost all indicators, amount of explained variance for each indicator was higher for Sample 1-Group 1 A than for the other two calibration samples. For example, the factor loading for indicator 3 (wanted to discuss questions about care or treatment, but did not) was 0.75 for Sample 1-Group 1 A compared to 0.48 and 0.45 for Sample 1-Group 2 and Sample 2-Group 1, respectively.

Indicator 9 (feel that doctor looks down) had the smallest standardized factor loading across all three samples. For Sample 1-Group 1 A, Sample 1-Group 2, and Sample 2-Group 1, standardized factor loadings for indicator 9 (feel that doctor looks down) were 0.428, 0.263, and 0.219, respectively, indicating that a one unit change in the underlying factor leads to a 0.428, 0.263, and 0.219 change in this indicator. When the model was re-estimated without item 9, the overall model fit improved minimally. However, since item 9 was positively correlated with all other items in the model and had positive and significant standardized factor loadings, it was retained in the model, despite the low percentage of its variance being associated with the underlying factor.

Squared multiple correlations ( $R^2$  values) of each indicator were generally of moderate to high magnitude. For instance, for Sample 1-Group 1 A, the common factor explained 64.2% of the variance associated with its first indicator variable (doctor listened). The  $R^2$  value for the first indicator is 0.585 and 0.379 for Sample 1-Group 2 and Sample 2-Group 1, respectively, which means that 58.5% and 37.9% of this indicator's variance is shared with the underlying factor. The noteworthy exception to the relatively sizeable  $R^2$ s was the  $R^2$  for indicator 9 (feel that doctor looks down) for all three samples. Squared multiple correlations for Sample 1-Group 1 A, Sample 1-Group 2, and Sample 2-Group 1 were 0.183, 0.069, and 0.048, respectively. This indicates that only 18.3%, 6.9% and 4.8%

of the variance in indicator 9 is shared with the underlying factor. Similar to the factor loadings, indicators 1 (doctor listened), 4 (confidence and trust in doctor), 5 (treated with dignity and respect), 6 (involvement in decision), and 7 (doctor spent enough time) shared the highest amount of their variance with the underlying factor. Indicator 5 (treated with dignity and respect) shared the highest amount of variance with the factor for Sample 1-Group 1 A (0.664) and Sample 1-Group 2 (0.686), and indicator 7 (doctor spent enough time) shared the highest amount of variance with the factor for Sample 2-Group 1 (0.630).

Table 3.8 presents information on the strength of correlation between measurement errors of select indicators. For the two English-proficient samples (Sample 1-Group 1A and Sample 2-Group 1), the measurement error of indicator 1 (doctor listened) was significantly correlated with the measurement error of indicator 2 (doctor explained things carefully) (0.153 and 2.530, respectively). The measurement error of indicator 4 (confidence and trust in doctor) was significantly correlated with the measurement error of indicator 5 (treated with dignity and respect) (0.062 and 0.275 for Sample 1-Group 1A and Sample 2-Group 1, respectively). The correlated measurement errors of indicators 2 (doctor explained things carefully) and 3 (wanted to discuss questions about care or treatment, but did not) were significantly correlated for Sample 1-Group 1A but not for Sample 2-Group 1. For the non-English speaking/limited English-proficient Sample 1-Group 2, measurement errors for indicators 1 (doctor listened) and 2 (doctor explained things carefully) (0.194), 6 (involvement in decision making) and 7 (doctor spent enough time) (0.276), 8 (doctor understands background and values) and 9 (feel that doctor looks down) (0.234), and 2 (doctor explained things carefully) and 11 (problems in understanding due to language difference) (0.313) were significantly correlated.



Taken together, the summary measures (chi-square statistic and fit indices) along with the component fit measures (standardized factor loadings and squared multiple correlations ( $R^2$  values) for each indicator) confirmed that a one-factor model with correlated measurement errors appears to be a good fit to the data for all three calibration samples. This common factor accounted for 64.2% and 37.9% of the variance in the 10 indicators for Sample 1-Group 1A (the English-proficient nationally representative sample, N=2,496) and Sample 2-Group 1 (the English-proficient Asian sample, N=341), respectively. The one-factor solution accounted for 58.5% of the variance in the 11 indicators for Sample 1-Group 2 (the non-English speaking/limited English proficient nationally representative sample, N=344). These findings are persuasive and provide initial evidence that a single common factor, rather than four correlated but distinct factors, explains the correlations among the measures of the four domains of patient experience of care. In other words, these findings provide initial evidence for the plausibility of the one-factor theory-driven measurement model (one-dimensional conceptualization of patient experience of care) in favor of the four-factor policy-driven measurement model. Thus, this evidence supports the hypotheses that the four dimensions of patient experience of care -- patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency – are highly related to each other and that they could be conceptualized as the single construct of patient experience of the interpersonal aspects of care.

### **3.2.2 Evidence from the Validation Sample**

After examining the adequacy of the one-factor measurement model for the three calibration samples, research hypotheses 1 and 2 were further tested by empirically examining the validity of the one-factor model using the validation sample from the English-

proficient nationally representative population. Results for Sample 1-Group 1B, the English-proficient nationally representative sample, are presented in Tables 3.9, 3.10, and 3.11.

Table 3.9 presents correlations among the ten indicators of the patient rating of interpersonal aspects of care factor for Sample 1-Group 1B. Inter-item correlations were similar to Sample 1-Group 1A, and ranged from 0.259 to 0.752. The lowest correlations were between indicator 10 (perception of disrespect or unfair treatment due to any reason) and indicator 8 (doctor understands background and values) (0.259), and between indicator 10 (perception of disrespect or unfair treatment due to any reason) and indicator 2 (doctor explained things carefully) (0.276).

Overall fit measures, sign, and significance of standardized factor loadings and the squared multiple correlations of each indicator for this validation sample were consistent with those from the English-proficient nationally representative sample (Sample 1-Group 1A, the calibration sample). The chi-square test of fit for the model was significant,  $\chi^2$  (26, N=2510) = 68.329,  $p = 0.000$ , rejecting the hypothesis that the one-factor model was consistent with the data. This could be due to the large sample size (N=2,510) which provided sufficient power to detect even minor deviations from a perfect fit. The  $\chi^2$ : df ratio (2.63), and the four goodness-of-fit indices CFI (0.985), TLI (0.992), RMSEA (0.025), and SRMR (0.038) all indicated that the one-factor model is a good fit to the data.

The component fit measures were evaluated to assess if the one-factor model is consistent with the data. Table 3.10 presents data on factor loading estimate, standardized factor loading, and squared multiple correlations ( $R^2$  value) for each indicator. All 10 items had positive factor loadings of over 0.50 for the common factor and were significant at 0.05 level. The standardized loading of indicator 6 (involvement in decision making) on the

factor was the largest (0.837), indicating that a one unit change in the common factor leads to a 0.837 increase in this indicator. The squared multiple correlation for indicator 6 (involvement in decision making) was 0.701, meaning that 70.1% of its variance is explained by the patient rating of interpersonal aspects of care factor. The factor loading estimate for indicator 9 (feels that doctor looks down) was the lowest (0.508), and its  $R^2$  value was 0.258, which means that 25.8% variance in this indicator was explained by the patient rating of interpersonal aspects of care factor.

Similar to Sample 1-Group 1A (the calibration sample of English-proficient nationally representative population), the measurement error terms of indicators 1 (doctor listened) and 2 (doctor explained things carefully), and of indicators 4 (confidence and trust in doctor) and 5 (treated with dignity and respect) were significantly correlated for Sample 1-Group 1B (Table 3.11). Unlike the calibration sample, the measurement error terms for indicators 2 (doctor explained things carefully), and 3 (wanted to discuss questions about care or treatment, but did not) were not significantly correlated for the validation sample (Table 3.11). The common factor explained 59.8% of the variance in the 10 indicators for Sample 1-Group 1B (N=2,510) compared to 64.2% for Sample 1-Group 1A (N=2,496).

In conclusion, the overall and component fit measures provide evidence supporting the hypotheses that the one-factor model is an excellent fit to the data for this validation sample. This evidence validates the earlier findings for the Sample 1-Group 1A (the calibration sample) and further supports the proposal that the four postulated dimensions of patient experience of care -- patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency -- are highly related to each other and that they

could be represented by the single construct, patient experience of the interpersonal aspects of care, for the English-proficient population.

### **3.2.3 Evidence from the Combined Sample**

In order to obtain stable parameter estimates, the one-factor model with correlated errors was specified using Sample 1-Group 1 data (combined Sample 1-Group 1A & Sample 1-Group 1B: the English-proficient nationally representative sample, N=5006). Results from this analysis of Sample 1-Group 1 data are presented in Tables 3.12, 3.13, and 3.14. The inter-item correlations ranged from 0.263 to 0.736 (Table 3.12), with most being moderate to high and similar to Sample 1-Group 1A and Sample 1-Group 1B. The lowest correlation was between indicators 10 (perception of disrespect or unfair treatment due to any reason) and 2 (doctor explained things carefully) (0.263). The highest was between indicators 5 (treated with dignity and respect) and 4 (confidence and trust in doctor) (0.736).

The chi-square test of fit was significant,  $\chi^2$  (df=28, N=5006) = 106.944,  $P=0.000$ , and the  $\chi^2$ :df ratio of 3.82 was also high, both indicating that the one-factor model was not consistent with the data. However, the large sample size likely provided sufficient power to detect even minor deviations from a perfect fit. Other goodness-of-fit indices were very favorable with CFI (0.987), TLI (0.993), RMSEA (0.024), and SRMR (0.029) and offered confirming evidence that a one-factor model with correlated measurement errors fits the data very well for the English-proficient nationally representative population.

The component fit measures were similar to those for Sample 1-Group 1A and Sample 1-Group 1B and showed a good to excellent fit. Standardized factor loading coefficients and squared multiple correlations ( $R^2$  values) associated with each indicator are reported in Table 3.13. All ten standardized factor loadings were positive, strong, and

significant at the 0.05 level, providing strong support for the hypothesis that these indicators are good measures of the latent construct patient rating of interpersonal aspects of care. For indicator 6 (involvement in decision making), the standardized factor loading was the highest (0.804). Squared multiple correlation ( $R^2$  value) was 0.646, which means that 64.6% of the variance in this indicator was explained by the patient experience of the interpersonal aspects of care. For indicator 9 (feel that doctor looks down), the standardized factor loading was the lowest (0.467), and the  $R^2$  value was 0.218, which means that 21.8% of variance in this indicator was explained by the patient experience of the interpersonal aspects of care.

Similar to Sample 1-Group 1A, the measurement error terms for indicators 1 and 2, 2 and 3, and 4 and 5 for Sample 1-Group 1 were significantly correlated (Table 3.14). The common factor accounted for 61.9% of the variance in the 10 indicators for the English-proficient nationally representative sample ( $N=5,006$ ). Thus, the overall and component fit measures confirmed that the one-factor model with correlated errors was an excellent fit to the Sample 1-Group 1 data.

This concludes the presentation of findings from the confirmatory factor analyses conducted to empirically examine the hypotheses 1 and 2 and to answer research questions 1 and 2. To summarize, the positive and moderate to high inter-item correlations, overall fit measures, positive and significant factor loadings, and strong squared multiple correlations ( $R^2$  values) associated with each indicator, provided strong and consistent evidence that a one-factor model with correlated measurement errors showed an adequate fit to the data for all five samples. For the English-proficient nationally representative samples (Sample 1-Group 1A, Sample 1-Group 1B, and Sample 1-Group 1), and the English-proficient Asian sample (Sample 2-Group 1), the hypothesis that a common factor underlies the 10 indicators

is confirmed. For the non-English speaking/limited English-proficient Sample 1-Group 2, the hypothesis that a common factor underlies the 11 indicators is confirmed.

#### **3.2.4 Internal Consistency Reliability**

The internal consistency for the scale, the item-total correlation for each item, and the effect of dropping an item on the scale's internal consistency reliability for all five samples are presented in Table 3.15. All 10 items for the four English-proficient groups showed a high level of item-total correlation and reduction in Cronbach's alpha when the item was deleted. Across these four samples, the scale had a higher level of internal consistency reliability for the three English-proficient nationally representative samples (Cronbach's alpha = 0.815, 0.818, and 0.816 for Sample 1-Group 1A, Sample 1-Group 1B, and Sample 1-Group 1, respectively) than for the English-proficient Asian sample (0.739). All 11 items for the non-English speaking/limited English-proficient sample showed a high level of item-total correlation and reduction in Cronbach's alpha after dropping the item. For this non-English speaking/limited English proficient sample, Cronbach's alpha was 0.766. Hence, I conclude that measures of the four domains of patient experience of care form a one-dimensional scale.

#### **3.2.5 Interpreting the Patient Experience of care Construct**

At the outset of this study, I proposed that the one factor emerging from the factor analyses of individual responses to the indicators measuring patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency could be conceptualized as the patient rating of interpersonal aspects of care. I reviewed the contents of the 10 items for the English-proficient samples and 11 items for the non-English speaking/limited English proficient sample to define the meaning of the underlying latent

variable (DeVellis, 1991; Nunally, 1978) and to determine if the theme that emerged from the review of these items match the a priori expectation, which was guided by Bruce (1990) quality of the service experience framework and empirical literature on patient experience of the interpersonal aspects of care.

My proposal that such a factor would emerge was based on the review of the literature (Bruce, 1990; Gerteis et al., 1993; Jain, Bruce, & Mensch, 1992; Spiezer & Bollen, 2000; Donabedian, 1988; Ensign, 2004; Mavalankar & Sharma, 1999; Tanassi, 2004; Salber, 1975; Shapiro, Hollinghead, & Morrison 2002; Haddad et al., 2000; American Board of Internal Medicine, 2003; ACGME, 2005; Rider & Perrin, 2002; Iezzoni et al., 2003; Wickizer et al., 2004; National Board of Medical Examiners, 2005; Kassebaum & Eaglen, 1999; Purtilo, 1990; Teutsch, 2003), which led to the theory-driven proposal that one-factor concept underlies the measures of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency. This construct has been referred to as the patient experience of the interpersonal aspects of care.

The evidence from the confirmatory factor analyses provided strong support for the proposed theory-driven conceptualization and the related hypothesis that patient experience of care is one-dimensional and that the construct of patient experience of the interpersonal aspects of care could represent the separate constructs of cultural competency, patient centeredness, patient-doctor communication and relationship. Hence, I conclude that patient experience of care defined as patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency could be represented by a single theory-driven concept of patient experience of the interpersonal aspects of care, as opposed to the policy-driven notion of four distinct but related constructs. Hence, I conclude that the scale

resulting from the factor analysis and supported by results of the reliability assessment is a measure of the patient experience of the interpersonal aspects of care. Building upon the commonly used and well-accepted term “interpersonal relations,” I refer to this scale as the Patient Rating of the Interpersonal Aspects of Care (PRIAC) scale. For the English-proficient population, the scale contains 10 items. For the non-English speaking/limited English-proficient population, it contains as additional item (Item 11) which is a composite of four items capturing problems in understanding between the doctor and patient due to language differences, applies to adults in the non-English speaking/limited English proficient adults. Table 3.16 presents the PRIAC scale.

### **3.3 Psychometric Properties of the Patient Rating of Interpersonal Aspects of Care (PRIAC) Scale**

#### **3.3.1 Items, Descriptive Statistics, and Distribution of Scale Scores**

Table 3.17 presents the items, response categories for each item, and a brief descriptor for each item. Information on the weighted proportions of respondents in each response category by scale item for the English proficient nationally representative samples (Sample 1-Group 1A and Sample 1-Group 1B), non-English speaking/limited English proficient nationally representative sample (Sample 1-Group 2), and the English-proficient Asian sample (Sample 2-Group 1) is presented. Responses to all items for each sample were skewed towards higher values. The proportion at the highest response category was larger in the English groups for eight of the ten items, and larger in the non-English speaking/limited English proficient group for the other two (“treated with dignity and respect” and “doctor understand background and values”).

The level of quality of interpersonal relations as measured by the scale items differed by sample on a number of indicators. As expected, the two random samples from the



English-proficient nationally representative population (Sample 1-Group 1A and Sample 1-Group 1B) did not differ markedly from each other in their responses to any of the 10 items. The English-proficient Asian (Sample 2-Group 1) and the non-English speaking/limited English proficient nationally representative (Sample 1-Group 2) population groups reported experiences similar to each other and in most cases, worse than the experiences of the two English-proficient nationally representative populations (Sample 1-Group 1A and Sample 1-Group 1B). For example, 20% of the total population in both Sample 2-Group 1 and Sample 1-Group 2 reported a perception of disrespect or unfair treatment (item 10) compared to 10% of the total population in both Sample 1-Group 1A and Sample 1-Group 1B. For several items, a higher proportion of the Asian English-proficient sample compared to the other three samples reported a lower level of quality of interpersonal relations. Respondents in all four samples reported high levels of confidence and trust in their doctor. Ninety-five percent of respondents from the three English-proficient samples reported a fair to great deal of confidence and trust in their doctor; 89% of respondents from the non-English speaking/limited English proficient sample reported a fair to great deal of confidence and trust in their doctor.

For the non-English speaking/limited English proficient population (Sample 1-Group 2), 49% reported that they did not have a hard time understanding their doctor due to language difference. Nineteen percent reported that they had a hard time understanding their doctor, and even though they needed an interpreter, they did not get one. Thus, the nationally representative English-proficient populations (Sample 1-Group 1A and Sample 1-Group 1B) experienced better interpersonal relations with their doctor than the populations from the

non-English speaking/limited English proficient Sample 1-Group 2 and English-proficient Asian Sample 2-Group 1 as measured by the items included in the PRIAC scale.

The descriptive statistics of the scale for all samples are presented in Table 3.18. Table 3.18, Column 3 presents the range of possible total scores of the PRIAC scale calculated by summing the values for the scale items. Column 5 presents the mean score and standard deviation of the PRIAC scale. Higher scores reflect a better experience with the interpersonal aspects of care, whereas low scores reflect a poorer experience. The average score on the 10-item PRIAC scale is 32.70 (SD,  $\pm 3.92$ ) and 30.35 (SD,  $\pm 3.68$ ) for the English-proficient Sample 1-Group 1A and Sample 2 -Group 1, respectively, where scores can range from 10 to 36. The average score for Sample 1-Group 1B and Sample 1-Group 1 is 32.66 (SD,  $\pm 3.79$ ) and 32.68 (SD  $\pm 3.86$ ), with a range of 10-36, similar to Sample 1-Group 1A. Thus, the mean scale score is equivalent for the four English-proficient samples. The average score on the 11-item PRIAC scale for the non-English speaking/limited English-proficient Sample 1-Group 2 is 34.70 (SD,  $\pm 5.17$ ), where scores can range from 11-41.

While the average score for all five samples was relatively high, the distribution of scale score varied within each sample. Table 3.19 presents data on the percentage of adults in each sample who rated the interpersonal aspects of their care at the optimum level, i.e., PRIAC scale score=36 for English-proficient individuals and PRIAC scale score=41 for non-English/limited English-proficient individuals. Column 5 presents the percentage of adults in each sample who rated the interpersonal aspects of their care at the optimum level. This group can be referred to as reporting an *optimum* level of interpersonal care experience. For the English-proficient nationally representative samples, a quarter of adults (26.93% of Sample 1-Group 1A, 23.03% of Sample 1-Group 1B, and 25.02% of Sample 1-Group 1)

belonged to this group. However, only 5.88% and 13.65% of the Asian English-proficient Sample 2-Group 1 and the non-English/limited English-proficient Sample 1-Group 2, respectively rated the interpersonal aspect of their care at the optimum level.

Table 3.19, Column 6 presents the percentage of adults who rated the interpersonal aspects of their care equal to or greater than 95%, but less than 100% optimum level. This group can be defined as having received an *excellent* level of interpersonal care, and is represented by a PRIAC scale score of at least 34.2, but less than 36 for the English-proficient adults, and at least 38.95, but less than 41 for the non-English speaking/limited English-proficient adults. About 30% of adults in Sample 1-Group 1 A, Sample 1-Group 1 B and Sample 1-Group 1 (English-proficient nationally representative samples) rated their interpersonal relations at this level. However, only 18% of Sample 2-Group 1 (Asian English-proficient sample), and 15% of Sample 1-Group 2 (non-English speaking/limited English-proficient sample) rated their interpersonal relations at this level.

Table 3.19, Column 7 presents the percentage of adults who rated the interpersonal aspects of their care equal to or greater than 85%, but less than 95% of the optimum level, a range defined as a *satisfactory* score. Similarly, column 8 presents the percentage of adults who rated the interpersonal aspects of their care equal to or greater than 75%, but less than 85% of the optimum level, a range defined as a *fair* score. Finally, Table 3.19, Column 9 presents the percentage of adults who rated the interpersonal aspect of their care less than 75% of the optimum level, a range defined as a *poor* score. As seen in column 9, only 7% of adults in the English-proficient nationally representative samples rated the interpersonal aspects of their care below 75%, whereas about 16% of the English-proficient Asian Sample 2-Group 1, and 22% of the non-English/limited English-proficient Sample 1-Group 2 rated

the interpersonal aspects of their care below 75% of the optimum level. Figures 3.17 to 3.26 present the distribution and the cumulative distribution of scale scores for respondents for each sample. These results clearly indicate that a larger proportion of non-English speaking / Limited English-proficient adults compared to the English-proficient adults poorly rated their experience with the interpersonal aspects of care.

### **3.3.2 Evidence of Cross-Cultural Validity of PRIAC Scale**

Having confirmed the adequacy of the one-factor measurement model and having presented information on the PRIAC scale, next, I present results from the examination of cross-cultural validity of the one-factor model and PRIAC scale across gender and across four racial and ethnic groups.

**Research Question 3:** Are males and females homogenous with respect to the measurement of patient experience of care? Does the resulting factor structure underlying the measures of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency hold across gender?

**Hypothesis 3:** The factor structure underlying the measures of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency is the same for males and females.

**Research Question 4:** Are four racial/ethnic groups the same with respect to the measurement of patient experience of care? Does the resulting factor structure underlying the measures of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency hold across racial/ethnic groups?

**Hypothesis 4:** The factor structure underlying the measures of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency is the same across four racial and ethnic groups.

Next, I present results from analysis conducted to answer research question 3 and to test hypothesis 3. Results of the multiple group confirmatory factor analysis indicated that the one-factor measurement model was not significantly different across gender for the English-proficient nationally representative population (Sample 1-Group 1A). Findings confirm the total invariance hypothesis across the gender, i.e., the one-factor model underlying the 10 indicators holds equally well across males and females and the parameter values (thresholds, factor loadings, residual variances and covariances, and factor variances) are equal for males and females.

Table 3.20 presents measures of overall fit for the two constrained models and group-specific models for males and females. For the model that holds factor loading measurement parameters (thresholds and factor loadings for all indicators) equal across males and females, results exhibited an excellent fit of the model to the data ( $\chi^2 = 73.064$ ,  $df=45$ ,  $P<0.005$ ,  $\chi^2/df=1.624$ , CFI = 0.991, TLI = 0.995, RMSEA = 0.022). The mean level of interpersonal relations in these data for females and males did not vary significantly. The standardized factor loading estimates were positive and significant as expected in both groups. For both females and males, I found the strongest support for items 1 (doctor listened), 3 (wanted to discuss questions about care or treatment, but did not), 4 (confidence and trust in doctor), and 5 (treated with dignity and respect). I found the least support for items 9 (feel that doctor looks down) and 10 (perception of disrespect or unfair treatment due to any reason).

Except for the pattern of correlated measurement errors, the models for males and females for these data were identical. For females, the measurement errors for indicators 1 (doctor listened) and 2 (doctor explained things carefully), and 4 (confidence and trust in doctor) and 5 (treated with dignity and respect) were correlated, whereas measurement errors for indicators 2 (doctor explained things carefully) and 3 (wanted to discuss questions about care or treatment, but did not) were not correlated. For males, the measurement error for indicator 1 and 2 and 2 and 3 were correlated, whereas measurement error for indicator 4 and 5 were not correlated. The amount of variance in each indicator explained by the factor variable was equivalent for females and males. The common factor explained 65.5% and 56.2% of the variance in the indicators for females and males, respectively.

The fully constrained model (one-factor model underlying 10 indicators estimated by holding thresholds, factor loadings, and correlated errors equal across males and females) also exhibited an excellent fit to the data ( $\chi^2 = 64.913$ ,  $df=41$ ,  $P < 0.01$ ,  $\chi^2/df=1.583$ , CFI = 0.992, TLI = 0.995, RMSEA = 0.022). The amount of variance in each indicator explained by the underlying common factor was equivalent for males and females for seven of the 10 indicators (all except items 3, 9, and 10), see Table 3.21. The model with 10 observed variables showed an excellent fit to the data under this highly restrictive hypothesis. These results are consistent with the assumption that the same model operates in both females and males; that is, the hypothesis that the factor structure underlying the ten items is identical for females and males is confirmed.

When the model was estimated separately for females and males, overall fit measures (for females:  $\chi^2 = 46.665$ ,  $df=24$ ,  $P < 0.0037$ ,  $\chi^2/df=1.944$ , CFI = 0.988, TLI = 0.994, RMSEA = 0.034, SRMR = 0.034; and for males:  $\chi^2 = 33.680$ ,  $df=21$ ,  $P < 0.0392$ ,  $\chi^2$

/df=1.604, CFI = 0.990, TLI = 0.994, RMSEA = 0.026, SRMR = 0.042) suggest that the one-factor model is an excellent fit to the data for both females and males (Table 3.22). The ten indicators explained a similar amount of variance in the factor (64% and 65% for females and males, respectively). The standardized factor loading estimates were positive and significant as expected in both groups. For both females and males, I found the strongest support for items 1 (doctor listened), 3 (wanted to discuss questions about care or treatment, but did not), 4 (confidence and trust in doctor), and 5 (treated with dignity and respect). I found the least support for items 9 (feel that doctor looks down) and 10 (perception of disrespect or unfair treatment due to any reason) (Table 3.22).

In addition, the amount of variance explained in seven of the 10 indicators by the common factor is equal for both groups. This suggests that these ten indicators perform equally well as measures of interpersonal aspects of care for males and females. Except for the pattern of correlated measurement errors, the models for males and females for these data are identical. For females, the measurement error for indicators 1 and 2 and 4 and 5 were correlated, while the measurement error for indicators 2 and 3 was not correlated. For males, the measurement error for indicators 1 and 2 and 2 and 3 were correlated, while the measurement error for indicators 4 and 5 were not correlated. These findings taken together provide strong evidence that similar factor structure underlies the 10 items for both females and males, thus supporting the validity of the PRIAC scale as a measure of patient experience with interpersonal aspects of care across gender for Sample 1-Group 1A (English-proficient population). This provides evidence supporting the hypothesis that the factor structure underlying the measures of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency is the same for males and females (Hypothesis 3).

Results of the multiple group CFA conducted using Sample 1-Group 1A data to test hypothesis 4 that the factor structure underlying the measures of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency is the same for four racial/ethnic groups (white, black, Hispanic and other) (i.e., the invariance hypothesis)—are presented in Table 3.23. The results of the multiple group CFA conducted by holding the factor loading parameters equal across the groups confirmed that the one-factor model provides an acceptable fit to the data for all groups. All the fit measures ( $\chi^2/df = 1.959$ , CFI = 0.977, TLI = 0.987, and RMSEA = 0.039) except the nonsignificant  $\chi^2$  (N=2496, df=66) = 129.339,  $P=0.0000$ , which might be due to the large sample size, provided strong evidence that the same factor model holds for all four racial/ethnic groups.

The amount of variance in each indicator explained by the factor was lower for blacks and “other” groups than for whites and Hispanics (with the exception of item 5 “treated with dignity and respect”) (see Table 3.24). Items 4 (confidence and trust in doctor) and 5 (treated with dignity and respect) had the highest amount of variance explained across all four groups. For all four groups, results indicated the strongest support for items 1, 3, 4, 5, 6 and 7 and least support for items 9 and 10. The interpersonal relations factor explained 63.9%, 60.4%, 71.9%, and 64.9% of the variance in the set of indicators for white, black, Hispanic, and “others,” respectively. The mean level of interpersonal relations in these data for white, blacks, Hispanics and those in the “other” category did not vary significantly. The pattern of correlated measurement errors was also the same, in that, the measurement errors for indicators 1 and 2 were correlated across all four racial and ethnic groups. Unlike the full sample, measurement errors for indicators 2 and 3, and for indicators 4 and 5 were not correlated.



Testing the hypothesis of total measurement invariance of the one-factor model across four racial/ethnic groups, the multiple-group model, estimated by holding all parameters constant, produced a  $\chi^2$  (df=38) = 67.92,  $P < 0.002$ ,  $\chi^2/df = 1.787$ , CFI = 0.989, TLI = 0.989, and RMSEA = 0.036. These measures of overall fit provided evidence that the one-factor model is invariant across the four racial/ethnic groups and that the hypothesis of total measurement invariance best matches the data. While there was some variation in the amount of variance in each indicator explained by the common factor across the four groups, overall there were more similarities than differences (see Table 3.24). All items except 9 and 10 performed well for all groups. The amount of variance for 9 and 10 was low for all groups, but especially low for Hispanic and “other” groups.

Taking these results together with the overall model fit statistics, I conclude that the one-factor model underlying 10 observed variables shows an adequate fit to the data across all four groups under the highly restrictive hypothesis (holding all parameters equal across groups). These results are consistent with the hypothesis that the factor structure underlying the ten indicators is identical for the four racial/ethnic groups. Findings from these two multiple group analyses using race/ethnicity as the grouping variable confirm the universality of the one-factor solution for the four racial and groups (black, Hispanic, other, and white).

In conclusion, results of multiple group confirmatory factor analysis for males and females replicated the one factor solution similar to the original full sample solution for the English-proficient sample. Results of multiple-group confirmatory factor analysis for white, black, Hispanic & other adults obtained a one-factor solution similar to the original full sample solution for the English-proficient sample. This evidence lends support to the conclusion that the PRIAC scale is a valid measure of patient experience of the interpersonal

aspects of care for both males and females as well as for four racial and ethnic groups. Thus, the PRIAC scale can be used to measure interpersonal aspects of care for both males and females and for the four racial and ethnic groups in the English-proficient population. Furthermore, since the factor structure is invariant across gender and racial/ethnic groups, future analysis examining the relationships between predictors and outcomes of interpersonal aspects of care need not be conducted separately for males and females or by race/ethnic groups among the English-proficient population.

Having confirmed the adequacy of the one-factor measurement model and established the measurement invariance of this model across gender and across racial and ethnic groups, thus supporting the cross-cultural validity of the one-domain conceptualization of patient experience of care and the PRIAC scale, I proceeded to answer the final two research questions, which relate to examination of construct validity of the PRIAC scale. Results from these analyses are presented next.

### **3.3.3 Evidence of Construct Validity of PRIAC Scale**

The one-factor measurement model and the one-dimensional PRIAC scale measuring patient rating of interpersonal aspects of care during their interaction with the doctor was further validated by examining the association with predictor variables (access to care measures including choice in place of care, usual source of care and continuity of care, and continuity of insurance coverage) and outcome variables (health care outcome measures including compliance with care, overall satisfaction with quality of care, confidence in seeking needed care in the future, and no delay/postponing of care). The research questions answered and hypotheses tested are listed below.

**Research Question 5:** Are the domain(s) of patient experience of care and three access to care measures (usual source of care and length of relationship with the usual source of care, choice in the place of care, and insurance status) associated in a manner predicted by theory and prior empirical evidence?

**Research Question 6:** Are the domains(s) of patient experience of care and four health care outcomes (overall satisfaction with quality of care, compliance with care, confidence in seeking future care, and no delay/postponing of care) associated in a manner predicted by theory and prior empirical evidence?

**Hypothesis 5:** Individuals who report having a better experience of care with their physician will also have better access to care (have a usual source of care, have a longer-term relationship with the usual source of care, have a choice in their place of care, and have continuous insurance coverage).

**Hypothesis 6:** Individuals who report having a better experience of care with their physician will be more likely to report experiencing more favorable health care outcomes (higher satisfaction with quality of care, better compliance with care, greater confidence in seeking future care, and less likely to report that they had delayed/postponed/foregone care).

As hypothesized, the PRIAC scale scores showed a positive association with all three access to care measures -- choice in the place of care, usual source of care and continuity of care, and continuity of insurance coverage -- across all five samples. Regression coefficients of the three access to care measures were positive, indicating construct validity of the PRIAC scale and one-factor measurement model it measures for the three calibration samples (Sample 1-Group 1A, Sample 1-Group 2, and Sample 2-Group 1) (Table 3.25). Table 3.26 presents evidence indicating construct validity of the PRIAC scale for the validation sample

(Sample 1-Group 1B) and the combined sample (Sample 1-Group 1). Individuals who reported having a better experience of care with their physician also had better access to care (i.e., have a usual source of care and have a longer-term relationship with the usual source of care, have a choice in their place of care, and have continuous insurance coverage). Comparing the results across samples offers additional insights into the strength of these results across different populations.

All relationships were statistically significant ( $\alpha=0.05$ ) for the English-proficient samples (Sample 1-Group 1A, Sample 1-Group 1B, Sample 1-Group 1, Sample 2-Group 1). For the non-English speaking/limited English proficient population (Sample 1-Group 2), choice in place of their care and continuity of insurance were positively associated with the interpersonal relations factor, but these relationships did not reach statistical significance at  $\alpha=0.05$  level. Thus, positive and significant association was consistently present between the interpersonal relations factor and whether the individual has a usual source of care and the continuity of care with their usual source of care. For the three nationally representative English-proficient samples (Sample 1-Group 1A, Sample 1-Group 1B, and Sample 1-Group 1), the strongest association was between the PRIAC scale and the measure of choice in the place of care. For the non-English speaking/limited English proficient population (Sample 1-Group 2) and English-proficient Asian population (Sample 2-Group 1), the strongest association was between PRIAC scale score and continuity of care (presence of usual source of care and length of relationship with usual source of care). Taken together, this evidence provides support that individual's PRIAC scale score is positively associated with all three access to care measures, as theoretically predicted.

When analyses were repeated after controlling for differences in age, education, gender, race/ethnicity, nativity, and health status, the relationship between the interpersonal relations factor (i.e., PRIAC scale score) and the three access to care measures did not change substantively. Across all five samples, adults with better access to care (as measured by choice in place of care, usual source of care and continuity of care, and continuity of insurance coverage) rated the interpersonal aspects of their care at a higher level than those reporting poor access to care. This finding is consistent provides evidence of construct validity of the PRIAC scale and the one-factor conceptualization of patient experience of care.

Results from the analysis examining the relationships between the interpersonal relations factor (i.e., PRIAC scale score) and measures of four health care outcomes to test hypothesis 6 and answer research question 6 are presented next. As hypothesized, for all five samples, the one-factor model (i.e., PRIAC scale score) was positively associated with measures of treatment compliance, overall satisfaction with quality of care, confidence that one can get good medical care in the future, and no delay / postponement / foregoing of needed care. Regression coefficient of the PRIAC scale score and z-statistic confirmed a positive and statistically significant relationship between PRIAC scale and all four health care outcome measures across all five samples (Tables 3.25 and 3.26). Thus, individuals who report having a better experience with the interpersonal aspects of care were more likely to report experiencing better health care outcomes, i.e., higher satisfaction with quality of care, better compliance with care, greater confidence in seeking future care, and lower likelihood of reporting that they had delayed/postponed/foregone care.

The strongest association was between the interpersonal relations factor and overall satisfaction with quality of care. For the English-proficient nationally representative samples (Sample 1-Group 1A, Sample 1-Group 1B, and Sample 1-Group 1), the regression coefficients for overall satisfaction with quality of care were 0.697 ( $z\text{-stat}=22.69$ ,  $p<0.05$ ), 0.757 ( $z\text{-stat}=23.64$ ,  $p<0.05$ ), and 0.724 ( $z\text{-stat}=31.86$ ,  $p<0.05$ ), respectively. This means that interpersonal relations explained 48.58%, 57.31%, and 52.42% of the variance in the overall satisfaction with the quality of care for these three samples, respectively. For the non-English speaking/limited English proficient sample (Sample 1-Group 2), and for the English-proficient Asian Sample (Sample 2-Group 1), the regression coefficients for overall satisfaction with quality of care were 0.748 ( $z\text{-stat}=10.36$ ,  $p<0.05$ ) and 0.621 ( $z\text{-stat}=8.67$ ,  $p<0.05$ ), respectively. Thus, patient experience of the interpersonal aspects of care explained 55.95% and 38.56% of the variance in the overall satisfaction with the quality of care for Sample 1-Group 2 and Sample 2-Group 1, respectively.

All health care outcome variables were categorical or binary in nature, so, the interpretation of their association with interpersonal relations is difficult. For the association between patient experience of the interpersonal aspects of care and observed categorical variables such as overall satisfaction with quality of care, the interpretation is as follows: one standard deviation increase in interpersonal relations score is associated with increased propensity to be satisfied with the overall quality of care by 0.697 units for adults in Sample 1-Group 1A. To understand the association between patient experience of interpersonal aspects of care and binary variables such as compliance with care, the interpretation is as follows: As patient experience of interpersonal aspects of care improved, an individual's propensity to comply with care increases. When the analyses were repeated after controlling

for age, education, gender, race/ethnicity, nativity, and health status, the PRIAC scale score remained positively and significantly associated with each of the four health care outcomes measures. The strength of the association between the PRIAC scale score and each health care outcome measure did not change substantively.

These findings support the conclusion that the PRIAC scale is behaving similar to the construct of patient experience of interpersonal aspects of care it purports to measure, thus providing evidence of construct validity of the PRIAC scale as a measure of patient experience of the interpersonal aspects of care.

### **3.4 Summary of Results**

In this study, I empirically compared two alternative conceptualizations of patient experience of care. Specifically, the validity of the policy-driven notion that patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency represent four distinct but related domains of patient experience of care was compared with a one-dimensional conceptualization of patient experience of care as informed by quality of the service experience framework (Bruce, 1990) of was examined using confirmatory factor analytic techniques. Results provided strong evidence that the four domains of patient experience of care -- patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competence -- are highly related and that they can be conceptualized as patient experience of the interpersonal aspects of care. A one-dimensional patient rating of interpersonal aspects of care (PRIAC) scale measuring the construct of patient experience of the interpersonal aspects of care was developed. The internal consistency reliability of this scale was found to be adequate and consistent across the five samples with Cronbach's alpha estimates ranging from 0.82 for the three nationally

representative English proficient samples of 2,496, 2,510, and 5,006 adults; 0.74 for the English-proficient Asian sample of 341 adults, and 0.77 for the non-English speaking/Limited English proficient sample of 344 adults.

The one-factor measurement model underlying the 10 indicators of patient experience of care was found to be a good fitting model for both males and females and across four racial/ethnic groups for the English-proficient population. Thus, for the English-proficient population, this finding supported cross-cultural validity of the PRIAC scale and the one factor conceptualization of patient experience of care across gender and racial and ethnic groups.

Construct validity was demonstrated by the evidence that the PRIAC scale score was positively and significantly associated with measures of three access to care variables and four health care outcome variables across all five samples. Evidence was stronger for the three English-proficient nationally representative samples. Since the results could be validated using an independent sample for the English proficient nationally representative sample, the results should be considered more conclusive for this group. The evidence for the non-English speaking/limited English-proficient sample should be considered preliminary since results from the CFA were not validated using an independent sample. The evidence for the Asian English proficient sample should be considered descriptive and preliminary since these data were collected from a nonrandom sample and were not validated using an independent sample.



In conclusion, the results of this study indicate that:

- There is support for the theory guided proposal that patient experience of care can be conceptualized and measured as a one-dimensional concept the “patient experience of the interpersonal aspects of care.”
- For the English-proficient population, ten items were identified as measures of patient experience of the interpersonal aspects of care. The patient rating of interpersonal aspects of care (PRIAC) scale, thus developed, is a reliable and valid one-dimensional scale measuring the patient experience of the interpersonal aspects of care.
- For the non-English speaking/limited English proficient population, eleven items were identified as measures of patient experience of the interpersonal aspects of care. The patient rating of interpersonal aspects of care (PRIAC) scale, thus developed, demonstrated evidence supporting its reliability and validity as a one-dimensional scale measuring patient experience of the interpersonal aspects of care for the non-English speaking/limited English proficient population.

## **CHAPTER IV**

### **DISCUSSION AND CONCLUSIONS**

In this chapter, I summarize key findings of the study, and discuss possible explanations as to why the one-domain conceptualization of patient experience of care is supported in favor of four-domain conceptualization. Next, I discuss policy and programmatic implications of the study and conclude with a presentation of study limitations along with suggestions for further research.

This is the first study to theorize about and empirically examine the validity of the policy-driven notion that patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency represent four distinct but related domains of patient experience of care. Guided by quality of the service experience framework (Bruce, 1990), I proposed an alternative conceptualization that patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency are empirically highly related with each other and can be conceptualized as a one-dimensional concept the patient experience of the interpersonal aspects of care. The primary aim of this study was to examine the validity of these alternative conceptualizations. The secondary aims were to assess and describe the psychometric properties of the scale(s) resulting from the analysis and to explore study implications for the conceptualization and measurement of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency and suggest how select stakeholders might use this scale.

#### **4.1 Summary of Findings: One-Domain Conceptualization of Patient Experience of Care and the Patient Rating of Interpersonal Aspects of Care Scale**

Findings provide strong and consistent evidence that patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency are empirically highly related with each other and can be conceptualized as a one-dimensional concept for both English-proficient and non-English speaking/Limited English-proficient populations. Study findings also confirm that there is substantial agreement among males and females and four racial/ethnic groups for the English-proficient population concerning their experience of care. Positive and significant associations between the measures of four domains of patient experience of care and measures of access to care and health care outcomes provided evidence supporting the construct validity of the one-domain conceptualization. Drawing upon the quality of the service experience framework (Bruce, 1990), I conclude that this one-domain can be conceptualized as the patient experience of the interpersonal aspects of care and that the measures of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency form a one-dimensional scale measuring patient experience of the interpersonal aspects of care.

These findings challenge the current policy-driven notion that patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency are four distinct but related domains of patient experience of care (NHDR, 2003, 2004; NHQR, 2003, 2004). The scale contains 10 items for the English-proficient population assessing patient experience of confidence and trust in the doctor and the extent to which the doctor (a) listened, (b) treated the patient with dignity and respect, (c) involved the patient in decision-making, (d) allowed the patient to discuss questions about care or treatment, (e) explained things carefully, (f) understood patient background and values, (g) looked down on the

patient, (h) disrespected or treated the patient unfairly due to any reason, and (h) spent enough time with the patient. For the non-English-speaking / Limited English-proficient population, the scale contains an additional item measuring patient experience with problems in understanding their doctor due to language difference. The scale demonstrated adequate internal consistency reliability with Cronbach's alpha estimate ranging from 0.74 to 0.82 across the four samples. Taken together, the consistency of findings with all of the proposed study hypotheses across data from four samples with marked differences in socio-demographic, health status, access to care characteristics, and health care outcomes suggests that the one-domain conceptualization of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency is valid and has considerable generality.

This study bridged the research conceptualizing and measuring the patient experience with the interpersonal aspects of care (Bruce, 1990; Mavalankar & Sharma, 1999; Cooper-Patrick et al., 1999; Costello et al., 2001; Payer, 1989; Salber, 1975; Speizer & Bollen, 2000; Gerteis et al., 1993; Purtilo, 1990; Ensign, 2004; National Board of Medical Examiners, 2005; American Board of Internal Medicine, 2003; Rider & Perrin, 2002; Iezzoni et al., 2003; Wickizer, 2004; Shapiro, Hollingshead, & Morrison, 2002; Ensign & Panke, 2002; Attree 2001; Teutsch, 2003; Meredith et al., 2001; Keating et al., 2002; Tanassi, 2004; Haddad et al., 2000; Kassebaum & Eaglen, 1999; Jain, Bruce, & Mensch, 1992) with the current policy-driven four-domain conceptualization of patient experience of care (NHDR, 2003, 2004, 2005, 2006, 2007; NHQR, 2003, 2004, 2005, 2006, 2007). Building upon the former, especially guided by the quality of the service experience framework (Bruce, 1990) supported the proposal and interpretation that the four domains -- patient centeredness,

patient-doctor relationship, patient-doctor communication, and cultural competency -- of patient experience of care can be defined and conceptualized as the patient experience of the interpersonal aspects of care. It is important to note that the present study was not concerned with testing the Bruce (1990) framework, but, instead, capitalized on this framework to propose, empirically examine, and understand the interrelationships among measures of these four domains.

## **4.2 Study Implications**

### **4.2.1 Policy Implications**

These study findings have significant policy implications regarding the conceptualization and measurement of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency. As presented in Chapter I, the National Healthcare Disparities and Quality Reports (NHDR, 2003, 2004, 2005, 2006, 2007; NHQR, 2003, 2004, 2005, 2006, 2007) use these terms and define the concepts patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency interchangeably and conceptualize that these are four distinct but related domains of patient experience of care. However, such use and conceptualization is devoid of theoretical underpinnings. Furthermore, the reports monitor and present data on measures of these concepts either as individual items (NHDR, 2003, 2004; NHQR, 2003, 2004) or as composite measures calculated using a subset of items and use these measures interchangeably (NHDR, 2005, 2006, 2007; NHQR, 2005, 2006, 2007). However, the relationships among these measures of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency and the psychometric properties of these items have not been empirically examined. This is the first study to theorize about and

empirically examine the validity of and interrelationships among measures of the four domains -- patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency -- of patient experience of care as conceptualized by the National Healthcare Disparities and Quality Reports.

Findings should be of particular relevance and interest to the Agency for Healthcare Quality and Research which is the federal agency charged by the United States Congress to annually compile, report, and disseminate valid, reliable, and scientifically sound data on the four domains -- patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency -- of patient experience of care in order to monitor nation's progress in eliminating health care and health disparities and improving the quality of health care for all Americans. Stakeholders across federal, state and local governmental agencies including the Department of Health and Human Services that are responsible for undertaking efforts to monitor and improve patient experience of care will also find these findings of particular interest and relevance to guide and modify their conceptualization and measurement of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency.

Study findings highlight the universality of what patients, irrespective of their gender and racial and ethnic groups, experience during their interaction with the doctor. Patient experience of care comprises of patient's confidence and trust in the doctor and the extent to which the doctor (a) listened, (b) treated the patient with dignity and respect, (c) involved the patient in decision-making, (d) allowed the patient to discuss questions about care or treatment, (e) explained things carefully, (f) understood patient background and values, (g) looked down on the patient, (h) disrespected or treated the patient unfairly due to any reason,

and (h) spent enough time with the patient. Furthermore, findings support the notion that during their interaction with the doctor, patients experience these aspects not in isolation of each other but in a highly interrelated manner. One key implication of the study finding is that it not only demonstrates that the four-domain conceptualization lacks empirical and theoretical support, but that interchangeable use of terms and concept might hinder desired progress in reducing health and health care disparities and improving quality of care by unintentionally creating ambiguity in stakeholders' understanding of these terms and concepts.

Based on the strong and consistent evidence supporting one-domain conceptualization underlying measures of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency, a key policy recommendation is that the patient experience of care should be meaningfully conceptualized and comprehensively measured using ten items retained in the PRIAC scale. The study highlights the lack of validity of NHDR and NHQR approach of monitoring and reporting on single or a subset of items as measures of four domains of patient experience of care since such use fails to comprehensively, reliably, and adequately measure patient experience of care. It is important to note that the review of individual items might help identify specific areas of patient experience of care where patients report less than optimal experience and suggest areas to target specific interventions. However, it is recommended that AHRQ should calculate and report a composite score using all 10 items rather than individual score or a composite score using a subset of items in order to provide valid and reliable information on patient experience of care in the future reports.

Findings also indicate that some items used to measure patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency in the NHDR and NHQR need further validation before their inclusion in future reports and their use to guide policy decisions and monitor improvements in quality of care and health and health care disparities. Specifically, three items, individual's response to: "Do you think there was ever a time when you would have gotten better medical care if you had belonged to a different race or ethnic group?," "Do you think there was ever a time when you would have gotten better medical care if you were a woman/man?," and "I feel that my doctor understands my background and values" had a high proportion of respondents who did not respond. Nonrespondents were predominantly non-English speaking/Limited English-proficient individuals and/or belonged to a racial/ethnic minority group. Furthermore, among respondents, a very small proportion endorsed these items. It is recommended that these items need further validation before continuing their use as measures of patient experience of care in future NHDR and NHQR.

The National Healthcare Disparities and Quality Reports present data on patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency by racial/ethnic and income groups and not by individual's English-proficiency. In so doing, these reports do not offer insight into or monitor patient experience of care by individual's English-proficiency. In this study, a vast majority of the nationally representative English-proficient adults reported experiencing high level of interpersonal relations with their doctor as measured by the ten items retained in the PRIAC scale compared to the non-English speaking/Limited English proficient adults. This finding is similar to prior evidence showing that a lack of English-proficiency negatively affects patient



experience of care in the domains of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency (Weech-Maldonado et al., 2001; Morales et al., 1999; Crane, 1997; David & Rhee, 1998; Carrasquillo et al., 1999; Tucker et al., 2003). Findings from this study strongly suggest that it is crucial to gain insight into disparities in patient experience of the interpersonal aspects of care between English-proficient population and Limited English proficient/non-English speaking population. A policy recommendation is that future National Healthcare Disparities and Quality Reports monitor, analyze, and report patient experience of the interpersonal aspects of care by separately for English-proficient and non-English speaking/Limited English-proficient populations.

Findings of positive and significant association between measures of access to care and patient experience of the interpersonal aspects of care suggest policy recommendation on how patient experience of the interpersonal aspects of care can be improved. These findings suggest that system-level efforts to ensure that patients have a usual source of care, to improve continuity of usual source of care and with health insurance coverage, and to offer choice to patients regarding the place where they seek care will likely result in improvements in patient experience of interpersonal aspects of care. Similarly, findings of positive and significant association between measures of patient experience of the interpersonal aspect of care and health care outcomes suggest that efforts to improve patient experience of the interpersonal aspects of care will likely result in improvements in patient satisfaction with overall quality of care, compliance with recommended care, confidence in seeking care in the future and timely utilization of services.

#### **4.2.2 Program Implications**

The findings suggest that the one-dimensional 10-item PRIAC scale is a valid and reliable tool to assess patient experience of the interpersonal aspects of care for the English-proficient and non-English speaking/Limited English-proficient population, as well as across gender and four racial/ethnic groups of the English-proficient population. A valid and reliable tool to assess patient experience of the interpersonal aspects of care will be of interest to payers, purchasers, health plans, employers, regulatory bodies, licensing boards, hospitals, and physicians involved in monitoring and evaluating improvements in patient experience of the care in the domains of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency. The PRIAC scale can also be used to evaluate the effectiveness of training and educational programs designed to improve patient experience of care in the domains of patient centeredness, patient-doctor communication, patient-doctor relationship, and cultural competency.

Health care delivery organizations can use the PRIAC scale to assess patient experience to identify specific areas for quality improvement efforts and to guide training and professional development programs, and benchmark physician performance against a desired level set by the organization. Organizations involved in physician credentialing, licensing, and rating physician performance can use this tool to monitor the interpersonal aspects of care experienced by patients, improve physician accountability, provide feedback to physicians and organizations involved in the design of continuing medical education to improve physician performance. Physician practices can use this tool to gather information from their patients and report it as part of their practice profile and as a marketing tool to communicate about patient experience with the interpersonal aspects of care in their

physicians to future patients. In sum, the PRIAC scale is a tool to gather standardized, valid, and reliable information on patient experience of interpersonal aspects of care.

#### **4.3 Limitations and Suggestions for Future Research**

Findings should be considered within the context of several limitations. First, the potential for nonresponse bias in this study should be considered. Nonresponse bias affecting the present study could be due to item nonresponse or survey nonresponse. With respect to item nonresponse, five items had the highest proportion of missing responses across all four samples. These items included: “Do you think there was ever a time when you would have gotten better medical care if you had belonged to a different race or ethnic group?,” “Do you think there was ever a time when you would have gotten better medical care if you were a woman/man?,” “I feel that my doctor understands my background and values,” “I often feel as if my doctor looks down on me and the way I live my life,” and “Did the doctor involve you in decisions about your care as much as you wanted, almost as much as you wanted, less than you wanted, or a lot less than you wanted?” Item nonresponse could be a function of question length, wording, content, clarity, and relevance to the respondent (Tourangeau, Rips, & Rasinski, 2000). Hence, future research should explore reasons and solutions to reduce nonresponse for these items.

Prior analyses conducted by CMWF to examine item nonresponse rate reported that data for the nationally representative sample could be assumed missing at random and that respondents and nonrespondents for each item did not vary by key demographic characteristics (Doty, 2005). In light of this, item nonresponse is not a major limitation when interpreting results for Sample 1 (Sample 1-Group 1A, Sample 1-Group 1B, Sample 1-Group 1, and Sample 1-Group 2). It is noteworthy that analysis of item nonresponse conducted in

the present study highlighted that item nonresponse rate was higher among non-English speaking/Limited English-proficient adults compared to English-proficient adults for this sample. While this is important to note and suggests that future studies should particularly explore causes for and implement efforts to reduce item nonresponse, specifically for the non-English speaking/Limited English-proficient population, overall nonresponse rate for each item was less than five percent, which is in line with other surveys.

With respect to nonresponse bias due to survey response, the response rate was 54.3% and 44% for Sample 1 and Sample 2, respectively. Low survey response rate limits the generalizability of findings and indicates how much confidence can be put in study findings. As mentioned earlier, respondents in Sample 2 (Asian sample) were selected using a nonrandom sampling strategy and hence, results are not generalizable to the Asian population in the United States but are only descriptive. Hence, low survey response rate does not pose additional limitations to the results for this sample. For Sample 1 (the nationally representative sample), while it is difficult to speculate bias introduced as a result of refusal to participate by survey respondents, weighted analysis was conducted to account for and minimize survey nonresponse bias. Furthermore, the 54.3% response rate, while low, is consistent with and hence, acceptable in light of other telephone surveys. The Centers for Disease Control's Behavioral Risk Factor Surveillance Survey for which the median state response rate was 48.9% in 2000 (Centers for Disease Control and Prevention, 2004) and the Consumer Assessment of Healthcare Providers and Systems Hospital Survey for which the response rate for Arizona, Maryland, and New York was 39% (de Vries et al., 2005). Increasing use of cellular phone and the internet for communications purposes have led to declining telephone usage rate. This has led to a declining response rate for telephone

surveys in recent years (Mokdad, Stroup, & Giles, 2003). Thus, the limitations posed on the generalizability of the results due to low response rate, are common to other telephone based commonly used health care surveys and not unique to this study.

A second limitation is the use of data collected through interviews using self-report measures and the likelihood of social desirability bias inherent in self-reported responses to survey items. It is likely that some respondents might have underreported their negative experiences with interpersonal aspects of care. Individuals who tend to respect and accept the authority of physicians or who feel disempowered during their participation in a survey or who find it inappropriate to criticize their physician in front of an interviewer might rate the interpersonal aspects of their care more favorably than their actual experiences. In this case, interpersonal relations scores for these individuals will be inflated. This is a common limitation of studies using self-report measures. Future research should examine the extent to which the PRIAC scale items accurately capture patients' experiences of the interpersonal aspects of their care, the extent of social desirability bias in the response patterns, and examine the differences in response patterns by the method of data collection (face-to-face vs. telephone vs. mail vs. web-based).

Another limitation is that the items included in the PRIAC scale asked multiple-choice questions not allowing respondents to provide additional insights to explain their responses. This limitation could not be overcome since the study was conducted using secondary data since primary data collection, which is usually cost and resource intensive, was beyond the scope of this dissertation research. Future studies could address this limitation by supplementing the study findings and evaluating the validity of the PRIAC scale in comparison to other measures of patient experience of interpersonal relations (e.g.,

in-depth interviews, focus groups, observation studies, rating of video or tape recording of the actual visit).

A fourth limitation of the study findings is due to recall bias. Findings should be viewed in light of respondents' ability to recall accurately their experience of interpersonal relations. How soon after the service experience the questions were asked might likely influence validity of responses. There is no way to conclusively evaluate how well the survey population recalled their experiences with their doctor, without recourse to evaluating video or audio recording of the interaction, which in this case did not exist. Therefore, we cannot know definitely whether some survey respondents were systematically underreporting the quality of their experience or other respondents were over reporting the quality of their experience. Both add error to the measures of patients' experience of interpersonal relations; in the end, it is possible that they neutralize each other. For the purpose of this study, in the absence of an evaluation of how recall bias might affect results of this study, we have to assume that respondents' responses reflected exactly what occurred during their interaction. Future studies can explore how recall bias might affect results obtained by using the PRIAC scale and how individual responses vary based on the time of administration of the survey vis-à-vis their interaction with their doctor.

Another limitation of the findings relates to external validity. First, while data used in this study were gathered using a telephone-based survey from adults 18 and over who spoke English, Spanish, Vietnamese, Cantonese, Mandarin, or Korean, the study sample included largely English-proficient adults and primarily Spanish-speaking. Therefore, it is important to note that findings are most representative of English-proficient adults and Spanish-speaking adults and are not generalizable to other non-English speakers/Limited English-

proficient population in the United States. Second, the large size of the English-proficient adult nationally representative sample allowed replication of the one-factor model for this group, thus, ensuring confidence in the generalizability of the findings for this group. However, the nonrandom sampling strategy employed for the selection of Asian English-proficient adults limits generalizability of findings to any group except those in this sample, findings are descriptive. Similarly, results for the non-English speaking adults should be considered preliminary since replication of the one-factor model was not possible due to small sample size. Third, analyses were limited to individuals who had a health care visit during the two years prior to their survey participation. It is unclear if and how adults with a health care visit differ from those without a health care visit in their experience of the interpersonal aspects of care. In summary, study findings are primarily generalizable to U.S. adult population who speak English, live in households with telephones and had at least one health care visit within two years preceding their participation in the survey. Study findings should be considered preliminary and descriptive for non-English speaking/Limited English-proficient adults. I recommend that future studies need to examine the validity of the one-domain conceptualization and psychometric properties of the PRIAC scale for non-English speaking/Limited English proficient sample and English-proficient before widespread use.

A delimitation of this study is that although the findings confirm that the proposed one-factor measurement model corresponds well with the data for all four samples, it is important to note that the statistical adequacy of a model should not be taken to mean that it is the “true” or “right” model. The a priori categorization of items from the Commonwealth Fund 2001 Healthcare Quality Survey guided by the National Healthcare Disparities and Quality Reports as measures of constructs of patient centeredness, patient-doctor

relationship, patient-doctor communication, and cultural competency and subsequent factor analysis to examine the validity of this categorization has not been done before. Hence, researchers need to replicate and validate the categorization of these measures and validate the one-factor model underlying these measures in future studies.

The findings showing relationship between measures of patient experience of the interpersonal aspects of care with predictor (access to care) and outcome (health care outcomes) measures should be taken as evidence to examine the validity of the PRIAC scale and one-factor solution as a measure of patient's experience of interpersonal relations and inferences for program or policy interventions should be interpreted with caution. This is due to several reasons. First, even though the hypothesized relationships amongst the measures of patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency and access to care and health care outcome measures were based on theory and empirical evidence, use of cross-sectional data makes it difficult to determine the directionality of relationships between these variables. Second, many influential factors and paths were not included in the model. For example, individuals' socioeconomic status (e.g., income, education), attitudes toward medical care, and many other factors that enable / facilitate or hinder use of health care services would also influence individuals' experiences during the process of care including their experiences with the interpersonal aspects of care. It is likely that individuals' overall satisfaction with the quality of care can influence their confidence in seeking future care. Similarly, compliance with treatment recommendations can influence health outcomes which in turn influence overall satisfaction with the quality of care. It is also possible that delay in seeking care could influence the possible benefits of medical care in improving individuals' health outcomes; this, in turn, could influence



individuals' rating of the interpersonal aspects of care. It is also possible that, while well-accepted measures of known predictors and outcomes of interpersonal aspects of care, some unaccountable third variable that relate to both interpersonal aspects of care and predictors and outcomes influences these relationships. For example, social desirability bias may have caused some people to report better experience of care as well as fewer problems in accessing care. These and other relationships were not modeled and tested and it is possible that if tested, these and other paths and models will have yielded different results. Future research should also explore theoretically and empirically derived models to examine how technical and interpersonal aspects of care interact and influence patients' experiences of care and health and health care outcomes. Given that the relationships among access to care, patient's experience of technical and interpersonal aspects of care, and health care outcomes are complex, future models may also posit and test bidirectional linkages among these constructs. Future analyses should examine the validity of the measurement model using structural equation modeling techniques in the presence of exogenous socio-demographic characteristics (age, education, place of birth and years lived in the US), self-rated health status, chronic disease status, attitudes towards health and health care, and access to care measures as predictors of interpersonal relations factor (Figure 4.1 and Figure 4.2) and health care outcome measures.

Despite these limitations, it is reasonable to conclude that the study findings offer strong and consistent evidence supporting the validity of the one-domain conceptualization underlying the four domains of patient experience of care. Furthermore, study findings support the conclusion that this domain can be conceptualized as patient experience of the interpersonal aspects of care. Results provide adequate evidence that the PRIAC scale is a

reliable and valid measure of patient experience of the interpersonal aspects of care for the English-proficient population and across gender and racial and ethnic groups for this population. The study findings supporting the one-domain conceptualization and validity and reliability of the PRIAC scale for the non-English speaking/Limited English proficient sample are preliminary and descriptive and should to be replicated in future studies.

#### **4.4 Conclusions**

The four-domain conceptualization proposed by NHDR and NHQR lacks theoretical underpinnings and empirical examination of the relationships between the measures of the four constructs -- patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency -- of patient experience of care and their measures. This study proposed to fill this gap by answering one key research question: what are the relationships among the measures of four domains -- patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency -- of patient experience of care? Analysis was conducted to answer this question using data from English-proficient and non-English proficient/Limited English proficient populations. Findings provide strong support for the hypotheses that the four domains -- patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency -- of patient experience of care are empirically highly related and can be conceptualized as the construct of patient experience of the interpersonal aspects of care for both English-proficient and non-English speaking/Limited English-proficient populations. The study resulted in a one-dimensional 10-item scale which could be used to measure patient experience of the interpersonal aspects of care during their interaction with the doctor. This scale is a reliable and valid measure of patient experience of the interpersonal aspects of care for both English-proficient and non-

English speaking/Limited English-proficient populations and across gender and four racial/ethnic groups. Future studies should be undertaken to replicate the validity of the one-domain conceptualization of patient experience of care and to examine the dimensionality and psychometric properties of the PRIAC scale, especially among the non-English speaking/Limited English-proficient population. In conclusion, findings contribute to the advancement of knowledge on the conceptualization and measurement of four domains -- patient centeredness, patient-doctor relationship, patient-doctor communication, and cultural competency -- of patient experience of care.

**Table 1.1 Definitions of Patient Centeredness, Patient -Doctor Relationship, Patient-Doctor Communication, and Cultural Competency**

Patient centeredness is a characteristic of the relationship between the clinician and the patient. In contrast to care that is clinician-centered or disease-focused, patient-centered care customizes treatment recommendations and decision-making in response to an individual patient's preferences and beliefs (Institute of Medicine, 2000; Institute of Medicine, 2001).	Care that is truly patient-centered considers patients' cultural traditions, their personal preferences and values, their family situations, and their lifestyles. It makes the patient and their loved ones an integral part of the care team who collaborate with health care professionals in making clinical decisions (Institute for Healthcare Improvement, 2006).
Strong patient-provider communication is just one aspect of effective care. The patient-provider relationship should include mutual trust, respect, confidence, and shared decision-making (NHDR, 2003).	Communication is key to achieving patient-centered care. Good patient-provider communication can help patients be heard, get the information they need, and fully participate in decision-making concerning their own care (NHQR, 2003).
Cultural competence is a set of attitudes, skills, behaviors, and policies that enable organizations and staff to work effectively in cross-cultural situations (Health Resources and Services Administration Bureau of Primary Health Care, 2006).	Patient centeredness encompasses qualities of compassion, empathy, and responsiveness to the need, values, and expressed preferences of the individual patient (Institute of Medicine, 2002).
Cultural competence can be defined broadly as the need for health care professionals to recognize and respond to their own and their patients' cultures (Johnson et al., 2004).	The goal of patient-centered communication is to help practitioners provide care that is concordant with the patient's values, needs and preferences, and that allows patients to provide input and participate actively in decisions regarding their health and health care (Epstein et al., 2005).
Patient centered care is defined as providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions. Patient centered approaches to care rely on building a doctor-patient relationship, improving communication techniques and fostering a positive atmosphere (Institute of Medicine, 2002).	Patient-physician communication is a skill and a way of "being in relation" to the other (Zoppi & Epstein, 2002).

**Table 1.1 Definitions of Patient Centeredness, Patient-Doctor Relationship, Patient-Doctor Communication, and Cultural Competency - continued**

Cultural competence is the ability to improve patient outcomes by overcoming language and cultural barriers, and also by understanding the ways in which belief systems, including spiritual practices, are critical to the patient's healing process (Shon, 1987).	The patient-healthcare provider communication process-- particularly the provider's cultural competency--is increasingly recognized as a key to reducing racial/ethnic disparities in health and healthcare utilization (Horner et al. 2004).
Patient centeredness is defined as health care that establishes a partnership among practitioners, patients, and their families (when appropriate) to ensure that decisions respect patients' wants, needs, and preferences and that patients have the education and support they need to make decisions and participate in their own care (Institute of Medicine, 2001).	Vissandjee & Dupere (2000) suggest that cross-cultural communication is essential to improving intercultural competence of nurses and other health care professionals.
Misra-Hebert (2003) suggests that using the skills of cross-cultural communication during the patient encounter, the doctor will enhance the quality of care by improving the doctor-patient relationship.	The patient-provider relationship is built upon mutual respect, trust, and understanding (NHDR, 2004).

**Table 2.1 Language of Interview and Fluency in Language of Interview, by Sample**

Language of Interview	Sample 1			Sample 2		
	Is respondent fluent in language of interview?		Total	Is respondent fluent in language of interview?		Total
	Yes	No		Yes	No	
English	5578	23	5601	404	9	413
Spanish	339	1	340	--	--	--
Mandarin or Cantonese	35	0	35	117	0	117
Korean	14	0	14	76	1	77
Vietnamese	16	2	18	109	1	110
Total	5982	26	6008	706	11	717

**Table 2.2 Sample Size after Listwise Deletion by Sample**

Sample-Group	Original Sample Size	% Cases w/o any missing data for items* retained in factor model	% Cases dropped due to missing values	Study Sample Size	Group included in further analysis
Sample 1-Group 1A	2794	89.33	10.67	2496	Yes
Sample 1-Group 1B	2784	90.16	9.84	2510	Yes
Sample 1-Group 2	430	80.00	20.00	344	Yes
Sample 2-Group 1	404	84.41	15.59	341	Yes
Sample 2-Group 2	313	66.45	33.51	208	No
* For items retained in the factor model. For English-proficient samples: 13 items, for non-English speaking/Limited English-proficient sample: 17 items.					

**Table 2.3 Measures of Patient Centeredness, Patient -Doctor Relationship, Patient-Doctor Communication, and Cultural Competency**

Survey Item # (from Commonwealth Fund 2001 Health Care Quality Survey)	Question	Response Categories	Underlying Construct(s)	Evidence guiding the use of the item as a measure of the underlying construct(s)
Q20 doctor listened	The last time you visited a doctor, did the doctor listen to everything you had to say, to most, to some, or only a little of what you had to say?	1 Everything 2 Most 3 Some 4 Only a little reverse coded	Patient-Doctor Communication, Patient Centeredness	Community Tracking Survey, 2000; Davis et. al., 2002; Ho, 2005; International Health Perspectives, 2004; DATA2010, 2006; Hospital CAHPS, 2004; MEPS-SAQ, 2000; Morales et al., 1999; NCBD, 2000; NHDR, 2003; NHDR, 2004; NHDR, 2005; NHDR, 2006; NHQR, 2003; NHQR, 2004; NHQR, 2005; NHQR, 2006; Rhoades et al., 2001; Ensign, 2004; Thom, Hall, & Pawlson, 2004; Charon, 2005; Mazor et al., 2002; Tucker et al., 2003; Goldstein et al., 2005; Sofaer et al., 2005; ACGME, 2005
Q21 doctor explained things carefully	During the visit, did you understand everything the doctor said, most of what the doctor said, some or only a little of what the doctor said?	1 Everything 2 Most 3 Some 4 Only a little reverse coded	Patient-Doctor Communication, Patient Centeredness	Cooke et al., 2000; Community Tracking Survey, 2000; Davis et al., 2002; Ho, 2005; International Health Perspectives, 2004; DATA2010, 2006; Hospital CAHPS, 2004; MEPS-SAQ, 2000; Morales et al., 1999; NCBD, 2000; NHDR, 2003; NHDR, 2004; NHDR, 2005; NHDR, 2006; NHQR, 2003; NHQR, 2004; NHQR, 2005; NHQR, 2006; Rhoades et al., 2001; KFF 1999; Thom, Hall, & Pawlson 2004; Baker et al., 1996; Keating et al., 2002; Tucker et al., 2003; Goldstein et al., 2005; Sofaer et al., 2005; ACGME, 2005
Q22 wanted to discuss questions about care or treatment, but did not	Did you have questions about your care or treatment that you wanted to discuss, but did not?	1 Yes 2 No	Patient-Doctor Communication; Patient-Doctor Relationship	Ho, 2005; Morales et al., 1999; International Health Perspectives, 2004; NHDR, 2003; NHDR, 2004; Thom, Hall, & Pawlson, 2004; Keating et al., 2002; ACGME, 2005

**Table 2.3 Measures of Patient Centeredness, Patient-Doctor Relationship, Patient-Doctor Communication and Cultural Competency – continued**

Survey Item #	Question	Response Categories	Underlying Construct(s)	Evidence guiding the use of each item as a measure of an underlying construct(s)
Q23 confidence and trust in doctor	How much confidence and trust did you have in the doctor treating you—a great deal, a fair amount, not too much, or none at all?	1 Great deal 2 A fair amount 3 Not too much 4 None at all  reverse coded	Patient-Doctor Relationship, Patient-Doctor Communication	MEPS-SAQ, 2000; NHQR, 2004; NHQR, 2005; Ho, 2005; Ensign, 2004; Thom & Campbell, 1997; Thom, 2001; Crawshaw et al., 1995; Montaglione, 1999; Tarn et al., 2005; Thom, Hall, & Pawlson, 2004; Collins et al., 2002b; Tucker et al., 2003
Q24 treated with dignity and respect	Did the doctor treat you with a great deal of respect and dignity, a fair amount, not too much, or none at all?	1 Great deal 2 A fair amount 3 Not too much 4 None at all  reverse coded	Patient Centeredness, Patient-Doctor Communication, Patient-Doctor Relationship	Institute of Medicine, 2001; MEPS-SAQ, 2000; NCB, 2000; NHQR, 2004; NHQR, 2005; NHQR, 2006; Ensign, 2004; DATA2010, 2006; Hospital CAHPS, 2004; Beach et al., 2005; Wear, 2005; Mazor et al., 2002; Tucker et al., 2003; Goldstein et al., 2005; Sofaer et al., 2005; ACGME, 2005
Q25 involvement in decision making	Did the doctor involve you in decisions about your care as much as you wanted, almost as much as you wanted, less than you wanted, or a lot less than you wanted?	1 As much as wanted 2 Almost as much 3 Less than wanted 4 A lot less than wanted 5 More than I wanted Recoding 5=3 reverse coded	Patient-Doctor Communication, Cultural competency, Patient Centeredness, Patient-Doctor Relationship	Cooper-Patrick et al., 1999; MEPS-SAQ, 2000; NHQR, 2003; NHQR, 2004; NHQR, 2005; Wensing et al., 1998; Carroll, Sullivan, & Colegedge, 1998; Jung, Wensing, & Grol, 1997; McKeown et al., 2002; Ogden et al. 2002; Schattner, Rudin, & Jellin, 2004; Cooper & Powe, 2004; Keating et al., 2002; ACGME, 2005
Q26 doctor spent enough time	Did the doctor spend as much time with you as you wanted, almost as much as you wanted, less than you wanted, or a lot less than you wanted?	1 As much as wanted 2 Almost as much 3 Less than wanted 4 A lot less than wanted  reverse coded	Patient-Doctor Communication, Patient Centeredness, Patient-Doctor Relationship	Cape, 2002; International Health Perspectives, 2004; DATA2010, 2006; Hospital CAHPS Pilot Questionnaire, 2003; MEPS-SAQ, 2000; NCB, 2000; NHDR, 2003; NHDR, 2004; NHDR, 2004; NHDR, 2006; NHQR, 2003; NHQR, 2004; NHQR, 2005; NHQR, 2006; Homer et al., 1999; Cooper & Powe, 2004; Keating et al., 2002; Sofaer et al., 2005; Askew, Mensch, & Adewuyi, 1994; Oliver et al., 2001; Epstein & Hundert, 2002; Iezzoni et al., 2003



**Table 2.3 Measures of Patient Centeredness, Patient-Doctor Relationship, Patient-Doctor Communication and Cultural Competency – continued**

Survey Item #	Question	Response Categories	Underlying Construct(s)	Evidence guiding the use of an item as a measure of the underlying construct(s)
Q30-Q31 met patient's preference to involve friend/relative during visit	In general, when you go to the doctor, do you prefer the doctor talk to both you and a person you are close to about your health care or do you prefer to talk to the doctor alone about your health care?  How often does it happen that the doctor talks to both you and a person you are close to - almost always, often, sometimes or never?	1 Prefer the doctor talk to both you and a person you are close to 2 Prefer to talk alone 3 No preference recoded 3=2 1 Almost always 2 Often 3 Sometimes 4 Never combined Q30 & Q31 and reverse coded	Patient Centeredness, Patient-doctor communication	Gerteis et al., 1993; Speice et al., 2000
Q32a doctor understands background and values	I feel that my doctor understands my background and values.  Respondent is referring to last visit	1 Strongly agree 2 Somewhat agree 3 Somewhat disagree 4 Strongly disagree reverse coded	Cultural competency, Patient-Doctor Relationship, Patient-Doctor Communication	Ho, 2005; NHDR, 2003; NHDR, 2004; Ensign, 2004; Cook, Kosoko-Lasaki, & O'Brien 2005; Keating et al., 2002; Eddey & Robey, 2005; Tucker et al., 2003
Q32b feel that doctor looks down	I often feel as if my doctor looks down on me and the way I live my life. Assumption: Respondent is referring to last visit	1 Strongly agree 2 Somewhat agree 3 Somewhat disagree 4 Strongly disagree	Patient-Doctor Communication, Patient-Doctor Relationship, Cultural competency	Ho, 2005; Ensign, 2004; NCB, 2000; NHQR, 2004; NHQR, 2005; Blanchard & Lurie, 2004; Tucker et al., 2003; ACGME, 2005

**Table 2.3 Measures of Patient Centeredness, Patient-Doctor Relationship, Patient-Doctor Communication and Cultural Competency – continued**

Survey Item #	Question	Response Categories	Underlying Construct(s)	Evidence guiding the use of an item as a measure of the underlying construct(s)
Q33b patient understands health information given by doctor	How easy or difficult is it for you to read and understand the information or booklets you get at the doctor's office --very easy, somewhat easy, somewhat difficult, or very difficult?  Assumption: Respondent is referring to last visit	1 Very easy 2 Somewhat easy 3 Somewhat difficult 4 Very difficult 5 Don't get any info from doctor	Patient-Doctor Communication, Cultural Competency	Ho, 2005; NHDR, 2004; NHDR 2005; Thom, Hall, & Pawlson, 2004; Office of Minority Health, 2001; Tucker et al., 2003; ACGME, 2005
Q40a perception of disrespect or unfair treatment due to ability to pay/type of health insurance  Q40b perception of disrespect or unfair treatment because of English-language ability  Q40c perception of disrespect or unfair treatment due to race or ethnic background  Q40d perception of disrespect or unfair treatment due to gender	Thinking about all of the experiences you have had with health care visits in the last two years, have you ever felt that the doctor or medical staff you saw judged you unfairly or treated you with disrespect because of (Insert? a your ability to pay for the care or the type of health insurance you have, b how well you speak English, c your race or ethnic background, d your gender.  Assumption: Respondent is referring to last visit	1 Yes 2 No  Combined 40a-d variable "unfair" created by PSRA was used 1 Yes 2 No	Patient-Doctor Communication, Patient-Doctor Relationship, Cultural Competency	Ho, 2005; Johnson et al., 2004; NHDR, 2003; NHDR, 2004; KFF, 1999; Collins et al., 2002a; Blanchard & Lurie, 2004; Tucker et al., 2003

**Table 2.3 Measures of Patient Centeredness, Patient-Doctor Relationship, Patient-Doctor Communication and Cultural Competency – continued**

Survey Item #	Question	Response Categories	Underlying Construct(s)	Evidence guiding the use of an item as a measure of the underlying construct(s)
Q42a believe that care would be better if were of a different race / ethnicity	Do you think there was ever a time when you would have gotten better medical care if you had belonged to a different race or ethnic group? Assumption: Respondent is referring to last visit	1 Yes 2 No	Patient-Doctor Relationship, Patient-Doctor Communication, Cultural competency	Felix-Aaron et al., 2005; Ho, 2005; Johnson et al., 2004; NHDR, 2003; NHDR, 2004; CHIS, 2003; KFF, 1999; Collins et al., 2002a; Blanchard & Lurie, 2004
Q42b believe that their care would be better if were of a different gender	Do you think there was ever a time when you would have gotten better medical care if you were a woman   man? Assumption: Respondent is referring to last visit	1 Yes 2 No	Cultural competency, Patient-Doctor Relationship, Patient-Doctor Communication	Johnson et al., 2004; NHDR, 2003; NHDR, 2004; CHIS, 2003; KFF, 1999; Collins et al., 2002a; Blanchard & Lurie 2004
Q57+Q59 told doctor that uses alternative care	In the last 2 years have you used (Insert? a herbal medicines (note for translation, use appropriate term for herbal medicines b acupuncture c a chiropractor d a traditional healer such as a Curendero, or an herbalist (note for translation, use appropriate term for a traditional healer Have you told your doctor that you use herbal medicine, acupuncture, a chiropractor, a traditional healer? Assumption: Respondent is referring to last visit	1 Yes 2 No      1 Yes 2 No 3 Doctor recommended it combined 57a-d and 59	Patient-Doctor Communication	Ho, 2005; NHDR, 2003; NHDR, 2004; Brach & Fraser, 2000; Zubek, 1994; Marbella et al., 1998; Kim & Kwok, 1998; Ma, 1999; Elder, Gillcrist, & Minz, 1997; Bhopal, 1986; Linde, 2002; Kidder, 2003; Skaer et al., 1996

**Table 2.3 Measures of Patient Centeredness, patient-doctor relationship, patient-doctor communication and cultural competency – continued**

Survey Item #	Question	Response Categories	Underlying Construct(s)	Evidence guiding the use of an item as a measure of the underlying construct(s)
Q74*	Thinking about your most recent care, how often did you have a hard time speaking with or understanding a doctor, a nurse or other health provider because you and the doctor spoke different languages -- always, usually, sometimes or never? (for non-English speakers)	1 Always 2 Usually 3 Sometimes 4 Never  Recoded 1=Yes if Q74=1/2/3 2=No if Q74=4	Patient-Doctor Communication, Cultural competency, Patient Centeredness	Baker et al., 1996; Baker, Hayes, & Fortier, 1998; Carrasquillo et al., 1999; Cooke et al., 2000; Crane, 1997; David & Rhee, 1998; NHDR, 2003; NHDR, 2004; CHIS, 2003; Brach & Fraser, 2000; Hornberger, Itakura, & Wilson, 1997; Tucker et al., 2003
Q75*	Again thinking about your most recent care, did you need an interpreter to help you speak with doctors or other health providers? (for non-English speakers)	1 Yes 2 No	Patient-Doctor Communication, Cultural competency, Patient Centeredness	Baker et al., 1996; Baker, Hayes, & Fortier, 1998; Carrasquillo et al., 1999; Cooke et al., 2000; Crane, 1997; David & Rhee, 1998; NHDR, 2003; NHDR, 2004; CHIS, 2003; Brach & Fraser, 2000; Hornberger, Itakura, & Wilson, 1997; Tucker et al., 2003
Q76*	When you needed an interpreter to help you speak with doctors or other health providers, how often did you get one -- always, usually, sometimes or never?	1 Always 2 Usually 3 Sometimes 4 Never  Recoded 2=Got an interpreter if Q76=1 1=Didn't get an interpreter if Q76=2/3/4	Patient-Doctor Communication, Cultural competency, Patient Centeredness	Baker et al., 1996; Baker, Hayes, & Fortier, 1998; Carrasquillo et al., 1999; Cooke et al., 2000; Crane, 1997; David & Rhee, 1998; NHDR, 2003; NHDR, 2004; CHIS, 2003; Brach & Fraser, 2000; Hornberger, Itakura, & Wilson, 1997; Tucker et al., 2003

**Table 2.3 Measures of Patient Centeredness, Patient-Doctor Relationship, Patient-Doctor Communication and Cultural Competency – continued**

Survey Item #	Question	Response Categories	Underlying Construct(s)	Evidence guiding the use of an item as a measure of the underlying construct(s)
Q77*	With the help of the interpreter, did you fully understand what the doctor was saying, somewhat understand, understand only a little, or not understand at all what the doctor was saying?	1 Fully understand 2 Somewhat understand 3 Understand only a little 4 Not understand at all Recoded 2=fully understand if Q77=1 1=didn't fully understand if Q77=2/3/4	Patient-Doctor Communication, Cultural competency, Patient Centeredness	Baker et al., 1996; Baker, Hayes, & Fortier, 1998; Carrasquillo et al., 1999; Cooke et al., 2000; Crane, 1997; David & Rhee, 1998; NHDR, 2003; NHDR, 2004; CHIS, 2003; Brach & Fraser, 2000; Hornberger, Itakura, & Wilson, 1997; Tucker et al., 2003
Combined 74-77* Problems in understanding due to language difference	**see below	**see below	Patient-Doctor Communication, Cultural competency, Patient Centeredness	Baker et al., 1996; Baker, Hayes, & Fortier, 1998; Carrasquillo et al., 1999; Cooke et al., 2000; Crane, 1997; David & Rhee, 1998; NHDR, 2003; NHDR, 2004; CHIS, 2003; Brach & Fraser, 2000; Hornberger, Itakura, & Wilson, 1997; Tucker et al., 2003
<p>**Combined 74-77 For non-English speaking/Limited English-proficient population</p> <p>5 Didn't have a hard time understanding due to language difference Q74 =2</p> <p>4 Had a hard time understanding due to language difference Q74 =1, needed an interpreter Q75=1, did get an interpreter Q76=2, did understand fully Q77 = 2</p> <p>3 Had a hard time understanding due to language difference Q74=1, didn't need an interpreter Q75=2</p> <p>2 Had a hard time understanding due to language difference Q74=1, needed an interpreter Q75=1, did get an interpreter Q76=2, didn't understand fully Q77=1</p> <p>1 Had a hard time understanding due to language difference Q74=1, needed an interpreter Q75=1, didn't get an interpreter Q76=1</p>				
<p>CHIS: California Health Interview Survey</p> <p>KFF: The Kaiser Family Foundation, Race, Ethnicity &amp; Medical Care: A Survey of Public Perceptions and Experiences</p> <p>MEPS-SAQ: Medical Expenditure Panel Survey - Self-Administered Questionnaire</p> <p>NCBD: Annual Report of the National CAHPS Benchmarking Database</p> <p>NHDR (2004 &amp; 2005): National Healthcare Disparities Report 2004 &amp; 2005</p> <p>NHQR (2004 &amp; 2005): National Healthcare Quality Report 2004 &amp; 2005</p> <p>* Applies to non-English speaking/Limited English-proficient population</p>				

**Table 2.4 Measures of Access to Care Used for Validation of the Scale**

Construct	Survey Item	Response Categories and Recoding of Data	Purpose for inclusion
Choice of source of care	How much choice do you have in where you go for medical care? Would you say you have a great deal, some, very little, or no choice?	1=great deal of choice 2=some choice 3=very little choice 4=no choice 8-9=don't know and refused recoded =2 reverse coded	Construct validity
Usual source of care	Do you have a regular doctor or other health professional, such as a nurse or a midwife, you usually go to when you are sick or need health care?	1=yes 2=no 3=has more than one regular doctor yes 3 recoded to 2 reverse coded	--
Length of time with regular doctor	And how long has this person been your doctor?	1=less than one year 2=1 to 2 years 3=3 to 5 years 4=more than 5 years reverse coded	--
Regular doctor and length of time with regular doctor	Created using Q6 and Q9	1=no Usual Source of Care (USC) 2=USC, less than one year 3=USC, 1-2 years 4=USC, 3-5 years 5=USC, more than 5 years	Construct validity
Continuity of health insurance coverage	In the last 12 months, has there been a time when you were without health insurance? and Those who didn't know/refused to respond to Which of the following is your main source of health insurance coverage?	1=insured continuously 2=insured now, but uninsured in past 12 months 3=uninsured now/undesigned reverse coded	Construct validity

**Table 2.5 Measures of healthcare outcomes used for validation of the scale**

Construct	Survey Item	Response Categories	Purpose for inclusion
Compliance with care	Has there been a time in the last two years when you didn't follow the doctor's advice, or treatment plan, get a recommended test or see a referred doctor?	1=yes, has been a time 2=no, has not been such a time 8-9=don't know and refused = 2	Construct validity
Confidence can get good medical care in future	Now thinking about the future, how confident are you that you can easily get good medical care when you need it? Do you feel very confident, somewhat confident, not too confident, or not confident at all about this?	1=very confident 2=somewhat confident 3=not too confident 4=not confident at all 8-9=don't know and refused = 4 reverse coded	Construct validity
Delay / Postponement / Foregone care	During the last 12 months, was there any time when you had a medical problem but put off, postponed or did not seek medical care when you needed to?	1=Yes 2=No 8-9=don't know and refused =2	Construct validity
Satisfaction with quality of health care during past 2 years	Overall, how satisfied or dissatisfied are you with the quality of health care you have received during the last 2 years? Would you say you are very satisfied, somewhat satisfied, somewhat dissatisfied, or very dissatisfied?	1=very satisfied 2=somewhat satisfied 3=somewhat dissatisfied 4=very dissatisfied 8-9=don't know and refused =3 reverse coded	Construct validity

**Table 3.1 Demographic Characteristics of the Study Samples**

Characteristic	Sample 1- Group 1A (n=2496) n (%)	Sample 1- Group 2 (n=344) n (%)	Sample 2- Group 1 (n=341) n (%)	Sample 1- Group 1B (n=2510) n (%)
Census Region				
Northeast	428 (17.1)	54 (15.7)	94 (27.6)	425 (16.9)
Midwest	342 (13.7)	15 (4.4)	45 (13.2)	355 (14.1)
South	761 (30.5)	85 (24.7)	91 (26.7)	713 (28.4)
West	965 (38.7)	190 (55.2)	111 (32.6)	1017 (40.5)
Place of Residence				
Urban	1136 (45.5)	190 (55.2)	139 (40.8)	1145 (45.6)
Suburban	1049 (42.0)	139 (40.4)	197 (57.8)	1060 (42.2)
Rural	311 (12.5)	15 (4.4)	5 (1.5)	305 (12.2)
Language of Interview				
English	2496 (100)	16 (4.7)	341 (100)	2510 (100)
Spanish	--	261 (75.9)	--	--
Mandarin or Cantonese	--	35 (10.2)	--	--
Korean	--	14 (4.1)	--	--
Vietnamese	--	18 (5.2)	--	--
Nativity Status and number of years in the US				
US born	2096 (84.0)	29 (8.4)	74 (21.7)	2115 (84.3)
Foreign-born, more than 10 years in US	296 (11.9)	201 (58.4)	194 (56.9)	285 (11.4)
Foreign-born, 5-10 years in US	43 (1.7)	60 (17.4)	41 (12.0)	44 (1.8)
Foreign-born, less than 5 years in US	48 (1.9)	48 (14.0)	29 (8.5)	48 (1.9)
Undesignated	13 (0.5)	6 (1.7)	3 (0.9)	18 (0.7)
Race/Ethnicity				
White, nonHispanic	1449 (58.1)	2 (0.6)	--	1450 (57.8)
Black, nonHispanic	422 (16.9)	1 (0.3)	--	418 (16.7)
Hispanic	312 (12.5)	295 (85.8)	--	262 (10.4)
Asian	175 (7.0)	44 (12.8)	335 (98.2)	212 (8.4)
Other	138 (5.5)	2 (0.6)	6 (1.8)	168 (6.7)



**Table 3.1 Demographic Characteristics of the Study Samples – continued**

Characteristic	Sample 1- Group 1A (n=2496) n (%)	Sample 1- Group 2 (n=344) n (%)	Sample 2- Group 1 (n=341) n (%)	Sample 1- Group 1B (n=2510) n (%)
Age				
18-29	558 (22.4)	87 (25.3)	117 (34.3)	538 (21.4)
30-39	531 (21.3)	101 (29.4)	104 (30.5)	560 (22.3)
40-49	522 (20.9)	68 (19.8)	70 (20.5)	502 (20.0)
50-64	514 (20.6)	52 (15.1)	34 (10.0)	523 (20.8)
65+	345 (13.8)	32 (9.3)	12 (3.5)	352 (14.0)
Missing	26 (1.0)	4 (1.2)	4 (1.2)	34 (1.4)
Gender				
Female	1598 (64.0)	237 (68.9)	178 (52.2)	1631 (65.0)
Male	898 (36.0)	107 (31.1)	163 (47.8)	879 (35.0)
Education				
High school incomplete	220 (8.8)	157 (45.6)	5 (1.5)	220 (8.8)
High school diploma, no college	654 (26.2)	85 (24.7)	37 (10.9)	603 (24.0)
Some college or technical	711 (28.5)	51 (14.8)	66 (19.4)	709 (28.2)
College graduate or more	906 (36.3)	45 (13.1)	229 (67.2)	967 (38.5)
Don't know/refused	5 (0.2)	6 (1.7)	4 (1.2)	11 (0.4)
Family Status				
Married, no children	588 (23.6)	58 (16.9)	68 (19.9)	629 (25.1)
Married w/ children	662 (26.5)	168 (48.8)	118 (34.6)	622 (24.8)
Single, no children	878 (35.2)	52 (15.1)	115 (33.7)	893 (35.6)
Single w/ children	354 (14.2)	62 (18.0)	40 (11.7)	351 (14.0)
Undesignated	14 (0.6)	4 (1.2)	--	15 (0.6)
Marital Status				
Married	1179 (47.2)	201 (58.4)	178 (52.2)	1153 (45.9)
Living as married	72 (2.9)	26 (7.6)	8 (2.3)	100 (4.0)
Widowed	205 (8.2)	18 (5.2)	4 (1.2)	182 (7.3)
Divorced	289 (11.6)	13 (3.8)	13 (3.8)	302 (12.0)
Separated	78 (3.1)	25 (7.3)	2 (0.6)	86 (3.4)
Never been married	661 (26.5)	58 (16.9)	136 (39.9)	675 (26.9)
DK / Refused	12 (0.5)	3 (0.9)	--	12 (0.5)

**Table 3.1 Demographic Characteristics of the Study Samples – continued**

Characteristic	Sample 1- Group 1A (n=2496) n (%)	Sample 1- Group 2 (n=344) n (%)	Sample 2- Group 1 (n=341) n (%)	Sample 1- Group 1B (n=2510) n (%)
Family Work Status				
No worker in family	559 (22.4)	64 (18.6)	52 (15.2)	587 (23.4)
At least one full-time worker	1726 (69.2)	243 (70.6)	261 (76.5)	1683 (67.1)
Only part-time workers	206 (8.3)	36 (10.5)	28 (8.2)	235 (9.4)
DK / Refused	5 (0.2)	1 (0.3)	--	5 (0.2)
2000 Family Income				
Under \$20K	396 (15.9)	101 (29.4)	23 (6.7)	418 (16.7)
\$20K - \$34,999	499 (20.0)	79 (23.0)	44 (12.9)	431 (17.2)
\$35K - \$49,999	400 (16.0)	31 (9.0)	43 (12.6)	379 (15.1)
\$50K - \$74,999	337 (13.5)	17 (4.9)	62 (18.2)	387 (15.4)
\$75K and over	503 (20.2)	8 (2.3)	108 (31.7)	484 (19.3)
DK / Refused	361 (14.5)	108 (31.4)	61 (17.9)	411 (16.4)
Health Status				
Excellent/Very Good	1360 (54.5)	83 (24.1)	156 (45.7)	1343 (53.5)
Good	765 (30.6)	130 (37.8)	145 (42.5)	818 (32.6)
Fair/Poor	371 (14.8)	131 (38.1)	40 (11.7)	349 (13.9)
Chronic Disease				
Had Chronic Disease	1302 (52.2)	171 (49.7)	128 (37.5)	1308 (52.1)
Didn't have Chronic Disease	1194 (47.8)	173 (50.3)	213 (62.5)	1202 (47.9)

**Table 3.2 Weighted Proportions of Demographic Characteristics of the Study Samples**

Characteristic	Sample 1- Group 1A (n=2496) %	Sample 1- Group 2 (n=344) %	Sample 2- Group 1 (n=341) %	Sample 1- Group 1B (n=2510) %
Census Region				
Northeast	18.3	15.7	19.6	19.1
Midwest	23.3	6.0	16.6	24.2
South	37.6	36.1	22.5	34.4
West	20.8	42.1	41.3	22.2
Place of Residence				
Urban	30.8	50.9	38.9	31.3
Suburban	47.9	38.9	60.0	47.8
Rural	21.3	10.2	1.1	20.9
Language of Interview				
English	100	5.3	100	100
Spanish	--	78.4	--	--
Mandarin or Cantonese	--	8.0	--	--
Korean	--	3.5	--	--
Vietnamese	--	4.9	--	--
Nativity Status and number of years in the US				
US born	90.4	9.1	20.8	90.8
Foreign-born, more than 10 years in US	7.1	55.3	58.7	6.4
Foreign-born, 5-10 years in US	1.1	17.0	11.7	0.8
Foreign-born, less than 5 years in US	1.0	17.1	8	1.4
Undesignated	0.4	1.5	0.8	0.6
Race/Ethnicity				
White, nonHispanic	75.6	0.2	--	72.2
Black, nonHispanic	10.5	0.3	--	12.0
Hispanic	6.4	93.7	--	5.7
Asian	2.6	4.7	98.5	3.5
Other	5.0	1.1	1.5	6.6

**Table 3.2 Weighted Proportions of Demographic Characteristics of the Study Samples - continued**

Characteristic	Sample 1- Group 1A (n=2496) %	Sample 1- Group 2 (n=344) %	Sample 2- Group 1 (n=341) %	Sample 1- Group 1B (n=2510) %
Age				
18-29	20.1	27.1	35.4	19.8
30-39	19.2	26.8	28.5	20.4
40-49	21.1	16.9	21.0	21.7
50-64	22.2	16.2	10.6	21.2
65+	16.4	11.4	4.0	15.8
Missing	1.0	1.6	0.5	1.2
Gender				
Female	56.0	62.0	51.7	59.3
Male	44.0	38.0	48.3	40.7
Education				
High school incomplete	11.6	56.0	1.4	12.0
High school diploma, no college	32.5	21.1	13.2	29.4
Some college or technical	28.0	14.6	22.6	28.9
College graduate or more	27.7	6.9	62.1	29.3
Don't know-refused	0.2	1.5	0.7	0.3
Family Status				
Married, no children	30.7	22.7	20.7	32.0
Married w/ children	30.5	47.2	36.8	29.2
Single, no children	27.3	12.8	29.5	26.1
Single w/ children	11.1	17.1	13.0	11.9
Undesignated	0.5	0.2	--	0.8
Marital Status				
Married	58.3	62.2	54.5	56.8
Living as married	2.9	7.7	2.9	4.5
Widowed	7.5	4.0	1.6	6.3
Divorced	9.9	2.2	2.6	10.0
Separated	2.3	7.1	0.3	2.3
Never been married	18.8	16.6	38.1	19.4
DK / Refused	0.3	0.2	--	0.7

**Table 3.2 Weighted Proportions of Demographic Characteristics of the Study Samples – continued**

Characteristic	Sample 1- Group 1A (n=2496) %	Sample 1- Group 2 (n=344) %	Sample 2- Group 1 (n=341) %	Sample 1- Group 1B (n=2510) %
Family Work Status				
No worker in family	22.3	17.1	16.5	23.2
At least one full-time worker	70.1	71.0	74.5	66.6
Only part-time workers	7.5	10.5	9.0	10.0
DK / Refused	0.1	1.3	--	0.2
2000 Family Income				
Under \$20K	15.4	31.9	5.6	16.8
\$20K - \$34,999	21.0	24.1	13.3	17.7
\$35K - \$49,999	15.7	10.6	12.3	15.4
\$50K - \$74,999	13.9	4.4	17.6	15.3
\$75K and over	18.1	1.8	32.3	18.4
DK / Refused	15.9	27.2	18.9	16.5
Health Status				
Excellent/Very Good	52.7	20.9	43.6	52.0
Good	30.9	41.6	44.0	34.0
Fair/Poor	16.4	37.5	12.4	14.0
Chronic Disease				
Have Chronic Disease	55.4	51.1	41.2	53.4
Don't have Chronic Disease	44.6	48.6	58.8	46.6

**Table 3.3 Sample 1-Group 1A: Interitem Correlation Matrix (with variances on the diagonal)**

	1	2	3	4	5	6	7	8	9	10
1										
2	0.647									
3	0.612	0.561								
4	0.670	0.481	0.608							
5	0.671	0.525	0.566	0.721						
6	0.587	0.500	0.581	0.583	0.638					
7	0.631	0.478	0.601	0.583	0.595	0.661				
8	0.473	0.354	0.428	0.582	0.515	0.437	0.450			
9	0.301	0.299	0.346	0.292	0.349	0.389	0.306	0.267		
10	0.374	0.252	0.414	0.403	0.436	0.375	0.421	0.376	0.304	

**Table 3.4 Sample 1-Group 2: Interitem Correlation Matrix (with variances on the diagonal)**

	1	2	3	4	5	6	7	8	9	10
1										
2	0.396									
3	0.400	0.300								
4	0.338	0.211	0.261							
5	0.439	0.282	0.243	0.685						
6	0.463	0.341	0.345	0.418	0.476					
7	0.454	0.387	0.271	0.455	0.543	0.588				
8	0.251	0.096	0.255	0.422	0.252	0.367	0.372			
9	0.121	0.212	0.118	0.085	0.120	0.263	0.107	0.028		
10	0.417	0.342	0.271	0.431	0.487	0.310	0.563	0.133	0.204	

**Table 3.6 Measures of overall fit for the one-factor measurement model, Sample 1-Group 1A, Sample 1-Group 2 and Sample 2-Group 1**

Sample	Sample Size	Chi-square Statistic				Fit Indices			
		$\chi^2$	df	<i>P</i>	$\chi^2/\text{df}$	CFI	TLI	RMSEA	SRMR
Sample 1-Group1A	2496	69.446	26	0.0000	2.671	0.986	0.993	0.026	0.032
Sample 1-Group2	344	29.228	17	0.0325	1.719	0.967	0.963	0.046	0.094
Sample 2-Group1	341	32.078	21	0.0575	1.528	0.986	0.987	0.039	0.057

**Table 3.7** Factor loading estimates, standardized factor loadings and R<sup>2</sup>s for the measurement model for the three calibration samples

Observed Indicators	Sample 1-Group 1A (n=2496)			Sample 1-Group 2 (n=344)			Sample 2-Group 1 (n=341)		
	Factor Loading Estimates	Standardized Factor Loadings*	R <sup>2</sup> Values	Factor Loading Estimates	Standardized Factor Loadings*	R <sup>2</sup> Values	Factor Loading Estimates	Standardized Factor Loadings*	R <sup>2</sup> Values
1	1.00+	0.801	0.642	1.00+	0.765	0.585	1.00+	0.615	0.379
2	0.770	0.617	0.380	0.722	0.552	0.305	0.724	0.445	0.198
3	0.933	0.747	0.558	0.633	0.484	0.234	0.728	0.448	0.201
4	1.009	0.809	0.654	0.804	0.615	0.378	0.992	0.611	0.373
5	1.017	0.815	0.664	1.083	0.828	0.686	1.091	0.671	0.451
6	0.968	0.776	0.602	0.795	0.608	0.369	1.178	0.725	0.526
7	0.966	0.774	0.599	0.984	0.752	0.566	1.290	0.794	0.630
8	0.780	0.625	0.390	0.801	0.613	0.375	0.753	0.464	0.215
9	0.534	0.428	0.183	0.344	0.263	0.069	0.355	0.219	0.048
10	0.647	0.518	0.269	0.559	0.428	0.183	1.041	0.641	0.411
11	n/a	n/a	n/a	0.479	0.366	0.134	n/a	n/a	n/a

\* All estimates are standardized and significant at  $p < 0.05$ , + Constrained parameter



**Table 3.8 Correlated Measurement Errors for the Confirmatory Factor Model for Three Calibration Samples**

	Sample 1-Group 1A N=2496		Sample 1-Group 2 N=344		Sample 2-Group 1 N=341	
Error Terms of Observed Indicators	Correlation	Z statistic	Correlation	Z statistic	Correlation	Z statistic
1, 2	0.153	6.170	0.194	2.517	0.122	2.530
2, 3	0.100	2.805	--	--	0.101	1.164
4, 5	0.062	2.754	--	--	0.275	5.248
6, 7			0.276	4.166		
8, 9			0.234	2.107		
2, 11			0.313	3.945		

**Table 3.9 Sample 1-Group 1B: Interitem Correlation Matrix (with variances on the diagonal)**

	1	2	3	4	5	6	7	8	9	10
1										
2	0.558									
3	0.576	0.426								
4	0.529	0.418	0.561							
5	0.638	0.450	0.525	0.752						
6	0.612	0.435	0.600	0.631	0.671					
7	0.593	0.411	0.497	0.508	0.547	0.652				
8	0.433	0.317	0.343	0.495	0.436	0.454	0.397			
9	0.370	0.348	0.409	0.404	0.365	0.390	0.324	0.304		
10	0.466	0.276	0.546	0.364	0.333	0.472	0.407	0.259	0.360	

**Table 3.10 Factor loading estimates, standardized factor loadings and R<sup>2</sup>s for the measurement model for Validation Sample 1-Group 1B**

Observed Indicators	Factor Loading Estimates	Standardized factor loadings*	R <sup>2</sup> Values
1	1.00+	0.773	0.598
2	0.724	0.560	0.313
3	0.940	0.727	0.529
4	0.962	0.744	0.553
5	1.007	0.779	0.607
6	1.083	0.837	0.701
7	0.946	0.731	0.535
8	0.729	0.564	0.318
9	0.657	0.508	0.258
10	0.718	0.555	0.308
* All estimates are standardized and significant at $p < .05$ . + Constrained parameter			

**Table 3.11 Correlated Error Terms for the Confirmatory Factor Model, Sample 1-Group 1B**

Error Terms of Observed Indicators	Correlation	Z statistic
1, 2	0.125	4.537
2, 3	0.019	0.039
4, 5	0.172	6.826

**Table 3.12 Sample 1-Group 1: Interitem Correlation Matrix (with variances on the diagonal)**

	1	2	3	4	5	6	7	8	9	10
1										
2	0.604									
3	0.595	0.498								
4	0.605	0.450	0.586							
5	0.644	0.489	0.547	0.736						
6	0.599	0.468	0.589	0.607	0.654					
7	0.613	0.446	0.553	0.548	0.573	0.656				
8	0.452	0.336	0.388	0.541	0.478	0.445	0.424			
9	0.336	0.324	0.376	0.348	0.356	0.389	0.315	0.285		
10	0.419	0.263	0.480	0.384	0.386	0.424	0.413	0.319	0.333	

**Table 3.13 Factor Loading Estimates, Standardized Factor Loadings and R<sup>2</sup>s for the Measurement Model, Sample 1-Group 1**

Observed Indicators	Factor Loading Estimates	Standardized Factor Loadings*	R <sup>2</sup> Values
1	1.00+	0.787	0.619
2	0.750	0.590	0.348
3	0.937	0.737	0.544
4	0.986	0.776	0.602
5	1.014	0.798	0.636
6	1.022	0.804	0.646
7	0.959	0.755	0.570
8	0.757	0.596	0.355
9	0.594	0.467	0.218
10	0.679	0.534	0.285
* All estimates are standardized and significant at p < .05. + Constrained parameter			

**Table 3.14 Correlated Error Terms for the Confirmatory Factor Model, Sample 1-Group 1**

Error Terms of Observed Indicators	Correlation	Z statistic
1, 2	0.140	7.523
2, 3	0.063	2.383
4, 5	0.117	6.939

**Table 3.15 Cronbach's Alpha for all N items and for all N-1 combinations of items**

	Sample 1-Group1A $\alpha = 0.815$ (n=2496)		Sample 1-Group 1B $\alpha = 0.815$ (n=2510)		Sample 1-Group 2 $\alpha = 0.766$ (n=344)		Sample 2-Group 1 $\alpha = 0.738$ (n=341)		Sample 1-Group 1 $\alpha = 0.816$ (n=5006)	
Item #	Correlation with Total	Alpha	Correlation with Total	Alpha	Correlation with Total	Alpha	Correlation with Total	Alpha	Correlation with Total	Alpha
1	0.648	0.780	0.651	0.783	0.545	0.730	0.482	0.704	0.649	0.781
2	0.454	0.803	0.437	0.808	0.507	0.736	0.386	0.719	0.446	0.805
3	0.500	0.805	0.448	0.811	0.340	0.760	0.310	0.731	0.475	0.808
4	0.609	0.787	0.619	0.790	0.489	0.741	0.489	0.705	0.614	0.788
5	0.631	0.787	0.626	0.791	0.516	0.747	0.520	0.701	0.629	0.789
6	0.607	0.786	0.634	0.786	0.506	0.737	0.571	0.691	0.620	0.786
7	0.606	0.785	0.606	0.789	0.593	0.725	0.565	0.687	0.606	0.787
8	0.439	0.808	0.449	0.809	0.471	0.742	0.319	0.731	0.444	0.808
9	0.301	0.825	0.328	0.824	0.227	0.771	0.140	0.771	0.314	0.825
10	0.359	0.813	0.354	0.816	0.330	0.761	0.394	0.724	0.357	0.815
11	--	--	--	--	0.353	0.778	--	--	--	--

**Table 3.16 Patient Rating of Interpersonal Aspects of Care (PRIAC) Scale**

<b>Purpose:</b> To Measure Patients' Experience with the Interpersonal Aspects of Care
Item # and brief descriptor for each item
1 doctor listened
2 doctor explained things carefully
3 wanted to discuss questions about care or treatment, but did not
4 confidence and trust in doctor
5 treated with dignity and respect
6 involvement in decision making
7 doctor spent enough time
8 doctor understands background and values
9 feel that doctor looks down
10 perception of disrespect or unfair treatment due to any reason
11 problems in understanding due to language difference

**Method of Administration:** Self-administration or Interviewer-administered through telephone or face-to-face interview.

**Instructions for data collection:** Q1 through Q10 apply to 18 years and older adults. Q11 (a)-(d) apply to non-English speaking/Limited English proficient respondents only.

**Instructions for analysis**

- Recode Q10 to create variable Q10. Q10=1 if Q10 a/ b/ c/ d=1, else Q10 =2.
- Recode variable Q11(d)=2 if Q11(d)=4, else=1.
- Combine Q11 (a)-(d) to create a categorical variable Q11 as follows:  
Q11=5=Didn't have a hard time understanding because of language difference  
if Q11(a)=2  
Q11=4=Had a hard time understanding due to language difference  
if Q11(a) =1, Q11(b)=1, Q11(c)=2 and Q11(d) = 2  
Q11=3=Had a hard time understanding because of language difference  
if Q11(a)=1 and Q11(b)=2  
Q11=2=Had a hard time understanding due to language difference  
if Q11(a)=1, Q11(b)=1, Q11(c)=2, and Q11(d)=1  
Q11=1=Had a hard time understanding  
if Q11(a)=1, Q11(b)=1 and Q11(c)=1
- Calculate scale score for each respondent as the sum of responses to all items.  
Score Range from 10 to 36 for English-proficient respondents; from 11-41 for Non-English speaking/Limited English proficient respondents.

Q1 The last time you visited a doctor, did the doctor listen to everything you had to say, to most, to some, or only a little of what you had to say?

- 4 Everything
- 3 Most
- 2 Some
- 1 Only a little

Q2 During the visit, did you understand everything the doctor said, most of what the doctor said, some, or only a little of what the doctor said?

- 4 Everything
- 3 Most
- 2 Some
- 1 Only a little

Q3 Did you have questions about your care or treatment that you wanted to discuss, but did not?

- 2 No
- 1 Yes

Q4 How much confidence and trust did you have in the doctor treating you—a great deal, a fair amount, not too much, or none at all?

- 4 Great deal
- 3 A fair amount
- 2 Not too much
- 1 None at all

Q5 Did the doctor treat you with a great deal of respect and dignity, a fair amount, not too much, or none at all?

- 4 Great deal
- 3 A fair amount
- 2 Not too much
- 1 None at all

Q6 Did the doctor involve you in decisions about your care as much as you wanted, almost as much as you wanted, less than you wanted, or a lot less than you wanted?

- 4 As much as wanted
- 3 Almost as much
- 2 Less/More than wanted
- 1 A lot less than wanted

Q7 Did the doctor spend as much time with you as you wanted, almost as much as you wanted, less than you wanted, or a lot less than you wanted?

- 4 As much as wanted
- 3 Almost as much
- 2 Less than wanted
- 1 A lot less than wanted

Q8 Please tell me if you strongly agree, somewhat agree, somewhat disagree or strongly disagree.

I feel that my doctor understands my background and values.

- 4 Strongly agree
- 3 Somewhat agree
- 2 Somewhat disagree
- 1 Strongly disagree

Q9 Please tell me if you strongly agree, somewhat agree, somewhat disagree or strongly disagree.

I often feel as if my doctor looks down on me and the way I live my life.

- 4 Strongly disagree
- 3 Somewhat disagree
- 2 Somewhat agree
- 1 Strongly agree

Q10 Thinking about your experience, did you ever feel that the doctor judged you unfairly or treated you with disrespect because of:

- a) your ability to pay for the care or the type of health insurance you have
- b) how well you speak English
- c) your race or ethnic background
- d) your gender
- e) your religion

- 2 No
- 1 Yes

**For Non-English speaking/Limited English-proficient respondents: proceed to Q11**

Q11

(a) During the visit, did you have a hard time speaking with or understanding the doctor because you and the doctor spoke different languages?

- 2 No
- 1 Yes → proceed to (b)

(b) During the visit, did you need an interpreter to help you speak with the doctor?

- 2 No
- 1 Yes → proceed to (c)

(c) When you needed an interpreter to help you speak with the doctor, did you get an interpreter?

- 2 Yes → proceed to (d)
- 1 No

(d) With the help of the interpreter, did you fully understand what the doctor was saying, somewhat understand, understand only a little, or not understand at all what the doctor was saying?

- 4 Fully understand
- 3 Somewhat understand
- 2 Understand only a little
- 1 Not understand at all



**Table 3.17 Patient Rating of Interpersonal Aspects of Care Scale Items, Descriptor for each item, and Weighted Proportions for items retained in the model (Base: Adults with a health care visit in the two years prior to their participation in the survey)**

Indicator # and Brief Description	Item and Response Categories	Sample 1- Group 1A (n=2496)	Sample 1- Group 2 (n=344)	Sample 2- Group 1 (n=341)	Sample 1- Group1B (n=2510)
1 (Doctor listened)	The last time you visited a doctor, did the doctor listen to everything you had to say, to most, to some, or only a little of what you had to say?				
	1=Only a little	3.8	14.4	4.0	3.0
	2=Some	4.3	7.9	9.8	5.2
	3=Most	24.6	20.6	48.8	24.7
	4=Everything	67.3	57.1	37.3	67.1
2 (Doctor explained things carefully)	During the visit, did you understand everything the doctor said, most of what the doctor said, some or only a little of what the doctor said?				
	1=Only a little	1.6	12.9	0.8	1.5
	2=Some	4.4	11.1	10.8	4.2
	3=Most	25.9	22.1	46.9	28.9
	4=Everything	68.0	53.9	41.5	65.4
3 (Wanted to discuss questions about care or treatment, but did not)	Did you have questions about your care or treatment that you wanted to discuss, but did not?				
	1=Yes	11.3	26.3	18.7	10.3
	2=No	88.7	73.7	81.3	89.7

**Table 3.17 Patient Rating of Interpersonal Aspects of Care Scale Items, Descriptor for each item, and Weighted Proportions for items retained in the model (Base: Adults with a health care visit in the two years prior to their participation in the survey) - Continued**

Indicator # and Brief Description	Item and Response Categories	Sample 1- Group 1A (n=2496)	Sample 1- Group 2 (n=344)	Sample 2- Group 1 (n=341)	Sample 1- Group 1B (n=2510)
4 (Confidence and trust in doctor)	How much confidence and trust did you have in the doctor treating you—a great deal, a fair amount, not too much, or none at all?				
	1=None at all	1.0	2.9	0.2	0.6
	2=Not too much	3.1	8.0	4.7	2.8
	3=A fair amount	24.1	44.3	38.7	25.7
	4=Great deal	71.8	44.8	56.3	70.9
5 (Treated with dignity and respect)	Did the doctor treat you with a great deal of respect and dignity, a fair amount, not too much, or none at all?				
	1=None at all	1.0	0.6	0.2	0.4
	2=Not too much	1.4	0.3	4.8	1.7
	3=A fair amount	21.9	13.1	34.7	21.9
	4=Great deal	75.7	86.1	60.3	76.0
6 (Involvement in decision making)	Did the doctor involve you in decisions about your care as much as you wanted, almost as much as you wanted, less than you wanted, or a lot less than you wanted?				
	1=A lot less than wanted	2.2	5.1	1.1	1.9
	2=Less/More than wanted	4.4	7.4	6.8	3.7
	3=Almost as much	15.3	20.3	41.0	18.3
	4=As much as wanted	78.1	67.2	51.1	76.1

**Table 3.17 Patient Rating of Interpersonal Aspects of Care Scale Items, Descriptor for each item, and Weighted Proportions for items retained in the model (Base: Adults with a health care visit in the two years prior to their participation in the survey) – continued**

Indicator # and Brief Description	Item and Response Categories	Sample 1-Group 1A (n=2496)	Sample 1-Group 2 (n=344)	Sample 2-Group 1 (n=341)	Sample 1-Group 1B (n=2510)
7 (Doctor spent enough time)	Did the doctor spend as much time with you as you wanted, almost as much as you wanted, less than you wanted, or a lot less than you wanted?				
	1=A lot less than wanted	3.5	6.8	3.6	2.7
	2=Less than wanted	7.2	12.4	15.9	7.4
	3=Almost as much	18.6	18.5	35.3	20.4
	4=As much as wanted	70.7	62.3	45.2	69.6
8 (Doctor understands background and values)	I feel that my doctor understands my background and values.				
	1=Strongly disagree	4.3	4.7	2.6	3.0
	2=Somewhat disagree	4.7	3.1	11.7	6.4
	3=Somewhat agree	28.5	22.9	49.6	29.7
	4=Strongly agree	62.5	69.2	36.1	60.9
9 (Feel that doctor looks down)	I often feel as if my doctor looks down on me and the way I live my life.				
	1=Strongly agree	4.0	7.3	6.4	5.4
	2=Somewhat agree	6.3	8.1	12.7	6.2
	3=Somewhat disagree	13.7	11.2	20.0	13.8
	4=Strongly disagree	76.1	73.4	60.9	74.6

**Table 3.17 Patient Rating of Interpersonal Aspects of Care Scale Items, Descriptor for each item, and Weighted Proportions for items retained in the model (Base: Adults with a health care visit in the two years prior to their participation in the survey) – Continued**

Indicator # and Brief Description	Item and Response Categories	Sample 1-Group 1A (n=2496)	Sample 1-Group 2 (n=344)	Sample 2-Group 1 (n=341)	Sample 1-Group 1B (n=2510)
10 (Perception of disrespect or unfair treatment due to any reason)	Thinking about all of the experiences you have had with health care visits in the last two years, have you ever felt that the doctor or medical staff you saw judged you unfairly or treated you with disrespect because of any reason? (your ability to pay for the care or the type of health insurance you have/how well you speak English/your race or ethnic background/your gender)				
	1=Yes	10.1	19.7	19.7	10.4
	2=No	89.9	80.3	80.3	89.6
11 (Problems in understanding due to language difference)*	(a) Thinking about your most recent care, did you have a hard time speaking with or understanding the doctor because you and the doctor spoke different languages? 2=No 1=Yes (b) Again thinking about your most recent care, did you need an interpreter to help you speak with the doctor? 2=No 1=Yes (c) When you needed an interpreter to help you speak with the doctor, did you get an interpreter? 2=Yes 1=No (d) With the help of the interpreter, did you fully understand what the doctor was saying, somewhat understand, understand only a little, or not understand at all what the doctor was saying? 2= Fully understand 1=Didn't fully understand				

**Table 3.17 Patient Rating of Interpersonal Aspects of Care Scale Items, Descriptor for each item, and Weighted Proportions for items retained in the model (Base: Adults with a health care visit in the two years prior to their participation in the survey)**

Indicator # and Brief Description	Item and Response Categories	Sample 1-Group1A (n=2496)	Sample 1-Group2 (n=344)	Sample 2-Group1 (n=341)	Sample 1-Group1B (n=2510)
	1=Had a hard time understanding due to language difference (a=1), needed an interpreter (b=1), didn't get an interpreter (c=1)	n/a	19.2	n/a	n/a
	2= Had a hard time understanding due to language difference (a=1), needed an interpreter (b=1), did get an interpreter (c=2), didn't understand fully (d=1)	n/a	2.6	n/a	n/a
	3= Had a hard time understanding due to language difference (a=1), didn't need an interpreter (b=2)	n/a	17.0	n/a	n/a
	4= Had a hard time understanding due to language difference (a=1), needed an interpreter (b=1), did get an interpreter (c=2), did understand fully (d=2)	n/a	12.0	n/a	n/a
	5= Didn't have a hard time understanding due to language difference (a=2)	n/a	49.2	n/a	n/a

**Table 3.18 Descriptive Statistics for PRIAC Scale**

Sample	Number of Items	Possible Range*	Actual Range	Mean Score $\pm$ SD
Sample 1-Group 1A	10	10-36	12-36	32.70 $\pm$ 3.92
Sample 1-Group 2	11	11-41	18-41	34.70 $\pm$ 5.17
Sample 2-Group 1	10	10-36	18-36	30.35 $\pm$ 3.68
Sample 1-Group 1B	10	10-36	13-36	32.66 $\pm$ 3.79
Sample 1-Group 1	10	10-36	12-36	32.68 $\pm$ 3.86
*Higher score indicates better experience with the interpersonal aspects of care.				

**Table 3.19 PRIAC Scale Score Compared to Optimum Score, by Sample**

Sample	Sample Size	Number of Items	Range	% sample with score at the optimum level*	% sample with score $\geq$ 95%, and < 100% of optimum level*	% sample with score $\geq$ 85%, and < 95% of optimum level*	% sample with score $\geq$ 75%, and < 85% of optimum level*	% sample with score < 75% of the optimum level*
				Outstanding	Excellent	Good	Fair	Poor
Sample 1-Group1A	2496	10	10-36	26.93%	28.56%	24.31%	12.79%	7.41%
Sample 1-Group2	344	11	11-41	13.65%	15.43%	27.14%	22.27%	21.51%
Sample 2-Group1	341	10	10-36	5.88%	18.11%	25.63%	34.80%	15.58%
Sample 1-Group1B	2510	10	10-36	23.03%	30.34%	26.43%	12.80%	7.41%
Sample 1-Group1	5006	10	10-36	25.02%	29.43%	25.35%	12.79%	7.41%
*Highest possible score on PRIAC scale is optimum level.								

**Table 3.20 Measures of overall fit for the measurement models across gender for assessing measurement invariance of the one-factor solution, Sample 1- Group 1A**

Sample	Sample Size	Fit Indices							
		$\chi^2$	df	<i>P</i>	$\chi^2/\text{df}$	CFI	TLI	RMSEA	SRMR
Overall Sample	2496	69.446	26	0.0000	2.671	0.986	0.993	0.026	0.032
Female	1598	46.665	24	0.0037	1.944	0.988	0.994	0.024	0.034
Male	898	33.680	21	0.0392	1.604	0.990	0.994	0.026	0.042
Holding thresholds and parameter estimates constant across males and females	Females=1598 Males=898	73.064	45	0.0051	1.624	0.991	0.995	0.022	--
Fully constrained model: Holding all parameters constant across males and females	Females=1598 Males=898	64.913	41	0.0101	1.583	0.992	0.995	0.022	--

**Table 3.21 Results from Multiple Group CFA for Gender, Sample 1- Group 1A**

Observed Indicators	Results of Multiple Group CFA with thresholds and factor loadings held equal across gender		Results of Multiple Group CFA with all parameters held equal across gender	
	Females (n=1598) $R^2$	Males (n=898) $R^2$	Females (n=1598) $R^2$	Males (n=898) $R^2$
1	0.655	0.627	0.649	0.635
2	0.394	0.371	0.376	0.392
3	0.611	0.512	0.602	0.535
4	0.670	0.634	0.669	0.636
5	0.668	0.661	0.665	0.662
6	0.611	0.597	0.610	0.600
7	0.585	0.620	0.585	0.620
8	0.403	0.374	0.400	0.379
9	0.239	0.141	0.235	0.147
10	0.253	0.326	0.249	0.332



**Table 3.22 Standardized factor loadings and R<sup>2</sup> Values for the One-factor Measurement Model estimated separately for females and males, Sample 1- Group 1A**

Observed Indicators	Females (N=1598) (variance explained=64%)		Males (N=898) (variance explained=65%)	
	Standardized factor loadings*	R <sup>2</sup> values	Standardized factor loadings*	R <sup>2</sup> values
1	0.800	0.640	0.806	0.650
2	0.592	0.351	0.652	0.425
3	0.798	0.637	0.677	0.459
4	0.823	0.678	0.788	0.621
5	0.809	0.654	0.822	0.676
6	0.791	0.626	0.758	0.575
7	0.770	0.593	0.781	0.610
8	0.631	0.398	0.619	0.383
9	0.491	0.241	0.371	0.137
10	0.527	0.278	0.534	0.285
* All estimates are standardized and significant at $p < 0.05$				

**Table 3.23 Measures of overall fit for the measurement model across four racial/ethnic groups: Results of Multiple group CFA assessing measurement invariance of the one -factor solution, Sample 1-Group 1A**

Sample	Sample Size	Fit Indices							
		$\chi^2$	df	<i>P</i>	$\chi^2/\text{df}$	CFI	TLI	RMSEA	SRMR
Overall Sample	Total=2496	69.446	26	0.0000	2.671	0.986	0.993	0.026	0.032
Holding thresholds and parameter estimates equal across four racial/ethnic groups	White=1449 Black = 422 Hispanic=312 Other = 313	129.339	66	0.0000	1.959	0.977	0.987	0.039	--
Fully constrained model: Holding all parameters equal across four groups	White = 1449 Black = 422 Hispanic=312 Other = 313	67.915	38	0.002	1.787	0.989	0.989	0.036	--

**Table 3.24 Amount of Variance ( $R^2$  Values) explained in each indicator by the factor:  
Results from Multiple Group CFA for racial/ethnic groups, Sample 1-Group 1A**

Observed Indicators	Multiple Group CFA with thresholds and factor loadings held constant across racial/ethnic groups - $R^2$ values				Multiple Group CFA with all parameters held constant across racial/ethnic groups - $R^2$ values			
	White	Black	Hispanic	Other	White	Black	Hispanic	Other
1	0.639	0.555	0.745	0.581	0.634	0.621	0.717	0.576
2	0.401	0.284	0.510	0.516	0.401	0.345	0.462	0.507
3	0.590	0.425	0.632	0.427	0.594	0.458	0.621	0.407
4	0.643	0.603	0.732	0.796	0.642	0.598	0.704	0.819
5	0.657	0.772	0.664	0.727	0.654	0.758	0.635	0.745
6	0.626	0.431	0.543	0.613	0.626	0.461	0.513	0.607
7	0.590	0.518	0.753	0.688	0.592	0.545	0.740	0.679
8	0.401	0.346	0.446	0.266	0.404	0.374	0.431	0.264
9	0.215	0.136	0.054	0.133	0.211	0.148	0.049	0.129
10	0.286	0.281	0.372	0.295	0.288	0.312	0.346	0.292

**Table 3.25 Regression Coefficient Estimates, Standardized Regression Coefficients, and R<sup>2</sup> Values of the Predictors and the Interpersonal Relations Score for Sample 1-Group 1A, Sample 1-Group 2, and Sample 2-Group 1**

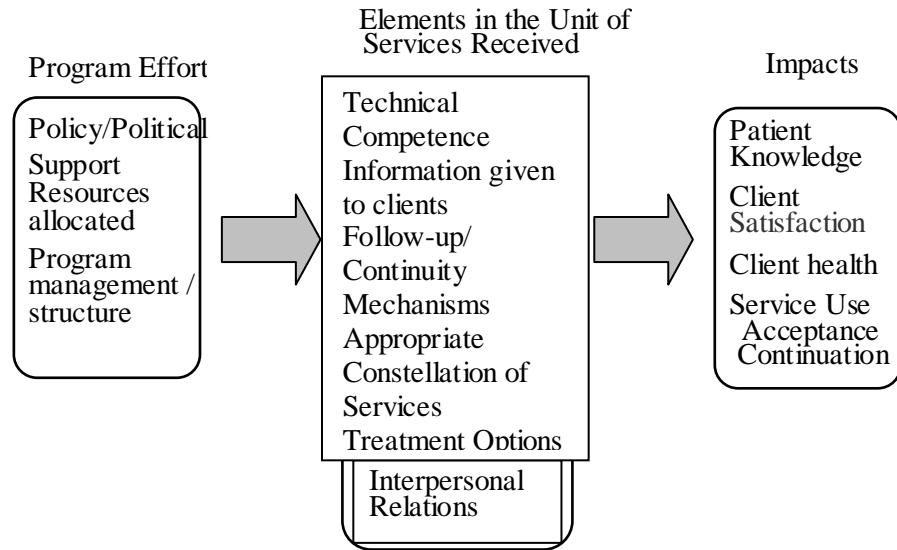
	Sample 1-Group 1A (n=2496)			Sample 1-Group 2 (n=344)			Sample 2-Group 1 (n=341)		
	Regression Coefficients	Standardized Regression Coefficients *	Z statistic	Regression Coefficients	Standardized Regression Coefficients *	Z statistic	Regression Coefficients	Standardized Regression Coefficients *	Z statistic
Predictors									
Choice in place of care	0.227	0.232	7.797	0.050	0.066	0.693	0.156	0.233	3.632
Usual source of care and continuity of care	0.113	0.201	5.971	0.155	0.304	3.465	0.095	0.235	3.782
Continuity of Insurance Coverage	0.207	0.162	4.979	0.106	0.126	1.389	0.099	0.109	2.044
Outcomes									
Compliance with care	0.462	0.380	9.005	0.461	0.367	4.001	0.550	0.334	3.550
Overall satisfaction with quality of care	0.871	0.697	22.686	0.972	0.748	10.358	1.047	0.621	8.674
Confidence in seeking future care	0.591	0.483	13.773	0.766	0.599	7.068	1.084	0.642	8.823
No delay or postponing of care	0.485	0.398	8.465	0.538	0.426	3.414	0.515	0.312	2.787
* All estimates are standardized. Estimates are significant at $p < 0.05$ except for choice in place of care and insurance continuity for Sample 1-Group 2.									

**Table 3.26 Regression Coefficient Estimates, Standardized Regression Coefficient Estimates, and R<sup>2</sup> Values of the Predictors and of the Interpersonal Relations Score for Sample 1-Group 1B and Sample 1–Group 1**

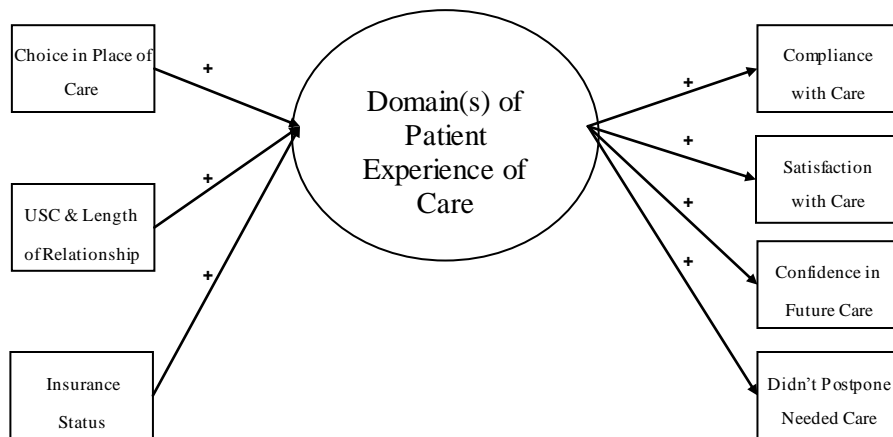
	Validation Sample			Sample to obtain stable estimates		
	Sample 1 -Group 1B (n=2510)			Sample 1 -Group 1 (n=5006)		
	Regression Coefficients	Standardized Regression Coefficients *	Z statistic	Regression Coefficients	Standardized Regression Coefficients *	Z statistic
Predictors						
Choice in place of care	0.245	0.264	8.686	0.235	0.247	11.614
Usual source of care and continuity of care	0.116	0.213	6.649	0.115	0.207	8.941
Insurance Continuity	0.204	0.166	5.025	0.206	0.165	7.070
Outcomes						
Compliance with care	0.379	0.307	6.626	0.422	0.344	10.855
Overall satisfaction with quality of care	0.982	0.757	23.638	0.924	0.724	31.860
Confidence in seeking future care	0.655	0.521	14.686	0.623	0.501	19.825
No delay / postponing / foregoing of care	0.343	0.278	5.562	0.419	0.341	9.745
* All estimates are standardized and significant at $p < 0.05$ .						

**Figure 1.1 Quality of the Service Experience Framework**

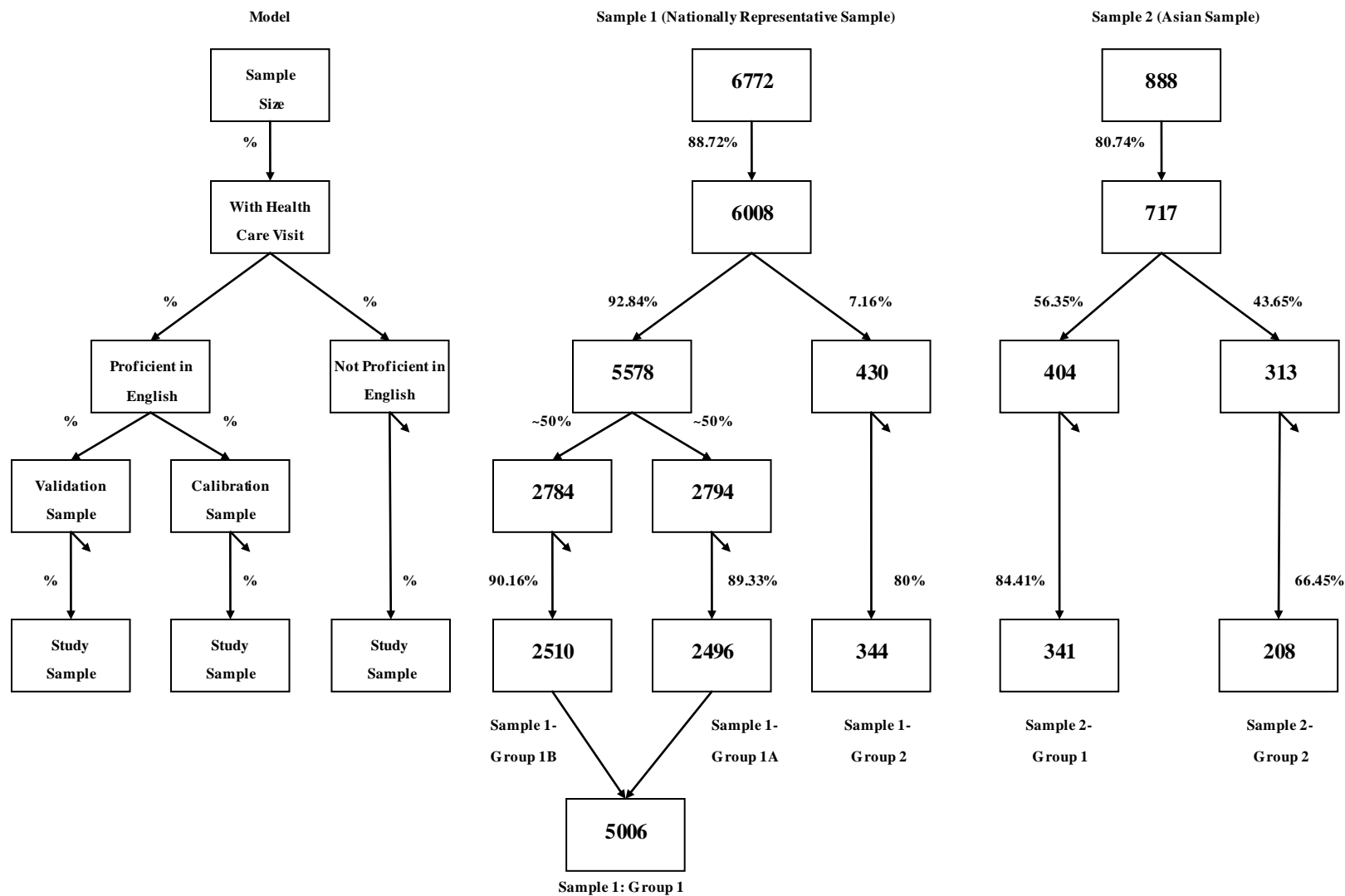
Adapted from Bruce, J. 1990; Donabedian, A. 1988



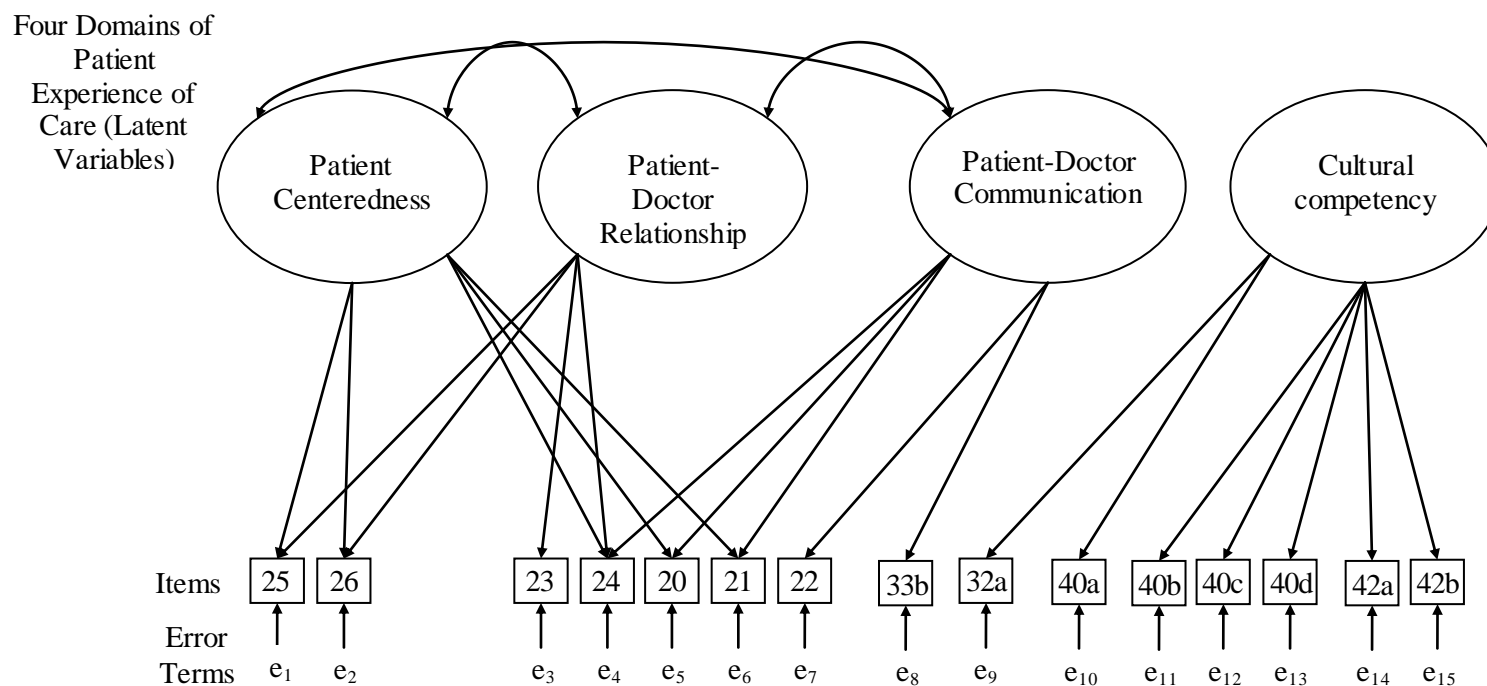
**Figure 1.2 Conceptual Framework to test Construct Validity of the One-Domain Conceptualization**



**Figure 2.1 Flow Diagram of Study Sample Selection**

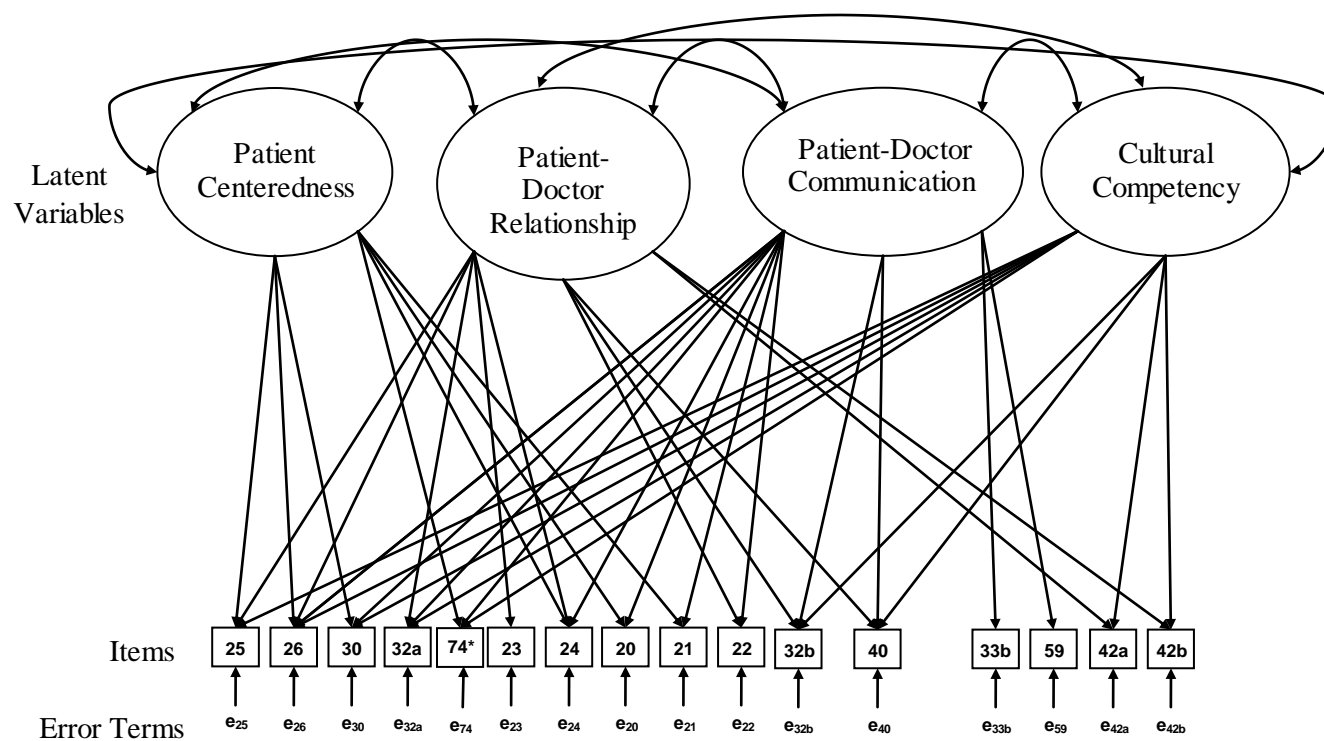


**Figure 2.2 Factor Model of Four-Domains of Patient Experience of Care based on National Healthcare Disparities and Quality Report**



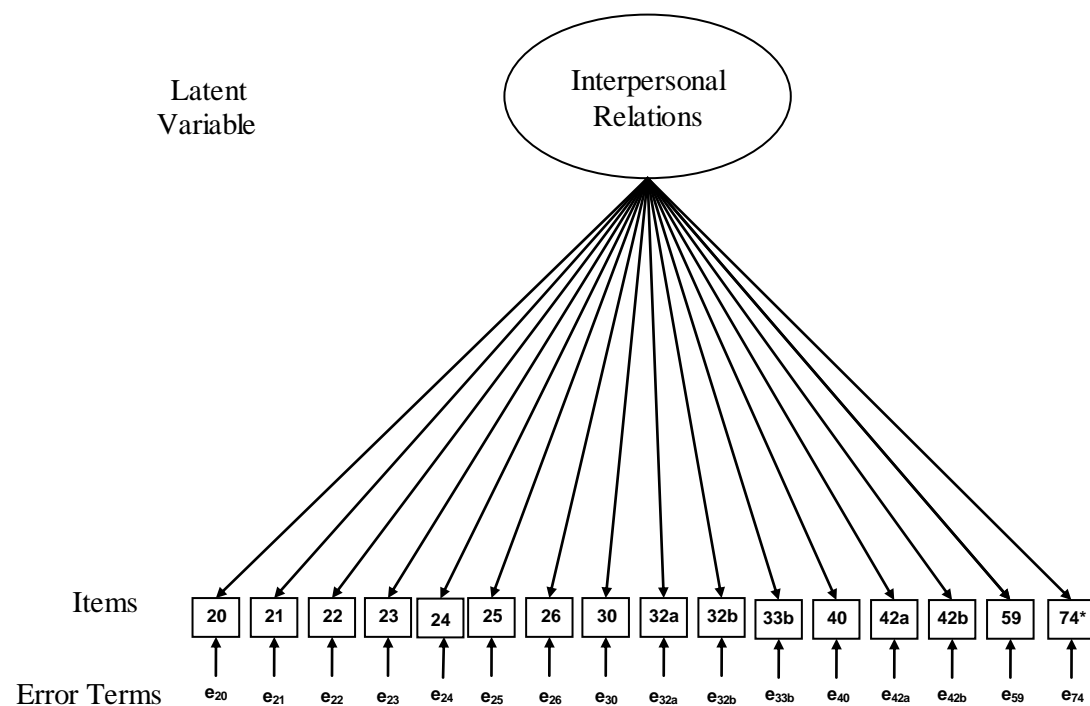


**Figure 2.3 Confirmatory Factor Model of Four-Domains of Patient Experience of Care**



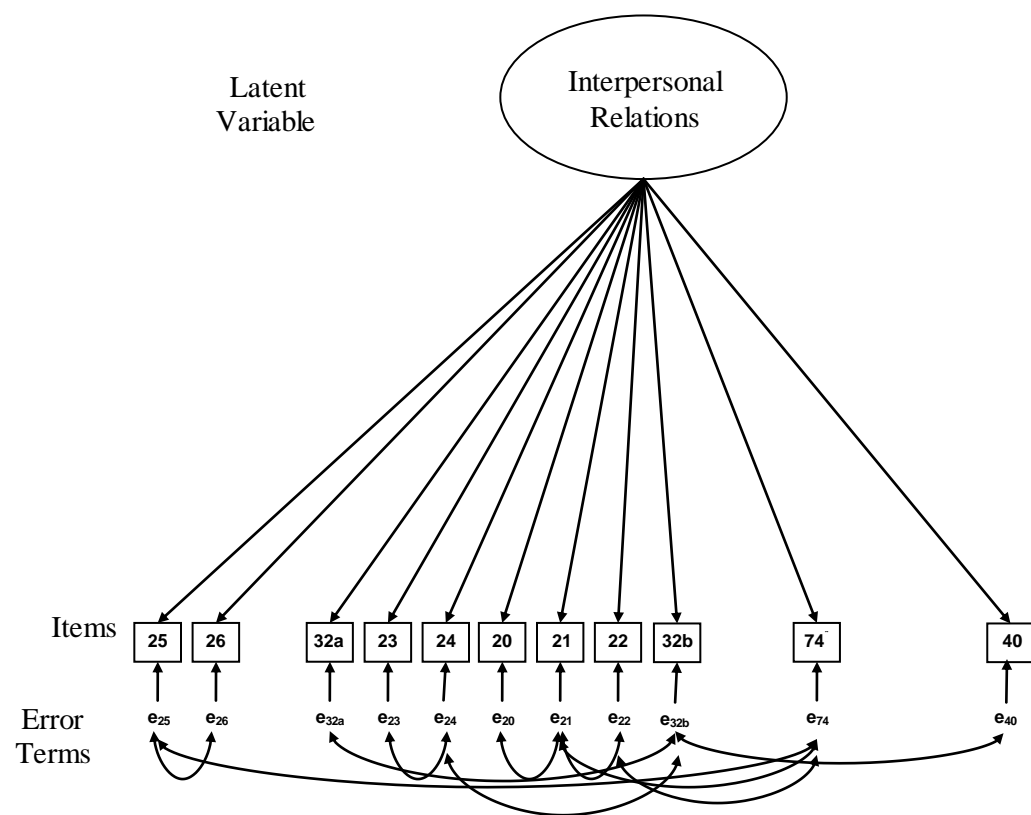
\* Applies to Non-English speaking/limited English proficient respondents

**Figure 2.4 Confirmatory Factor Model of Patient Experience of the Interpersonal Aspects of Care**



\* Applies to Non-English speaking/limited English proficient respondents

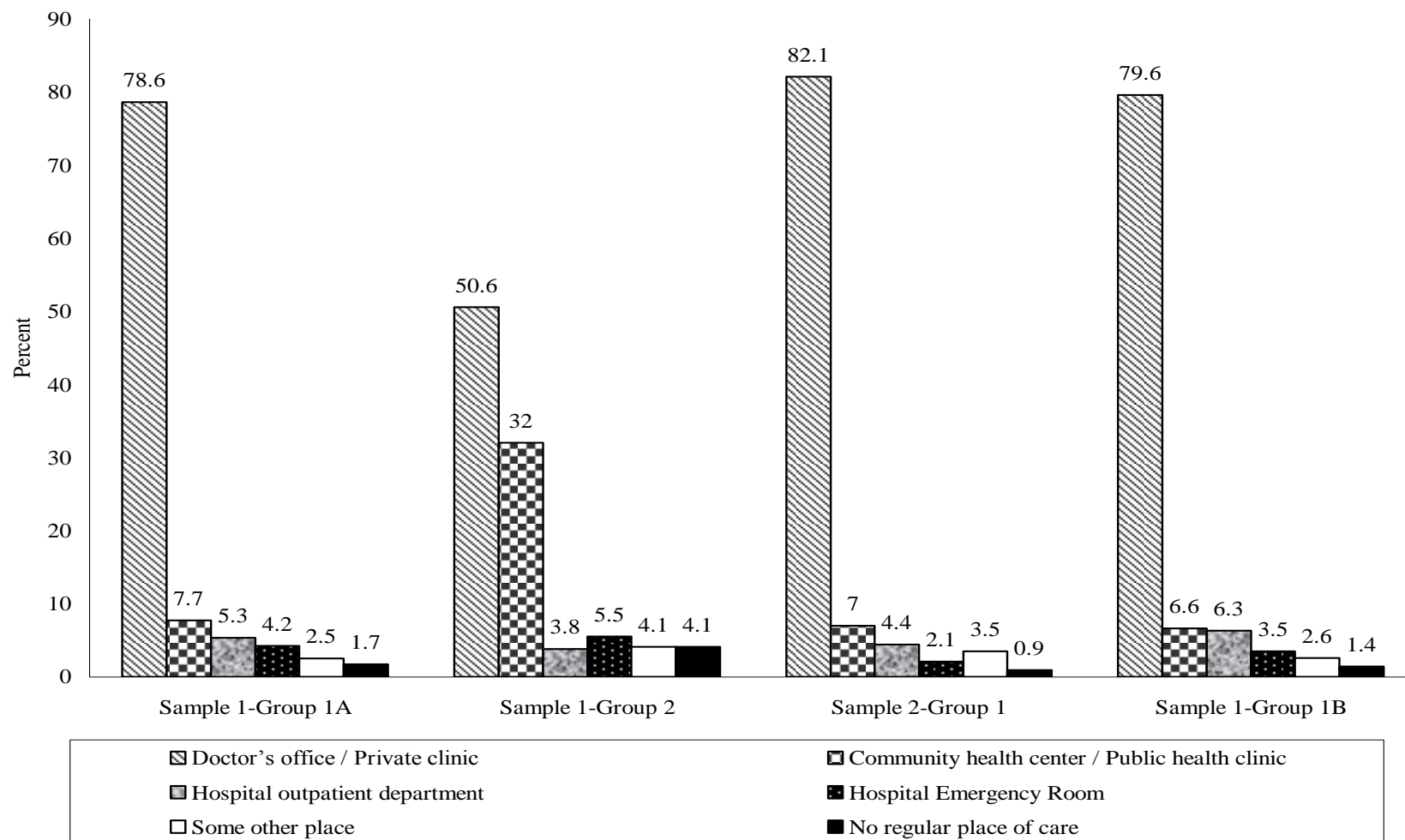
**Figure 2.5 Confirmatory Factor Model of Patient Experience of the Interpersonal Aspect of Care with Correlated Error Terms**



\* Applies to Non-English speaking/limited English proficient respondents

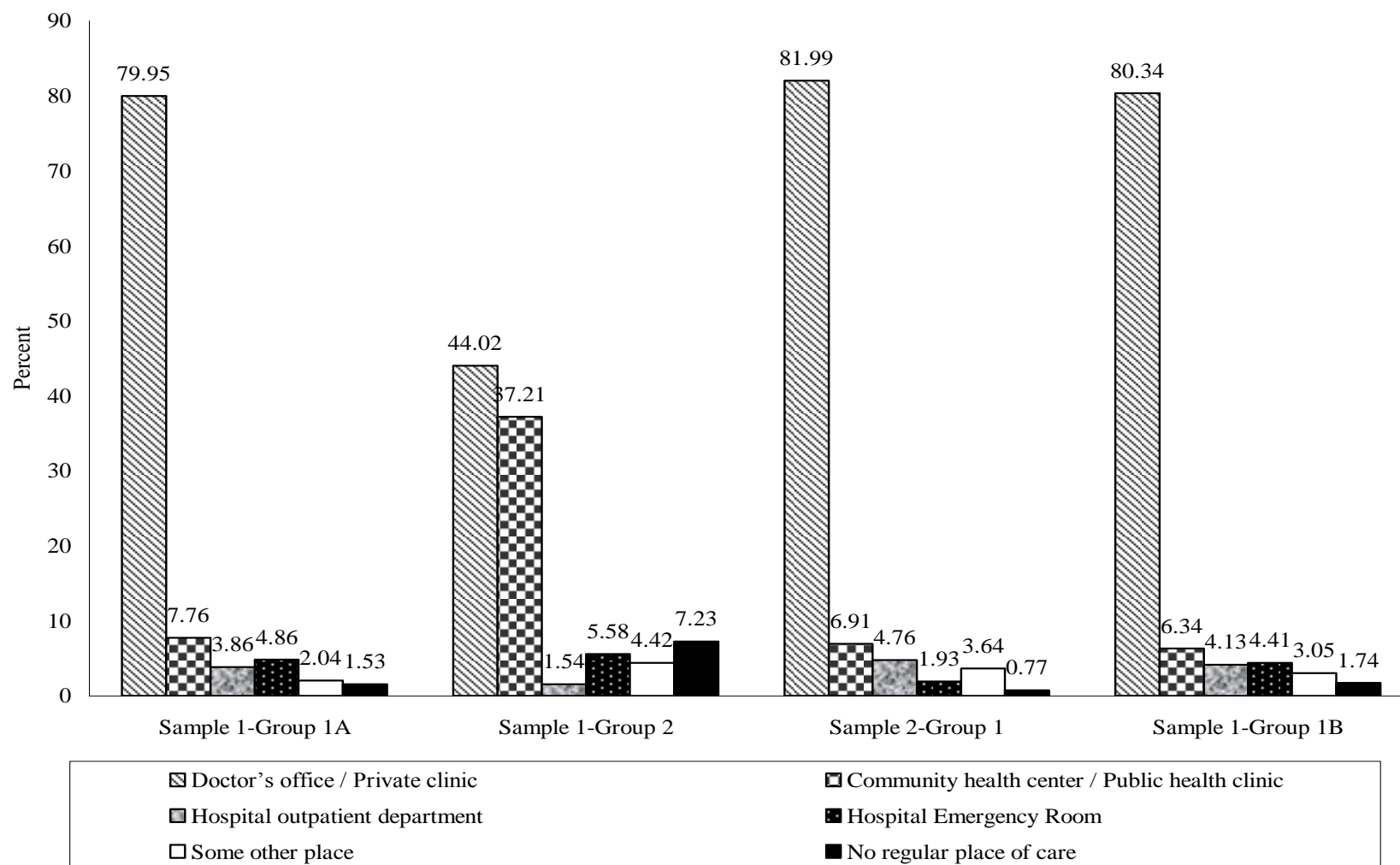
**Figure 3.1 Usual Place of Care**

Where do you usually go when you are sick or need health care?



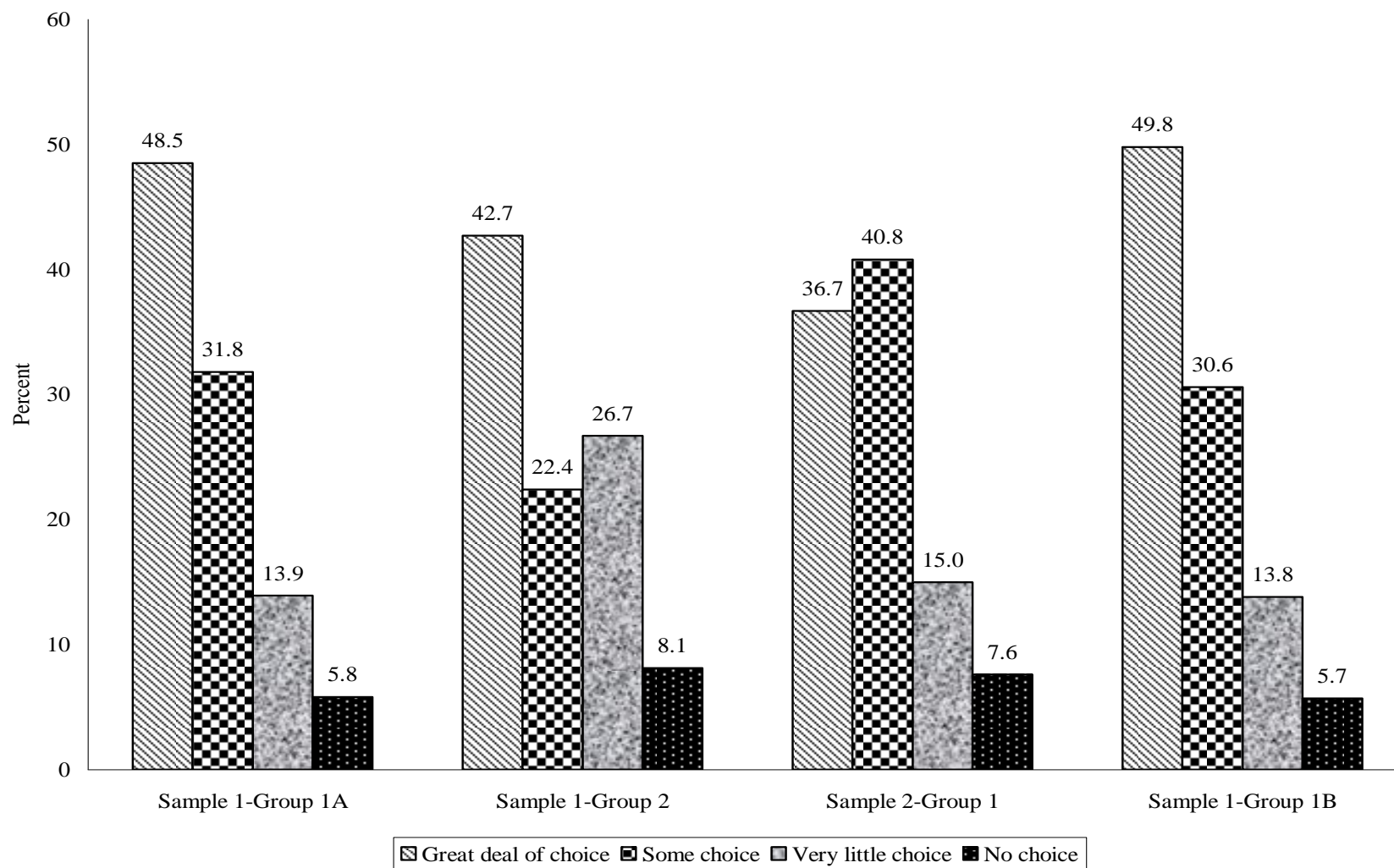
**Figure 3.2 Usual Place of Care (Weighted Proportions)**

Where do you usually go when you are sick or need health care?



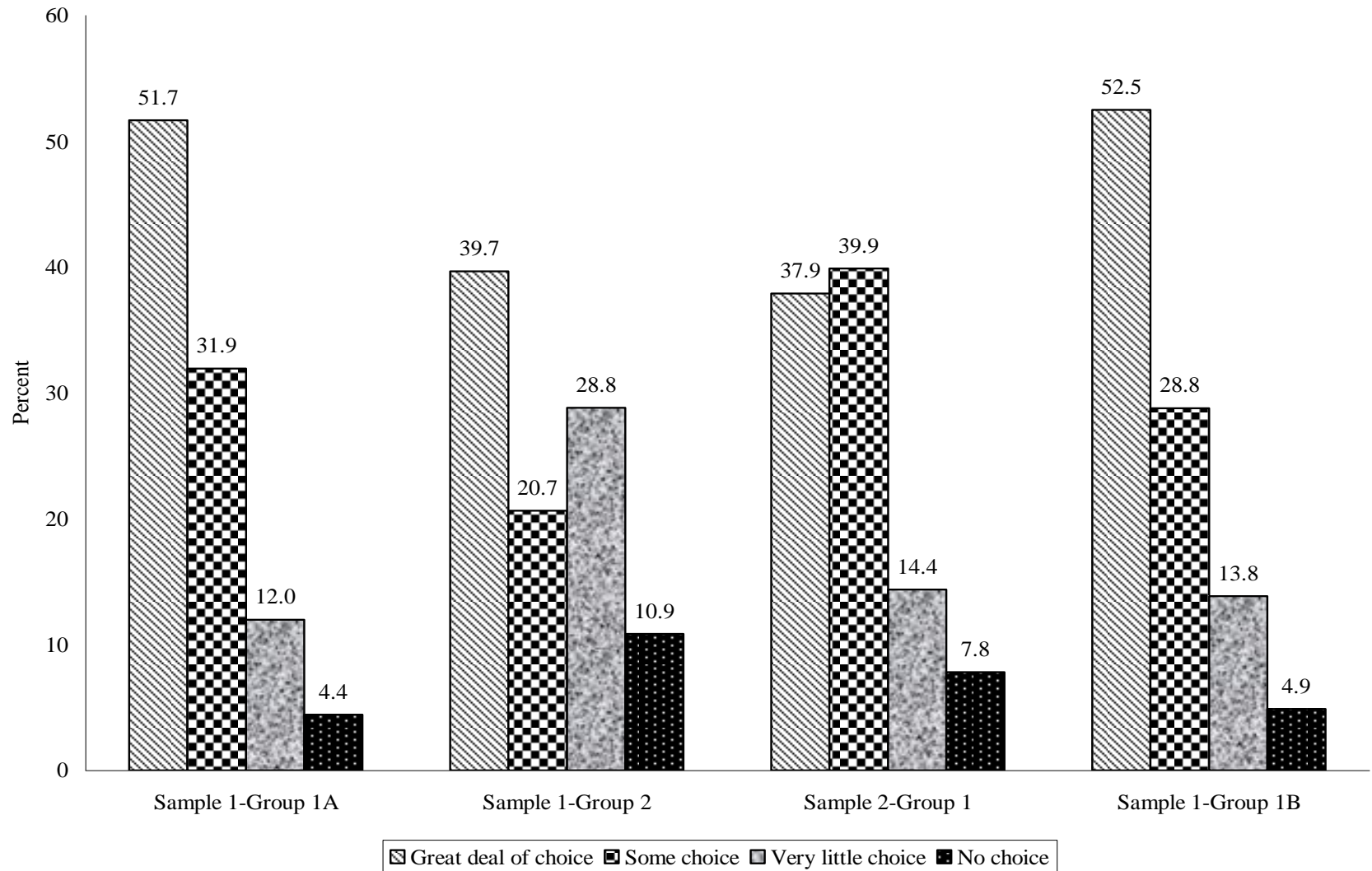
**Figure 3.3 Choice in Place of Care**

How much choice do you have in where you go for medical care?

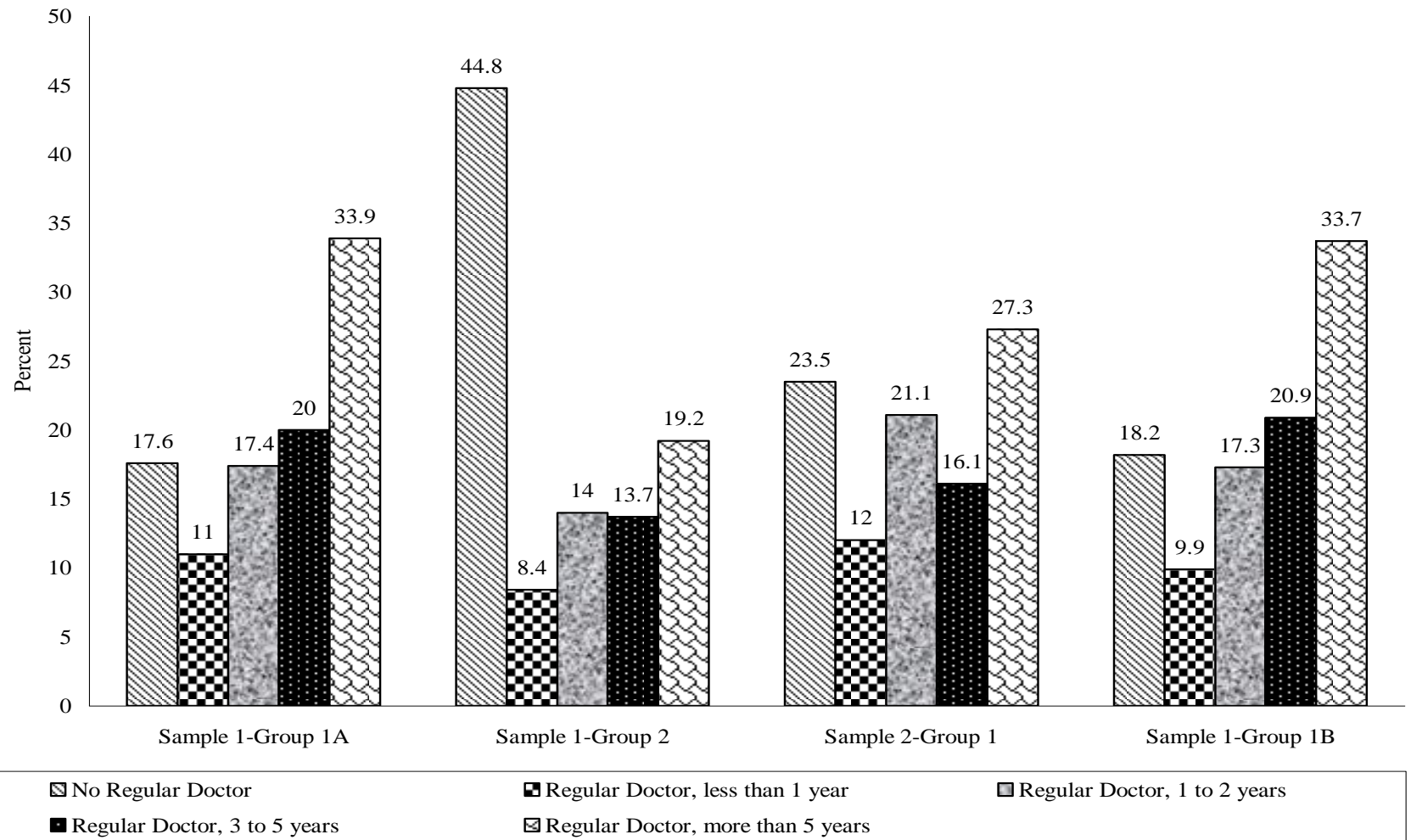


**Figure 3.4 Choice in Place of Care (Weighted Proportions)**

How much choice do you have in where you go for medical care?

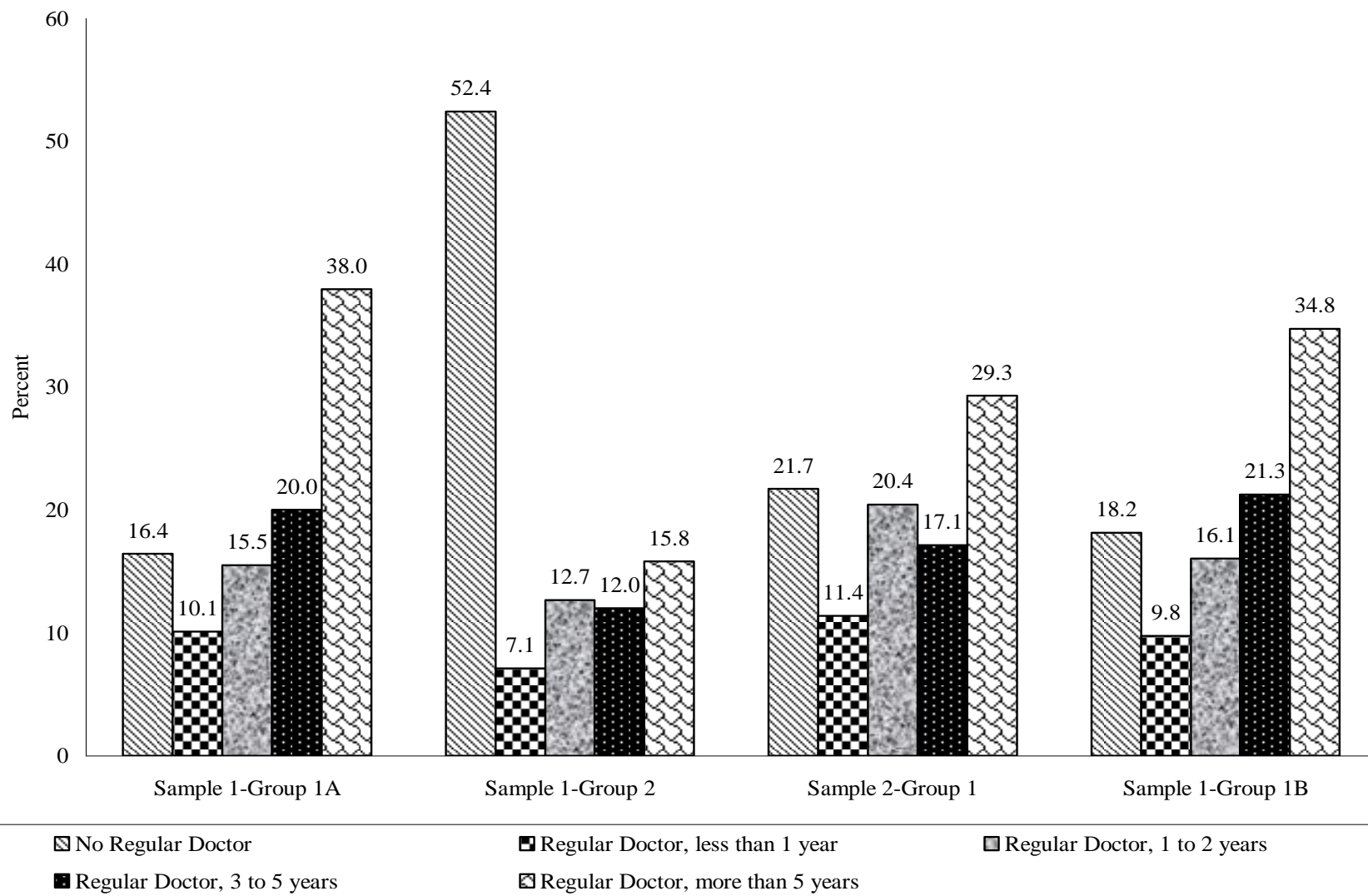


**Figure 3.5 Regular Doctor and Duration of Relationship with Regular Doctor**

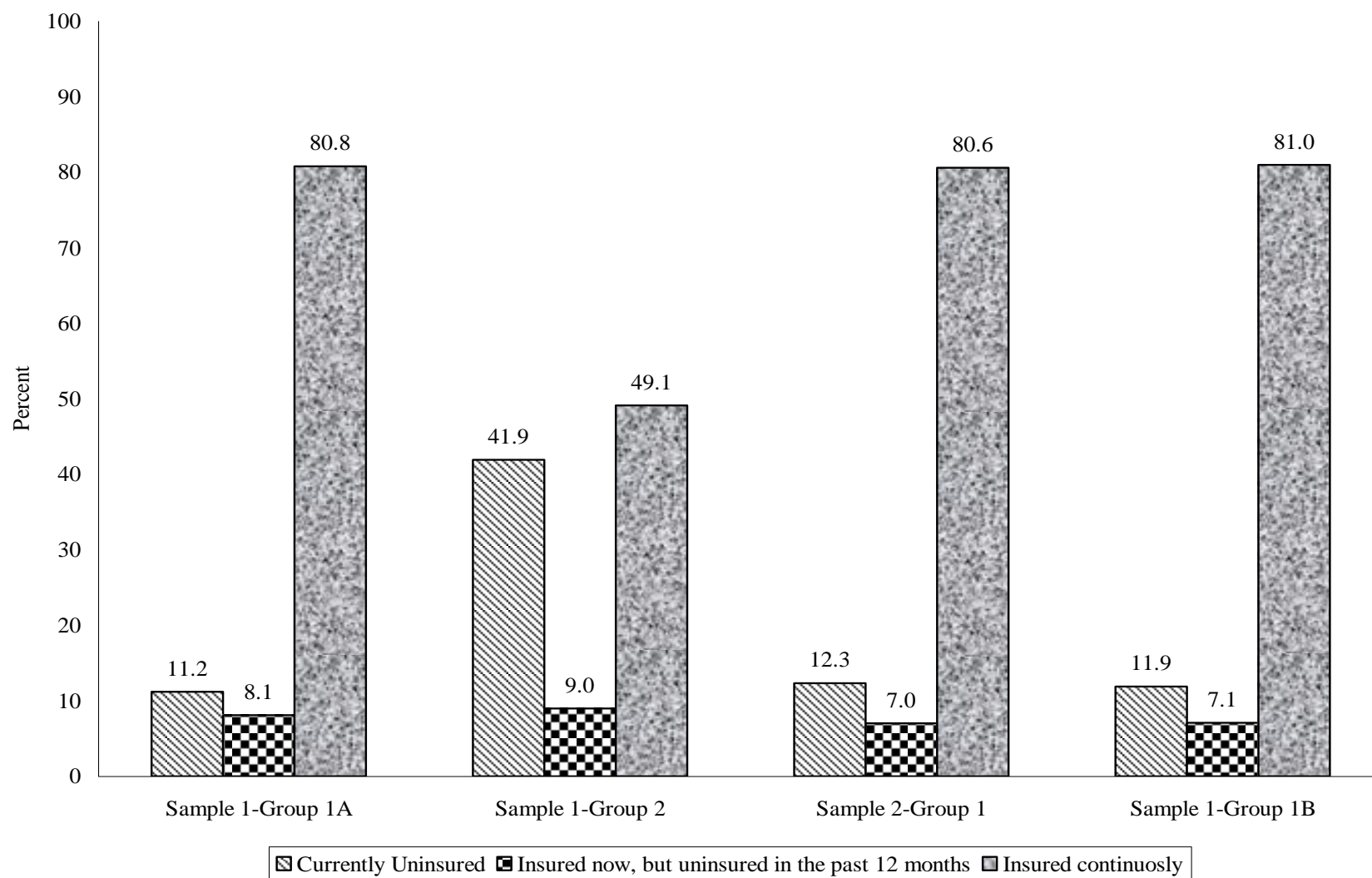




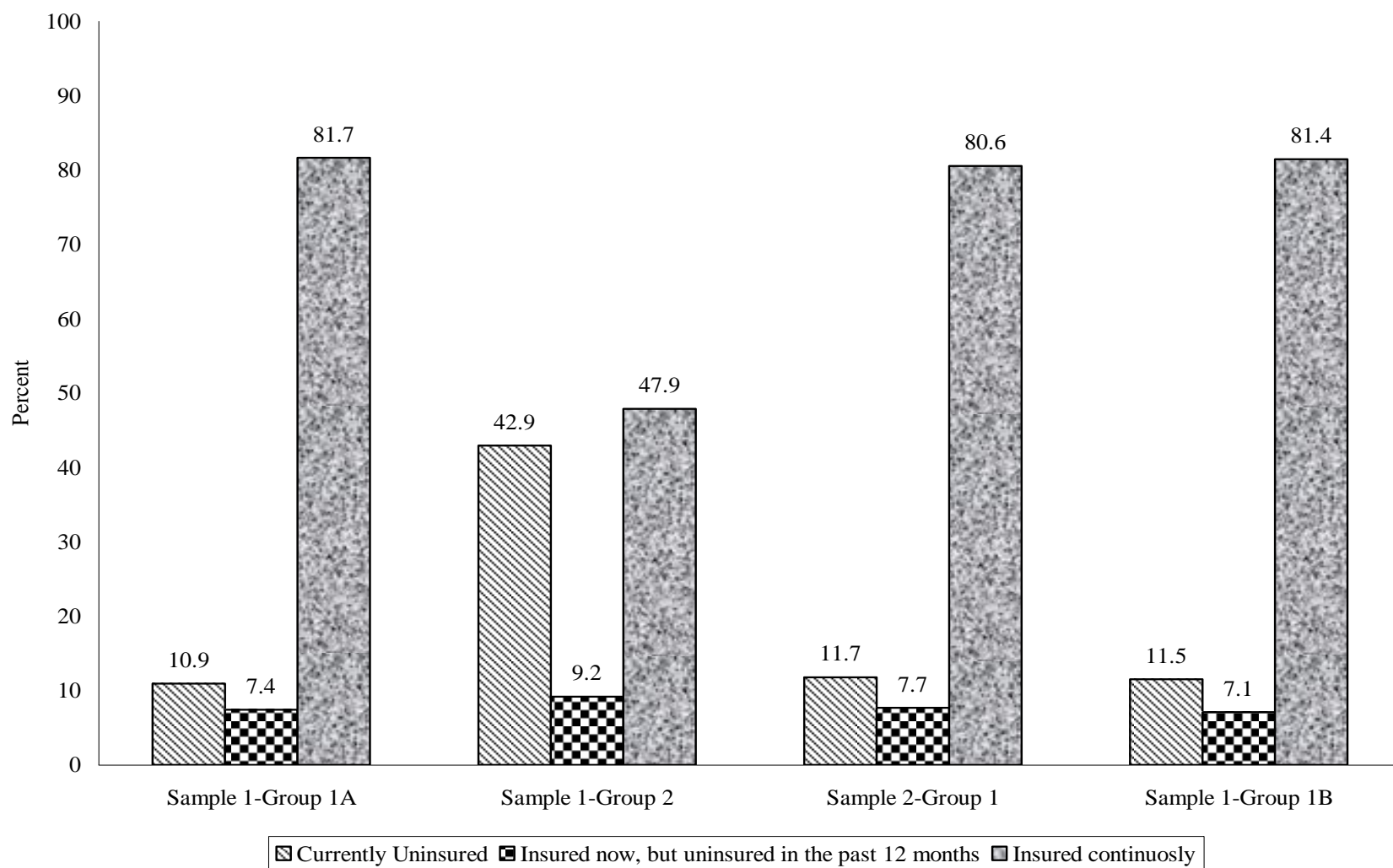
**Figure 3.6 Regular Doctor and Duration of Relationship with Regular Doctor (Weighted Proportions)**



**Figure 3.7 Continuity of Health Insurance**

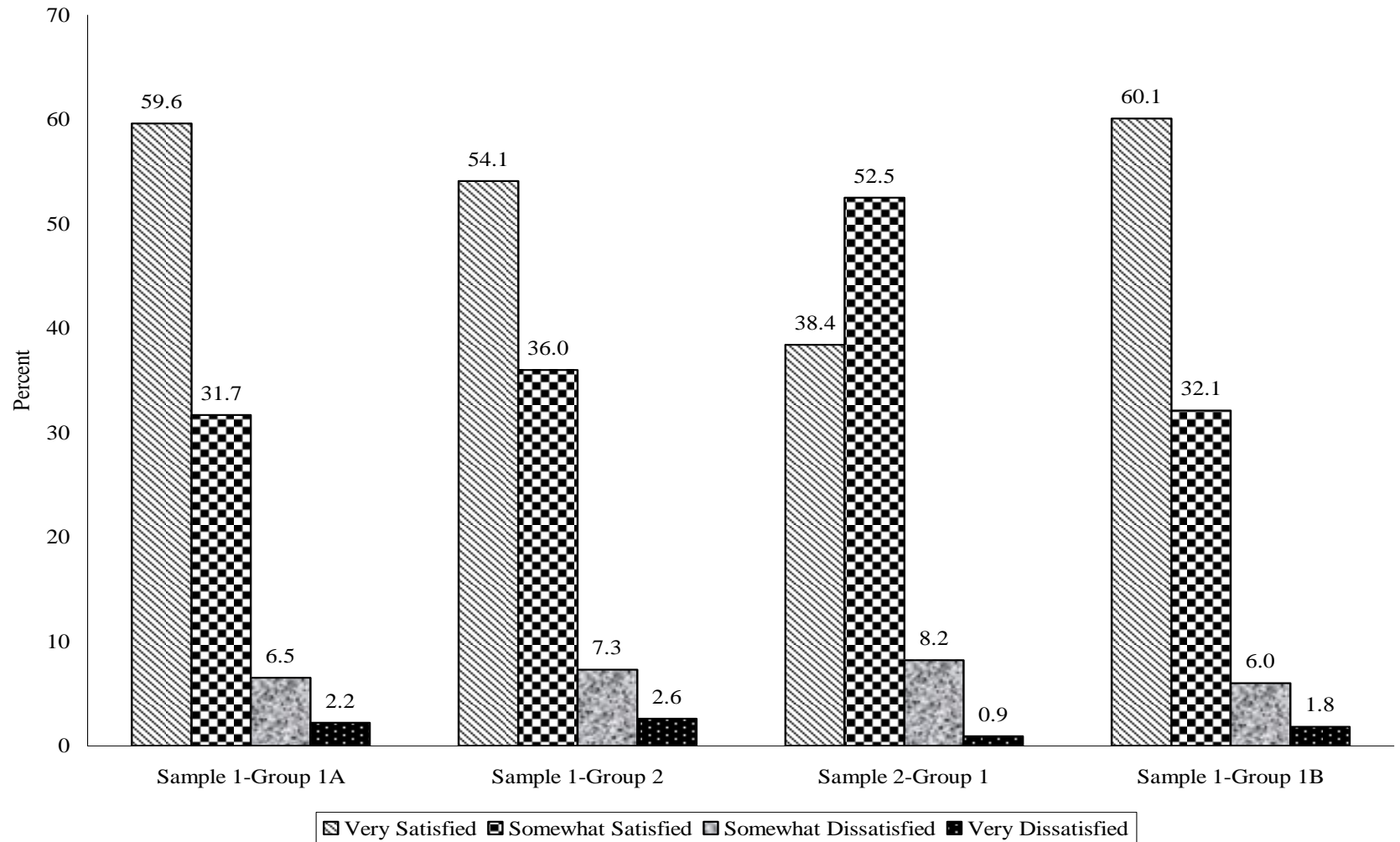


**Figure 3.8 Continuity of Health Insurance (Weighted Proportions)**



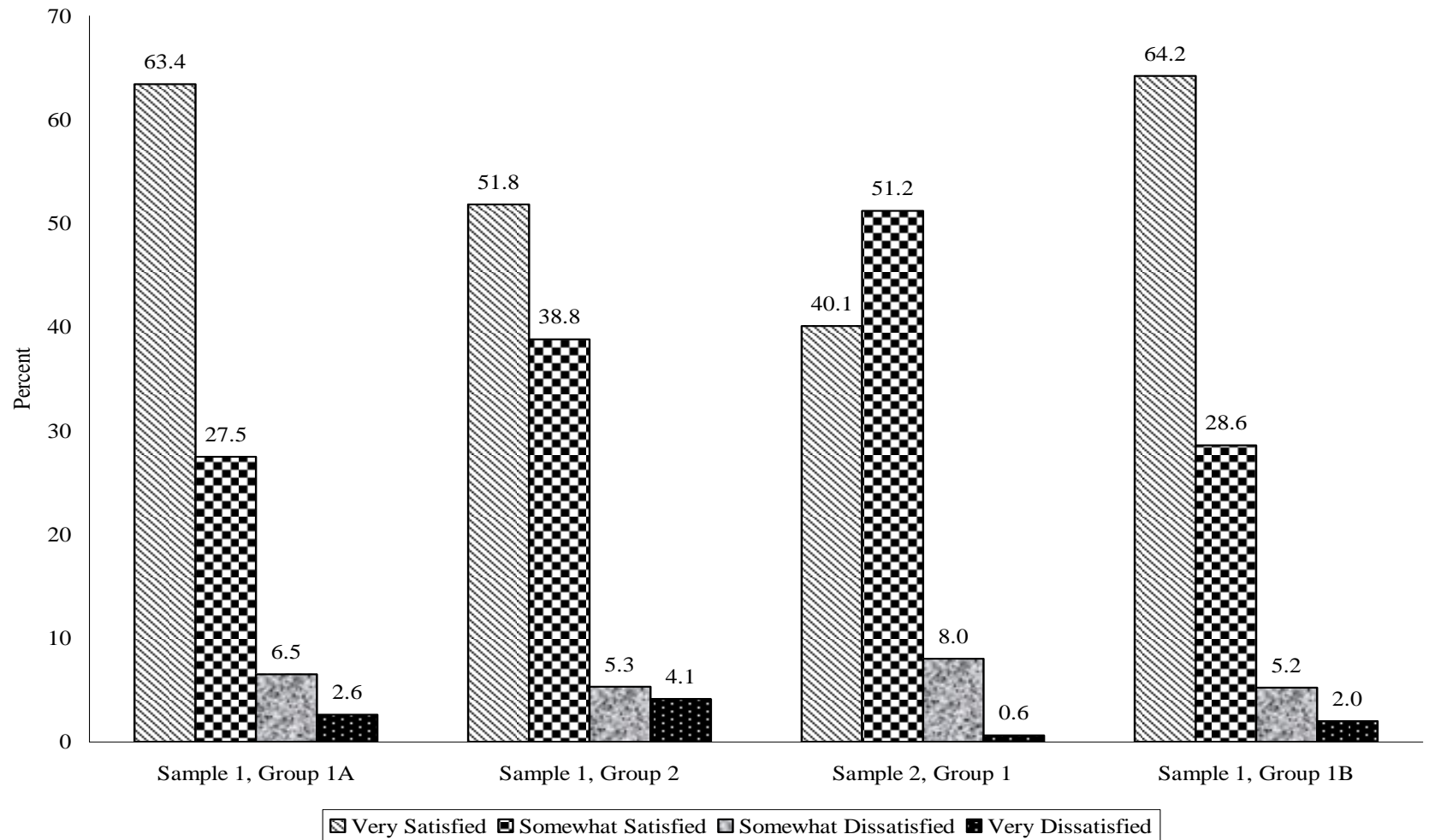
**Figure 3.9 Overall Satisfaction with Quality of Care**

Overall, how satisfied or dissatisfied are you with the quality of health care you have received during the last 2 years?



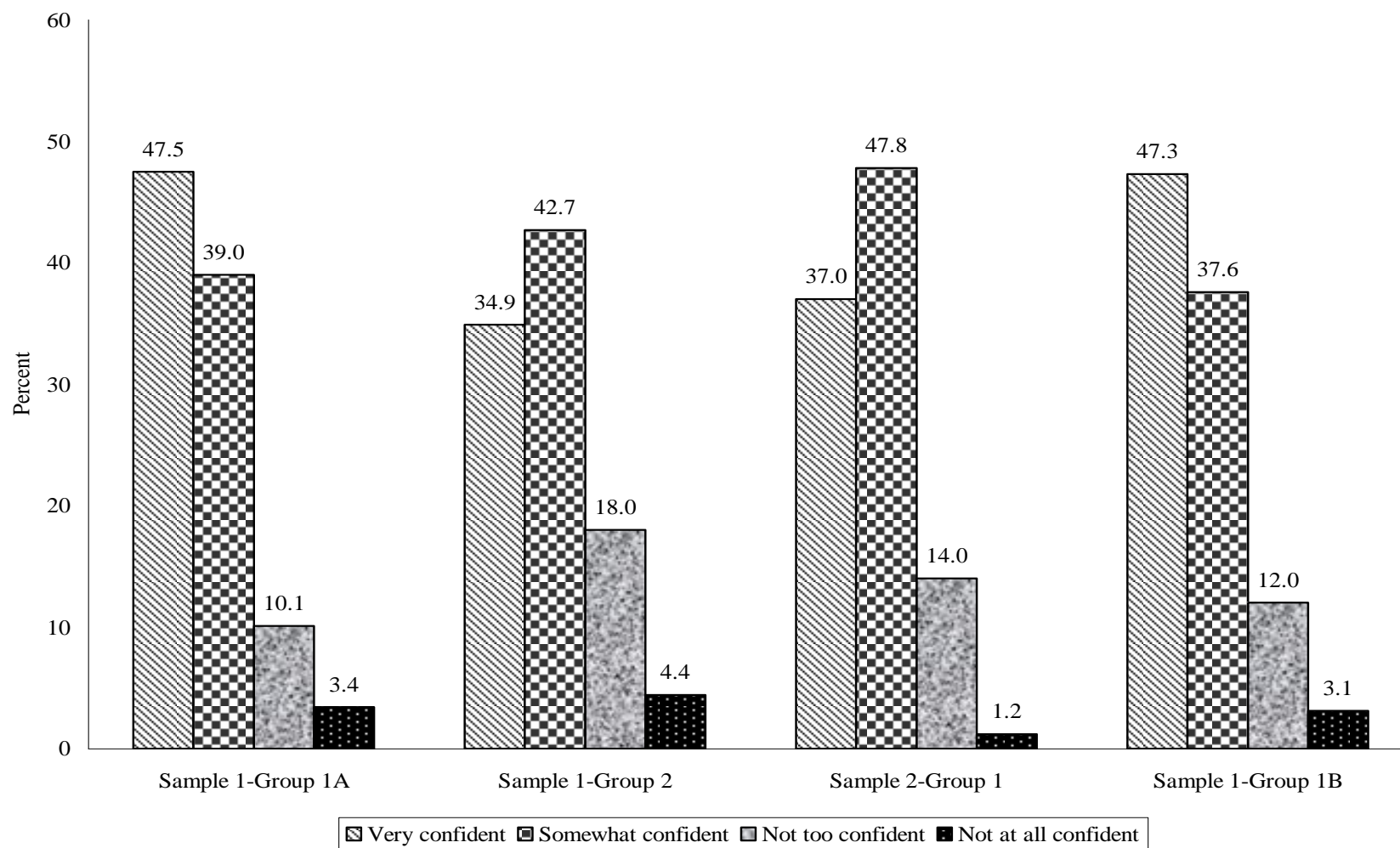
**Figure 3.10 Overall Satisfaction with Quality of Care (Weighted Proportions)**

Overall, how satisfied or dissatisfied are you with the quality of health care you have received during the last 2 years?



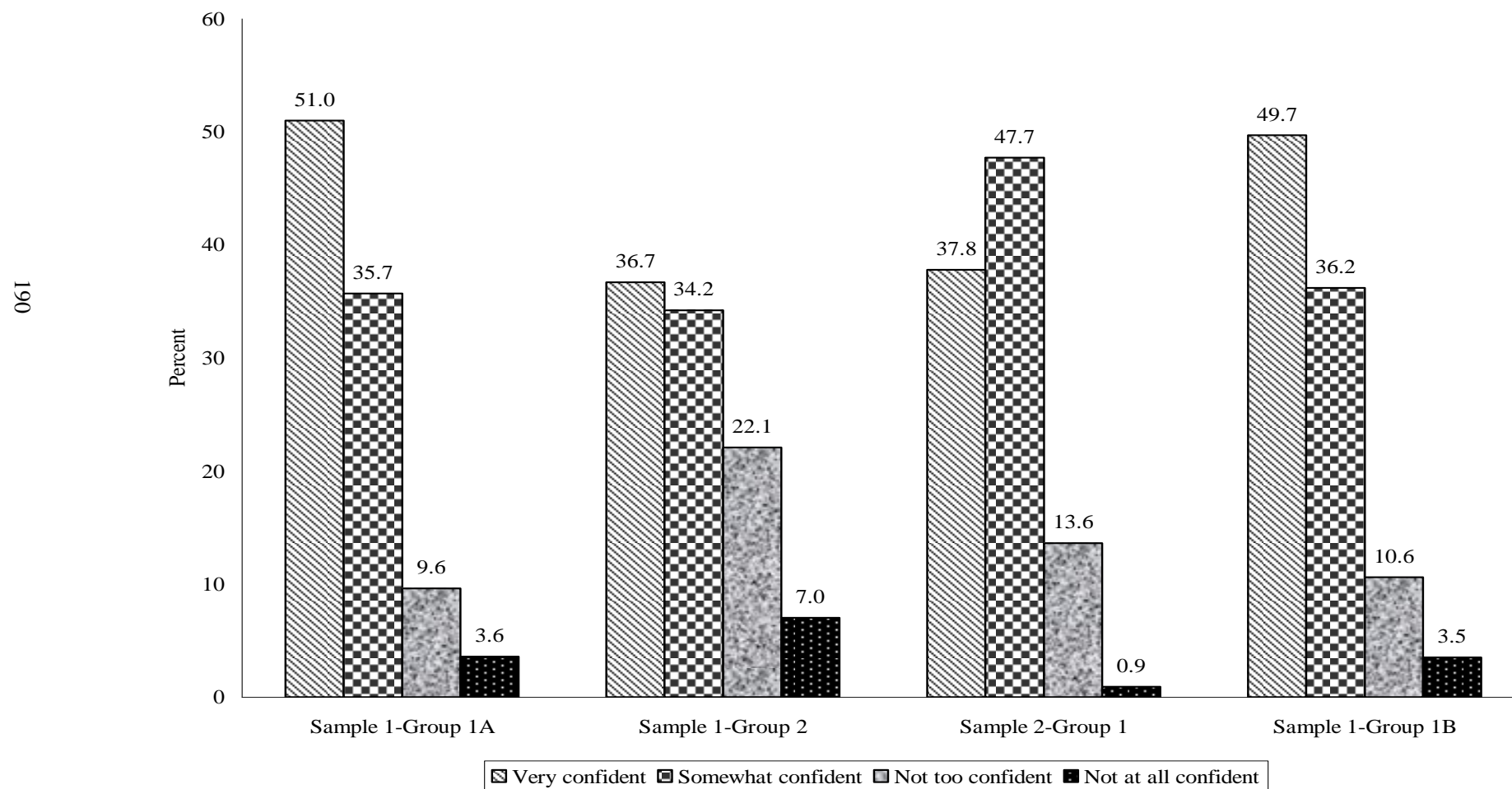
**Figure 3.11 Confidence in Seeking Future Care**

Now thinking about the future, how confident are you that you can easily get good medical care when you need it?



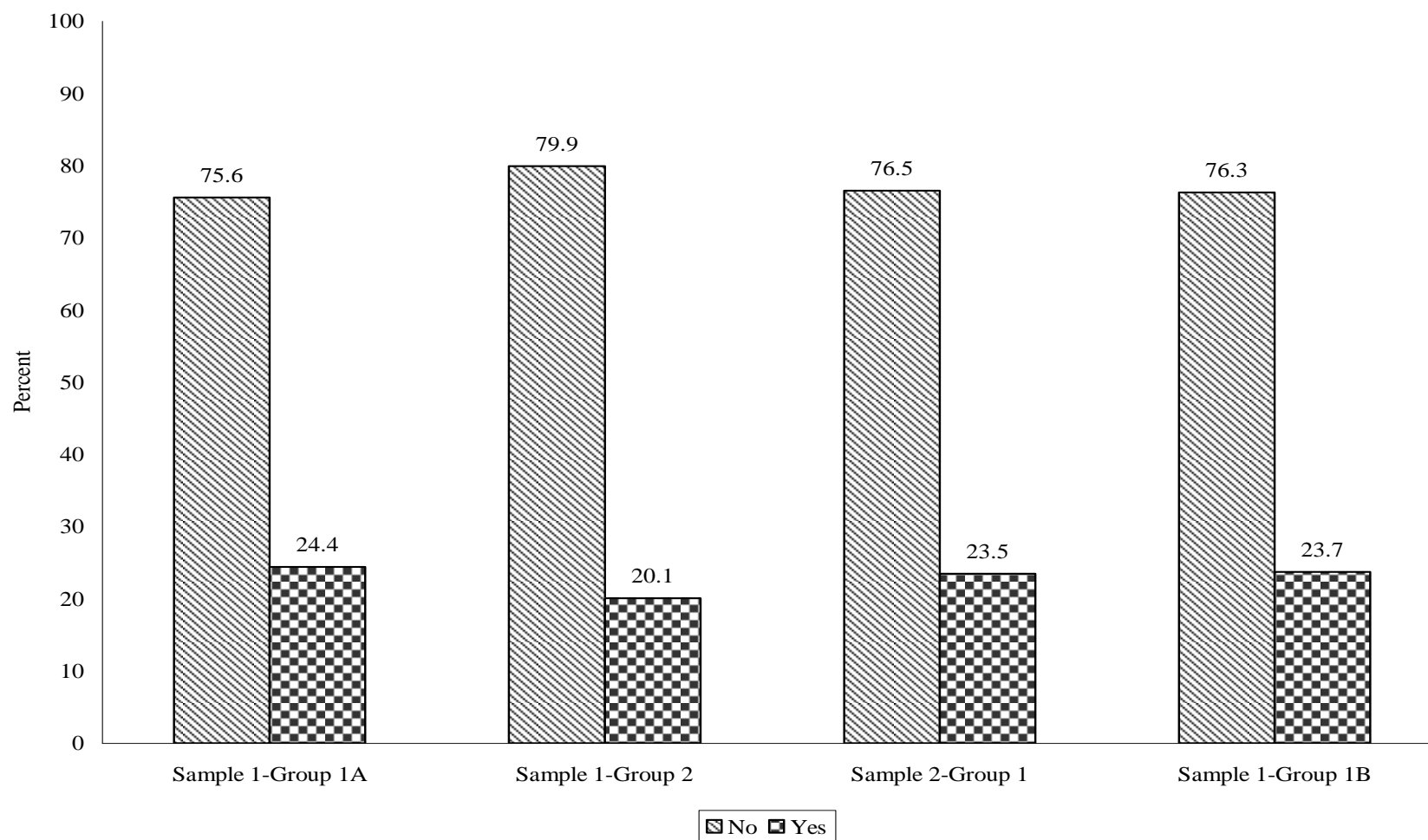
**Figure 3.12 Confidence in Seeking Future Care (Weighted Proportions)**

Now thinking about the future, how confident are you that you can easily get good medical care when you need it?



**Figure 3.13 Compliance with Care**

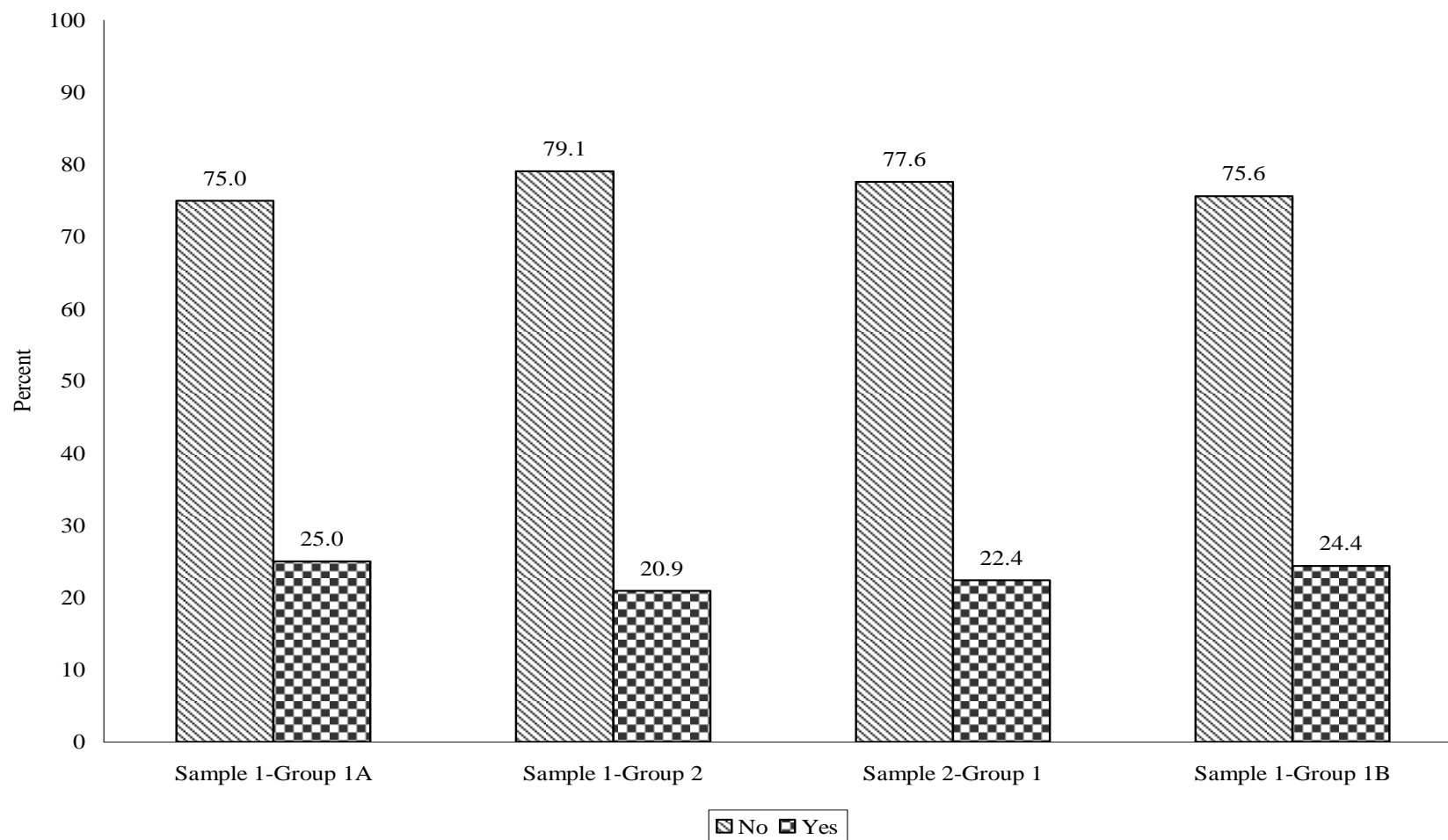
Has there been a time in the last two years when you didn't follow the doctor's advice, or treatment plan, get a recommended test or see a referred doctor?





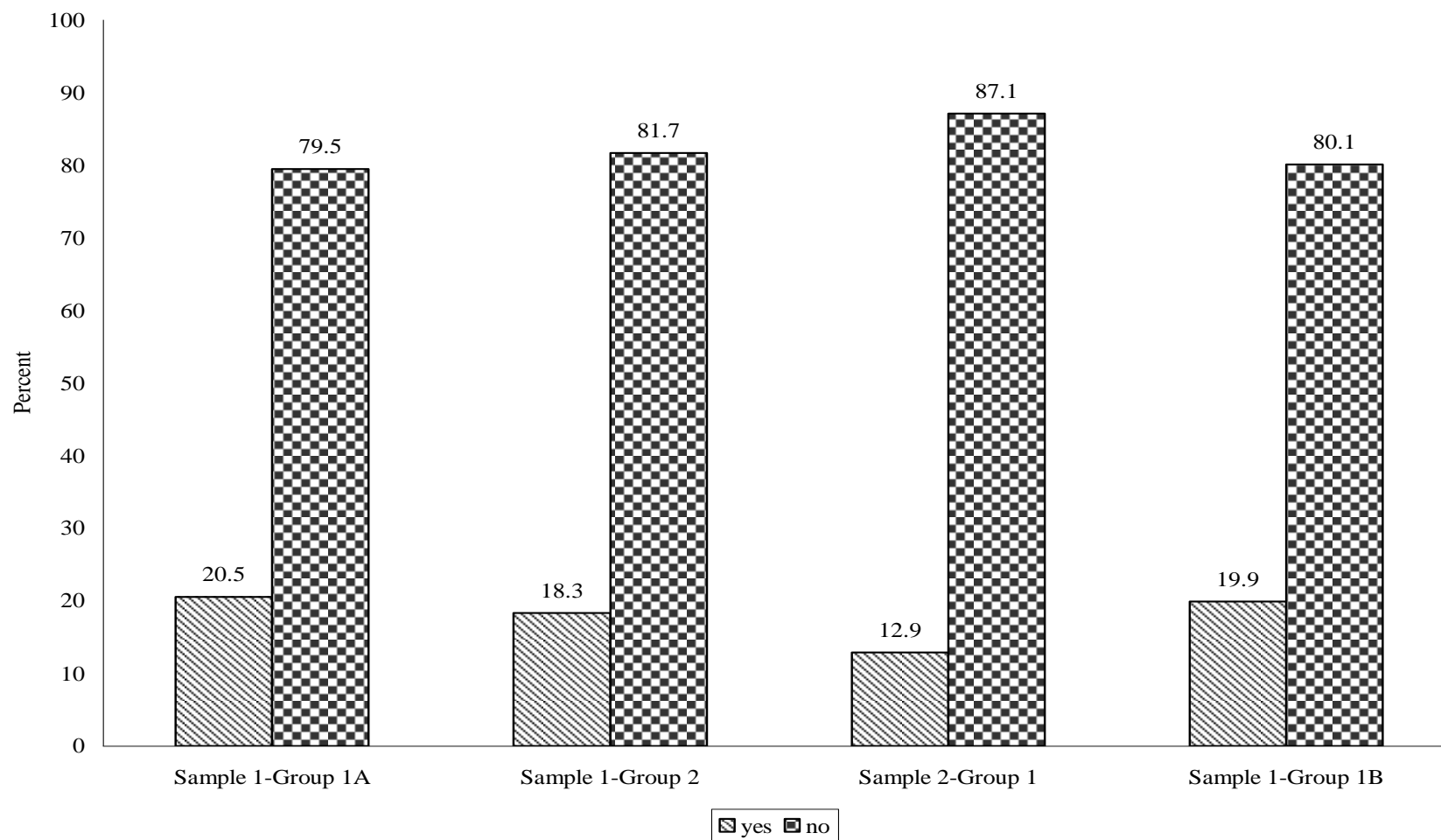
**Figure 3.14 Compliance with Care (Weighted Proportions)**

Has there been a time in the last two years when you didn't follow the doctor's advice, or treatment plan, get a recommended test or see a referred doctor?



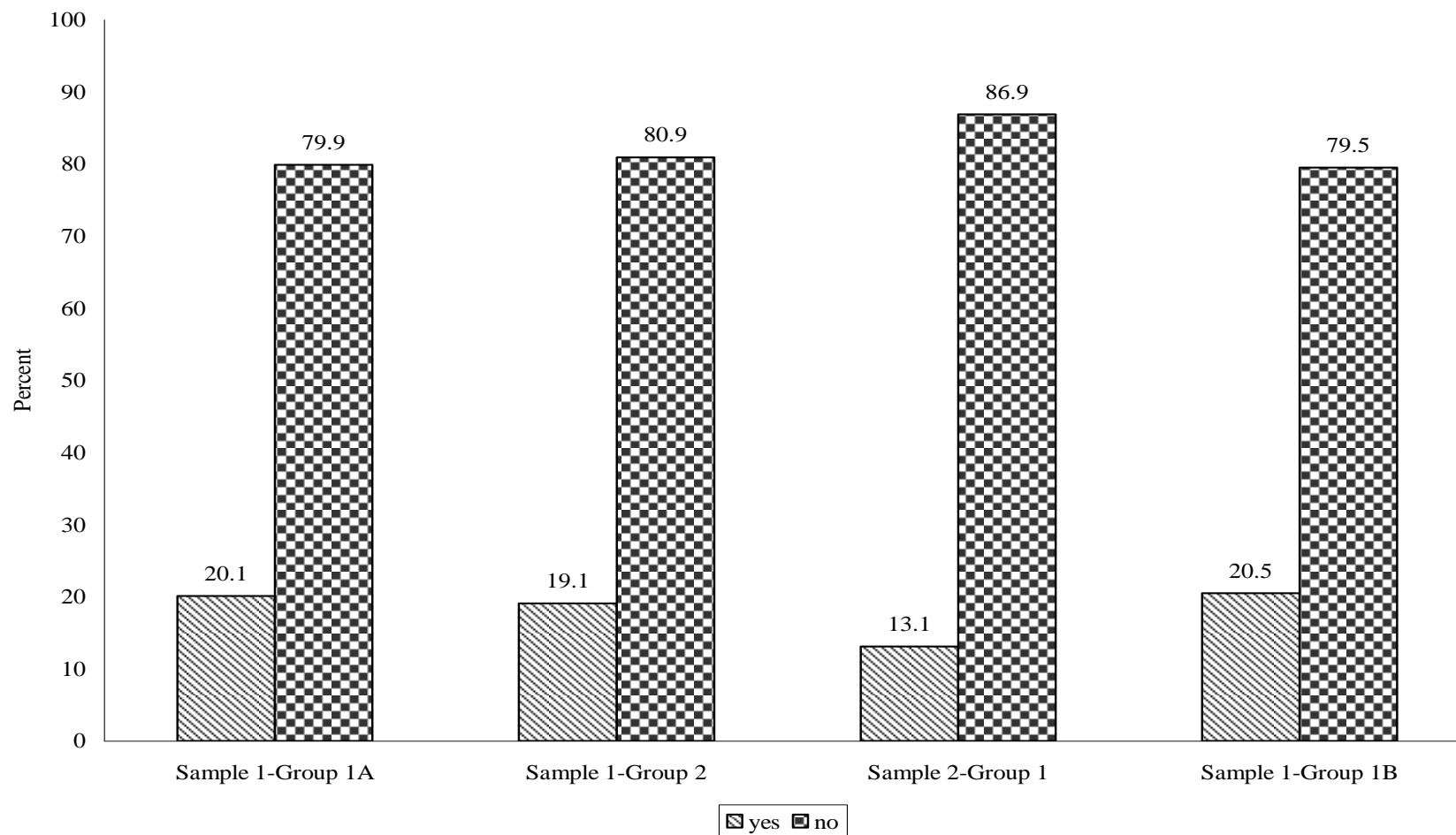
**Figure 3.15 Delay / Postponing / Foregoing of Care**

During the last 12 months, was there any time when you had a problem but put off, postponed or did not seek medical care when you needed to?

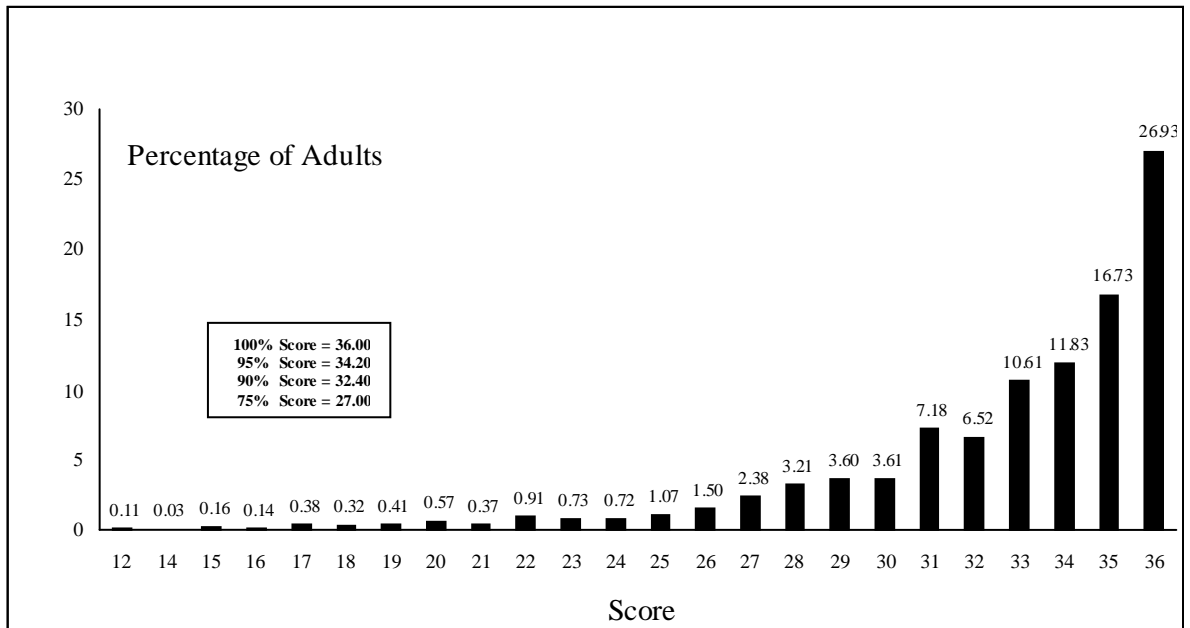


**Figure 3.16 Delay / Postponing / Foregoing of Care (Weighted Proportions)**

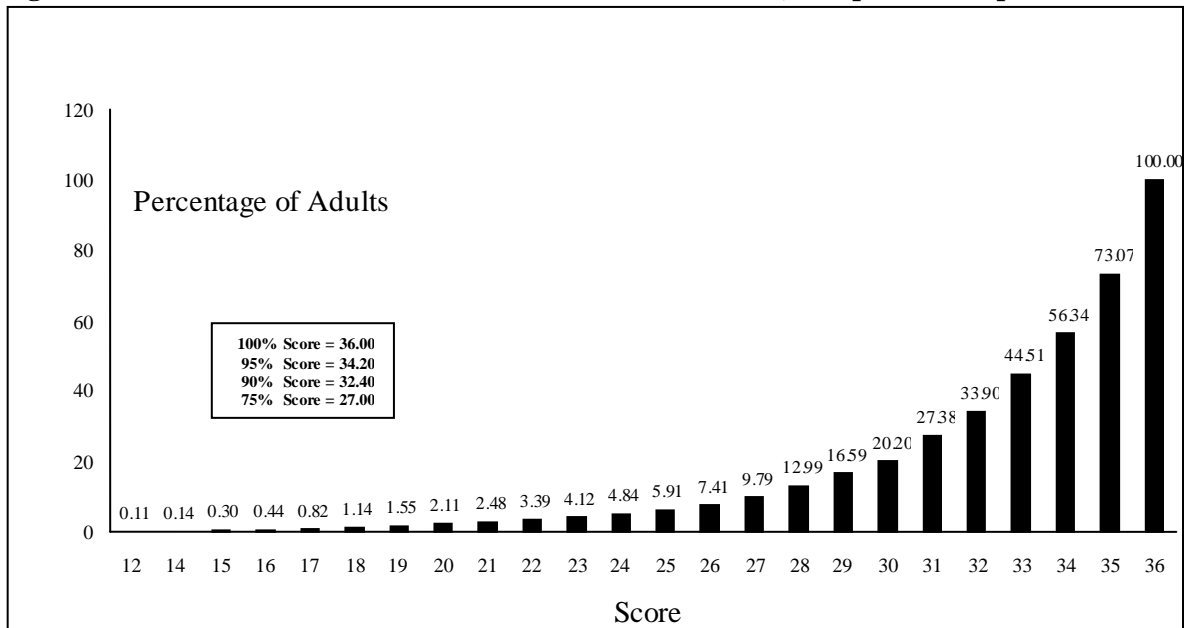
During the last 12 months, was there any time when you had a problem but put off, postponed or did not seek medical care when you needed to?



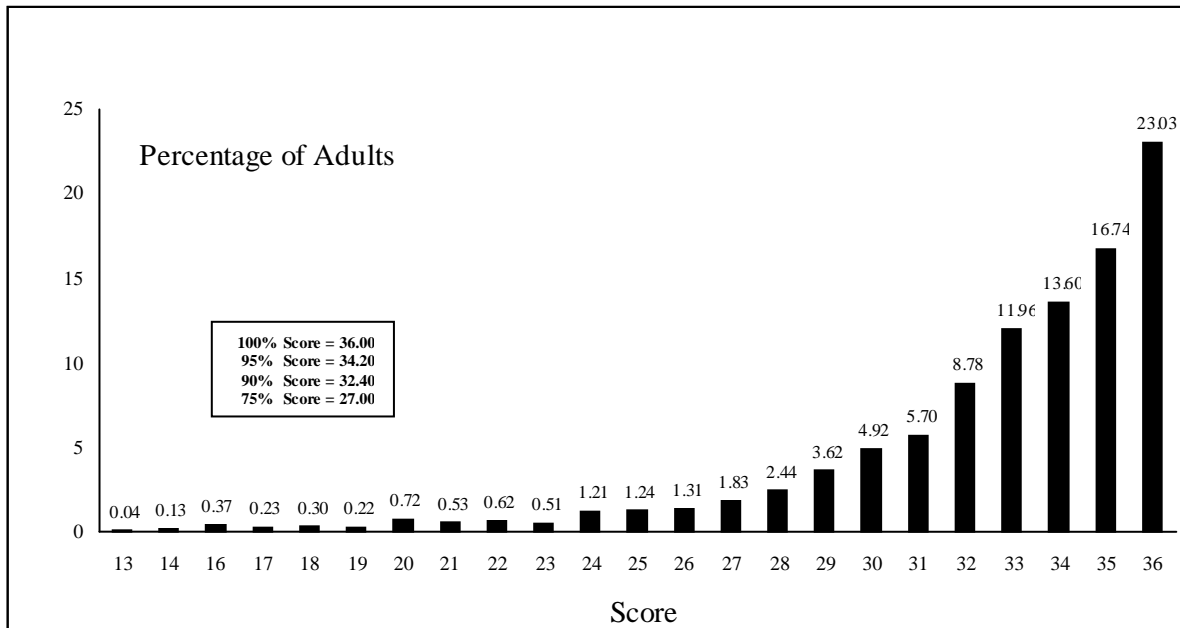
**Figure 3.17 Distribution of PRIAC Scale Score, Sample 1-Group 1A**



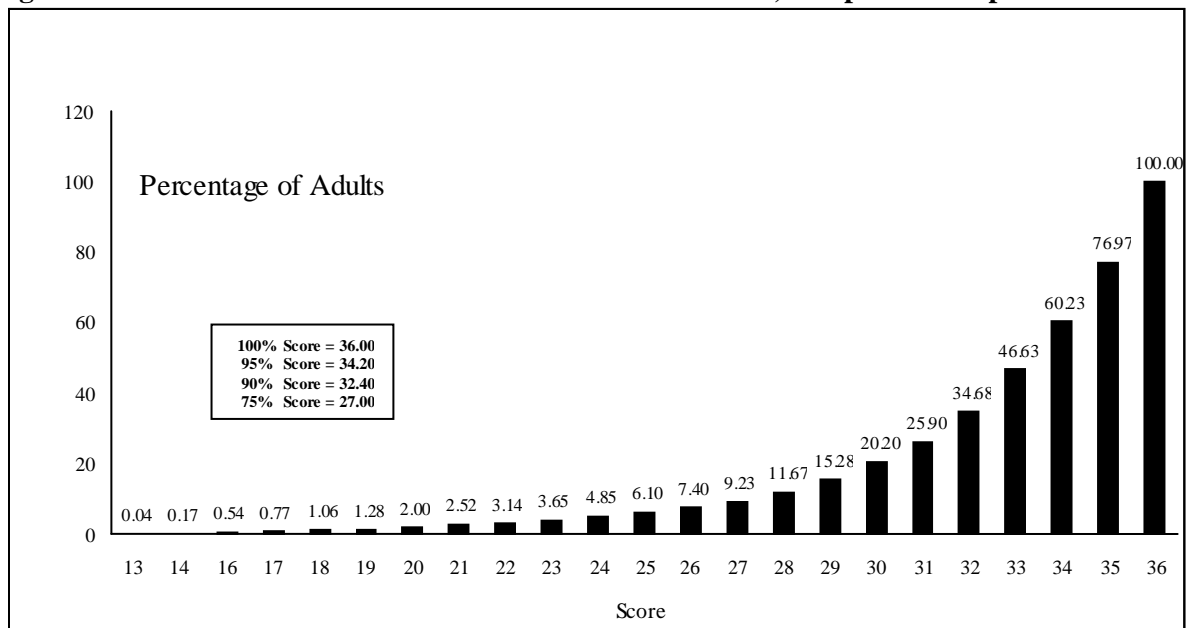
**Figure 3.18 Cumulative Distribution of PRIAC Scale Score, Sample 1-Group 1A**



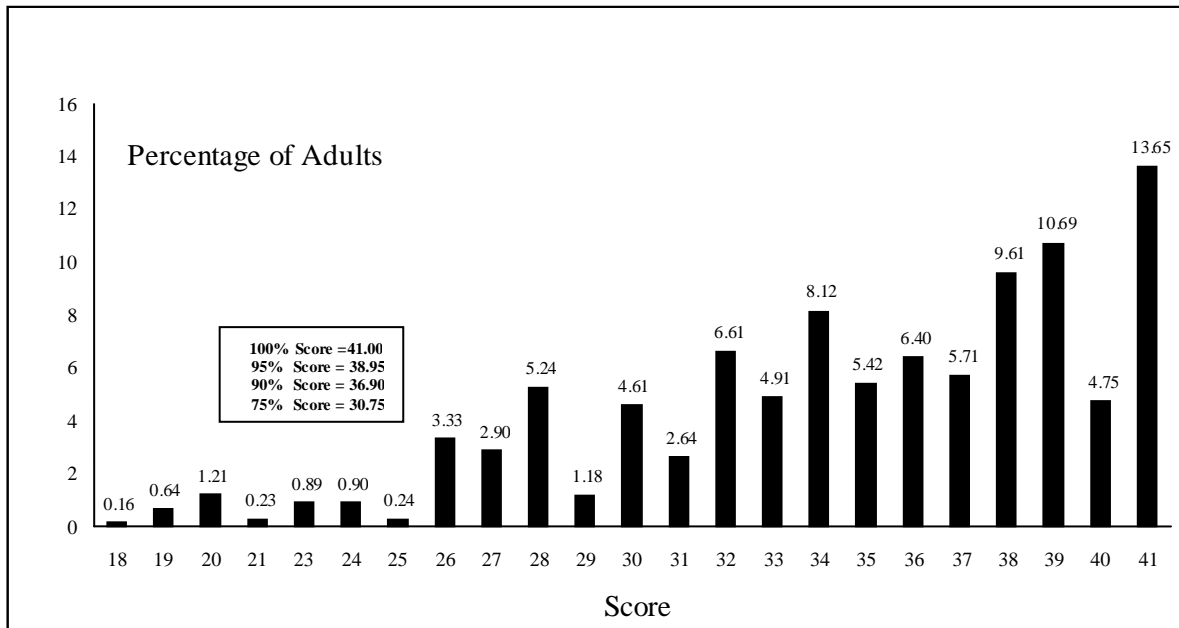
**Figure 3.19 Distribution of PRIAC Scale Score, Sample 1-Group 1B**



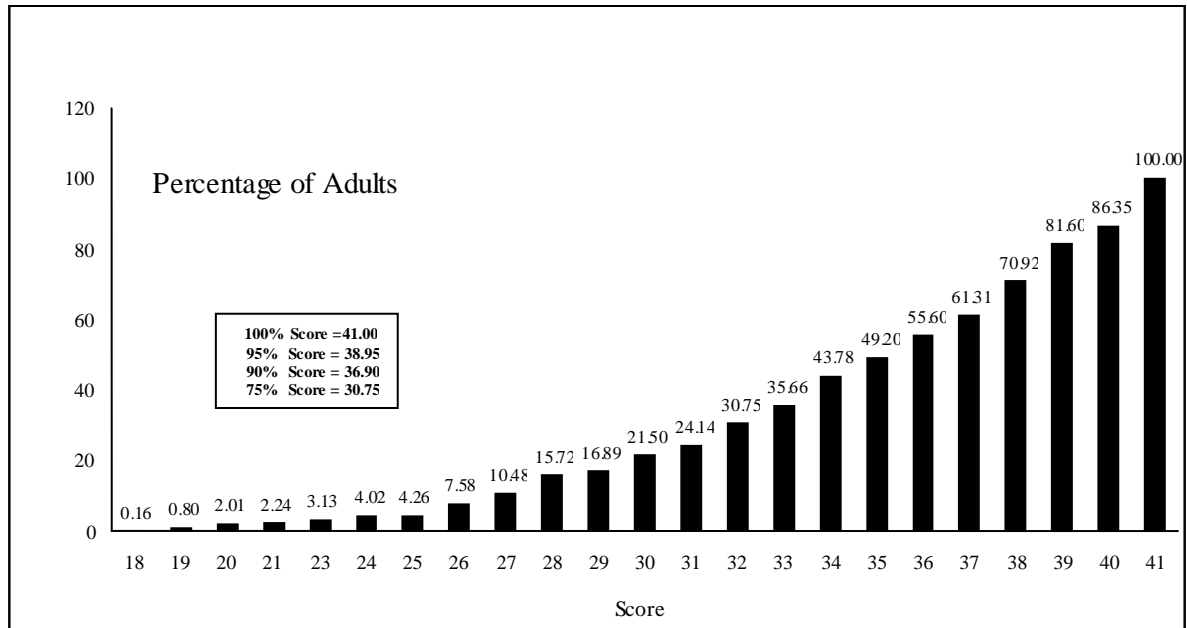
**Figure 3.20 Cumulative Distribution of PRIAC Scale Score, Sample 1-Group 1B**



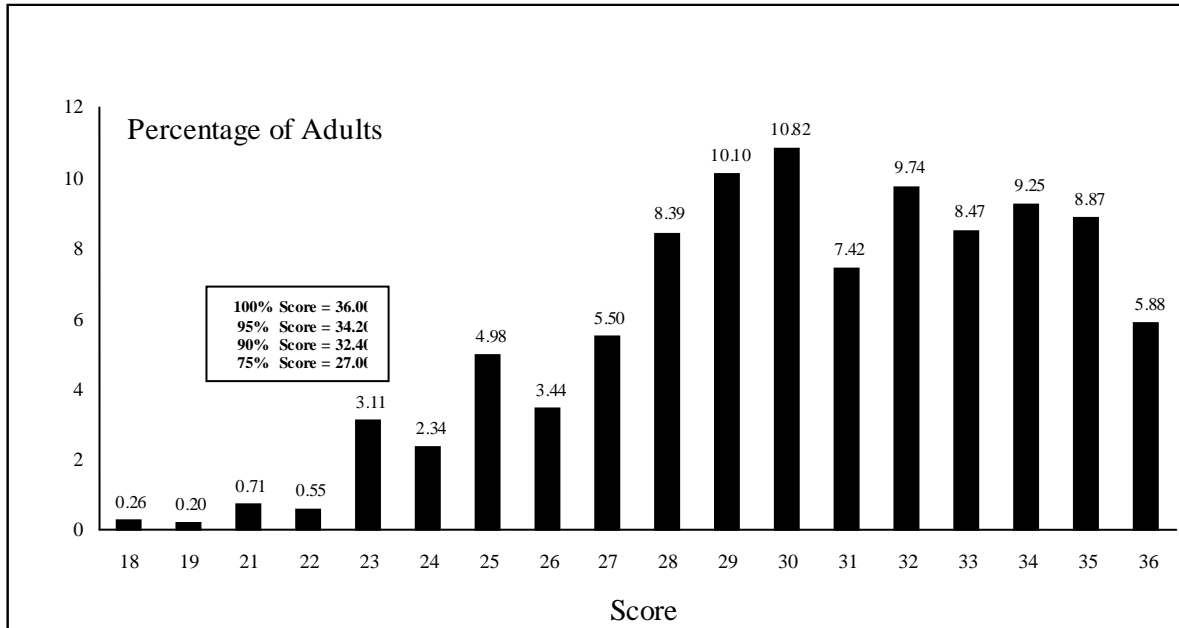
**Figure 3.21 Distribution of PRIAC Scale Score, Sample 1-Group 2**



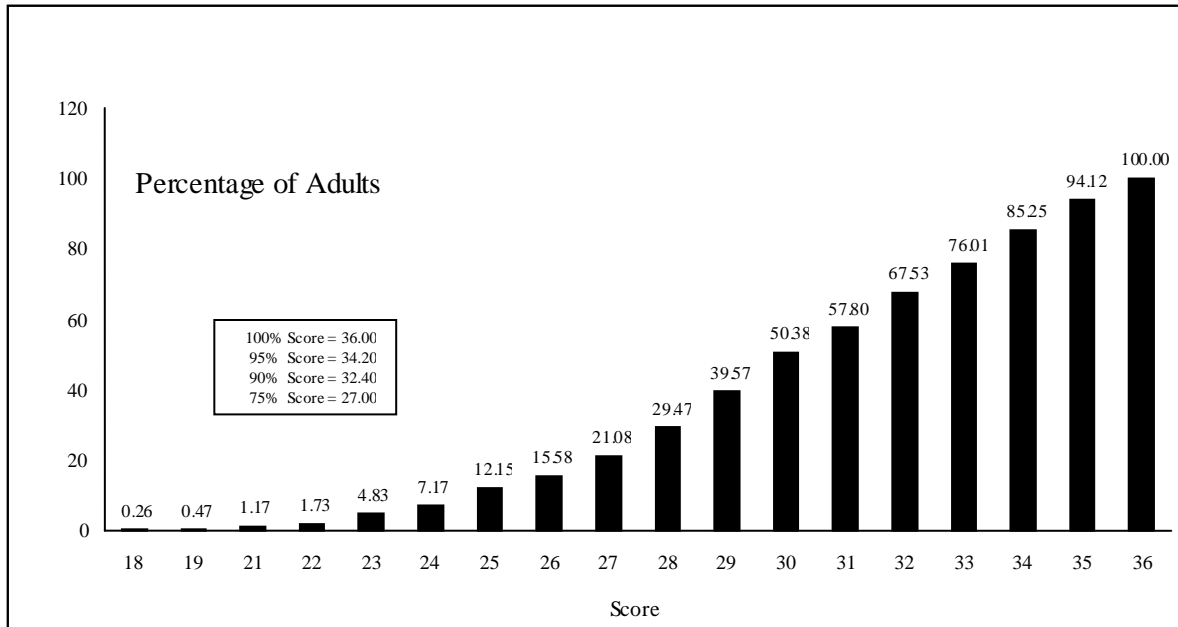
**Figure 3.22 Cumulative Distribution of PRIAC Scale Score, Sample 1-Group 2**



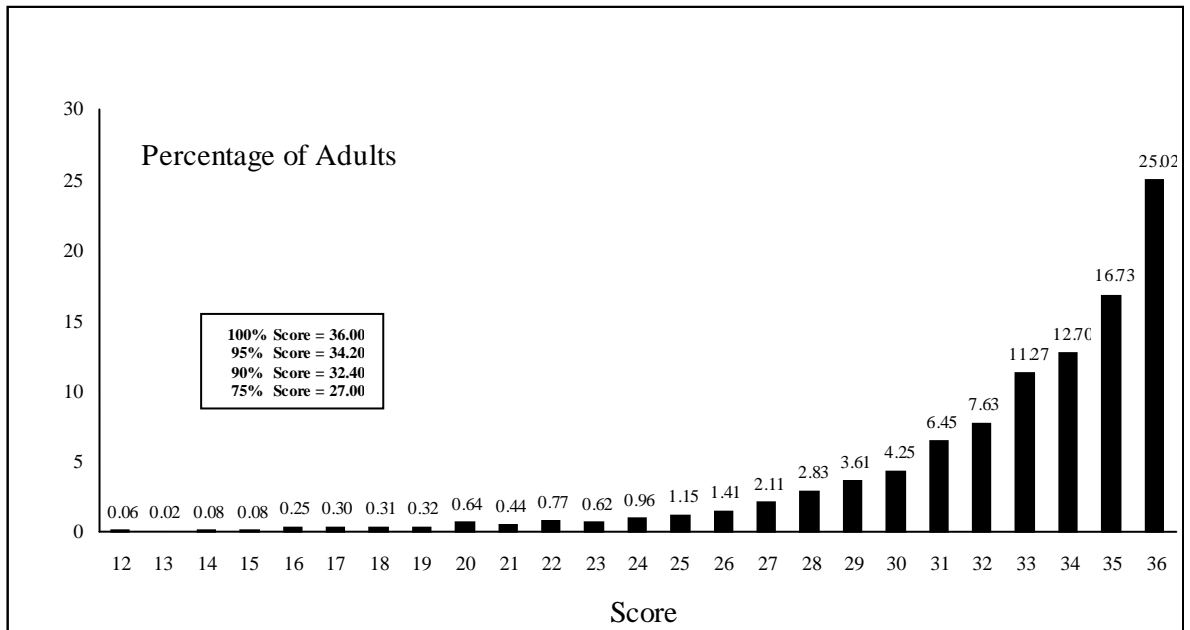
**Figure 3.23 Distribution of PRIAC Scale Score, Sample 2-Group 1**



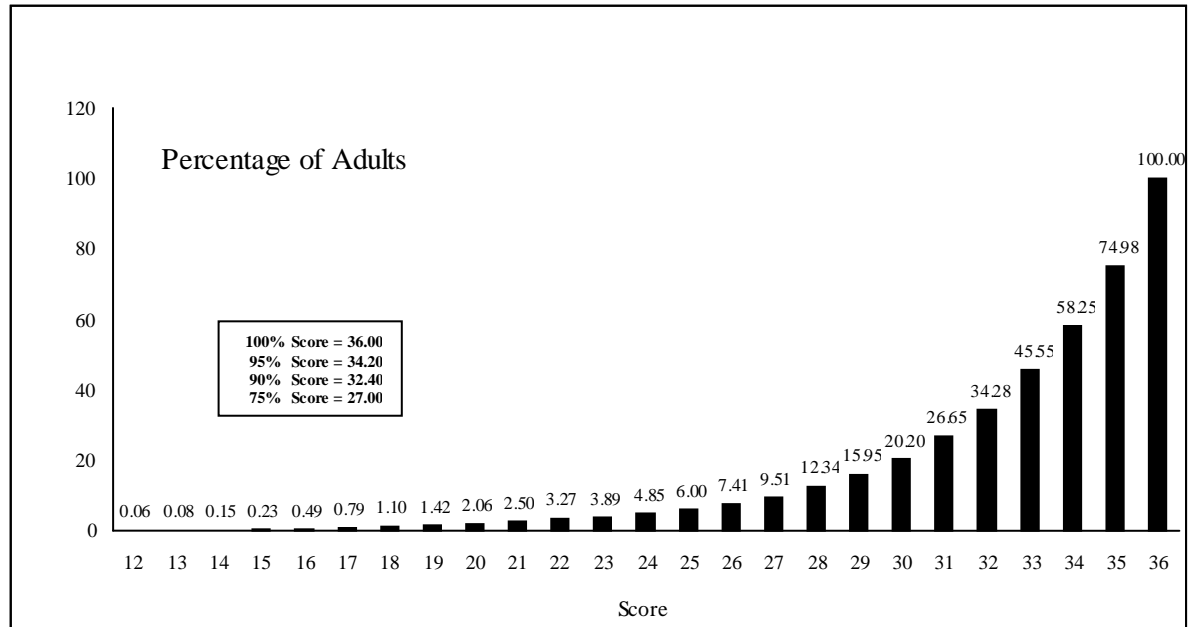
**Figure 3.24 Cumulative Distribution of PRIAC Scale Score, Sample 2-Group1**



**Figure 3.25 Distribution of PRIAC Scale Score, Sample 1-Group 1**

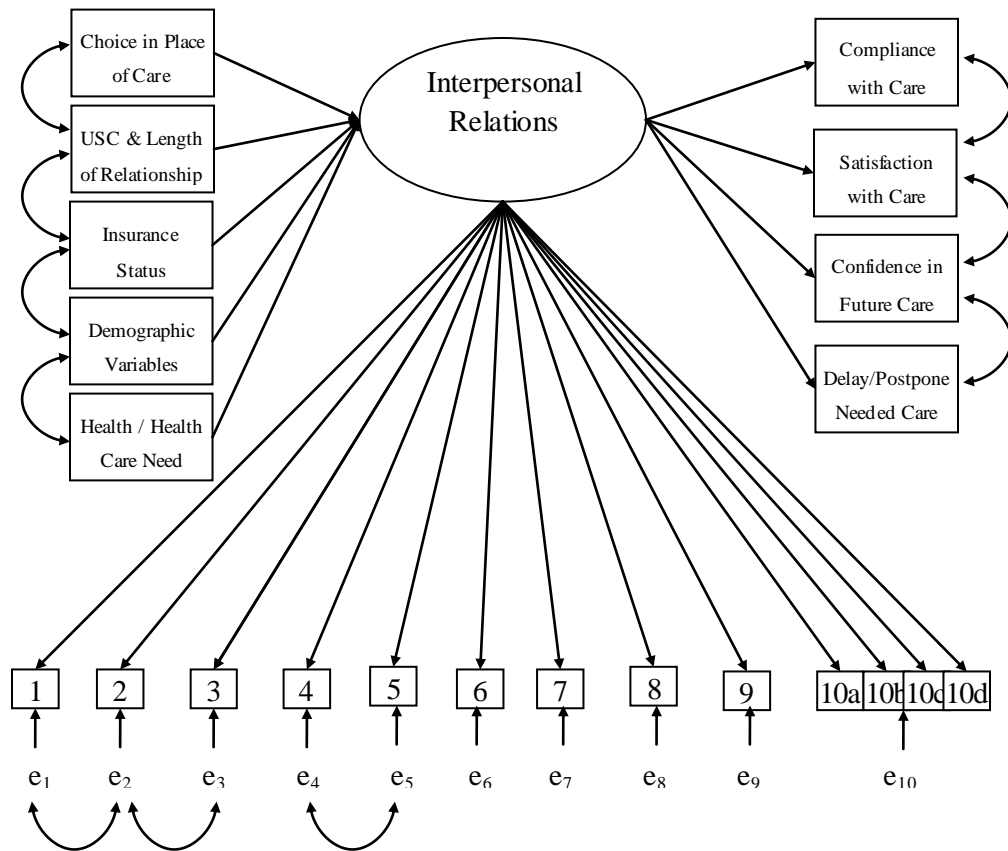


**Figure 3.24 Cumulative Distribution of PRIAC Scale Score, Sample 1-Group1**

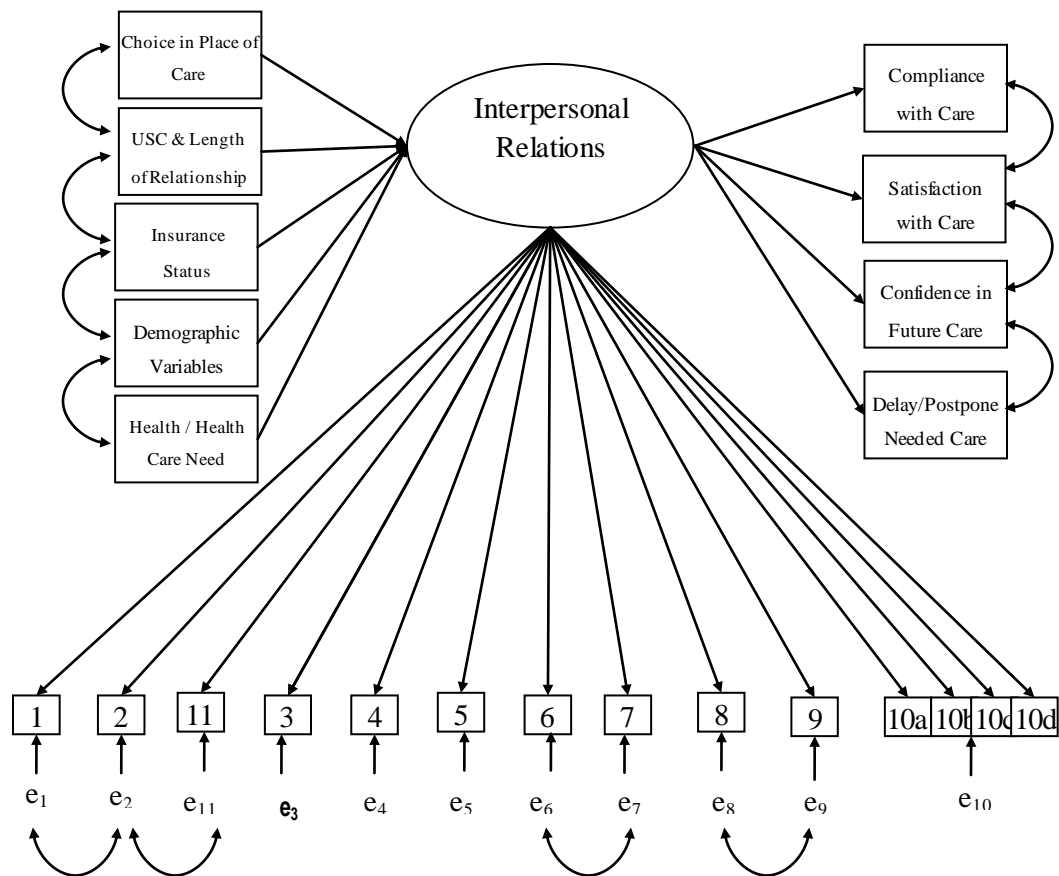




**Figure 4.1** Factor Model of Patient Experience of the Interpersonal Aspects of Care, English-Proficient Population



**Figure 4.2 Factor Model of Patient Experience of the Interpersonal Aspects of Care, Non-English speaking/Limited English-Proficient Population**



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