The Complex Relationship between Organizational Culture and Patient-perceived Integrated Care

Clearing the mud?

Maike V. Tietschert
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DISSERTATION

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CHAPTER 1

General introduction
As is widely-known, healthcare systems across the world are challenged by an ageing population, contributing to an increase in the number of people who suffer from chronic diseases (Bodenheimer, Chen, and Bennett 2009; Glendinning 2003; OECD 2015; OECD/EU 2016). In the US, for example, 45 percent of Medicare beneficiaries suffer from multiple chronic conditions (Valentine, Nembhard, and Edmondson 2015). In Europe, numbers are similar, indicating that 32 percent of all Europeans suffer from one chronic condition or multiple ones (Elissen et al. 2016). Caring for these patients, who often have multiple, long-term care demands and may be challenged by socio-economic factors, is complicated and requires care from multiple providers across different settings (Kerrissey et al. 2017; Singer et al. 2011).

These complex challenges increasingly compel healthcare systems to provide integrated care, meaning coordinated, continuous and patient-centered care (Singer et al. 2011). In response, reforms have been introduced that drive the imperative for systems to be more integrated (Osborn et al. 2015). Examples in the U.S. include (a) The Blue Cross Blue Shield Alternative Quality Contracts, introduced in 2009, which are payment models that combine population-based payment with performance-based payment (Chernew et al. 2011), (b) the Affordable Care Act, enacted in 2010, a reform aiming at improved access to healthcare across the population (Obama 2016; Orszag and Emanuel 2010), (c) Accountable Care Organizations, which are physician-led organizations in which payments are tied to quality metrics and costs of care, implemented in 2011 (McClellan et al. 2010; Shortell et al. 2015), and (d) the Medicare Access and Children’s Health Insurance Program Reauthorization Act (MACRA) introduced in 2015, in which physicians face strong incentives to join so called alternative payment models aimed at introducing value-based payment (Centers for Medicare and Medicaid Services n.d.). Examples in the Netherlands include (a) the introduction of bundled payments (“keten DBC”) in 2007, which cover a continuum of care services for a specific chronic disease for a fixed period of time (Struijs and Baan 2011), (b) the appointment of nine pioneer sites in 2013, designated for experimentation with innovative approaches to reduce unnecessary and expensive care, and achieve improvement in quality (Van Hoof et al. 2016), and (c) the Youth Act and the Social Support Act reform, introduced in 2015, aiming to integrate primary care and social care by decentralizing responsibilities for youth and long-term elderly care from the national government to the municipalities (Maarse and Jeurissen 2016; Westra, Wilbers, and Angeli 2016).

All of these reforms seek to decrease financial silos and healthcare service fragmentation through increased provider accountability for quality and costs across the full continuum of healthcare services (McClellan, McStay, and Saunders 2016). Among other things, they quantify healthcare outcomes and attach financial consequences if targets are not met. Commonly used terms for these mechanisms are population health management (Hendrikx et al. 2016), shared savings (Rosenthal 2008) and the triple aim, including improved patient experience of care, improved population
health and reduced per capita costs of health care (Berwick, Nolan, and Whittington 2008). In addition, countries have started to address problems as early as possible by reforming their medical educational curricula to train medical professionals on treating patients with complex needs who require collaboration across organizational and professional boundaries (American Medical Association n.d., Kaljouw and Van Vliet 2015). The increasing need to better integrated care has also garnered interest of the scientific community to conceptualize what integrated care is and how it can best be achieved. Yet, despite of over 20 years of research and experience in the field, integrated care is neither widely developed nor implemented as a standard practice to providing care (Suter et al. 2009; Tsasis, Evans, and Owen 2012).

Integrated care: a child with many names

Integrated care has many meanings, depending on the perspective from which the concept is used, the setting, and context, which impedes the promotion of integrated care in theory and practice (Kodner and Spreeuwenberg 2002). The multitude of conceptualizations probed Kodner and Spreeuwenberg, in 2002, to ask whether we have “defined integrated care well enough to help the community of academics, scientists, policy analysts and practitioners to understand this concept, and guide the search for solid evidence and lessons?” (Kodner and Spreeuwenberg 2002, p.1). Fifteen years since, the study of integrated care is still afflicted by a multitude of definitions and conceptualizations that have different meanings to different stakeholders. In 2009, Suter and colleagues identified close to 180 definitions of terms, which aim to capture various aspects of integrated care (Suter et al. 2009). Examples of some of the terms used are “case management”, “shared care”, “managed care”, “comprehensive care”, “multidisciplinary care”, or “coordinated care” (Martínez-González et al. 2014).

In addition to different terminology, conceptualizations distinguish different levels at which healthcare system can be integrated (Delnoij, Klazinga, and Glasgow 2002; Nolte and McKee 2008; Valentijn et al. 2013). Clinical integration requires coordination across different services. Professional integration exists if professionals coordinate services across various disciplines. Organizational integration refers to the extent to which organizations coordinate services across different organization. System integration requires alignment of rules and policies within a system. Literature further distinguishes orientations of integration. Vertically integrated systems are integrated across various levels of care, while horizontal integration concerns similar levels of care (Delnoij et al. 2002; Kerrissey et al. 2017; Valentijn et al. 2013). The multitude of different conceptualizations ironically led authors to argue that the study of integrated care itself has become subject to fragmentation and requires integration in order to contribute meaningfully. To understand integrated care more comprehensively, various efforts have been made to integrate different conceptu-
alization in one overarching conceptual framework, such as the Rainbow Model of Integrated Care, developed by Valentijn and colleagues (Valentijn et al. 2013). Although, these frameworks are a first step towards understanding the complexity of the phenomenon, they do not move beyond collecting different conceptualizations and providing normative advice about how integrated care can best be achieved, leaving the field short-handed of evidence-based approaches. Much of the literature is focused on specific health care domains, such as primary care (see for example Valentijn et al. 2013), or specialty care (see for example Van Hoeve et al. 2014), which seems to be a contradiction in terms, as the very essence of care integration is coordination across different settings (Singer et al. 2011).

Here lies another problem of current conceptualizations of integrated care. Instead of focusing on integrated patient care, current definitions often focus on organizations and adopt an organizational level of analysis (Axelsson and Axelsson 2006; Gröne and Garcia-Barbero 2001; Kodner and Spreeuwenberg 2002; Niskanen 2002; Patient Centered Primary Care Collaborative 2007; Shortell, Gillies, and Anderson 1994; Singer et al. 2011). Even when definitions include patient care, the positive influence of organizational activities on patient care integration is often implicitly assumed (Mur-Veeman et al. 2003; Ouwens et al. 2005; Singer et al. 2011), rather than being empirically tested. However, while systems and organization-level integration indisputably make sense in terms of improving economy of scale (Kerrissey et al. 2017; Kodner and Spreeuwenberg 2002), understanding the patients’ perceptions of current healthcare integration is paramount because, given the fragmented nature of healthcare delivery, the patient is likely to be the only person in the care process who sees the full picture of their care (Berwick 2009; Singer et al. 2011). Hence, patient experiences should provide the norms to which systems need to comply (Solinís and Stein 2016). Unless the patient is central to integration efforts, initiatives to promote integrated care may target healthcare organizations’ self-interests rather than improving care experiences of patients (Goodwin 2017). Increasing integration efforts’ effectiveness thus requires understanding integrated care from the patient perspective and comprehensively. A definition that puts the patient at the center of integrated care is provided by Singer and colleagues (Singer et al. 2011). According to the authors, integrated care is “patient care that is coordinated across professionals, facilities, and support systems; continuous over time and between visits; tailored to the patients and family members’ needs and preferences; and based on shared responsibility between patient, family, and caregivers for optimizing health” (Singer et al. 2011, p.113). Due to its focus on patient centeredness, its multidimensionality and because it conceptualizes integrated care independently from the organizational arrangement through which care is provided, this definition has guided the understanding of integrated care throughout this dissertation.
Chapter 1

Measuring integrated care

The increasing interest for reforms and initiatives that aim to integrate care and resources, which are invested to provoke change has generated a need for valid and reliable evidence and instruments suitable to generate such evidence (Solinis and Stein 2016). However, the ambiguity in concepts of integrated care, discussed earlier hinders the development of comprehensive measures (Bautista et al. 2016). Nevertheless, several instruments that aim to assess integrated care are available. Of these instruments, rather than studying integrated care from a comprehensive perspective, most are focused on separate dimensions (Bautista et al. 2016). Examples for this type of surveys are the Patient Assessment of Chronic Illness Care (PACIC) survey (Glasgow et al. 2005), which is focused at chronic care and care coordination (Bautista et al. 2016) or the Patient Continuity of Care Questionnaire (PCCQ) (Hadjistavropoulos et al. 2008), which is another measure of care coordination (Bautista et al. 2016). A comprehensive assessment of integrated care, according to some researchers and practitioners, is challenging because integrated care initiatives often include multiple components and many different stakeholders (for example, patients and their families, general practitioners, specialists, as well as the social sector) for which it is difficult to distribute causality (Solinis and Stein 2016). However, given that integrated care embraces multiple dimensions, studying dimensions separately only provides piecemeal insights, rather than understanding how integrated care as a comprehensive concept can be achieved. For example, improving coordination as one of the dimensions of integrated care (Kerrissey et al. 2017; Singer et al. 2011) may be facilitated by introducing standardized approaches to care, such was done for diabetes care in the Netherlands (Struijs and Baan 2011). Yet, while facilitating coordination, standardization may impede patient centeredness (Elissen et al. 2016), which is another dimension of integrated care and requires tailoring care to patients’ and family members’ individual needs (Singer et al. 2011). Not considering different dimensions of integrated care simultaneously may be counterproductive or even harmful to care integration (Singer et al. 2011).

Generating comprehensive empirical insights about integrated care is further complicated by insufficient quality of psychometric testing and instruments (Bautista et al. 2016). In a recent review on instrumentometric validation studies, Bautista and colleagues (2016) concluded that, of the studies reviewed, less than 50 percent were of good or excellent quality for any of the measurement properties. Another drawback is that very few studies are cross-culturally applicable hampering cross-cultural learning and identification of evidence-based best practices across national boundaries (Bautista et al. 2016). The only survey, which we could identify to measure integrated care from the patient perspective, multidimensionally and with good validity and reliability, was the Patient Perception of Integrated Care (PPIC) survey, developed by Singer and colleagues for use in the United States (US) (Singer et al. 2011). The
PPIC survey is a self-administered survey tool and measures patients’ experiences of care across settings, and over time (Singer et al. 2012). Because the survey measured integrated care independently of the system or organizational arrangement through which care is provided, we hypothesized it may be particularly suitable for cross-cultural measurement and hence used the survey to measure integrated care for the purpose of this dissertation.

**Achieving integrated care: empirical evidence or a lack thereof**

The lack of conceptual clarity, and the lack of valid, reliable, and cross-culturally applicable measurement instruments has serious implications for practices that aim to improve integrated care. Often, initiatives are developed to solve immediate organizational challenges, such as “workforce, productivity, managing acute demand and closing gaps in available finances” instead of integrating care from the patient’s perspective (Goodwin 2017, p.1). Many care integration initiatives are evaluated on general health and well-being-related outcome measures such as mortality or quality of life (Ouwens et al. 2009). Although, these outcomes are important to consider they do not provide information about whether initiatives were successful at integrating care (Lemmens, Nieboer, and Huijsman 2009). In addition, studies on the effects of these initiatives often lack sufficient methodological rigor (Lemmens et al. 2009). Controversy about how care should be integrated results in fragmented, small-scale practices rather than standardized approaches to integrating care (Solinís and Stein 2016).

**Role of organizational structure**

The few initiatives that were implemented on a larger scale are focused on structural changes to the way healthcare is provided. Often these structural changes involve grouping different professionals together in one practice to facilitate patient-centered care, to provide services necessary to cover most common needs, to coordinate care across specialties and settings, to avoid preventable admissions to the hospital, and improve clinical outcomes and lowering costs through economies of scale (Armeni, Compagni, and Longo 2014; Kerrissey et al. 2017). Examples include medical homes in the US (Rittenhouse and Shortell 2009), primary care centers in the Netherlands (Tietschert et al. 2017) or multi-professional primary care units in Italy (Armeni et al. 2014). The potential benefits of these new structures have evoked enthusiasm about the potential of integrated care in the scientific community and in policy makers and practitioners alike (Kerrissey et al. 2017). Yet, empirical evidence of the associations between structural characteristics and outcomes is mixed (Kerrissey et al. 2017). Often, real improvements are not achieved and patients do not gain improved satisfaction about their care, while costs continually increase (Elissen et al. 2016).
Furthermore, the patient’s experience is often not considered in research or policy initiatives alike (Goodwin 2017). For example, European policies for integration were mostly motivated by cost reductions while the “person-centered” perspective was rarely included (Goodwin 2017). An exception is a recent study of Kerrissey and colleagues (2017). In their study, the authors assessed the influence of structural integration of medical groups in the US on patient-perceived integrated care. The authors concluded that structural integration may not be sufficient for delivering care, which patients perceive to be integrated.

**Role of organizational culture**

The failure of structural changes to provoke desired care integration has raised calls for “cultural transformation” to be wrought along structural change (Scott et al. 2003). Organizational culture, like integrated care, has been variously conceived. The probably most cited definition of organizational culture defines culture as “a) pattern of basic assumptions, (b) invented, discovered, or developed by a given group, (c) as it learns to cope with its problems of external adaptation and internal integration, (d) that has worked well enough to be considered valid and, therefore (e) is to be taught to new members as the (f) correct way to perceive, think, and feel in relation to those problems” (Schein 1985, p.9). According to Schein, three levels can be distinguished at which culture manifests itself: (a) observable artifacts, (b) values, and (c) basic underlying assumption.

An influential conceptualization of organizational culture at the value-level is the Competing Values Framework (Zammuto and Krakower 1991). The Competing Values Framework classifies organizational cultures along two dimensions: flexibility versus control and external versus internal orientation. From the intersection of these two dimensions, four culture types can be articulated. Clan culture stresses teamwork and investing in human resources. Adhocracy cultures are characterized by adaptability, risk taking and innovativeness. Hierarchy culture highlights structures of bureaucracy, including control and stability. Market culture emphasizes productivity, efficiency and productivity.

Culture can thus be classified according to different values that represent distinct culture types. These types can manifest at different levels within the organization. Some values can be held homogeneously across all members of an organization, while other values may exist only in subgroupings (Sackmann 1992; Saffold 1988). For example, in a case study of a medium-size conglomerate, Sackmann (1992) discovered subgroupings, depending on the occupational group organizational members belonged to, such as design and control, production or marketing. Homogeneity was found in the procedural steps used to approach situations. Even though departments differed in the problems and situations they encountered, they approached these
situations similarly, regardless of their occupational or departmental membership. Much evidence exists today that suggest culture can be a significant contributor to organizational performance. The culture-performance relationship is attributed to the effects of a strong set of shared norms and values within organizations (Denison 1984). Shared norms and values improve coordination, and goal alignment inside organizations and increase staff efforts. Organizations with strong cultures, i.e. cultures which align members’ behavior (Chatman 2014) have hence shown to achieve better results than organizations with weak cultures (Sørensen 2002).

The potential of organizational culture to improve organizational performance has evoked interest of the healthcare sector. Organizational culture in health care organizations is increasingly considered an influential determinant for health care quality (Scott et al. 2003). A call for culture has been prominent in the US (Institute of Medicine 2001) and as a central component of the reforms of the National Health Service (NHS) in the United Kingdom (Department of Health 2000, 2002). Since then the potential influence of organizational culture on health system performance has enlivened a burgeoning interest. Studies have examined and found evidence for associations of organizational culture with safety (Singer et al. 2009), physician satisfaction (Zazzali et al. 2007) and patient satisfaction (Meterko, Mohr, and Young 2004). However, empirical support for the influence of culture on integrated care is limited and relationships have mostly been described in a normative way (see for example Ahgren and Axelsson 2007).

Caring for patients with chronic disease often requires different professional groups to work together and is characterized by a high degree of input uncertainty as every patient is practically unique with his or set of multiple needs. Given this uncertainty, care for these patients often works without formalized structures and hence culture is hypothesized to be a particularly important coordination mechanism (Zazzali et al. 2007). Culture can facilitate coordination through its influence on behavior and by socializing organizational members into a system of shared values (Birkinshaw and Morrison 1995). Internalized shared values guide organizational members in their activities thereby obviating the need for formal structures of coordination (Edström and Galbraith 1977). Based on this coordinating mechanism, a shared culture is believed to help providers from different professional backgrounds to collaborate in a team, with the patient and his or her family (Hall 2005). However, based on the professional nature of health care that resulted from increased specialization, healthcare professions traditionally are guided by different cultures stemming from their profession-specific education and tasks rather than a shared set of values (Hall 2005). Hence, there have been prominent calls for culture change towards developing a collaborative culture in healthcare.
Successfully changing a culture requires knowledge of the nature of the culture to be changed (Wilkins and Dyer 1988) and understanding which type or mix of culture types are beneficial (Cameron and Quinn 2006). For integrated care, although culture has been frequently cited as key determinant for achieving well-integrated care, the characteristics of a culture that facilitates integrated care have not yet been identified. Empirical studies hardly ever consider organizational culture as a determinant for integrated care (Martínez-González et al. 2014) and, if they do so, culture is often insufficiently conceptualized (see for example Ling et al. 2012), which hampers reproducibility and conclusions about studies’ validity and applicability.

When studies consider organizational culture, the shared aspect is often stressed. Yet, for integrated care teams, members from different disciplinary backgrounds may function well professionally not because they have the same characteristics, but because differences in team members’ knowledge and values may provide heterogeneous resources that is sufficiently diverse to meet the individual needs of today’s complex patients. Different professionals are grouped together in teams, because each provider contributes a unique set of values to the team. While for example a dietician is knowledgeable about which nutritional levels are required to keep the patient healthy, a social worker on the other hand is much more concerned with the home and contextual situation of the patient. He or she may consider whether the patient has financial means for or access to food, which has the right nutritional values to comply with the instructions of the dietician. Underlying these different approaches to care may be different values that guide these healthcare providers in their work (Hall 2005). Eliminating these differences in favor of a shared culture may result in both healthcare professionals losing their unique contributions to patient care. The social worker may lose his or her flexibility to respond to patients’ unique contextual circumstances while the dietician may struggle in the absence of standardization to ensure continuity in patients’ nutrition. To understand these complexities and if and how culture can facilitate integrated care, more knowledge is needed about the true nature of the relationship between the organizational culture and integrated care, before any culture change approach can produce meaningful improvement.
Aim and outline of this dissertation

This dissertation studies the association of organizational culture with care that is perceived as integrated from the patient’s point of view. To do so requires an instrument that measures integrated care across settings and cultures, from the patient perspective, independent from the organization of those who provide care, and an instrument that measures organizational culture from the provider’s point of view.

The following objectives are addressed in this dissertation:
1. Develop and validate a survey that measures the degree to which patients perceive care they receive to be integrated across settings and over time and which is suitable for cross-cultural use.
2. Examine the extent to which patients perceive their care to be integrated through a survey that measures integration across settings and over time.
3. Investigate which types of organizational culture are perceived within primary health care teams, located in primary care centers.
4. Understand how different types of organizational culture relate to the degree to which patients perceive their care to be integrated.
5. Understand how the distribution of different culture types across healthcare professionals is associated with the degree to which their patients perceive care to be integrated.

To address these objectives different data and methodologies were used. Chapter 2 corresponds with objective 1 and investigates how to translate and culturally adapt surveys that assess integrated care for cross-cultural use. Specifically, it reports the process that was used to translate and culturally adapt the Patient Perception of Integrated Care survey, which was originally developed for use in the US context, for application in the Dutch context. Chapter 3 addresses objective 1 and 2 and describes how to validate surveys for cross-cultural use. In this chapter, the validation process and outcome of the Dutch Version of the Patient Perception of Integrated Care survey is described. Chapter 4, corresponding to objective 3 and 4, studies the association of average organizational culture, conceptualized through the Competing Values Framework, in multidisciplinary healthcare teams that are located in primary care centers with patient’s perceived integrated care, using three-level ordered logistic regression analysis. Chapter 5 addresses objective 5 and studies whether heterogeneity in perceived cultures, conceptualized through the Competing Values Framework, among members of multidisciplinary healthcare teams in primary care centers is associated with the degree to which patients perceive their care to be more or less integrated, using three-level ordered logistic regression analysis. A general discussion of the findings in this dissertation is provided in Chapter 6. This chapter also addresses limitations and implications of findings for policy, practice, and future research aiming to improve integrated care and to utilize organizational culture.
References


CHAPTER 2

Translating the PPIC survey to measure integrated care in the Netherlands: Combining equivalence and contextualization approaches for optimal results

Published as:
Abstract

An increase in initiatives that aim to improve care integration provides the need for instruments that evaluate integrated care as perceived by patients across cultural contexts. This study aims to explain the relevance of equivalence and contextualization approaches in translating and adapting the Patient Perception of Integrated Care (PPIC) survey developed in the US for use in the Netherlands. In translating and adapting the PPIC survey we followed the World Health Organization guidelines, including a forward-backward translation and patient-feedback through informal contacts (N4) and cognitive interviews (N14). The forward-backward translation produced a Dutch version of the PPIC survey with minor adaptations. Patients evaluated the survey as very relevant. Alterations resulted from structural and cultural differences and specificities of patients with chronic conditions. A context-sensitive translation process is key to developing instruments for cross-cultural health research. Our results show that equivalence- and contextualization methods provide equally relevant, yet substantially different contributions to the translation outcome and should both be incorporated when translating instruments for different cultural contexts. The results support the applicability of the Patient Perception of Integrated Care survey in the Netherlands and are promising for its adoption in other cultural contexts.
Introduction

“Meeting the complex needs of patients with chronic illness or impairment is the single greatest challenge facing organized medical practice” (Wagner 1997, p.2).

Chronic patients’ needs require multiple services and, due to specialization and professionalization of different occupational groups (Ahgren, Axelsson, and Axelsson 2009), cannot be addressed by one professional alone (Minkman et al. 2011). Integration of healthcare services and providers has become indispensable (Bodenheimer 2008), giving rise to many initiatives all over the world that aim to improve the degree to which professionals integrate care (Gröne and Garcia-Barbero 2001; Kodner and Spreeuwenberg 2002; Sun et al. 2014; Walker et al. 2013).

Although of critical importance for practice and policy makers alike, little is known about which approaches improve various aspects of care integration (Singer et al. 2012; Walker et al. 2013). Learning from on-going initiatives requires thorough evaluations and international comparison (Gröne and Garcia-Barbero 2001). Yet, instruments that assess integrated care comprehensively are scarce. A review performed by Lyngsø et al. (2014), although limited to provider perceived level of integrated care, could not identify any instruments assessing integrated care that are cross-culturally applicable. Research in other areas of health services research has shown that, although beneficial, translating instruments for use in different contexts and countries can have implications for the data quality and reliability (Gröne and Garcia-Barbero 2001). This is particularly relevant to cross-cultural studies of integrated care, because the values and social norms underlying integrated care are shaped within diverse cultural contexts, which is expected to bear an influence on individuals’ perception of care delivery (Beaton et al. 2000; Cella et al. 1998; McKenna and Doward 2005). Hence, translating and adapting patient-reported measures to another cultural context requires a careful approach.

To facilitate valid translations and adaptations of surveys for cross-cultural use, translation studies have introduced different methods. At present, there is little agreement on which type of translation should be used - and how - to produce the most rigorous output (Johnson 2006). Studies use different techniques and guidelines, which are mostly based on established practices rather than empirical results (Lenderking 2005). Limited empirical evidence is reported about what each method contributes to the translation (Chidlow, Plakoyiannaki, and Welch 2014; Lenderking 2005; McKenna and Doward 2005). Consequently, cross-cultural applicability of instruments is limited.

The pressing need for more empirically based insights on how best to perform cross-cultural translation combined with the need for cross-culturally applicable
measures of integrated care requires addressing “challenges of replicating measurement instruments across different health care settings, guidelines on how best to develop measurement instruments that can more effectively be replicated in the health system of other countries and further validation and development of already existing measurement” (Lyngsø et al. 2014, p.13). Therefore, this chapter addresses the following research question: How should different approaches for translations and cultural-adaptations be used for the translation of surveys that assess integrated care across different cultural contexts?

To do so, this chapter describes the translation and adaptation process of the Patient Perception of Integrated Care (PPIC) survey (Singer et al. 2012) for use in a research project that assesses integrated care in the Netherlands. The PPIC survey is developed by Singer and colleagues (Singer et al. 2012) in the US, based on two premises: First is that the degree to which integrated care is provided must be assessed independently from its organizational antecedents, which is why this survey is particularly suitable for cross-cultural use. Second is that the patient’s perspective should be the point of departure. The PPIC survey operationalizes the following definition of integrated care:

“Patient care that is coordinated across professionals, facilities, and support systems; continuous over time and between visits; tailored to the patients’ (and family members’) needs and preferences; and based on shared responsibility between patient, family, and caregivers for optimizing health.” (Singer et al. 2011, p.113).

This definition is further specified in a conceptual model, which describes integrated care along seven dimensions: coordination within, and across care teams, coordination between care teams and community resources, familiarity with patient over time, proactive and responsive action between visits, shared responsibility, and patient-centeredness (Singer et al. 2011; Singer et al. 2012). That the framework underlying the PPIC survey indeed reflects patients’ understanding of integrated care is supported by the study of Walker et al. (2013). The authors conducted a series of focus groups with a diverse patient sample to explore patients’ perception of integrated care. The themes they discovered were consistent with the dimensions underlying the PPIC survey. So far, the PPIC survey has only been used in the American health care context for which first psychometric tests support reliability and validity (Singer et al. 2012).

To translate and culturally adapt the PPIC survey to the Dutch context, we apply techniques from two basic approaches and compare their separate contribution to the translation output. Thus, by accomplishing the translation of the PPIC survey for use in the Netherlands, this study contributes insights that can help to inform future translations and adaptations of health-related surveys for different cultural
settings. We proceed by explaining two different translation approaches, the translation process that we followed and how these processes contributed to the translation outcome.

Theory and method

The literature describes two basic approaches to translation, namely equivalence and contextualization. According to the equivalence approach the aim of a translation is “to achieve a text in the target language that is equivalent, meaning having equal value, to the original source-language version” (Chidlow et al. 2014, p.563). Studies seeking this objective predominately use techniques that ensure accuracy, validity, and reliability, such as forward-backward or team/committee translations. When seeking contextualization, “the translation is a form of intercultural interaction, rather than a lexical transfer of meaning” (Chidlow et al. 2014, p.573). This form of translation employs a hermeneutic and interpretive activity, which achieves quality if the original meaning is transmitted in a culturally adequate way. The idea underlying this approach is that instruments should not only receive adequate linguistic translation but also should adjust for cultural specificities of the new context to maintain content validity (Beaton et al. 2000). An example is provided by the study of Li, Wang and Shen (2003) in which they translated the US-developed SF-36 Health Survey for use in China. To adapt an item that measured physical activity for the Chinese context they used Tai Chi as a complementary prompt because the original suggestions golf and bowling were not regular sports in China. Although linguistically these adaptations change the question, they helped to increase comparability of the construct that the item measured.

Along these same lines, Johnson (2006) distinguishes between shared method and shared meaning. Shared method addresses equivalence and concerns technical problems of cross-cultural measurement, such as semantic and instrument equivalence or psychometric properties. Shared meaning follows the contextualization paradigm and aims for interpretive equivalence, being equivalence of the meaning of measures. These two approaches (equivalence and contextualization) formed the framework that guided our translation process. To translate the PPIC survey we started by following the equivalence approach. We then proceeded with contextualization methods to culturally adapt the PPIC survey to the target context. We will continue by describing the properties of the PPIC survey, followed by the translation process that we applied to translate and adapt the survey for use in the Netherlands to assess integrated care as perceived by patients of primary care centers.
Measure

The PPIC survey (version 2.1) measures patients’ perceptions of integrated care for application in the US and served as basis for the translation and adaption process. The survey was theoretically derived and developed through multiple rounds of pilot-testing, cognitive testing, and input from an advisory panel of survey measurement and care integration experts, patient representatives, and patients (Fryer et al. 2016; Singer et al. 2012). Designed particularly for administration to patients with multiple and complex healthcare needs, the survey asks about patients’ experience of care across settings, including their primary provider’s office, specialists, hospitals, and at home, and over time. Reliability and validity were previously established in a US based sample.

Development process

In translating the survey, we followed the guidelines of the World Health Organization for translating questionnaires (WHO n.d.). Figure 1 provides an overview of our translation process, which started in November 2013 and was finalized in August 2014.

We started by assessing the item applicability for our study purpose and target population. We included all items that measure the degree to which integrated care is provided. Additionally, we included questions about the following demographics: general health status, age, gender, highest level of school, country of origin and whether somebody helped to complete the survey. In choosing our methodology we sought to achieve interpretative comparability, i.e., equality with which measures are interpreted across cultures (equality of meaning) and procedural comparability, which relates to technical problems of cross-cultural measurement (e.g. equality of items, measurement unit, or psychometric characteristics) (Johnson 2006). We started with the equivalence approach in performing a forward-backward translation. Forward-backward translation was chosen because we aimed to produce a cross-culturally comparable survey for which this method is most suitable as it allows for direct comparison of the translated measure with the original (Maneesriwongul and Dixon 2004). The research team consisted of four researchers, fluent in English and Dutch. Two researchers are native Dutch, one German and one Italian. The forward translation was performed by the German and one Dutch researcher and then verified by the other researchers independently.

Deviations and adjustments were discussed during group sessions. The developer of the PPIC survey verified the intended interpretation of questions in case of disagreement. After reaching consensus, a backward translation was requested from an independent translator at the University’s Language Center. The backward translation was compared to the original and Dutch version. Mismatches were discussed among the research team and the translator until consensus was reached.
Applying forward-backward translation ensures comparability of the translated measure with the original measure even in case of poor translations, because the translated items may use the same structure as the translation and hence may perform well in the backward translation. Yet, it may not necessarily produce a translation that is appropriate for use in the target culture (Maneesriwongul and Dixon 2004). Although items might be semantically equivalent, their interpretation can vary across different cultural contexts. We therefore supplemented equivalence methods with contextualization to ensure understandability of our survey and to verify that items were measuring the constructs they were intended to measure. Because involving informants from the target population in the translation process
is associated with increased user satisfaction and response completeness (Hagell et al. 2010), we presented the survey to four respondents who were patients of a primary care center in South Limburg, the Netherlands. Respondents were asked for feedback on understandability and relevance of each survey item.

Insights from the forward-backward translation and initial patient feedback were incorporated in a pilot version of the Dutch PPIC survey. To assess applicability and understandability of this version we then performed cognitive interviewing in group- and individual settings. Group interviews were performed because they allow comparison among respondents’ experiences and perceptions. Furthermore, group interviews facilitate interaction between respondents and can illuminate similarities and differences in reference frames that respondents apply when interpreting survey items (Morgan and Spanish 1984). Next, we performed individual interviews because, although group interviews offer the benefit of interaction, individual interviews are better suited to gain in-depth knowledge as they allow for direct probing of respondent’s knowledge (Morgan and Spanish 1984). Also, individual interviews allowed the inclusion of informants who were not able to travel to participate in group interviews due to health challenges. Inclusion of this group was very important because patients with complex health needs are likely to strongly benefit from receiving integrated patient care and hence are an important target audience (Singer et al. 2011). The WHO guidelines advise testing each instrument section on at least ten patients (WHO n.d.). We reached saturation after interviewing 14 patients (one group interview with four respondents, three interviews with pairs and four individual interviews). During the interview, the interviewer read the questions out loud. Respondents were asked whether questions were formulated clearly, to rephrase questions, explain what the items were asking and what they thought of when providing an answer. For difficult items, respondents were encouraged to provide suggestions for improvement. At the end of the interview, respondents were asked what they thought of the survey, whether the items cover their care experience and whether questions were missing. Each interview was recorded after respondents’ permission was gained. Insights from the interviews were used to finalize the survey. Finally, adapted questions were translated into English and presented to the developer of the PPIC survey to ask for feedback and approval (the survey is available from the authors on request). This study did not require review by the Medical Research and Ethics Committee according to the Dutch Medical Research (Human Subjects) Act (Borst-Eilers and Sorgdrager 1998).

**Study population – cognitive interviewing**

As the survey assesses inter-provider collaboration, respondents eligible for inclusion had to be seen by more than one health care provider in the previous six months. Respondents were approached via a primary care center and an interest group for
health care users in South Limburg, the Netherlands. Men and women were equally represented with ages ranging from 40 to 83.

Data-analysis

The feedback from the cognitive interviews was summarized after the interviews were performed. To determine whether questions needed refinement the notes were reviewed to find similarities and differences in the respondents’ feedback. The findings and possible alterations of items were discussed within the research team.

Results

Forward-backward translation

After the forward translation was performed some questions needed shortening, because grammatical differences in the Dutch language resulted in over-complicated sentence structures. To ensure that question content was not affected, we checked for conceptual equivalence after the backward translation was performed. Alterations after the backward translation were minor and considered lexical changes, where synonyms were matched to the original version precisely. At this stage, we changed words in three items: “thoughts” into “idea”, “good” into “easy” and “care” into “instructions”. We also adapted three questions for which the introduction differed from the other items. Most questions in the survey begin with “In the last 6 months...”. However, questions about specialist care outside the provider’s office start with “In general” but were erroneously translated with “In the last 6 months”. We also adapted one question where the word “sometimes” was accidentally translated into “often”.

First response by the initial four patients

We presented the survey to four patients to ask for their first impression on understandability and relevance of survey items before finalizing our survey for cognitive interviews. Respondents experienced difficulties in answering some questions that assess the provision of information and support because they did not feel they needed such services. For example, patients with chronic disease found it difficult to relate to the following question:

“In the last 6 months, how often have you and anyone of the primary care center talked about how you were supposed to take your medicine?”
Respondents explained that they did not discuss how to take the medicine with their provider because they had been taking this medication for years. Hence, they perceived that this question was not relevant to their situation. The same applied to patients with non-complex health needs, in relation to the following question:

“In the past 6 months, how often did these other staff talk with you about care you received from your GP?”

Respondents struggled to answer this question because answering “never” indicates that the staff did not provide integrated care, while instead they perceived that there was no need. Because the survey was presented to a small number of patients who may not cover all characteristics of the target population, we did not change any survey items at this stage. Instead, we added sub-questions that assessed patients’ needs for the type of care that the particular question was addressing to improve the interpretability of these items and to account for the heterogeneous population. These additions were verified during cognitive interviews.

Cognitive interviewing

Respondents’ feedback for the applicability of the PPIC survey was positive. Items were evaluated as highly relevant and covering crucial aspects of health care delivery. However, respondents also identified possibilities for improvements. Below, we describe the main issues patients raised and how we addressed them.

Respondents experienced difficulties with questions that were referring to the content of the previous question, such as the case for the following two items:

Item 18: “In the last 6 months, did this provider talk with you about setting goals for your health?”

Item 19: “In the last 6 months, did the care you received from this provider help you meet your goals?”

It was not clear that the goals in question 19 were referring to the goals in question 18. To improve visual guidance and to reduce item length we subordinated referring questions and took out redundant repetitions. For example, question 19 was changed to 18a and “your goals” adapted to “these goals”.

Questions that asked about “instructions” that providers advised the patient to follow were experienced as somewhat patronizing. Respondents explained that doctors can only give advice and that it is up to the patient to decide how they use it. We therefore added the word “advice”.

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Furthermore, patients struggled with the item that asks whether the GP discussed setting goals for their health. Patients stated that the only goal of a patient is to get perfectly healthy but that this was not possible for most of them. Providing examples about other goals such as increasing physical activity or a healthier diet clarified the item but respondents expressed a discrepancy between these examples and their initial understanding of the question. However, possible goals could be many, and we did not want to limit the item to a set of examples. To provide more guidance to the respondent we added “setting goals to improve your health, maintain your health, or to slow down deterioration” to the question.

Patients had difficulties in answering questions about the GP’s knowledge of patients’ medical history. According to respondents, providers were well informed because they access information via the medical information system when seeing the patient. Respondents were satisfied with this approach but had problems answering the question, as strictly speaking the providers did not “know” the information but had “consulted” their medical record to access it. To overcome this problem, we added consult to this question:

“In the last 6 months, how often did this provider seem to know or consult the important information about your medical history?”

The item asking whether the patient had to contact the provider’s office him/herself to get the results of a medical test also required adaptation. In the Netherlands, it is normal procedure for patients to contact the provider’s office themselves. All respondents reported that this was the case. Respondents did not experience this as onerous as long as they were informed about it. Hence, we added the following question:

“When you had to contact the primary care center yourself: Did they explain to you in advance that you had to contact them yourself?”

Other items requiring discussion were asking about contact with the primary care provider’s office outside regular office hours. Respondents stated that these questions were not applicable to the Dutch system, because patients either are redirected to an answer machine with information on where to go or are immediately redirected to the general practice service (“huisartsenpost”), a service for acute and urgent care needs outside regular office hours. This is a widely-used system in the Netherlands of which patients are aware. Patients explained that they would not contact their provider outside office hours, because they know they have to contact the general practice service. Although this system is much institutionalized we consider it important to determine whether primary care centers ensure continuity of care. For this purpose, we changed the following question from:
“In the last 6 months, when you tried to contact this provider’s office after regular office hours, how often did you get an answer to your medical question in a timely manner?”

to

“Did the primary care center make sure that you knew where to go outside regular office hours?”.

Respondents had difficulties providing one overall score for the care they received because there are large differences in the quality of care they receive from different providers, which they claimed makes it impossible to weigh these differences in one score. To prevent respondents from skipping this item we separated answer categories from an overall score to individual scores for each provider group in the survey (GP, other staff of the provider’s office and the specialist).

We also asked patients whether the survey misses aspects that are important to their care delivery. An item that was missing concerned the evaluation of medicine. Patients explained that their GP, when prescribing new medicine, typically thoroughly explained how to take this medicine, but may not have evaluated whether the current medication intake was still up to date. Patients described situations where they felt nauseous for long periods because the medication intake did not meet their needs anymore. We therefore added the following question:

“In the last 6 months: did somebody from the primary care center look at your medication intake with you?”

**Discussion**

This chapter describes the approach used to translate and culturally adapt the Patient Perception of Integrated Care (PPIC) survey for use in the Dutch health care sector. The WHO guidelines proved to be very useful in guiding this process. Using both equivalence and contextualization approaches was particularly valuable, as each step of the process led to significant improvements in the applicability of the survey for the Dutch context. Figure 2 highlights how both methods provided different contributions to the adaptations process.

Methodologies that belong to the equivalence approach revealed the need for lexical and formal adaptations. The forward-backward translation process showed that choosing adequate wording is a delicate process and needs a thorough examination. This is particularly relevant for words that have several synonyms in the target
language that, depending on the context, one or the other of which may better represent the source wording. Formal adaptations were needed because some items were lengthy after literal translation, which, although adequate, threatened comprehensibility and ultimately validity. Item subordinating was needed to solve this problem.

**Figure 2. Translation process outcomes**

Although this step was important to retrieve a comprehensive starting version equivalent to the source, our process has shown that an adaptation needs additional steps to successfully transfer a survey to a different cultural context. This is even more important in the case of patient self-reported measures that assess normative constructs, such as for the study of integrated care. As the respondents’ feedback has shown, although the cultures of the US and the Netherlands are relatively similar
considerable differences exist between integrated care perceived by patients in the Netherlands as opposed to the US. These differences relate to the health care context and are structural and cultural in nature, requiring adaptations of the survey content. As for cultural elements, Dutch patients perceived the word “instructions” as patronizing and preferred the word “advice”. Also, Dutch patients with chronic disease experienced questions about instructions for the medication intake as redundant because they were familiar with this medication and did not need repetitive explanations. As for structural elements, questions about care outside regular office hours were not applicable to the Dutch health care system and needed adaptation because patients are typically referred to the general practice service.

As these examples show, over-reliance on the equivalence approach ensures formal congruence of the “signifiers” (words and sentences) but misses possible contextual differences which affect their “signified”, hence perceived meaning (Barthes 1968). Thus, if one is looking for a sheer instrument translation, equivalence methods such as a forward and backward translation will serve the purpose. For a culturally appropriate adaptation, however, the equivalence approach results in only a starting version. Contextualization related methods are needed to adapt the survey to specificities of the context in which the survey will be administered. We therefore advise researchers who want to introduce an instrument to a new cultural context to combine equivalence and contextualization methods. Yet, the proportion of methods from each approach might depend on the context for which an instrument is adapted and its difference with the source context. Future research should investigate the extent to which differences across contexts influence the mix of methods between approaches. Doing so could advance our understanding of requirements for an efficient translation process in which each step adds value to the translation (McKenna and Doward 2005). Translation and cultural adaptation processes are costly and time-consuming (Beaton et al. 2000), and hence should be designed to provide meaningful contribution to the translation outcome. Hofstede’s classifications of national cultures (Hofstede 1985) is one framework that could help explain how differences in contexts relate to the necessity for either equivalence or contextualization approaches. According to this framework, national cultures can be compared across different dimensions. Johnson and colleagues (2005) have shown how differences in Hofstede’s dimensions relate to differences in response behavior. Cultures with high power distance, that is the extent to which members of a society accept that power is distributed unequally (Hofstede 1984), are associated with significantly higher extreme responding and significantly lower tendency for acquiescence. These findings illuminate how this framework could be useful in assessing distance in cultural values between the context in which an instrument is developed and the context to which the instrument is transferred. Understanding these differences would help with choosing the relative proportion of equivalence and contextualization-related approaches. Equivalence approaches may suffice for transferring instruments across
countries with relatively similar scores on the Hofstede’s culture dimensions. Larger differences may require more contextualization-related approaches. Translation approaches should start with an assessment of similarities and differences in contexts before choosing approaches to perform the transfer.

Through this study, we were able to show that it is possible to transfer instruments that assess the patient-perceived level of integrated care across countries and cultural contexts. In doing so, we advanced current insights about how different approaches impact on the translation outcome in providing in-depth results of our translation process and results. Our results are promising, but more research is needed to advance cross-cultural research in the field of integrated care. For example, this study focused on between-country differences. The influences of within-country differences, which result from increasingly diversifying cultures inside countries (Nijkamp and Poot 2015), have yet to be examined. Also, differences in context between the US and the Netherlands were relatively small (Hofstede 1984). Usability of equivalence- and contextualization-related approaches should be assessed in translation projects for countries with larger differences. Additionally, this study focused on assessing the interpretative equivalence of survey items, namely the extent to which concepts are similar or different across contexts through cognitive interviews. However, Johnson and colleagues (2005) have shown that respondents from different cultures do not only differ in their perception of the constructs but also in the degree to which they perceive that needs are fulfilled. As described in the method section, we aimed to achieve procedural equivalence during the translation and adaptation process of the Dutch PPIC survey and added questions that ask about respondents’ needs for a certain service to assess these preferences. A next step is to further explore results related to procedural equivalence and to determine validity of the Dutch PPIC survey through psychometric testing. These analyses are currently underway based on a study that was performed in five primary care centers in the Netherlands.

**Conclusion**

Both equivalence and contextualization approaches contributed significantly to the translation and cultural adaptation of the PPIC survey, supporting the need for methods from both approaches when preparing an instrument for cross-cultural use. However, the required mix of approaches might depend on the difference between contexts, the nature of the survey and the purpose for which the survey is translated. The results retrieved by combining methods from both approaches support the applicability of the PPIC survey to measure integrated care in the Netherlands. Although alterations were needed, patients recognized that the PPIC survey covers crucial points of their care perception and confirmed the need for an assessment of these points to improve care experience.
References


emirical validation of the Development Model for Integrated Care." BMC health services research 11(177).
CHAPTER 3

Cross-cultural validation of the Patient Perception of Integrated Care survey

Abstract

Global interest in improving health care systems and the growing number of multicultural research projects call for methods that validly and reliably assess health system outcomes across cultural contexts. Yet, there is limited guidance on how to test validity and reliability of instruments intended for cross-cultural use. This study aims at testing the cross-cultural validity of the US Patient Perception of Integrated Care (PPIC) survey in a Dutch sample using a standardized procedure. Primary data was collected from 3725 patients who saw multiple healthcare providers in one of five primary care centers in the south of the Netherlands, through survey research from 2014 to 2015. The PPIC survey includes 59 questions that measure patient-perceived integrated care across providers, settings, and time. Data analysis followed a standardized procedure guiding data preparation, psychometric analysis, and included invariance testing with the US dataset. Latent scale structures of the Dutch and US survey were highly comparable. Factor “Integration with specialist” had lower reliability scores and noninvariance. For the remaining factors, internal consistency and invariance estimates were strong. The standardized cross-cultural validation procedure produced strong support for comparable psychometric characteristics of the Dutch and US surveys. Future research should examine the usability of the proposed procedure for contexts with greater cultural differences.
Introduction

Global interest in improving health care systems and the growing number of multicultural research projects call for methods that validly and reliably assess health system outcomes across cultural contexts (Arah et al. 2006; Berzon, Hays, and Shumaker 1993; Bullinger et al. 1998; Guillemin, Bombardier, and Beaton 1993; Sousa and Rojjanasrirat 2011). This need is reinforced by diversifying cultures within national boundaries (Nijkamp and Poot 2015), such as in the United States (Acquadro et al. 2008). In 2000, 18% of the US population on average, and up to 93% in some areas, spoke a language other than English at home (Hurtado et al. 2005; Pan and Puente 2005; Shin and Bruno 2003). Because cultural groups may vary in their perception and expression of health, as well as their use and experience of health care, valid and reliable measures should be sensitive to cultural differences (Guillemin et al. 1993). When concepts are studied across cultures, measures should be context-sensitive and cross-culturally comparable. This chapter focuses on the development of measures suitable for cross-cultural comparison.

We adopt a broad definition of culture “as system of symbolic meanings that shapes both social reality and personal experience, mediates between the external and internal parameters of medical systems, and thereby is a major determinant of their content, effects and the changes they undergo” (Kleinman 1978, p. 86). According to this definition health and health care systems are embedded in cultural systems and hence cannot be examined in isolation (Kleinman 1978). Thus, in performing cross-cultural validation, we aim to account for differences in cultures and systems.

A measure is cross-culturally valid if it “functions as intended and has the same properties as the original” (Epstein, Santo, and Guillemin 2015, p. 436). It requires equivalence on five dimensions (Epstein et al. 2015). Conceptual equivalence requires domains to be equally relevant and meaningful to the explored concept. Item equivalence exists if items are as relevant and acceptable. Semantic equivalence requires items to have equal meaning. A measure is operationally equivalent if it can be used in the same way by its target population. Measurement equivalence requires equal psychometric properties, i.e. construct validity, reliability, and responsiveness of both measures.

Conceptual, item, semantic and operational equivalence are addressed prior to and during the translation and adaptation process, in which the measure is transferred to the new context (Epstein et al. 2015). Methods for doing so have been addressed through multiple guidelines such as the WHO guidelines (World Health Organization n.d.) and the IQOLA approach (Bullinger et al. 1998). In comparison, standardization of methods for testing measurement equivalence have received limited attention (Epstein et al. 2015). As a result, cross-cultural validation procedures vary greatly in
their degree of completeness (Guillemin et al. 1993). Most often psychometric analyses are restricted to reliability and validity of the translated measure but do not assess cross-cultural comparability (measurement equivalence) (Bautista et al. 2016). When psychometric properties from the translated measure are compared with the original, results typically provide limited support for comparability (e.g. Gehring et al. 2015; Perneger, Staines, and Kundig 2014; Pfeiffer and Manser 2010). These inconsistencies hamper investigator’s ability to understand how cultural characteristics impact construct formations and perceptions and to draw conclusions about the comparability of study findings across cultures. Hence, in addition to validation processes for the translation and adaptation, standardized, evidence-based procedures for testing measurement equivalence are necessary to increase potential sample populations beyond national boundaries (Epstein et al. 2015).

With this study, we aim to promote method standardization for establishing measurement equivalence to complement guidelines for cross-cultural validations. To do so, we present lessons learned from the psychometric analysis of the Patient Perception of Integrated Care (PPIC) survey (Singer et al. 2012) for cross-cultural application. The PPIC survey is a self-administered tool that was successfully transferred from the US to the Netherlands. It measures integrated care from the patient’s perspective, independently of the organizational arrangement of the patient’s providers, where integrated care is defined as “patient care that is coordinated across professionals, facilities, and support systems; continuous over time and between visits; tailored to the patients and family members’ needs and preferences; and based on shared responsibility between patient, family, and caregivers for optimizing health” (Singer et al. 2011, p.113).

The survey was previously translated and adapted for use in the Dutch context and conceptual, item, semantic and operational equivalence were established (Tietschert et al. 2016). In this chapter, we assess the transferability of health-related, patient-reported outcome measures for application in cross-cultural comparative research and offer a guide for psychometric testing. We do so by comparing the measurement properties of the Dutch PPIC survey to the previously validated US PPIC survey using a standardized methodology. We also show that the PPIC survey can reliably and validly measure integrated care across US and Dutch contexts.

Establishing the cross-cultural validity of this survey provides opportunity to compare patient-perceived integrated care in the US and the Netherlands. Both countries invest in various reforms to improve care integration. Examples are accountable care organizations in the US (Shortell et al. 2015) and bundled payments for chronic care in the Netherlands (Struijs and Baan 2011). Despite these initiatives, it is still poorly understood which approaches improve different aspects of integrated care (Tietschert et al. 2016). The PPIC survey can serve as research tool to compare inter-
ventions intended to improve integrated care and, to guide refinement of delivery system innovation. Using the survey in this way would generate knowledge about which interventions can improve integration. Plans for leveraging the cross-culturally validated PPIC survey include comparing the US and Dutch data to identify strengths and weaknesses in patient-perceived integrated care of each delivery system in order to foster cross-cultural learning.

Methods

In the following section, we detail the step-wise procedure used to assess measurement equivalence of the PPIC survey. Because the focus is on the Dutch survey, we provide information about US processes only as needed for comparison. We begin by describing the US survey and proceed with explaining how the different domains of cross-cultural validity were explored.

US survey – development and survey characteristics

The PPIC survey (version 2.1) was finalized in 2014 to measure patients’ perceptions of integrated care for application in the US. The survey was theoretically derived and developed through pilot-testing, cognitive testing, and input from an advisory panel of survey measurement and care integration experts, patient representatives, and patients in multiple rounds (Fryer et al. 2016; Singer et al. 2012). Reliability and validity were established (Kerrissey et al. 2017). The survey is designed particularly for administration to patients with complex needs and includes 59 questions about patients’ experiences of care across settings, including their primary provider’s office, specialists, hospitals, at home, and over time.

The survey measures patient-perceived integration on six dimensions (Kerrissey et al. 2017): (1) **Provider Knowledge of the Patient** assesses the extent to which providers are well informed, up to date and familiar with the patient’s needs and values; (2) **Staff Knowledge About the Patient’s Medical History** measures how familiar staff within the provider’s office is with the patient’s current and prior medical information; (3) **Specialist Knowledge About the Patient’s Medical History** addresses familiarity of the specialist outside the provider’s office with the patient’s current and prior medical information; (4) **Support for Self-Directed Care** asks to which extent providers encourage, enable and support the patient to perform self-care; (5) **Support for Medication and Home Health Management** covers how well providers orient patients to their medications and provide support between visits; and (6) **Test Result Communication** addresses the efficacy and timing of efforts made to share test result information with the patient. Integrated care dimensions and corresponding items are available on request. For respondents who had been hospitalized, survey responses also produced an index of integration following hospitalization. Additional items assess
demographic characteristic, personal information, general health ratings, and the CAHPS communication construct (Hargraves, Hays, and Cleary 2003).

Testing conceptual, item, semantic, and operational equivalence

**Dutch survey – cultural translation and adaptation**

From November 2013 to August 2014, the US survey was translated and adapted for use in the Netherlands according to the guidelines for translating and culturally adapting survey instruments offered by the World Health Organization (World Health Organization n.d.). The process included a forward-backward translation of the survey from English to Dutch and back to English, aimed at testing semantic equivalence (Chidlow, Plakoyiannaki, and Welch 2014). Thereafter, semantic, operational, and item equivalence were tested in cognitive interviews with respondents who received care from multiple providers (Chidlow et al. 2014). The final Dutch version was produced by adapting survey items based on these tests (Tietschert et al. 2016).

Testing measurement equivalence

**Dutch survey administration: Setting, data collection and study population**

Differences in US and Dutch healthcare systems required different approaches to survey administration (Table A1, technical appendix). Setting, study population, data collection and content of the distributed survey packages were similar. Sampling method, survey distributor, and data collection period differed. To test the cross-cultural validity of the Dutch survey, data were collected in five primary care centers in the South of the Netherlands (January 2014 – February 2015). The centers varied in size, organizational maturity, and provider mix, but all included multiple providers and a heterogeneous patient mix.

Respondents were selected from the patient population of each primary care center. Several survey dimensions assess inter-provider collaboration. Hence, we selected all adult patients (18+) who had been seen by more than one healthcare provider. The Dutch healthcare system leverages a gatekeeper concept, in which the patient commonly enters the care process via the general practitioner (GP), who then determines whether referral to a different provider is needed. Because electronic patient records did not allow tracking of referred patients, health care providers other than GPs selected all adult patients whom they had seen during the six months preceding data collection. These providers – for example dieticians, physiotherapists, and social workers – worked at the primary care center. We assumed a high likelihood that these patients had also been seen by the GP. The lists were cleaned for duplicates. Patients who were deceased were excluded. Each respondent was anonymized with an individual ID-number. The primary care centers distributed the written survey by mail with an accompanying letter explaining the study purpose, that participation was
voluntary and how to contact the leading researcher when additional information was desired. When no response was provided, a reminder was sent three weeks after the survey was posted. Respondents were thus contacted two times at maximum.

**Standardizing the cross-cultural validation of measurement equivalence**

We hypothesized that assessing comparability of a translated survey with the original requires substantive equivalence of the survey itself and equivalence of the cross-cultural validation procedure. Only then differences or similarities in psychometric results between surveys are unambiguously interpretable. To standardize the cross-cultural validation, the first author composed a manual for analysis of the PPIC survey in partnership with the US-based PPIC development team. In this manual, the validation of the PPIC survey in the US was reproduced step by step. We reviewed all information relevant to the validation process applied to the US dataset and compiled the information in a single document. To check for accuracy, each section was presented to the person responsible for the respective analysis in the US. The final manual provided detailed information on the data preparation and psychometric testing. For details on the data preparation we refer to the technical appendix 1 “Data Preparation”. Psychometric testing included (a) analyzing sample and survey properties, (b) testing the survey latent scale structure, and (c) testing invariance. The manual is available from authors on request.

**Psychometric testing**

**Sample and survey properties.** To study comparability between the US and Dutch survey data, we used the same items that were included in the analysis of the US data. To test sample properties respondents’ demographic characteristics were examined. We studied survey properties to detect potential problems related to survey comprehension (Ware and Gandek 1998). We studied item response-rate and ran generalized linear regression models to test for influences of respondent characteristics on missing values. We computed frequency distributions of survey items to determine whether all response choices were used. If response choices are underrepresented, this may indicate inadequate translation or insufficient adaptation for the new cultural context being studied (Ware and Gandek 1998).

**Survey’s latent scale structure.** Our main interest was to determine comparability of the US and the Dutch survey. However, imposing the US structure from the outset would not have detected potential alternative, and maybe better fitting structures. Based on procedures suggested by Pett, Lackey and Sullivan (2006), we started with an exploratory factor analysis (EFA) to determine the Dutch survey’s latent scale structure. We first computed and visually examined a pair-wise correlation matrix to determine whether items had adequate correlations to warrant grouping them. If
items are too highly correlated, it may be impossible to determine their unique contribution to a factor, causing problems for factor analysis. Therefore, several sources advise eliminating variables with strong correlations as there is not enough unique contribution by each variable (e.g. Pett et al. 2006). If items had correlations higher than .80, we excluded one item based on theoretical considerations and after confirming that the choice did not result in ceiling effects or significant changes to the factor structure. We assessed sampling adequacy by comparing the magnitude of the calculated correlation coefficients to the magnitude of the partial correlation coefficients with Kaiser-Meyer-Olkin Test (KMO) (Kaiser 1970; Kaiser and Rice 1974). Values larger than .60 indicate adequate sample size. We applied Bartlett’s test of sphericity (Bartlett 1937) to determine whether items in the correlation matrix are sufficiently related. Under the null-hypothesis, the correlation matrix is an identity matrix with uncorrelated items and factor analysis would be inadvisable. A significant chi-square (p<.05) indicates that the correlation matrix is not an identity matrix. We proceeded with an EFA, in which we applied Kaiser’s eigen value-greater-than-one decision rule (Kaiser 1960). We used Promax Oblique Rotation to consider potential correlations between integrated care dimensions. Items that loaded on multiple factors were assigned to the factor with the highest loading (Arah et al. 2006). Factors’ internal consistency was assessed with Cronbach’s alpha (Cronbach 1951), which is a reliability estimate of shared variance among items (Ware and Gandek 1998). To examine discriminant validity, Cronbach’s alphas were compared to the correlations with all other remaining scales. Cronbach’s alphas higher than the remaining correlations indicate unique variance and thus suggest that scales measure distinct factors (Ware and Gandek 1998). To test goodness of fit we used confirmatory factor analysis (CFA), applying criteria suggested by Brown (2006). Analyses were run on the full sample. To check robustness, we repeated analyses with the split-half procedure in which EFA and CFA were rerun on separate subsamples. The procedure did not yield appreciably different results.

*Invariance testing.* To assess comparability between the US and Dutch survey we tested invariance (2d) of the US and Dutch datasets. The Dutch latent scale (factor) structure was visually compared with the US structure and an invariance test was performed according to the procedure suggested by Dimitrov (2010). To evaluate model fit we applied criteria provided by Cheung and Rensvold (2002).
Results of the cross-cultural validation

Sample properties

A total of 5,991 surveys were distributed, of which 62 were returned undeliverable because respondents had changed address or were deceased. We received back a total of 3,725 surveys (response rate of 62.3%). Table 1 details respondent demographics. Eighty-five percent of the respondents were 55 years or older, 52.4% were female, 34% patients had attained at most general secondary education or primary vocational education. Respondents were predominantly Dutch (93.6%). Almost 82% of the respondents had moderate to good health, and 81.7% completed the survey without help.

Survey properties

We assessed item total and relevant nonresponse. Nonresponse is the absence of a response to an item that the respondent should have answered, i.e., not skipped appropriately according to the survey skip pattern. The total nonresponse rate compares the total number of blank responses (not skipped properly) and the total number of respondents. Of the items included in our analysis, total nonresponse rate per item averaged 5.4%. The relative nonresponse rate for a given item compares the number of people who should have answered a question based on the response to the gate question to the number of people who answered. The relative nonresponse averaged 3.3%. Older respondents (>75), women and patients who filled in the survey without help had significantly more missing values.

Percentage top-box of items with 4-point scales ranged from 7% (Q42) to 93% (Q6). Item means ranged from 1.44 (Q42) to 3.92 (Q6) with standard deviations of at least .28 (Table 2).
Table 1. Respondent Demographics

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<th>Respondents</th>
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<td>65-74</td>
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<td>Female</td>
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<td>High</td>
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<td>German</td>
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<td><strong>Self-reported health</strong></td>
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<td>Very good</td>
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<tr>
<td>Good</td>
<td>1903</td>
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<tr>
<td>Fair</td>
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<td><strong>Had help completing the survey</strong></td>
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Table 2. Items Response, Mean, and Standard Deviation

<table>
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<tr>
<th>Item Number/ Item Text</th>
<th>N</th>
<th>Response Scale</th>
<th>Percentage Top Box°</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combination-question 4 and 5. Some offices remind patients about appointments. Before your most recent visit with this provider, did you get a reminder from this provider’s office about the appointment? Before your most recent visit with this provider, did you get instructions telling you what to expect or how to prepare for the visit?</td>
<td>2819</td>
<td>Combination 4-point▼</td>
<td>9</td>
<td>1.50</td>
<td>0.94</td>
</tr>
<tr>
<td>Question 6. In the last 6 months, how often did this provider cancel or change the date of an appointment?</td>
<td>2878</td>
<td>A/U/S/N*</td>
<td>93</td>
<td>3.92</td>
<td>0.28</td>
</tr>
<tr>
<td>Question 9. In the last 6 months, how often did you have to repeat information that you had already provided during the same visit?</td>
<td>2846</td>
<td>A/U/S/N</td>
<td>79</td>
<td>3.75</td>
<td>0.53</td>
</tr>
<tr>
<td>Question 10. In the last 6 months, how often did this provider seem to know the important information about your medical history?</td>
<td>2827</td>
<td>A/U/S/N</td>
<td>35</td>
<td>2.78</td>
<td>1.10</td>
</tr>
<tr>
<td>Question 17. How would you rate this provider’s knowledge of your values and beliefs that are important to your health care?</td>
<td>2878</td>
<td>E/G/F/P*</td>
<td>36</td>
<td>3.25</td>
<td>0.65</td>
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<tr>
<td>Combination-question 18 and 19. In the last 6 months, did this provider talk with you about setting goals for your health? In the last 6 months, did the care you received from this provider help you meet your goals?</td>
<td>2753</td>
<td>Combination 4-point*</td>
<td>30</td>
<td>2.48</td>
<td>1.28</td>
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<tr>
<td>Question 21. In the last 6 months, how often did these other staff seem up-to-date about the care you were receiving from this provider?</td>
<td>2190</td>
<td>A/U/S/N</td>
<td>57</td>
<td>3.42</td>
<td>0.76</td>
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<tr>
<td>Question 22. In the last 6 months, how often did these other staff talk to you about the care you were receiving from this provider?</td>
<td>2176</td>
<td>A/U/S/N</td>
<td>27</td>
<td>2.58</td>
<td>1.11</td>
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<tr>
<td>Question 23. In the last 6 months, how often did these other staff seem to know the important information about your medical history?</td>
<td>2153</td>
<td>A/U/S/N</td>
<td>41</td>
<td>3.02</td>
<td>1.00</td>
</tr>
<tr>
<td>Question 25. In the last 6 months, when this provider or someone in his or her office ordered a blood test, x-ray, or other test for you, how often did this provider or someone from his or her office follow up to give you those results?</td>
<td>2636</td>
<td>A/U/S/N</td>
<td>41</td>
<td>2.65</td>
<td>1.30</td>
</tr>
<tr>
<td>Question 26. In the last 6 months, how often did you have to request your test results before you got them?</td>
<td>2645</td>
<td>A/U/S/N</td>
<td>75</td>
<td>2.59</td>
<td>1.22</td>
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<tr>
<td>Item Number/ Item Text</td>
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<td>Response Scale</td>
<td>Percentage Top Box°</td>
<td>Mean</td>
<td>SD</td>
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<tr>
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<td>------</td>
<td>----------------</td>
<td>---------------------</td>
<td>-------</td>
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<tr>
<td>Question 27. In the last 6 months, how often were your test results presented in a way that easy to understand?</td>
<td>2664</td>
<td>A/U/S/N</td>
<td>69</td>
<td>3.57</td>
<td>0.73</td>
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<tr>
<td>Combination-question 29 and 30. In the last 6 months, did this provider or someone in his or her office ask you about these things that make it hard for you to take care of your health? In the last 6 months, did you and this provider or someone in his or her office come up with a plan to help you deal with the things that make it hard for you to take care of your health?</td>
<td>736</td>
<td>Combination 4-point*</td>
<td>27</td>
<td>2.28</td>
<td>1.28</td>
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<tr>
<td>Question 31. In the last 6 months, how often did this provider or someone in his or her office help you identify the most important things for you to do for your health?</td>
<td>3599</td>
<td>A/U/S/N</td>
<td>25</td>
<td>2.36</td>
<td>1.19</td>
</tr>
<tr>
<td>Question 33. In the last 6 months, how often did this provider or someone in his or her office help you get these services at home to take care of your health?</td>
<td>391</td>
<td>A/U/S/N</td>
<td>23</td>
<td>2.04</td>
<td>1.26</td>
</tr>
<tr>
<td>Combination-question 34 and 35. In the last 6 months, did this provider or someone in his or her office give you instructions about how to take care of your health? In the last 6 months, how often were you able to follow these instructions about taking care of your health?</td>
<td>3456</td>
<td>Combination 4-point*</td>
<td>15</td>
<td>1.88</td>
<td>1.18</td>
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<tr>
<td>Combination-question 34 and 36. In the last 6 months, did this provider or someone in his or her office give you instructions about how to take care of your health? In the last 6 months, how often did the instructions you received help you take care of your health?</td>
<td>3454</td>
<td>Combination 4-pointci</td>
<td>11</td>
<td>1.79</td>
<td>1.08</td>
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<tr>
<td>Question 37. In the last 6 months, if you had any trouble taking care of your health at home, would you know who to ask for help?</td>
<td>3588</td>
<td>D/S/N⁴</td>
<td>50</td>
<td>2.20</td>
<td>0.87</td>
</tr>
<tr>
<td>Question 39. In the last 6 months, how often did this provider or someone in his or her office talk with you about how you were supposed to take your medicine?</td>
<td>3300</td>
<td>A/U/S/N</td>
<td>83</td>
<td>2.87</td>
<td>1.27</td>
</tr>
<tr>
<td>Question 40. There are many reasons why people may not always be able to take their medicines as prescribed. In the last 6 months, how often were you able to take your medicine as prescribed?</td>
<td>3351</td>
<td>A/U/S/N</td>
<td>83</td>
<td>3.79</td>
<td>0.53</td>
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Table 2. Items Response, Mean, and Standard Deviation (Continued)

<table>
<thead>
<tr>
<th>Item Number/ Item Text</th>
<th>N</th>
<th>Response Scale</th>
<th>Percentage Top Box</th>
<th>Mean</th>
<th>SD</th>
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</thead>
<tbody>
<tr>
<td>Question 41. In the last 6 months, how often did this provider or someone in his or her office talk with you about what to do if you have a bad reaction to your medicine?</td>
<td>3301</td>
<td>A/U/S/N</td>
<td>29</td>
<td>2.29</td>
<td>1.29</td>
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<tr>
<td>Question 42. In the last 6 months, how often did this provider or someone in his or her office contact you between visits to see how you were doing?</td>
<td>3586</td>
<td>A/U/S/N</td>
<td>7</td>
<td>1.44</td>
<td>0.90</td>
</tr>
<tr>
<td>Question 46. In general, how often does the provider named in Question 1 seem informed and up-to-date about the care you get from specialists?</td>
<td>1822</td>
<td>A/U/S/N</td>
<td>60</td>
<td>3.40</td>
<td>0.85</td>
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<tr>
<td>Question 47. In general, how often do you have to remind the provider named in Question 1 about care you receive from specialists?</td>
<td>1816</td>
<td>A/U/S/N</td>
<td>66</td>
<td>3.50</td>
<td>0.81</td>
</tr>
<tr>
<td>Question 49. In general, how often does the provider named in Question 1 talk with you about the medicines prescribed by these specialists?</td>
<td>1013</td>
<td>A/U/S/N</td>
<td>17</td>
<td>2.06</td>
<td>1.15</td>
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<tr>
<td>Question 50. These questions ask about care you received from the specialist you saw most often in the last 6 months outside the office of the provider named in question 1. When you see this specialist, does he or she seem to know enough information about your medical history?</td>
<td>1804</td>
<td>D/S/N</td>
<td>65</td>
<td>2.55</td>
<td>0.65</td>
</tr>
<tr>
<td>Question 52. When you see this specialist, how often does this specialist seem to know your important test results from other providers?</td>
<td>1722</td>
<td>A/U/S/N</td>
<td>26</td>
<td>2.46</td>
<td>1.16</td>
</tr>
</tbody>
</table>

* YesReminder&YesInstruction/YesReminder&NoInstructions/NoReminder&YesInstruction/ NoReminder&NoInstruction

* Percentage top box is the percent of responses in the most favorable category.

• Always/Usually/Sometimes/Never

• Poor/Fair/Good/Excellent

• NoTalk/Talk&NoHelp/Talk&SomeHelp/Talk&DefinitelyHelp

• NoAsk/Ask&NoPlan/Ask&SomePlan/Ask&DefinitelyPlan

• NoInstruc/Instruc&NeverSomeFollow/Instruc&UsuallyFollow/Instruc&AlwaysFollow

• NoInstruc/Instruc&NeverSomeHelp/Instruc&UsuallyHelp/Instruc&AlwaysHelp

• Yes, definitely/Yes, somewhat/No
Survey’s latent scale structure

To study appropriateness of exploratory factor analysis, we examined the correlation matrix. Correlations with other items in the proposed scale below .30 were revealed for combination-question 4/5, question 6, question 9, question 10, and question 40. Combination-question 34/35 correlated above the .80 threshold with combination-question 34/36. As a result, SPSS produced a warning that the matrix was not positive definite, indicating a collinearity problem. The first combination-question consisted of the following: Question 34. In the last 6 months, did this provider or someone in his or her office give you instructions about how to take care of your health? Question 35. In the last 6 months, were the instructions you received easy to follow? The second combination-question included the following: Question 34. In the last 6 months, did this provider or someone in his or her office give you instructions about how to take care of your health? Question 36. In the last 6 months, how often did the instructions you received help you take care of your health? Because the first of each pair of items is identical, the combination-questions correlated strongly with each other (.95). As both items had similar means, we excluded combination-question 34/35 based on theoretical considerations and in accordance with the US factor analysis. We maintained that if respondents felt instructions were helpful they would be able to follow these instructions. We tested both items in separate factor analyses, which confirmed that our decision did not affect our factor structure. Excluding items that did not meet the required thresholds from the factor analysis solved associated problems. Item 8 was removed because Bartlett’s test of sphericity suggested insufficient sample size.

Twenty-one items were included in the EFA. Kaiser’s eigenvalues suggested retention of six factors, where each item loaded on at least one factor with loadings above .40. All but five items had cross-loadings higher than .30 but primary loadings were substantially higher for most of the items (Table 3).

We calculated Cronbach’s alpha to assess factors’ internal consistency. Factor 1 (mostly consistent with Support for Self-Directed Care), factor 3 (Staff Knowledge of Patient’s Medical History) and factor 5 (mostly consistent with Test Result Communication) had acceptable to strong consistency (> .70). Factor 2 (Support for Medication and Home Health Management) and factor 4 (mostly consistent with Provider Knowledge of Patient) had moderate consistencies (.66 & .63). Cronbach’s alpha for factor 6 (Specialist Knowledge of Patient’s Medical History) was lower at .44. We explored the effect on reliability of reallocating items. Specifically, we reallocated items with high loadings on more than one factor to the factor for which the item exhibited the second highest loadings. This reallocation of items did not result in improvements, and removing items from the factor to which they were originally assigned reduced Cronbach’s alphas. We, therefore, adopted the structure that was proposed based on
the factor analysis. Comparing Cronbach’s alphas with the correlation of that scale with all other remaining scales supported the discriminant validity of factors (Table A3, technical appendix).

We tested model fit of the identified scales using confirmatory factor analysis and calculated goodness of fit indices (Brown, 2006) (Table A4, technical appendix). The Root Mean Squared Error of Approximation (RMSEA) met the acceptable threshold of .06 or lower (.04). The Standardized Root Mean Square Residual (SRMR) met the acceptable threshold of .08 or lower (.05). The comparative fit index (CFI) and Tucker Lewis index (TLI) met the conventional threshold of .90 but were somewhat lower than the conservative threshold of .95 (CFI .93 and TLI .91). Because the missing at random assumption is the default setting for these tests but respondents older than 75 and female respondents had significantly more missing values, we repeated analyses for subsamples of male respondents younger than 75. Scores remained consistent for all but one sample and the threshold was met for the overall subsample (CFI .93 and TLI .91).

**Invariance test: Comparability of the Dutch and US surveys**

To assess the comparability of the Dutch and the US PPIC survey we examined factorial invariance. Configural invariance requires model configurations, i.e., the patterns of free and fixed model parameters, to be equal across compared groups (Dimitrov 2010). Factor structures of both datasets showed a high degree of overlap (Table 4). Out of 21 items that were included in the analysis, 19 items loaded on the same factors in both datasets.
Table 3: Patient-level Exploratory Factor Analysis

<table>
<thead>
<tr>
<th>Scales names</th>
<th>Staff Knowledge of Patient’s Medical History</th>
<th>Support for Self-Directed Care</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Factor numbers US\Dutch</td>
<td>Factor 3</td>
</tr>
<tr>
<td>Question 21. In the last 6 months, how often did these other staff seem up-to-date about the care you were receiving from this provider?</td>
<td>1</td>
<td>0.79</td>
</tr>
<tr>
<td>Question 22. In the last 6 months, how often did these other staff talk to you about the care you were receiving from this provider?</td>
<td>1</td>
<td>0.73</td>
</tr>
<tr>
<td>Question 23. In the last 6 months, how often did these other staff seem to know the important information about your medical history?</td>
<td>1</td>
<td>0.83</td>
</tr>
<tr>
<td>Combination-question 18 and 19. In the last 6 months, did this provider talk with you about setting goals for your health? In the last 6 months, did the care you received from this provider help you meet your goals?</td>
<td>2</td>
<td>0.53</td>
</tr>
<tr>
<td>Combination-question 29 and 30. In the last 6 months, did this provider or someone in his or her office ask you about these things that make it hard for you to take care of your health? In the last 6 months, did you and this provider or someone in his or her office come up with a plan to help you deal with the things that make it hard for you to take care of your health?</td>
<td>2</td>
<td>0.83</td>
</tr>
<tr>
<td>Question 31. In the last 6 months, how often did this provider or someone in his or her office help you identify the most important things for you to do for your health?</td>
<td>2</td>
<td>0.46</td>
</tr>
<tr>
<td>Question 33. In the last 6 months, how often did this provider or someone in his or her office help you get these services at home to take care of your health?</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Combination-question 34 and 36. In the last 6 months, did this provider or someone in his or her office give you instructions about how to take care of your health? In the last 6 months, how often did the instructions you received help you take care of your health?</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Question 26. In the last 6 months, how often did you have to request your test results before you got them?</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Question 25. In the last 6 months, when this provider or someone in his or her office ordered a blood test, x-ray, or other test for you, how often did this provider or someone from his or her office follow up to give you those results?</td>
<td>3</td>
<td></td>
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</table>
## Table 3: Patient-level Exploratory Factor Analysis

<table>
<thead>
<tr>
<th>Test Result Communication</th>
<th>Provider Knowledge of the Patient</th>
<th>Support for Medication and Home Health Management</th>
<th>Specialist Knowledge of Patient’s Medical History</th>
</tr>
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<tbody>
<tr>
<td><strong>Factor 5</strong></td>
<td><strong>Factor 4</strong></td>
<td><strong>Factor 2</strong></td>
<td><strong>Factor 6</strong></td>
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<tr>
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<td></td>
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<td></td>
<td>0.44</td>
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<td>0.49</td>
<td>0.40</td>
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<tr>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>0.33</td>
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<td></td>
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<td>0.90</td>
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### Table 3: Patient-level Exploratory Factor Analysis (Continued)

<table>
<thead>
<tr>
<th>Scales names</th>
<th>Factor numbers US\Dutch</th>
<th>Staff Knowledge of Patient’s Medical History</th>
<th>Support for Self-Directed Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 27. In the last 6 months, how often were your test results presented in a way that was easy to understand?</td>
<td>3</td>
<td>0.45</td>
<td></td>
</tr>
<tr>
<td>Question 17. How would you rate this provider’s knowledge of your values and beliefs that are important to your health care?</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Question 46. In general, how often does the provider named in Question 1 seem informed and up-to-date about the care you get from specialists?</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Question 47. In general, how often do you have to remind the provider named in Question 1 about care you receive from specialists?</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Question 39. In the last 6 months, how often did this provider or someone in his or her office talk with you about how you were supposed to take your medicine?</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Question 41. In the last 6 months, how often did this provider or someone in his or her office talk with you about what to do if you have a bad reaction to your medicine?</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Question 42. In the last 6 months, how often did this provider or someone in his or her office contact you between visits to see how you were doing?</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Question 49. In general, how often does the provider named in Question 1 talk with you about the medicines prescribed by these specialists?</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Question 52. When you see this specialist, how often does this specialist seem to know your important test results from other providers?</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Question 50. These questions ask about care you received from the specialist you saw most often in the last 6 months outside the office of the provider named in question 1. When you see this specialist, does he or she seem to know enough information about your medical history?</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>■Question 37. In the last 6 months, if you had any trouble taking care of your health at home, would you know who to ask for help?</td>
<td>0.58</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

- Factor names are borrowed from US factor model. Not all factors are identical but highly consistent with US factor model (see Table 5).
- Items are listed by hypothesized US latent scale structure (Bold italic numbers).
<table>
<thead>
<tr>
<th>Factor 5</th>
<th>Factor 4</th>
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<th>Factor 6</th>
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<td>0.51</td>
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<td>0.77</td>
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<td>0.46</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.51</td>
<td></td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.51</td>
<td>0.80</td>
</tr>
</tbody>
</table>

**Notes:**
- Bold numbers present the primary loading of each survey item.
- Factor loadings less than .40 are suppressed.
- ■ Item did not load in the US factor analysis.
<table>
<thead>
<tr>
<th>Item Number/ Item Text</th>
<th>Factor names</th>
<th>Factors US</th>
<th>Factors Dutch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 21. In the last 6 months, how often did these other staff seem up-to-date about the care you were receiving from this provider?</td>
<td>Staff Knowledge of Patient’s Medical History</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Question 22. In the last 6 months, how often did these other staff talk to you about the care you received from this provider?</td>
<td>Staff Knowledge of Patient’s Medical History</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Question 23. In the last 6 months, how often did these other staff seem to know the important information about your medical history?</td>
<td>Staff Knowledge of Patient’s Medical History</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Combination-question 18 and 19. In the last 6 months, did this provider talk with you about setting goals for your health? In the last 6 months, did the care you received from this provider help you meet your goals?</td>
<td>Support for Self-Directed Care</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Combination-question 29 and 30. In the last 6 months, did this provider or someone in his or her office ask you about these things that make it hard for you to take care of your health? In the last 6 months, did you and this provider or someone in his or her office come up with a plan to help you deal with the things that make it hard for you to take care of your health?</td>
<td>Support for Self-Directed Care</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Question 31. In the last 6 months, how often did this provider or someone in his or her office help you identify the most important things for you to do for your health?</td>
<td>Support for Self-Directed Care</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Question 33. In the last 6 months, how often did this provider or someone in his or her office help you get these services at home to take care of your health?</td>
<td>Support for Self-Directed Care</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Combination-question 34 and 36. In the last 6 months, did this provider or someone in his or her office give you instructions about how to take care of your health? In the last 6 months, how often did the instructions you received help you take care of your health?</td>
<td>Support for Self-Directed Care</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Question 26. In the last 6 months, how often did you have to request your test results before you got them?</td>
<td>Test Result Communication</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Question 25. In the last 6 months, when this provider or someone in his or her office ordered a blood test, x-ray, or other test for you, how often did this provider or someone from his or her office follow up to give you those results?</td>
<td>Test Result Communication</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Question 27. In the last 6 months, how often were your test results presented in a way that was easy to understand?</td>
<td>Test Result Communication</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Question 17. How would you rate this provider’s knowledge of your values and beliefs that are important to your health care?</td>
<td>Provider Knowledge of Patient</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>
Next, we ran separate confirmatory factor analyses with the Dutch and the US datasets, including the 19 overlapping items to test model fit for each dataset. The results are displayed in Table A5 and A6 in the technical appendix. Factor loadings and CFI, TLI and RMSEA met the conventional thresholds. Factor loading for item 26 in the US dataset was somewhat lower than the threshold of .40. Nevertheless, configural invariance was confirmed for all factors but factor 6, for which factor loadings differed by .45 between datasets (items Q50).

---

Table 4: Comparison of Latent Scale Structure, US and Dutch datasets (Continued)

<table>
<thead>
<tr>
<th>Item Number/ Item Text</th>
<th>Factor names</th>
<th>Factors US</th>
<th>Factors Dutch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 46. In general, how often does the provider named in Question 1 seem informed and up-to-date about the care you get from specialists?</td>
<td>Provider Knowledge of Patient</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Question 47. In general, how often do you have to remind the provider named in Question 1 about care you receive from specialists?</td>
<td>Provider Knowledge of Patient</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Question 39. In the last 6 months, how often did this provider or someone in his or her office talk with you about how you were supposed to take your medicine?</td>
<td>Support for Medication and Home Health Management</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Question 41. In the last 6 months, how often did this provider or someone in his or her office talk with you about what to do if you have a bad reaction to your medicine?</td>
<td>Support for Medication and Home Health Management</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Question 42. In the last 6 months, how often did this provider or someone in his or her office contact you between visits to see how you were doing?</td>
<td>Support for Medication and Home Health Management</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Question 49. In general, how often does the provider named in Question 1 talk with you about the medicines prescribed by these specialists?</td>
<td>Support for Medication and Home Health Management</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Question 50. When you see this specialist, does he or she seem to know enough information about your medical history?</td>
<td>Specialist Knowledge of Patient’s Medical History</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Question 52. When you see this specialist, how often does this specialist seem to know all your test results from other providers?</td>
<td>Specialist Knowledge of Patient’s Medical History</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Question 37. In the last 6 months, if you had any trouble taking care of your health at home, would you know who to ask for help?</td>
<td>Orphan item, i.e. item that did not load on a factor in the US factor analysis</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
We then examined metric invariance, which exists if equal factor loadings across groups indicate equivalent relationships between a latent factor and its indicators derived through CFA (Dimitrov 2010). To test for metric invariance we combined the US and Dutch databases. To run a difference test we computed two models with increasing restrictions. The 0-model had no parameters constrained to be equal. Model 1 had factor loadings constrained to be equal (Dimitrov 2010). Because of Chi-square’s sensitivity to large sample size, we followed the criteria suggested by Cheung and Rensvold (2002) and used CFI and RMSEA difference tests (Chen 2007). When all six factors were included in the models, no convergence could be achieved. We then continued to test for partial invariance by excluding Factor 6 (Specialist knowledge of Patient’s Medical History) from the model due to large difference in factor loadings in the Dutch and US datasets. In the new models, acceptable thresholds of a negative ΔCFI value higher than -.01 (-.005) were met. These results were supported by the ΔRMSEA and ΔSRMR (Table 5).

Table 5: Difference Test for Partial Invariance Excluding Factor 6 from the Model

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>CFI</th>
<th>TLI</th>
<th>SRMR</th>
<th>RMSEA</th>
<th>LL</th>
<th>UL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODEL 0</td>
<td>1043.935</td>
<td>218</td>
<td>0.939</td>
<td>0.924</td>
<td>0.058</td>
<td>0.04</td>
<td>0.037</td>
<td>0.042</td>
</tr>
<tr>
<td>MODEL 1</td>
<td>1106.076</td>
<td>230</td>
<td>0.934</td>
<td>0.922</td>
<td>0.061</td>
<td>0.04</td>
<td>0.038</td>
<td>0.042</td>
</tr>
<tr>
<td>Δ</td>
<td>62.141</td>
<td>12</td>
<td>-0.005</td>
<td>-0.002</td>
<td>0.003</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Discussion

To our knowledge this is the first study in which psychometric characteristics of a culturally transferred patient survey were assessed following a standard procedure. Through a standardized validation of measurement equivalence, we demonstrated the validity and reliability of the PPIC survey for measuring integrated patient care across US and Dutch contexts and cultures. Item nonresponse for the Dutch survey indicated that items were generally comprehensible and consistent with the US survey (5.4% vs. 4.8%). Responses to the Dutch survey were also sufficiently varied, with percentage top-box scores that were about the same as in the US data (none over 79%) for all but three items (83% & 93%). Psychometric assessment suggested a six-dimensional measurement framework that largely overlapped the six dimensions that were produced from the US dataset. The empirical support for this model is strong for five of the six factors. Item factor loadings and goodness of fit of the six-factor model met standard statistical criteria. Internal consistency was moderate to good for five factors (0.6-0.84), with the lowest factor being somewhat lower.
than in the US data (0.68-0.84.). As for the US survey, discriminant validity was supported by Cronbach’s alphas greater than correlations with all other remaining scales, indicating that dimensions are conceptually distinct. Invariance testing, which examines the “extent to which score properties and interpretations generalize to and across population groups, settings and tasks” (Dimitrov 2010 p. 123; Messick 1995) confirmed strong partial invariance for five of the six PPIC scales and factor loadings between the Dutch and US dataset. The extremely consistent results suggest that the constructs of the PPIC survey transcend cultural differences between Dutch and US contexts and are promising for the transferability of such measures to assess integration outcomes across different populations and health systems.

The high degree of comparability that was achieved also supports the usefulness of a standardized procedure for measurement equivalence and shows the potential for extending guidelines for cross-cultural validations. In doing so, the methodology applied in this study can function as a template for future studies that aim to validate measurement equivalence in cross-cultural work. Adding standardized validation procedures, such as applied in this study, to best practices of cross-cultural adaptations can advance research by facilitating a better understanding of how culture influences constructs and perceptions of health system outcomes. This is a prerequisite for studying bigger samples and comparing health system changes and their effects across cultures and populations in future research. It will enable policy makers and healthcare organizations to share evidence about how to achieve healthcare system improvements and promote change. It also provides the opportunity to take into account the cultural diversity within countries when evaluating health system outcomes and to include population groups particularly vulnerable for inequalities within healthcare systems who would otherwise be left out (Arah et al. 2006; Hsia and Shen 2015). Replication of our methodology is required to confirm the usability of this standardized validation procedure. Particularly, the impact of standardization on cross-cultural evaluations in countries with greater culture differences should receive attention, because the generalizability of our findings may be limited by the relative similarity between the US and Dutch cultures (Hofstede 1985). Future studies should explore survey properties at organizational level, for which our sample size did not allow. The results of our analysis confirm that the PPIC survey dimensions are relevant conceptualizations of integrated care for patients in the Netherlands. Whether these scales are exhaustive cannot be concluded from this analysis. We did, however, mitigate this uncertainty by asking respondents during the translation and adaptation process whether survey items missed any aspects. Respondents mentioned minor aspects relating to items but did not identify dimensions that our items did not cover. Due to system differences, implementing the US and Dutch survey took different approaches. Nevertheless, psychometric results support comparability of the survey data across both countries.
Invariance analysis should be expanded to include residual invariance and intercept invariance, which we were unable to evaluate because the US data was corrected for life-orientation, which measures respondents’ levels of optimism. These items that measured respondents’ life orientation were included in the US PPIC survey to correct for heterogeneity in the sample population. In the Netherlands, the survey was administered in a smaller geographical location with a more homogenous culture and context. Therefore, life-orientation items were not included in the Dutch version to reduce respondents’ burden. Not including life-orientation questions in the Dutch survey did not seem to impact the comparability across the Dutch and the US data. Most probably this is a result of the more homogenous population provided by the smaller geographical location. We advise future studies to include items that assess respondent’s life orientation. However, if shortening of the survey is required and the study population has homogenous characteristics, excluding the life-orientation items could be contemplated. For the Dutch PPIC survey possibilities for improvement are suggested for the factor related to integration with the specialist, indicated by the small Cronbach’s alpha and lack of invariance. Adding items could increase the validity of this factor. Together with the US-based research team we discussed the possibility for extending the factor with question 51 “When you see this specialist, how often do you have to repeat information that you have already given to the provider named in Question 1?”. This item was excluded from the US factor analysis based on insufficient covariance coverage and hence also from the analysis of the Dutch data. Including this item results in a small improvement in Cronbach’s alfa from .438 to .467. This may provide an opportunity to expand the dimension “Integration with specialist”.

Conclusion

The standardized cross-cultural validation procedure demonstrated that five of the six scales in the PPIC survey are reliable and valid for use within the Dutch context. Strong invariance with the US survey supports the applicability of the survey for cross-cultural assessment of integrated care as perceived by the patient. Scale Specialist Knowledge About the Patient’s Medical History warrants further examination and potentially improvement. Replication studies across Europe are currently underway.

Notes 1 Item wording comes from the original US questionnaire.
References


Technical appendix

Table A1: Survey Implementation in the US and the Netherlands

<table>
<thead>
<tr>
<th>Similarities</th>
<th>US PPIC survey</th>
<th>Dutch PPIC survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting</td>
<td>Physician organizations</td>
<td>Primary care centers</td>
</tr>
<tr>
<td>Study population</td>
<td>Patients with chronic condition(s)</td>
<td>Patients with chronic condition(s)</td>
</tr>
<tr>
<td>Survey distribution</td>
<td>Mail</td>
<td>Mail</td>
</tr>
<tr>
<td>Data collection</td>
<td>Cross-sectional</td>
<td>Cross-sectional</td>
</tr>
<tr>
<td>Content of distributed survey</td>
<td>- Survey</td>
<td>- Survey</td>
</tr>
<tr>
<td></td>
<td>- Cover letter</td>
<td>- Cover letter</td>
</tr>
<tr>
<td></td>
<td>- Postage-prepaid reply envelope</td>
<td>- Postage-prepaid reply envelope</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Differences</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sampling method</td>
<td>CMS database: beneficiaries who received care from included physician organization</td>
<td>Providers other than GP selected patients they had seen during 6 months preceding to data collection.</td>
</tr>
<tr>
<td>Survey distributor</td>
<td>CSS</td>
<td>Primary care centers and Maastricht University</td>
</tr>
<tr>
<td>Data collection period</td>
<td>July 2014 to October 2014: Three waves spaced one month apart</td>
<td>November 2013 to August 2014: 2 waves spaced three weeks apart</td>
</tr>
</tbody>
</table>

Data preparation

Data were scored so that higher scores reflect a higher level of integrated care (1a). We excluded six duplicate cases, which are data rows with identical identification numbers (1b). We recoded negatively framed questions and missing values to reflect different types (1c). For example, missing values on gate questions that determine which questions should be answered next received a different code than missing values on dependent questions, that are to be answered or skipped based on the response to a gate question. Conforming to the US analytical approach, in quantifying results we combined certain item pairs. Most of the paired items consisted of a gate question and a gated question. For these pairs, if the respondent answered the gate question with no, he or she was probed to skip the question that followed. If the respondent responded positively to a gate question indicating he or she had received a service, the next question prompted the respondent to evaluate the value of the service. If the respondent answered a gate question indicating that a provider had asked about things that made it hard to take of his or her health, the next question assessed whether the provider planned with the patient how to deal with those things. Taken together these items measure the extent to which patients received support to cope and deal with difficulties they have experienced in taking care of
their health. We separated this concept into two survey questions to avoid asking double-barreled questions. In our analysis, we combined these paired items to create a categorical variable with four response categories, representing a continuum of support: NoAsk, Ask/NoPlan, Ask/SomePlan, Ask/DefinitelyPlan. This approach accounts for the fact that a “no” on the gate question represents part of the continuum of integrated care addressed by the question that follows. One pair of items asked whether the patient received a reminder before an upcoming visit and whether the patient received instructions about how to prepare for the visit. In other words, both questions asked whether the provider prepared the patient for an upcoming visit. Both items had a dichotomous response scale (yes/on), with similar mean values (1.14 vs 1.23). Correlation between these items were also considerably higher at .45 than correlations with all other items of which the highest correlation was .23. Combining the two items allowed for creating a four-point scale, which was consistent with the other variables and facilitated interpretability.

Table A2: Combined Items due to Conceptual Link

<table>
<thead>
<tr>
<th>Item number</th>
<th>Questions</th>
<th>Scale</th>
<th>Combined scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q4/5</td>
<td>Did you get reminders/Did you get instructions before visit</td>
<td>2-point/2-point</td>
<td>1 NoReminder/NoInstruction</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 NoReminder/YesInstruction</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 YesReminder/NoInstruction</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 YesReminder/YesInstruction</td>
</tr>
<tr>
<td>Q8/19</td>
<td>Talked about setting goals/Helped you achieve goals</td>
<td>2-point/3-point</td>
<td>1 NoTalk</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 Talk/NoHelp</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 Talk/SomeHelp</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 Talk/DefinitelyHelp</td>
</tr>
<tr>
<td>Q29/30</td>
<td>Asked about things that made it hard to take care of health/Make plan for these things</td>
<td>2-point/3-point</td>
<td>1 NoAsk</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 Ask/NoPlan</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 Ask/SomePlan</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 Ask/DefinitelyPlan</td>
</tr>
<tr>
<td>Q34/35</td>
<td>Gave instructions for care/Instructions were easy to follow</td>
<td>2-point/4-point</td>
<td>1 NoInstructions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 Instructions/NeverSomeFollow</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 Instructions/UsuallyFollow</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 Instructions/AlwaysFollow</td>
</tr>
<tr>
<td>Q34/36</td>
<td>Gave instructions for care/Instructions helped</td>
<td>2-point/4-point</td>
<td>1 NoInstructions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 Instructions/NeverSomeHelped</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 Instructions/UsuallyHelped</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 Instructions/AlwaysHelped</td>
</tr>
<tr>
<td>Q57/58</td>
<td>Received instructions for caring for yourself at home/Instructions were easy to follow</td>
<td>2-point/3-point</td>
<td>1 NoInstructions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 Instructions/NotEasy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 Instructions/SomeEasy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 Instructions/DefinitelyEasy</td>
</tr>
</tbody>
</table>
Table A3: Component Correlation Matrix

<table>
<thead>
<tr>
<th>Factor number and name</th>
<th>Factor 1: Support for Self-Directed Care</th>
<th>Factor 2: Support for Medication and Home Health Management</th>
<th>Factor 3: Staff Knowledge of Patient’s Medical History</th>
<th>Factor 4: Provider knowledge of the patient</th>
<th>Factor 5: Test result communication</th>
<th>Factor 6: Specialist Knowledge of patient’s medical history</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Support for Self-Directed Care</td>
<td>(0.84)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) Support for Medication and Home Health Management</td>
<td>0.50</td>
<td>(0.67)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Staff Knowledge of Patient’s Medical History</td>
<td>0.40</td>
<td>0.38</td>
<td>(0.71)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4) Provider knowledge of the patient</td>
<td>0.32</td>
<td>0.27</td>
<td>0.29</td>
<td>(0.63)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(5) Test result communication</td>
<td>0.37</td>
<td>0.33</td>
<td>0.30</td>
<td>0.31</td>
<td>(0.84)</td>
<td></td>
</tr>
<tr>
<td>(6) Specialist Knowledge of patient’s medical history</td>
<td>0.137</td>
<td>0.16</td>
<td>0.19</td>
<td>0.23</td>
<td>0.13</td>
<td>(0.44)</td>
</tr>
</tbody>
</table>

Notes:

* Factor names are borrowed from US factor model. Not all factors are identical but highly consistent with US factor model (see Table 5)

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization
### Table A4: Goodness of Fit

<table>
<thead>
<tr>
<th></th>
<th>Full sample with correlated errors</th>
<th>Men &lt;75</th>
<th>Sub1 Men &lt;75</th>
<th>Sub2 Men &lt;75</th>
<th>Sub3 Men &lt;75</th>
<th>Sub4 Men &lt;75</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Free Parameters</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
</tr>
</tbody>
</table>

### Log likelihood

<table>
<thead>
<tr>
<th></th>
<th>Ho Value</th>
<th>Hi Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-65784.94</td>
<td>-65239.41</td>
</tr>
<tr>
<td>Ho Value</td>
<td>-47192.90</td>
<td>-46781.49</td>
</tr>
<tr>
<td>Hi Value</td>
<td>-9307.37</td>
<td>-9097.34</td>
</tr>
</tbody>
</table>

### Information Criteria

<table>
<thead>
<tr>
<th></th>
<th>Akaike (AIC)</th>
<th>Bayesian (BIC)</th>
<th>Sample-Size Adjusted BIC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>131729.89</td>
<td>132227.56</td>
<td>131973.36 (n* = (n + 2) / 24)</td>
</tr>
</tbody>
</table>

### Chi-Square Test of Model Fit

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Degrees of Freedom</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1091.06</td>
<td>172</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Degrees of Freedom</td>
<td>822.82</td>
<td>172</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>P-Value</td>
<td>420.06</td>
<td>172</td>
<td>&lt;0.001</td>
</tr>
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### RMSEA

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### CFI/TLI

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### Chi-Square Test of Model Fit for the Baseline Model

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<th>P-Value</th>
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### SRMR (Standardized Root Mean Square Residual)

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### Table A5: Standardized Factor Loadings and Standard Errors by Groups

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<tr>
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<td>Q34Q36</td>
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<tr>
<td>Q17</td>
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<tr>
<td>Q46</td>
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<td>Q47rn</td>
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<tr>
<td><strong>Support for Medication and Home Health Management</strong></td>
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<td>Q39</td>
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<tr>
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### Table A6: Goodness of Fit Indices

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<th>TLI</th>
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CHAPTER 4

Can organizational culture of teams be a lever for integrating care? An exploratory study

Submitted as:
Abstract

Organizational culture is believed to be an important facilitator of successfully integrating care, yet how organizational culture impacts integrated care remains underspecified. In an exploratory study, we assessed the relationship between organizational culture in primary care teams and patient-perceived levels of integrated care. We analyze a sample of 2,911 patient responses and 17 healthcare teams in four primary care centers. We used three-level ordered logistic regression models to account for the nesting of patients within health care teams within primary care centers. Our results suggest a non-linear relationship between organizational culture and integrated care. For teams, a combination of different culture types—including moderate levels of production-oriented, hierarchical and team-oriented cultures and low or high levels of entrepreneurial cultures—is related to higher patient-perceived levels of integrated care. Our results may be valuable for primary care organizations in their efforts to compose healthcare teams that are predisposed to providing better integrated care.
CHAPTER 5

Agree to disagree: an exploratory study of the relationship between heterogeneity in organizational culture of teams and integrated patient care

Submitted as:
Tietschert, M. V., F. Angeli, A. J. A. Raak, J. Clark, D. Ruwaard, and S. J. Singer
“Agree to disagree: an exploratory study of the relationship between heterogeneity in organizational culture of teams and integrated patient care”

Based on:
Abstract

The relationship of organization culture and health system outcomes is generally viewed through a consensus perspective, which assumes that more agreement among members is better. Yet, there is no convincing evidence that a uniform culture yields higher performance than a pluralistic one. Given that patients with complex conditions have diverse needs which require multidisciplinary collaboration, conceptualizing culture through heterogeneity may be more suitable for explaining variations in team performance. To recognize the heterogeneity in multidisciplinary healthcare teams, we assess whether heterogeneity in organizational culture at the team level is associated with levels of patient-perceived integrated care, in an exploratory study. We analyze data of 2,911 patients and 17 healthcare teams across four primary care centers. Results from three-level ordered logistic regression analyses suggest that intermediate levels of heterogeneity in perceptions of culture among healthcare team members is significantly, positively related to integrated care. These findings contribute to better understanding how culture relates to multidisciplinary team performance.
CHAPTER 6

General Discussion
Studying the relationship of organizational culture and integrated care is like searching for clearness in the mud. Both concepts enjoy considerable attention of the academic and policy audience as well as from professionals in the field. Nevertheless, today, limited insights exist about what exactly both concepts mean and how they are related. Many words have been spent on discussing how to best theorize, conceptualize and operationalize integrated care (Bautista et al. 2016; Suter et al. 2009) and organizational culture (Giorgi, Lockwood, and Glynn 2015; Weber and Dacin 2011). Definitions have been developed, adapted, summarized, and criticized from standpoints of alternative paradigms, starting the circle all over again. These steps have made important contributions to igniting debate about how both concepts may be useful for improving health system outcomes. Many scholars have addressed how organizational culture may be an important facilitator for integrating care. Yet, to date, insights are limited to normative rhetoric, often based on insufficient conceptualizations of how integrated care and organizational culture should be conceived (Aghgren and Axelsson 2007; Ling et al. 2012; Suter et al. 2009). In this dissertation, we examined whether organizational culture and levels of patient-perceived integration are related. Specially, we first prepared the ground by developing the appropriate empirical tools to measure the core concepts. We explored to which degrees patients perceive their care to be integrated and which types of organizational culture are perceived among healthcare professionals. Subsequently, we studied to which degree different types of organizational culture and the distribution of these different types across healthcare professionals are associated with the degree to which patients perceive care to be integrated.

The remainder of this chapter is structured as follows. We begin by summarizing the main findings of this dissertation, after which we discuss insights in the light of prior research and current developments in the healthcare sector. Subsequently, we present methodological strengths and weaknesses of our study approaches. We round off by presenting implications for policy, practice and research.

Main findings

Measuring integrated care: hearing the patient

Central to this dissertation is the argument that improving integrated care requires understanding current strengths and weaknesses related to integration as perceived by the patient across healthcare systems. Doing so requires instruments that measure integrated care multidimensional from the patient’s perspective and that are cross-culturally applicable (Bautista et al. 2016; Gröne and Garcia-Barbero 2001; Solinis and Stein 2016). Healthcare systems may differ in characteristics, contextual specificities and national cultures (Osborn et al. 2015; Tietschert et al. 2017). In
order to measure integrated care validly, these differences across systems should be considered while maintaining comparability (Chidlow, Plakoyiannaki, and Welch 2014; Tietschert et al. 2016). In Chapter 2, we describe different approaches to culturally adapting survey instruments that measure integrated care across cultural contexts and examine their utility. We describe the translation and adaptation process that we used to transfer the US-developed Patient Perception of Integrated Care (PPIC) survey (Singer et al. 2012) for administration in the Netherlands. The PPIC survey is a self-administered survey tool that measures integrated care from the patient perspective, multidimensionally and independently from the organizational arrangement through which care is provided (Singer et al. 2012). The PPIC survey addresses the following dimensions of integrated care: Provider’s knowledge of the patient, Staff knowledge about patient’s medical history, Specialist knowledge about patient’s medical history, Support for self-directed care, Support for medication, and home health management and Test result communication (Kerrissey et al. 2017; Tietschert et al. 2017). We conclude that successful adaptions require equivalence approaches that ensure comparability of the translated instrument with the original and contextualization approaches to adapt the new instrument to the particularities of the healthcare system to which the instrument is to be transferred. In Chapter 3, we explore how surveys that are developed for cross-cultural use should be validated for application in a new context. We contribute to cross-cultural validation guidelines by proposing a standardized methodology to be used for establishing measurement equivalence. Measurement equivalence requires finding equal psychometric properties across the original and the culturally adapted instrument (Epstein, Santo, and Guillemin 2015) and involves methods for data preparation and psychometric testing, including analyzing sample and survey properties, testing the survey latent scale structure and invariance. We use these methods to validate the Patient Perception of Integrated Care (PPIC) survey (Singer et al. 2012) for cross-cultural application and present lessons learned. We evaluate psychometric characteristics of the PPIC survey in a sample of 3,725 respondents (response rate of 62%), who were patients seen in one of five primary care centers in the South of the Netherlands. The proposed standardized cross-cultural validation procedure supported the comparability of psychometric characteristics of the Dutch and US PPIC survey, confirming its applicability across both contexts.

**Relating organizational culture to patient-perceived integrated care**

In addition to measuring the extent to which patients perceive their care to be integrated, we also examined to which extent healthcare providers who work in healthcare teams perceive organizational culture in primary care centers to be team-, entrepreneurially-, hierarchically-, or production-oriented. We then related providers-perceived cultures to patient-perceptions of integrated care. We conceived organizational culture through the Competing Values Framework (CVF) (Zammuto
and Krakower 1991) and studied patient-perceived levels of integrated care, using the Dutch version of the PPIC survey (Tietschert et al. 2016; Tietschert et al. 2017). We studied a sample of 2,911 patient responses (response rate 66.51%) and 47 provider responses (response rate 100%) across 17 healthcare teams and 4 primary care centers in the South of the Netherlands. In Chapter 4, we explored how different types of organizational culture relate to patient-perceived levels of integrated care. Our findings suggest a non-linear relationship. For teams, a combination of different culture types—including moderate levels of production-, hierarchically and team-oriented cultures and low and high levels of entrepreneurial cultures—is related to higher patient-perceived levels of integrated care. In addition to exploring how average organizational culture at the team level associates with integrated care we also tested how heterogeneity in team members’ perceptions of organizational culture relates to patient-perceived levels of integrated care (Chapter 5). According to our results, intermediate levels of heterogeneity among healthcare team members in perceived entrepreneurial, hierarchical and production-oriented culture types is significantly related to higher perceptions of integrated care. For team-oriented cultures high and low levels of heterogeneity are related to higher perceived levels of integrated care.

**Clearing the mud – understanding the relationship between integrated care and organizational culture**

**Conceptualizing and operationalizing integrated care**

This dissertation has produced insights that raise important question on how to proceed with the study of integrated care and organizational culture. Considerable efforts have been made in the past for defining, debating and evaluating the concept of integrated care (Bautista et al. 2016; Kodner and Spreeuwenberg 2002; Suter et al. 2009). Some have even said that integrated care cannot be evaluated, due to the complexity associated with initiatives aimed at integrating care (Solinís and Stein 2016).

That the study of integrated care is burdened by too many definitions and conceptualizations has been mentioned as many times, maybe, as there are definitions of integrated care itself. In the introduction of this thesis, integrated care was called a child with many names. It may be time to provide integrated care with an identity. If patient experiences are truly to be improved, we need to move past the over a decade-long lasting conceptualizing phase, agree on what integrating care means from the patient’s viewpoint and study how integrated care is perceived by patients (Goodwin 2017; Singer et al. 2011; Solinis and Stein 2016). Understanding weaknesses and strengths related to care integration across healthcare systems is a critical step
towards identifying targets for health policy reforms and developing approaches that improve organizational performance in order to contribute meaningfully to patient experiences (Singer et al. 2012). Up to present, this has been precluded by the absence of instruments that evaluate integrated care comprehensively, cross-culturally and with sufficient rigor (Bautista et al. 2016; Singer et al. 2011). Taken together Chapters 2 and 3 highlight how measures that assess integrated care in a multidimensional way and across cultures can be generated and validated. Our results show that integrated care can be assessed from the patient’s perspective, comprehensively and across countries.

Conceptualizing and operationalizing organizational culture in the context of integrated care

Having instruments available that measure integrated care adequately provides opportunities for studying how different characteristics of healthcare systems relate to patient-perceived levels of integrated care (Singer et al. 2012). In Chapters 4 and 5, we studied whether organizational culture is related to integrated care. Our findings make important contributions to the conceptualization of organizational culture in the context of integrated care. Prior research on the association of organizational culture and integrated care has set the agenda for looking beyond structural characteristics of healthcare systems and organizations. While this is undoubtedly important, much work is needed to conceptualize clearly what organizational culture is in the context of integrated care. Not providing clear conceptualizations of organizational culture is detrimental to the utility that organizational culture may have for facilitating integrated care. A study by Ahrgen and Axelsson (2007) for example highlights that different aspects of culture seem to be important for developing integrated care. However, no encompassing conceptualization is provided that explains how culture is conceived and which aspects of culture are studied. Ling and colleagues (2012) provide practical examples of how culture in the NHS impacts on care integration, but do not provide any definition of the organizational culture concept. Similar, Sutter (2009) concludes that culture is important for the implementation and operationalization of an integrated healthcare system, but do not conceptualize culture clearly. This is problematic, because organizational culture is a multidimensional construct and can be studied from different angles (Giorgi et al. 2015). Organization and management scholars have spent considerable efforts on identifying different paradigms from which culture can be studied (Giorgi et al. 2015; Meyerson and Martin 1987; Weber and Dacin 2011). For examples, earlier studies of organizational culture have emphasized shared aspects of culture, requiring leaders to establish and maintain a stable, collective organizational culture using top-down approaches (Weber and Dacin 2011). In contrast, later scholarly work emphasized dynamics of culture and the influence of individuals in creating culture (Weber and Dacin 2011). Being insensitive to differences across different paradigms from which
to study culture neglects the considerable efforts that have been made by many to conceptualize clearly what organizational culture is and what it is not and prevents a univocal understanding about how culture influences the ability of healthcare providers to integrate care. Research on the relationship between organizational culture and integrated care could be advanced largely by utilizing knowledge from the organizational and managerial literature in the healthcare domain.

Consensus versus heterogeneity in organizational culture. Prior research that did conceptualize organizational culture clearly mostly applied a consensus perspective, where culture is reduced to those manifestations that are shared among organizational members (Morgan and Ogbonna 2008; Scott et al. 2003). It was hypothesized that higher agreement across members results in stronger organizational cultures, which improves organizational performance (Deal and Kennedy 1983; Saffold 1988). Underlying this assumption is the idea that culture has a coordinating capacity, because internalized shared values guide organizational members in their activities, which improves alignment (Chatman et al. 2014). However, our findings show that prior conceptualizations of organizational culture may have been oversimplified and hence led to inappropriate conclusions about the relationships between organizational culture and outcomes. Our findings provide a more nuanced, detailed picture of organizational culture in healthcare teams. We found that organizational culture relates to integrated care through the average culture types in an organization, but also through the degree to which team members agree or disagree in their perception of the relative presence of each of these types. Specifically, we found that heterogeneity among perceived culture of healthcare professionals is a significant predictor for patient-perceived levels of integrated care. These findings are supported by studies outside the healthcare industry. Tripsas (2009) for example discusses that some level of heterogeneity is beneficial to technology adoption (Armeni, Compagni, and Longo 2014; Leonardi 2011), while extensive disagreements increase the risk of technological failure (Leonardi 2011).

Individual, subgrouping and organizational levels of organizational culture. Recognizing that organizational culture is not limited to those manifestations that members agree upon, but also includes differences across members has important implications for conceptualizing organizational culture. Accepting pluralism, which is the simultaneous presence of several cultural subsets (Meyerson and Martin 1987) does not only have implications for how culture should be conceived but also for the level at which culture should be studied. Critiques to the oversimplified perspective, which denotes the existence of a single, shared culture, has prompted many researchers to argue that one way of advancing culture research is by examining the ways that culture can manifest differently across subgroupings in organizations (Meyerson and Martin 1987; Morgan and Ogbonna 2008; Sackmann 1992b), such as teams or professional groups. Consequently, organizational culture has been studied at the
subgroup level outside (Sackmann 1992b) and within the healthcare domain (Davies, Nutley, and Mannion 2000; Jones and Dewing 1997; Morgan and Ogbonna 2008; Sutherland and Dawson 1998). Subcultures have been found to exist across different professional groups, including lay managers, medical clinicians, medical managers, nurse clinicians and nurse managers (Degeling, Kennedy, and Hill 2001; Degeling et al. 1998; Degeling et al. 2003; Morgan and Ogbonna 2008).

Our findings support the distinction between subgroup levels and the organizational level, which is at the level of healthcare teams and primary care centers, respectively in this dissertation. We found significant between-group differences at healthcare team level and the organizational level, suggesting that subgroups and organizations provide an important level of analysis to be considered (Chapter 2). However, existing studies on subcultures, although recognizing that organizational culture exists at different levels (Alvesson 1993; Alvesson 2002; Meyerson and Martin 1987; Morgan and Ogbonna 2008), continue to adopt a consensus perspective (Morgan and Ogbonna 2008). Our findings go beyond the subgroup level distinction by suggesting that differences in culture not only exist between groups but also within groups. Our results are in line with the study by Morgan and Ogbonna (2008), who also found significant differences in perceived culture among individuals and groups within the same subculture. In their study on change initiatives in the NHS, authors found some physicians to be change-averse, while others appreciated change, implying different cultural subgroupings with distinct value sets.

Finding heterogeneity among perceived culture within subgroups in addition to differences between groups poses questions about the appropriate level of analysis for studying cultures. Most existing studies of organizational culture in healthcare adopted an organizational-level analysis, using a unitarist perspective to conceive culture (Morgan and Ogbonna 2008; Scott et al. 2003). Although, still in the minority, lately studies examined culture at the subgroup level (Morgan and Ogbonna 2008; Scott et al. 2003). Our results suggest a third level relevant to organizational culture, which is the individual level. Individuals can differ significantly in their perception of organizational culture, which impacts their groups’ ability to integrate care.

Agency at the individual level has received attention in more recent conceptualizations of organizational culture in the organizational and managerial literature, which has been classified as the second wave of culture research (Weber and Dacin 2011). Whereas the first wave, which dates to the 1980s, treated culture as a given constraint on organizational activities, the second wave, which started in the late 1980s, was characterized by a growing emphasis on cultural construction. Conceptualizations of this stream of research argue that individuals actively use culture to solve problems and achieve different goals (Giorgi et al. 2015; Kellogg 2011; Molinsky 2013; Rindova, Dalpiaz, and Ravasi 2011; Swidler 1986, 2000; Weber and Dacin 2011).
A dynamic view of organizational culture. The emphasis on agency at the individual level may become increasingly important to studying organizational culture in the healthcare domain. The healthcare sector is one of the most turbulent industries (Goes et al. 2000), characterized by significant technological advances, an aging population with multiple care needs and rising costs. These challenges require collaborations across organizations and sectors (Singer et al. 2011), due to which organizational boundaries become more permeable and less clearly defined (Giorgi et al. 2015). Healthcare professionals are increasingly shared across different organizations or are grouped in network-type organizations (Bazzoli et al. 2003; Dubbs et al. 2004; Luke, Begun, and Pointer 1989; Rosenfeld, Richman, and May 2004). In primary care, different professionals which traditionally operated independently are grouped in one organization (e.g. primary care centers as discussed in this dissertation) (Armeni et al. 2014). In secondary care, specialist sharing across organizations is a frequently observed phenomenon (Westra et al. 2016). Across primary and secondary care, providers and specialists are grouped together periodically in so-called primary care plus arrangements, while maintaining membership in different organizations, to facilitate inter-professional learning and reduce unnecessary referrals (Van Hoof et al. 2016).

More “transparent” organizational forms (Giorgi et al. 2015) may require new conceptualizations of organizational culture that reflect the dynamic character of the industry. Today, definitions and operationalization of the organizational culture concept often assume stable, clearly-defined organizational boundaries (Giorgi et al. 2015). For example, in the Organizational Culture Assessment Instrument (Cameron and Quinn 2005), which was used to operationalize the CVF and to diagnose organizational culture in this dissertation, each statement among which respondents distributed points, starts with “The organization [is ...]”. However, with a rise in network-type organizations, determining organizational boundaries becomes increasingly challenging (Rosenfeld et al. 2004), which has implications for the analysis of organizational culture (Giorgi et al. 2015). In our study for instance, we surveyed providers who were officially associated with one of the primary care centers but who in some cases worked across two primary care centers. We did not include providers who worked in multiple primary care centers for a few hours per week but who were employed by a different organization than the primary care centers, such as a home health agency or a mental health practice. Asking providers who were employed at the primary care center but who also worked in a second center already required more explanation about which culture should be evaluated and in which way. For providers who were not employed by the primary care centers, evaluation of their organizational culture would have been even more challenging. Which organization do these providers perceive to be their primary organization? It could be one of the primary care centers or the organization through which they are employed or the group of people with which they interact most often (Rosenfeld et al. 2004). Even
if providers can identify the organization of interest, it is questionable how much of the actual organizational culture they register if their time at the organization is limited to a few hours per week. Instead, perceptions of culture may be more strongly influenced by the team with which these providers interact regularly across the boundaries of these different organizations. Professionals who work in a network across different organizations may be much more influenced by the cultural values that their close network ties hold than that of the organizations across which the network spans (Rosenfeld et al. 2004). This is particularly relevant for studying the association of organizational culture and integrated care, because integrated care requires extensive inter-professional and inter-organizational collaboration in order to coordinate care for patients with multiple healthcare needs (Singer et al. 2011).

**Organizational culture change – collectivism versus individualism.** What these findings suggest is, that a static, single-level, unitarist conceptualization of organizational culture may be of limited value for understanding organizational culture in healthcare and, integrated care in particular, which are increasingly provided by more fluid network-type organizations (Bazzoli et al. 2003). However, viewing culture as a multi-level construct requires knowledge about which processes introduce heterogeneity to culture, emphasizing the individual level, and which processes result in agreement at the subgroup or organizational level (Giorgi et al. 2015). During the first wave of cultural approaches, which focused on the shared aspect of organizational culture, culture production was conceptualized through socialization processes (Sørensen 2002). From this perspective, organizational culture was produced by the organization’s leadership by establishing values to which organizational members had to comply (Deal and Kennedy 1983; Meyerson and Martin 1987; Saffold 1988). Through socialization activities “cognitions become rooted in the group and ultimately exist independently of an individual group member, even though individuals are carriers of culture” (Sackmann 1992a, p.141). Producing organizational culture through socialization aligns organizational members’ values and increases homogeneity among the perceived organizational culture (Edström and Galbraith 1977). During the second wave, organizational members were conceived to use culture as a resource to make sense of situations and to construct strategy of action, depending on the specific situation at hand (Weber and Dacin 2011). Affinities change as new contextual situations require different resources to be used (Martin, Frost, and O’Neill 2006).

Processes suggested in the first wave explain how culture gains longevity and stability, while conceptualizations of the second wave emphasize heterogeneity and dynamicity (Weber and Dacin 2011). Although seemingly contradictory at first, taken together conceptualizations of both waves could provide opportunity to explain how culture manifests at different levels combining heterogeneity with homogeneity and dynamics with longevity (Giorgi et al. 2015; Weber and Dacin 2011). However, how these processes work, their interplay and their influence on team’s ability to provide
integrated care has yet to be explored.

Organizational culture and integrated care: a non-linear, multi-dimensional relationship

In addition to insights pertaining to the conceptualization of organizational culture, our findings also contribute to better understanding the nature of the relationship between organizational culture and integrated care, which may extend to other healthcare outcomes. First, previous literature has stressed the importance of strong culture for integrated care. Collaborative cultures with high levels of trust and consensus were regarded most beneficial to providers’ ability to integrate care (Aghgren and Axelsson 2007; Hardy et al. 1999; Suter et al. 2009). However, evidence in this dissertation suggest that organizational culture seems to be related to integrated care through several culture types. We found significant relationships of team-, entrepreneurial-, hierarchical- and production-oriented culture types with different dimensions of integrated care. Most often, moderate levels of these types were positively related to patient-perceived integrated care. Not recognizing the multi-dimensionality of the organizational culture construct, based on our results, would result in the illumination of one dimension while neglecting others, and an incomplete understanding of how culture relates to integrated care.

Second, extant literature has primarily predicted a linear relationship between organizational culture and the outcome of interest (Meterko, Mohr, and Young 2004; Singer et al. 2009; Zazzali et al. 2007), often with limited results (Bosch et al. 2008; Bosch et al. 2011; Hann et al. 2007). However, our findings suggest that culture influences integrated care in non-linear ways. Most often moderate levels of average culture and heterogeneity in perceived culture were related to higher ratings of patient-perceived levels of integrated care. These findings are important for better understanding, conceptualizing and predicting the relationship between organizational culture and integrated care. Much of the integrated care literature views heterogeneity of cultures, such as in form of subgroups, to be a significant barrier to integrating care, see for example Suter et al. (2009). In contrast to this believe, our results suggest that some degree of heterogeneity results in higher levels of patient-perceived levels of integrated care, while overly high and low levels may be related to lower perceptions. In order to integrate care, providers, teams and organizations may need some degree of heterogeneity and homogeneity in cultural values. These findings support the previous discussion that conceptualizing culture as an interplay of stability and dynamics may be helpful for understanding the relationship of organizational culture and integrated care and the processes by which culture is produced.
Strengths and limitations of this dissertation

In this dissertation, we used a novel approach for conceptualizing integrated care and organizational culture and for studying the relationship between both concepts. This section addresses methodological strengths and limitations related to our approach. Specifically, we discuss aspects related to understanding integrated care from the patient viewpoint, and organizational culture in the integrated care context.

Understanding integrated care

While there is considerable agreement that integrated care requires the patient to be central to all integration activities, previous research on integrated care and initiatives or reforms that aim to improve integrated care mostly adopted an organizational or system perspective (Goodwin 2017). This is problematic, because initiatives were primarily focused on solving organizational problems, rather than addressing patient needs (Goodwin 2017). Although both can be subject to integration, the organizational arrangement through which care is provided and the care that patients receive are conceptually different (Singer et al. 2011). Integration of organizations or systems is expected to result in improved patient experience (Kerrissey et al. 2017). Yet, in practice this relationship is often implicitly assumed instead of being tested empirically (Singer et al. 2011). Understanding patient-perceived strengths and weakness across healthcare systems is important for identifying opportunities for clinical outcome improvements and cost reduction (Goodwin 2017). After all, given the fragmented nature of healthcare, the patient is most likely the only person in the care process who experiences this process from the beginning to the end, with all its challenges (Singer et al. 2011; Solinís and Stein 2016).

Studying whether initiatives result in better patient experience of integrated care requires instruments that evaluate the care delivered to patients (Singer et al. 2011). In using the PPIC survey we measured integrated care from the patient’s perspective, distinguishing patient care from the organizational arrangement through which patients receive care. Our insights are important for understanding current strengths and weaknesses across healthcare systems and for identifying opportunities for improvement. In using the PPIC survey, we identified which dimensions of integrated care seem to be working better and which dimensions require more attention to improve patient experience in the future.

Measuring integrated care independently from the organizational arrangement made the PPIC survey particularly useful for application across different cultures and healthcare systems. Although very important for facilitating cross-cultural learning about what works and what does not work for integrating care, cross-cultural applicability of survey instruments has rarely been evaluated (Bautista et al. 2016). If
cross-cultural applicability was evaluated, results often fail to establish cross-cultural validity (Gehring et al. 2015; Perneger, Staines, and Kundig 2014; Pfeiffer and Manser 2010). To develop opportunities for cross-cultural comparative studies about how integrated care can best be achieved, we culturally adapted the PPIC survey for use in the Netherlands. We did so in ways that warranted comparability with the original PPIC survey, developed for administration in the US, while considering specificities of the Dutch context. Subsequently, we developed and used a standardized procedure to test validity, reliability and cross-cultural comparability of the Dutch survey. Psychometric results confirmed the usefulness of our approach and the applicability of the PPIC survey for use across countries.

Previous research that empirically examined the extent to which care is integrated often applied an atomistic perspective, studying different dimensions of integrated care separately (Bautista et al. 2016). While this provides detailed information about each of these dimensions, it has less utility for understanding integrated care as a multidimensional construct. Improving one dimension of integrated care, such as coordination, could negatively impact another dimension, such as patient centeredness (Singer et al. 2011). Not considering different dimensions simultaneously may hence be counterproductive to integrated care. By administering the PPIC survey, we studied integrated care in a multidimensional way, distinguishing six dimensions of integrated care which were discussed earlier. We also establish the validity of measuring integrated care multidimensionally and from the patient perspective. However, although critically needed, adopting a patient’s perspective also has limitations. In conceiving integrated care from the patient’s perspective, we considered those aspects of care that have a direct impact on the patient experience, relating mostly to the process through which care is provided by the primary provider, other staff in the provider’s office and the specialists outside the provider’s office. However, integration occurs at and across different levels in the healthcare system (Delnoij, Klazinga, and Glasgow 2002; Kerrissey et al. 2017; Valentijn et al. 2013), and we may not have considered all of them. While system integration, which requires a coherent set of rules and policies (Valentijn et al. 2013), influences patient experience indirectly, as for example integrated financing structures may improve providers’ willingness to collaborate and hence may impact patient experience of continuity of care positively (Struijs and Baan 2011), we did not measure this dimension directly. How patient experience is affected by integration at different levels has yet to be considered.

Understanding organizational culture in the context of integrated care

Previous research that has studied the relationship of organizational culture and integrated care often did not conceptualize organizational culture clearly. We conceived organizational culture through the CVF, which is a well-established framework for
diagnosing organizational culture in and outside the healthcare domain (Helfrich et al. 2007; Singer et al. 2009). By using the CVF, we were able to sort culture into different types. Attributes of organizational culture can be useful predictors of organizational performance and effectiveness (Denison 1984; Giorgi et al. 2015). Thus, by providing distinction (Giorgi et al. 2015), we could identify differences among organizational cultures held by healthcare professionals and healthcare teams and explore whether these differences associate with patient-perceived integrated care.

We also studied organizational culture from two perspectives. Organizational culture research can be distinguished in two waves of research. The first wave of organizational culture research emphasizes the collective character of organizational culture and views culture as what is shared between organization members. In contrast, the second wave emphasizes dynamicity and heterogeneity of organizational culture between different organizational members. Evidence for the superiority of conceptualizations in one wave over the other does not exist (Scott et al. 2003). While a shared set of values may improve alignment and, hence improve collaboration (Bechky 2003; Carlile 2002; Leonardi 2011), heterogeneity may provide sufficient variety of resources that healthcare providers need to react to variable patient needs and contextual factors (Horwitz and Horwitz 2007). We therefore operationalized and studied culture from both perspectives (Horwitz and Horwitz 2007). In Chapter 4, we conceptualized organizational culture as average organizational culture scores across healthcare team members. In Chapter 5, we studied heterogeneity among team members perceived organizational culture. Our findings support the importance of both perspectives for understanding how culture influences integrated care.

Another strength of our approach is that we consider different levels when studying the relationship of organization culture and integrated care. Nowadays, much of healthcare is provided through healthcare teams. However, while teams, given their frequent use, are an important unit of analysis, teams are embedded and work within wider organizational arrangements. In using three-level models in which we distinguish a patient-, team- and organizational level we consider this nested nature.

Our approach also had limitations, which should be considered. We conceptualized organizational culture through the CVF. While the CVF has enjoyed considerable attention in the industry and the healthcare sector alike and its applicability has been variously demonstrated (Horwitz and Horwitz 2007), it also has its shortcomings. The CVF takes a value-perspective in conceptualizing organizational culture. While it is common to conceive organizational culture as a collection of values that guide members action (Giorgi et al. 2015), many argue that culture is more than a set of values and can consist of various resources and materials (Harrison and Corley 2011; Swidler 1986, 2000). Hence, in adopting the CVF, we may have ignored other elements of organizational culture that could relate to patient-perceived levels of integrated care.
Another limitation of conceptualizing culture through the CVF is that culture is naturally bounded by the organization, meaning that culture is limited to what is perceived inside organizational boundaries. However, given that healthcare is increasingly provided through different provider networks that span across organizations in order to improve coordination, we may have missed cultural attributes that exist across organizations and potentially influence integrated care experiences. Nevertheless, given that valid and reliable network measures of organizational culture are not available, the CVF remains the most widely applied and useful conceptualization for diagnosing organizational culture in healthcare (Helfrich et al. 2007).

We proceed by discussing implications of findings in the dissertation for policy and practice and conclude by explaining how future research could utilize our insights and address important questions posed in this discussion to understand better how integrated care can be improved from the patients’ point of view.

**Implications for policy, practice and directions for future research**

**Implications for policy and practice**

Considerable room exists to improve patient experiences of integrated care. The dimensions of integrated care that are related to patient centeredness received notably low ratings and provide opportunities for healthcare organizations to improve the experience of their patients. As stated in Chapter 1 of this dissertation, without placing the patient central to all integration efforts, many initiatives to promote integrated care may be targeted at improving healthcare organizations self-interests rather than improving care experiences of patients (Giorgi et al. 2015). If initiatives are to be contributing meaningfully to improved integration, the patient should be central to all efforts. Taking a patient perspective requires understanding patient needs and preferences (Singer et al. 2011). In this dissertation, we have conceptualized integrated care in a way that can help to better understand strength and weaknesses related to integrated care from the patient’s viewpoint. Using the definition of integrated care (Singer et al. 2011), which was adopted in our work and the Patient Perception of Integrated Care survey (Singer et al. 2012) to guide delivery system improvements may be helpful in defining which dimensions of integrated care require improvement. A rigorous and systematic evaluation of initiatives and their performance is not only relevant for organizations themselves but also to other organizations as it allows for sharing strategies that lead to improvements and for identifying which strategies should be avoided. Improving patient experience of integrated care requires collaboration across different stakeholders, organizations and systems to learn together about determinants of successful integrated care (Osborn et al. 2015, Osborn et al. 2016). In identifying strength and weaknesses across healthcare...
systems related to integrated care will provide targets for which policy interventions and healthcare organization innovations are most likely to achieve the largest improvement in patients’ experiences. The PPIC survey may provide opportunity for developing monitoring systems for policy makers and healthcare organizations to evaluate progress towards developing better integrated health care.

Our study illuminated how organizational culture may be an important determinant for improving integrated care. Longitudinal studies have yet to confirm this relationship. However, if organizations and their employees are investing into changing their organizations’ culture in ways that may promote integrated care, several issues should be considered based on our findings. Firstly, our study shows that several culture types are related to better perceived integrated care and hence should all be considered in efforts to improve integrate care. Secondly, against prior beliefs that stressed the importance of a shared organizational culture, we identified that some degree of heterogeneity seems to be important. Multidisciplinary teams do not group different professionals together because they are mutually replaceable but because each of them provides a unique contribution toward patient care. Our results highlight that this uniqueness should be preserved in the values that each provider contributes to the team. Instead of spending considerable efforts and resources on creating a common set of values, providers require room for an individual approach to care. In composing teams, it may be beneficial to select members not only by the degree through which they share a common set of values but also by the unique skills and values they can contribute to the team. Our results also show that both the average culture of healthcare teams and heterogeneity of perceived culture among team members have optimal levels at which patients evaluate integrated care at the highest. Hence it is important to balance the right degree of culture types, heterogeneity and homogeneity among team members’ perceptions. The right balance may vary, depending on contextual circumstances. The use of longitudinal monitoring systems, which was suggested earlier, may help organizations to understand which proportion of culture types and of heterogeneity and homogeneity is related to better organizational performance in which situation.

**Directions for future research**

Advancing the study of integrate care requires insights of what facilitates and what impedes integration. Adopting the patient’s viewpoint is crucial in this endeavor to understand whether initiatives achieve what they are intended to do, and that is improving patient’s wellbeing. To generate such knowledge, as academic community, we need to agree on a comprehensive understanding of what constitutes integrated care from the patient perspective. The definition provided by Singer and colleagues (2012) that was adopted in this dissertation, reflects patient experiences (Walker et al. 2013) and has proven to be useful for understanding integrated care comprehen-
Improving integrated care requires identifying strengths and weaknesses of current health delivery systems from the patient perspective in a structured way (Singer et al. 2012). Much is to learn from comparing and benchmarking different healthcare systems (Osborn et al. 2016). Across industrial countries problems related to healthcare access, affordability, and quality remain, with much performance variation between countries (Osborn et al. 2016). Learning from other healthcare systems requires instruments that are cross-culturally comparable. We have produced a survey that measures integrated care comprehensively from the patient’s viewpoint in a cross-cultural comparable way. Using the PPIC survey in future research to understand differences across healthcare systems can facilitate cross-cultural learning by illuminating strengths and weaknesses related to integrated care across these systems.

When developing new instruments that are to be used in different countries, researchers are advised to combine equivalence and contextualization approaches. The relative proportion of methods used from each approach may depend on the degree to which countries differ in terms of their culture and health system. Insights into which proportion is required for countries that are more alike versus countries with larger differences would be beneficial to developing guidelines aimed at improving translation and adaptation processes’ efficiency, while warranting quality. When validating surveys for cross-cultural use, researchers are advised to use a standardized process for achieving measurement equivalence as suggested in Chapter 3 in this dissertation. Instruments should only be used for comparative work, if validity, reliability and cross-cultural comparability are established.

When studying the relationship between organizational culture and integrated care, future studies should pay specific attention to conceptualizing organizational culture clearly. In the absence of new measures that adopt a network perspective, the CVF may be the most suitable research instrument for understanding differences in perceived organizational culture at different levels within the organization (Helfrich et al. 2007). However, there is a need for developing more dynamic conceptualizations of organizational culture. A dynamic conceptualization of organizational culture should equally address both components of the concept, i.e. “organization” and “culture”. Since health care and integrated care is increasingly provided in network-type organizations, historical conceptualization of organizational culture within stable, demarcated organizational boundaries may poorly characterize how culture influences healthcare providers in their daily work. Instead, conceptualizations of organizational culture should recognize the fluid nature of today’s organizations in health care and integrated care in particular. These developments open several avenues for future research. Conceptualizations of culture in ways that recognize
heterogeneity among unit members and the different levels at which culture may manifests requires understanding which processes are responsibility for the co-existence of heterogeneously and homogeneously held elements of organizational culture. Reconnecting current approaches to cultural analysis to the historical base of culture may provide important contributions toward better understanding how organizational culture is produced and operates at different levels (Giorgi et al. 2015; Weber and Dacin 2011).

Understanding the production and evolution of organizational culture requires resources that support longitudinal studies and different instruments compared to what is currently available. Conceptualizations such as the culture-as-toolkit perspective, which assumes that organizational culture represents a collection of resources (Harrison and Corley 2011; Rindova et al. 2011; Swidler 1986; Weber 2005) that is situation specific, and from which members construct strategy of action may be helpful for understanding the dynamics involved in the production and evolution of organizational culture and could be a starting point for developing methods that are able to capture culture in dynamic ways.

When studying the relationship between organizational culture and integrated care, researchers may be advised to explore non-linear relationships. Incorporating squared terms in quantitative analysis may provide a fruitful way for doing so. Our studies have shown that there are optimal points of culture at which patients perceive integrated care to be highest. More research is needed to identify the relative position of these optimal points and to guide culture change that may facilitate integrated care.

In this dissertation, we used a cross-sectional research design to understand whether and how organizational culture relates to integrated care. Although this was important to understand if the two concepts associate at all, it does not allow for drawing inferences about the direction of this relationship. Using longitudinal designs, future research should explore whether organizational culture can facilitate integrated care or whether providing integrated care and the effects it has on care processes alters an organization’s culture. Longitudinal designs could also provide insights about the processes through which organizational culture is produced, evolves and changes. If organizational culture is a facilitator for integrated care, as widely assumed in the integrated care literature, understanding how culture can be changed towards a configuration that supports integrated care is important. Studying processes through which heterogeneity and homogeneity evolves in organizational culture may provide relevant insights for understanding how to achieve culture change.

Previous research that has examined outcomes of initiatives aimed at improving care often evaluated these initiatives on system, health or quality related outcomes,
without considering whether initiatives achieve better patient-perceived integrated care. Future research should examine whether initiatives result in improved patient perceptions of integrated care and whether these improved patient perception impact positively on health and health system outcomes, such as reduced mortality or costs. A first study, using the PPIC survey in this way, has shown that higher patient perceptions on some integrated care dimensions are related to significantly lower emergency department rates (Fryer et al. 2016). More of this type of research is needed to advance our understanding of how integrated care can be improved and how, in turn, integrated care can improve health system performance.
References


General Discussion

of Integrated Care 2(2).


General Discussion


Summary
Complex healthcare needs of patients with multiple chronic diseases increasingly require healthcare systems to provide integrated care, which is coordinated, continuous and patient-centered. Yet, limited knowledge exists about how integrated care from the patient’s viewpoint can be achieved. Organizational culture is considered an important determinant for healthcare systems’ effectiveness in integrating care. Yet, comprehensive conceptualizations of organizational culture in the context of integrated care do not exist, precluding conclusions about the exact relationship between organizational culture and integrated care. This dissertation studies whether and how organizational culture relates to patient-perceived levels of integrated care. Specifically this dissertation aims at (1) developing and validating a survey that measures the degree to which patients perceive care that they receive to be integrated across settings and over time and which is suitable for cross-cultural use, (2) examining the extent to which patients perceive their care to be integrated through a survey that measures integration across settings and over time (3) investigating which types of organizational culture are perceived within primary health care teams, located in primary care centers, (4) understanding how different types of organizational culture relate to the degree to which care is perceived to be integrated by the patient, and (5) understanding how the distribution of different culture types across healthcare professionals is associated with the degree to which patients perceive their care to be integrated.

Chapter 1 introduces the concepts of integrated care and organizational culture, delineates the relevance of studying the relationship between organizational culture and patient-perceived levels of integrated care and presents the five objectives of this dissertation listed above.

Chapter 2 corresponds with objective 1 and investigates how to translate and culturally adapt surveys that assess integrated care for cross-cultural use. Specifically, it reports the process that was used to translate and culturally adapt the Patient Perception of Integrated Care (PPIC) survey for use in the Dutch context. The PPIC survey is a self-administered survey tool that was originally developed for use in the US and conceptualizes integrated care from the patient perspective and multidimensional. The results of Chapter 2 suggest that translating and adapting surveys for cultural use require *equivalence approaches* to achieve comparability of the translated instrument with the original and *contextualization approaches* to adapt the new instrument to the characteristics of the healthcare system to which the instrument is to be transferred. The results support the applicability of the Patient Perception of Integrated Care Survey in the Netherlands and are promising for its adoption in other cultural contexts.

Chapter 3 addresses objective 1 and 2 and describes how to validate surveys for cross-cultural use. Methods for a standardized approach to establishing measurement equivalence, i.e. equal psychometric properties across the culturally adapted
instrument and the original instrument, are proposed. Methods relate to data preparation, psychometric testing and invariance testing. The utility of a standardized approach to testing measurement equivalence was examined by applying related methods to validate the Dutch Version of the PPIC survey in a sample of 3,725 patient responses. The proposed standardized cross-cultural validation method produced strong support for comparable psychometric characteristics of the Dutch and US surveys. Latent scale structures were highly consistent, confirming that the PPIC survey is cross-culturally applicable.

Chapter 4, corresponding to objective 3 and 4, studies the association of average organizational culture, conceived through the Competing Values Framework (CVF), in multidisciplinary healthcare teams, located in primary care centers with patient’s perceived care integration. A sample of 2,911 patient responses and 17 healthcare teams in four primary care centers in the Netherlands was analyzed using three-level ordered logistic regression models to account for the nesting of patients within health care teams within primary care centers. Results suggest a non-linear relationship between organizational culture and integrated care. For teams, a combination of different culture types — including moderate levels of production-oriented, hierarchic and team-oriented cultures and low or high levels of entrepreneurial cultures — is related to higher patient-perceived levels of integrated care.

Chapter 5 addresses objective 5 and examines whether heterogeneity in perceived cultures among members of multidisciplinary healthcare teams in primary care centers, operationalized as the average Euclidean distance between team members’ scores on the CVF, is associated with the degree to which patients perceive their care to integrated, using three-level ordered logistic regression analysis. Heterogeneity exists independently of the content of culture and represents a structural characteristic of culture. Heterogeneity was operationalized by computing Euclidean distance between healthcare team members’ culture scores. Three-level ordered logistic regression analyses were performed in a sample of 2,911 patient responses and 17 healthcare teams across four primary care centers in the Netherlands. Results suggest that intermediate levels of heterogeneity in perceptions of entrepreneurially, hierarchically and production-oriented culture types among healthcare team members is significantly, positively related to integrated care. For team-oriented cultures high and low levels are associated with higher ratings of patient-perceived integrated care. These findings contribute to better understanding how culture relates to multidisciplinary team performance.
Chapter 6 summarizes the main findings of this dissertation. In addition, insights that are related to conceptualizing integrated care and organizational culture in the context of integrated care are discussed. Methodological strengths and weaknesses of the study approaches are reviewed. To conclude, implications for policy, practice and research are presented. Most important points addressed in the discussion section are the need for agreeing on a common understanding of how integrated care should be conceived from the patient perspective and how organizational culture should be conceptualized in the context of integrated care. Given the complex, multidisciplinary and fluid character of integrated care and of organizations that provide integrated care, conceptualizations of organizational culture should recognize that culture does not only pertain to commonly held values at the organizational level, but that culture can also exist heterogeneously across organizational members. Homogenous and heterogeneous manifestations of culture can co-exist, which should be considered when conceptualizing organizational culture in the context of integrated care. These findings further suggest that culture does not only exist at the organizational or subgroup level, but also at the individual level. Conceptualizing organizational culture from this standpoint requires more dynamic perspectives to study organizational culture which recognize that heterogeneity and homogeneity are not mutually exclusive characteristics. Instead studying their interplay may help to understand how culture in the context of integrated care is produced, evolves and changes.
Samenvatting
Complexe zorg behoeftes van patiënten met meervoudige chronische aandoeningen vereisen in toenemende mate een gezondheidssysteem dat voorziet in geïntegreerde, en dus gecoördineerde en aaneengesloten, zorg waarbij de patiënt centraal staat. Tot op heden is onvoldoende duidelijk hoe zorgverlening, vanuit het perspectief van de patiënt, optimaal geïntegreerd kan worden. Organisatiecultuur wordt gezien als een belangrijke determinant van de effectiviteit van gezondheidssystemen in het integreren van zorg. Toch bestaan er geen alomvattende conceptualisaties van organisatiecultuur in de context van geïntegreerde zorg, waardoor het onmogelijk is om conclusies te trekken over de exacte relatie tussen organisatiecultuur en geïntegreerde zorg. In dit proefschrift is onderzocht of en hoe organisatiecultuur invloed heeft op de door patiënten ervaren mate van geïntegreerde zorg. Specifiek is dit proefschrift gericht op het (1) ontwikkelen, valideren en toepassen van een vragenlijst waarmee gemeten kan worden in welke mate patiënten zorg als geïntegreerd percipieren, zowel tussen verschillende locaties als tussen verschillende momenten in de tijd, (2) bepalen van de mate waarin patiënten hun zorg als geïntegreerd ervaren door middel van een vragenlijst die geïntegreerde zorg over meerdere instellingen en over de tijd meet, (3) onderzoeken van de mate waarin verschillende soorten organisatiecultuur worden ervaren binnen teams in gezondheidscentra in de eerste lijn, (4) begrijpen hoe verschillende soorten organisatiecultuur samenhangen met de mate waarin zorg als geïntegreerd wordt ervaren door de patiënt, en (5) analyseren hoe de verdeling van verschillende soorten organisatiecultuur verband houden met de mate waarin patiënten hun zorg als geïntegreerd ervaren.

**Hoofdstuk 1** introduceert de begrippen geïntegreerde zorg en organisatiecultuur, beschrijft de relevantie van de associatie tussen organisatiecultuur en door de patiënt ervaren mate van geïntegreerde zorg, en presenteert de vijf doelstellingen van dit proefschrift, die hierboven staan benoemd.

**Hoofdstuk 2** gaat in op doelstelling 1 en zet uiteen hoe vragenlijsten, die geïntegreerde zorg evalueren, vertaald en aangepast moeten worden voor toepassing in verschillende culturen. Het beschrijft de specifieke stappen die gezet zijn om de Patient Perception of Integrated Care (PPIC) vragenlijst te vertalen en aan te passen voor gebruik in Nederland. De PPIC-vragenlijst is een door de patiënt zelf in te vullen vragenlijst die oorspronkelijk ontwikkeld is voor gebruik in Amerika, en die geïntegreerde zorg meet vanuit meerdere dimensies en vanuit het perspectief van de patiënt. Het resultaat van Hoofdstuk 2 laat zien dat het vertalen en aanpassen van vragenlijsten voor gebruik in een andere cultuur een combinatie van twee aanpakken vereist. De vergelijkbaarheid tussen de vertaalde en de originele vragenlijst moet worden gewaarborgd (equivalence approach), terwijl de vragenlijst tevens aangepast dient te worden aan de eigenschappen van het zorgsysteem waarnaar de vragenlijst vertaald wordt (contextualization approach). Het resultaat onderschrijft de toepasbaarheid van de Patient Perception of Integrated Care vragenlijst in Nederland en is veelbelovend voor het gebruik in andere culturen.
Hoofdstuk 3 gaat in op doelstelling 1 en 2 en beschrijft hoe een vragenlijst gevalideerd moet worden voor gebruik in meerdere culturen. Methodes voor een gestandaardiseerde aanpak om de maten van overeenstemming te bepalen, zoals gelijke psychometrische eigenschappen tussen de cultureel aangepaste vragenlijst en de originele vragenlijst, worden voorgesteld. Deze methodes hebben betrekking op data voorbereiding, psychometrisch testen en invariantie testen. De meerwaarde van deze aanpak is getoetst door de aanpak toe te passen in de validatie van de PPIC-vragenlijst in Nederland binnen een steekproef van 3.725 patiënten. De voorgestelde gestandaardiseerde validatie methode bevestigd vergelijkbare psychometrische kenmerken in de Nederlandse en Amerikaanse vragenlijst. Latente constructen van geïntegreerde zorg in beide vragenlijsten waren grotendeels consistent, waarmee bevestigd is dat de PPIC-vragenlijst toepasbaar is in verschillende culturen.

Hoofdstuk 4, relaterend aan doelstelling 3 en 4, onderzoekt het verband tussen de gemiddelde organisatiecultuur in multidisciplinaire zorgteams binnen eerstelijns gezondheidscentra en patiënt ervaringen van geïntegreerde zorg. Cultuur is gemeten met het Concurrerende Waarde Model (Competing Values Framework, CVF). Antwoorden van 2.911 patiënten en 17 zorgteams in vier eerstelijns gezondheidscentra in Nederland zijn geanalyseerd middels multinomiale logistische regressie modellen met drie niveaus, waarbij rekening is gehouden met het feit dat patiënten ingebed zijn in zorgteams binnen eerstelijns gezondheidscentra. De resultaten tonen een niet-lineair verband tussen organisatiecultuur en geïntegreerde zorg. Een combinatie van verschillende cultuur types binnen een team - waarbij productie-gedreven, hiërarchische en team-georiënteerde culturen matig aanwezig zijn en sprake is van een lage en hoge mate van ondernemerscultuur - is gerelateerd aan een hoger niveau van geïntegreerde zorg zoals ervaren door de patiënt.

Hoofdstuk 5 gaat in op doelstelling 5 en toetst of heterogeniteit in waargenomen cultuur bij zorgverleners in multidisciplinaire zorgteams in de eerstelijnsgezondheidszorg gerelateerd is aan de mate waarin patiënten hun zorg als geïntegreerd ervaren. Heterogeniteit bestaat onafhankelijk van de inhoud van culturen en is een structurele eigenschap van cultuur. Heterogeniteit werd bepaald door het uitrekenen van de Euclidische afstand tussen cultuur scores op het Concurrerende Waarde Model van zorgverleners in zorgteams. Multinomiale logistische regressieanalyses met drie niveaus zijn uitgevoerd met een steekproef van 2.911 patiënten en 17 zorgteams in vier eerstelijns gezondheidscentra in Nederland. De resultaten laten zien dat een matig niveau van heterogeniteit in ondernemers-, hiërarchische en productiegedreven cultuur types tussen zorgteam leden een significant positief verband heeft met geïntegreerde zorg. Bij team-georiënteerde culturen zijn hoge en lage niveaus geassocieerd met een hogere score van door de patiënt ervaren geïntegreerde zorg. Deze bevindingen leiden tot een beter begrip van de relatie tussen organisatiecultuur en multidisciplinaire teamprestaties.
Zusammenfassung
Zusammenfassung


Die folgenden Ziele wurden gesetzt:
1. Entwicklung und Validierung eines Fragebogens, der erfasst zu welchem Grade Patienten ihre Versorgung als integriert wahrnehmen.
2. Datenerhebung zur integrierten Versorgung auf Grundlage der Patientenerfahrungen mit Hilfe des entwickelten Fragebogens. Mit dem Fragebogen wurde gemessen, inwiefern die Patienten ihre Versorgung als integriert zwischen unterschiedlichen Organisationen und Zeitmomenten erfahren.


und ermittelt die Sicht des Patienten auf unterschiedliche Aspekte der integrierten Versorgung. Es wurde analysiert, wie der Fragebogen übersetzt und adaptiert werden muss, um eine kulturübergreifende Nutzbarkeit zu gewährleisten. Im Speziellen wurde der Entwicklungsprozess für die Nutzung des Fragebogens im niederländischen Sprachgebrauch beschrieben.


Valorization
Valorization, which traditionally was seen as the creation of economic value, is been termed the maxim of modern research (De Jonge and Louwaars 2009). Today, knowledge valorization refers to the “process of creating value from knowledge, by making knowledge suitable and/or available for social and/or economic use and by making knowledge suitable for translation into competitive products, services, processes and new commercial activities” (Maastricht University 2016).

In addition to research and education, transfer of knowledge for the benefit of society (i.e. valorization) was first introduced as third tasks of universities in 2004, when the Dutch Minister of Science, Van der Hoeven, published a policy paper in which she described that Dutch science policy had to facilitate the use of academic knowledge for the benefits of society (Higher Education and Research Act (WHW) 1992, article 1.3) (De Jong 2015; Maastricht University 2016). Today, discussions about science in the Netherlands almost always address questions about valorization (De Jong 2015). Much has been written about the need for valorization and how to define valorization. Still, a recent report by the Dutch Health Council has concluded that Academic Medical Centers in the Netherlands do too little to address societal questions and to create value for societal use (Health Council of the Netherlands 2016). However, responses from the academic community to increased pressures for valorization are far from all positive and agreement on the valorization process in academic practice is limited (De Jong 2015).

This addendum will present ways through which knowledge that was produced through this dissertation can be of social value. Specifically, valorization in the context of integrated care and organizational culture will be discussed and problems related to valorization of some of the findings presented in this dissertation will be addressed.

The most important results that emerge from this dissertation are twofold. First, this dissertation produced a cross-culturally valid version of the Patient Perception of Integrated Care survey (Singer et al. 2012) to measure integrated care from the patient perspective in the Netherlands. This survey was used to collect patient experiences of integrated care across Dutch primary care centers. Second, the work in this dissertation has highlighted that patient-perceived integrated care is not only influenced by healthcare team members’ shared culture, which was previously assumed. Instead, this dissertation showed that moderate levels of heterogeneity in team members perceived culture are associated with better integrated care as experienced by the patient.
Integrated care

The introduction of this dissertation described that the lack of conceptual clarity, and the lack of valid, reliable, and cross-culturally applicable measurement instruments has serious implications for practices that aim to improve integration. Often, initiatives are developed to solve immediate organizational challenges instead of improving integrated care from the patient’s perspective (Goodwin 2017) and many care integration initiatives are not evaluated on whether they are successful at integrating care (Lemmens, Nieboer, and Huijsman 2009). Findings of this dissertation provide opportunities for addressing these problems and for producing social value. Through this dissertation, we have provided an instrument that measures integrated care as perceived by the patient that is valid for use in the Netherlands and is cross-culturally applicable. The Patient Perception of Integrated Care (PPIC) survey provides patients with an opportunity to share and evaluate their integrated care experience.

Used as a longitudinal monitoring system, the PPIC survey can provide governments and healthcare organizations with the opportunity to understand patient needs in a systematic way, to evaluate how successful integration efforts are and to compare performance across organizations and within and across countries. The PPIC survey can assist in distinguishing successful initiatives from less successful ones and can facilitate learning about how integrated care can be improved. Interest of the government in using the PPIC survey in such a way has already been demonstrated, when in 2014, five questions of the Dutch PPIC survey were included in the national monitor of the National Institute for Public Health and the Environment (RIVM) (Drewes et al. 2015).

We collected a large sample of patient experiences related to integrated care, that can assist the centers that participated in this research to identify areas that need correction and to identify areas that work well and should be maintained in efforts to provide better integrated care. For example, our results show that dimensions related to patient centeredness perform low compared to other dimensions. Deploying resources in ways expected to make largest contributions to patient experiences is important given that healthcare systems, policy makers, healthcare organizations, insurers and professionals are facing several challenges. Among these challenges are increasingly scarce resources, healthcare costs that have reached unprecedented levels, increasingly complex patient needs and reforms that introduced market competition and emphasize value-based healthcare and pay for performance. We have provided an instrument and collected data that highlights what is needed from a patients’ point of view and can assist in benchmarking integration efforts in the Netherlands and across countries.
Organizational culture

Against our findings related to integrated care, valorizing findings related to organizational culture is more complex. In this dissertation, we have described how organizational culture is an abstract, multidimensional concept that can be studied from various perspectives with different implications for how culture shapes and influences organizations’ realities.

We diverged from the consensus perspective that emphasizes shared aspects of culture and instead conceptualized culture in ways that may better fit the complex realities that modern healthcare organizations and professionals are faced with and explained the theoretical foundations of this perspective.

Our findings are important for healthcare organizations to consider. Based on our findings organizations should be careful to assume the benefits of a shared culture. Instead of impeding integration efforts, a heterogeneous set of skills and values within multi-professional teams may support organizations in efforts to integrate care by introducing sufficient variety of resources. Consequently, organizations, instead of focusing solely on creating consensus, should study the richness of their cultural repertoire. In this dissertation, we have provided tools and analytical opportunities that can assist organizations in this endeavor.

We will not discuss which culture is needed and how culture should be changed based on our findings. Valorization requires a certain degree of maturity of study findings and more research is needed to understand better how organizational culture relates to integrated care, which requires research designs suitable for theory development. It also requires funding that supports such research designs. The Young Academy within the Netherlands Royal Academy of Arts and Sciences has cautioned that the valorization thrift emphasizes short-term application of knowledge that is predictable and of direct use for policy makers and organizations (De Jong 2015; Robeyns, Kleinhans, and Gohrab 2010). While conducting research close to and in collaboration with practice by all means is important it can be at the expense of traditional theoretical work. Short durations and practically oriented proposals, which due to an increasing emphasis on valorization may become increasingly popular, will unlikely be suited to understand the complex evolution of organizational culture in healthcare organizations and their interaction with healthcare outcomes. Longitudinal research that builds on our findings and studies organizational culture in dynamic ways is needed to understand how culture should change in favor of integrated care and to advance social value beyond the implications of our current findings.
Dissemination strategy

Translating the findings into value requires dissemination of knowledge and findings for which we have and will use different methods. We disseminated our findings across the academic community through presentations at scientific conferences specific to healthcare (e.g. AcademyHealth, International Conference on Integrated Care) as well as a broader audience (e.g. the Academy of Management Annual Meeting). We have published in scientific journals, such as Health Services Research and the International Journal of Integrated Care.

We have worked with researchers in other institutes. We have collaborated and shared data with researchers at the Harvard T.H. Chan School to establish the cross-cultural validity of the PPIC survey and to develop larger samples of patient-perceived integrated care experiences and facilitate cross-cultural learning. For this purpose, we have shared our experience with the translation, adaptation and validation of the PPIC survey for use in a new context with researchers in Germany and Scotland. In addition, we provided the National Institute for Public Health and the Environment with five PPIC survey questions for use in the national monitor to measure aspects related to integrated care in a national sample.

We have also disseminated our findings in the field. We presented our findings to participating organizations through presentations and fact sheets, which summarized organization’s performance related to patient-perceived levels of integrated care and presented how the organization’s culture was composed. We discussed our findings with a leading health insurer and reviewed opportunities for insurers to leverage the PPIC survey in efforts to improve patient experience, improve quality and to potentially reduce costs.

Future efforts

The value of the findings in this dissertation has not yet been fully exploited. Future activities based on the data and methods developed and presented in this dissertation include understanding differences among patients in perceived levels of integrated care in the Netherlands and cross-cultural comparisons of patient-perceived levels of integrated care across the Netherlands, the US, Scotland and Germany. Doing so lays the groundwork for benchmarking different systems and for cross-cultural learning about how integrated care can best be facilitated. It provides insights into systems’ strengths related to integrated care and identifies opportunities where largest improvements in patients’ experiences are likely to be achieved. Results will provide input for further research on organizational policy. These future activities will be conducted in the US as part of a Harkness Fellowship in Health Care Policy.
and Practice (September 2017-August 2018) awarded by the Commonwealth Fund, which is intended to stimulate innovative policies and practices in the United States and other industrialized countries. The Harkness fellowship at which’s very core is the belief that changes require collaboration between research, policy and practice will provide an exceptional opportunity to further develop the social value of the work in this dissertation. The insights generated during the fellowship will help to inform future research and educational activities at Stanford University in the US and Maastricht University in the Netherlands. In an alliance between the Division of Primary Care and Population Health at Stanford University and the department of Health Services Research at Maastricht University, insights generated during the fellowship will be compared to current policy reforms to understand how well aligned current policy reforms are with patient experiences of integrated care and the extent to which policy programs provide contextual factors that facilitate organizations in integrating care. The results of this comparison will provide targets for future healthcare and system reforms. Additionally, findings will inform academic educational curricula. Findings are particularly relevant to a Master program at Maastricht University, which seeks to train future healthcare providers, managers, leaders and policy makers in healthcare policy, innovation and management. Using the knowledge from this dissertation in modules related to strategic management and healthcare redesign seeks to sensitize future professionals for the importance of understanding patient needs, for what these needs are based on our findings and for how healthcare should be designed in ways that meet patient needs.
References

Health Council of the Netherlands. 2016. “Research that will make you better: A new orientation for umc research.”
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About the author
Maike Tietschert was born on March 8, 1988 in Koblenz, Germany. In 2007, she received her diploma from German secondary school from Julius-Wegeler-Gymnasium. During the same year, she enrolled in a General Health Sciences Bachelor’s program at Maastricht University in the Netherlands with a major in Healthcare Policy and Management and a minor in Nursing Sciences. In 2009, she obtained her Bachelor’s degree in General Health Sciences from Maastricht University after she successfully completed her bachelor thesis about the influence of principles, routines and beliefs on change within an academic hospital in the Netherlands. In 2011, Ms. Tietschert graduated from a Healthcare Policy, Innovation and Management Master Program. She completed her program with a Master thesis on the applicability of Organizational Development approaches in Healthcare. She received a Master of Science Degree in Public Health (Cum Laude) and received a Top 3%-student scholarship, which is awarded to the best three percent of students at the Faculty of Health, Medicine and Life Sciences at Maastricht University.

In 2012, Ms. Tietschert was awarded one of four prestigious NWO graduate program PhD positions at the Care and Public Health Research Institute (CAPHRI), sponsored by the Netherlands Organizations for Scientific Research (NWO), based on her proposal to study how organizational culture is associated with integrated care and how culture change that may facilitate integrated care could be initiated. At Maastricht University’s department of Health Services Research, Ms. Tietschert studied how organizational culture in different primary care teams is associated with the degree to which patients perceive their care to be integrated. In addition to her research activities, Ms. Tietschert fulfilled different teaching roles. She led trainings and tutorial groups, lectured, and mentored Bachelor and Master students in writing their graduation thesis. Topics on which she taught covered health economics, health policy and law, patient logistics and redesign, research methods and strategic management, and organizational change. From 2013 to 2015, Ms. Tietschert was a PhD representative at the Care and Public Health Research Institute at Maastricht University, in which she represented more than 300 PhD students and discussed developments and the strategic course of CAPHRI in board meetings with the scientific director and in meetings across all schools at the Faculty of Health Medicine and Life Sciences. In addition to her research in the Netherlands, Ms. Tietschert is part of a research team in the U.S. that works on distinguishing high- and low-performing physician organizations. In 2014 and in 2015, Ms. Tietschert was a visiting scholar at the Harvard T.H. Chan School for Public Health in Boston, Massachusetts. In 2017, Ms. Tietschert was awarded a Harkness Fellowship. The Harkness Fellowship is awarded by the Commonwealth Fund with the aim to build an international network of policy-oriented health care researchers, to spark innovative health policy thinking and high-level exchanges, and encourage comparative research and collaboration. Since September 2017, as part of her Harkness Fellowship, Ms. Tietschert is following a post-doctoral program at Stanford University, California. During her fellowship, she
conducts research about cross-cultural differences in patient-perceived integrated care and organizational determinants that may explain potential differences.
List of Publications
International publications


National publications


International conference contributions


