

An exploration of the role of companions for healthcare service quality

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Purpose - This study proposes that companions are an influential human factor on a customer's service quality perception, and demonstrates how a companion's diverse role-play influences customer perceptions of service quality in healthcare settings.

Design/methodology/approach – Field survey data from 201 respondents were analyzed using exploratory factor analysis, confirmatory factor analysis, and structural equation modeling.

Findings - This study proposes and validates scales for measuring companions' role-play and patients' role-play. It then demonstrates that the quality of a companion's role-play affects the quality of a patient's role-play, and that this eventually affects the patient's perceptions of service quality. The first effect is moderated by the quality of patient-companion relationships and by patient stress levels.

Research implications - First, this study extends the stream of research on the “human factors” involved in service encounters and demonstrates the importance of companions as such a factor. Further, this study empirically proves that the effect of companions on patients depends on the patient-companion relationship quality and the patient's stress level. Additionally, this study has put together comprehensive scales for measuring companions' and patients' roles, and empirically demonstrates their validity.

Practical implications - This study demonstrates to service practitioners that helping companions to effectively play their expected roles can enhance patients' perceptions of service quality. Furthermore, it shows specifically what types of companion roles are important to manage. Finally, it indicates in which circumstances the effects of companion role-play are greater, in terms of patient-companion relationship quality and patient stress levels.

Social implications - The importance of healthcare services for a society continues to grow as population ages. Accordingly, healthcare costs increase and create a burden on the society. Finding ways to make healthcare services more effective while keeping costs down is crucial for creating a sustainability society. This study proposes a way to keep healthcare more effective yet more efficient by proposing the importance of involving companions of patients more actively throughout healthcare processes.

Originality/value - This study is the first to emphasize and demonstrate the importance of managing companions as a human factor that influences customer perceptions of service quality. It also proposes a comprehensive scale for measuring companion and patient role-play, respectively.

Keywords Companion role-play, Patient role-play, Patient perception of service quality, Patient-companion relationship quality, Patient stress level

Paper type Research paper

1. Introduction

The roles of customers as co-producers of services have been well-researched in existing literature (Bitner *et al.*, 1997; Solomon *et al.*, 1985). This research stream has extended to cover the roles of other customers as third participants that shape services for focal customers. Other customers include both the known (e.g., family members or friends) and the unknown (e.g., those who coincidentally share service experiences) (Carù and Cova, 2015). The impact of unknown other-customers has been investigated (Berry and Seiders, 2008; Tombs and McColl-Kennedy, 2010; Tynan and McKechnie, 2009), but the impact of known other-customers has not.

A particular service industry in which the roles of known other-customers are particularly important is the healthcare industry. Due to their physical or mental insecurity, healthcare customers tend to be accompanied by family members or friends, which makes it important to examine the roles and influences of such companions in healthcare settings. When patients face serious conditions, they tend to want to be accompanied by others (Clayman and Morris, 2013). This can be due to their nervousness (Berry and Bendaupudi, 2007; Rook and Underwood, 2000; Uchino, 2009), uncertainty (Hibbard, 2009), or lack of confidence (Brown and Kirmani, 1999). Approximately, 40% of general patients and 60% of elderly patients are accompanied by another person when they go for treatment (Schilling *et al.*, 2002; Wolff and Roter, 2011). Organizations such as the US-based Agency for Health Research and Quality (AHRQ) and the National Institute of Aging (DeWalt, 2010) strongly recommend that patients be accompanied during hospital visits.

Companions' profound impacts on patients have been discussed in past healthcare research (Clayman *et al.*, 2005; Clayman and Morris, 2013). Companions have been shown to play key roles in providing help and support (Andrades *et al.*, 2013; Ishikawa *et al.*, 2005, 2006; Neuling and Winefield, 1988), reducing psychological stress (Glynn *et al.*, 2006; Laidsaar-Powell *et al.*, 2013; Neuling and Winefield, 1988; Seeman, 2000), and assisting in making better treatment decisions (Dy, 2007; Wolff and Roter, 2011) for patients. These extant studies on companions and the roles that they play have mostly focused on certain particular aspects of the companionship role, and are primarily descriptive in their approaches.

Considering that all participants of a service network play a key role in co-creating values (Lusch *et al.* 2007) and that value co-creation occurs not only in the process in which customers interact with the firms but also in the process in which customers utilize various public and private resources (McColl-Kennedy *et al.* 2012), it is necessary to define the role of companions, comprehensively account the diverse companionship role, and empirically examine its effects. Furthermore, the primary focus of existing research has been the impacts on patients, while potential impacts on healthcare firms have been under-addressed. To fill this gap in the research, we have first attempted to comprehensively compile information on companionship roles based on observations, practitioner interviews, and literature reviews.

We then examined the impact of these roles on patient perceptions of service quality, which is a vital performance measure for firms. Although no direct relationship between the two seems to be evident, we propose (1) that well-played companionship roles facilitate patient roles, which is critical to the successful delivery of healthcare services, (2) that better-facilitated patient roles contribute to service quality, and (3) that as a result, patient perceptions of service quality will improve. Furthermore, we propose that the impact of companions' role-play on patient role-play is moderated by two factors: patient-companion relationship quality and patient stress levels.

The remainder of this paper is organized as follows. First, the dimensions and measurement items for each of the two roles (companion and patient) are developed and presented. Second, our hypotheses are developed, supported, and discussed. Third, the methodology that we have adopted for data collection is shown. In the results section, the two scales for the two roles are first validated, and our hypotheses are then tested. The paper concludes with a discussion of our findings and contributions.

2. Literature Review

2.1. Companions in value co-creation

According to the service dominant logic (Vargo and Lusch, 2004), customers are not mere recipients of services but are co-creators of services (Prahalad and Ramaswamy, 2004; Vargo and Lusch, 2004), and value is created as customers use resources, interactions and outputs (Auh et al., 2007; Chan et al., 2010). Customers integrate various public and private resources in the service process to create value-in-use (McColl-Kennedy et al., 2012).

In the healthcare context, it is emphasized that patients should collaborate with the medical staff and actively participate in the healthcare service process (McColl-Kennedy et al., 2012; Sweeney et al., 2015). Furthermore, patients have to effectively apply various resources such as help from family and friends in the treatment process in order to increase service quality and satisfaction (Hausman, 2004, Dellande et al., 2004, Michie et al., 2003).

Recent years witnessed various efforts to identify healthcare customer value co-creation behaviors and demonstrate the effects. For example, McColl-Kennedy et al. (2012) divided value creation behaviors in the healthcare setting into role, behavior and interaction, and presented types of behaviors for each item through an exploratory research. Sweeney et al. (2015) presented how patients utilize various resources not only in a two-way relationship between patients and the medical staff but also in their private and public networks (family,

friends, government agencies, etc.), and demonstrated that the utilization intensity had a positive effect on customer service satisfaction, behavioral intentions and quality of life. These studies, however, have mainly focused on interactions between customers and service providers (Grönroos and Voima, 2013), leaving the interactions between customers and other various participants such as other customers, partners, and caregivers under studied. The latter interactions could contribute significantly to creating values in circumstances where complicated decision making activities occur such as in medical treatment contexts (McColl-Kennedy et al., 2012; 2006; Wolff and Roter, 2011).

2.2. The role of companions

Companions participate in service encounters as customers' helpers, guardians, and supporters. In order to identify the roles of companions, we reviewed literature on social support within the fields of service management and psychology. Social support refers to the help and aid received from others, and is a multi-dimensional concept comprising emotional, informational, and instrumental dimensions (Cobb, 1976; House, 1981; Schaefer and Olson, 1981). Emotional support makes people feel listened to, cared for, and loved. Informational support refers to the offering of advice and valuable information. Instrumental support relates to providing physical aid and, sometimes, offering monetary assistance. We have borrowed measures of social support to use in measuring the roles of companions in healthcare studies (Neuling and Winefield, 1988; Seeman, 2000). The current study focuses only on behaviors that occur during medical encounters, and thus excludes instrumental roles.

Instead, we focus on two new roles, which we propose based on our observations and literature review. During healthcare encounters, patients need and expect companions' help with following the various procedures involved in the service process. Due to their physical and mental weakness, patients may not feel confident in their ability to accurately follow

procedures as instructed. We refer to this helping role as the procedural role. Another new role that we propose is the communicational role. Recently, the importance of a shared medical decision-making paradigm has rapidly increased (Murray *et al.*, 2006). Within this paradigm, patients are encouraged to actively participate in decision-making processes. Companions are expected to facilitate the communications between physicians and patients, as well as to express their own thoughts and concerns. Overall, we propose a scale composed of four dimensions and 23 measures, which is presented in detail in the following subsection and summarized in Table II.

2.2.1. Emotional role

A companion's emotional role involves the behaviors and functions that support patients in better controlling their emotions (Dunkel-Schetter, 1984; Uchino, 2009). Patients tend to be anxious and concerned about their illnesses, and therefore require care for their emotional conditions as well as their physical conditions (Wortman, 1984; Winefield and Neuling, 1987). Companions should provide this care (Nordin *et al.*, 1999) by showing empathy and offering comfort (Neuling and Winefield, 1988).

As measures of the emotional role, we have adopted and modified the emotional support items in the multi-dimensional support scale (MDSS) (Neuling and Winefield, 1988). The MDSS was originally developed to measure the effects of the social support behaviors of family members, friends, and medical workers on patients' negative emotions, such as anxiety and depression. The items include encouraging patients to talk about their emotional feelings and illnesses, listening to patients carefully, trying to understand patients, showing concern about patients, telling patients not to worry, and telling jokes to keep patients' minds off their illnesses.

2.2.2. Informational role

Physicians require information on patients in order to carry out accurate diagnoses and treatments, while patients seek out information on their diseases and treatments from healthcare professionals (Ishikawa *et al.*, 2005, 2006; Laidsaar-Powell *et al.*, 2013). Companions' assistance is critical to facilitating the effective exchange of information between these two parties (Cegala *et al.*, 2007; Dy, 2007; McColl-Kennedy *et al.*, 2012; Neuling and Winefield, 1988) and to choosing the best diagnosis and optimum treatment methods (Makoul, 2001; Wolff and Roter, 2011). Hence, a companion's informational role can be defined as 1) providing necessary information on patients to healthcare professionals and 2) helping patients obtain information on available treatments.

As measures of the informational role, we have adopted and modified the items proposed by Neuling and Winefield (1988) and Ishikawa *et al.* (2006) in their studies on companions' helpfulness and active involvement in communication. The items that we have used include proposing new treatment methods, offering information on available treatment methods (Neuling and Winefield, 1988), providing disease-related information, and providing information on patients to medical professionals (Ishikawa *et al.*, 2006).

2.2.3. Procedural role

Patients need assistance with following instructions from medical professionals, and with following healthcare service procedures. A companion's procedural role refers to the offering of this type of assistance to patients, and corresponds to the tangible support proposed by Neuling and Winefield (1988), and the logistical assistance proposed by Wolff and Roter (2011). As measures of the procedural role, we have adopted and modified items from Andrades *et al.* (2013). These items include helping patients with registration, the preparation of forms, and physical tests.

2.2.4. Communicational role

Effective and efficient communication between patients and physicians is the key to building a positive relationship between the two (Street *et al.*, 2003). The two parties need to openly communicate with each other throughout the decision-making process in order to enable optimal treatment (Murray *et al.*, 2006). In general, healthcare service encounters involve a triadic interaction (Laidsaar-Powell *et al.*, 2013) between the patient, physician, and companion. A companion's communicational role is to enhance and assist with communication in this triadic relationship.

As measures of the communicational role, we have adopted and modified six items from Ishikawa *et al.* (2006), as well as items from Clayman *et al.* (2005). The items included are expressing concerns about patients to healthcare staff, asking questions to physicians, repeating or clarifying physicians' statements to patients, facilitating talk between patients and physicians, remembering what medical staff have said, asking patients questions about their illnesses, asking patients to express their opinions, checking if patients have provided information correctly, and helping patients to build good relationships with medical staff.

2.3. The roles of patients

Patients' active participation in the healthcare process is important to the achievement of desirable healthcare outcomes (Dellande *et al.*, 2004; Hausman, 2004). Patients are expected to play active roles by providing information on their physical conditions, desired outcomes and goals, risk perceptions, and psychological conditions, such as worries and anxiety (Gallan *et al.*, 2013). In a recent study exploring the activities of customer value co-creation in healthcare settings (Sweeney *et al.*, 2015), a hierarchy of activities with varying degrees of customer effort was proposed. Clinic-based activities were grouped into four categories:

active sharing of information, compliance with basic requirements, proactive involvement in decision-making, and active interaction with clinic staff. The study also emphasizes the roles of positive thinking and emotional regulation as self-generated behavior. In our study, customer efforts are restructured to address four dimensions of a patient's role: the procedural role (compliance with basic requirements), the communicational role (sharing information and interacting with clinic staff), the decision-making role, and the emotional role (positive thinking and emotional regulation). The definition and measurement items for each dimension are presented in the following subsections.

2.3.1. Procedural role

Patients have to follow various instructions and procedures throughout the service process. For example, patients are expected to register for services, prepare forms, wait for services, move to specific locations for examinations, and carefully follow test steps. Hence, patients' procedural roles can be defined as following the instructions of medical professionals with regard to service procedures (Andrades *et al.*, 2013). As measures, we have adopted items related to physical procedures from the items proposed by Andrades *et al.* (2013). These are registration and payment, preparation of forms, prompt response to the announcement of patients' turns, appropriate response to healthcare professionals' requests, and compliance with instructions.

2.3.2. Communicational role

Effective communication is a vital element of the successful delivery of healthcare services (Street *et al.*, 2003). To obtain treatments that are customized to their specific conditions, patients need to actively express their opinions on their expected outcomes and goals, and work to provide the information required by medical professionals (Cegala *et al.*,

2007; Dy, 2007; Epstein *et al.*, 2005). In other words, patients should actively participate in the communication process with physicians. Patients' communicational roles are defined as the behaviors of asking necessary questions and answering the questions asked by healthcare staff (Brody *et al.*, 1989). As measures of the communicational role, we have adopted and modified the items proposed by Brody *et al.* (1989) and Street *et al.* (2003). Items include sharing one's status (illness and feelings) and asking physicians to explain problems, medical symptoms, treatments, and procedures.

2.3.3. *Decision-making role*

In general, decision-making refers to “a verbal statement committing to a particular course of action” (Braddock *et al.*, 1997). In healthcare settings, patients' decision-making roles involve actively seeking out relevant information and agreeing on optimal treatments during medical consultations (Clayman *et al.*, 2005). Since medical services aim to involve shared decision-making with regard to treatment methods (Charles *et al.*, 1999; Murray *et al.*, 2006; Wolff and Roter, 2011), patients are expected to actively participate in decision-making processes and make their own decisions by considering the recommendations of their physicians and companions.

To assess the level of patient participation in decision-making activities, Braddock *et al.* (1997) developed a coding system named the “elements of informed decision-making” for primary care situations. Five of the six items for discussion with a physician in this coding system have been adopted for this study: treatment alternatives, their benefits, their risks, the uncertainty associated with decisions, and patient preferences. One excluded item concerned the roles of medical service providers, which goes beyond the scope of this study.

2.3.4. *Emotional role*

The emotional role of patients is to control and manage their emotions throughout the service process (Nordin *et al.*, 1999), or to cope with stressful situations and try to stay positive (Billings and Moos, 1981; Nordin *et al.* 1999). Negative emotions such as anxiety, depression, and loss of control can discourage patients from participating in the healthcare process, and diminish their ability to absorb information or communicate with doctors (Nordin *et al.*, 1999). Therefore, in order to arrive at desirable healthcare encounter outcomes, patients should control these emotions (Beisecker *et al.*, 1997; Schilling *et al.*, 2002; Wolff and Roter, 2008). As measures of this role, we have adopted items from Billing and Moos (1981). Their 19-item coping response scale has been used to examine how coping helps reduce the stress of life events. The items are either emotion-focused or problem-focused (Folkman and Lazarus, 1980), but only emotion-focused items have been adopted for the current study. Of these emotion items, avoidance items such as bingeing have been excluded. The four adopted items are seeing the positive side of a disease, being more objective about the disease, not worrying about the disease, and getting busy with other things to keep one's mind off the disease.

3. Hypothesis development

The primary purpose of this study was to examine the impact of patients' perceptions of the quality of a companion's role-play on their perceptions of the quality of a healthcare firm. We thus assess the impact of a companion's role-play on a healthcare firm. We propose that this impact is mediated by the perceived quality of the patient's own role-play and moderated by the patient-companion relationship and the patient's stress level. To confirm the importance of the patient's service quality perceptions, we also examine the impact of service quality perception on patient satisfaction. The proposed research model is as summarized in

Figure 1. The theoretical background for each hypothesis is presented in the following subsections.

3.1. The effect of a companion's role-play on a patient's role-play

According to social cognition theory, when an individual observes others' performances, he or she acquires new skills that are suitable to the relevant situation, learns effective and appropriate strategies for coping with problems, and consequently gains confidence in his or her abilities (Compeau and Higgins, 1995). This confidence increases the individual's efforts and persistence, and leads to better performance (Bandura, 1986). Social cognition theory can help to explain the effect of customer participation behaviors on employee performance (Yi *et al.*, 2011). When an employee has an opportunity to learn effective strategies through the resources, efforts, encouragement, and assistance offered by customers, and through their active participation in the service delivery process, the employee's performance tends to improve (Yi and Gong, 2013). During healthcare service encounters, patients observe and receive help from companions. By observing these companions' positive performances, patients can better understand, learn effective approaches to carry out, and eventually better perform their own roles.

If human functioning is based on reciprocal interplay (Bandura, 1986), companions can influence patients through interpersonal activities. Role theory and social exchange theory can help explain this influence. According to the former, a patient's behavior is the result of its context (Callero *et al.*, 1987; Oeser and Harary, 1964), and therefore various social-exchange processes (contexts) that patients face through their companions will affect their performance. The reciprocity norm of social exchange theory (Gouldner 1960; Homans, 1961) explains that when people receive benefits, they develop a sense of obligation and try to return those benefits. Accordingly, when patients receive help from companions, they feel

obligated to behave and act favorably, which can be manifested as improved role-play. Taken together, we propose the following:

H1: A patient's perceptions of the quality of a companion's role-play will positively influence the quality of that patient's role-play.

3.2. The effect of a patient's role-play on the patient's perceived service quality

Perceived service quality, as a customer's overall evaluation of service processes (Bolton and Drew, 1991; Cronin and Taylor, 1992), has been demonstrated to be clearly influential on customer behaviors, loyalty, purchase intentions (Zeithaml *et al.*, 1996), and ultimately the service firm's performance (Parasuraman *et al.*, 1988). As the production and consumption of services occur simultaneously, customers contribute to services (Lengnick *et al.*, 2000) through their participation in the service process (Fitzsimmons and Fitzsimmons, 2006; Svensson, 2003). The more actively customers participate in the service process, the higher their levels of perceived service quality tend to be (Claycomb *et al.*, 2001; Edvardsson, 2005). Particularly in healthcare services, the outcome of interactions between physicians and patients depends greatly on whether customers are merely present or actively play their expected roles (Claycomb *et al.*, 2001). Given these considerations, we propose the following:

H2: The quality of a patient's role-play will positively influence that patient's perception of service quality.

3.3. The effect of a patient's perceived service quality on service satisfaction

Customer satisfaction is the state in which a customer is satisfied after the use of goods or services (Oliver *et al.*, 1997). The high correlation between a customer's perceptions of service quality and satisfaction has been clearly demonstrated (Cronin *et al.*, 2000; Oliver *et al.*, 1997). In healthcare services, the service quality dimensions of attitudes, functional skills, and communication styles of service providers have been shown to greatly influence patient satisfaction (Bitner *et al.*, 1990; Dagger *et al.*, 2007; Parasuraman *et al.*, 1985). Thus, we propose the following:

H3: A patient's perceptions of service quality will positively influence that patient's satisfaction.

3.4. Moderation effects

We propose that the effect of a companion's role-play on a patient's role-play depends on the quality of the patient-companion relationship, and on the patient's level of stress.

3.4.1. The moderating effect of patient-companion relationship quality

In healthcare services, the relationship between a patient and his or her companion has a significant impact on the patient (Silliman *et al.*, 1989; Wortman and Dunkel-schetter, 1979). When patients are not satisfied with their companions, they can develop anxiety, insecurity, and other negative emotions (Barrera *et al.*, 1981; Henderson *et al.*, 1978). The levels of expectations that a patient has for a companion can also vary based on the quality of this relationship. Social relationship theory explains that individuals generally have a sense of balance, and therefore provide others with just as much as they receive from them in a relationship (Elangovan and Shapiro, 1998). Any perceived inequity thus results in negative evaluations (Elangovan and Shapiro, 1998). In communal relationships with family and

friends, people share trust and intimacy with others. The higher the level of a patient's intimacy and trust in a companion is, the higher his or her level of reliance on and expectation of the companion may be (Reis and Shaver, 1988). Consequently, patients might take their companion's good role-play for granted, and this may weaken the impact of the companion's role-play on the patient's role-play. Accordingly, we propose the following:

H4a: The effect of a companion's role-play on the patient's role-play depends on the patient-companion relationship quality, such that the effect will be stronger when the relationship quality is lower.

3.4.2. The moderating effect of patient stress level

Patients tend to suffer from negative emotions (Nordin *et al.*, 1999), which complicate healthcare encounters (Wolff and Roter, 2011). Depending on a patient's stress level, the level of emotional support that he or she needs can vary, as can the level of his or her recognition of others' supportive behaviors (Rook and Underwood, 2000; Uchino, 2009). Patients want and expect their companions to participate in the healthcare service process on their behalf (Beisecker and Moore 1994; Beisecker *et al.*, 1997). Such wants and needs grow stronger as a patient's illness grows more serious (Rook and Underwood, 2000). As discussed in the preceding section, such increasing expectations necessarily result in perceived inequity (Elangovan and Shapiro, 1998). Thus, patients experiencing a higher level of stress tend to require a higher level of support from companions, and thus may not easily recognize or appreciate the utility of the roles and assistance provided by their companions. As such, we propose the following:

H4b: The effect of a companion's role-play on a patient's role-play depends on the patient's

stress level, such that the effect will be stronger when the stress level is lower.

4. Methodology

4.1. Sampling and data collection

We chose the field of orthopedics as our study context, since orthopedic patients tend to be accompanied by others due to their difficulty in moving around. More specifically, we chose an orthopedics department in a general hospital, as it is a setting in which patients are highly likely to be accompanied by others, as they typically have serious conditions that require a visit to a general hospital rather than a local clinic (Park and Park, 2011). A self-administered survey was conducted among outpatients who were 18 years old or older and were accompanied by someone. Participants were given a questionnaire at the end of their hospital visit so that they could assess the quality of the service as a whole.

4.2. Measures

There are six primary variables in the proposed research model: companion's role-play, patient's role-play, patient's perceived service quality, patient satisfaction, patient-companion relationship quality, and patient stress level. The measures for the first two variables have been presented in detail in sections 2 and 3, above. The measures for the remaining four variables are presented in the following subsections. All variables except for the two moderating variables were measured on a 7-point Likert scale.

4.2.1. Perceived service quality

The most widely recognized and used measure for service quality is SERVQUAL (Parasuraman *et al.*, 1988), which can be modified to fit the unique characteristics of diverse

service sectors. In this study, we adopted SERVQUAL items that were modified by Babakus and Mangold (1992) to fit the characteristics of healthcare services.

4.2.2. Patient satisfaction

We adopted satisfaction items developed specifically by Dagger *et al.* (2007) for healthcare services. Two items related to treatment outcomes were excluded, since our study subjects were still in the process of being treated.

4.2.3. Patient-companion relationship quality

The quality of patient-companion relationships was measured based on the levels of trust and intimacy involved (Reis and Shaver, 1988). Rempel *et al.* (1985) define trust as a strong belief in and reliance on human relationships, and have developed a scale comprising 26 items. As patients and companions are familiar with each other and the durations of their encounters during hospital visits are relatively short, we have only adopted six out of the 26 potential items. Schaefer and Olson (1981) define a patient's intimacy with a companion in terms of the patient's willingness to disclose personal stories and interact with the companion, and have developed a scale for this, known as the "personal assessment of intimacy in relationships" (PAIR). In our study context, the patients suffered from medical conditions, were familiar with their companions, and needed emotional support due to their physical frailty and negative sentiments. As such, we have used four of the five PAIR items (Table III).

4.2.4. Patient stress level

John (2004) has developed a scale for measuring the subjective well-being of humans. This scale is typically applied in social sciences, medicine, and pharmacies. The four factors

in this scale are stress and strain, tension, exhaustion, and concern over health. We have adopted the items related to the stress and strain factor, which are: feeling tense or on edge, being worried about one's health, and feeling exhausted, worn out, or at the end of one's rope (Table III).

5. Results

A total of 273 questionnaires were distributed and 244 responses were obtained. After the elimination of eight incomplete answers and 35 responses with inconsistent answers to reverse-coded questions, finally we used 201 valid responses. This yielded a valid response rate of 82.4%.

5.1. Respondent profile

Overall, there were more female respondents than male (55.7% of patients and 68.2% of companions) (Table IV). Female dominance among companions is typical (Wolff and Roter, 2011). The average age of companions ($M=38$) was lower than that of patients ($M=42$). The knowledge about illness and treatment methods and familiarity with hospital services were measured on a 6-point Likert scale, so as to create an easy split between the high and low group, which is necessary for a moderation analysis. Both had good knowledge of illness and treatment methods ($M=4.8$ for patients, $M=4.74$ for companions) and were familiar with hospital services ($M=4.8$ for patients, $M=4.68$ for companions).

5.2. EFA results

First, steps were taken to validate the scales for companion role-play and patient role-play (Churchill, 1979; Gerbing and Anderson, 1988). As a result of an exploratory factor analysis, using a principal component analysis and a Varimax rotation, a four-factor scale for

companions' role-play (Table V) and a three-factor scale for patients' role-play were obtained (Table VI). Items with an absolute factor loading value of .5 or lower and items with a cross-loading value of .4 or higher (Hair *et al.*, 2006) were eliminated.

5.3. CFA results

To confirm the properties of the two purified scales, a CFA analysis was conducted. Our sample size of 201 was deemed large enough for this analysis (Hoelter, 1983). Items with a modification index (MI) of 10 or higher were deleted to obtain an acceptable model fit (Schermbellen-Engel *et al.*, 2003). The resulting model's internal consistency was confirmed, as all factor loadings were significant ($p < .001$) and all factor loadings and composite reliabilities were greater than .7, except for the procedural role of companions, which had a reliability of .67 (Bagozzi and Yi, 1988). Convergent validity was confirmed by the average variance extracted (AVE) values for all factors, which were greater than .5, except, again, for the procedural role of companions (.39) (Bagozzi and Yi, 1988) (Table VII and IX). As such, we dropped the procedural role factor from companion's role-play. Comparisons between the AVE values and coefficients of determination confirmed the discriminant validity (Fornell and Larcker, 1981) (Table VIII and X). As a result, we proposed a three-factor scale with 10 items for companion's role-play, with four items for communicative role, four items for emotional role, and two items for informational role (Table VII). We also proposed a three-factor scale with eight items for patient's role-play, with three items for procedural role, three items for decision-making role, and two items for emotional role (Table IX).

5.4. Hypothesis tests

5.4.1. Overall model

To confirm the discriminant validity, reliability, and convergent validity of the hypothesized measurement model, a CFA was conducted. Reliability was confirmed for all items with Cronbach's alphas of .7 or greater (Nunnally, 1978). The model fit was determined to be acceptable ($\chi^2 = 707.231$, $df = 413$, $p < .001$, CFI = .938, TLI = .930, RMSEA = .060). Discriminant validity across all constructs was confirmed according to the standard set out by Fornell and Larcker (1981) (Table XI and XII). A structural equation modeling analysis was used to estimate the theoretical model depicted in Figure 1. The fit for the corrected model was acceptable ($\chi^2 = 629.481$, $df = 291$, $p < .001$, CFI = .932, TLI = .912, RMSEA = .056). Each hypothesis was tested based on the corresponding estimated path coefficient (Table XIII). The results showed that all of the hypothesized effects were significant ($\beta = .766, .601, .893$ for H1, H2, H3, respectively; $p < .01$ for all). Consequently, H1, H2, and H3 were accepted (Table XIII). The path coefficients were highest ($\beta = .88$) for the informational role among the companion's roles, and for the procedural role ($\beta = .86$) among the patient's roles (Figure 2).

5.4.2. Moderation effects

To test the moderation effects of patient-companion relationship quality and patient stress level, the sample was divided by the median split of each variable (Baron and Kenny, 1986; James and Brett, 1984). A multi-group analysis was then conducted, and a significant difference between the groups was found for both variables (Sauer and Dick, 1993). When the free model and constrained model for relationship quality were compared, the χ^2 change was 51.282, with a degree of freedom change of 24, indicating a significance in the differences at $p < .001$. For stress level, the chi-square change was 50.004, indicating a significance at $p < .001$ (Table XIV). The coefficient of the path from the companion's role-play quality to the patient's role-play quality was higher for the low relationship quality

group and for the low stress group than for the respective counterpart group. Thus, H4a and H4b were both accepted (Tables XV and XVI).

5.4.3. Mediating effect of patient's role-play

To test the mediating effect of the patient's role-play on the patient's perceived quality of companion's role-play and perceived service quality, a bootstrapping bias-corrected interval procedure was carried out in SEM (Cheung and Lau, 2008). The bootstrapping test of the indirect effect is known to be more powerful than Sobel's test (Preacher and Hayes, 2004). A bias-corrected percentile method generated at 95% confidence intervals was used. The result showed that the indirect effect is significant ($\gamma = .46, p < .05$) (Table XVII).

As a double check, the partial mediating model was compared to the full mediating model. A partial mediating model was constructed by adding a direct path from companion's role-play to perceived service quality. The partial mediation model showed an acceptable fit ($\chi^2 = 620.755, df = 290, p < .001, GFI = 0.835, CFI = 0.921, TLI = 0.924, RMSEA = 0.056$). The change in χ^2 was 8.736, indicating a significance at $p < .05$. The goodness of the model fit for the partial mediation model was better than that for the full mediation model (Tables XVIII and XIX). These two outcomes confirmed the mediating role of patient's role-play.

6. Summary and discussion of findings

The main purpose of this study was to propose and empirically examine a model of the impact of companions' role-playing on healthcare service firms. In order to test the hypothesized effects, a scale for companion's role-play and a scale for patient's role-play were first developed. A three-factor model of 10 items was proposed for the former, while a three-factor model of eight items was proposed for the latter. A structural equation modeling analysis showed support for all proposed hypotheses, demonstrating that the quality of a

companion's role-play influences a patient's perceptions of service quality, but that this is partially mediated by the quality of the patient's role-play. This effect was shown to be dependent on patient-companion relationship quality and patient stress level.

6.1. Managerial implications

The findings of this study offer several insights for healthcare practitioners. First, the procedural role factor was dropped from our scale for companion's role but was kept in our scale for patient's role. This implies that patients consider following healthcare procedures to be distinctly within the role of the patient, and not of the companion. Second, a patient's perceptions of the quality of a companion's role-playing were found to affect the patient's perceptions of service quality. This implies that companions are not mere assistants to patients but influence the ways that patients perceive the quality of services. Hence, service firms should consider companions as an additional human factor that influences customers' perceptions of the outcomes of their service, should carefully design their roles, and should facilitate the effective accomplishment of those roles (Fitzsimmons and Fitzsimmons, 2006; Lengnick *et al.*, 2000; Svensson, 2003).

Third, the effect of a companion's role-play on a patient's role-play is contingent on the quality of the patient-companion relationship. The effect is greater when the quality is lower. Conversely, when the quality of the relationship is high, patients might take their companions' support for granted and thus might not recognize or appreciate the roles that they play as much as they should (Elangovan and Shapiro, 1998). This implies that healthcare firms should try to maintain awareness of patient-companion relationship quality and pay special attention to companions' roles when the quality of such relationships is found to be low. Fourth, the effect of a companion's role-play on a patient's role-play was found to be contingent on the patient's stress level. The effect was greater when stress levels were lower.

When patients experience a high level of stress, their sensitivity to the quality of their companions' role-playing may be low, and the patients may thus not even properly recognize companion support. This implies that the effectiveness of companion role management strategies might vary based on various factors, such as the seriousness of a patient's illness, the patient's personal circumstances, and the patient's stress resistance. Healthcare firms should customize their levels of companion role management according to the stress levels of individual patients.

6.2. Theoretical implications

This study makes several theoretical contributions. First, it extends the stream of research on the "human factors" involved in service encounters (Solomon *et al.*, 1987), and shows that companions should be considered to be a human factor that influences the accomplishment of desirable service outcomes. More specifically, this study emphasizes the need for and importance of managing companions' role-play in order to improve customer perceptions of service quality. It builds on recent studies that have emphasized the importance of managing "other customers" for the successful service delivery outcome (Wu, 2008; Yoo *et al.*, 2012), and empirically demonstrates that importance. Second, this study has put together comprehensive scales for measuring companions' and patients' roles, and empirically demonstrates their validity. These two scales, developed in an orthopedic setting, can serve as a useful basis for their further development in diverse healthcare or service settings. Third, this study empirically proves that the patient-companion relationship matters in terms of the effects of companions on patients (e.g., Silliman *et al.*, 1989; Wortman and Dunkel-schetter, 1979), and demonstrates that a companion's role matters more when the quality of that relationship is low. Fourth, this study provides empirical support for the proposition that the emotional support required and perceived utility of supportive behaviors

of a third party vary based on a patient's stress levels (Rook and Underwood, 2000; Uchino, 2009). This finding is consistent with previous suggestions that in healthcare situations, patients' negative sentiments are likely to negatively affect their ability to receive and process information (Nordin *et al.*, 1999). Accordingly, this study has shown that the impact of a companion's role is greater when a patient's stress level is low.

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Figure 1. Proposed research model

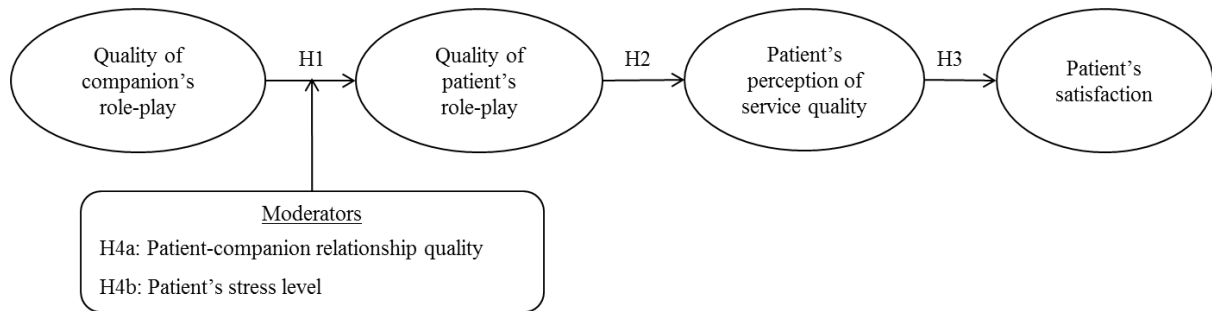


Figure 2. Factor loadings and path coefficients of the measurement model

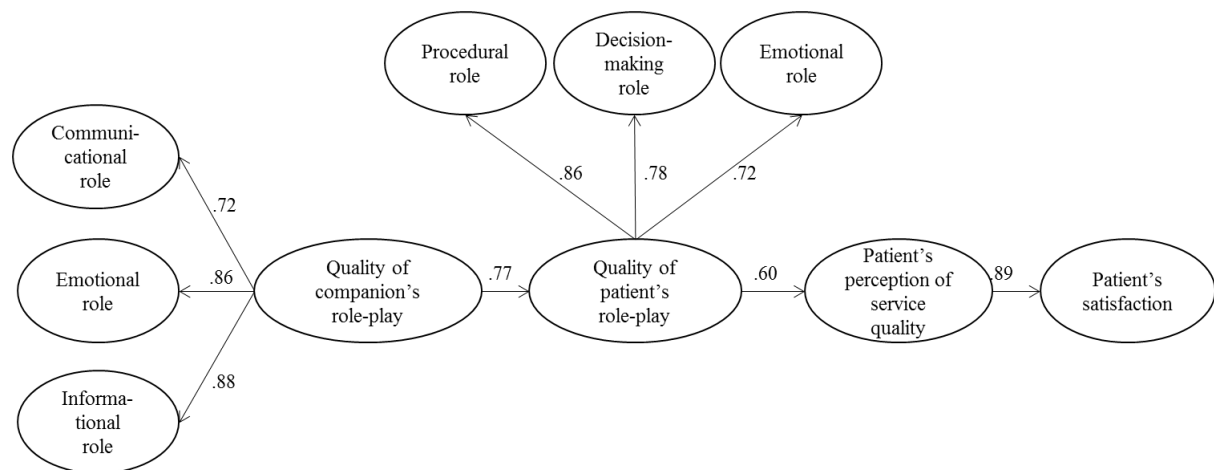


Table I. The role of companions in healthcare settings

Role	Research topic	Authors
Positive, negative	Role and type of companion, from the patient's perspective	Adelman <i>et al.</i> , 1987
Emotional support	The impact of the supportive social behavior of families, friends, and medical professionals on breast cancer patients	Neuling and Winefield, 1988
Emotional support	The impact of companions on the physical and mental health of patients	Seeman, 2000
Emotional support, communication, assistance in communication	The effect of companion accompaniment on patients' satisfaction with doctors	Wolff and Roter, 2008
Emotional support, procedural assistance	Types of companions	Andrades <i>et al.</i> , 2013
Support for communication	The role of companions of older patients in tripartite communications (doctor-patient-companion)	Ishikawa <i>et al.</i> , 2005
Support for communication	The assistance of companions as perceived by patients, and its role in communications	Ishikawa <i>et al.</i> , 2006
Support for communication	The effect of the long-term engagement of family members on the quality of medical service and the restoration of the mental health of patients	Glynn <i>et al.</i> , 2006
Communication, assistance in communication	The types and roles of companions, and the impact of companions on care for patients, quality of treatment, and interpersonal process	Wolff and Roter, 2011

Table II. Theoretical foundations for the roles of companions

Perspective	Companion’s role	Social support	Customer participation behavior
Dimension	Emotional role	Emotional support	Personal interaction
	Communicational role	Informational support	
	Informational role		Instrumental support
	Area	Healthcare	Social psychology
Source	See Table I	Cobb, 1976; House, 1981; Schaefer and Olson, 1981	Yi and Gong, 2013

Table III. Measurement items

Construct	Dimension	Item
1. Quality of companion's role-play		<i>My companion...</i>
	Emotional role (E)	1. Encouraged me to talk about my emotional feelings and my illness.
		2. Listened carefully to what I said.
		3. Tried to understand me.
		4. Told me that he or she is concerned about me.
		5. Told me not to worry as everything would be alright.
		6. Told jokes and chatted with me to keep my mind off the illness.
	Informational role (I)	1. Suggested new ways of looking at my illness.
		2. Offered advice about available treatments.
		3. Provided medical information.
		4. Provided information about my lifestyle and medical history to medical staff.
	Procedural role (P)	1. Helped me with registration.
		2. Helped me to fill out forms.
		3. Helped me to follow all of the instructions given by the medical staff.
		4. Helped me to find the next places to go to.
	Communicational role (C)	1. Expressed his or her concern about me to the physician.
		2. Asked questions to the physician on my behalf.
		3. Repeated or clarified for me what medical staff had said.
		4. Facilitated talks between me and my physician.
		5. Remembered what the physician said.
		6. Asked me questions about my illness.
		7. Asked me to express my opinion to medical staff.
		8. Checked whether I was providing information correctly.
		9. Helped me to build good relationships with medical staff.
2. Quality of patient's role-play	Procedural role (P)	1. I performed registration according to directions.
		2. I filled out all of the forms carefully and completely.

		3. I tried hard not to miss my turn during wait times.
		4. I tried to follow all of the instructions given by the medical staff.
		5. I cooperated pleasantly with the medical staff.
	Communicational role (C)	1. I went into great detail about my medical symptoms.
		2. I told my physician what I believed was causing my medical symptoms.
		3. I asked the doctor for an explanation of my problems.
		4. I talked about my personal concerns related to my medical symptoms.
		5. I asked my physician to explain treatments or procedures to me in a greater detail.
		6. I asked my physician for recommendations about my medical symptoms.
	Decision-making role (D)	1. I discussed treatment alternatives with the physician.
		2. I discussed the benefits of the alternatives with the physician.
		3. I discussed the risks of the alternatives with the physician
		4. I discussed the uncertainties associated with the decision with the physician
		5. I discussed my preferences for treatment with the physician.
	Emotional role (E)	1. I tried to see the positive side of the disease.
		2. I tried to be more objective about my disease.
		3. I tried to not worry about the disease, and figured everything would probably work out fine.
		4. I tried to get busy with other things in order to keep my mind off the disease.
3. Patient-companion relationship quality	Intimacy	1. My companion listens to me when I need someone to talk to.
		2. I can state my feelings without my companion getting defensive.
		3. I often feel distant from my companion (reverse scored).
		4. My companion can really understand my pain and joys.
	Trust	1. I can count on my companion to be concerned about my welfare.
		2. I am familiar with and can rely on the patterns of behavior that my companion has established.
		3. I know that my companion will always be ready and willing to offer me strength and support.
		4. I know that my companion is dependable when it comes to things that are important to me.
		5. When I am with my companion, I feel secure in facing new and unknown situations.

		6. I am willing to let my companion make decisions for me.
5. Patient's stress level (S)		1. I felt tense or on edge.
		2. I was worried about my health
		3. I felt exhausted, worn out, or at the end of my rope.
6. Patient's perception of service quality		<i>This hospital ...</i>
	Tangibles	1. Has up-to-date equipment.
		2. Has visually-appealing physical facilities.
		3. Has a medical staff that is well-dressed and appears neat.
	Reliability	4. Provided services at the time that was promised.
		5. Has a medical staff that is sympathetic and reassuring when patients have problems.
		6. Kept records accurately.
	Responsiveness	7. Has a medical staff that told me exactly when services would be performed.
		8. Has a medical staff that provided prompt service to me.
		9. Has a medical staff that is willing to help patients.
	Assurance	10. Made me feel safe in my interactions with medical staff.
		11. Has a medical staff that is knowledgeable.
		12. Has a medical staff that seems to get the kind of adequate support from employers that allows staff members to do their jobs well.
	Empathy	13. Has a medical staff that is polite.
		14. Has a medical staff that gave me personal attention.
		15. Has the patient's best interests at heart.
7. Patient satisfaction		1. Overall, I am satisfied with this clinic and the service that it provides.
		2. I feel good about coming to this clinic for my treatment.
		3. My feelings toward this clinic are very positive.

Table IV. Respondent characteristics

	Patients n(%)	Companions n(%)
Gender		
Male	89(44.3)	64(31.8)
Female	112(55.7)	137(68.2)
Age		
19-29	68(33.8)	30(14.9)
30-39	33(16.4)	21(10.4)
40-49	41(20.4)	63(31.3)
50-59	43(21.4)	70(34.8)
60+	16(8)	17(8.5)
Level of knowledge about illness and treatment methods		
1	2 (1.0)	1 (0.5)
2	5 (2.5)	4 (2.0)
3	24 (11.9)	20 (10.0)
4	45 (22.4)	56 (27.9)
5	68 (33.8)	70 (34.8)
6	38 (18.9)	41 (20.4)
7	19 (9.5)	9 (4.5)
Level of familiarity with hospital services		
1	5 (2.5)	7 (3.5)
2	7 (3.5)	8 (4.0)
3	26 (12.9)	23 (11.4)
4	42 (20.9)	47 (23.4)
5	51 (25.4)	54 (26.9)
6	46 (22.9)	44 (21.9)
7	24 (11.9)	18 (9.0)

Table V. EFA results on the quality of companion's role-play

Items	Communicational role	Emotional role	Procedural role	Informational role
C 7	0.921	0.079	0.153	0.025
C 6	0.916	0.103	0.121	0.062
C 5	0.811	0.121	0.309	0.15
C 3	0.81	0.137	0.217	0.099
C 8	0.775	0.186	0.274	-0.007
C 9	0.741	0.248	0.358	0.021
C 4	0.709	0.238	0.156	0.315
C 1	0.67	0.036	0.574	0.146
I 4	0.665	-0.002	0.489	0.226
C 2	0.663	0.195	0.501	0.156
E 3	0.092	0.886	0.141	-0.014
E 1	0.161	0.869	0.086	0.136
E 2	0.123	0.859	0.091	0.083
E 6	0.141	0.729	-0.031	0.329
E 4	0.103	0.716	0.324	0.073
E 5	0.134	0.708	0.255	0.186
P 1	0.192	0.164	0.825	0.130
P 2	0.335	0.238	0.697	0.08
P 4	0.404	0.149	0.676	0.217
I 3	0.483	0.059	0.655	0.202
P 3	0.275	0.331	0.649	-0.051
I 1	0.199	0.265	0.091	0.844
I 2	0.129	0.235	0.274	0.828

Table VI. EFA results on the quality of patient's role-play

Items	Procedural role	Decision-making role	Emotional role	Communicational role
P 2	0.812	0.125	0.211	0.089
P 4	0.805	0.240	0.172	0.109
P 1	0.784	0.125	0.273	-0.022
P 5	0.736	0.069	0.427	0.204
C 1	0.715	0.300	0.310	0.165
C 2	0.689	0.269	0.320	0.246
P 3	0.680	0.202	-0.057	0.303
C 4	0.628	0.345	0.356	0.240
C 3	0.584	0.372	0.304	0.291
D 3	0.223	0.817	0.344	0.162
D 1	0.224	0.808	0.043	0.246
D 4	0.278	0.805	0.348	0.087
D 2	0.194	0.787	0.006	0.414
E 3	0.155	0.194	0.827	0.185
E 2	0.395	0.148	0.780	0.028
E 4	0.483	0.154	0.688	0.231
E 1	0.503	0.173	0.518	0.379
C 5	0.169	0.199	0.197	0.808
D 5	0.201	0.386	0.134	0.791
C 6	0.322	0.343	0.488	0.541

Table VII. CFA results on the quality of companion's role-play

Dimensions	Items	Factor loadings	S.E.	C.R.	A.V.E.
Communicational role	C 8	0.823	0.93	0.799	0.500
	C 7	0.907	0.45		
	C 5	0.856	0.746		
	C 3	0.823	0.804		
Emotional role	E 4	0.725	0.862	0.849	0.586
	E 3	0.858	0.501		
	E 2	0.875	0.344		
	E 1	0.900	0.295		
Procedural role	P 3	0.775	0.862	0.665	0.398
	P 2	0.783	0.939		
	P 1	0.766	0.915		
Informational role	I 2	0.858	0.467	0.717	0.559
	I 1	0.819	0.641		

Table VIII. Validity check for the quality of companion's role-play

	Emotional	Informational	Communicational
Emotional	0.586 [*]		
Informational	0.221 ^a (0.470) ^b	0.559 [*]	
Communicational	0.110 ^a (0.332) ^b	0.141 ^a (0.375) ^b	0.500 [*]

(^a correlation coefficient, ^b determinant coefficient, ^{*} AVE)

Table IX. CFA results on the quality of patient's role-play

Dimensions	Items	Factor loadings	S.E.	C.R.	A.V.E.
Procedural role	P 1	0.803	0.339	0.844	0.665
	P 2	0.871	0.276		
	P 4	0.799	0.512		
Decision- making role	D 1	0.723	0.776	0.831	0.624
	D 2	0.972	0.117		
	D 3	0.886	0.466		
Emotional role	E 2	0.941	0.156	0.748	0.600
	E 3	0.733	0.79		

Table X. Validity check for the quality of patient's role-play

	Procedural	Decision-making	Emotional
Procedural	0.665 [*]		
Decision-making	0.314 ^a (0.560) ^b	0.624 [*]	
Emotional	0.379 ^a (0.616) ^b	0.296 ^a (0.544) ^b	0.600 [*]

(^a correlation coefficient, ^b determinant coefficient, ^{*} AVE)

Table XI. Factor loadings in the measurement model

Factor or item	Standardized factor loading	<i>t</i> -value
Quality of companion's role-play		
Communicational role	0.721	Marker
Informational role	0.878	6.601
Emotional role	0.855	6.021
Quality of patient's role-play		
Decision-making role	0.781	7.861
Procedural role	0.861	6.661
Emotional role	0.724	Marker
Patient's perception of service quality		
Tangibles	0.741	Marker
Reliability	0.919	13.686
Responsiveness	0.861	12.721
Assurance	0.918	13.666
Empathy	0.896	13.313
Patient satisfaction		
1. Overall, I am satisfied with this clinic and the service that it provides.	0.818	Marker
2. I feel good about coming to this clinic for my treatment.	0.935	17.091
3. My feelings toward this clinic are very positive.	0.928	16.721
Patient stress level		
1. I felt tense or on edge.	0.901	Marker
2. I was worried about my health.	0.902	14.621
3. I felt exhausted, worn out, or at the end of my rope.	0.687	11.015
Patient-companion relationship quality		
Intimacy	0.824	marker
Trust	0.794	7.161

Note. Factor loadings for the three dimensions of companion's role-play, patient's role-play, and perceived service quality were first-order loadings based on a second-order confirmatory factor analysis model. All other loadings were for observed variables.

Table XII. CFA results of the measurement model

	Mean	s.d.	Cron- bach's α	CR	AVE	Correlations					
						1	2	3	4	5	6
1. Quality of companion's role-play	5.44	1.213	.787	.861	.674	(.674)	.293	.159	.159	.296	.024
2. Quality of patient's role-play	5.82	1.184	.828	.832	.624	.541	(.624)	.352	.226	.236	.001
3. Patient's perception of service quality	5.62	1.007	.872	.948	.744	.399	.593	(.744)	.803	.118	.047
4. Patient satisfaction	5.58	1.137	.928	.923	.802	.399	.475	.896	(.802)	.136	.049
5. Patient-companion relationship quality	5.47	.981	.727	.791	.655	.544	.486	.343	.369	(.655)	.055
6. Patient stress level	2.85	1.677	.831	.873	.699	-.154	-.0231	-.216	-.222	-0.235	(.699)

Note: values in parentheses = AVE, Values below the diagonal = correlation estimates, Values above the diagonal = squared correlations.

Table XIII. Hypothesis test results

		Standardized estimate	S.E.	C.R.	Results
H1	Quality of companion's role-play → Quality of patient's role-play	0.766	0.187	4.469***	accept
H2	Quality of patient's role-play → Patient's perception of service quality	0.601	0.135	6.837***	accept
H3	Patient's perception of service quality → Patient satisfaction	0.893	0.055	16.630***	accept

*** $p < .001$

Table XIV. Test results for the moderation effect: Multi-group analysis

Moderators		χ^2	df	Change in χ^2	Change in df	p
Patient-companion relationship quality	Free model	1105.585	582	50.004	24	<0.001
	Constrained model	1155.588	606			
Patient stress level	Free model	1108.37	582	51.282	24	<0.001
	Constrained model	1159.652	606			

Table XV. Path coefficients for low vs. high patient-companion relationship quality groups

		Low			High		
		Standard ized estimate	S.E.	C.R.	Standard ized estimate	S.E.	C.R.
H1	Quality of companion's role-play → Quality of patient's role-play	0.767	0.34	3.264**	0.496	0.091	2.088*
H2	Quality of patient's role- play → Patient's perception of service quality	0.516	0.144	4.495***	0.579	0.665	3.086**
H3	Patient's perception of service quality → Patient satisfaction	0.927	0.076	13.166** *	0.764	0.088	7.846***

* $p < .05$, ** $p < .01$, *** $p < .001$

Table XVI. Path coefficients for low vs. high patient stress level groups

		Low			High		
		Standard ized estimate	S.E.	C.R.	Standard ized estimate	S.E.	C.R.
H1	Quality of companion's role-play → Quality of patient's role-play	0.793	0.602	2.358*	0.746	0.167	3.507***
H2	Quality of patient's role- play → Patient's perception of service quality	0.504	0.153	4.415***	0.715	0.247	5.12***
H3	Patient's perception of service quality → Patient's satisfaction	0.871	0.078	11.674***	0.914	0.078	11.567***

* $p < .05$, ** $p < .01$, *** $p < .001$

Table XVII. Mediation effect of the quality of companion's role-play

Effect of quality of companion's role-play on...	Effect		
	Total	Direct	Indirect
Quality of patient's role-play	0.77*	0.77*	-
Patient's perception of service quality	0.46*	-	0.46*

* $p < .05$

Table XVIII. Results of comparison between full and partial mediation models

Model	χ^2	df	p	Change in χ^2	GFI	CFI	TLI	RMSEA
Full	629.481	291	0.000	8.736	0.800	0.922	0.912	0.076
Partial	620.755	290	0.000		0.805	0.923	0.914	0.076

Table XIX. Results for partial mediation model

		Standardized estimate	S.E.	C.R.
H1	Quality of companion's role-play → Quality of patient's role-play	0.706	0.185	4.295***
H2	Quality of patient's role-play → Patient's perception of service quality	0.256	0.207	1.894*
H3	Patient's perception of service quality → Patient satisfaction	0.426	0.277	2.641**

* $p < .05$, ** $p < .01$, *** $p < .001$