

Customer Effort in Value Cocreation Activities: Improving Quality of Life and Behavioral Intentions of Health Care Customers

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ABSTRACT

Transformative service research is particularly relevant in health care where the firm and customer can contribute to individual as well as societal well-being. This article explores customer value cocreation in health care, identifying a hierarchy of activities representing varying levels of customer effort from complying with basic requirements (less effort, easier tasks) to extensive decision making (more effort, more difficult tasks). We define customer Effort in Value Cocreation Activities (EVCA) as the degree of effort that customers exert to integrate resources, through a range of activities of varying levels of perceived difficulty. Our findings underscore the importance of viewing health care service as taking place within the customer's service network which extends well beyond the customer-firm dyad to include other market-facing as well as public and private resources. Moreover, we demonstrate the transformative potential of customer EVCA linking customer EVCA to quality of life, satisfaction with service and behavioral intentions. We do so across three prevalent chronic diseases - cancer, heart disease and diabetes. Our findings highlight how an integrated care model has benefits for both customers and providers and can enhance customer EVCA.

Keywords: customer effort in value cocreation activities, customer effort, value cocreation, hierarchy, activities, resource integration, participation, quality of life, satisfaction, health care

Transformative service research is particularly relevant in health care where the firm and customer can contribute to individual as well as societal well-being (Ozanne and Anderson 2010; Anderson et al. 2013). While the economic impact of health care is staggering (Deloitte 2012), its impact on patients' quality of life demonstrates an ever greater potential impact in transforming people's lives. To improve health outcomes and reduce the burden on the health care system, collaborative care (AAFP 2013), home-based (NARI 2006), and patient-centered models (NARI 2006), that place the customer at the center of their own care, are increasingly being adopted. Service-Dominant (S-D) logic parallels this shift, recognizing the role of the customer as a co-creator and ultimate determiner of value (Vargo and Lusch 2004; 2008). Value is realized through an integration of resources involving activities and interactions that take place not only with the focal firm but also with other market-facing, public and private sources (McColl-Kennedy et al. 2012).

Managing health care, and chronic disease particularly, depends largely on the active involvement of customers (Michie, Miles, and Weinman 2003). In the context of chronic disease the customer is likely to engage resources that extend well beyond the focal firm to potentially include activities undertaken with other firms (Arnould, Price, and Malshe 2006) such as complementary therapies, activities with private sources such as peers, family, friends, even other customers, and self-generated activities, such as positive thinking, reframing, and sense-making. Thus, health care customers may undertake a range of value cocreating activities aimed at enhancing health and quality of life (McColl-Kennedy et al. 2012). Activities that are relatively simple requiring minimal effort (e.g., cooperating with basic requirements from a clinic) will most likely be undertaken by more customers than activities that are more difficult requiring greater effort (e.g., the regulation of one's emotions). We build on the work of McColl-Kennedy et al. (2012), Gallan et al. (2013) and

Chan, Yim and Lam (2010) to investigate a hierarchy of activities that reflect customer effort in value cocreation activities (EVCA).

The purpose of this paper, therefore, is two-fold: (1) to explore customer effort in value cocreation activities in health care, identifying a hierarchy of value cocreation activities that require increasing effort (and that represent increasingly difficult tasks) as one moves up the hierarchy; and (2) to demonstrate links between customer effort in value cocreation activities and quality of life, satisfaction with a health care service and behavioral intentions. We do so across three prevalent chronic disease settings - cancer, heart disease and diabetes. Our study is important because customer EVCA enables customers to directly impact their own well-being, transforming their lives and positively affecting society as a whole, thus contributing to the transformative research agenda (Anderson et al. 2013).

CUSTOMER VALUE COCREATION

Service-dominant logic argues that customers always cocreate value, because they are intrinsically involved in the value creation process (Payne, Storbacka, and Frow 2008; Vargo and Lusch 2008). Customers participate in value cocreation through an integration of resources obtained through a range of activities and interactions (Arnould, Price, and Malshe 2006; Baron and Harris 2008). Thus, customers play an active, albeit varying, role in the provision of service and in the realization of benefit (Prahalad and Ramaswamy 2003; Vargo and Lusch 2004; McColl-Kennedy et al. 2012).

Customer value cocreation has thus been defined as “the benefit realized from integration of resources through activities and interactions with collaborators in the customer’s service network” (McColl-Kennedy et al. 2012 p. 375). Within this definition ‘activities’ address the cognitive and behavioral performance or active doing of things and ‘interactions’ reflect the engagement of an individual with others in the service network (McColl-Kennedy et al.

2012). We build on McColl-Kennedy et al.'s (2012) definition recognizing that these activities may range from simple, less effortful activities such as cooperating with basic requirements to more demanding activities such as emotional regulation. Moreover, we propose a hierarchy of activities representing varying levels of difficulty for the customer. We define customer EVCA as the degree of effort that customers exert to integrate resources through a range of activities of varying levels of perceived difficulty. These activities may be with others in the service network or may be self-generated activities and are motivated by the value proposition offered by the focal firm, such as the value proposition of better health offered by the clinic in our context.

We differentiate customer EVCA from related concepts including participation, coproduction and engagement. Customer participation for example, affects the service experience of the customer or other customers, but in contrast to our customer EVCA, typically focusses on customer actions that are fundamental to and take place during the service encounter (Jaakola and Alexander 2014). Coproduction also differs from our concept of EVCA as it reflects the customer's participation in the production of the core product viewing the customer as a temporary or 'partial' employee (Lusch and Vargo 2006). Coproduction is thus one component of value cocreation (Lusch and Vargo 2006; McColl-Kennedy et al. 2012). Customer EVCA which is driven by the expected outcome or value proposition and is represented by a hierarchy of customer activities can also be differentiated from customer engagement which represents a consumer's motivational state relative to a focal engagement object such as civic, work or brand engagement (Brodie et al. 2011).

Value Cocreation Activities Within and Beyond the Firm

We note from McColl-Kennedy et al.'s (2012) definition of customer value cocreation that 'activities' reflect the cognitive and behavioral performance or the active doing of things and 'interactions' reflect collaboration with others in the service network. Furthermore, in

our study context these activities are directed at the goal of a positive health outcome which is the value proposition offered by the health clinic. Thus, customer value cocreation activities can be defined as the set of cognitive and behavioral activities carried out by the customer and motivated by the value proposition. We examine customer value cocreation activities that include not only activities with the focal firm but also those that go beyond the firm, as well as the customer's self-generated activities.

Although research on the customers' service experiences often focuses on a firm-bound perspective (e.g., Chang and Horng 2010), Prahalad and Ramaswamy (2003) and Ramaswamy (2011) propose a conceptualization that extends beyond the customer–firm exchange process to include many-sided interactions. According to Hilton, Hughes, and Chalcraft (2012), value derives from resource integration behaviors which may occur at the point of service or spatially or temporally distant from the service organization. Indeed, Vargo and Lusch (2008) argue that although traditionally the firm and the customer are identified as resource integrators, customers may integrate resources from sources other than the firm including private sources (e.g., friends and family), market-facing sources (e.g., firms, other entities) and public sources (e.g., communal, governmental). Despite this it remains rare for studies to explicitly consider the customer's role in value cocreation beyond the service setting itself.

For chronic illness service and for many other service contexts, it is necessary to examine value cocreation within the context of the customer's service network as the customer experience extends beyond the clinical event to the fusion of lived, cognitive, social, and emotional elements (Thorne 1999). It is clearly broader than the focal firm–customer dyad; it also is inextricably linked to the customer's lifestyle and social world (Berry and Bendapudi 2007; Michie, Miles, and Weinman 2003). Indeed, the transformative service research framework stresses the role of various entities such as the sector, firm, and

employee (service entities) and the ecosystem, collectives and individuals (customer entities) in creating customer well-being (Anderson et al. 2013). This is particularly so given our hierarchy of customer EVCA which comprises a range of activities undertaken across the customer's service network including not only activities undertaken within the focal firm but also activities with other firms such as those offering complementary therapies, and/or with the customer's private sources such as peers, family and/or friends. Further, we consider self-generated resources such as positive thinking and emotional labor. We demonstrate how customers actually co-create value in practice, through activities involving interactions with a range of actors in their service network.

Customer Effort in Value Cocreation Activities (EVCA): A Hierarchical Approach

The concept of customer EVCA has received insufficient attention, although recent work stresses the need to explore effort-based meanings of value cocreation (Chen, Drennan, and Andrews 2012). The concept of an individual's effort appears primarily in the field of organizational behavior, in the context of work effort. Effort in this context has been viewed through objective measures such as hours worked, and subjective measures such as 'direction' (how involved employees are at their work), 'intensity' (how hard they work) and 'persistence' (De Cooman et al 2009). Nonetheless, subjective scales of employee effort relate to attitude towards one's work (e.g., I really do my best in my job) while objective measures reflect quantitative behavioral outcomes. Research into customer effort however is sparse. Cardozo (1965) is one of the few authors to explore customer effort demonstrating that product satisfaction is higher when customers expend considerable effort to obtain the product than when they use only a modest amount of effort. Cardozo defined customer effort as including physical, mental and financial resources expended to obtain a product. Thus we define customer effort as the degree of effort that customers exert to integrate resources, through a range of activities of varying levels of perceived difficulty.

McColl-Kennedy et al. (2012) put forward a framework of value cocreation practice styles which examines value cocreation activities and the ease or difficulty of these activities. For example, the pragmatic adapting and passive compliance styles in McColl-Kennedy et al.'s (2012) framework are characterized by low levels of activities suggesting low effort, whereas team management and insular controlling styles demand higher levels of activities suggesting higher effort. In the present study, we use required effort (or by association, degree of difficulty of the activity), in undertaking an activity to operationalize EVCA. For example, activities that are relatively easy to undertake are less effortful; activities that are more difficult require more effort. Accordingly, we propose a hierarchy of activities representing varying levels of difficulty for the customer, where the easier, less effortful activities are undertaken by more customers than those activities that are more demanding and require more effort. Moreover, we posit that the easier activities in our hierarchy would be undertaken before the more difficult activities can be carried out, in keeping with the notion of a hierarchy.

The concept of a hierarchy of value cocreation activities, representing varying levels of difficulty for the customer, is supported by Atkinson and Birch's (1970) dynamic theory of action which posits that when individuals are exposed to various activities with varying levels of difficulty they demonstrate a shift to the more difficult tasks over time. Based on the dynamics of action, as easier tasks are accomplished, individuals perceive the relative probability of success for more difficult tasks as increasing (Kuhl and Blankenship 1979). Individuals are therefore motivated to move from easy to more and more difficult tasks (Kuhl and Blankenship 1979). In essence, when individuals are satisfied or intrinsically rewarded for their activity in a particular situation, there will be a motivating force for that activity and subsequent activities. This provides support for our hierarchy of activities representing different levels of difficulty for the customer, such that a customer is unlikely to partake in

difficult tasks unless they have already undertaken the easier tasks. Hence, we expect that while many customers will undertake the less effortful activities in our hierarchy, few will undertake those activities that demand greater effort.

We further explain this effect drawing on ego depletion literature (e.g., Baumeister et al 1998; Muraven and Baumeister 2000; Hagger et al. 2010) which views the self as a limited resource akin to the energy of a person that is depleted when an activity is undertaken. According to the concept of ego depletion an individual's acts of volition, such as making decisions, considering alternatives, taking responsibility, initiating and inhibiting behavior, and making plans of action and carrying out these plans, draws on the individual's resources (strength or energy) which are limited (Hagger et al. 2010). Moreover, ego depletion suggests that undertaking one activity will have a damaging effect on the conduct of subsequent activities. The initial act depletes the amount of resources left for dealing with subsequent acts (Baumeister et al. 1998; Muraven and Baumeister 2000), especially those that are seen as more challenging. We therefore argue that as easier, less effortful value cocreation activities are undertaken resource depletion occurs and there are less available resources for conducting more effortful activities. Thus, while the dynamic theory of action supports an individual's motivation to move 'up' the hierarchy to more difficult tasks, depending on their success for each previous task, ego depletion moderates this movement. This means that more customers will undertake easier activities while fewer customers will undertake the more demanding and effortful activities in the hierarchy.

STAGE 1: IDENTIFYING VALUE COCREATION ACTIVITY THEMES

Consistent with our objectives, our first task was to explore the range of value cocreation activities, and identify value cocreation activity themes, that are evident in our chronic illness context, with the ultimate objective of exploring the concept of customer EVCA and a possible hierarchy of activities. To do so we conducted 20 depth interviews with customers in

two oncology day clinics. The participants, selected randomly, were at different stages of treatment. All respondents were at least 18 years of age, had private medical insurance, and had received a histological diagnosis of cancer. The interviews lasted an hour on average, with a maximum of 1.5 hours. We followed the guidelines of Minichiello et al. (1995) for capturing narratives. We asked participants open questions such as “Can you tell me what it is like living with cancer?” and followed up with more specific questions like “What do you do to make life better for yourself while dealing with your illness?”. Therefore, we could identify emergent themes reflecting value cocreation activities. Two authors and a third independent researcher read the transcripts to identify the underlying themes. The category development process used the constant comparative data processing method (Lincoln and Guba 1985). This process revealed 13 themes that reflected different value cocreation activities, namely, actively sharing information, compliance with basic requirements, proactive involvement in decision making, interactions with clinic staff, relationships with family and friends, connecting with others, diversionary activities, diet, managing the practicalities of life, seeking information, positive thinking, spiritual relationships, and emotional regulation, as shown in Table 1.

TABLE 1 ABOUT HERE

These activities take place both within the focal firm (e.g., actively sharing information, compliance with basic requirements) and beyond it through the use of personal and market-facing sources (e.g., diet, relationships with family and friends). Thus, we find support for our view that across a range of customer value cocreation activities, customers use a wide variety of resources. We also find evidence of self-generated activities, such as positive thinking and emotional regulation, consistent with customers’ emotional resources (Baron and Harris 2008; Hochschild 1983). Importantly, we find that across the range of cocreation activities, some are relatively simple to undertake and require less effort such as

compliance with basic requirements, and relationships with family and friends, while others are more demanding and effortful, such as proactive involvement in decision making and emotional regulation. While the range of activities we identify and their impact on customer and firm outcomes is supported in the marketing, health psychology and medical literatures (see Table 2), the purpose and outcome of these studies is diverse. Some authors, for example, recognize that a specific activity is an important part of the illness and/or treatment process while others focus more on the impact of such activities on perceptions of service quality, quality of life, or mastery and control.

TABLE 2 ABOUT HERE

STAGE 2: MEASURING CUSTOMER EFFORT IN VALUE COCREATION ACTIVITIES

The purpose of this stage was to explore if some activities were less effortful/ easier to undertake while others were more effortful/difficult in order to develop a hierarchy of value cocreation activities ordered in terms of increasing effort. A second purpose was to recast this hierarchy into a measure of customer EVCA. First we generated items representing the 13 activity themes from the interview transcripts leading to 45 items in total [Footnote 1]. Second, we asked 13 consumer behavior experts to evaluate the extent to which these items were representative of our 13 theme definitions in the context of cancer [Footnote 2]. Judges expressed concern about the spiritual theme, arguing that this theme may be interpreted differently in various cultural backgrounds and also appeared to overlap with the concept of positive thinking. Thus, we deleted this theme, leaving 12.

As our aim was to develop a hierarchy of value cocreation activities we used Rasch modeling. We explain this approach and its suitability to our purpose in subsequent sections. We used one item to represent each activity theme [Footnote 3], identifying 12 items that most closely represented our definitions. Items are listed in the third column of Table 3. The scores for the 12 selected activity items used six-point Likert scales, ranging from 1 =

“strongly disagree” to 6 = “strongly agree.” Six categories were selected following the recommendations of Salzberger (2009), who argues against a middle category in Rasch modeling. Table 3 contains the descriptive statistics for each of our 12 value cocreation activity items.

To develop the hierarchy of value cocreation activities we obtained data from a national, online consumer panel (Deutskens, de Ruyter, and Wetzels 2006). Only individuals over 18 years of age who suffered from any of three major chronic illnesses - cancer, heart disease, or diabetes were eligible. Quotas ensured a wide range of ages and geographical locations. Individuals who selected one or more of the three illnesses, attended a clinic at the time of the survey, and could name the clinic and answer basic questions about it qualified for the survey [Footnote 4]. As a check of data quality, we examined the response patterns and speed of survey completion. The market research company contacted 51,202 individuals of which 13,774 agreed to undertake the survey (no criteria were imposed at this stage of the recruitment process), representing a response rate of 26.9%. Of those that agreed to participate, a total of 2,083 individuals were eligible for the survey. In all, 1008 individuals (304 cancer, 348 heart disease, and 356 diabetes) successfully completed the survey, representing a second stage response rate of 48.3%. The comparison of early and late responders across key variables indicated that nonresponse bias was not an issue (Armstrong and Overton 1977). We provide the sample profile for the three illnesses in Table 4. The samples are diverse in terms of gender, length of time attending the clinic, and self-reported health ratings. However, heart disease patients are more likely to be male and older; diabetes patients reported a higher overall health rating; and cancer patients reported the shortest length of attendance at the clinic. These findings reflect the nature and trajectory of the three illness types.

TABLES 3 AND 4 ABOUT HERE

Given that we sought to develop a scale of customer EVCA, Rasch modeling is an appropriate approach as it explicitly recognizes the different intensity levels of items (e.g., Ganglmair-Wooliscroft and Wooliscroft 2013). Specifically, the degree of the latent trait (customer EVCA) in a person and the degree of the trait reflected in the various items in the scale are estimated independently, yet are compared explicitly to each other on the same Rasch scale (Andrich 2011; Salzberger 2009). The basic principle of the Rasch model is that *both* the items and individuals are fitted to a latent trait (Rasch scale), such that each item and each person has a position on the same scale. The higher a customer's EVCA score (i.e., location of individual person on the Rasch scale) relative to the difficulty of a specific activity (i.e., location of item representing the activity on the Rasch scale), the higher the probability that he or she will perform the activity. Thus, many people engage in easy activities, however, as activities become more demanding, relatively fewer people undertake them. Rasch modeling can also reflect the breadth of a construct (e.g., customer EVCA) rather than a single point (e.g., information provision). Thus, with Rasch modeling (Andrich 1988; Rasch 1960), we can test whether a single latent trait underlies multiple items (activities) that we believe represent the trait (customer EVCA) to a greater or lesser degree.

Rasch Procedure

We applied Rasch analysis to the 12 selected items representing the 12 activity themes, using RUMM 2030 (Andrich, Sheridan, and Luo 2011). We first considered the cancer customer sample, before investigating equivalence in the heart disease and diabetes samples. To test the scale for dimensionality, we used multiple correspondence analysis confirming that the scale was unidimensional. Thus, the conceptualization of the scale as a single scale, customer EVCA, was supported. Next, we followed Ewing, Salzberger, and Sinkovics (2005) and investigated the scale's measurement properties by examining the threshold order for each item. Thresholds are transition points between categories, determined

by the probability of answering “2” rather than “1”, or “3” rather than “2”, on a particular item (based on a 6-point scale). Disordered thresholds occur where there are more response categories (in our case 6) than respondents correctly distinguish between [Footnote 5]. Should thresholds become disordered, adjacent categories must be collapsed to achieve a proper threshold order. Among the 12 customer EVCA items, we found disordered thresholds for eight. Using an iterative process, we collapsed adjacent categories and determined that a three-category scoring system (1 and 2, 3 and 4, and 5 and 6) across all items produced a proper order of thresholds and a sensible categorization (Andrich 2011). These categories equate to “disagree,” “neither agree nor disagree,” and “agree” with the conduct of an activity. Hence, this classification reflects the natural level of precision in responses (Andrich 2011).

To assess overall fit of the model, we used the item–trait interaction, which reflects the match of the expected score, based on the probabilities implied by the model, and their actual scores. The fit was good ($\chi^2 = 99.51$, $df = 48$, $p < .01$), and the values of the item locations (i.e., difficulties) were consistent across respondents (Soutar and Ward 2008), as supported by the alpha reliability of .73 and person separation index (PSI) of .66. Finally, we examined the fit of each item finding that when we acknowledge the number of items being simultaneously tested with the Bonferroni correction factor, all items were acceptable and the fit was good [Footnote 6].

Having determined good fit of the 12-item scale representing customer EVCA in the cancer sample, we sought to determine its generalizability to the other two chronic illness samples, heart disease and diabetes. Rasch modeling facilitates assessments of this equivalence, through its differential item functioning (DIF) (Ganglmair-Wooliscroft and Wooliscroft 2013), which indicates the non-invariance of items. If an item is non-invariant, it has a different meaning across groups, in that its position varies across groups with regard to

the latent trait being investigated (Salzberger 2009). When we investigated the equivalence of items across the three chronic illness groups [Footnote 7], we determined that non-uniform DIF was not an issue. That is, customers in each illness sample were similar in their patterns of responses to the items, and the scale can thus be extended to these other chronic illness settings.

The final model fit was good across all three illness samples (item–trait interaction $\chi^2 = 180.80$, $df = 108$, $p < .01$, $PSI = .71$, $reliability = .76$). The fit of each item was good, taking into account the Bonferroni correction factor. Table 5 provides the probabilities of the interaction terms from the non-uniform DIF with respect to illness groups, which further support the similarity of scale use across illnesses. We also tested for DIF across age, gender, and length of time they had been attending the clinic, with no obvious case of non-uniform DIF, again suggesting a similarity of response patterns across demographics. Only 2 of a possible 36 interactions were significant (emotional regulation in the case of gender, proactive involvement in decision making in the case of length of time at the clinic), again supporting the robustness of the scale.

The spread of items and respondents across the Rasch scale is shown in Appendix A. Respondents were reasonably spread across the scale, with a standard deviation of .99, suggesting the Rasch model provides useful information about customers' different value cocreation activities in this context. The spread of the items, rather than respondents, is less at a standard deviation of .64 but this is typical of Rasch scaling in marketing (Salzberger and Koller 2012; Soutar and Ward 2008). This finding supports the notion that customers differ in the level of effort they put into value cocreation activities.

TABLE 5 ABOUT HERE

Results of Rasch Modeling

The order of the items on the Rasch scale shows that compliance with basic clinic requirements represents the lowest end of the scale. That is, compliance with basic clinic requirements is most likely to be carried out by customers in chronic illness settings, thus represents the anchor point on our hierarchy of activities. This is followed by putting effort into relationships with family and friends and the interactions that customers have with staff; thus the first three items represent relatively easy relationally focused activities in which the customer is supported by other parties. Following these are activities which are more effortful including: managing the practicalities of life such as changing things in your life to help manage your situation; consciously thinking that 'I am not going to let this beat me' which reflects positive thinking; actively sharing information about illness and/or the individual's personal condition with medical staff; maintaining a healthy diet; seeking information which involves doing a considerable amount of research about the individual's medical situation; and diversionary activities which aim to keep the individual busy as a way of distracting them from thinking about their medical situation.

Activities least likely to be agreed with by customers, and thus less likely to be carried out, include connecting with others which reflects seeking support from others who have the same illness, and proactivity in decision making where customers request changes be made to their treatment plan (coproduction). Emotional regulation, which reflects trying to protect others from negative information about their illness, is a value cocreation activity carried out by only a few. These are the most difficult and effortful activities to be undertaken in our hierarchy of value cocreation activities. One of the principles of Rasch measurement is that the probability of endorsing a higher end item (agreeing that the activity is carried out), is increased if a lower ranked item is endorsed. Thus, our Rasch model shows that customers who have undertaken more effortful activities are more likely to have also done the less

demanding activities. This suggests that the easier to undertake activities in our hierarchy need to be completed before the more effortful activities.

STAGE 3: INVESTIGATING THE EFFECT OF CUSTOMER EVCA ON QUALITY OF LIFE, SATISFACTION AND BEHAVIORAL INTENTIONS

In this section we demonstrate the links between customer EVCA and quality of life, satisfaction with the service, and behavioral intentions, highlighting the importance of this construct.

Customer EVCA Outcome Model

Health care seeks to maximize quality of life reflecting the health care customer's well-being, happiness, and life satisfaction (Sirgy, Samli, and Meadow 1982). Customer value cocreation, viewed as the enhancement of customer benefit from the integration of resources, thus has the potential to affect quality of life perceptions. Most recently, McColl-Kennedy et al. (2012), in an exploratory study, found greater quality of life associated with certain customer value cocreation practice styles. Individuals displaying a "partnering" or "team management" practice styles had relatively higher quality of life than "passive compliance" and "insular controlling" styles. While most individuals with chronic illness are able to engage in activities that can potentially improve their quality of life, the take up of these activities and the way individuals integrate resources may affect the quality of life an individual achieves. Customer EVCA is thus likely to drive quality of life perceptions. Engaging in more demanding and effortful activities should result in stronger quality of life perceptions, while undertaking activities that are less effortful is unlikely to maximize quality of life. Hence:

H₁ Health care customer EVCA increases quality of life

The expanded role of customers in service is likely to directly affect service evaluations (Ennew and Binks 1999; Groth 2005). Customer participation delivers value to

the customer (Auh et al. 2007) and customers perceiving greater value tend to be more satisfied (Ouschan, Sweeney, and Johnson 2006). Indeed, Chan, Yim and Lam (2010) find that customer value creation (economic and rational) drives customer satisfaction. We extend this argument by positing that the degree of effort undertaken by participating in various activities, each of which has a different level of difficulty, increases satisfaction with the service. Therefore we propose:

H₂ Health care customer EVCA increases satisfaction with the service

Although customer outcomes, such as service satisfaction, may enhance behavioral intentions (e.g., Dagger and Sweeney 2006), we investigate the direct impact of customer EVCA on the customer's intentions to use the service provider again if the need arises or to spread positive word of mouth, which is a loyalty outcome of particular interest to organizations. If customers have more control of the service, they perceive more responsibility and more positive perceptions of the service outcome, which impacts their behavioral responses (Van Raaij and Pruyn 1998). Hence, customer EVCA should also be associated with positive behavioral intentions, such as reusing the service if needed and positive communications with others. Hence, we also propose:

H₃ Health care customer EVCA increases favorable behavioral intentions

Satisfaction with the service should also contribute directly to quality of life perceptions. For example, Dagger and Sweeney (2006) find that service satisfaction for customers of a cancer clinic drives quality of life perceptions. Moreover, Sirgy, Lee, and Rahtz (2007) suggest that satisfaction with concrete events and experiences spills over to life domains (e.g., work, leisure, health, family) and thus to life satisfaction. We therefore propose that while health care customer EVCA enhances quality of life (H₁) that there is a further indirect effect on quality of life through satisfaction with the service that is not accounted for by customer EVCA. Hence:

H₄: Satisfaction with the service is a partial mediator of the health care customer EVCA to quality of life relationship.

We also recognize that satisfaction with the service should affect behavioral intentions toward the service provider (Cronin, Brady, and Hult 2000; Dagger and Sweeney 2006; Dagger, Sweeney and Johnson 2007). Although our context suggests that customers prefer to be healthy and to not need to use the service provider, satisfaction with the service may increase behavioral intentions, such as word of mouth and conditional future visits, if the customer needs treatment. We therefore propose that while health care customer EVCA enhances behavioral intentions (H₃), there is a further indirect effect on behavioral intentions through satisfaction with the service. Thus:

H₅: Satisfaction with the service is a partial mediator of the health care customer EVCA to positive behavioral intentions relationship.

Research Method and Sample

To test our hypotheses, we use the same sample described earlier and the hierarchy of activities representing our customer EVCA scale. We also adopt several established scales including a four-item measure of quality of life (Fox 2004), a four-item service satisfaction scale (Oliver 2010), and a four-item behavioral intention measure from Zeithaml, Berry, and Parasuraman (1996). All measures used 7-point Likert scales, where 1 represents 'strongly disagree' and 7 represents 'strongly agree'. We used structural equation modeling to assess the psychometric properties of scales and each was refined using standard procedures. Appendix B shows our results and confirms the reliability of the final scales. We examined customer EVCA using our Rasch score as a latent variable with the error variance fixed to .15 times the variance as per Jöreskog and Sörbom (1989). We confirmed the discriminant validity of the three outcome constructs and customer EVCA using the approach of Fornell and Larcker (1981).

Control Variables

Due to the nature of chronic illness, we controlled for several demographic and situational variables that are likely to affect results. Specifically, we control for gender and age as women and older people tend to have lower health-related quality of life (Cherepanov et al. 2010). Quality of life also may vary with the length of time the patient has attended the clinic, which correlates with illness stage (Osoba et al. 2006), so we controlled for it. We included current perceived health status to remove short-term health effects from the overall quality of life measure (Ferrell, Wisdom and Wenzel 1989). We also controlled for belief in the efficacy of the treatment (Seligman and Csikszentmihlyi 2000) which is a psychological variable that may affect quality of life perceptions (Seligman and Csikszentmihlyi 2000). Differences in the patient sample profiles across the three illness types (Table 4) reinforce the importance of controlling for these variables.

Results

A structural equation model was developed to reflect the relationships discussed above. Overall the structural equation model, fitted well across the full sample ($\chi^2 = 159.87$, $df=61$, $p < .01$, $RMR = .04$, $CFI = .99$, $RMSEA = .04$). Results of multi-group analysis across all three illnesses showed that both measurement and structural parameters were invariant across the three conditions ($\chi^2_{(meas\ invariance)} = 16.36$, $df=10$, n.s.; $\chi^2_{(str\ invariance)} = 4.37$ $df=10$, n.s). That is, we can have confidence that the structural paths demonstrated the same relationships across all three illnesses. The results confirmed the links of customer EVCA with quality of life, in support of H₁ ($\beta = .26$, $p < .01$); with satisfaction with the service ($\beta = .28$, $p < .01$), in support of H₂; and with behavioral intentions ($\beta = .08$, $p < .01$), in support of H₃.

We also tested for 'satisfaction with the service' as a mediator of both customer EVCA and quality of life and behavioral intentions through Preacher and Hayes' (2004)

bootstrapping approach within SPSS (H₄ and H₅). Mediation is supported if the indirect path is significant. Based on Preacher and Hayes' recommendation, we used 5000 bootstrap resamples and a 95% confidence interval. In the first case (H₄ customer EVCA - satisfaction with the service - quality of life) the indirect effect was significant (indirect effect = .10, standard error SE=.02, p<0.01, 95% confidence interval .07 to .14). However, the direct effect of customer EVCA on quality of life remained significant despite the addition of the mediating variable (direct effect=.52, SE=.05, p<0.01). These results, support H₄ and suggest that satisfaction with the service partially mediates the link between customer EVCA and quality of life, such that while some of the effect of customer EVCA on quality of life is explained through satisfaction with the service, that customer EVCA also impacts quality of life independently of satisfaction with the service, an important finding given the focus on customer EVCA in this present study.

Findings for H₅ (customer EVCA - satisfaction with the service - behavioral intentions) similarly showed that the indirect effect was significant, (indirect effect = .28, SE=.03, p<0.01, 95% confidence interval .21 to .35) and the direct effect remained significant despite the addition of the mediating variable (direct effect=.11, SE=.02, p<0.01), supporting the partial mediation of satisfaction with the service on the customer EVCA and behavioral intentions relationship. Satisfaction with the service played a stronger mediation role, in the case of customer EVCA to behavioral intentions, than to quality of life. This can be seen through the significantly higher indirect path coefficient, as well as the significantly lower direct path coefficient in the case of behavioral intentions (H₅) compared with quality of life (H₄). Our model explained 11.6% of the variance in satisfaction with the service, 79.0% of the variance in behavioral intentions, and 39.6% in quality of life.

DISCUSSION

Our study makes a vital contribution to the service science research priority of understanding customer value cocreation for improved well-being (Ostrom et al. 2010). Specifically, our research contributes to S-D logic and the transformative research agenda in several important ways.

Our study is the first to put forward a hierarchy of value cocreation activities, representing varying levels of difficulty for the customer. Taking part in these activities represents the effort that the customer contributes in order to cocreate value. We thus define customer EVCA as the degree of effort that customers exert to integrate resources through a range of activities of different levels of perceived difficulty. While McColl-Kennedy et al. (2012) explore the different types of activities undertaken by health care customers to understand health care value cocreation their work does not elucidate a hierarchy of activities of varying levels of difficulty.

Our study makes a second contribution by underscoring the importance of viewing health care service as taking place within the *customer's* service network, moving beyond firm – customer service interactions. We demonstrate that customers integrate resources to achieve benefits from sources other than the focal firm. Resources may come from sources within the customer themselves (e.g., their own personal knowledge), from friends, family, and other customers, and from other firms and the community (Arnould, Price, and Malshe 2006; Baron and Harris 2008).

Finally, our study demonstrates the transformative potential of customer value cocreation activities and in so doing contributes to the transformative service research agenda (e.g., Anderson et al. 2013). We show that customer EVCA has a direct impact on satisfaction with the service and behavioral intentions. A critical finding is that customer EVCA affects quality of life perceptions. Moreover, satisfaction with the service also enhances intentions and quality of life perceptions.

Notwithstanding the economic impact of health care, chronic disease also affects individuals, their families and social networks, as well as the wider community (Anderson et al. 2013). Recognizing that individuals can cocreate value to better manage their health care is important not only for the individual, but for health care service firms (McCull-Kennedy et al. 2012). Our study underscores the transformative potential of customer EVCA. We show that individuals can engage in activities that have the potential to improve their quality of life. Moreover, our findings necessitate a broader view of health care, one that accounts for customers' lives and their role in their own health and well-being (e.g., Michie, Miles, and Weinman 2003; Tang et al. 2010).

MANAGERIAL IMPLICATIONS

Individuals with a chronic illness account for 75% of health care expenditure in the United States and this number will increase with an ageing population (Harris and Wallace 2012). Further, poor health and associated health care affects individuals, their families and social networks, and the wider community (Anderson et al. 2013). The Patient Protection and Affordable Care Act (2012) provides several recommendations relating to broadening the base of support for those with poor health, to alleviate the burden of health care costs. In particular, it addresses the potential to improve the efficiency of chronic disease management. The Act recognizes the importance of extending the network of support, and highlights the efficacy of both community and home-based medical services in achieving this goal. As such, collaborative care (AAFP 2013), home-based (NARI 2006), and patient-centered models (NARI 2006) are being adopted to reduce the burden on the health care system.

Given this background, it is imperative that the roles of the customer and others in the customer's health care service network are understood. We explore the role of the customer beyond mere compliance with basic requirements of the focal firm, and beyond self-management, which have been addressed in part in previous research (e.g., Fattal et al. 2005;

Gallan et al. 2013; Michie, Miles and Weinman 2003; Ouschan, Sweeney and Johnson 2006). Instead, we focus on the impact of customer effort in a range of value cocreation activities across the customer's life situation. We therefore view the present study as one of potentially many studies in the rich and fruitful field of customer value cocreation, to fully understand how the customer and others can work together to achieve health care value.

An illustration can be seen in aged care services where home-based care is increasingly being adopted. This means that doctors, nurses and allied health professionals work collaboratively with the individual to provide services in the customer's own home. Community and not-for-profit organizations provide meals (e.g., meals on wheels), community based care workers assist with shopping, bathing, and general house cleaning and gardening services, support groups offer entertainment and social services (e.g., adopt a grandparent) and friends and family are involved in decision making and with the overall care process. Understanding the network of resources that can be integrated to cocreate value with the customer is vital. Pulling together this network is a significant task involving considerable effort but has the potential to enhance customer well-being, and reduce the burden on the health care system. Accordingly, our findings have the potential to create uplifting changes that result in greater quality of life for individuals and their respective communities.

We find that customer EVCA affects quality of life perceptions. This demonstrates the transformative potential of value cocreation and the need for health care professionals to use a patient-centered approach to support customers in value cocreation. By understanding the range of activities that customers may undertake to cocreate value, firms can develop strategies aimed at facilitating and encouraging customers in these activities, especially those activities that demand greater effort. Our study shows that the more effort the customer puts into value cocreation activities the greater their satisfaction with the service, the more likely they are to continue with the focal provider, to return to the focal provider if they need

treatment in the future, and to recommend the clinic to others. Further, supporting customers in putting effort into value cocreation leads to higher levels of quality of life which is a fundamentally important outcome for individuals living with chronic illness. Based on our hierarchy of activities, health care providers should encourage customers early on in the relationship to put effort into the activities that are lower in the hierarchy and less effortful thus increasing the chances of the customer acting on the higher end activities which are more effortful.

Opportunities for health care providers lie in developing a ‘medical home’ for patients where a regular health care provider who knows the patient, is easy to contact and who coordinates their care is assigned to that individual (DHA 2009). For example, a diabetes patient benefits from liaising with a variety of health care professionals, including nursing professionals, diabetes educators, dieticians, endocrinologists, pharmacists and neurologists. However, patients and their carers often experience frustration and difficulties when trying to access health care from different providers, in different locations and settings with different administrative arrangements and costs and would benefit from a single coordinator. Reducing these difficulties would lower the demand on the customer’s ‘self’ resource (Baumeister et al. 1998) and thus enhance their ability to put effort into value cocreation activities, leading to the positive outcomes identified in this study.

Against this background, it is important to recognize that health customers differ in their level of skill, ability, and willingness to cocreate value through activities as identified in this study. Therefore, different health care customer segments need to be offered different value propositions (Frow et al. 2014). For example, customers are likely to adjust to their diagnosis in different ways, such as compartmentalizing their treatment versus their “regular” life (Barnett 2006). These customers might prefer to use independent or online services in their value cocreation, rather than having to visit a health care facility that offers a full range

of health care and health support services in one location. Some customers are also limited in their health literacy. Adkins and Corus (2009) thus highlight the need for health practitioners to screen for low literacy and adapt consumer-centered strategies to make health settings less threatening and less complex. The critical take away for firms is that a hierarchy of customer value cocreation activities exists, representing customer EVCA which affects the quality of life of individuals with chronic illness. Understanding these activities and the effort involved allows firms to develop strategies aimed at encouraging customers to take an active role in their health care and ultimately their well-being.

LIMITATIONS AND FURTHER RESEARCH

Although our study contributes to theory and practice and offers new insights into how health care value is cocreated, we acknowledge limitations. First, we examine customer EVCA from the customer perspective, yet firms and other entities in the service network also cocreate value by integrating resources during the service process (Lusch, Vargo, and O'Brien 2007). A logical next step for transformative service research would be to investigate value cocreation activities from a multi-party view point; that is, examining the range of activities undertaken by the various others in the customer's service network. This would allow researchers to examine activities performed across multiple firms and whether the relationships found in the present study would hold for service providers in the network other than the focal firm. This is particularly important in health care where home-based, collaborative models are being implemented involving multiple stakeholders, such as the customers, primary caregiver, health agencies, community groups and the like.

Second, while we found a linear relationship between customer EVCA and outcomes such as quality of life future research may address whether there are thresholds of effort beyond which the incremental effects of customer EVCA diminish. Taking quality of life for example, increasing customer EVCA beyond such a threshold would represent the customer

going the extra mile for even higher, but harder to achieve levels of quality of life. Possibly contexts such as adventure sports, which require a unique form of extreme contribution from the participant (e.g., skydiving, bungee jumping, race-car drive days), may show differential relationships across low and higher levels of customer EVCA and outcomes.

Third, while the easier activities are undertaken before the more difficult activities according to our hierarchy, future research may investigate if there are circumstances in which the order that activities are carried out in differ. For example, is it possible that a person may wish to protect close others from the details of their illness (item 10 in the scale) and may prefer to share their concerns with other ‘strangers’ with the same illness through support groups and the like (item 12 in the scale), rather than putting effort into close personal relationships (item 2 in the scale). While this scenario is improbable, the Rasch model in predicting the level of effort undertaken is probabilistic in nature and hence accounts for the majority of the sample, rather than a few respondents who possibly do not undertake these activities in this order.

Fourth, although we limit our study to chronic illness, we examine our hierarchy of customer EVCA across three of the most prevalent chronic illnesses, namely, cancer, heart disease and diabetes to provide generalizability within chronic illness. Our focus on chronic illness allows us to contribute to the transformative service research agenda which targets improving the well-being of consumers including individuals, communities and the service ecosystem (Anderson et al. 2013). It would be useful to extend our study in other health care settings such as aged care, general practice, dentistry, psychology, and counseling services. Many of the value cocreation activities identified may also apply to other professional services, such as education, accounting and financial services, legal services, and architectural services, which require significant value cocreation effort to maximize customer benefits. For example, a first meeting with a legal professional may require gathering information, a

positive attitude, or regulating emotions resulting from a life event such as redundancy, a death in the family, divorce or some other change in circumstances. The notion that a hierarchy of value cocreation activities exists could also be applied to other services (e.g., travel agencies) and retail firms (e.g., hotels and resorts), in general, albeit the activities may need to be redefined in these instances.

Fifth, antecedents that enhance customer EVCA need exploration. Several personal and situational factors may contribute or detract from a customer's ability and willingness to undertake a range of value cocreation activities, such as self-esteem and internal locus of control. In addition, factors such as health status and the length of time the customer has attended the clinic which were used as control variables in this study may also enhance or moderate the impact of the antecedent factors on customer EVCA.

Finally, our study is cross-sectional, so the directionality of the relationships requires some consideration, similar to other studies of customer roles (e.g., Bettencourt 1997; Auh et al. 2007). Longitudinal studies might relate customer EVCA identified at one time period to later outcomes, which would improve our understanding of how effort differentially supports quality of life and satisfaction across service provision stages. The degree to which a customer participates in value cocreation activities may change over time, as activities that once seemed difficult, become more manageable with experience, thus customers could 'move up' the Rasch scale (customer EVCA) over time. Notwithstanding these limitations and directions for future research, this research represents a crucial step in the path toward a better understanding of the transformative impact of customer EVCA.

Footnotes

- 1 The derivation of scale items from qualitative research is well established (Verbeke and Bagozzi 2002).
- 2 The judges rated the 45 items in terms of their representativeness on a seven-point scale, where 0 = “not at all representative” and 6 = “strongly representative.” Each item selection was based on the degree of representativeness compared with other appropriate items.
- 3 We took one item per activity theme for reasons of parsimony, since the Rasch approach is based on a range of items across the dimension (in our case effort in value cocreating activities). That is, in Rasch modeling the item’s intensity is parameterized and the relative intensity or affective value is central to capturing the variable. In contrast in factor analytical approaches, items are reflective and are associated through a correlation matrix. Indeed, using a wider set of 45 items representing the 12 activities in the Rasch approach resulted in a Rasch score, with a correlation of 0.95 with the Rasch score used through our parsimonious 12-item approach.
- 4 If a respondent selected two or more illnesses (e.g., approximately 13% of the cancer sample also had heart disease; approximately 5% suffered from all three), we chose one condition at random for the purposes of this study.
- 5 Disordered thresholds occur when categories (1 to 6 in our case) are not used in a strictly ordinal way from low to high. This results in reversed threshold parameters, which are positioned at the transition of one category to the next. Rasch modeling parameterizes the probabilities in each category based on the assumption of ordered categories. More details on disordered thresholds can be found in Salzberger (2009 chapter 5).
- 6 The Bonferroni correction factor is used to counteract the problem of multiple comparisons. That is, that if 20 tests are conducted, one is likely to be significant based on chance using a 95% confidence level. This approach is also used in MANOVA and other multivariate techniques. Hence, an item that is significant, in our case representing misfit, may not be so extremely viewed when multiple items are considered.
- 7 If DIF exists, we must consider eliminating the ill-fitting items, because they produce a lack of consistency across groups. With the Rasch model, we conducted a two-way analysis of variance, based on the person’s location (low to high) and illness categories (Salzberger 2009). We particularly tested for non-uniform DIF, the critical DIF type for violation of the Rasch model in one group. This tests whether an item appeared easier for customers with one illness rather than another in one area of the Rasch scale (i.e., customer EVCA) but harder in another area of the Rasch scale. That is, the test examined whether respondents in different groups had similar response patterns.

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Table 1. Typology of Health Care Customer Value Cocreation Activities

Activity Theme	Example Quotes	Potential Sources of Resources
Focal firm (clinic) based activities		
Actively sharing information	I found a fabulous downloadable pamphlet all on resection of bowels....and talked to the doctor about it.	Focal firm's (clinic) medical professionals and staff (reception staff, nurses, doctors)
Compliance with basic requirements	[Attending clinic appointments] I just try and be patient if you have to come as an outpatient it can be a long wait sometimes and so it is just important that you accept that.	
Proactive involvement in decision making	He would come in and see me when I was having chemo, and then he'd walk away and I would end up in tears...We sought a second opinion.	
Interactions with clinic staff	She spent round about an hour with me on that occasion where we got to share a bit about each other's lives ... making me feel as though I mattered to her I suppose, getting better mattered to her.	
Beyond focal firm (clinic) activities		
Relationships with family and friends	The love and support I have had from friends, and colleagues... I got about 40 bouquets of flowers in the hospital, ... I could actually feel people praying for me and people sending me thoughts.	Support groups, family, friends, caregivers, links through Internet sites; other supportive entities (e.g., health professionals), self
Connecting with others with illness	I have a friend who had breast cancer 20 years ago ...I would ring her and say "I just feel so sick" and she was great.	
Diversionary activities	I put in a rose garden and it has just been a joy, to see roses grow that I've never seen grow before.	
Healthy diet	I attempted to include in my diet some things that people were telling me work like drinking lemon juice and having linseed and ginger.	
Managing the practicalities of life	I have changed a few things in the house that made life a bit easier ...for example I bought myself a leather recliner.	
Seeking information	We knew then the treatments that were available; we got a lot of really good solid information about mantel cell lymphoma about the latest research etc., so we did all that.	
Self-generated activities		
Positive thinking	So I just decided I had to turn this around in my head. For me saying the prayers helps me do that...and say go get those bad cells (sings tune) and drive them out.	
Spiritual relationship	I feel I am getting strength from another source, when I say prayers.	
Emotional regulation	I don't go into a lot of detail with them, they don't cope with detail, they just want to know is there a path that you are going to follow, is there a treatment plan, when is it, and what happened, and how did that MRI go?	

Table 2. Customer Value Cocreation Activities: Marketing, Health and Psychology Literature

Marketing Literature*	Chronic Health or Health Psychology Literature**
Within-Clinic Activities	
<i>Actively Sharing Information</i>	
<p>Ennew and Binks (1999)^{ge} Consumer information sharing enhances perceptions of quality of the service.</p> <p>Bitner et al. (1997)^{he} In contributing information and effort to their diagnoses, patients are part of the service production process, supporting the effectiveness of the physician.</p>	<p>McWilliam, Brown, and Stewart (2000)^{ce} Information sharing and relationship building are critical components of a working relationship. This experience influences women's experience of control and mastery of the illness experience, and their learning to live with breast cancer.</p> <p>Michie, Miles, and Weinman (2003)^{ge} Patients taking the initiative in giving information to health professionals is also supported by the patient-centered approach and the positive impact of such an approach on satisfaction and quality of life.</p>
<i>Compliance with Basic Requirements</i>	
<p>Dellande et al. (2004)^{he} Compliance with behaviors prescribed by staff in a weight loss center has a positive effect on sense of achievement and satisfaction with the service.</p> <p>Yi and Gong (2012)^{ge} Responsible behavior, such as performing all required tasks, is a core aspect of customer participation behavior, which has a significant impact on customer perceived value.</p> <p>Auh et al. (2007)^{ge} Cooperating with the financial advisor increases perceptions of attitudinal and behavioral loyalty.</p>	<p>Fattal et al. (2005)^{ge} emphasize that compliance is critical and a widespread problem. Compliant patients have a better perspective of their current mental health status.</p> <p>Berben et al. (2012)^{ge} explains the potential negative outcomes of non-compliance, such as poor clinical outcomes, a higher chance of (re)hospitalization, and increased health costs.</p>
<i>Proactive Involvement in Decision Making</i>	
<p>Bettencourt (1997)^{ge} Proactive behaviors such as offering feedback to the organization may offer guidance for the service organization, which can contribute to satisfaction of the customer's and other's needs.</p> <p>Bettencourt et al. (2002)^{ge} Partnership and shared problem solving are integral to service success.</p>	<p>Guadagnoli and Ward (1998)^{ge} Reviews of previous research show that joint decision making and management lead to satisfaction and better health status.</p> <p>Michie, Miles, and Weinman (2003)^{ge} Reviews of literature relating to chronic illness show that a patient-centered approach, including a partnership style of decision making, results in greater satisfaction, adherence, physical health, and quality of life.</p>
<i>Interactions with Staff</i>	
<p>Ennew and Binks (1999)^{ge} The personal interaction between customer and firm enhances customer satisfaction.</p> <p>Yi and Gong (2012)^{ge} Personal interaction between customers and employees is a core aspect of customer participation behavior, which has a significant impact on customer perceived value.</p>	<p>Kearley et al. (2001)^{ge} Having a personal relationship with a general practitioner is highly valued by patients with significant health problems such as cancer and associated with significant benefits for patients and practitioners.</p> <p>Kruijver et al. (2000)^{ce} Nurses' behaviors, such as empathy, touch, comforting, and supporting, are essential in caring for patients.</p>

Outside Clinic Activities

Information Seeking

Yi and Gong (2012)^{ge} Consumer information seeking is a core aspect of customer participation behavior, which has a significant impact on customer perceived value.

Ziebland et al. (2004)^{cc} Actively gathering information about cancer from the Internet leads to competency and social fitness (perception of remaining a competent member of society despite serious illness).

Carlsson (2000)^{cc} Gathering information about cancer from sources external to the clinic is a form of coping.

Diet

Bitner et al. (1997)^{hc} In the context of Weight Watchers, it is up to the members to follow the prescribed guidelines. Customers would attribute some of the success to themselves, thus would play a role in their own satisfaction.

Andrykowski et al. (2006)^{cc} Patients adopt healthier lifestyles, including a healthy diet after diagnosis, to improve their general health status and future risk for other diseases; others do so to enhance their response to treatment or reduce the risk for recurrence.

Patterson et al. (2003)^{cc} Patients who had made significant healthy dietary change (e.g., ate more fruit and vegetables and less red meat, followed a weight loss diet) overwhelmingly thought that these lifestyle changes improved their health and well-being.

Diversions Activities

Duhachek (2005)^{ge} Taking one's mind off a stressful situation leads to reduced stress.

Culver et al. (2002)^{cc} and Moorey, Frampton and Greer (2003)^{cc} Self-distraction is a form of coping response that helps reduce stress.

Managing the Practicalities of Life

Duhachek (2005)^{ge} Making a plan of action is a coping strategy.

Funnell and Anderson (2004)^{dc} For successful self-management, patients must be able to set goals, make frequent decisions that are effective and fit their values and lifestyles, and take into account multiple physiological and personal psychosocial factors.

Connecting with Others

Duhachek (2005)^{ge} Obtaining advice from someone else on what to do is a form of instrumental support that aids in stress reduction.

Ziebland et al. (2004)^{cc} Patients use the Internet to contact and gain experiential information from other patients. Wider access to medical information is inevitable and likely to encourage a balanced encounter between patient and health professional and increase the appropriate use of medicine.

Blake-Mortimer et al. (1999)^{cc} argue that constructing new social networks for cancer patients through support groups and other means is doubly important during illness, when natural social support may erode.

Relationships with Family and Friends

Duhachek (2005)^g Putting effort into relationships and sharing information with others is a form of emotional support that aids in stress reduction.

Andrykowski et al. (2006)^{cc} Psychosocial factors, such as spending time with friends and family, are critical components of healthy lifestyle behaviors.

Fagerlind et al. (2010)^g Managing daily life, having meaningful family relationships, and having meaningful friendships support quality of life.

Self-Generated Activities

Emotional Regulation

Gross (1999)^g Emotions are not always helpful and often must be regulated.

Duhachek (2005)^g Controlling emotions, preserving an emotional balance, and trying to avoid behaviors driven by emotions is a core function of coping.

Finch and Gibson (2009)^{cc} Parents tend to restrict or filter information on their own health status given to children and need guidance on this issue.

Emslie et al. (2009)^{cc} Both men and women put considerable emotional labor into controlling their emotions to protect spouses, maintain household routines, and preserve normality for their families by putting on a brave face.

Positive Thinking

Duhachek (2005)^g Looking on the bright side or developing a fighting spirit is a form of coping when faced with stressful events.

Fagerlind et al. (2010)^g Having a positive outlook on life is essential to quality of life.

Cordova et al. (2003)^{cc} Greater fighting spirit is linked to better emotional adjustment.

*Col 1:

g, h = general or health care context

e, c= point is conceptual or arises from discussion (c) or is empirical (e)

**Col 2:

c, d, h or g= cancer, diabetes, heart disease or general chronic illness

e or c= point is conceptual or arises from discussion (c) or is empirical (e)

Table 3. Descriptive Statistics for Health Care Customer Value Cocreation Activities

Customer Value Cocreation Activities Category	Activity Theme	Item^a	M (SD) Cancer	M (SD) heart	M (SD) diabetes	M (SD) Total
Within-firm (clinic) activities	Actively sharing information	Shared information about my condition with the medical staff	4.66 (1.42)	4.70 (1.31)	4.55 (1.36)	4.64 (1.36)
	Compliance with basic requirements	Done what my medical staff at the clinic tell me to do	5.12 (1.10)	4.94 (1.08)	4.60 (1.21)	4.87 (1.15)
	Proactive involvement in decision making	Requested changes be made to my treatment plan if I think it best for me	3.57 (1.72)	3.72 (1.61)	3.65 (1.58)	3.65 (1.63)
	Interactions with clinic staff	Interacted with staff on a personal level	4.82 (1.33)	4.75 (1.25)	4.49 (1.42)	4.68 (1.34)
Outside firm (clinic) activities	Relationships with family and friends	Put effort into my relationships with friends and family	4.91(1.21)	4.91 (1.19)	4.92 (1.20)	4.91 (1.20)
	Connecting with others with illness	Asked others who have had the same illness as me for support	3.32(1.76)	3.11 (1.60)	3.12 (1.65)	3.18 (1.67)
	Diversionary activities	Kept busy to distract myself from thinking about my medical situation	4.49 (1.46)	4.03 (1.54)	3.74 (1.53)	4.07 (1.54)
	Healthy diet	Maintained a healthy diet	4.42 (1.26)	4.49 (1.23)	4.22 (1.33)	4.37 (1.28)
	Managing the practicalities of life	Changed things in my life to help my situation	4.71 (1.30)	4.67 (1.25)	4.25 (1.36)	4.53 (1.32)
	Seeking information	Done a considerable amount of research about my condition on my own	4.50(1.57)	4.11 (1.55)	4.03 (1.63)	4.20 (1.59)
Self-generated activities	Positive thinking	Consciously thought ‘I am not going to let this beat me’	5.14 (1.18)	4.62 (1.40)	4.33 (1.46)	4.68 (1.40)
	Emotional regulation	Tried to protect others from negative information about my illness	4.45 (1.48)	4.01 (1.56)	3.58 (1.56)	3.99 (1.57)

^a Measured on a six-point scale (1=strongly disagree, 6= strongly agree).

Table 4. Sample Characteristics

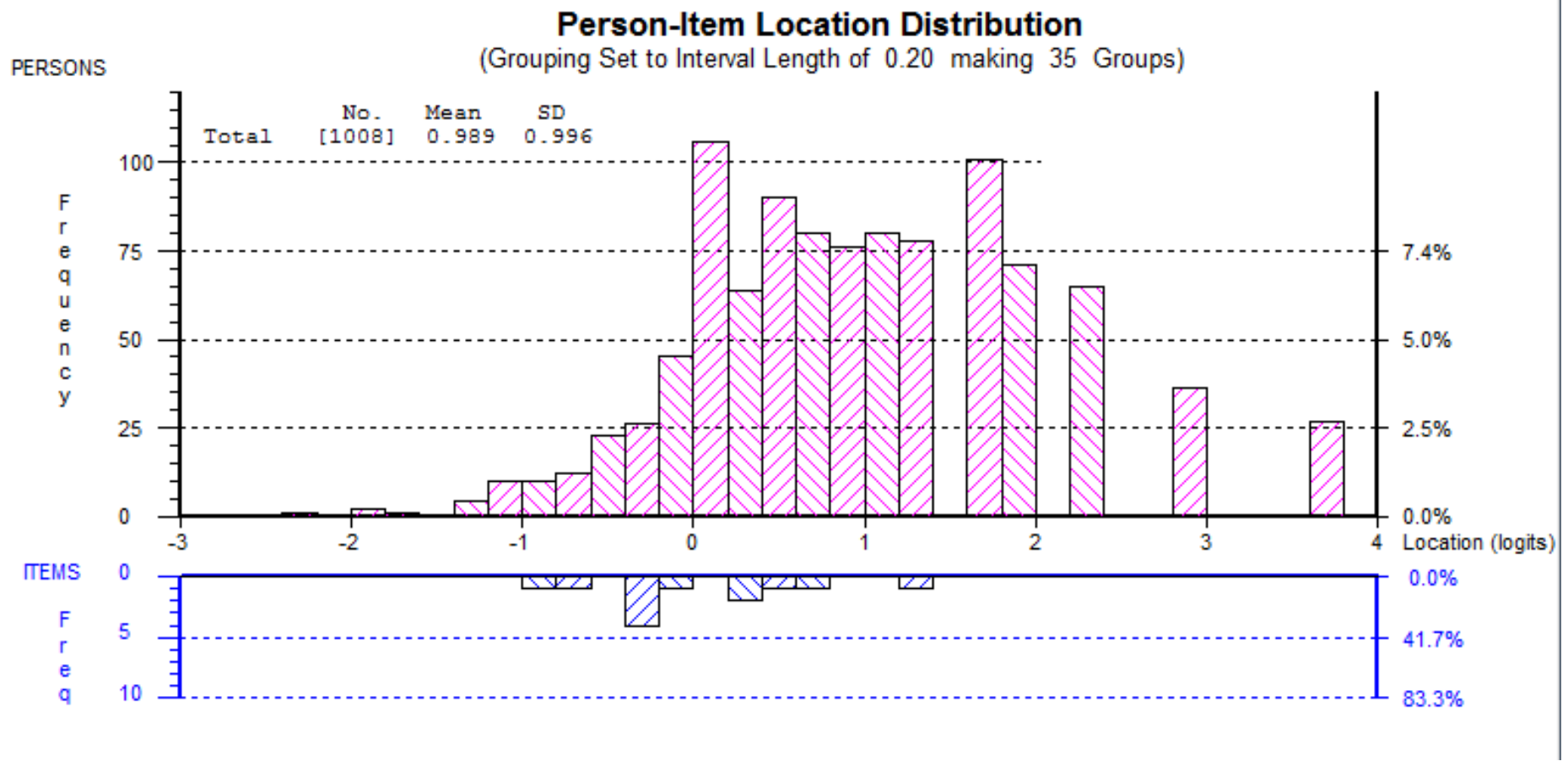
Characteristic	Cancer (%) (n=304)	Heart Disease (%) (n=348)	Diabetes (%) (n=356)
Age (years)			
19-29	5.9	4.9	7.3
30-39	15.5	11.5	15.2
40-49	26.3	16.4	25.6
50-59	26.0	28.4	26.4
60-69	21.1	27.9	19.9
70+	5.3	10.9	5.6
Gender			
Male	40.1	63.8	44.1
Female	59.9	36.2	55.9
Length of Clinic Attendance (years)			
<1	29.3	15.5	14.0
1-3	36.8	31.6	31.2
4-6	16.8	19.5	19.7
7-9	7.9	10.1	9.0
10+	9.2	23.3	26.1
Belief in Treatment Efficacy			
Cure the disease	30.3	4.9	0.8
Control the disease	55.6	89.7	97.5
Unsure	14.1	5.5	1.7
Overall Health Rating (1=poor, 7= excellent)			
1	3.3	0.9	2.5
2	7.6	8.9	6.5
3	16.1	14.9	14.0
4	18.4	23.0	22.5
5	30.3	31.6	26.7
6	15.1	16.1	22.2
7	9.2	4.6	5.6
Mean Overall Health Rating	4.47	4.42	4.53

Notes: Chi-square tests show that patients in the three illness types differed in age (Pearson's $\chi^2 = 28.543$, $df = 10$, $p = .001$), gender (Pearson's $\chi^2 = 43.246$, $df = 2$, $p = .000$), length of clinic attendance (Pearson's $\chi^2 = 53.375$, $df = 8$, $p = .000$), belief in treatment efficacy (Pearson's $\chi^2 = 2.240$, $df = 4$, $p = .000$), and overall health rating (Pearson's $\chi^2 = 21.418$, $df = 12$, $p = .045$).

Table 5. Rasch Scale Values and Fit Statistics

Theme	Value Cocreation Activities Item	Location on Rasch Scale	Item Fit (df = 9)	χ^2 Probability	DIF Interaction Term Probability for Illness
Compliance with basic requirements	Done what my medical staff at the clinic tell me to do	-.92	14.34	.11	.78
Relationships with family and friends	Put effort into my relationships with friends and family	-.73	8.02	.53	.44
Interactions with staff	Interacted with staff on a personal level	-.36	10.30	.32	.70
Managing the practicalities of life	Changed things in my life to help my situation	-.33	39.80	.00	.35
Positive thinking	Consciously thought 'I am not going to let this beat me'	-.32	16.64	.06	.12
Actively sharing information	Shared information about my condition with the medical staff	-.30	13.01	.16	.04
Healthy diet	Maintained a healthy diet	-.15	8.89	.45	.69
Seeking information	Done a considerable amount of research about my condition on my own	.29	7.53	.58	.11
Diversionsary activities	Kept busy to distract myself from thinking about my medical situation	.37	9.22	.42	.47
Emotional regulation	Tried to protect others from negative information about my illness	.41	17.33	.05	.27
Proactive involvement in decision making	Requested changes be made to my treatment plan if I think it best for me	.76	27.42	.01	.70
Connecting with others	Asked others who have had the same illness as me for support	1.28	8.25	.51	.85

Appendix A. Person-Item Location Distribution on Rasch Scale



Appendix B. Measurement Model Results

Construct	Item	Mean	SD	AVE	Construct reliability
Satisfaction with service Satisfaction with the service provided at the clinic attended for the focal illness	I am satisfied with this clinic.	6.02	1.28	0.94	0.98
	My choice to use this clinic was a wise one.	5.98	1.33		
	I am happy with this clinic.	6.02	1.32		
Quality of life Evaluation of overall quality of life (not specifically related to health)	I am satisfied with the quality of my life.	4.76	1.73	0.97	0.98
	I am happy with the quality of my life.	4.72	1.75		
	I have a sense of well-being.	4.82	1.77		
Behavioral intentions Future intentions of the patient with respect to loyalty and word of mouth	If I had to start treatment again I would want to come to the same clinic.	6.07	1.33	0.83	0.94
	I would highly recommend the clinic to other patients.	6.05	1.34		
	I intend to continue having treatment, or any follow-up care I need, at this clinic.	6.21	1.17		