Tampere University

LAURI LITOVUO

Healthcare Value as an Experience

From individuals' health service experiences to healthcare ecosystem and related methods

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ACADEMIC DISSERTATION
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ABSTRACT

Healthcare customers' experiences are increasingly becoming the focus of healthcare service provision and have lately assumed prominence in healthcare practice and research. The potential for providing superior experiences, notably health service experiences (HSEs), is extensive: improved clinical effectiveness, positive word of mouth, improved patient satisfaction, and patient engagement that can lead to improved cost effectiveness and positive health outcomes for individuals. Most importantly, HSEs are considered to be the core basis of value determinations of healthcare customers. These value determinations are described and conceptualized as value as an experience. The provision of experiential value is critical for healthcare companies—those healthcare providers who increase the value provided will be the most competitive, whereas those who do not increase value in healthcare provision will encounter growing pressure that is driven by many societal challenges. For this reason, understanding and developing value through experiences has become one of the fundamental aims in healthcare systems and a top priority for healthcare organizations.

Generating such understanding, however, is no small task and is framed by the complexity of the HSE phenomenon through which the value is determined. HSE is described as a sensitive, subjective, and multidimensional construct that emerges through a myriad of interactions over complex patient journeys within a sophisticated healthcare ecosystem. Despite its relevancy, the concept of healthcare value as an experience has remained elusive, lacking an empirical and comprehensive understanding. The objective of this dissertation, therefore, is to develop a better understanding of healthcare value as an experience to contribute theory building with empirically generated knowledge and offer guidance for healthcare providers that are seeking to provide better value for their customers.

The objective is approached using four research questions: 1) How is multidimensional HSE composed? 2) Who belongs to the healthcare ecosystem by co-creating value as an HSE? 3) What kinds of patient journey touchpoints shape an HSE in a healthcare ecosystem? 4) What do diverse methods provide for capturing an individual's HSE, and how is the HSE understanding utilized within healthcare ecosystem? To answer these questions, the dissertation comprises six articles with a qualitative research approach and this introduction. The studies applied a range of research designs, including a systematic literature review of 129 customer experience articles; explorative interview studies with pediatric patients' parents, healthcare professionals, and healthcare workers; an explorative case study of a healthcare gamification ecosystem; a collective, instrumental case study focusing on qualitative methods; and a participatory design study focusing on children's experience inquiry. The empirical studies were conducted in a Finnish healthcare setting.

This dissertation creates a new knowledge of healthcare value as an experience, thereby making several contributions to the service research and marketing literature in healthcare context, healthcare management, healthcare operations management, participatory design, and qualitative healthcare research literature. The findings build on a nuanced empirical understanding of multidimensional HSEs through sensory, emotional, cognitive, behavioral, and social dimensions and identify the relevant healthcare ecosystem actors at the micro, meso, and macro levels of the ecosystem that participate in experiential value co-creation. In addition, the dissertation empirically highlights the broadness of the touchpoints shaping the HSE over patient journeys, specifically those that reside well beyond the healthcare providers' facilities, including touchpoints in patients' and their families' everyday lives. Finally, the dissertation provides methodological insights into the empirical query of individuals' HSEs, develops a novel data collection method for studying children's HSEs, and provides a better understanding of the challenges in utilizing this understanding within the healthcare ecosystem. The findings are relevant for practitioners, including healthcare managers and professionals, municipal and governmental entities, and other actors in the healthcare ecosystem, such as patient associations and technology companies.

TIIVISTELMÄ

Terveydenhuollon asiakkaiden kokemukset, eli terveyspalvelukokemukset, ovat enenevissä määrin terveydenhuollon palvelujen tuottamisen painopisteenä, ja ovat viime aikoina lisänneet näkyvyyttään niin terveydenhuollon toiminnassa kuin tutkimuksessa. Hyötypotentiaali parempien kokemusten tarjoamisessa on kattava, sillä se on yhteydessä parempaan kliiniseen tehokkuuteen, asiakassuosituksiin, parempaan potilastyytyväisyyteen ja potilaiden sitoutumiseen. Nämä voivat johtaa parempaan terveydenhuollon kustannustehokkuuteen ja parempiin hoitotuloksiin potilaille. Mikä tärkeintä, terveyspalvelukokemuksia pidetään terveydenhuollon asiakkaiden arvon määritysten keskeisenä perustana, joka käsitteellistetään kokemuksellisena arvona. Terveydenhuoltoalan yrityksille tämän kokemusarvon tarjoaminen on kriittisen tärkeää—ne terveydenhuollon tarjoajat, jotka nostavat tarjottua arvoa eniten ovat kilpailukykyisempiä, kun taas ne, jotka eivät lisää arvoa kohtaavat kasvavaa painetta kilpailusta ja monista yhteiskunnallisista haasteista johtuen. Näistä syistä, arvon ja terveyspalvelukokemusten ymmärtämisestä ja kehittämisestä on tullut yksi terveydenhuoltojärjestelmien ja terveydenhuollon organisaatioiden ensisijaisista tavoitteista.

Tämän ymmärryksen saavuttaminen ei ole yksinkertaista, sillä terveyspalvelukokemukset ovat monimutkainen kokonaisuus. Terveyspalvelukokemusta on kuvattu sensitiiviseksi, subjektiiviseksi ja moniulotteiseksi kokonaisuudeksi, joka syntyy lukemattomissa vuorovaikutuksissa moninaisten potilaspolkujen aikana terveydenhuolto-ekosysteemin sisällä. Tärkeydestään huolimatta, terveydenhuollon kokemuksellinen arvo onkin jäänyt hämäräksi vailla empiiristä ja kokonaisvaltaista ymmärrystä. Tämän väitöskirjan tavoitteena on kehittää parempaa ymmärrystä terveydenhuollon kokemuksellisena arvona, joka edistää niin teorian rakentamista empiirisesti tuotetun tiedon tuella kuin tarjoaa ohjausta terveydenhuollon organisaatioille, jotka pyrkivät tarjoamaan parempaa arvoa asiakkailleen.

Tavoitetta lähestytään neljällä tutkimuskysymyksellä: 1) Miten moniulotteinen terveyspalvelukokemus koostuu?, 2) Ketkä kuuluvat terveyspalvelu-ekosysteemiin yhteisluomalla arvoa terveyspalvelukokemuksena?, 3) Millaiset potilaspolun kosketuspisteet muokkaavat terveyspalvelukokemusta terveydenhuolto-ekosysteemissä?, 4) Mitä erilaiset menetelmät tarjoavat yksilöiden terveyspalvelukokemuksen tutkimiseen, ja miten ymmärrystä hyödynnetään terveydenhuolto ekosysteemissä?. Vastatakseen näihin kysymyksiin, tämä väitöskirja sisältää kuusi laadullista lähestymistapaa hyödyntävää artikkelia, ja tämän johdannon. Tutkimuksissa sovellettiin erilaisia tutkimusmalleja, kuten 129 asiakaskokemusartikkelin systemaattista kirjallisuuskatsausta; lapsipotilaiden vanhempien, terveydenhuollon ammattilaisten ja työntekijöiden kanssa tekemiä kartoittavia haastattelututkimuksia; terveydenhuollon pelillistämisekosysteemiä kartoittavaa tapaustutkimusta; kollektiivista instrumentaalista kartoittavaa tapaustutkimusta, jossa keskitytään laadullisiin tutkimusmenetelmiin; sekä osallistavaa suunnittelututkimusta, jossa keskitytään lasten terveyspalvelukokemuksen tutkimiseen kehitettyyn tutkimusmenetelmään. Empiiriset tutkimukset tehtiin suomalaisessa terveydenhuollossa.

Tämä väitöskirja luo uutta tietoa terveydenhuollon arvosta kokemuksena ja antaa siten useita kontribuutioita palvelututkimuksen ja markkinoinnin kirjallisuuteen terveydenhuollon kontekstissa, terveydenhuollon johtamisen kirjallisuuteen ja terveydenhuollon operaatioiden johtamisen kirjallisuuteen. Tulokset perustuvat empiiriseen ymmärrykseen moniulotteisista terveyspalvelukokemuksista, jotka koostuvat aisti, tunne, kognitio, käyttäytymis-, ja sosiaalisen ulottuvuuksien kautta ja mikro-, meso-, ja makrotasojen yhteisluomiseen osallistuvien toimijoiden tunnistuksesta terveydenhuolto-ekosysteemin sisällä. Lisäksi väitöskirjassa valaistaan laajasti terveyspalvelukokemusten muodostumista potilaspoluilla eri kosketuspisteiden kautta, myös niiltä osin, mitkä sijoittuvat terveydenhuoltotarjoajien kentän ulkopuolelle potilaiden ja heidän perheidensä arkeen. Väitöskirja tarjoaa metodologisia näkemyksiä yksilöiden terveyspalvelukokemuksen tutkimiseen ja antaa paremman käsityksen haasteista, jotka liittyvät tämän ymmärryksen hyödyntämiseen terveydenhuolto-ekosysteemissä. Tämän väitöskirjan löydökset ovat merkityksellisiä terveydenhuollon johdolle ja ammattilaisille, kunnallisille ja valtiollisille toimijoille sekä muille terveydenhuolto-ekosysteemin toimijoille, kuten potilasyhdistyksille ja teknologiayrityksille.

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ABBREVIATIONS

HOM	Healthcare operations management
HSE	Health service experience

ORIGINAL PUBLICATIONS

Publication I	Kuuru, T-K., Litovuo, L, Aarikka-Stenroos, L. & Helander, N. (2020). Emotions in customer experience. In Lehtimäki H., Uusikylä P., Smedlund A. (Eds.) *Society as an Interaction Space* (pp. 247-274). Translational Systems Sciences, vol 22. Springer, Singapore. https://doi.org/10.1007/978-981-15-0069-5_12.
Publication II	Litovuo, L., Jaakkola, E., Aarikka-Stenroos, L., Kaipio, J., Karisalmi, N., & Nieminen, M. (2018, June) What constitutes patient experience and journey in pediatric health services? Contrasting doctors and caregivers perceptions. In *Proceedings of 10th Servsig Conference.* (pp. 573-587). June 14-16, 2018. Paris, France.
Publication III	Litovuo, L., Makkonen, H., Aarikka-Stenroos, L., Luhtala, L., & Makinen, S. (2017, September). Ecosystem approach on medical game development: the relevant actors, value propositions and innovation barriers. In *Proceedings of the 21st International Academic Mindtrek Conference.* September 20-21, 2017. Tampere, Finland. (pp. 35-44). Association for Computing Machinery, New York, NY, United States. https://doi.org/10.1145/3131085.3131104
Publication IV	Kaipio, J., Stenhammar, H., Immonen, S., Litovuo, L., Axelsson, M., Lantto, M., & Lahdenne, P. (2018, May). Improving hospital services based on patient experience data: current feedback practices and future opportunities. In *Proceedings of MIE2018 (Medical Informatics Europe) Conference* (pp. 266-270). April 24-26, 2018. Gothenburg, Sweden. https://doi.org/10.3233/978-1-61499-852-5-266
Publication V	Litovuo, L., Karisalmi, N., Aarikka-Stenroos, L. & Kaipio, J. (2019). Comparing three methods to capture multidimensional service experience in children's healthcare: video diaries, narratives, and semistructured interviews. *International Journal of Qualitative Methods, 18,* 1-13. https://doi.org/10.1177/1609406919835112
Publication VI	Litovuo, L. (2021). Development of a boundary object supported method to study children's healthcare customer journeys. In *Proceedings of the 20st European Conference on Research Methodology for Business and Management Studies* (pp. 274-279). June 17-18, 2021. Aveiro, Portugal. https://doi.org/10.34190/ERM.21.073

AUTHOR'S CONTRIBUTION

Publication I	For publication I, I jointly with T.-K.K., L.A.-S., and N.H developed the idea for the study. The systematic literature review for the publication and writing of the first draft was done jointly by the four authors. In the review process, revisions based on the feedback from the editors of the book were developed jointly by the thesis author and T.-K.K. with support from L.A.-S. and N.H.
Publication II	For the publication II, the thesis author with the support of E.J. and L.A.-S. developed the research design of the study. As the corresponding author of the publication, I carried out the literature review for the publication, analyzed the data collected by the LAPSUS project team*1),2), in which N.K. provided a major contribution, and wrote the paper's first full draft, including developing the findings and the model presented in the paper, discussion, and conclusions. E.J. and L.A.-S. provided input to and comments of the drafts throughout the process, and J.K. and N.K. provided input, clarifications, and corrections for finalizing the draft. The draft was then modified primarily by me.
Publication III	For publication III, the study's research design was developed jointly by the thesis author L.L., H.M. and L.A.-S based on the idea and draft of H.M. The literature review for the publication was primarily done by me with the support of L.A.-S. and H.M. Data collection and the initial data analysis was carried out by L. Luh., after which I further developed the analysis and wrote the first draft of the publication, including developing the findings, discussion, and conclusions with the comments and input from L.A.-S. and H.M. S.M provided input on formulating the conclusions and commented on the first draft, and the draft was then modified primarily by me. During the review process, I developed and implemented the revisions with support from the coauthors. I act as the corresponding author.
Publication IV	J.K. had the main responsibility for planning and writing of the article*. The study was designed and the interview data mainly collected by H.S., S.I., M.A. and M.L., to which I contributed by collecting complementary data and participating in the data analysis

together with the other authors. I also provided writing input to the theoretical framing and discussions on ecosystems. The article was finalized in collaboration with all the authors.

Publication V

For publication V, the thesis author L.L. jointly with L.A.-S. developed the idea and the research design for the study with the support from N.K. The literature review for the publication was primarily done by me, with a support from N.K., J.K., and L.A.-S. The data for the publication was collected by the LAPSUS research project team*, N.K. had a major contribution in the data collection. I analyzed the data of one sub-study*1), and N.K. analyzed the data of one sub-study, which she had collected. I was responsible for writing the methods and results for the corresponding sub-study, whereas N.K. was responsible for the other sub-study. N.K. and I jointly analyzed the data of the one substudy2) and jointly wrote the methods and results for this sub-study. I wrote the first draft of the paper, including the introduction, summarizing the findings, discussion, and conclusions with the input from N.K. and J.K. and support from L.A.-S, which was then presented by me as an early manuscript of the study at the 5th Naples Forum on Service Conference (6-9 June 2017, Sorrento, Italy). The publication was then further developed to the full journal paper jointly with N.K. and with the support from J.K. and L.A.-S. During the review process, the four authors with the lead of the thesis author and L.A.-S developed the revisions based on the comments of three anonymous reviewers from the journal. I primarily implemented the revisions jointly with N.K. and with support from J.K and L.A.-S. I acted as the corresponding author.

Publication VI

For publication VI, I conceived of the idea for the paper, conducted the literature review for the publication, developed the research framework, and drew the conclusions of the study. The method development was done jointly with a participant from a participatory design workshop. I presented an early abstract of the study at the 10th Naples Forum on Service Conference (4-7 June 2019, Ischia, Italy), after which the publication was further developed into a full paper.

*The appended publication is built on the LAPSUS research project, and the data utilized were collected to meet the aims of the project.

*1) Hanna-Riikka Sundberg, who did not participate in writing the publication, collected the interviews with the hospital personnel.

*2) Petri Mannonen, Mikael Runonen, who did not participate in writing the publication, and Nina Karisalmi collected the retrospective interviews with the child patients' parents.

1 INTRODUCTION

1.1 Allurement of studying healthcare value as an experience

Healthcare customers' experiences are increasingly becoming the focus of healthcare service provision and have lately assumed prominence in healthcare practice and research. The potential of providing superior experiences, namely health service experiences (HSEs), is extensive. HSEs are associated with clinical effectiveness (Ahmed et al., 2014), patient safety (Sonis et al., 2018), positive word of mouth (Jha et al., 2008), frequency of patient complaints and lawsuits (Sonis et al., 2018), and patient satisfaction (Jha et al., 2008; Bleich et al., 2009). HSEs are also connected to how healthcare customers participate in care processes and engage with the care (Van Doorn et al., 2010), which contributes to the cost effectiveness of healthcare and positive health outcomes for individuals (Rave et al., 2003; Greenfield et al., 1988). Most importantly, the HSEs are considered the basis of value determinations of healthcare customers (Vargo and Lusch, 2008, Helkkula et al., 2012), conceptualized value as an experience (Helkkula et al., 2012), thus making provision of such experiences critical for achieving competitive advantage in highly competitive healthcare markets (Porter and Lee, 2013). Those healthcare providers who increase the value provided will be the most competitive, whereas those who do not increase value in healthcare will encounter growing pressure (Porter and Lee, 2013) driven, by the increasing health needs of aging, growing populations, and the proliferation of chronic diseases, in addition to the current pandemic (Deloitte Insights, 2021). For this reason, the development of value through experiences has become one of the fundamental aims of healthcare systems (Berwick et al., 2008), and a top priority for healthcare organizations that has sparked the rising appointments of Chief Experience Officers, who are responsible for developing HSEs in hospitals (Wolf, 2019). Clearly, understanding healthcare value as an experience is a critical factor for organizations and healthcare systems that help individuals who seek aid in recovering their wellbeing.

Value as an experience is defined as "individual service customers' lived experiences of value that extends beyond the current context of service use to also include past and future experiences and service customers' broader lifeworld contexts" (Helkkula et al., 2012, p. 59). It is worth acknowledging that other definitions of healthcare value also exist in the research literature. These include, for example, value defined as health outcomes relative to the cost of care (Porter, 2010), monetary value of the healthcare customer to the firm (Pitta and Laric, 2004), and value as health and well-being (Black and Gallan, 2015; Anderson and Ostrom, 2015). Yet, the great importance of the experiences for an individual patient, and his or her wellbeing, and the potential to impact the healthcare system as a whole underlines the importance of approaching value as an experience in healthcare.

The provision of high value as an experience or even generating an understanding of the experiences can be challenging for several reasons. First, the past and present lived experiences and imagined future HSEs of healthcare customers are a complex, subjective, and multidimensional construct that manifests through sensory, emotional, cognitive, behavioral, and social dimensions (Becker and Jaakkola, 2020; Verhoef et al., 2009; Schmitt, 1999). Thus, nuanced knowledge is required to gain a comprehensive view of HSEs. Second, as defined, the context of healthcare value as an experience extends well beyond the context of the focal health service to the lives of the customers. This implies that value and HSE emerge through a myriad of interactions over the course of recovering wellbeing. In other words, HSE is viewed to emerge over complex patient journeys, in which various actors of the sophisticated healthcare ecosystem participate, including healthcare providers, the patients' own networks such as family and friends, other firms, and public services (LaVela and Gallan, 2014; Lemon and Verhoef, 2016; McColl-Kennedy et al., 2012; Sweeney et al., 2015). Thus, to holistically understand value as an experience, a dynamic, multi-actor approach is required. Third, the studied individuals may be going through difficult times in their lives, including the potential for painful experiences, making the topic highly sensitive and within a context that is highly influenced by regulation and norms (Danaher and Gallan, 2016). It is therefore imperative that special attention should be paid to the research methods used.

Despite the challenges, scholars from different research streams have been increasingly paying attention to and advancing the knowledge on healthcare value as an experience and HSE itself. The current thesis particularly focuses on service research, marketing research, healthcare operations research, and healthcare management research. The amount of scholarly interest within the scope is not surprising because the healthcare sector contributes substantially to the gross domestic product of developed economies, employs a significant number of people (Danaher and Gallan, 2016), and most people, at some point in their lives, are likely to be the industry's customer. This makes it a fruitful and rewarding field for research. In the healthcare management literature, for instance, the number of studies addressing patients' experiences has rapidly increased in recent years, accompanied by two journals, *Patient Experience Journal* and *Journal of Patient Experience,* focusing largely on the topic. In the healthcare operations management (HOM) stream, individuals' experiences are described as a central component of healthcare quality, which is a cornerstone of efficient and effective healthcare systems (Karuppan et al., 2016; Lillrank, 2015). In the marketing and service literature, customer and service experience have become one of the dominant concepts (Becker and Jaakkola, 2020), with healthcare increasingly becoming one of its most relevant domains for study (Danaher and Gallan, 2016). Despite the interest and motivation to understand value and experiences in healthcare, the current understanding has remained insufficient, which has been proven by a number of comprehensive research agendas that have been published to study experiences in the healthcare context (Berry and Bendapudi, 2007; McColl-Kennedy et al., 2017b).

Although the healthcare management stream provides some valuable insights into the antecedents of patients' experiences in hospital, the consequences of such experiences (see e.g., Sonis et al., 2018), and the optimizing of patients' journeys (Wolterbeek et al., 2019), it provides little understanding of the holistic experiences emerging through interactions in the wider healthcare ecosystem, consisting of family, friends, and third-sector societies, such as patient associations. The service research, in addition to advancing our conceptual understanding of experiences, has still largely focused on the contexts providing positively memorable experiences, whereas little attention has been paid to "negative" and reluctant consumer contexts like healthcare (McColl-Kennedy et al., 2015; Garg et al., 2011), where customers need the services rather than want them (Berry and Bendapudi, 2007) and are likely looking to get in and out as quickly and painlessly as possible (Vogus et al., 2020). Similarly, in the marketing research stream, addressing customers' experiences has mostly focused on hedonic consumption that emphasizes the individual's extraordinary, critical, or peak experiences (McColl-Kennedy et al., 2015). In the studied contexts, the experiential value is inherently "positive" and added through "feel wells" that include delight, desire, nostalgia, and entertainment (Ponsonby and Boyle, 2004), which provides little relevancy for the healthcare context. Thus, researching healthcare value as an experience from multiple perspectives, from the individual's experiences to ecosystem investigations and related methods, is still needed. This is what the current dissertation addresses.

1.2 Research rationale and gaps

The present research addresses several gaps in the service, marketing, healthcare management, and healthcare operations management (HOM) research that relate to exploring healthcare value as an experience. These gaps are discussed as follows.

First, given that value is embedded in the experiences of individuals (Helkkula et al., 2012), which are context dependent (De Keyser et al., 2020; Becker and Jaakkola, 2020; Kranzbühler et al., 2018), HSEs must be contextually and empirically examined and understood. However, the current research has largely stayed at a conceptual level, missing empirical insights into HSEs. Although marketing and service research has provided important conceptualizations of multidimensional experiences as the sensory, affective, cognitive, behavioral, and social dimensions (Verhoef et al., 2009; Schmitt, 1999), there are only limited papers focusing these experiences empirically. In a healthcare context these papers have focused, for example, on only a particular aspects of experience, such as experience quality in the hospital setting (Ponsignon et al., 2015), a particular dimension of HSE, for example, emotions (McColl-Kennedy et al., 2017c), or understanding and conceptualizing a "luxury patient experience" (Klaus, 2017). In the HOM stream, individuals' experiences are seen as a central component of quality, which is a cornerstone of efficient and effective healthcare systems (Karuppan et al., 2016; Lillrank, 2015). However, these subjective experiences are rarely discussed in detail or addressed per se. In healthcare management literature, the essence of HSE—or in that stream the patient experience—is the patient's perceptions, which are defined as what is recognized, understood, and remembered by patients (Wolf et al., 2014). Yet the attention in healthcare management research has mainly been centered on the measurement of healthcare organization processes and experience metrics as the key indicators (Sonis et al., 2018; Wolterbeek et al., 2019), leaving these perceptions lacking when it comes to in-depth investigations. Hence, within the key literature streams *the concept of multidimensional HSEs have remained elusive and lacking empirical understanding, and thus, is an important cross-disciplinary gap to fill.*

Second, HSEs emerge in a sophisticated and fragmented service environment, namely the healthcare ecosystem, entailing various individuals, technologies, social norms, policies, and regulations (Patricio et al., 2018) and in which people are serving others, providing medical treatments, and maintaining efficient and effective healthcare quality, while patients are likely to engage in the resources from the patient's own network, such as family, friends, other firms, and public services, to regain their well-being (McColl-Kennedy et al., 2012; Sweeney et al., 2015). To understand this complex and multisided emergence of experiential value in healthcare, the field has started to adapt an ecosystem approach (Pop et al., 2018; Frow et al., 2016; Dai and Tayur, 2019) for examining the focal set of actors as part of broad and interdependent systems (Aarikka-Stenroos and Ritala, 2017) rather than taking a dyadic view of the healthcare organization and the patient (e.g., Osei-Frimpong et al., 2015).

The service ecosystem lens enables the considerations of interactions across multiple levels of the ecosystem (micro, meso, and macro), institutions (e.g., social norms, organization culture, and regulations), and the interconnectedness of these levels regarding the co-created experiential value (Akaka et al., 2015). Although the subjective experience is always perceived at the micro level of the healthcare ecosystem, that is, the individual level, experience can be influenced by the higher levels of the ecosystem (Akaka and Vargo, 2015), namely by the meso and macro levels. The meso level is described as the local or organization level and extends the ecosystem to concern a broader set of actors (see Appendix 1 for definition) and institutions that guide and influence micro-level value co-creation (Akaka et al., 2013). The macro level can be described as the broadest context through which the experiences are co-created (Akaka et al., 2015), that is, the level of society. The macro level includes actors responsible for developing and implementing healthcare policies, actors forming and structuring economic, social, and cultural contexts, and actors responsible of medical and scientific training and education (Helkkula et al., 2013; Capunzo et al., 2013). Although the co-creation practices and customer's role in the co-creation within the healthcare ecosystem has gained some attention in the research (McColl-Kennedy et al., 2017a, b; Frow et al., 2016), the empirical examinations of healthcare ecosystem have mainly focused on higher system-level investigations (e.g., Frow et al., 2016) rather than utilizing multilevel perspectives for their mapping. Thus, to move forward from the dyadic view and toward a better understanding of the composition of healthcare ecosystems, *the multiperspective mapping of the healthcare ecosystem and its actors is an important gap to fill.*

Third, because the ecosystem perspective entails multiple interactions with various different actors through which the experience emerges, a dynamic and broad perspective on the emergence of the HSE is needed to better understand and serve customers. It is essential that service and management research and healthcare practice not only examine the health service experience as a static multidimensional construct but also understand how the HSE dynamically emerges from touchpoint stimuli throughout a journey that the patient—and to some extent the family members—go through while recovering (Følstad and Kvale, 2018; Lemon and

Verhoef, 2016; Becker and Jaakkola, 2020; LaVela and Gallan, 2014). However, in healthcare management, the dominant view examines the dyadic healthcare provider–patient interaction sequences, which are labeled as the continuum of care (Wolf et al., 2014) or patient journeys (Wolterbeek et al., 2019; Lamprell et al., 2019). In parallel, the HOM literature approaches experiences narrowly, describing the experiences, for example, of the patient's subjective perceptions of a care episode (Lillrank, 2015). Although these interactions or touchpoints with various physicians are unarguably at the center of health services and the patient's medical care, the view depicts a potentially very limited view of the patient journey, throughout which the holistic HSE potentially emerges and healthcare value is viewed to be determined. Marketing researchers take a step further concerning the scope of such journeys by acknowledging the touchpoints that are not in control of a single firm but that are controlled by the partners of the focal service provider, the customer's own activities, and the activities co-created with other actors related to the customer's social network (Lemon and Verhoef, 2016). In the same vein, many scholars in service research have highlighted the importance of taking more customer-centric perspectives on the journeys to serve the service customers better (Becker et al., 2020; Heinonen et al., 2010). Still, a gap in understanding remains because the empirical patient journey research is focused predominantly on the dyadic encounters and "continuum of care" rather than taking a more customer-centric view that addresses the patient's journey more broadly. This shortcoming could drive a myopic, clinically driven experience facilitation and limited understanding compared with the promise of providing valuable holistic HSEs. *Thus, an empirical, customer-centric understanding of patient journeys and its systemic touchpoints is an important gap to fill.*

Fourth, because of its extremely personal and sensitive nature, healthcare has its own unique, context-specific characteristics (Bolton et al., 2014; Danaher and Gallan, 2016); indeed, healthcare is an interesting and important field for exploring experiences and developing value in them (Berry and Bendanpudi, 2007; Danaher and Gallan, 2016). However, the sensitive and regulated healthcare study context also implies that special attention should be paid to two aspects in research and practice: the methods used to explore individuals' experiences and how the HSE understanding is then utilized within the healthcare ecosystem. Regarding the first one, researchers should simultaneously capture the complexity of the emerging experience while avoiding disturbing the sensitivity of patients, who may be undergoing painful experiences that influence their health, well-being, and quality of life (Torpie, 2014; Danaher and Gallan, 2016). To capture this complexity, some researchers in service research and healthcare management streams have highlighted the applicability of narratives in providing valuable insights on individual's experiences over the course of the whole experience (Cognetta-Rieke and Guney, 2014; Ponsignon et al., 2015; Helkkula et al., 2012). This includes the experiences which are cocreated within a broader healthcare ecosystem, not only those created in a dyad of the provider and the patient. However, overall, the healthcare field has been slow to adapt these arguments because of its long traditions of measuring the quality of medical care by using objective criteria such as mortality and morbidity and overlooking the softer qualitative assessments (Dagger et al., 2007), despite research acknowledging the incapability of capturing the total experience in a holistic way over time with such measures (e.g., Helkkula et al., 2012). Industries possessing more mature experiential perspective or customer-centric traditions and being in unsensitive service contexts, such as retail, have been actively inventing new methods to better understand, make sense, and design contextual experiences. For example, neuroscience tools, such as functional magnetic resonance (fMRI) and electroencephalography (EEG), have been used to investigate customers' cognitive, affective, and sensorial responses to different cues from the service environment, products, and advertisements (Solnais et al., 2013; Verhulst et al., 2019). Thus, to complement the method understanding and development in healthcare context*, a gap in expanding the methodological understanding in healthcare is critical to fill to better facilitate exploration of the experiences in healthcare.*

In addition, the importance of exploring individuals' experiences emerges from understanding patients' and family members' HSEs and can help in reaching the aim of healthcare systems to facilitate and develop value and HSEs (e.g., Wolf, 2019). Hence, exploration of one's experiences is only one half of this—the understanding needs to be utilized within the healthcare ecosystem to make a change. The utilization is, however, framed by system-level complexity and embedded institutions such as the mindsets, norms, and practices of healthcare ecosystem. This may significantly influence the utilization of this understanding. Yet little attention has been paid to the utilization of understanding the experiences within the healthcare ecosystem. Hence, *examinations on how the experiential understanding is utilized within the healthcare ecosystem is another important gap to fill.* After all, this is required to move toward truly patient-centric experiential value-driven healthcare systems and the development of healthcare value as an experience.

1.3 Purpose of the study and research questions

Because of the relevancy of value as an experience while acknowledging what is lacking in our current understanding of this, the purpose of the current study is to develop a better understanding of healthcare value as an experience in terms of HSEs, the patient journey, the healthcare ecosystem, and methods used. By achieving this purpose, this research contributes theory building with empirically generated knowledge and offers guidance for healthcare providers that are seeking to provide better value for their customers. To achieve this purpose, I have disaggregated the main purpose of this thesis into four research questions (RQs).

First, although experiences—also in healthcare—have been widely discussed topics over the past decade, a significant number of publications have been published in different veins of research, including healthcare management (e.g. Wolf et al., 2014; Sonis et al., 2018; Wolterbeek et al., 2019), HOM (e.g., Karuppan et al., 2016; Lillrank, 2015), and service research (e.g., Osei-Frimpong et al., 2015; McColl-Kennedy et al., 2017c), these studies have largely focused on building a conceptual or managerial understanding of the value and HSE, lacking a customer-centric perspective. Hence, the concept of HSEs has remained elusive, lacking an understanding of the composition of the multidimensional experience, including sensory, affective, cognitive, behavioral, and social experiences, which would support understanding value as an experience in healthcare. To develop this understanding of HSEs as a whole, I ask the following:

RQ1: How is multidimensional health service experience composed?

Second, developing a better understanding of value as an experience in healthcare is to identify which individuals are participating in experiential value co-creation. The literature has stressed the importance of moving from an isolated view of the clinician–patient dyad toward a more systemic, collaborative view engaging multiple different entities from different sides of the healthcare ecosystem (Pop et al., 2018; Frow et al., 2016; Dai and Tayur, 2019). Some seminal studies have been published recently that have shed light on the complexity of the healthcare ecosystem. For example, Frow et al. (2016) discuss co-creational practices within the ecosystem and elaborate on the actors, suggesting that they originate from different angles of the system, including patients and their families and friends, other patients, healthcare professionals, hospitals, health support agencies, professional associations, health insurers, healthcare authorities, government agencies, and regulatory bodies. Capunzo et al. (2013) suggest that in addition to people and organizations, a healthcare ecosystem comprises the technologies that the ecosystem uses, arguing that even though healthcare ecosystems typically comprise very divergent actors and the actors in a healthcare ecosystem are heterogeneous, they ideally all share a common goal of patient well-being. The healthcare management literature (e.g., Wolf et al., 2014) indicates that patients have multiple encounters during their care, but the actors concentrate purely on the healthcare sector, leaving the ecosystem in the least viable state. Hence, despite their merits, these studies provide a limited view of the constellation of the healthcare ecosystem that participates in experiential value co-creation because these studies do not examine the ecosystem from different perspectives and levels. Therefore, healthcare ecosystem investigations deserve further attention, and it is pivotal to examine the individuals, as well as organizations, within the healthcare ecosystem. Empirical studies and a comprehensive mapping of the healthcare ecosystem from different perspectives with an experiential approach would advance our current understanding of this. Hence, aiming to do so and acknowledging the research context, I ask the following:

RQ2: Who belongs to the healthcare ecosystem by co-creating value as an HSE?

Third, during their care and quest for well-being, patients and their families need to interact with a diverse set of actors in the healthcare ecosystem, including those beyond the main healthcare provider. Therefore, the emergence of HSEs should be approached from a dynamic perspective by acknowledging all the clinical and nonclinical interactions involved in the dynamic experience. However, such patient journeys are a phenomenon still lacking an empirical understanding. The dynamic in-depth understanding must be generated not only within the processes and practices of healthcare providers' perspectives, but also from a customer perspective by understanding the emerging experiences of patients and their families during their patient journeys that health service and healthcare ecosystem actors shape. Currently, however, the attention in HSE and the patient journey research has mainly been centered on its management. Furthermore, the research here has focused predominantly on the clinician–patient dyad either from a patient perspective (e.g., Osei-Frimpong et al., 2015) or primary from a health service provider perspective (e.g., LaVela and Gallan, 2014; Sequist et al., 2008). Thus, this provides a limited understanding because HSEs are not only co-created through these dyadic interactions, but also throughout systemic interactions (Jaakkola et al., 2015) that are present in the everyday lives of the patients and family members. Few, if any, studies have been offered to provide an understanding of the interactions or touchpoints involved in this. Hence, I ask the third research question:

> *RQ3: What kinds of patient journey touchpoints shape an HSE in the healthcare ecosystem?*

The fourth and final step in developing a better understanding of value as an experience in healthcare is two-fold. First, previous research acknowledges the difficulty of obtaining information regarding individuals' experiences (Helkkula et al., 2012) because this information is idiosyncratic (Vargo and Lusch, 2004) and a multidimensional, spatial, and temporal construct (Jaakkola et al., 2015). However, the negligence of methodological matters, particularly in the healthcare setting, may hinder the development of this understanding and provide limited accounts of HSEs. Hence, the applicability of conventional methods needs to be examined. Second, because the development of healthcare value as an experience necessities the utilization of an understanding within the healthcare ecosystem, exploration of knowledge utilization is needed. Hence, in the current dissertation, I ask the following:

> *RQ4: What do diverse methods provide for capturing an individual's HSE, and how is the HSE understanding utilized within healthcare ecosystem?*

Table 1 summarizes the RQs, gaps related to each RQ, objectives of the dissertation concerning the RQs, the most relevant literature, and the appended publications.

Table 1. Research questions, gaps, objectives, and publications of the dissertation.

Research question	Research gaps in different literature streams	Key literature	Objective	Publications
RQ1: How is multidimensional HSE composed?	Service research: Lack of empirical and comprehensive understanding on multidimensional experiences in healthcare HOM and healthcare management: Lack of holistic, customer-centric view of HSEs	McColl-Kennedy et al., 2017c; Osei-Frimpong et al., 2015 ; Ponsignon et al., 2015 Wolf et al, 2014; Sonis et al., 2018; Lillrank, 2015	To improve the composition of the sensory, affective, cognitive, behavioral, and social dimensions of HSEs	I, II
RQ2: Who belongs to the healthcare ecosystem by co-creating value as an HSE?	HOM: Lack of healthcare ecosystem mapping at the individual level Marketing and service research: Little understanding of public healthcare ecosystems Healthcare management: An ecosystem approach is not widely applied	Dai and Tayur, 2019 Pop et al., 2018; Frow et al., 2016; Helkkula et al., 2013	To map the constitution of a public healthcare ecosystem from different perspectives at the micro, meso, and macro levels	II, III
RQ3: What kinds of patient journey touchpoints shape an HSE in the healthcare ecosystem?	Service research: Previous research has focused mainly on healthcare provider touchpoints, lacking a broader, systemic understanding Marketing: Empirical	Osei-Frimpong et al., 2015 Følstad and Kvale, 2018; Lemon and	To empirically improve the understanding of the patient journey as a whole, including the touchpoints within and beyond hospital settings	II

Research question	Research gaps in different literature streams	Key literature	Objective	Publications
	examinations of healthcare customer journeys is missing	Verhoef, 2016		
	Healthcare management and HOM: The focus has been on dyadic experience creation with a provider perspective	LaVela and Gallan, 2014; Wolterbeek et al., 2019; Lamprell et al., 2019		
RQ4: *What do diverse methods provide for capturing an individual's HSE, and how is the HSE understanding utilized within healthcare ecosystem*? 🔍	Marketing and service research: Methodological considerations are underdeveloped and have trouble fully harnessing the experiential approach	Helkkula et al., 2012; Dagger et al., 2007	To better understand how different methods guide our understanding of HSEs and how the understanding is utilized within and between organizations and healthcare ecosystems	IV, V, VI, I, (II), (III)
	HOM and healthcare management: The experience phenomenon is dominantly approached with quantitative methods	Jha et al., 2008; Doyle et al., 2010; Stanizewska et al., 2015		

The theoretical positioning of the current thesis is between service research, marketing, HOM, and healthcare management, with supporting theoretical areas within the qualitative research literature, as shown in Figure 1.

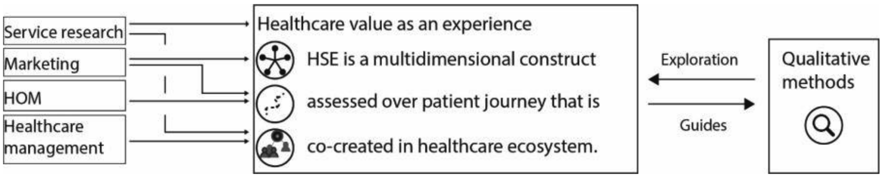


Figure 1. Theoretical areas of this dissertation.

The present dissertation views HSE as multidimensional construct with sensory, affective, cognitive, behavioral, and social dimensions, as has been established in marketing and service research (Becker and Jaakkola, 2020; Verhoef et al., 2009; Schmitt, 1999). The context of healthcare connects and introduces these multidimensional experiences to the fields of healthcare management, where the experiences are typically labeled as patient experiences (e.g., Wolf et al., 2014; Sonis et al., 2018), and HOM, where the experiences are viewed through experiential quality perspectives (Karuppan et al., 2016). The present research acknowledges the dynamic nature of the HSE by addressing patient journeys. The dynamic approach is common in all central theoretical areas of this thesis, albeit in varying scopes and perspectives. The main theoretical perspective applied here—the four categories of touchpoints—originates from the marketing literature (Lemon and Verhoef, 2016). The ecosystem perspective is adapted to describe the complexities of experiential value co-creation and the interconnectedness of the different sides of the healthcare ecosystem. The ecosystem perspective is discussed in the service research (e.g., Akaka and Vargo, 2015), as well as in HOM (Dai and Tayur, 2019). I have compiled the key concepts in this dissertation to Appendix 1: Key concepts. The underlying aim of this research is to assist healthcare organizations to serve their customers better by providing insights on healthcare customers' value as an HSE. Yet, the present dissertation takes a multi-perspective approach to healthcare value as an experience phenomenon with an emphasis on the customer's perspective. This approach presents a less service provider centric view and acknowledges the customer's interactions that go beyond the provider-customer dyad. The qualitative approach applied here supports the understanding of value as an experience, as suggested by, for example, Helkkula et al. (2012).

1.4 Research process and contributions of the appended publications

The present thesis is based on six original publications. The empirical data sets cover multiple different perspectives, including the patient and family, healthcare professionals, and other key actors within the healthcare ecosystem. This type of multiperspective investigation is important for a few reasons. First, the co-created value as an experience is a micro-level phenomenon that is perceived at the individual level of the healthcare ecosystem by the customer (Akaka and Vargo, 2015; Akaka et al., 2015), for example, the patient. Thus, this highlights the importance of micro-level investigations. Second, despite that value is determined at the micro level of the ecosystem—and to a great extent directly co-created within it, the co-created experience is influenced by higher levels of the ecosystem (Akaka and Vargo, 2015), namely the meso and macro levels. The meso level is described as the local or organization level (Akaka et al. 2013), and in the present dissertation, the meso level describes the organizations and social groups that embed the individuals participating in micro-level experiential value co-creation. The macro level can be described as the broadest context through which the experiences are evaluated and co-created (Akaka et al., 2015), that is, society. Investigating these higher-level perspectives allow for better understanding the broadness of the context and ecosystem where the experiential value is co-created and how the understanding can be better utilized within the ecosystem. Figure 2 gives an overall view of the samples (illustrated as *i*) and perspectives (illustrated as arrows) of the original publications and their links in answering the RQs.

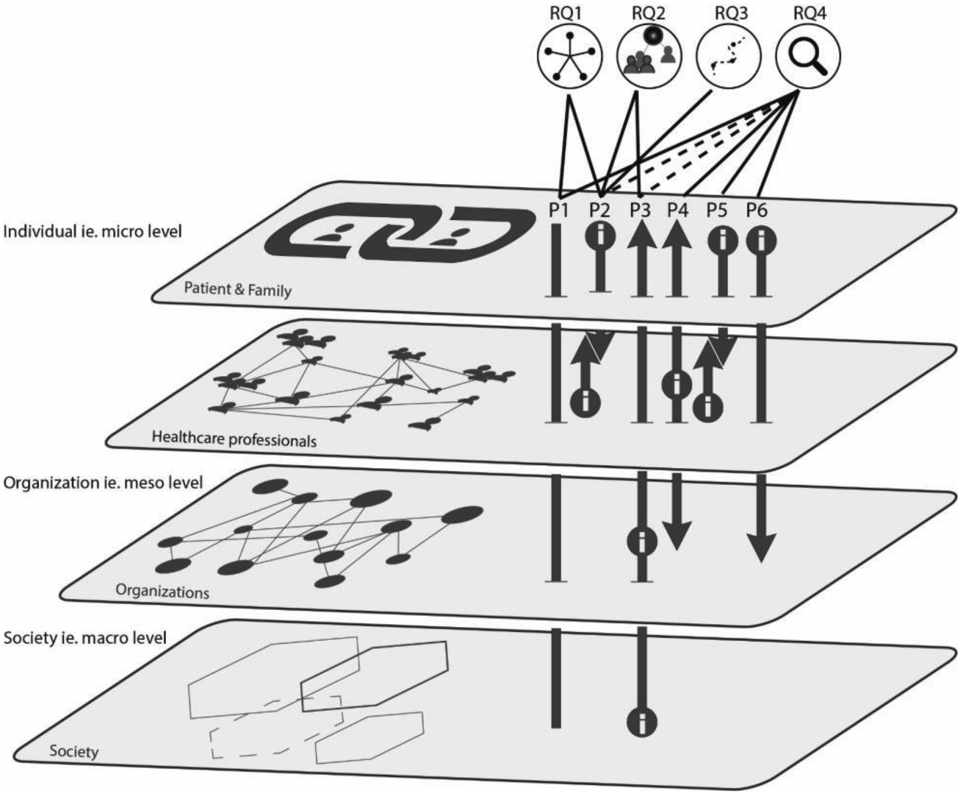


Figure 2. Perspectives of the original publication and links to the research questions.

The data sets enabled differing perspectives between the original publications to answer the four RQs while maintaining the overall focus of the purpose of this dissertation. Table 2 presents the original articles and elaborates on their roles in answering the RQs.

Table 2. Role of the articles in answering the research questions

	Title	Type of research	Role of article in answering the research questions
I	Emotions in customer experience	Systematic literature review	Clarifies the different terms around emotions (RQ1) and identifies the different emotion types in customer experiences (RQ4)
II	What constitutes the patient experience and journey in pediatric health services? Contrasting doctors and caregivers perceptions	Explorative interview study	Examines HSEs from health service providers' and families' perspectives (RQ1) Develops an understanding of the composition of five experience dimensions in HSEs (RQ1) Maps the key actors at the micro level of the healthcare ecosystem (RQ2) Creates an understanding of the touchpoint that families have during their patient journeys (RQ3) Implies differences between family's perceived HSEs through the patient journey and the view of healthcare professionals (RQ4)
III	Ecosystem approach on medical game development: the relevant actors, value propositions, and innovation barriers	Explorative case study	Develops a meso- and macro-level understanding of the actors participating in the development of gamified touchpoint (RQ2) Identifies the key elements hindering gamified touchpoint integration into

	Title	Type of research	Role of article in answering the research questions
			the healthcare ecosystem (RQ4)
IV	Improving hospital services based on patient experience data: current feedback practices and future opportunities	Explorative interview study	Develops an understanding of current practices of gathering data on patients' experiences (RQ4) Reveals the challenges of utilizing data within and between hospitals (RQ4)
V	Comparing three methods to capture multidimensional service experience in children's healthcare: video diaries, narratives, and semistructured interviews	Collective, instrumental case study	Experiments with three methods for capturing individual's HSE (RQ4) Explicates the benefits, limitations, and applicability of the three methods to explore health service experience (RQ4)
VI	Development of boundary objects to study children's patient experiences	Participatory design study	Introduces a novel qualitative data collection method to support explorations of the broader patient journey and multiactor perspective from a child informant (RQ4)

The research process started in 2016 when I joined the "LAPSUS: Patient-Centred and Experience-Driven Development of Healthcare Services" research project (2015–2018), in which I worked until the end of the project in 2018. The LAPSUS research project was a joint project of Aalto University and Tampere University of Technology (Tampere University 2019 onwards) and three children's hospitals: Hospital District of Helsinki and Uusimaa, Oulu University Hospital and Turku University Hospital (more information about the project can be found at https://lapsus.cs.aalto.fi/grav/). The aim was to promote child patient and family experience-driven development when constructing new hospitals and improving healthcare services. After the project ended, I continued to work on the topic with a grant from Tampereen teknillisen yliopiston tukisäätiö sr until the end of this dissertation process in 2021. During the years, the six articles appended to this dissertation were written.

Article I (Kuuru et al., 2020; later Article I) discusses the emotions in customer experiences based on a systemic literature review. The article contributes to the first and fourth research question by clarifying the terms around the emotions and building a framework that captures key types of how emotions build experiences.

Article II (Litovuo et al., 2018; later Article II) explores the experiences in healthcare and focuses on the constitution of multidimensional experiences, touchpoints along the journey, and comparing the perceptions of healthcare professionals and families of the experience and journey touchpoints. The study was part of the LAPSUS project, and the data applied in Article II were collected by the LAPSUS project team; the study reported findings for the purposes of the project. The article contributes to all RQs (see Table 2).

Article III (Litovuo et al., 2017; later Artcile III) focuses on mapping healthcare gamification ecosystem actors, their reciprocal value propositions, and the barriers that hider the realization of these value propositions. Thus, the article discusses the composition of the healthcare ecosystem at the meso and macro levels and the challenges in implementing knowledge within the healthcare ecosystem, hence contributing to the second and fourth RQs.

Article IV (Kapio et al., 2018; later Article IV) focuses on gathering the data of the experiences of patients (patient feedback) and its utilization at children's hospitals. The article contributes to the fourth RQ by highlighting the current practices in gathering data on HSEs and challenges in utilizing it within and between hospitals, examining the central actors within healthcare ecosystem. The study was part of the LAPSUS research project. Hence, the data applied in the article were collected related to LAPSUS project aims and work packages. I was responsible for collecting complimentary data (two interviews) from Turku University Hospital, whereas the coauthors Hanna Stenhammar, Susanna Immonen, Minja Axelsson, and Minna Lantto were responsible for collecting the main data (seven interviews) from the children's hospitals of Hospital District of Helsinki and Uusimaa and Oulu University Hospital.

Article V (Litovuo et al., 2019; later Article V) focuses on qualitative data collection methods in capturing the experiences in a pediatric healthcare context. The article compares three data collection methods and contributes to the fourth RQ by highlighting the applicability of each method in capturing the different sides of the individual's experiences in healthcare. The examined methods were used during and for the purposes of the LAPSUS research project.

Article VI (Litovuo, 2021; later Article VI) introduces a boundary object supported method for studying children's experiences in healthcare. Thus, the article complements and continues the discussion of Article V, hence contributing to the fourth RQ.

The current dissertation is organized as follows: First, this *Introduction* section has presented the study's motivation and background, its relevance, and research gaps. It has stated the dissertation's purpose and RQs and discussed the original publications and their contributions. The second chapter presents the dissertation's underlying theories in more detail, reviewing the relevant literature on HSEs, the patient journey, ecosystems, and methods. The third chapter, *Methodology*, presents the research approach and design, research context, and research methods used in the research. It also discusses the research quality assessments and ethical reflections related to the research. Fourth, the *Findings* chapter summarizes the key findings from the original articles related to the RQs. The fifth and final chapter, *Discussion and conclusions*, synthesizes the key findings, presents the scientific and practical contributions, discusses the limitations of the research, and raises potential avenues for future research.

2 FROM AN INDIVIDUAL’S EXPERIENCE TO THE HEALTHCARE ECOSYSTEM

2.1 Individuals’ experiences in healthcare

2.1.1 Co-created value as individuals’ experiences

Value has been a widely discussed topic for decades in various different business contexts, healthcare included—the provision of value has become a cornerstone of health service system. For example, for health service providers in highly competitive markets, providing value is seen as a mechanism for creating competitive advantage between providers—those providers who increase the value provided will be the most competitive, whereas those not increasing value in healthcare will encounter growing pressure (Porter and Lee, 2013).

In the healthcare context, many scholars have employed the “value” label in various research disciplines, thus improving the variety of the approaches and theoretical perspectives adopted in the field. These include, but are not limited to, value as health outcomes relative to the cost of care (Porter, 2010), emphasizing the clinical and economic factors of value; value in use, where value is “determined ‘in use’ through activities and interactions of customers ‘with’ the service provider/providers and others” (McColl-Kennedy et al., 2012, p. 370); value as health and well-being, emphasizing people’s emotional, physical, and psychological health or quality of life (Black and Gallan, 2015; Anderson and Ostrom, 2015); and value as an experience (Helkkula et al., 2013), viewing value as phenomenologically determined (Vargo and Lusch, 2008). The current thesis adopts value as an experience perspective, which is defined as: “individual service customers’ lived experiences of value that extends beyond the current context of service use to also include past and future experiences and service customers’ broader lifeworld contexts” (Helkkula et al., 2012, p. 59).

The emergence and interest toward experiences have been fueled by the pivotal work of Vargo and Lusch (2004, 2008) on service dominant logic, which views value being always uniquely and phenomenologically determined by the beneficiary of a service (Vargo et al., 2006), for example patient or a customer (see Appendix 1 for descriptions). While experiences boost their presence, healthcare practice and research has moved from the traditional medical model, where the patient's role is seen as a passive recipient of care and health services, to healthcare value co-creation, where the patient is *a collaborator in healthcare ecosystem* and *active cocreator of value* (McColl-Kennedy et al., 2017a; McColl-Kennedy et al., 2012; Stanizewska et al., 2014). Thus, each healthcare customer can co-create value in differing ways by integrating different sets of resources with various different collaborators (McColl-Kennedy et al., 2017a), which can be also at sometimes a burdensome "work" for the patients themselves (Azzari et al., 2021). The experiential value co-creation occurs "when interpersonal interaction with other actors in or beyond the service setting influences an actors' subjective response to or interpretation of the elements of the service" and encompasses "lived or imaginary experiences in the past, present, or future and may occur in interaction between the customer and service provider(s), other customers, and/ or other actors" (Jaakkola et al., 2015, p. 193). Hence, the value co-creation approach recognizes that the value is phenomenologically and contextually determined by the individual and can be realized in various ways through the perceptions of healthcare customers (McColl-Kennedy et al., 2017a). Moreover, through the ecosystem lens, the experience emerges through co-creation within the healthcare ecosystem, and the HSE includes related and even unrelated experiences in the past, present, and future that may not all be visible to the firm (Voima et al., 2011). Although the value is determined at the micro level of the ecosystem—and in a great extent directly co-created within it—the co-created experience is influenced by the interaction across higher levels of the ecosystem (Akaka and Vargo, 2015), namely the meso and macro levels of healthcare ecosystem.

The proposed definition of value as an experience highlights experiences as being strongly individual while also recognizing the importance of social aspects (Helkkula et al., 2012) because experiences are always co-created (Vargo and Lusch, 2008). This notion of the intersubjective nature of value in experiences (Helkkula et al., 2012) is particularly important when considering value in HSEs, where family members, especially in pediatric and geriatric care, play a central role throughout the whole care trajectory from diagnosis to daily illness management, with the risk of negatively influencing their own health-related quality of life (Heilporn et al., 2019; Caicedo, 2014). Moreover, many healthcare systems depend on the resources provided by this "shadow workforce," who are untrained, under supported, and unseen (Bookman and Harrington, 2007) but who play an important role in cocreating health services (McColl-Kennedy et al., 2017b); they play a significant role in medical care and in ensuring informational and relational continuity, bringing some cohesion to often fragmented healthcare systems that lack coordination and cross-institutional communication (Bookman and Harrington, 2007; Miller et al., 2009). Particularly in pediatric and geriatric services, family members typically have a better understanding of what patients look like when they are healthy than those healthcare professionals who see them for the first time when they are sick, and they need to provide information about the patient's medical history and information about current medications (Bookman and Harrington, 2007). Furthermore, "the family constitutes perhaps the most important social context within which the illness occurs and is resolved" (Litman 1976, p. 495). Yet service research, in which experiential value is mostly discussed, has been slow to adopt a family-centric approach when researching experiences and value in healthcare.

To highlight the important role of family members, the current thesis applies the concept of the customer unit, which is defined as a specification of the internal structure of the customer (Voima et al., 2011), which is a construct of the meso level as is different organizations. Hence, the current thesis shifts the perspective from a patient-centered perspective to a setting where family members (including the patient) are an important part of the HSE co-creation process, in which value is individually intrasubjective and socially intersubjective (Helkkula et al. 2012). In other words, each individual of the customer unit may have different subjective experiences because all experiences are subjectively and uniquely perceived by each individual at the micro level but here with a notion that experience is socially constructed collectively (Voima et al., 2011). Figure 3 visualizes the typical setting in healthcare and underlines the importance of understanding how HSEs are manifested though multiple interactions with a variety of different actors in the healthcare ecosystem who are found in the context of the customer unit, where families are living with one's lowered condition and experiencing this in a unique way (Stanizewska et al., 2014; Arantola-Hattab, 2015).

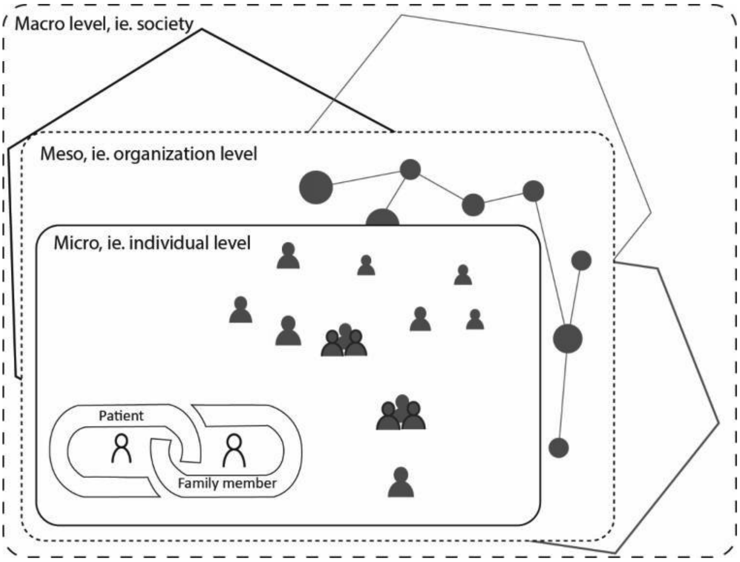


Figure 3. Illustrative setting for typical HSE co-creation.

2.1.2 Multidimensional nature of health service experiences

As value as an experience highlights individuals' experiences (Helkkula et al., 2012) and experience co-creation underlines the influence of interpersonal interactions to an individual's subjective responses or interpretation of service (Jaakkola et al., 2015), it is highly relevant to examine the incorporation of an individual's experiences. To do so, the current research views HSEs as multidimensional, more precisely, as manifested though sensory, affective, cognitive, behavioral, and social dimensions (e.g., Becker and Jaakkola, 2020; Verhoef et al., 2009). These dimensions reflect the broad range of subjective reactions or experiences that are evoked through co-creation. The multidimensional nature of experiences is widely acknowledged in the previous research, but empirical papers typically overfocus on the individual dimension. In this chapter, I describe the different dimensions and review what is known about these dimensions as they are related to the healthcare context.

Sensory experiences are evoked as a response to sensory stimuli through a customer's five senses: sight, hear, smell, taste, and touch (Schmitt, 1999; Gentile et al., 2007). In other words, sensory experiences regard how taste, smell or scent, music, and feel affect one's experiences (Mahr et al., 2018; Kranzbühler et al., 2018). This sensory-level processing and retrieval occurs automatically and drives individual preferences (Zajonc, 1980) and typically concerns sensorial stimuli in the customer's interactions with the physical service environment (Mahr et al., 2018). The literature has focused mainly on visual stimuli, such as colors, shapes, typefaces, and designs, that a brand, product, or consumption evokes as a form of arousal of aesthetic pleasure, excitement, satisfaction, or sense of beauty (Brakus et al., 2009; Gentile et al., 2007). Furthermore, sensory experiences are mostly studied with products (Mahr et al., 2018); hence, there is little understanding of how the elements of health service transform into the sensorial experiences of patients and their families. The scarce literature addressing the healthcare context has identified, for example, that visual stimuli emerge from the physical environment of the hospital settings and the cleanliness of these facilities (Annemans et al., 2012; Ahmed et al., 2014). Besides visual impressions, healthcare customers have been known to assess pain, food, smells, and the surrounding sounds of the healthcare environment (Browall et al., 2013; Lamprell et al., 2019).

Healthcare is considered a high-emotion service that is closely connected to strong feelings, emotions, and moods, even before the service commences (Berry et al., 2015). Hence, a*ffective experiences* are regarded as a core of HSEs (McColl-Kennedy et al., 2017c; Berry et al., 2015). These affective experiences can vary in intensity, from low-intensity positive or negative moods to high-intensity positive and negative emotions (Schmitt, 1999). All services can evoke frustration, anger, or other strong negative emotions if a customer is treated poorly, but the high-emotion services differ in that the anticipation of receiving the service sparks an emotional reaction (Berry, 2020). Strong emotions are likely to arise in healthcare because the provided services tend to be unfamiliar for the patient and family but are highly personal, with high stakes; in addition, often, these services are intrusive and invasive (Berry et al., 2015; McColl-Kennedy et al., 2017c). To highlight this, studies have reported patients and family members feeling emotionally frustrated, anxious, angry, helpless, and hopeless when encountering illness or injury (McColl-Kennedy et al., 2017c; Caicedo, 2014). This underlines the importance of acknowledging emerging experiences beyond the experiences triggered throughout the interactions with the focal health service provider. Furthermore, the patient and family members do not only display these emotions in isolation, but emotion contagion is also likely to occur between family members (McColl-Kennedy et al., 2017c).

In the broadest sense, *behavioral experiences* (Verhoef et al., 2009; Brakus et al., 2009) can be conceptualized as all the physical actions and behaviors a customer undertakes based on the stimuli related to a service. However, different interpretations and approaches to behavioral experiences exist. For example, Becker and Jaakkola (2020) conceptualize customer experiences as comprising "customers' nondeliberate, spontaneous responses," implying more in-situ physical reactions, such as wanting to touch a product in a store, whereas Gentile et al. (2007) take a broader approach by considering behavioral experiences as including the adhesion to certain values or lifestyles (Gentile et al., 2007). Although this definition by Gentile et al. (2007) diminishes the physical reactions, this thesis considers that the lifestyle approach is useful in conceptualizing the behavioral experiences in healthcare as eliciting positive health behavioral changes that are pivotal to achieve more positive health outcomes, whereas reluctancy can result in grave consequences (Mitchie et al., 2003; Kaartemo and Känsäkoski, 2018). These positive health behavioral changes do not only concern the patient him- or herself but also include family members (e.g., Kaartemo and Känsäkoski, 2018) because for example, families may need to change their lifestyle or diet and perform activities promoting the well-being of the whole family. It is not uncommon that the parents of children with special health needs feel high stress levels, resulting in critical fatigue, poor physical health, and social isolation (Caicedo, 2014). Critical fatigue causes parents to be tired when waking up, too tired to do things they like to do and having little energy for household chores or social activities (Caicedo, 2014). Furthermore, because of the care burden, family members have been reported to stop working or having their employment decisions immediately affected by the child's needs (Caicedo, 2014). This suggest that these possibly reluctant customers of health services are sometimes forced to make behavioral changes, resulting in possibly unwanted behavioral experiences.

Experiences in the *cognitive dimension* (c.f. Schmitt, 1999) appeal to the intellect of an individual, evoking thinking or conscious mental processes when problem solving or using creativity (Gentile et al., 2007). Cognitive experiences in healthcare also connect closely to the sensemaking processes of the patient and the family, through which individuals attempt to explain novel, unexpected, or confusing events (Vogus et al., 2020). Sensemaking begins when an event breaks down a previously coherent representation of oneself and necessitates constructing a new account (Vogus et al., 2020). For example, when receiving a diagnosis of an illness, this can change a patient's idea of his- or herself as being healthy to a person having a lifelong illness. The odds of this type of situations happening in relation to health services stresses the importance of studying cognitive experiences in healthcare. Yet cognitive reactions have gained only little attention in the current literature, even though the available cognitive capacity can be a major factor affecting perceived value, especially when judging complex services such as health services (Mahr et al., 2018; Kranzbühler et al., 2018). Cognitive experiences connect to customers' engagement with goal-directed activities, such as searching for information, evaluating available options, and deciding whether one should undergo a service. These goals can be complex and linked to a patient's and family's quality of life perceptions (Klaus, 2018), and health service customers may find it difficult to understand and evaluate the expertise of the service provider and assess whether the medical treatment has been the best for them (Grace and O'Cass, 2004).

The cognitive burden of patients and their families can be sometimes excessive. Yet the asymmetry of information between health service providers and individuals getting care—one having the medical knowledge and the other being an expert about their own lives and experiences (Awdish and Berry, 2019)—necessities a unique need to cognitively co-create the service with the patient and his or her family (Berry and Bendapudi, 2007; Vogus et al., 2020). Patients and/or their families are required to understand and make important, complex decisions swiftly, even though their status is greatly reduced by the illness or injury that is causing the patients and their family members to be vulnerable, frightened, exhausted, and confused (Torpie, 2014). The "forced" role of being responsible of one's own or someone's care and health may evoke needs to seek reliable additional information about the illness, by causing the burden of having too little information to cope with the illness in home settings, by getting an overwhelming quantity of new information in a short time and having no time to process the illness, or by getting information that they do not understand because of the language used, that is, medical jargon (Diehl et al., 1991; Heilporn et al., 2019).

Social experiences reflect relating to the experiences that create a social identity and sense of belonging (Gentile et al., 2007). Social experiences involve the customer him- or herself and his or her social context (Bustamante and Rubio, 2017); therefore, this includes both the relationships with other people but also the customer's self-image and self-identity belonging to the different communities. Typically, the marketing literature considers these experiences as emerging when a service or event encourages a person to use services with other people, or it can encourage people with common passions to create a community (Gentile et al., 2007). Concerning these communities, Loane et al. (2014) highlight the importance of peer-to-peer online health networks in cocreating experiential value; they argue that through these communities, patients and their family members can have social support that triggers feelings of belonging, providing a quality of life that medical treatments co-created between healthcare professionals and patients and their family members are unable to deliver. In health services, however, the patients and their family members are not only encouraged to co-create experiences in communities but sometimes are forced into isolation and to change their normal social lives (Caicedo, 2014). Table 3 summarizes selected studies that have advanced the understanding of individuals multidimensional HSEs.

Table 3. Selected studies that advance the understanding of individuals' multidimensional HSEs.

Study	Aim and method	Main findings
Kortesluoma and Nikkonen, 2004	To describe pain experiences of child patients 44 qualitative interviews with 4–11-year-old children	Pain experiences of children were related to symptoms of the illness, medical procedures, accidents, and inexplicable reasons.
Curtis et al., 2004	To identify children's positive and unpleasant experiences related to local health services Interviewing, play techniques, and a website with children between 4–19 years of age.	Positive experiences of children were related to waiting area and healthcare staff. The children reported negative feedback on planning, food, environment, and communication.
Forsner et al., 2005	To illuminate 7-–10-year-olds experiences of being ill. Interviews in the form of open conversations	Reality and imagination were reflected in the children's responses, eliciting contrasting experiences, such as scared/confident, sad/cozy, hurt/having fun.
Browall et al., 2013	To describe what hospital factors are perceived to be of importance to patients of oncology care. Focus group interviews	Three categories were identified to be of importance to patients: safety, partnership, and physical space.
Caicedo, 2014	To examine physical and mental health, family functioning, and care burden of families with children of special needs.	The study showed that parents who are saddled with the provision of caregiving for a child with special needs shouldered a substantial care burden, and experienced physical

Study	Aim and method	Main findings
	Longitudinal study with interviews and questionnaires	and mental debilitation, and social isolation
McColl-Kennedy et al., 2017c	To conceptualize a framework for emotional responses impacting patient experiences. Conceptual with anecdotal evidence	The findings elaborated on the emotional experiences of patients and family members over patient healthcare journeys.

2.1.3 Patient journey and its touchpoints

As discussed in the previous sections, value as an experience is viewed to emerge through the co-creation within a fragmented system, and the HSE can include related and even unrelated multidimensional experiences in the past, present, and imagined future (Voima et al., 2011; Jaakkola et al., 2015). For example, the family being in continuous long-lasting engagement in an emotional rollercoaster might influence amplifying the emotions triggered later when they navigate toward the patient's well-being (McColl-Kennedy et al., 2017c). Thus, this implies that the subjective perceptions of a healthcare customer is not only a static evaluation at an isolated moment or event but should be viewed dynamic over time, revealing itself along a longer continuum (LaVela and Gallan, 2014; Meyer, 2018; Wolf et al., 2014; Wolterbeek et al., 2019), namely along the patient journey. Therefore, rather than focusing only on addressing HSE composition in a static multidimensional manner within a single encounter between healthcare professionals and patients, this thesis acknowledges the dynamic perspective of HSEs described as an individual's evolving evaluation of a series of any direct or indirect touchpoints within the entire course of the service (Lemon and Verhoef, 2016; Kranzbühler et al., 2018; Mahr et al., 2018).

Despite the agreement of the dynamic nature of HSEs (LaVela and Gallan, 2014; Meyer, 2018; Wolf et al., 2014; Wolterbeek et al., 2019), there still seems to be high heterogeneity concerning the scope of the period during which the HSE is viewed to being shaped. Moreover, a short examination of the literature related to experiences in the healthcare setting shows that several related concepts are used interchangeably without a clear distinction among them; these include touchpoints, the patient journey, the clinical journey, patient pathways, and the continuum of care (Heilporn et al., 2019; Lamprell et al., 2019; Wolf et al., 2014; Wolterbeek et al., 2019). To better understand the dynamic nature of the HSE, a discussion and closer look at the concepts and constituents of the journey is followed next.

Indeed, there are a myriad of interactions that patients and their families undergo during their quest for health and well-being when an illness occurs. Hence, because the interactions with various actors influence experiences, eventually forming a journey that is highly complex (see, e.g., Lemon and Verhoef, 2016), these distinct interaction points, namely touchpoints, could be considered as its building blocks. On the whole, four categories of touchpoints mark the path in this dissertation: healthcare provider touchpoints, partner touchpoints, social touchpoints, and family-generated touchpoints (based on the work of Lemon and Verhoef, 2016).

Healthcare provider touchpoints, also called brand-owned touchpoints (Lemon and Verhoef, 2016), can be described as the touchpoints that are designed, managed, and controlled by the focal healthcare organization. These dyadic interactions between healthcare providers and the patient include, for example, the first consultation, an informational meeting, and surgery (see, e.g., Wolterbeek et al., 2019). Hence, these build the very core of the patient journey and are arguably the most influential regarding its formation. These touchpoints can form a complex journey because numerous distinct and largely independent organizational units' professionals are involved in treating patient's condition (Kaplan and Porter, 2011); this is partly caused by the high degree of specialization that fragments the healthcare system (Teixeira et al., 2018). However, these touchpoints offer a rather narrow perspective of the dynamic HSE emergence as a whole by focusing only on multiple interactions with a focal healthcare provider. That is, some case studies indicate that patient experiences are also evoked beyond the reach of a single provider. For example, the results from one study indicate that patients have some form of experience prior to seeking help, such as pain, confusion, or concerns (Lamprell et al., 2019). In another study, researchers found that postdischarge events were actually the most stressful for patients and families (Heilporn et al., 2019), highlighting the experience after the focal service. One personal narrative compares the experiences between two healthcare systems, both of which occurred during a single patient journey (Miller, 2019). Therefore, to fully understand and describe the whole patient journey, one must reach beyond the facets of focal clinical encounters and address the evolving HSE across the journey in its broadest sense.

The inclusion of partners' touchpoints, which can be described as touchpoints that are jointly designed, managed, or controlled by the focal organization and one or more of its partners (Lemon and Verhoef, 2016), addresses a broader perspective on the continuum and challenges the traditional dyadic perspective. For example, interactions with a partner's touchpoints may involve a complimentary health service provider or supporting entities helping patients to adjust their lifestyle when facing an illness or disability. The systemic constellation of healthcare provider and partner touchpoints can be considered as including all the facets of the medical system and all the clinical and nonclinical interactions that patients go through in seeking care. Hence, this implies that this describes all the interactions along *the continuum of care*—the journey related to the clinical care of the patient and family.

However, by zooming out from the continuum of care, the entire *patient journey* can be understood as the context that the HSE emerges in not equaling the service environments of a healthcare provider; instead, it extends the context to the world of the patients and their families. This is important because for example, an illness or condition of the patient requires self-care that takes place in the patient's social context and is part of patient's ongoing life, which is a point where healthcare companies have little or no control.

The remaining two touchpoint categories—namely social and patient–family touchpoints—extend the journey touchpoints to regarding these interactions beyond or having little control over the focal healthcare provider or one of its partners. *Social touchpoints* are those in which an individual's experiences are influenced by others in the service context (Lemon and Verhoef, 2016). These concern, for example, interaction points with peers when patients or their family members seek knowledge from online forums regarding their situation.

Family-generated touchpoints, or customer-owned touchpoints (Lemon and Verhoef, 2016), include actions that are only slightly, if at all, influenced by a firm, its partners, or others. In a pediatric healthcare context, in which the current study takes place, parents may have a critical role in these self-generated touchpoints being guardians, emotionally attached to the child, making decisions concerning the child's care, monitoring, or putting self-care into practice (Bookman and Harrington, 2007; Miller et al., 2009). Hence, rather than conceptualizing these touchpoints as a patient-owned touchpoint, the current dissertation takes a customer unit perspective and highlights the collective nature of HSE co-creation (c.f. Jaakkola et al., 2015). Family-generated touchpoints may relate to the self-care actions that occur in a family's social context and as part of a patient's life. Healthcare organizations may have little or no control over these factors.

Based on the discussion above, Figure 4 illustrates the different levels of the patient journey. Included in the developed framework is the proposal to divide the dynamic HSE into three levels: touchpoints, the continuum of care, and the patient journey.

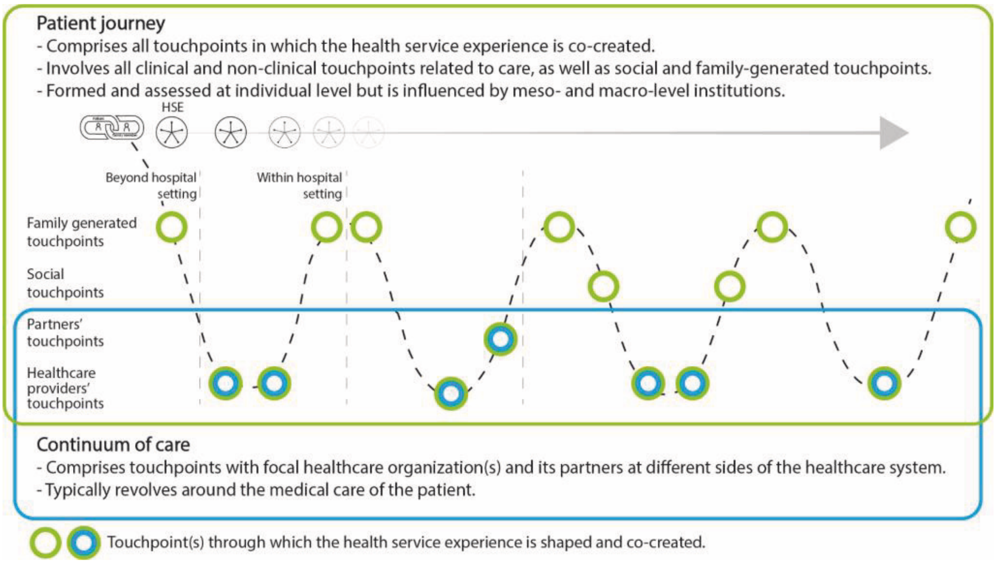


Figure 4. Illustrative framework for scopes of HSE emergence.

The touchpoints (green and blue-green dots in Figure 4) reflect a distinct interaction point in which the patient or family co-creates their dynamic, multidimensional HSE. These can include interactions with, to name a few, clinicians, care partners, peers, technologies, and physical objects that influence the HSE. Interactions may occur in a given touchpoint within different sides of the healthcare ecosystem, as well as the everyday life environment of the patient and family.

The continuum of care (lower part of Figure 4 with blue-green touchpoints) comprises all the touchpoints in which the focal healthcare organization or one of its partners interacts with the patients and/or their family; it addresses the systemic facets of the healthcare system, including the complementary interactions related to patient's medical care.

Finally, the broadest level is that of the patient journey (upper and lower parts of Figure 4); it comprises all the touchpoints through which the HSE emerges before, during, and after the actual core health services. Therefore, it describes all clinical and nonclinical touchpoints regarding the care of the patient and family, along with those that are social and family generated. Over the course of the patient journey, all touchpoints in a healthcare ecosystem are synthesized to a holistic, multidimensional

HSE (depicted in the figure as an arrow crossing multidimensional symbols). The patient journey and its touchpoints are the scope on which this research focuses. The Table 4 summarizes selected studies that have advanced the understanding of dynamic HSEs and patient journeys.

Table 4. Selected studies that advance the understanding of dynamic HSEs and patient journeys.

Study	Aim and method	Main findings
Miller et al., 2009	To examine how parents of chronically ill children perceived continuity of care. Semi-structured, open-ended interviews with parents of child patients.	Identified that parents do not only focus and perceive the continuity of care, but percept the continuity over time in all domains concerning their child's health, wellbeing and development
Loane et al., 2014	To identify how online health communities co-create value in peer-to-peer interaction.	Identified social value that is co-created in peer-to-peer and what other types of triggers they are unable to deliver for the patients' benefit.
McColl-Kennedy et al., 2017c	To build a framework for emotional responses that impact healthcare experiences. Conceptual with anecdotal evidence	The findings showed that medical journey includes broad range of emotions that are triggered by trigger events and sub-events, and influenced by personal characteristics, individual states, and contextual factors
Lamprell et al., 2019	To understand patients' experiences in different phases of clinical trajectory Interviews, observations, and medical data.	The study identified a cyclical four-segment model for clinical trajectory: initiation, identification, action, and adaptation.
Wolterbeek et al., 2019	To explore patients' experiences in knee arthrosis journey within the hospital setting. Semi-structured interviews with patients	The study identified that overall patient experiences were good throughout patient journeys but improvement possibilities in waiting times, communication, information, and facilities related issues were also included.

Azzari et al., 2021	To examine how consumers manage burden in expert services. Netnographic inquiry in a healthcare context.	The study discovered that patients use lifehacks and various movements in dynamic journeys to contextualize and manage burden.

2.2 Healthcare ecosystem

2.2.1 From provider-patient dyads to ecosystems

As implied in the earlier sections, health services and value as an experience are not created in an isolation but are increasingly co-created throughout the systemic interactions with various individuals and other stimuli within the context. However, although co-creation has been a widely discussed topic over the past decade, current research on co-created healthcare value and HSEs has focused predominantly on the clinician–patient encounters either from a patient perspective (e.g., Osei-Frimpong et al., 2015) or from a focal health service provider perspective (e.g., LaVela and Gallan, 2014; Sequist et al., 2008). Thus, this so-called dyadic lens (Lipkin, 2016) describes a rather outdated view of service provision and experience emergence, where the customer interacts with a provider-created environment to realize the service (Kranzbühler et al., 2018). Lipkin (2016) notes that although some of these dyadic studies acknowledge the social dimension of the experience (i.e., other customers as co-creators), the dyadic lens sets the boundaries of the context to provider-created environments, neglecting the context beyond these settings. Hence, despite the dyadic situation being typical in clinical and medical appointments, addressing co-creation and HSE formation in the patient–clinician dyad is not adequate anymore, but rather, a broader perspective with a multiactor approach needs to be acknowledged to thoroughly understand value co-creation (McColl-Kennedy et al., 2015; Kranzbühler et al., 2018; Mahr et al., 2018; Voima et al., 2011; Lipkin, 2016). Health service provision is no longer viewed as a transaction between a passive healthcare customer and the clinician; instead, it is seen as a patient-active process and healthcare provision as relying on collaboration between various actors in health service system, including health service providers, complementary therapies undertaken by other firms or organizations, and the patient's broader network of actors including family and friends and other healthcare customers (McColl-Kennedy et al., 2017a; McColl-Kennedy et al., 2012; Sweeney et al., 2015).

To acknowledge this complexity, the ecosystem concept has been applied to describe the approaches that examine the focal set of actors (the firm/organization, product, etc.) as a part of a broad and interdependent systems environment rather than an isolated view (Aarikka-Stenroos and Ritala, 2017). Scholars from different disciplines have presented a broad range of labels to capture the nature of this approach, including the business ecosystem (Moore, 1993), innovation ecosystem (Adner and Kapoor, 2010; Ritala et al., 2013), value delivery networks (Patricio et al., 2018), platform ecosystem (Ceccagnoli et al., 2013; Gawer and Cusumano, 2014), service ecosystem (Akaka et al., 2013; Akaka and Vargo, 2015; Vargo and Lusch, 2011, 2016), customer's ecosystem (Lipkin, 2016; Voima et al., 2011), and healthcare ecosystem (Dai and Tayur, 2019). These studies suggest diverse constellations for an ecosystem: when healthcare ecosystem focus on the entanglements of entities of healthcare delivery, financing, innovation, and policy making, the service ecosystem approach highlights a generic actor-to-actor perspective, in which those actors are cocreators of mutual phenomenological value at multiple levels of the context including the micro, meso, and macro levels (Vargo and Lusch, 2011; Akaka and Vargo, 2015). The present dissertation adopts the concept of a healthcare ecosystem to highlight the context of experiential value co-creation but applies service and customer ecosystem approaches for the theoretical lens (Akaka and Vargo, 2015; Lipkin, 2016; Voima et al., 2011). The next section discusses how the composition of multiple nested levels aligns with experiential value co-creation.

2.2.2 Multiple levels of the healthcare ecosystem

The service ecosystem lens enables the consideration of interactions across multiple levels of the ecosystem (micro, meso, and macro), institutions (e.g., social norms, organization culture, regulations), and interconnectedness of these levels regarding the co-created experiential value (Akaka et al., 2015). The value of a HSE as viewed through a service ecosystem lens entails the systemic co-creation of experience with all social actors in direct and indirect interactions and who are interconnected through shared institutions and the provision of service (Akaka et al., 2013; Lipkin, 2016). The value as an experience emerges through interactions and collaboration between the system's actors, who are viewed as resource integrators and cocreators of mutual value (Akaka et al. 2013); this is framed by a set of institutions that guide the integration. Compared with a service ecosystem lens, the customer ecosystem approach —defined as systems of actors and elements related to the customer that are relevant concerning a specific service (Lipkin, 2016; Voima et al., 2011)—posits the focal customer or (customer unit) as being the center of their network of actors, examining this from the perspective of the one who enables and shapes their experiences (Baron and Harris, 2010; Voima et al., 2011); this entails that an HSE is formed in a customer's lifeworld context, where the customer is actively involved and in control (Lipkin, 2016). Hence, experience emerges through the co-creation within the customer's (healthcare) ecosystem, not in the provider's ecosystem, and the HSE includes all the related and unrelated experiences in the past, present, and future that may not all be visible to the firm (Voima et al., 2011).

Given that experiential value co-creation occurs when *interpersonal interactions* with other actors in or beyond the service setting influences an individual's subjective response to or interpretation of the elements of the service (Jaakkola et al., 2015), value as an experience is always a micro-level phenomenon perceived at the individual level by the service beneficiary (Akaka and Vargo, 2015; Akaka et al., 2015), i.e. patient and his or her family-members as beneficiary. In the current dissertation, the micro level of the healthcare ecosystem describes and comprises the individuals and virtual and physical elements that the patient interacts with as he or she co-creates his or her value as an experience (Lipkin, 2016; Voima et al., 2011; Akaka et al., 2015). As argued earlier, the patient is an active participant in selecting the relevant actors to participate with and form their own ecosystem (Lipkin, 2016); hence, the composition is not defined by the firms but constructed by the patient, who strings together the experiences with a variety of different entities (Bitner and Wang, 2014). These individuals include, for example, the patients' family members (being part of the family unit), healthcare professionals (e.g., doctors and nurses), other types of employees (e.g., social workers), and other customers (Helkkula et al. 2013). Importantly, the HSE emerges across a spectrum of individual-level interactions in which medical treatment is only one part. For example, one important actor cocreating HSEs at the individual level of healthcare ecosystems are members of (online) health communities (Loane et al., 2014). These online health community members provide opportunities for patients and their families ways to co-create and experience value that would not otherwise be available, for example, through sharing information and experiences, gaining empathy and support in stressful situations, and giving morale boosts when needed (Loane et al., 2014). The institutions at the lower levels of the ecosystem shape co-creation because co-creation is based on the social interaction and institutions are addressing explaining on how the individuals act in social interactions.

Despite this, value is determined at the micro level of the ecosystem and, to a large extent, it is directly co-created within it; the co-created experience is influenced by higher levels of the ecosystem (Akaka and Vargo, 2015), namely the meso and macro levels. The meso level is described as the local or organization level and extends the ecosystem to a broader set of actors and institutions that guide and influence the value co-creation at the micro level (Akaka et al. 2013). In the current dissertation, the meso level describes the organizations and social groups that embed the individuals participating into micro-level experiential value co-creation. These organizations or social groups include, but are not limited to, health service providers, private organizations, patient associations, and patient communities (e.g., Helkkula et al., 2013; Joiner and Lusch, 2016). As the different levels of healthcare ecosystem are nested and interconnected to each other (Akaka et al., 2013), the prevalent mindsets, norms, and routines of these organizations or social groups influence the experiential value at the individual level.

The macro level can be described as the broadest context through which the experiences are evaluated and co-created (Akaka et al., 2015), that is, society. The macro level includes the actors responsible for developing and implementing healthcare policies, actors forming and structuring the economic, social, and cultural contexts, and the actors responsible for the medical and scientific training and education (Helkkula et al. 2013; Capunzo et al., 2013). Hence, the macro level includes a broad set of actors from different sides of society, which—through policies or social norms—are influencing the value co-created across the other levels of the healthcare ecosystem.

The service ecosystem composition is contextual and hence reflects a specific set of actors and evolves continuously (Frow et al., 2019). The constellation of actors within the healthcare ecosystem thus varies because of the different ways that health services are provided within each country. Some countries rely heavily on public services with universal coverage, whereas others are more driven by private healthcare providers. Hence, the macro-level institutions can be seen as shaping the constellation. In addition, although including focal actors that are participating in value co-creation is important when examining compositions of ecosystems, it can be difficult to define those actors, as the boundaries of the service ecosystem are fuzzy (Barile et al., 2016), composition is constantly evolving (Frow et al., 2019), and setting the boundaries is often the task of a researcher (Polese et al., 2021). Table 5 summarizes selected studies that have advanced the understanding of the constellation of multi-level healthcare ecosystems.

Table 5. Selected studies that advance the understanding of multi-level healthcare ecosystems.

Study	Aim and method	Main findings
McColl-Kennedy et al., 2012	To explore healthcare customers' value co-creation practice styles. Interviews, field observations, and focus groups	Identified the roles, activities and interactions that patients have with various actors in customers' service networks.
Helkkula et al., 2013	To examine how value is co-created, calculated, and experienced by different micro, meso, and macro level actors within public healthcare system. Conceptual with an illustrative case	The study provides a framework for value co-creation and alignment of micro-, meso-, and macro-level actors in public healthcare settings.
Osei-Frimpong et al., 2015	To investigate value co-creation processes in patient-physician dyad. Semi-structured interviews with doctors and outpatients	The study elaborated critical areas of experiential value co-creation processes during dyadic appointments.
Sweeney et al., 2015	To explore customer effort in value co-creation activities in healthcare and demonstrate its links with quality of life, satisfaction, and behavioral intentions. A survey	The study shows that customers integrate resources to achieve benefits from sources other than their focal healthcare provider.
Frow et al., 2016	To develop a typology of co-creation practices that shape healthcare service ecosystem. Conceptual study with illustrative examples	The study proposes typologies of healthcare service ecosystem co-creation shaping practices at micro, meso, and macro-levels of the ecosystem.
Patricio et al., 2018	To present service design for value networks method Design science research approach with a case application	Mapped the value network and created understanding of experiences and interactions of actors in Portuguese national health record service

2.3 Methods to explore co-created value as an experience within an ecosystem

2.3.1 Overview of the methods currently utilized to explore an individual's HSE

Research of HSEs and experiential value in healthcare resides in the intersection of human experience, the clinical world, and person-to-person service setting, making it interesting methodologically. The dominant paradigm in the clinical world and clinical research is rooted in positivism (Miller and Grabtree, 2005, p. 610). This highlights the scientific rationality, with the patient being an object rather than subject and where the emphasis is on the quantitative approach. Humanistic research focusing on human experiences is rooted in the interpretative or phenomenological philosophies of science. Hence, this underlines the subjective experiences of individuals and healing in the everyday life in the clinical encounter while approaching the phenomenon qualitatively (Miller and Grabtree, 2005, p. 612). Between these two extremes is research of different service contexts, in which there is a wide range of metatheoretical assumptions (see, e.g., Becker and Jaakkola, 2020). In this chapter, I will take an overall view of the methods currently utilized in the research related to studying individuals' experiences, here with a focus on the healthcare setting.

As mentioned before, most research conducted in clinical research relies on quantitative methods, which is also visible in the studies focusing on experiences in healthcare (e.g., Jha et al., 2008; Doyle et al., 2010; Stanizewska et al., 2015). Quantitative methods typically utilize standardized frameworks or survey instruments to investigate and measure the experiences of patients; however, commonly, these frameworks and survey instruments are designed and developed to capture the perceived experiential quality of the customer, that is, the patient's experience of their care in relation to their expectations. These instruments include, for example, the Institute of Medicine (IOM) framework (Institute of Medicine, 2011; Gerteis, 1993), Consumer Assessment of Healthcare Providers and Systems (CAHPS) framework (Centers for Medicare and Medical services, n.d.), Picker Institute's patient-centered care (Shaller and Consulting, 2007), National Health service patient experience framework (NHS, 2012), and the Warwick patient experiences (WaPEF) framework (Staniszewska et al., 2014). Concerning exploration of the HSE as conceptualized as a multidimensional construct emerging over patient journeys, these quantitative instruments provide little information in the broader temporal scope and the experiences of the patients' and their family members. That is, the strength in quantitative methods is in the generalization of the results, but at the same time, these results are less descriptive and may only cover selected components or areas of the patient experience (de Silva, 2013). As Porter (2010) argues, measured outcomes often fail to capture dimensions that are important to patients. For example, the instruments dominantly focus on the perceived experience in the hospital settings, though patients' experiences may be shaped in a much broader context, that is, the healthcare ecosystem, to which these instruments give no attention. From the frameworks mentioned above, the WaPEF is one, if not the only, framework that frames the patient as an active participant of his or her own care recognizes that individuals are living with their condition and experiencing it in a unique way through "lived experiences" (Staniszewska et al., 2014). Therefore, it may be inappropriate to use predetermined scales to explore and measure HSEs because this would suggest that the composition and emergence of HSEs are already understood in depth.

To tackle this, qualitative methods are increasingly employed to explore the experiences in clinical research (Miller and Grabtree, 2005). For example, Forsberg et al. (2011) utilize semistructured interviews with patients, focusing on experiences in an intensive care unit. Bulk et al. (2019) utilize a phenomenological approach with semistructured interviews and focus groups to understand patients' perceptions (experiences) toward healthcare providers' professionalism. Watson et al. (1999) employ interviews to study elderly patients' perceptions of care in the emergency department. Common to all of these examples of qualitative studies is that the healthcare management studies focus on parts of the overall dynamic journey of the patients or capture a specific aspect of the experience.

To tackle this narrowness of exploration, researchers in service and healthcare management highlight the applicability of narratives in providing valuable insights into individuals' experiences over the course of the whole experience (Cognetta-Rieke and Guney, 2014; Ponsignon et al., 2015; Helkkula et al., 2012). Narratives can provide in-depth information in the patients' own words about what they have experienced and felt, making it possible to draw out experience-related areas that are of the greatest importance or interest to the patients (de Silva, 2013). Some studies, however, imply that individuals may find it difficult to describe or explain the full spectrum of events and aspects of experience emergence process (c.f. Ponsonby and Boyle, 2004), particularly when studying the experiences of children (Sartain et al., 2001; Curtis et al., 2004; Forsner et al., 2005). This may be because of potentially less-developed cognitive competencies because to fully access to one's experience requires some level of language skills, thinking, reasoning, and understanding (cf. Ponsignon et al., 2015). Some previous studies have utilized visual or mixed methods rather than pure interviews to overcome children's undeveloped storytelling and dialogical skills, hence making it easier for children, especially younger ones, to present their experiences by responding with familiar methods (Sartain et al., 2001; Carney et al., 2003), that is, by playing with toys or drawings. Despite the efforts, the exploration of HSEs and applicable methods has remained insufficient for capturing the nuances of multidimensional and dynamic HSEs of individuals, and thus, for developing and orchestrating healthcare services.

2.3.2 Overview of the methods used to explore ecosystems

The previous sections have discussed the basic ideas of ecosystem approach in terms of the needs to address the multiactor perspective and general multilevel composition of the healthcare ecosystem, including the micro, meso, and macro levels. Keeping in mind the aims of the present dissertation, this section discusses healthcare ecosystem exploration from different perspectives and how these perspectives help understand how experiential value is co-created within the ecosystem and how the understanding is utilized to help a development.

As argued earlier, value as an experience is always an individual-level phenomenon and perceived by the patient and family-members (Akaka and Vargo, 2015; Akaka et al., 2015). This implies that to understand the co-creation of value, micro-level investigations should be applied. Despite the promise of generic actor-to-actor ecosystem composition (Vargo and Lusch, 2011), these micro-level investigations exploring an ecosystem are typically divided into two differing perspectives: the organizational and customer perspective (Kranzbühler et al., 2018). In practice, studies applying an ecosystem lens from an organizational perspective are positing the firm as being the center of the ecosystem and viewing experience co-creation with a managerial focus. For example, Dai and Tayur (2019) suggest addressing the operations of single provider to examine the interactions of the multiple entities that build a complex healthcare ecosystem. Edelman and Singer (2015) and Holmburg et al. (2015) suggest firms focus on managing the whole journeys, during which the customer's experience emerges and to seek ways to extend their reach through alliances. Thus, this emphasizes that firms must analyze the broader ecosystem or network to understand customers' wants before designing their own service and intended experience.

Scholars addressing the customer perspective in ecosystem studies approach the inter-related ecosystem by positing the focal customer is at the center of their network of actors, examining this from that perspective of who enables and shapes their experiences (Baron and Harris, 2010; Voima et al., 2011). Taking this customer perspective of the healthcare ecosystem is important to understand the composition of the customer ecosystem, what co-creation processes in the experience context matters the most for the patient and the family-members, and how the experience emerges (Baron and Harris, 2010; Järvikoski et al., 2018). Importantly, the customer is seen as an active participant in selecting the relevant actors to participate with and in forming their own ecosystem (Lipkin, 2016). Thus, experience is more than something realized in provider-dominated interactions but is formed in the whole customer ecosystem not only during, but also before and after, the focal service provision's interaction through systemic co-creation (Voima et al., 2011). Furthermore, the composition of organizations through a customer lens may be blurred because the customer may neglect the firms' formal relationships between each other (Bitner and Wang, 2014). Hence, the customer ecosystem approach extends the understanding of the experience of co-creation as spatially emerging in the provider's and customer's worlds (world beyond the provider's control and visibility) and through their interplay (Lipkin, 2016). Some scholars, such as Arantola-Hattab (2015), argue that value co-creation needs to be investigated more strongly as a form of co-creation covering both the visible and invisible interactions of a *customer unit,* rather than focusing on a single customer. This approach would be beneficial also in healthcare to support an understanding of value co-creation in a family's lifeworld and family members' role as cocreators.

To comprehensively understand the value of co-creation interactions and their underlying social structures, pure micro-level investigations either from a provider or customer perspective may not be enough but necessities a higher-level systemic view of the healthcare ecosystem. That is, a pure focus on the individual level of the ecosystem might provide little understanding of the institutions, such as regulations, norms, and culture, that frame the ecosystem (Akaka et al., 2013; Vargo et al., 2015). Hence, higher-level investigations including, for example, mapping the meso- and macro-level actors and their interlinkages and identifying the resources, social structures, and motives of the ecosystem actors involved in the value co-creation process (Frow et al., 2014) and value co-creation (Vargo and Lusch, 2011), could provide a more in-depth understanding of the healthcare ecosystem. Understanding these underlying norms and regulations is important. For example, Frow et al. (2016) suggest that the actors of the healthcare ecosystem originate from different vantages, including patients and their families and friends, other patients, healthcare professionals, hospitals, health support agencies, professional associations, health insurers, healthcare authorities, government agencies, and regulatory bodies. Thus, it is likely that in healthcare, various different institutions may influence the value co-creation within the healthcare ecosystem, either enabling and supporting the collaboration; However, if the institutions differ dramatically it is likely that co-creation will be unsuccessful (Akaka et al. 2013).

This systemic view is not only beneficial in terms of understanding the composition of the healthcare ecosystem and the underlying institutions but also contributes to understanding how experiential value is co-created within the healthcare ecosystem and how the perceived value understanding is utilized within the healthcare system. The development of healthcare value is often associated with service innovation. For service innovation, there are several different conceptualizations (Gustafsson et al., 2012). For example, Gallouj and Weinstein (1997) conceptualize service innovation as any change that affects one or more terms of one or more service characteristics. Myhren et al. (2018) view service innovation as "recombinative, and new combinations of resources can be either incremental or radical" (p. 102), whereas Michel et al. (2008) and Gustaffson et al. (2012) conceptualize it as change in the role of the customer and the value creation processes manifested through a change in the competences of the company or customer, the perquisites of the offering or what the customer co-creates. In the last conceptualization, the service offering captures the value in the context of a customer, and hence, the focus is not really on the offering but on the customer's value creation process through which experiential value emerges for the customer (Gustafsson et al., 2012). In the scope of the current dissertation, healthcare development and service innovation are seen as a new emerging touchpoint that, if implemented, influences the patient's perceived HSE. Article III examines one type of service innovation, a medical game, at the ecosystem level. This kind of gamified service development is a fruitful field to examine the constellation of the healthcare ecosystem and value co-creation because it engages the resources from different sides of the healthcare ecosystem and wider society; here, the success of a service is not only affected by an organization's internal processes but also by the social norms and regulative matters that influence it. Furthermore, gamification and technology is seen as a process that enhances services with gameful experiences to support an individual's value creation (Huotari and Hamari, 2017) and to humanize the delivery of healthcare (Tian et al., 2014), hence, has linkages to experiential value co-creation at the individual level.

3 METHODOLOGY

3.1 Research approach and design

The current research addresses healthcare value as an experience. The dominant philosophy of science here is subjectivism with a qualitative research approach. Subjectivistic, or a constructionistic approach to reality—subjective in nature and the product of an individual's mind and interpretation—emphasizes the subjective experiences of individuals in their own lives (Creswell and Creswell, 2018). Hence, this view of reality aligns with the view of value being phenomenologically (through experience) and uniquely determined by an individual (Vargo and Lusch, 2008; Helkkula et al., 2012). Furthermore, a subjectivistic worldview and interpretive epistemology are commonly used in research streams—such as service dominant logic and consumer research—that study experience as a subjective phenomenon from a customer-centric perspective and that includes systemic co-creation with various actors in their context (Becker and Jaakkola, 2020). Similarly, regarding epistemological assumptions—implying how I, as a researcher, can understand the world and reality—the present research adopts an interpretative epistemology (Giacomini, 2012). Interpretivism holds an assumption that reality, or the individual's interpretation of the surrounding world, can be obtained through the individuals under investigation.

Although some research has been conducted in various customer–consumer contexts, there are limited studies in service and management research focusing on the healthcare sector. Because of this limitation, an exploratory qualitative approach was seen as being necessary. Hence, methodologically, this research employed multiple qualitative research methods by applying an exploratory research design. The strength of a qualitative research approach in healthcare is that it enables researchers to identify the perceptions, experiences, and behaviors of individuals in a chosen healthcare context, hence reaching beyond quantitative bio-medical measures (Miller and Grabtree, 2005). In the current research, an explorative qualitative study was seen as well serving the search for a better understanding of value as an HSE and clarifying the existing concepts that lack an empirical understanding, that is, HSEs, the patient journey, and the healthcare ecosystem. The explorative nature of this research is implied in the RQs that are formulated as "what kinds of," "who," and "how" questions, aiming to identify, map, and understand the studied phenomenon in an exploratory manner.

I follow induction and abduction. In both chosen approaches, the starting point is the data (Reichertz, 2014). In Article V, following inductive reasoning, the analysis relied heavily on data to produce understanding and theory. In the articles relying on abductive reasoning, the theoretical explanations were developed by approaching the analysis iteratively with empirical and theoretical knowledge. In these articles, the chosen theoretical lens, for example, the multidimensional model of experience and service ecosystem lens, was applied.

3.2 Research context: Finnish healthcare system

Healthcare systems are traditionally divided to three basic models: national health service model, social insurance model, and private insurance model (OECD, 1987). The national health service type, for example, the healthcare systems of Spain, Portugal, and Finland, is characterized by universal coverage and is funded by general taxation and public ownership and/or control of healthcare delivery (Burau et al., 2015). The social insurance model, for example, the healthcare system of Germany, is characterized by compulsory, universal coverage that is part of a system of social security and that is funded by employer and employee contributions through nonprofit insurance funds and in which the provision of healthcare are in private or public ownership. In the private insurance model, healthcare is funded by individual and/or employer contributions, and the provision is predominantly in private ownership (Burau et al., 2015), for example, the United States' healthcare system. The classification presented is not comprehensive but rather an oversimplification because many hybrid systems and varieties exist from each of the three ideal models (e.g., Toth, 2016). In reality, all healthcare systems can be considered different from each other because each healthcare system is strongly influenced by the respective society's underlying regulations, norms, values, history, and social and cultural expectations (Lameire et al., 1999), i.e. institutions of healthcare ecosystem and wider society. However, the classification gives a basis to understand the more general differences and similarities between healthcare systems.

As implied in the section heading, the current research was conducted in the Finnish healthcare setting, which can be described as a national health service system with universal coverage. Typical for these types of systems (e.g., the United Kingdom, Italy, Spain, Sweden, Denmark, Norway, and Canada) is that healthcare is viewed as a predominantly social or collective good rather than a commodity that should be bought and sold on the open market (e.g., United States) (Lameire et al., 1999). The Finnish healthcare system is funded by municipal taxes and central government subsidies and is based on public healthcare services complemented by private health service providers and nongovernmental organizations (Ministry of Social Affairs and Health, 2019). Like many other healthcare systems in various other countries, the current state and sustainability of the Finnish healthcare system is threatened, in addition to the ongoing pandemic, by a range of societal challenges, including the proliferation of chronic illnesses, aging population, heightened patient demands, and growing pressure from the rising costs of healthcare and well-being (Deloitte, 2021; Janssen and Moors, 2013; Ministry of Social Affairs and Health, 2019). To overcome these challenges, debates about health and social services reform has been ongoing for more than a decade, which was finally passed in Finnish Parliament in 2021 entailing changes in the healthcare system.

The present research paid particular attention to value as an experience in children's healthcare context. This research setting was chosen partly because the prior research experiences in the context and existing data sets generated in the "LAPSUS: Patient-centred and Experience-driven Development of Healthcare Services" research project that I took part in from 2016–2018. In addition to the convenience aspects, the research setting was chosen because it was seen as a fruitful field for examining experiential value and the healthcare ecosystem for several reasons, such as the social nature of experiential value (strong inclusion of family); associations with a fragmented service system, complex patient journeys, and wide range of experiences; and the relevance of the methodological considerations when conducting empirical research in the field.

For a short overview of the Finnish healthcare system, health services in Finland are divided into primary healthcare and specialized medical care (Ministry of Social Affairs and Health, n.d.). Primary healthcare services are arranged municipally and are provided at 142 municipal health centers around Finland (Ministry of Social Affairs and Health, 2019). The primary healthcare services include, among other things, monitoring of the health of the population, promoting well-being and health, and the prevention, diagnosis, and treatment of diseases. In addition to the primary health services provided in health centers, some health services are also provided through maternity and child health clinics and school healthcare (Ministry of Social Affairs and Health, n.d.). Maternity health clinics provide, for example, family support and monitoring of the progress of pregnancy for expectant mothers and their partners. Child health clinics assess the physical, mental, and social condition of children under school age and provide, for example, vaccinations, whereas school healthcare continues the health promotion and monitoring of school-aged children. In addition to these public health services, patients may co-create health services with private healthcare entities, including companies and independent practitioners. Typically, these services complement the primary health services, and private health service providers may sell their services to municipalities, to joint municipal authorities, or directly to individuals (Ministry of Social Affairs and Health, n.d.). The more demanding specialized medical care refers to secondary and tertiary healthcare delivered in 20 central hospitals, some local hospitals, and five university hospitals located in Helsinki, Turku, Oulu, Tampere, and Kuopio. To receive specialized medical care in secondary or tertiary levels, patients must have a referral issued by, for example, a general practitioner at the health center or another physician of primary healthcare. In other words, the Finnish healthcare system has a compulsory gatekeeping system (Toth, 2016). Hence, the Finnish healthcare system inherently embeds a high degree of specialization and fragmentation that may cause complex journeys through which patients' and their families' medical care is facilitated. In addition to public and private health service providers, the Finnish healthcare system is also complemented by nongovernmental organizations. There are various associations either focused on various health conditions such as the Diabetics Association focusing on diabetes or Finnish Association for the Heart Children and Adults focusing on people with a congenital heart defect, or associations with a more general focus, such as Leijonaemot, which facilitates peer support for the parents of children with special needs. This implies fruitful investigations with customers with conditions associated with possibly long patient journeys, a wide range of experiences, and significant self-care burden.

3.3 Research methods

The current dissertation research applied a variety of research designs and methods to answer the posited RQs. These diverse methods included exploratory interview studies, exploratory and collective case study studies, a literature review, and a participatory design study (see Table 6). The designed studies also employed various data sets to investigate the phenomenon from different perspectives. The purpose of this section is to give an overall description of the adapted research designs and methods in six original articles and their links to the RQs.

In Article I, a systematic literature review on emotions in customer experience was conducted to gain an in-depth conceptual understanding of the emotions in the experience domain. This was seen as important because HSEs are considered a high-emotive service context. The article contributed to the first and fourth RQs by providing nuanced knowledge on the different types of emotions in experiences and clarifying the concepts around the affective experiences.

Article II investigated the constituents of multidimensional HSE and the manifestation of the patient journey through an explorative qualitative interview study with the parents of a child patient and healthcare professionals. The empirical study contributes to all RQs.

In Article III, an explorative case study with a qualitative ecosystem mapping was conducted to identify the relevant actors participating in co-creation regarding the development of a medical game, conceptualized here as a gamified touchpoint. The article contributes to the second research question by providing an understanding of experiential value co-creation at the meso and macro levels of the healthcare ecosystem and those interlinkages to micro-level experience co-creation. In addition, the article contributes to the fourth research question by providing insights into the barriers of touchpoint development within the healthcare ecosystem.

Article IV employed an explorative interview research with healthcare workers to examine patient experience data collection and utilization in three university hospitals. The article contributed to the fourth research question by providing insights into how the understanding of HSEs is utilized within the healthcare ecosystem.

In Article V, a collective, instrumental case study was conducted that examined the applicability of the three data collection methods in terms of capturing HSEs in pediatric healthcare context. The article contributed to answering research question four.

In Article VI, a participatory design study was conducted to design a novel qualitative research method for studying the HSEs of a child patient over the patient journey. Hence, it contributed to the fourth research question. Table 6 summarizes the applied methods in the appended publications.

Table 6. Methodologies of the original publications.

	A1	A2	A3	A4	A5	A6
Research design	Systematic literature review	Exploratory interview study	Exploratory case study	Exploratory interview study	Collective, instrumental case study	Participatory design study
Form of logical reasoning	Abductive	Abductive	Abductive	Inductive	Abductive	Abductive
Data collection method(s)	Systematic literature search	Semistructured and narrative interviews	Qualitative ecosystem mapping	Semistructured interviews	Semistructured interviews, narrative interviews, video diaries	Participatory design workshop
Assumptions for method selection	Enables synthesis of relevant literature	Enables multisided examination of individuals experiences	Enables examination of emerging ecosystem that is complex and multifaceted	Enables focus for generating in-depth understanding on the topic	Maximum variation on methods enabled the exploration of applicability of different methods	Enables provision of insights during a design process
Unit and level of analysis	Concept of emotions. Analysis was conducted in conceptual level.	Individual's experience. The analysis was conducted focusing on five dimensions of HSE	Value propositions in healthcare gamification ecosystem. The analysis was conducted at the organization level	Healthcare provider. The analysis was conducted in an organizational level	Data collection method. The analysis was conducted in data collection method level	n/a
Data	129 articles in customer experience literature	Semistructured interviews with healthcare	Open-ended thematic interviews with	Interviews with healthcare professionals (n=9)	Semistructured interviews	Comments of 15-year-old teenager

	A1	A2	A3	A4	A5	A6
		professionals of two Finnish university hospitals Narrative interviews with pediatric patients' parents	experts of games and technology, health, and health and games funding	of three Finnish University hospitals	healthcare professionals Narrative interviews with pediatric patients' parents Video diaries of child patients	in a participatory design workshop
Data analysis	Content analysis focusing on conceptualizations, theoretical models, and approaches on "emotion" in customer experience literature, and research themes and contexts	Thematic analysis focusing on dimensions of HSE and touchpoints of patient journey	Thematic analysis to identify relevant actors, value propositions, and barriers in eHealth development	Two-phase thematic analysis	Two-phase (within- and cross-case) qualitative analysis focusing on capturing children's experiences, applicability, benefits, and limitations	n/a

3.3.1 Literature review

In Article I, the purpose was to analyze the emotions in the customer experience through a systematic literature review. Systematic literature reviews are useful when there is a need for an explicit method for selecting the relevant literature and analyzing them (e.g., Booth et al., 2012). In the article, we used a two-phase search to gather the relevant literature on emotions in the customer experience. In the first phase, we identified and collected articles concerning customer experience. Articles were searched for in Web of Science and EBSCO because both cover a wide range of quality journals in various relevant fields and various geographical areas. From the selected databases, we conducted a systematic search for all articles in which the title, keywords, or abstract mentioned the phrase "customer experience." The search was restricted to peer-reviewed journals to find high-quality articles. The temporal limit was set to articles published before May 2018. The search yielded a total of 399 articles from EBSCO and 570 articles from Web of Science. The articles were then screened to exclude duplicates. Because we focused on scholarly peer-reviewed articles, we excluded book reviews and editorials. The screening reduced the number of articles to 336. In the second search phase, a search within the identified customer experience articles was conducted to find those articles that examined or were related to emotions in customer experience. The following keywords were selected: "emotion," "feeling," "affection," and "sentiment." One of these expressions or its variations had to be present in the title, keywords, or abstract. This resulted in 129 articles. The research process is represented in Figure 5.

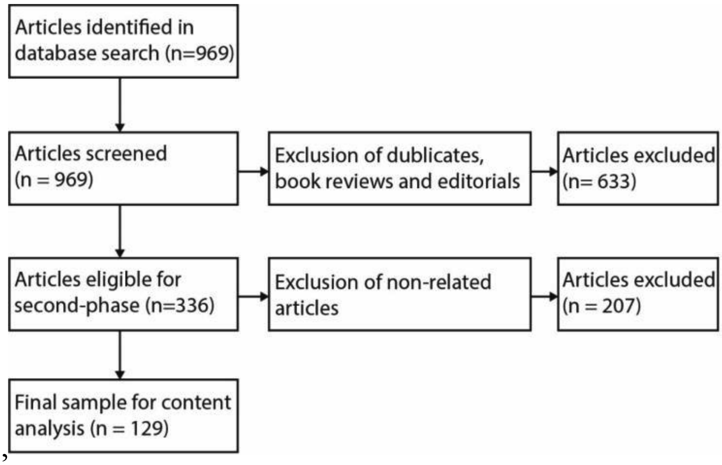


Figure 5. Process of gathering and identifying the relevant articles for the literature review.

After identifying the articles, we conducted a content analysis of the 129 articles. Here, the content analysis emphasized qualitative content and a thematic analysis. The content analysis was chosen because it requires minimal interference by the researchers in the phenomenon studied and can handle large volumes of data (Krippendorff, 1980; Weber, 1985). Among the coauthors of Article I, we first read through all the articles to acquire a general view of the papers and then compared, categorized, and coded the content of the articles. The analysis had several focus points that included classification of the publication forum, major research themes and empirical research contexts, and identifying the key conceptualizations of "emotion," along with the major theoretical models and approaches. The analysis is depicted more thoroughly in the original article.

3.3.2 Empirical data and data collection methods

This research adopted a multi-method approach to answer the posited research questions and to achieve its purpose. The approach was deemed necessary due to the subjective and social nature of healthcare value co-creation as well as the complexity of the healthcare ecosystem. Hence, in articles II–VI in total of five qualitative empirical data sets were employed to examine co-created healthcare value as an experience from multiple perspectives. These data sets covered different levels of the healthcare ecosystem and society to enable a multisided view of the phenomenon (see Figure 6 for the overall view of the utilized data sets).

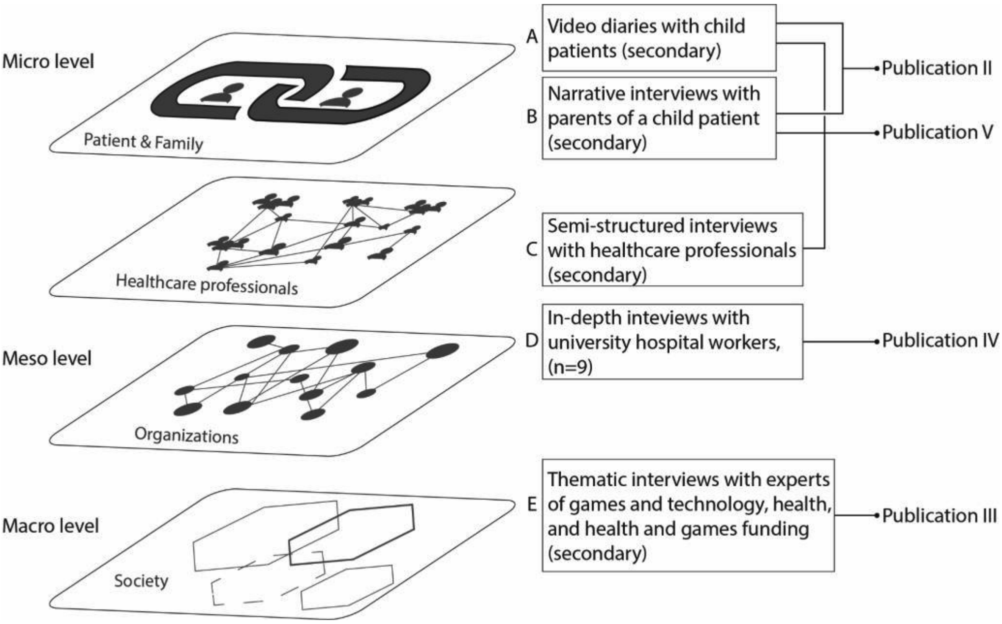


Figure 6. Overall view of the empirical data used in this research.

The majority of the data used (data sets A-C and E in Figure 6) are secondary, meaning that I did not personally collect the data. The benefit of using secondary data is its low costs in terms of resources (Boslaugh, 2007). The quality assessment of the data is discussed more thoroughly in section 3.4.

Data sets A-D were gathered in the "LAPSUS: Patient-Centred and Experience-Driven Development of Healthcare Services" project (2015–2018). The aim was to promote child patient and family experience-driven development when constructing new hospitals and improving healthcare services. The project consisted of several substudies that concerned a) dimensions of the patient experience and patient journeys of families with pediatric patients, b) questionnaires for measuring the patient experience of patients, c) a video diary as an instrument for studying patient experiences of adolescents, d) photo elicitation methods for studying children's patient experiences, e) ecosystem's role in patient experience, and f) collecting and utilizing patient feedback in a children's hospital. My work in the research project was related to substudies a, e, and f. To contribute to the project and conduct research on the topics, I had access to the empirical data collected during the project through coauthoring.

Data set A, comprising video diaries of child patients and adolescents, was used in Article V. In Article V, the video diary method was chosen as one of the examined methods on the supposition that flexible and playful methods would capture various sides of the child's experience in a pediatric healthcare context that traditional methods would not be able to capture. Nina Karisalmi, a coauthor of Article V, developed the video diary method as an instrument for studying the patient experiences of children and adolescents as a part of the LAPSUS project. She also gathered the data (video diary clips, tasks in the binder, interviews) and analyzed it (for details, see Karisalmi et al., 2018).

Data set B was applied in Articles II and V. This secondary data set comprised 23 narrative interview transcripts with pediatric patient's parents of the Pediatrics and Adolescent Medicine Department at Helsinki University Hospital and was gathered during the LAPSUS project. The participants included two groups of parents: those with young children with congenital disorders and parents with teenage children suffering from chronic illnesses (see Article V for more details). In Article II, the narrative interviews were chosen on the supposition that it would enable an exploration of the constituents of HSEs and exploration of the touchpoints that shape the HSE of families. In Article V, the gathered data were utilized in the exploration of the applicability of the interviewing narrative in capturing different sides of individuals' experiences in a pediatric healthcare context.

Data set C, comprising the interview transcripts with healthcare professionals were utilized in Articles II and V. The data set comprised 23 semistructured interview transcripts with Finnish healthcare professionals working at the Pediatrics and Adolescent Medicine Department at Helsinki University Hospital and the Department of Pediatrics and Adolescence at Oulu University Hospital. The participants represent a range of professional groups, including doctors ($n = 11$), head nurses ($n = 4$), other nurses ($n = 8$), and those with other specializations (e.g., cancer ward, pediatric surgery, rheumatics, and neurology). In Article II, the semi-structured interviewing was chosen on the supposition that it would yield in-depth understanding that could be utilized to explore the dimensions of HSE and patient journey touchpoints from the perspective of healthcare professionals. In Article V, the data set was utilized in the exploration of the applicability of the method and design in capturing the different sides of individuals' experiences in the pediatric healthcare context.

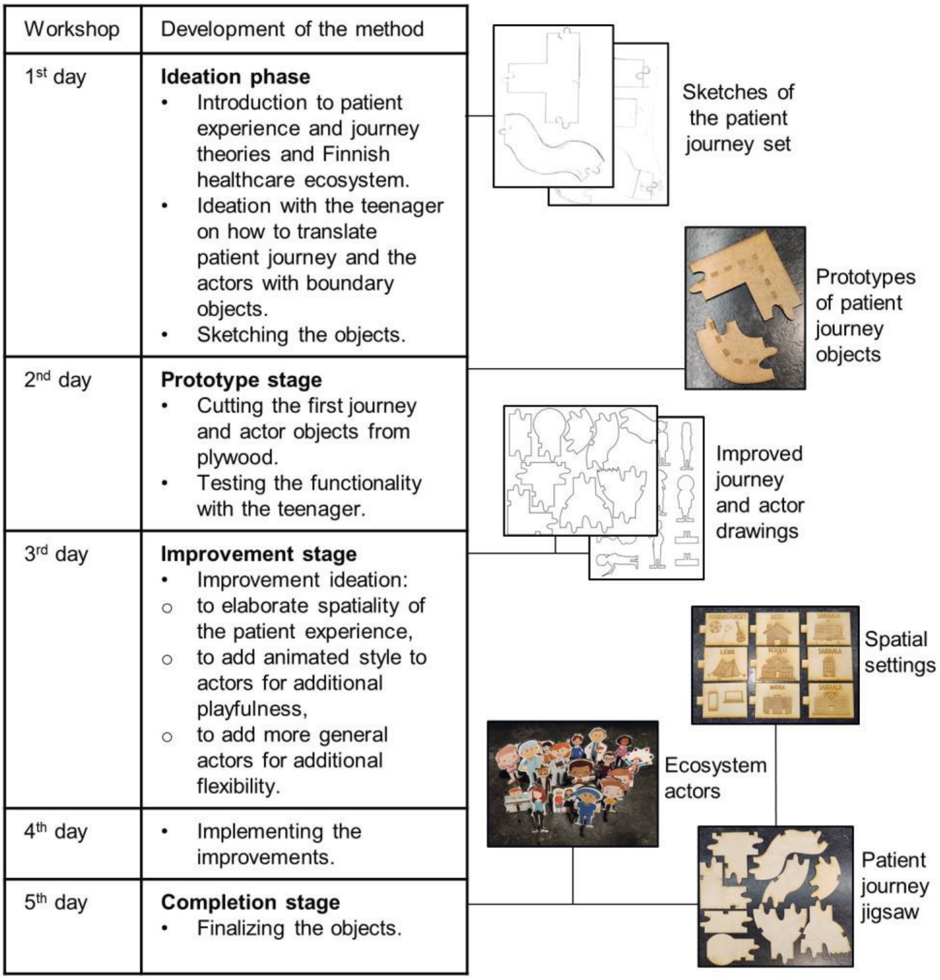
Data set D, which included data from nine in-depth interviews with healthcare professionals of three university hospitals, was utilized in Article IV. The data comprised healthcare professionals working at the Pediatrics and Adolescent Medicine Department at Helsinki University Hospital, the Department of Pediatrics and Adolescence at Oulu University Hospital and Department of Paediatrics, and Adolescent Medicine at Turku University Hospital. The coauthors of Article IV (Hanna Stenhammar, Susanna Immonen, Minja Axelsson, and Minna Lantto) created an interview framework and collected five interviews from Helsinki University Hospital personnel. I collected two interviews in Turku University Hospital, and Susanna Immonen collected an additional two interviews from Oulu University Hospital. The data set was utilized to explore the patient feedback collection and utilization practices of the hospitals, hence contributing to answering the fourth research question.

Data set E was utilized in Article III. In the study, we chose a qualitative ecosystem mapping approach that builds on an exploratory case study approach (Yin, 2009) to tackle the multifaceted and complex nature of the development of a medical game in an ecosystem since this method for examining emerging healthcare ecosystems is established (Ehrenhard et al., 2014). The secondary data set E was collected by the coauthor Linda Luhtala. The purpose of the collected data was to analyze value creation in a healthcare gamification ecosystem in terms of identifying the actors who participate in value co-creation and the respective value propositions and barriers that influence healthcare gamification. The empirical case comprised the emergence of a neuropsychological healthcare gamification ecosystem in a traumatic brain injury (TBI) context in Finland. Data set E comprised a total of 24 interview transcripts with 25 interviewees. The interviewees had expertise in three main areas: games and technology, health, and health and games funding. The informants in games and technology represent a university, a university of applied sciences, three companies operating in the medical game industry, two associations related to health innovations, and four game companies inspecting business opportunities in the health games sector. The informants in the field of health comprise representatives from three rehabilitation organizations, a university, a university hospital, and a brain injury association. The informants in the funding category represent two private and two public health and medical sector funding agencies.

Participatory design methods. Participatory design methods were utilized to develop and introduce a novel data collection method to enable a broader and more holistic approach toward inquiries on children’s patient journeys, as reported in Article VI. The participatory design method describes a process where an end-user is invited to participate and contribute to the design and development of a given product or concept (Buur and Matthews, 2008). This helps provide insights during the design process. In this study, the objects were developed and designed in a participatory design workshop with a 15-year-old teenager whose role was to support the design process from the perspective of a child. The development of the method followed a design thinking approach (Stickdorn and Schneider, 2010) that included three stages. In the first stage, the literature on children's HSEs, patient journeys, and customer experience research methods was reviewed to provide the research challenge and theoretical support for the development of a method. Drawing from previous studies utilizing tangible mixed methods approaches (Curtis et al., 2004; Buur, 2018), I created a method utilizing functional, flexible, and playful elements but applied them as tangible *boundary objects* (Star, 1989) to study children's HSEs. Boundary objects (Star, 1989) are those "which help mediate in the boundary between actors with different perspectives, knowledge, skills, locations or status in social systems" (Moultrie, 2015, p. 2). The tangible boundary objects were developed on the supposition that those would act as an instrumental mediation at the researcher–child patient boundary. It was also supposed that the objects would support the storytelling of the child while enabling functionality, playfulness, and flexibility for the data inquiry.

In the second stage, the knowledge from the LAPSUS project was applied. This was important to capture the complexity of the ecosystem and to develop a method that could probe for interactions with different actors over the patient journeys that all build the HSE.

In the third stage, theories and findings from the previous stages were implemented for the boundary objects. The participatory design workshop took place at Tampere University from April 1 to April 5, 2019. The objects were designed such that an experience inquiry would playfully and flexibly activate and support the child's storytelling. Simultaneously, the objects would support the translation of the underpinnings of patient journey theory, which is created through interactions with multiple ecosystem actors in different settings. The development of the boundary objects during the five-day participatory design workshop is illustrated in Figure 7.



Workshop	Development of the method
1st day	**Ideation phase** • Introduction to patient experience and journey theories and Finnish healthcare ecosystem. • Ideation with the teenager on how to translate patient journey and the actors with boundary objects. • Sketching the objects.
2nd day	**Prototype stage** • Cutting the first journey and actor objects from plywood. • Testing the functionality with the teenager.
3rd day	**Improvement stage** • Improvement ideation: ○ to elaborate spatiality of the patient experience, ○ to add animated style to actors for additional playfulness, ○ to add more general actors for additional flexibility.
4th day	• Implementing the improvements.
5th day	**Completion stage** • Finalizing the objects.

Figure 7. Development of the method during a five-day participatory design workshop (adapted from Article VI).

After development of the method, it was planned to be tested in practice. However, it was shortly found to be unfeasible because applying for the permission from the ethical board was not possible because it would have taken unreasonable amount of resources. Section 3.4. elaborates on these challenges.

3.3.3 Analyses of the empirical data

As depicted in Table 6 (pp. 46-46), the research processes followed either abductive or inductive research processes. The choices of the research process are reflected in the different data analysis methods. This chapter clarifies the different data analysis methods taken in the different studies, including the content and thematic analyses.

The analysis in Article II followed an abductive research process (e.g., Reichertz, 2007) because we iteratively moved back and forth between data and theoretical concepts to deepen our understanding of both data and theory. In the beginning of the process, we conducted a preliminary overview of the data to gain an understanding of the emergent phenomenon and theories on service experience, customer experience, and patient experience to build an initial framework for the analysis. Based on the preliminary overview, our analysis framework drew from the conceptual thinking of customer experience (Verhoef et al., 2009; Schmitt, 1999), including the sensory, affective, cognitive, behavioral, and social dimensions and the customer journey (Lemon and Verhoef, 2016), including brand-owned, partner-owned, customer-owned, and social touchpoints. The utilized framework provided a structural approach to deepen and broaden the existing understanding of HSEs manifested through each dimension, actors, and journey touchpoints. It is worth acknowledging that the journey is a theoretical metaphor to better make sense and understand dynamic experiences. That is, although the applied metaphors and concepts may share similar aspects with stories of individuals facing an illness, disease or injury and seeking to recover from it (e.g., interviewees describing a start and an end; describing a sequence of events and interactions; describing some type of process; or directly using the metaphor of a journey), the representations based on the theoretical concepts are still researchers' interpretations of the patients' and their family-members' subjective experiences. Each individual interview, including the pediatric patients' parent and healthcare professional interviews, was thematically analyzed using qualitative data analysis software. Initially, the two data sets (data sets B and C in Figure 6) were analyzed separately to identify possible differences between the perspectives.

In Article III, the purpose—to identify relevant actors, value propositions, and barriers—guided the analysis. The analysis had two phases. In the first phase, we read the transcriptions line by line while making notes to get an overview of the data. Then, with the help of NVivo, we organized and coded the transcriptions into themes of actors, value propositions, and barriers. We considered each theme in higher-order categories of the related subthemes and notions. Some subthemes were explicit, while others were implicit. For example, coding for barriers required identifying texts that concern the various disabling or enabling effects on the healthcare gamification ecosystem. Similarly, coding for value propositions aimed at identifying texts related to the expected and experienced costs, benefits, aims, goals, and potential uses of the medical game and the actors' positions in the ecosystem. In the second round of analysis, we listed all the subthemes raised in an Excel spreadsheet with the original citation and a condensed explanation of the barrier. For example, in the first round of coding, we identified 59 notions regarding barriers. We then condensed these 59 notions further into general statements by combining their major features, resulting in 20 main barriers. We then further coded these barriers into four subthemes: barriers associated with the validation process, barriers associated with the commercial aspect, barriers associated with healthcare innovation structures, and barriers associated with individuals' experiences.

In Article IV, the focus of the analysis was on hospitals' practices in gathering and utilizing data on patients' experiences, the positives and negatives of current practices, and future opportunities regarding data collection and utilization. The unit of analysis was the individual interviewed healthcare worker and the level of analysis was set at the hospital level. The data analysis was conducted in two phases. In the first phase, the analysis concerned five interviews at a Finnish University Hospital's pediatrics and adolescent medicine department. The "within-case" analysis included organizing data from the interviews into an Excel sheet and categorizing parts of the interviews under five categories: background information, current data collection and utilization, positives and negatives of current practices, and future opportunities. In the first phase, an affinity diagram was used for further analysis. In the second phase, four interviews from two other pediatrics and adolescent medicine departments were analyzed. The analysis followed a similar procedure as the first phase, but the findings were compared with the first phase's findings to find the similarities and differences between the findings and to validate the first phase's results.

In Article V, the study drew from three substudies with different data collection methods that were conducted to examine experiences in children's healthcare. The three selected substudies were video diaries with child patients (data set A), narrative interviews with the parent(s) of a child patient (data set B), and semistructured interviews with pediatric healthcare professionals (data set

C). The focus was to analyze the benefits and limitations of each method and compare their applicability to capture the dimensions of the service experience; hence, the unit of analysis here was the different data collection methods. The analysis of Article V also comprised two phases. In the first phase, we conducted a within-study content analysis for each of the conducted substudies. The analyzed data included a filled binder, the video clips, interview transcripts from the video diary method, transcripts of narrative interviews, and transcripts of semistructured interviews. Our first-round analysis followed a deductive approach and explored how the applied methods generated information on the dimensions of service experience. In this study, the dimensions of service experience were based on the work of Jaakkola et al. (2015) and included the temporal, factual, spatial, organizational, locus, and control dimensions. The dimensions depict different sides of the service experience. For example, the factual dimension ranges from lived experiences to ones imagined by the service customer (Jaakkola et al., 2015). The dimensions are discussed more thoroughly in the original article. The analysis was done using qualitative data analysis software, and the coding framework drew on the dimensions. We also analyzed each method's applicability for studying service experiences in children's healthcare, including the method's benefits and limitations. The applicability of each method was analyzed regarding the method's ability to capture the various dimensions of a service experience and the appropriateness of using the method with the selected sample; this was carried out through discussions among the participating researchers. In the second phase, we conducted a cross-study analysis of the three substudies. The cross-case analysis process drew on discussions within the research team and was based on the experiences and interpretations from the first round of analysis. The aim was to identify the differences and similarities among the substudies concerning capturing the six dimensions of the service experience (Jaakkola et al., 2015). Therefore, the units of the cross-study analysis were the service experience dimensions and two factors within each dimension (e.g., broad or narrow time frame in the temporal dimension). Each dimension and its factors were analyzed independently through a discussion to compare the substudies.

3.4 Ethical reflections related to children's healthcare context and quality assessment of the studies

Conducting research in a healthcare context is important, but the healthcare context itself necessities critical considerations when it comes to ethical matters. Ethical considerations are necessary because healthcare services are highly personal, often have a high stakes at play, and the services are intrusive and invasive towards an individual's body or psyche (Berry et al., 2015; McColl-Kennedy et al., 2017c). As acknowledged in the literature, strict regulations may exist when studies are conducted in healthcare settings (Stark and Hedgecoe, 2010) with complex, country-specific ethical processes.

These processes and ethical considerations are well justified, particularly when conducting a research in the healthcare field with children (Burns and Grove, 2001, p. 166; Phelan and Kinsella, 2013). That is, children are more vulnerable and experience stress more readily than adults (Burns and Grove, 2001; Kortesluoma et al., 2003). In addition, the power imbalance between children and adult researchers must be considered (Greene and Hogan, 2005). For example, children may feel intimidated when talking to an unfamiliar researcher (Punch, 2002), and they may try to please the researcher by giving the "right answers" (Singh, 2007). Furthermore, as a participant in research in a healthcare setting, individuals may also believe that their condition will improve because of their participation in the research (Stark and Hedgecoe, 2010), and children have more difficulty understanding the implications of participating in a study (Kortesluoma et al., 2003).

These ethical matters also influenced the research process of this thesis. The dissertation relied greatly on secondary data, but primary data were planned to be used. Specifically, the plan was to gather data with the method developed in Article VI from the children attending the camps held by a patient association. Gaining such access and collecting that data in a Finnish healthcare setting is, however, far from simple. This type of research that explores the child as a human subject or the study and medical related field of experiences is difficult in terms of ethical approval. To evaluate the necessary ethical approval, discussions with the Ethics Committee of the Tampere Region (nonmedical research involving human subjects) and the Regional Ethics Committee of Tampere University Hospital (medical research involving human subjects) was done. Medical research ethics approval was needed. In addition, although the patient association was interested in the research and it seemed possible to collect the data in a few camps, it would have required another ethical review from the Social Insurance Institution of Finland because the camps were financially supported by it. In the end, it was not seen feasible resource-wise (time) to conduct the planned study. Hence, the current dissertation applied mostly existing secondary data approved by the ethical committee of the Hospital District of Helsinki and Uusimaa (HUS). As said earlier, the secondary data are data that I personally did not collect.

The studies must be evaluated for the purpose of scientific assessment of the research. This is particularly important for those studies utilizing empirical data. In conceptual studies using the literature, such as Article I, the assessment of the research is easier for readers because all of the used literature can be accessed; hence, the validity and reliability of findings can be proven more easily. Miles and Huberman (1994, pp. 277-280) include five main standards or issues to assess the quality of qualitative conclusions: objectivity/confirmability of the qualitative work, dependability (also known as reliability and auditability), credibility (internal validity and authenticity), transferability (external validity and fittingness), and application (also known as utilization and action orientation).

The objectivity and confirmability of qualitative work refers to the explicitness about the inevitable biases that exist (Miles and Huberman, 1994). In interpretative studies, the interpretations are always influenced by the researcher's personal background and assumptions, values and biases, and affective states. Creswell and Creswell (2018) emphasize constructivist researchers need to recognize how their own background is shaping their interpretation of the data. That is, one must understand how the interpretation is influenced by one's personal, cultural and historic experiences. Hence, it is critical to transparently reflect my own background and myself as a researcher and assess how it might have influenced the research.

I gained my master's degree in industrial engineering and management at Tampere University (formerly Tampere University of Technology) adhering to an analytical perspective and technology and process orientation. During the following four years as a PhD student, I have been influenced by the prevailing research paradigm and traditions of the Center of Innovation and Technology Research (CITER), so I adhere to ecosystem theory and qualitative research traditions. Furthermore, during the research process, I have attended a few conferences focusing on service research (e.g., Naples Forum on Service and Servsig), a doctoral course on theory and research in service management at the Service Research Center at Karlstad University, Sweden, and a week-long exchange at the Department of Design and Communication at University of Southern Denmark, which have all influenced my theoretical perspectives. Regarding this research, my background in industrial management and interest in service management has caused researcher bias and thus has influenced the formulation of research questions, choice of theoretical and conceptual frameworks, and interpretations made from data.

Although I have been a customer of health services in Finland and acquittanced a patient, I do not have any strong subjective experiences, nor have I lived with a chronic illness. I only have an interest to study the patients' experiences with an underlying aim to develop health services. Not having "an intensive personal involvement" (Silverman, 2006, p. 247) is a two-edged sword; it enables me to draw conclusions more objectively without strong preconceptions, but at the same time, I did not have the benefit of reflecting on my own experiences to elaborate on the nuances that another researcher with personal involvement might have. Working in the LAPSUS research project for three years enabled me to become familiar with the context where the secondary data were collected, and this is important to consider when using secondary data. This was important because I was not participating in the collection of data, nor was I able to influence the data collection or the questions asked in the interviews. Furthermore, the articles were written with one or more researchers who had collected the data or actively participated to formulating the RQs and aims of the data collection. This helped in generating an in-depth understanding of the data and context of data collection. To enhance the confirmability of the findings, in the original articles, I have used some extracts from the data to transparently illustrate how conclusions were drawn from the data. This helps readers assess the trustworthiness of the conclusions.

The dependability and reliability of the study refers to the degree of consistency of the study and whether the study process is reasonably consistent over time and across researchers and methods (Miles and Huberman, 1994; Silverman, 2006). To satisfy dependability and reliability, I have aimed to describe comprehensive and transparent accounts of the research process, including the sources of primary and secondary data, data analysis methods, and theoretical frameworks that have guided the interpretations made. Here, the secondary data utilized in this dissertation's studies either served its primary purpose or another purpose that it was meant (Boslaugh, 2007). For example, the data gathered to generate the understanding of the patient and their families experiences (data set B) was used for its primary purpose (Article II). Whereas in Article V, the data served another purpose than the one it was gathered for; hence, it can be considered a secondary analysis of existing data (Boslaugh, 2007). This can have an influence on the reliability of the findings.

Credibility refers to the truth value of the findings (Miles and Huberman, 1994, p. 278). In other words, are the findings credible when it comes to the subjects of the study and to the readers of the findings? The credibility of the study was enhanced by discussing the findings with the coauthors, LAPSUS team members, and the personnel of the healthcare providers. Unfortunately, no respondent validation (Silverman, 2006, p. 291) was made for the analysis, which would have enhanced the credibility even further. However, the analysis was based on verbatim transcription of the interviews rather than notes of the interviews, which is seen as a good way to increase the credibility of the analysis and the conclusions (Silverman, 2006, p. 283). Because the transcriptions were made by someone other than myself, I cannot verify whether some subtle features of the talk were left out from the verbatim transcriptions and whether these would have influenced the results. The subjectivity and context-ladenness of experience influences the conclusions and generalizability of my conclusions.

Finally, from an ethical perspective, particular attention was posed regarding respecting the privacy and anonymity of the participants. In all the original articles, the participants were anonymized, and the results cannot be linked to any individual.

4 FINDINGS

4.1 Composition of multidimensional HSE

This section answers the first research question: "*How is multidimensional HSE composed?*" As discussed in the theory section, HSEs can be seen as multidimensional in nature. That is, HSEs at the micro, or individual, level emerge through sensory, affective, cognitive, behavioral, and social dimensions. This section presents a framework for multidimensional HSEs and discusses the composition of multidimensional service experiences in the healthcare setting; this is done by drawing from the findings of Articles I and II[1].

HSEs incorporate the various experiences that are evoked during a patient's and the family's quest toward well-being. To answer the first research question, Figure 8 provides an overall representation of the broad range of experiences that incorporates through the sensory, affective, cognitive, behavioral, and social dimensions. The Figure 8 is developed from the findings of Articles I and II. In the figure, outer circle provides insights into the context of experience by exemplifying the potential triggers of a given experience. The inner circle presents the HSE reactions in different dimensions. The preliminary idea and the figure are based on the "Model of PX dimensions, touchpoints and actors" that is presented in Article II, which I have further developed by remodeling the figure, by exemplifying triggers from the written findings of Article II, by refining the HSEs based on the findings of Article II, and by elaborating the emotional dimensions based on the findings of Article I.

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[1] The findings of Article II were based on the data partly gathered by researchers of Aalto University, and the theoretical framework of the article was jointly developed by the authors (see Author's Contribution section). The findings of this chapter I have then refined and developed myself based on the appended Articles I and II.

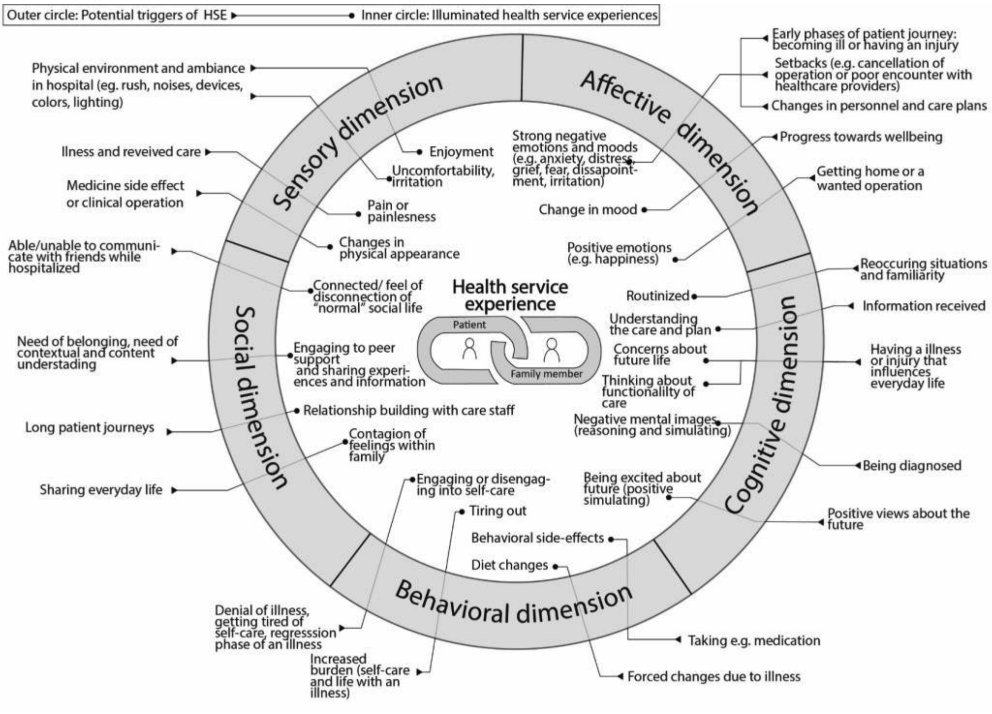

Figure 8. Composition of multidimensional HSE (developed on the findings of Articles I and II)

Overall, HSEs are highly emotional, cognitively burdening, and socially infused experiences and, hence, are heavily weighted on the affective, cognitive, and social dimensions. Despite their relative narrower weight, the sensory and behavioral dimensions also show their presence in HSEs.

Regarding the *sensory dimension* of HSE, the findings affirm that sensorial HSE is evoked mainly through ambient factors, such as through (unwanted) noises of hospital environments (Annemans et al., 2012; Browall et al., 2013); in addition, patients and their family members react to the overall ambiance of a hospital, including, for example, feeling/seeing the rush in the hospital. These sensorial triggers can evoke both negative and positive experiences in valence, namely, enjoyment, uncomfortableness, and irritation. Other sensory HSEs were changes in physical appearance caused by medicine side effects or clinical operations and pain and painlessness caused by illness and received care (see Article II). Article II focused particularly on HSEs in the pediatric healthcare context, and results were generated through data collected from the child patient's parents, not the child patients themselves. Hence, interestingly, the results indicate this intrusiveness of healthcare services (Bolton et al., 2014) from another perspective, that is, through the visual stimuli of *seeing* pain, painlessness, and the negative effects on the body of a patient. This highlights the potential criticality of the family unit perspective in health services and research addressing the HSE because of the strong experience co-creation between the patient and the family member.

Regarding the *affective dimension of HSE,* researchers in the customer experience literature utilize a lot of different terms to describe emotions, for example, feeling, mood, and affection (see Article I). Hence, it is crucial to generate some consensus about the definitions related to emotions. In Article I, we proposed the following definitions for different terms: 1) "*Mood*" depicts a long-lasting subjective emotion that affects a person's behavior and experience; 2) "*feelings*" are subjective experiences that are shorter (from minutes to hours; e.g., joy, irritation); 3) "*emotions*" are also short-term feelings but are characterized by projected feelings, usually manifested in social interaction (e.g., love, hate); and 4) "*affective experience*" is based on the spectrum of all previous terms (emotions, feeling, and mood) and can be described by features like intensity, duration, and cause. Typically, however, "emotion" is used as an umbrella term, concealing the complex relationship between an individual's experiences and various emotions. Concerning the empirical findings, as shown in Article II and previous research (Diehl et al., 1991; Caicedo, 2014; McColl-Kennedy et al., 2017c), patients and families are likely to undergo a rollercoaster of affective experiences over these stressing and frightening times and are likely to feel strong, short-term negative *emotions* triggered by the extremeness and unpredictableness of the events related to one's own health and care or health of their loved one, while being in a long-lasting engagement to *negative moods* such as stress, anxiety, and worry. Nevertheless, patients and family members sometimes feel *positive moods* of relief and hopefulness when the health situation progresses and the sense of an emergency stabilizes and *positive emotions* when, for example, a hospitalization period is ending and a patient is going back home. As identified in Article I, emotions can also be approached as an *emotional driver*, where emotions are seen as a driver of long-term customer relationship dynamics because this shapes trust, satisfaction, and commitment. On the other hand, confronting setbacks in this dynamic journey, for example, change in care personnel, tend to not only diminish or even destroy these experience outcomes, but can also evoke negative emotions, for example, disappointment or irritation, toward a health service provider (as implied in Article II).

The relevancy of the *cognitive dimension* underlines the knowledge-intensive nature of health services (Lovelock, 1983) and the knowledge asymmetry between the healthcare professional and healthcare customer (Osei-Frimpong et al., 2015), making being sick cognitively burdening, not only for the patient but the family members as well. Based on the findings of Article II, cognitive experiences over the course toward well-being include generating an understanding of the illness, situation, and care related to it; pondering over previous lived events and concerning one's future life; and feelings of being lost until the situation routinizes and the confidence in coping with an illness potentially emerges. Hence, the cognitive experiences related to the care and life with an illness empirically exemplify how HSE is influenced by past, present, and future events, as theorized by Jaakkola et al. (2015).

The experiences concerning the activities evoked by the triggers, namely *behavioral experiences*, include the activities related to everyday life changes (like diet change), tiring out, and activity changes because of medical side effects but that are mostly concentrated on the theme of self-care: to engage with self-care or disengage from self-care. Engaging with self-care means there was an eagerness to practice self-care at home and in voluntary self-care clinics. Disengaging from self-care was often related to the denial of an illness, getting tired of self-care, or a regression phase in a child's behavior. The regression might also happen because of medication side effects, making a child unwilling to do anything.

Social experiences in healthcare include, but are not limited to, relationship building, with healthcare professionals emerging through long patient journeys, which is typical for chronic illnesses. In addition, the findings highlight the importance of social peer-to-peer activities, such as sharing experiences and information with peers. Interactions with friends while being hospitalized and a continuity of a "normal" life enables one to maintain friendships. However, it was also indicated that patients sometimes felt that their illness made them different from their peers in their normal social network, that is, children of the same age but without an illness. Peer support provided social relatedness experiences for those patients because they shares their experiences with other patients and felt that they belonged to a group of peers. Social experience here also includes experience contagion (e.g., McColl-Kennedy et al., 2017c) between the family members, for example, child mirroring the mood or emotion of the parent. Furthermore, although not explicitly stated in Article II, the interviewed parents interpreted their HSEs both as individual, “me,” and collectively for the whole family, “we” and “us.” They highlighted that the illness of a family member is not only a matter of that medically treated individual but shapes the experiences of the whole family.

4.2 Healthcare ecosystem and actors co-creating value as HSEs in Finland

Even though experiential value and patients’ and their families’ HSEs are inevitably partly co-created in a dyad between the patient and family members and clinicians, the view lacks broadness. This section first discusses and builds a comprehensive view of the healthcare ecosystem’s actors at the micro, that is, individual, level where the experiential value is perceived while shedding light on the wider constellation of ecosystem actors at the meso and macro levels. The empirical investigations in Articles II and III answer the second research question by exploring and mapping the healthcare ecosystem from different perspectives. Article II explores the healthcare ecosystem system from the perspectives of pediatric patients’ parents and healthcare professionals, hence focusing on the micro-level interactions and experiential value co-creation. Article III explores the ecosystem in a health game development context and focuses on mapping actors that are at the meso, that is, organizational, and macro, that is, society, levels.

4.2.1 Individuals at the micro level of healthcare ecosystem

In the healthcare context, the set of actors who co-create experiential value is broader than just the dyad of a doctor and patient. As demonstrated in Article II, the patient and family are interacting with a wide variety of different individuals. The patients and family members are in the key position for inviting actors outside the medical services into value co-creation in healthcare ecosystems, for example individuals who offer complementary and alternative health and wellbeing services and individuals who can offer support and experiential knowledge for a family. However, in the healthcare sector, the medical professionals are typically in charge of offering the medical professionals to the customer’s ecosystem because of the referral and gatekeeping practices. In addition, according to the findings in Article III, healthcare professionals are also particularly important for implementing new practices for experience co-creation, such as, medical games as rehabilitation practices and as influencers recommending the game to patients. Healthcare professionals can use their typically authoritarian role to recommend treatment to support self-care. Hence, this implies differences with the concept of the customer ecosystem, where the customer is seen as a dominant actor engaging other actors in the co-creation and healthcare ecosystem. The composition of the healthcare ecosystem at the individual level also includes healthcare professionals and workers, the partners of the focal healthcare organization, individuals contributing to the well-being of patients and families, and individuals from the patient's and family members' social network. Figure 9 visualizes the actors at different levels of the healthcare ecosystem.

Healthcare professionals, including doctors, nurses, therapists, psychologists, and laboratory workers, are the focal individuals offering the medical knowledge and care for the patients and their family members. Hence, these individuals are at the very center of co-creating patients' and their family members' HSEs and, thus, healthcare value. Within the healthcare ecosystem, medical knowledge is fragmented into various healthcare professionals, and in some situations, the patient needs to or wants to move between different healthcare organizations to receive the care and knowledge needed. Hence, the healthcare ecosystem includes individual healthcare workers in the municipal healthcare system, private healthcare system, and specialized healthcare system. In addition to the healthcare professionals offering medical care, healthcare workers can include individuals providing nonmedical services, such as social workers and secretaries. In addition, based on the patient's needs, the ecosystem can include partners or workers of the healthcare organization that support the care, including dietary planners, rehabilitation workers, therapists, interpreters, and care equipment suppliers. In the children's healthcare context, the actors are likely to include individuals who provide education and enjoyment in the hospital, such as hospital clowns.

The healthcare ecosystem also can include health- and medical-care-related individuals who are offering complementary health and well-being services within or beyond the hospitals, including individuals supporting the planning of future life with an illness (e.g., career instructors), offering social- and welfare-support-related knowledge for patients and their families and/or and complementary medicine professionals, workers of social welfare system, care equipment suppliers, and technicians.

At the micro level, patients and family members are likely to be in an interaction with individuals who belong to the social network of the family, such as friends, relatives, other patients and families, and members of school community (teachers, school nurses, other students, etc.). In addition, individuals who offer experiential and/or social experiences can participate in micro-level HSE co-creation. These include members of online patient communities and associations and members of religious societies.

Article III examined a new touchpoint development within a healthcare context in a specific medical game. This medical game can facilitate micro-level experiential value co-creation by, for example, offering a rewarding experience and immediate concrete feedback of their progress and feeling of the health benefits for patients. Medical games may also work as a link between patients and doctors, encouraging continuous communication, hence potentially positively influencing their co-created experiential value.

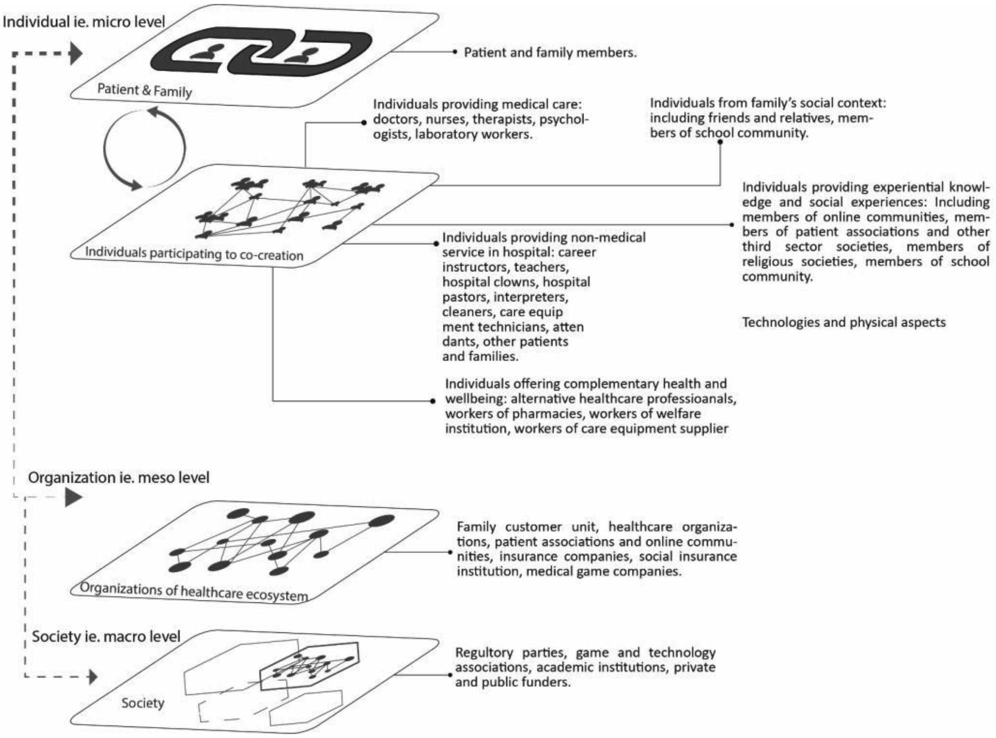

Figure 9. Healthcare ecosystem actors identified in this research.

4.2.2 Meso- and macro-level actors of the healthcare ecosystem

In this section, I move from the micro-level view of a healthcare ecosystem to discuss actors at the meso (organizational) and macro (society) levels. In this thesis, I adopted a view that these higher levels can influence the micro-level value determinations through shared institutions, such as norms and cultures. The organizations of the meso level can also offer value propositions for the other ecosystem actors to bring value for the ecosystem through collaboration and cooperation. To recall, in this dissertation, the meso level describes the organizations and social groups that embeds the individuals participating in micro-level experiential value co-creation and at the macro level, which is described as the broadest context of co-created.

As a key finding in Article III, we mapped a gamification ecosystem and identified more than 11 actor types within the healthcare gamification ecosystem, building an extensive composition of diverse actors at the meso and macro levels (depicted in Figure 9). The composition of the healthcare ecosystem includes healthcare organizations, the patient–family unit, patient associations, medical game companies, private and public funding agencies, insurance companies and social insurance institutions, regulatory parties, and higher-level ecosystem complementors, such as academic institutions and different associations related to the industry.

At the meso level, as suggested in the findings of Articles II and III, the "customer" in healthcare services is not only the patient but the wider customer unit. That is, the patient and his or her family members. After all, the family "constitutes perhaps the most important social context within which the illness occurs and is resolved" (Litman, 1976). In pediatric healthcare services, the family members typically include parents and siblings. The family unit is seeking resources from the healthcare ecosystem to recover their well-being.

Healthcare organizations can be some of the most important actors for the well-being of the healthcare ecosystem. As described in the previous section, the healthcare professionals working for the healthcare organization are typically in charge of the care path of the patient, which diminishes the role of the family unit in selecting the actors who they engage with and their value co-creation. According to our analysis in Article III, healthcare organizations can influence healthcare sector administrators by recommending the medical game be validated as an applicable treatment method. Healthcare organizations also offer serious game companies access to the individuals using the application, that is, patients. The resources sought by healthcare organizations from the gamification ecosystem include advances in the process of increasing the patient's role in treatment and rehabilitation and transferring treatments from the healthcare organizations to people's homes. This process enables a potentially more patient-centric approach while potentially cutting the cost of care. For example, by taking advantage of technology and using it to free up therapists' resources, the technology may also hasten the start of the rehabilitation and could potentially create otherwise unharnessed experiential value for patients waiting for rehabilitation to start.

Examining the healthcare ecosystem at the meso level, patient associations have another important role in bringing their resources to the ecosystem, in addition to experiential value co-creation within the micro level through social experiences and providing experiential knowledge: the recommendation power that they have regarding the family unit and healthcare organizations. Patient associations can provide recommendations that promote the given delivery type or a touchpoint, e.g. medical game. Patient associations may also act as recommenders and informants for a firm's products, increasing the market presence of a firm. This can create pressure for healthcare organizations to provide access to patients for that offering. Patient associations also offer know-how and expertise about particular types of illness. Reciprocally, patient associations seek better lives and treatments for the patients that the associations represent.

Complementing actors of the healthcare ecosystem, such as serious game companies, aid the ecosystem by providing and developing, for example, technological tools that reform the operations and delivery of the services within the healthcare ecosystem. At the micro level, this is utilized as offerings for patients and families that can increase well-being. However, at the core of the firms' offering is typically reducing the costs of care of other ecosystem actors at the meso level, particularly healthcare organizations' care costs, and delivering updated treatment opportunities. Therefore, for example, serious game companies respond to a healthcare organization's need to operate more efficiently. Serious game companies can provide healthcare organizations a tool for activating, motivating, and engaging patients with their own care. For example, in rehabilitation, medical games reduce the care pressure of healthcare organizations and transform operating models from episode-based healthcare in hospitals to patient-led self-care. Furthermore, serious game companies offer new and innovative therapies and treatments for the use of healthcare organizations and the family unit. The motivation for these firms for participating in the healthcare ecosystem is business growth.

Being accepted by relevant regulatory parties gives medical games the authority needed to, for example, convince healthcare organizations of the safety and effectiveness of the games. For regulatory parties, new innovative technologies, here medical games, offer effective and safe new treatments that can increase individuals' well-being. Insurance companies and social insurance institutions share a similar resource for the ecosystem as the authorities guiding customers and providing an existing customer base. Insurance companies and social insurance institutions can use their authority over patients and make a treatment mandatory for patients to use to receive welfare support or discounts from insurers, implying their interlinkages to the micro-level experience co-creation.

In the wider macro-level, public funding agencies are supplementing medical technology companies', for example game companies', financing methods together with private investments. The resources they seek are the return on the investment they have made in the company. Hence, these actors can act as enablers of a new innovative technology-based treatments (e.g., gamification) to actualize in the healthcare ecosystem but do not directly influence experiential value in general. However, healthcare organizations depend on the rules of the regulator granting access to the new innovative technology-based treatment, either in an experimental or commercial way. Moreover, healthcare organizations' ability to utilize the new treatment depends on insurance companies' rules for coverage, and patients may depend on their insurance coverage.

Our study on healthcare gamification (Article III) provided insights of the macro level actors concerning a medical game. Academic institutions, game and technology associations, serious game networks, and business-related partners are different types of macro-level complementors within the healthcare ecosystem. Research institutions and educational organizations can work as intermediaries between the game industry and healthcare actors, connecting two otherwise separate industries. Research institutions provide academic knowledge to support the ecosystem actors to attain validation of the game. Reciprocally, research institutions seek funding to conduct research and opportunities to gain appreciation for the academic institution. The developmental organizations in Finland (such as Kuopio Innovation, the Finnish Funding Association for Innovation, and the Finnish Health Technology Association) are striving to help health technology start-ups seek market entry with regulatory procedures; these organizations offer resources in know-how in their related fields of expertise, such as health technology, regulations, software development, or business. Although these actors are not necessarily directly shaping the value as an HSE, the actors are vital part of the ecosystem. Furthermore, the findings showcases the fuzziness and broadness of the healthcare ecosystem.

4.3 Touchpoints along the patient journey

To recall, this dissertation adopts the theoretical framework of patient journey on examining dynamic HSE. That is, individuals (patient and family members) at the micro level are viewed to perceive healthcare value as an HSE across the patient journey. The patient journey comprises various types of touchpoints in which the patient and family members interact with the healthcare ecosystem actors, co-creating their multidimensional HSE. Although these touchpoints, which are described as distinct interaction points, are perceived at the micro level of the healthcare ecosystem, the higher meso and macro level institutions can influence how the interaction actualizes at the micro level and the HSE perceptions of the individual.

Scholars and practitioners continue to deal with different metaphors, concepts, scopes, and definitions related to the patient journey. Hence, bridging the views of families and clinicians—the central actors of healthcare ecosystem—is an important step to build a comprehensive understanding. In this research, Article II[2] examined the different types of touchpoints along the patient journey from both of these views to empirically clarify the concept of healthcare value as an experience in terms of the scope of the patient journey and its touchpoints.

The findings follow the patient journey theory presented in this dissertation, and the touchpoint types are drawing from the work of Lemon and Verhoef (2016), including, healthcare provider touchpoints, partners' touchpoints, social touchpoints, and family-generated touchpoints. In addition, a rough spatial division between the touchpoints in a hospital environment and the touchpoints beyond hospital settings is made (in the everyday lives of patients and families). As theorized earlier in section 2.1.3, the healthcare provider's touchpoints, in addition to partners' touchpoints, manifests the continuum of care, whereas the patient journey can be more extensive, including social and family-generated touchpoints that fall beyond the control of healthcare provider. Table 7 summarizes the findings based on these divisions. The preliminary idea and the Table 7 are based on the "Touchpoints constituting customer journeys in pediatric health services" table presented in Article II, which I have then developed by refining the contents of the table based on the findings written in Article II, by recategorizing the touchpoints, and by refining the insights concerning different views.

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[2] The findings of Article II were based on the data partly gathered by researchers of Aalto University, and the theoretical framework of the Article II was jointly developed by the authors (see Author's Contribution section). The findings of this chapter I have then refined and developed myself based on the appended Article II.

Table 7. Touchpoints of the patient journey (developed from Article II).

Touchpoint categories	Relevant touchpoints of the patient journey	Insights concerning different views
	In hospital settings	
Healthcare providers' touchpoints	***Physical environment of a hospital***: *e.g., waiting lobbies, appointment rooms, playing areas, devices and cables, clothing of the personnel* ***Encounters with healthcare professionals from different wards***: *patient journey comprises various actors providing medical expertise with which the family interacts with*	*Healthcare professionals focus more on focal healthcare processes, whereas families perceive a longer patient journey.* *Families emphasize continuity in encounters by reflecting on unwanted variability in their care personnel influencing their HSE.*
Partner-owned touchpoints	***Encounters with different healthcare organizations*** *during the patient journey, e.g., from municipal or private healthcare to a pediatrics hospital* ***Interactions with partners supporting care processes***: *rehabilitation workers, interpreters, care equipment suppliers* ***Interactions with educational partners***: *being educated with hospital teachers or kindergarten teachers* ***Interactions with partners supporting enjoyment in hospital***: *playing with hospital clowns, having leisure activities with babysitters, having discussions with cleaners* ***Interactions with partners supporting future life with an illness***: *discussing with career instructors and social workers*	*Families' perception of longer patient journeys included different healthcare organizations implying meso level influence in HSE emergence over patient journeys.* *Healthcare professionals pay less attention to touchpoints with partners that support families' future life with the illness, which implies weaker interconnectedness between these actors.*
Social touchpoints	***Interactions with other patients and families***: *sharing experiences, seeing other patients, giving and receiving support from other patients and families* ***Interaction with visitors***: *chatting with friends, grandparents*	*n/a*
Family-generated touchpoints	***Parents caring for the child in the hospital***: *monitoring, staying with the child during the hospitalization period, sharing feelings, making decisions, and waiting together*	*Family members are actively participating in self-generated touchpoints that include medical activities and social, supportive activities that healthcare professionals might ignore or lack a view of. Thus, it emphasizes the importance of the customer unit view at the meso level of the healthcare ecosystem.*

Touchpoint categories	Relevant touchpoints of the patient journey	Insights concerning different views
	Beyond hospital settings	
Healthcare providers' touchpoints	***Mobile interactions between healthcare professionals and family*** ***Online interactions with healthcare providers' website***	*n/a*
Partners' touchpoints	***Interactions with partners supporting care****: care equipment suppliers, school nurses, physiotherapists' home visits, pharmacist* ***Interactions with actors providing social support and welfare for patients and families*** ***Interactions with alternative and complementary medicine providers****: seeking alternative medicine or homeopathy*	*Although healthcare professionals acknowledge self-care procedures that patient families conduct beyond hospital settings, they give little attention to the supportive partners that facilitate these touchpoints, which implies weak meso-level interconnectedness.* *Families also acknowledged seeking alternative diagnoses through different complementary medicine providers influencing their experiences.*
Social touchpoints	***Interactions with child's own support network****: friends, relatives* ***Interactions with peer support actors*** *in associations, social media, blogs, internet forums, patient and parent societies to gain information, share experiences, have peer support, gain perspective on future life with an illness* ***Interactions with educational actors****: school, kindergarten, other students*	*Families emphasize a great range of peer support activities shaping HSEs and the interactions with educational actors, making it a strongly social phenomenon.*
Family-generated touchpoints	***Caring for the illness in everyday life surroundings****: monitoring illness, caring and doing self-care procedures, e.g., injections, medication, using care equipment, doing rehabilitation activities* ***Performing everyday life changes****: dietary changes, everyday activity changes* ***Mentally preparing to come to the hospital and operations***	*Both views emphasize the patient family's touchpoints as medical self-care processes.* *Families emphasize the illness became part of their lives and required changes to their everyday behavior.*

Healthcare providers' touchpoints. Healthcare providers' touchpoints within hospital settings include the physical environment of a hospital and encounters with the professionals of different hospital wards. Concerning a hospital's physical environment, healthcare professionals focus on the functional aspects of physical touchpoints, but also on how these facilitate the experiences of the patients. Patient families, on the other hand, seem to focus more on experiences as feelings that the environment evokes. Some person-to-person interactions along the continuum of care seem to have a more critical impact on the experience; for example, healthcare professionals emphasize the importance of first contact at the hospital by stating it has a strong influence on the behavior of the patient and family at the next appointment. The other critical touchpoint in the continuum of care (and patient journey, see Appendix 1 for definitions) is when families hear their diagnosis, which usually triggers a strong emotional response in the patients. Interestingly, the findings of Article II indicate that healthcare professionals are focused on a shorter period in the patient journey than the patient families. This, in turn, can imply a siloed view of the whole patient journey among healthcare professionals or a lack of information sharing and flow among healthcare professionals because there are multiple actors facilitating the provider touchpoints.

Healthcare providers' touchpoints beyond hospital settings are, unsurprisingly, considerably narrower than those within hospital settings. These include the mobile interactions between clinical staff and a family, and online interactions with healthcare providers' websites. Because of these, healthcare professionals pay little attention to written and online interactions with patients. This, however, does not diminish their importance when addressing the patient journey as a whole. That is, the a poorly designed healthcare provider touchpoint beyond the hospital setting can trigger, for example, the need for co-creation to understand or make sense of the transcripts (i.e., written diagnosis) with one or more additional actors within the healthcare ecosystem, which influences the sequence of future patient journey.

Partners' touchpoints. Concerning the partners' touchpoints within a hospital setting, patient families emphasized the interactions with multiple healthcare organizations. It is fair to argue that these touchpoints are also clearly healthcare provider touchpoints, but the facilitation of these touchpoints is not in the control of a given healthcare organization. Hence, these touchpoints are described as partners' touchpoints. As described earlier, in the Finnish healthcare system, patients can move between a municipal healthcare system and specialized pediatric hospitals; this increases the contextual complexity of patient journeys. Besides the touchpoints of different healthcare organizations, partner touchpoints are facilitated by partners supporting care, partners supporting education, partners providing enjoyment in the hospital, and partners supporting future life with an illness. Interactions with partners supporting care includes touchpoints at which the patients need, for example, different therapies, or interpretation services. Interactions with educational partners and partners supporting one's enjoyment in the hospital can be considered specific to pediatric care. However, interactions with these types of partners were mainly discussed by families; healthcare professionals paid little attention to them, even though these services were co-created within the settings provided by the healthcare provider.

The partners' touchpoints beyond a hospital setting included interactions with partners supporting care, interactions with the actors providing social support and welfare for patients and families, and the interactions with alternative and complementary medicine providers. In general, the findings indicate that healthcare professionals tend to focus on medically relevant touchpoints concerning partner touchpoints, whereas families may regard touchpoints more broadly concerning those who have, from a medical perspective, no influence on their health but revolve around the complex goals of the family and, hence, are important regarding their HSE. For example, heavily medicated patients may seek more natural medication through alternative or complementary medicine providers. Interactions with partners supporting care take place mostly in the patients' home surroundings, for example, in the form of physiotherapist home visitations. The families also emphasized the interactions with actors as providing social support and welfare because an illness may be a financial burden for families; therefore, these touchpoints can be relevant to the emergence of the HSE as well.

Social touchpoints. Zooming out from the continuum of care to the patient journey, the findings indicate social touchpoints within hospital settings as including the interactions with other patients, families, and visitors. The interactions with other patients are relevant for the HSE because patients and their families could share their experiences, give and receive peer support, and play with other patients.

Beyond the hospital setting, the most important social touchpoints of the patient journey engaged those in the patients' social network, including related communities (e.g., Facebook groups for patients with a particular illness); third-sector healthcare societies (e.g., diabetes association); and other patients. Both healthcare professionals and patients' families emphasized the importance of touchpoints with peer support in realizing the feelings of belonging and in sharing experiences. Healthcare providers could, therefore, benefit from investigating the possibilities to connect resources with third-sector societies to provide better integrative HSE. These organizations not only provide environments and platforms for patients' families to connect with other patients' families, but they also facilitate important knowledge that influences their experience.

Family-generated touchpoints. The findings indicate that the illness of a child broadly affects the lives of family members and engages family members into co-creation. Patients' families' touchpoints within a hospital setting were made up of versatile events in which the parents participated in clinical procedures or, in the more typical interactions between the child and a parent, such as staying with a child during hospitalization, sharing feelings, or waiting together to get to appointments. Clinical procedures centered on monitoring the illness, practicing self-care and medication, and making decisions about the care plan or choices with the child. Patients' families' touchpoints beyond the hospital included caring for the ill child in their everyday surroundings and living through typical life changes. The parents of an ill child are often responsible for the execution of the self-care plan and for medicating the child. Parents also play a critical role in the start of patient journeys because they usually notice the first symptoms of an illness. Therefore, these journeys typically begin with patients' families' touchpoints, as described by the patients' families. Everyday life changes were also emphasized by family members.

4.4 Methods to explore an individual’s experiences and utilizing the understanding within the healthcare ecosystem

The understanding of healthcare value as an experience and individual’s HSE emerges through the methods used to study one’s experiences. This section discusses exploring experiences at the individual level and utilizing an understanding of the experiential value within the healthcare ecosystem, where the development of healthcare value can be actualized. Articles I–VI answer the fourth and final research question. First, in the next section, the findings mainly from Articles V and VI, with the support of Articles I and II, are used to answer the research question by providing an understanding of how we can better explore the experiential value and HSEs of individuals. Second, the findings from Articles III and IV are utilized to answer the research question by addressing the utilization of experience understanding within healthcare ecosystem.

4.4.1 Methods to explore and capture individuals’ HSEs

Because the studies were conducted with different methods and sources, it may be extremely difficult to obtain a complementary view of the individual’s service experience by using just a single method or source. Hence, this section describes how researchers and practitioners could better explore individuals’ subjective experiences and capture different sides of the phenomenon.

As shown in Article V, different qualitative data collection designs and methods captured the individuals’ experiences differently. In that study, we utilized a conceptualization of co-created service experience that included temporal, factual, spatial, organizational, locus, and control dimensions (Jaakkola et al., 2015). These dimensions are discussed more thoroughly in the original article. The findings suggest the strengths of each method but also some limitations/challenges that should be acknowledged in trying to capture individuals’ experiences. For example, the video diary method provided rich data on the subjective service experiences of the child patients on their everyday lives and surroundings and provided insights into chronically ill children’s minds. Hence, the method is particularly helpful on the explorative HSE studies with a child customer-centric view. On the other hand, the method was seen as laborious for the children, and there were some difficulties in motivating the children to participate.

The narrative method with the parents yielded data on collective HSEs, providing insights into family dynamics in families with an ill child and parents' subjective experiences. The design accesses experiences of family members rather than the patient him- or herself; therefore, it provides only one view of the subjective experience within the customer unit. That is, although, for example, parents move constantly with the patient through the health services and might have an in-depth understanding of the child patient's journey, there could be some subjective experiences of the child that family members are not aware of. However, this type of research design highlights the social nature of HSE co-creation, supporting an understanding of the collective experiences. Compared with the findings of the video diary method with children, the parents' narratives emphasized the healthcare ecosystem more broadly and provided detailed accounts of patient journeys. Hence, based on the experimentation, this type of method and design is applicable in exploratory studies on families' experiences that aim to map patient journeys and associated family members' experiences in a detailed manner.

Semistructured interviews with the healthcare professionals yielded data providing an in-depth understanding of the hospital processes that construct the patient experience. However, the descriptions lack a view of the experiences that reside outside the hospital environment. This also links to the findings of Article II that indicated some discrepancies in the perceptions of families and clinicians relating to the patient journey (see the far right column of Table 7 in section 4.3). In particular, healthcare professionals tend to approach patient journeys from a narrow coproduction perspective, whereas families tend to assess the journey touchpoints more broadly in terms of spatiality and ecosystem composition. Importantly, healthcare professionals tend to overlook those touchpoints that reside beyond hospital processes, even though these touchpoints may have a significant influence over the total HSE. Hence, research designs that utilize healthcare professionals' views are well suited for HOM studies or studies that address patient journeys from a managerial perspective. However, these studies may provide a rather limited view in understanding patients' and families' needs in facing everyday life with an illness. The findings are discussed more thoroughly in the original publication V and, for instance, a summary table of the lessons learned from the three research design experimentations can be found in the appended original publication V (Litovuo et al., 2019; Table 3. Lessons learned from studies on the service experience of child patients, pp. 9-10).

To elaborate on these findings, Article II implies some differences between families' and healthcare professionals' perceptions of HSEs regarding the sensory, affective, cognitive, behavioral, and social experiences. For example, our results in Article II imply that the families emphasized the role of familiarity and comfort in shaping the sensory experiences that healthcare professionals lacked a view of.

Regarding affective experiences, the healthcare professionals do not necessarily see the full range of emotions experienced by the patients and family members. That is, the moods and emotions continue to emerge and evolve beyond the facilities provided by health service providers in the everyday lives of the family before and after the service commences. To better understand the affective experiences, the integrative framework developed in Article I can be used. The framework consists of eight types of emotions in customers' experiences (Figure 10).

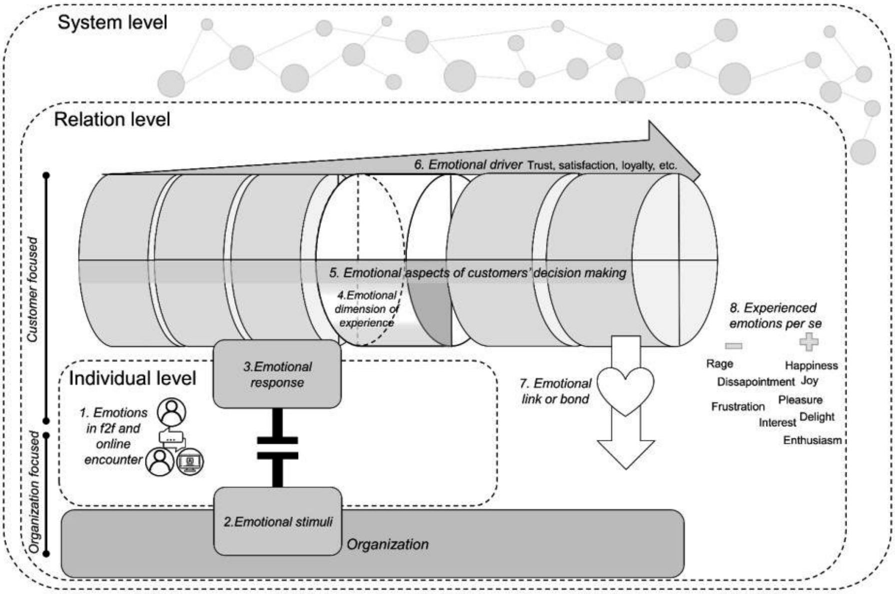

Figure 10. Framework for emotions in the customer experience (adapted from Kuuru et al., 2020).

The framework highlights the variability of emotion types as they relate to customers' experiences. This is important to generate an understanding because people are describing their emotions and why some emotions are not visible. The framework is discussed more thoroughly in Article I.

Regarding the cognitive dimension, the understanding from the family members' perspectives is evoked through broader interactions during the patient journey, for example, through peer-to-peer activities. Healthcare professionals seemed to overlook these social interactions that build families' cognitive experiences and focused more on the interactions inside the hospital. In addition, the concerns raised by family members were related to the effects of an illness in everyday life; this was not mentioned by the healthcare professionals. Similarly, behavioral experiences were strongly linked to beyond the hospital setting (e.g., practicing self-care and everyday life changes). Overall, developing a broader, patient-focused understanding of the total journey of dealing with an illness is pivotal in the effective development of HSE, whereas ignorance could result in a weaker outcome for families. These findings support using narratives for exploring HSEs and applying patient-centric or family-centric research designs.

However, earlier studies have identified the difficulties in using narratives with young children (Curtis et al., 2004; Forsner et al., 2005). This is critical because communication with the child patient during the exploration of HSEs is pivotal to understand the value in the experiences, but the success of such communication relies much on the content of the reciprocal communication (cf. Gustafsson et al., 2012). On the other hand, playful and flexible methods seem to support the children's ability to describe their experiences. To support the children's ability to meaningfully participate in studies and describe experiences from a broad ecosystem perspective, a novel method was designed, as reported in Article VI. The developed method utilizes the boundary objects (Star, 1989), which enables a translation of the contents to the language that both supports the child and simultaneously provides knowledge that is beneficial for the researcher. To recall, boundary objects are defined as those that "help mediate in the boundary between actors with different perspectives, knowledge, skills, locations or status in social systems" (Moultrie, 2015, p. 2). Here, the tangible boundary objects would serve as an instrumental mediation at the researcher–child patient boundary and support the storytelling of the child while enabling functionality, playfulness, and flexibility for data inquiry. Importantly, the objects could enable a shift toward a broader and more holistic systemic understanding by translating the theoretical underpinnings of the HSE, patient journey, and healthcare ecosystem between the researcher and child patient. The developed data collection method comprises three sets of tangible boundary objects: a patient journey jigsaw set, a spatial settings set, and an ecosystem actors set. The sets, their pieces, and the translations of theory are presented in Table 8.

Table 8. Developed boundary object sets and their role in the translation of theory (adapted from Article VI)

Boundary object set	Developed boundary objects	Translation of theory
Patient journey jigsaw	9 differently shaped jigsaw pieces	Customer/patient journey theory: each piece of the jigsaw depicts an experienced event or moment of the child's patient journey
Spatial settings	9 different spatial setting tags	Spatial nature of the customer experience: objects depict the spatial settings in which an experience is created/perceived
Ecosystem actors	18 different actor figurines	Ecosystem theory: objects connect the ecosystem actors to patient journey events

The patient journey jigsaw puzzle brings value through the translation of patient journey theory in the child patients' experiences of information inquiry. Each piece of the jigsaw depicts an important moment or event in the patient's journey through which the child's total HSE emerges. The jigsaw is designed to begin the inquiry about the experience; a child is asked to simultaneously explain and build their journey with an illness or injury from the pieces of the jigsaw. This type of motivation and support through play is important because earlier studies have identified the difficulties in using narratives with young children (Curtis et al., 2004; Forsner et al., 2005). Furthermore, the jigsaw boundary objects can provide value to the information inquiries by being a familiar type of play for the children and, hence, being easier to approach.

The spatial setting objects support the translation of the spatial nature of the HSE at the child patient–researcher boundary. Hence, the value of the spatial boundary objects is that they help in capturing the broadness of various spatial settings in which the children's HSE is manifested. The spatial setting set includes nine different settings: three different hospital settings, a home, camp, school, and travel setting, and settings related to technology and hobbies. The objects are integrated by the participant into each stage of the journey to depict the setting around which a given experience has revolved.

The ecosystem actor figurines serve as an instrumental mediation to support the ecosystem approach to the children's HSEs and patient journey inquiries. The value of these figurines is in probing deeper and broader information regarding the creation of the HSE in a wider healthcare ecosystem. The figurines represent different individuals in the healthcare ecosystem (e.g., nurses, doctors, surgeons, janitors, therapists, and the hospital clown) and the patients' own social network (e.g., other children, friends, family, teacher). To gain information about the relevant actors who have influenced an experience, researchers can ask a child to place the actors near the relevant pieces of the journey and spatial setting. The child can also be asked to explain how each actor has influenced the experience. Some of the figurines have clear roles (e.g., doctor), but others are more general, allowing the participant to decide on their meaning.

4.4.2 Utilizing HSE understanding within the healthcare ecosystem

The importance of exploring individuals' experiences draws from understanding the patient's and family's HSE to reach the aim of healthcare systems to facilitate and develop value and HSEs (e.g., Wolf, 2019). Healthcare providers aim to collect as much data as possible on individuals' experiences, which can provide healthcare providers with an understanding of how people perceive current services, help to identify problem areas and improvement opportunities, and help in receiving comparable data between healthcare units and organizations (see Article IV). The current data collection practices of exploring and measuring individual's experiences are extensive, including official and structured (e.g., web-based feedback forms or paper questionnaires), unstructured (e.g., informal discussions with patients), pilot projects (e.g., new ways of collecting data using digital devices such as tablets), and occasional studies (e.g., nursing students' diploma work). On top of these official channels, a large amount of data is received through informal channels such as e-mail or face-to-face discussions with patients and their families. However, exploration of the individuals' value as an experience is only a basis for healthcare development. That is, the development of value and HSEs can be actualized throughout the utilization of the understanding within the healthcare ecosystem. Hence, this section changes the perspective from exploring one's value as an experience to one that addresses how the understanding is utilized in the healthcare ecosystem in terms of experience data utilization and the utilization of understanding this in the form of a new gamified touchpoint within the healthcare ecosystem.

Currently, according to the findings of Article IV, information about the individuals' HSEs is utilized in hospitals at two levels: hospital administration level and individual unit level. The hospital administration level is responsible for processing official, structured patient feedback, and reporting and delivering it to the individual units. The understanding is utilized to, for example, identify trends and compare results between different hospital districts. In contrast, individual units are responsible for analyzing and responding to the three other information types, including unstructured information, pilot projects, and occasional studies. The head nurses of individual care units have significant responsibility and influence regarding the utilization of this information for service and care improvement. Typically, for example, responses are given to the unstructured feedback for patients, which leads to further actions in practice.

However, current information gathering and utilization practices in hospitals is overshadowed by a few challenges with an overarching critique of the process being poorly planned and inflexible. That is, although information about patients' and family members' experiences is gathered in hospitals, it is not systematically utilized into practice and development work. There are several reasons for this, as identified in Article IV; these include, but are not limited to, the low response rates of the official and structured feedback, which leads to difficulties in receiving comprehensive and valid information; unalignment of information collection practices with the everyday work of nurses and unclarity regarding the data collection's purpose, which leads to motivational challenges; vagueness of the gathered information and missing the crucial aspects of the HSE, leading to lack of control; and a prevalent amount of unstructured "hidden" feedback that is not captured by official channels.

Based on the study, to overcome these challenges, hospital workers envisioned a system that would enable continuous improvement toward a more patient-centric hospital at the meso level of the healthcare ecosystem. In practice, this would mean moving toward a measurement on patients' experiences, which currently vary between units and healthcare organizations, and sharing the results between the healthcare organizations of the healthcare ecosystem. The findings from Article II support this by implying the benefits of adopting broader system-level value improvement processes to create coherent HSEs within the system. To tackle the shortage of utilizable information, a dual-sided improvement opportunity was implied in the findings of Article IV: both giving and collecting feedback should be effortless from the patients' and nurses' perspectives. To implement this, an improvement in the accessibility and usability of feedback tools is needed. For example, in the future, this process should move toward constant and automatic multichannel feedback systems, which benefit from technologies such as SMS and tablets, which would support the real-time presentation and reporting of results and personalized experience data gathering. Moreover, a cultural change was seen as a crucial aspect in improving the attitudes toward patient feedback data gathering and utilization.

One way to utilize understanding and potentially shape the individuals' perceived value as HSE is to design and implement new touchpoints into micro-level patient journeys. However, the development of such a touchpoint can be heavily influenced by meso- and macro-level institution-driven barriers that may hinder the development and understanding utilization. Barriers motivate or demotivate actors to engage in interactions when it comes to realizing the new touchpoint. The interdependency and complexities of the healthcare ecosystem and healthcare context easily create systemic lock-in situations in which none of the actors alone has the power or will to surpass the systemic barriers; therefore, a touchpoint can be unfeasible. To address these potential barriers, Article III focused on examining one type of potential touchpoint category of a medical game that has potential to simultaneously improve the effectiveness of the healthcare sector while positively influencing the HSE and well-being of patients. The medical game enables tailored and individual rehabilitation and facilitates a shift from individual rehabilitation to group rehabilitation because of the data the game produces. The greatest success of such new touchpoints could be achieved by recognizing the most tedious or most cognitively burdensome parts of the healthcare process or rehabilitation and developing and implementing a medical game that could potentially enhance treatment the most while maintaining or even developing experiential value of the patients and their family members. This type of development work does not happen in isolation but requires the collaboration of multiple entities of differing expertise. As discussed in section 4.2.2 and Article III, these actors may go well beyond the traditional healthcare providers to include those entities from various sides of society, such as game companies and regulatory parties.

Based on the findings of Article III, the main barriers related to gamified touchpoint development in healthcare concern a *lack of innovation structures, validation requirements, and regulatory barriers*. Contrary to information utilization in a hospital, many of these identified barriers seem to be external and inhibit the interlinkages between the ecosystem actors at the meso and macro levels of the healthcare ecosystem. This is an important notion because such external barriers influence how different actors of the healthcare ecosystem can utilize the understanding and resources of other actors of the healthcare ecosystem and develop patients' and family members' HSEs. Hence, these barriers may influence the well-being and value provision of the whole ecosystem.

Although, there is evidences that healthcare organizations pursue developing health services and HSEs (e.g., Wolf, 2019), the crossroads of two extremes, the agile game industry and the risk-avoiding healthcare industry, is a challenge. First and foremost, the underlying barrier that complicates knowledge utilization between these two extremes comes from the lack of a mutual innovation mindset, structure, and process. Here, the existing prejudiced attitudes in healthcare organizations toward medical games and new technologies in general hinder the development and utilization of the gamified touchpoint. Regarding the process, the sales and development processes are established practices formed by traditional healthcare actors, such as large pharmaceutical companies, and getting even a sales contact can be a challenge for a small medical game start-up. Therefore, the lack of needed structures supporting innovation in the public healthcare sector has a significant impact on experiential value development in terms of the utilization of a novel touchpoint within the healthcare ecosystem. More importantly, the public healthcare providers are the core of the Finnish healthcare system and a large part of the journey that patients and their families undergo, as well as an important client for medical game companies. Luckily, the complexity and broadness of the healthcare ecosystem could offer alternative ways to surpass this barrier. For example, game companies can cooperate with private healthcare providers that based on the findings of Article III, offer a pilot platform for testing medical games more easily than public healthcare providers. Hence, the true potential for co-creation will be found in the cooperation of game companies and private clinics with decent resource bases that can implement the technologies they find useful. These private providers have the structures supporting innovation and new technologies, and the providers strive to offer more effective and efficient services for their patients.

There are validation and regulatory related barriers that can be considered macro-level institutions hindering touchpoint development. That is, some medical games fall into the category of medical devices, depending on the intended use and health claims, resulting in certain obligatory procedures. The procedure for registering the medical game as a medical device may be challenging and burdening for game companies with limited resources. However, the product's effectiveness and safety are essential. Most importantly regarding this research, this exemplifies how the meso- and macro-level institutions are influencing the micro-level experiential value development.

5 DISCUSSION AND CONCLUSIONS

5.1 Synthesis of the key findings

The purpose of the current research was to develop a better understanding of healthcare customers' value as an experience. To do so, this research approached the phenomenon from four different perspectives. First, the research approached HSEs as multidimensional constructs because the understanding in healthcare service and management literature had remained elusive and lacking in empirical understanding. Second, because multiple different actors in healthcare ecosystem participate in value and HSE co-creation, the system is fragmented and sophisticated, and patients are likely to engage in resources from the patient's own network such as family, friends, other firms, and public services to regain their well-being (McColl-Kennedy et al., 2012; Sweeney et al., 2015), this research mapped the micro-, meso-, and social-level actors of the Finnish healthcare ecosystem. Third, this research took a dynamic approach toward HSEs to better understand HSE emergence. In particular, this research explored the patient journey touchpoints that shape the HSE. Fourth, the research suggested methods that aid in generating an understanding of this sensitive and subjective phenomenon. The study focused on qualitative methods because those are useful in research aiming to explore subjective and multilevel phenomena. The research also highlighted how the understanding is utilized within the healthcare ecosystem. This section summarizes the answers of the four RQs based on the research findings, which is summarized in Table 9.

Table 9. Contribution of original articles in answering the research questions.

Research question	Identified research gaps	Key findings of original articles
RQ1: How is multidimensional HSE composed?	Service research: Lack of an empirical and comprehensive understanding of multidimensional experience in healthcare HOM and healthcare management: Lack of holistic, customer-centric view of HSEs	• Article II empirically clarified all dimensions of HSEs perceived by family members and healthcare professionals • Article I developed nuanced understanding of the emotions, moods, and affects related to experiences • Article II, with input from I, developed a model for multidimensional HSE composition
RQ2: Who belongs to the healthcare ecosystem by co-creating value as an HSE?	HOM: Lack of healthcare ecosystem mapping at the individual level Marketing and service research: Little understanding of public healthcare ecosystems Healthcare management: Ecosystem approach is not widely applied	• Article II identified individuals participating in HSE co-creation • Article III mapped 11 Finnish healthcare ecosystem actors at the meso and macro levels • As a synthesizing multilevel framework developed based on the articles, depicting the healthcare ecosystem actors
RQ3: What kinds of patient journey touchpoints shape an HSE in the healthcare ecosystem?	Marketing: Previous research has focused mainly to healthcare provider touchpoints lacking broader, systemic understanding Service research: Empirical examinations of healthcare journeys is missing Healthcare management and HOM: Focus has been on dyadic experience creation with a provider perspective	• Article II identified provider, partner, social and family touchpoints along the patient journey within hospital settings and in the context of the families. The article highlights the systemic approach and broadness of the touchpoints shaping the HSE
RQ4: What do diverse methods provide for capturing an individual's HSE, and how is the HSE understanding utilized within healthcare ecosystem?	Marketing and service research: Methodological considerations are underdeveloped to fully harness the experiential approach HOM and healthcare management: Experience phenomenon is dominantly approached	• Article V compared three different data collection designs in terms of their applicability in capturing subjective HSEs in pediatric healthcare context and the strengths and weaknesses of the methods • By employing the findings of Article V, Article VI developed and introduced boundary object that supported data collection method to be utilized in children's HSE research

Research question	Identified research gaps	Key findings of original articles
	with quantitative methods.=	• Article I developed an understanding of the different types of emotions in the experiences encompassing subjective emotions and moods to affective experiences in society • Article II depicted the differences in healthcare professionals' and families' perceptions toward HSEs regarding the sensory, affective, cognitive, behavioral, and social experiences and scope of the patient journey • Article IV explored the experience data gathering and utilization at hospitals, implying improvement areas • Article III developed an understanding of the barriers regarding the development of new touchpoints within the healthcare ecosystem

The first research question asked the following: "*How is multidimensional health service experience composed?*" Based on the findings from Articles II and I, the research created a model for HSE composition (Figure 8, section 4.1). The model utilized established experience dimensions (Schmitt, 1999; Vehoef et al., 2009; Becker and Jaakkola, 2020), including sensory, affective, cognitive, behavioral, and social dimensions, and contributes to the service research and marketing literature by offering a comprehensive understanding of HSE composition as a whole rather than focusing on one or a few of the dimensions (e.g., McColl-Kennedy et al., 2017c). Article II provided an empirical understanding of the composition of HSEs, whereas Article I provided input on the affective experiences by clarifying the concepts around emotions. The model also implies the potential triggers for the HSEs evoked. The results show highly emotional, cognitively burdening, and socially infused experiences. Sensory experiences are evoked from the physical environment and ambiance in hospitals, illness and care, and taken medicines that evoke experiences of enjoyment, uncomfortableness, pains, and changes in appearances. Affective experiences are best described as an emotional rollercoaster, including various negative moods (e.g., anxiety) and emotions (disappointment) and some positive emotions (e.g., happiness). Cognitive experiences include generating an understanding of the illness, situation, and care related to it; pondering about previous lived events and concern over the future; and feeling lost until the situation routinizes and confidence in coping with an illness emerges. The behavioral experiences include the activities related to engaging/disengaging with self-care, everyday life changes (e.g., diet change) and tiring out. Social experiences include relationships with healthcare staff, peer support, maintaining relationships to friend or potential social isolation, and experiences related to everyday life as a family with an ill family member.

Considering that HSEs are co-created through multiple different interactions within the healthcare ecosystem, it is essential to understand the composition of the healthcare ecosystem actors who co-create these experiences. Hence, the second research question asked the following: "*Who belongs to the healthcare ecosystem by co-creating value as an HSE?*" Articles II and III contributed to answering this question. Article II provided an understanding about the composition of actors at the individual level of the healthcare ecosystem, whereas Article III mapped the healthcare ecosystem at the organization and society levels. The findings of the multiperspective examination of healthcare ecosystem provided a comprehensive view on the wide variety of actors that contributes to value cocreation in Finnish healthcare setting. These actors broadly represent different sides of the ecosystem from medical and non-medical professionals of healthcare provider to family's own social network to technologies and peer support entities. The findings also implies how regulations, norms and other institutions can enable or constrain the ways resources are integrated and value is cocreated (Akaka et al., 2019).

Considering that the HSE is theorized to emerge over the patient journey (Kranzbühler et al., 2018; Mahr et al., 2018), it is critical to understand the constitution of such journeys to fulfill the purpose of the present dissertation. Hence, the third research question focused on the scope and constitution of the patient journey touchpoints, asking the following: "*What kinds of patient journey touchpoints shape an HSE in the healthcare ecosystem*?" Article II contributed to answering this question. Four types of patient journey touchpoints were analyzed: healthcare provider touchpoints, partners' touchpoints, social touchpoints, and family-generated touchpoints (Lemon and Verhoef, 2016). Article II highlighted two naturally different perspectives of these touchpoints by analyzing healthcare professionals' perceptions of the patient journey and family members' perceptions. The analysis also highlighted the broadness of the patient journey by including touchpoints that are well beyond the control of healthcare providers and in the lifeworld of the patients and their families. This differs from the typically utilized approaches that focus purely on either dyadic healthcare professional–patient encounters (Osei-Frimpong et al., 2015) or clinical and nonclinical touchpoints during the continuum of care (Heilporn et al., 2019; Lamprell et al., 2019; Wolf et al., 2014; Wolterbeek et al., 2019).

The healthcare field has been described as fertile and interesting for conducting research (Berry and Bendanpudi, 2007; Danaher and Gallan, 2016). I agree with that argument, but also question the current state of the art, given healthcare's long traditions of measuring the quality of medical care using objective criteria such as mortality and morbidity and overlooking the softer qualitative assessments (Dagger et al., 2007). Based on this, the fourth research question asked the following: "*What do diverse methods provide for capturing an individual's HSE, and how is the HSE understanding utilized within healthcare ecosystem?*" All articles (I–VI) contributed to answering this question. First, the present dissertation compared three different research designs in terms of capturing subjective HSEs in the pediatric healthcare context, along with their applicability, strengths, and weaknesses. After this, a novel research method was developed to support further explorations of the HSE and patient journeys with children.

Second, given that large amounts of data about HSEs are collected in hospitals but infrequently utilized to improve the care (Coulter et al., 2004), the current dissertation provided an improved understanding of data collection and utilization in the Finnish healthcare context and the aspects that could be done better. The main reasons for the poor utilization of HSE data was because of poorly planned and inflexible utilization processes, too vague information being captured, various data collection channels and types, and data gathering not being aligned with the nurses' work. Third, given that the development of valuable HSEs is one of the main aims of health service organizations (Wolf, 2019), this dissertation provided an understanding of the potential utilization and development barriers within the healthcare ecosystem.

5.2 Scientific contributions

The present research has several contributions for different fields of the literature, including service research and marketing, healthcare management and healthcare operations management, and participatory and qualitative healthcare research.

Contribution to service research and marketing, particularly in the healthcare field. The present research contributes to the discussion on understanding experiential value in healthcare, which includes studies on health service and service and customer experiences, value co-creation, and the healthcare ecosystem. In particular, this dissertation contributes to the service research in four important ways. First, the dissertation and articles contribute to health service experience research by empirically clarifying the incorporation of the multiple dimensions of HSEs. Hence, this study answers service research and marketing scholars' calls for more contextual investigations into customer and service experiences (e.g., Becker and Jaakkola, 2020; Lemon and Verhoef, 2016). In the same vein, the model of HSE composition (Figure 8, section 4.1) developed in this study contributes to midrange theory development within the service research. Although some of the dimensions, particularly the affective dimension (McColl-Kennedy et al., 2017c), have already been studied in the service literature, this dissertation empirically examined the multidimensional experiences as a whole that has been established widely in the research (Schmitt, 1999; Verhoef et al. 2009; Lemon and Verhoef, 2016; Becker and Jaakkola, 2020). Although, the dissertation focuses on health services, the understanding of the service experience may can also be regarded as contributing to other domains like legal and law enforcement service contexts, which also involve reluctant customers (McColl-Kennedy et al., 2015; Garg et al., 2011), in a knowledge-intensive and highly emotional service context (Lovelock, 1983). For example, as a contribution for these research context, the developed integrative framework represents different types of emotions in the customer experience (Figure 10). This is important for a few reasons. First, based on Article I, it seems necessary to highlight that the emotions emerging in the customer experience are both positive and negative. Presently, positive emotions have gained a lot more attention in research than negative emotions, even though the diversity of emotions is extensive. Therefore, it is important to understand that negative emotions define individuals' experiences and should not be downplayed. Second, regarding the conceptual heterogeneity and fragmentation within service experience and customer experience concerning emotions, it seems imperative to conceptualize emotions in great depth.

Second, this dissertation contributes to the marketing research that addresses customer journeys (Mahr et al., 2018; Kranzbühler et al., 2018; Lemon and Verhoef, 2016) by deepening the understanding of co-creation and HSE emergence through touchpoints. Going beyond the traditional healthcare provider–patient interactions in appointments (Osei-Frimpong et al., 2015), the present study expands the HSE co-creation understanding by analyzing all types of touchpoints that are perceived as relevant by the healthcare customer and healthcare professionals. The dissertation draws attention to the less acknowledged touchpoints where HSE is co-created before, between, and after the actual health services begin. By doing so, this dissertation contributes to the discussion on the touchpoints and dynamics of service experience (Mahr et al., 2018; Kranzbühler et al., 2018; Lemon and Verhoef, 2016).

Third, the current research continues the healthcare co-creation literature in service research (Sweeney et al., 2015, McColl-Kennedy et al., 2017a; Osei-Frimpong et al., 2015) by taking an underutilized approach of a family unit to the co-creation of multidimensional HSEs. Although the previous research has focused on the patient's, that is, the primary customer's, perceptions (Osei-Frimpong et al., 2015) or has noted that family has an important role in co-creation (McColl-Kennedy et al., 2017a), this dissertation highlights the family members' perceptions of HSEs. By examining HSEs from the perspective of a family member, this dissertation generates a better understanding of the co-creation beyond the control of the service provider. At the same time, the study provides insights into the co-creation within the primary customer unit of health services—the family—and supports the need for service researchers to move toward a family-centric perspective of co-creation as suggested by, for example, Voima et al. (2011).

Fourth, this research contributes to the discussions of healthcare ecosystems (e.g., Frow et al., 2016; Frow et al., 2014; Helkkula et al., 2013) by mapping the various healthcare ecosystem actors at the micro, meso, and macro levels in the Finnish healthcare ecosystem. Importantly, this research integrated multiple different perspectives for the mapping, providing depictions of the interlinkages between actors cocreating experiential value at the individual or micro levels of the healthcare ecosystem and also the interlinkages between organizations and other actors at the higher levels of the ecosystem, which can be found as drivers or barriers for healthcare value development.

Contributions to healthcare management and HOM literature. The current study contributes to the healthcare management and HOM literature in several important ways. In the HOM stream, HSEs are integrated within experiential quality, which is conceptualized as a patient's subjective perception of the provider's expertise, courtesy, attentiveness to their needs and respect for their time, facilities they are cared in, health outcomes in terms of well-being (e.g., less pain or increased mobility) (Karuppan et al., 2016), or the patient's subjective perceptions of a care episode (Lillrank, 2015). The study contributes by addressing patients' and family members' experiences as multidimensional and emerging through complex patient journeys, which differs from the traditional experience as an outcome view. Furthermore, despite the growing interest in research concerning patients' experiences, scholars in different healthcare management-oriented streams continue to deal with different concepts, scopes, and definitions related to the patients' experiences and patient journey. That is, several related concepts are used interchangeably, such as patient journey, clinical journey, patient pathway, and continuum of care, without a clear distinction among them (Lamprell et al., 2019; Wolterbeek et al., 2019; Heilporn et al., 2019, Wolf et al., 2014), even though there have been some notable pursuits for building a unifying conceptualization for the patient journey (e.g., LaVela and Gallan, 2014). Therefore, this research contributes by reconceptualizing the experience in terms of the scope of the patient journey and its constituents so as to move forward and unify the nomenclature of its continuum domain. In addition, although patient journeys in these research streams are approached at best from a coproduction perspective where HSEs are created through the healthcare provider's facilitation or delivery (Lillrank, 2015; Karuppan et al., 2016), this study approached and identified all types of touchpoints along the patient journey, including those that are more or less controlled by the healthcare provider and the touchpoints that fall beyond their control. This is pivotal because health service operations research has recently shifted from addressing the operations of a single provider to examining the interactions of multiple actors who build a complex healthcare ecosystem, including delivery, financing, policymaking, and innovation entities (Dai and Tayur, 2019). The research further contributed by mapping the public healthcare ecosystem at three levels. In the same vein, the research increased the understanding of reciprocal value propositions and barriers related to the development of a health service delivery system (Article III).

The current study focused on healthcare services, where the service is provided to facilitate the health and well-being recovery of an individual and which is likely to arise various emotions during the recovery process. However, this type of high-emotive service setting that includes some form of recovery is also visible in other fields and contexts, such as in B2B and B2C contexts relevant for operations management research. These include, but are not limited to, contexts of repair services and supply failures (Primo et al., 2007) and service recovery (Miller et al., 2000). Hence, the understanding provided in this dissertation, for example, concerning different types of emotions in experience, could be transferred and applied to understand the customer's experiential value in those settings.

Contributions to participatory design methods and qualitative healthcare methods literature. The current study has made contributions to the research methods literature addressing experience studies, particularly in the healthcare setting. The study contributed by highlighting the applicability of qualitative research methods in clinically related research that are often overlooked in the literature (Dagger et al., 2007). In particular, the study compared three qualitative research designs to elaborate their applicability to capture different sides of the health service experience. The comparison was followed with a design of a tangible method that could be utilized in reaching parts of the children's HSE that other methods were not able to reach. The method developed in this research further contributes to research that has propounded the use of tangible materials or objects in expressing experiences related to a healthcare service (e.g., Curtis et al., 2004; Fyhn and Buur, 2020). The functional, playful, flexible, and tangible methods may help children to better express themselves while describing their experiences, therefore, providing a deeper understanding of children's experiences and experiential value co-creation in healthcare. Moreover, as tangible methods have already been introduced to other business contexts in previous research (e.g., Buur, 2018), and widely utilized in service design (Stickdorn and Schneider, 2010), the data collection method can be potentially modified or be an inspiration for studies in other high-emotive, sensitive, or invasive service contexts where experiences are co-created within a complex ecosystem.

5.3 Contributions to practitioners

The present dissertation and its findings also offer relevant contributions to the practitioners in different facets of the healthcare ecosystem. Such practitioners include healthcare managers and professionals, patient association managers, municipal and governmental entities, and patient associations and technology companies.

Healthcare managers and professionals. First, the findings show which dimensions dominate HSEs, providing concrete and nuanced knowledge on the likely HSEs and potential triggers and the touchpoints of patient journeys. This knowledge can be applied as guidance for healthcare managers in their attempts to develop better HSEs for patients and families, which might transform into better well-being. Importantly, healthcare managers and practitioners should understand what they can and cannot control in HSE formation. Managers and healthcare professionals, for example, can control many aspects of the sensorial triggers of HSEs because these revolve around the hospital environment, whereas, for example, HSE co-creation drawing from the patient's and family's own motivations and imaginations (e.g., peer-to-peer experience sharing and cognitive experiences) often fall beyond health providers' control. Although, healthcare managers and professionals may not be truly able to control such HSE manifestations, it is crucial that they acknowledge them as a part of family's overall assessment of their experience. By recognizing the visible and traditionally invisible HSE manifestations, healthcare managers can design their services and find potential actors to collaborate with to ensure alignment throughout their services and HSE co-creation in the families' everyday lives. As a simple example, healthcare providers can provide proactive information on other actors, such as online communities and third-sector societies for families to co-create with to gain experiential knowledge, which parents often seek for sensemaking related to illness and their situation, or to intentionally facilitate social peer-to-peer interactions in their facilities. Because the cognitive burden of families are often excessive in HSEs, managers should not only focus on diminishing the negative cognitive experiences but should be aware so as not to increase patients' and family's responsibilization (Azzari et al., 2021). In addition, to avoid an excessive burden of care on personnel that might rise throughout possibly dramatic changes in work procedures and possible attitude changes, a continuous improvement of the healthcare workers' profession and well-being may be required to answer the demands of family-centric care delivery (Vogus et al., 2020). For example, managing affective experiences of families might require healthcare workers to recognize and react to the positive or negative moods that families have when they arrive and move forward in their journeys. Hence, I suggest continuous training and support of employees' emotional intelligence, skills, and behavior to successfully manage encounters that include a range of emotions, particularly at the first contact points where patients and their family members can be in crisis and can influence the later contacts. In addition, the framework of emotions in the customer experience can be utilized to understand the different types of emotions and make informed design choices of health services.

As family-centric care increasingly becomes the premise of health systems worldwide, it is imperative for managers to focus on the formation of HSEs from the perspective of the whole family. The findings indicate some discrepancies in the perceptions of families and healthcare professionals relating to the patient journey. Healthcare professionals strongly approached the patient journey from a narrow coproduction perspective, whereas families tend to assess the journey touchpoints more broadly. Therefore, maintaining a sharp focus on hospital processes might result in missing some critical touchpoints. The findings revealed a complex set of touchpoints through the patient journey, indicating the difficulty in predicting and concisely managing or facilitating an individual's dimensional experience sequences throughout the journey. Nevertheless, focusing on some critical touchpoints can enable managers to guide a journey to a preferable direction. This effort may require an analysis of hospital processes and redesign of health service delivery. For example, by positing relational continuity at the center of health service delivery and enabling the co-creation of positive social experiences, families might feel more bonded with the care personnel through these advanced relationships. At the same time, for care personnel, it makes it easier to approach the family as a group of persons rather than subjects of care. Developing a broader, patient-focused understanding of the total journey of dealing with an illness is pivotal in the effective development of an HSE, whereas ignorance could result in a weaker outcome for families.

Managers should design service delivery and the environment to minimize the potential limiting structures in hospital environments, for example, limited visiting times or no room to sleep and rest, to enable family members to have more control over their HSE co-creation and being part of a family member's care.

Finally, while the current study encouraged qualitative methods in exploring the HSEs more broadly, measurement of HSE and obtaining feedback plays pivotal role in providing overall view for top management and making insights actionable for the healthcare managers (Lemon and Verhof, 2016). Thus, the in-depth understanding generated in the current study can be applied to develop better evaluation, measuring, and monitoring of HSEs for healthcare providers. For example, only a minority of applied HSE and healthcare quality monitoring and evaluation instruments address patients' and their families' needs of living with an illness (Staniszewska et al., 2014), despite it being closely connected to the overall HSE assessment. Hence, healthcare managers should identify the potential gaps in their applied questionnaires or surveys and develop them to cover the relevant aspects of HSEs. Regarding the collection of HSE data and utilizing it in the hospital, the following recommendations can be made based on the research, as suggested in Article IV:

- *Healthcare managers should pay attention to both the patients' and nurses' perspectives when collecting feedback*. Managers should seek to enhance patient awareness in the opportunities to give feedback for avoiding biased results and making feedback collection instruments user-friendly. In addition, managers should seek opportunities to automate feedback collection to fit together with the nurses' everyday work.
- *Healthcare managers should focus on creating a coordinated approach for collecting and utilizing patient feedback*. Healthcare managers should measure the HSE instead of satisfaction and identify the relevant aspects of the experience and measure them to gather data that can be fully utilized. In addition, managers

should seek to apply a multichannel approach and merge the findings from all data sources.

- *Organizational transformation toward patient-centric culture.* Communicate the vision organization wide. Work on motivating staff to collect and utilize feedback through an understanding of the importance of feedback.

Municipal and governmental entities, particularly in Finland. With the health and social services reform debate just being passed in the Finnish Parliament, the findings of this dissertation are also relevant for municipal and governmental entities that work toward providing a sustainable welfare and healthcare system. First, this dissertation revealed the extensive composition of diverse actors within the Finnish healthcare ecosystem. This not only demonstrates the complexity of the healthcare system in general but provides important knowledge of the current complexity of healthcare journeys that patients and their family members need to undergo to recover their well-being. This increased understanding can be utilized in reformation work at the ecosystem level so that a new operation model of health service centers can be designed. Moreover, the findings of Article IV concerning value propositions and innovation barriers within the healthcare ecosystem suggest that systemic lock-in situations in which none of the actors alone has the power or will surpass the systemic barriers can happen when a new digital solution is developed. Given that the new operation models after a reform will utilize digital solutions (Finnish Government, n.d.), these challenges need to be addressed.

Second, this research drew attention and explored healthcare value as an experience. This information can be utilized when possible new reimbursement systems for health service centers are developed. After all, measuring the outcomes that matter to the patients is regarded as the most powerful mechanism to lower the growing costs of health services (Porter and Lee, 2013). In addition, value should not be measured based on the processes of one service provider but should encompass all services and activities that jointly determine success in meeting a set of patient needs (Porter, 2010). In addition, the generated understanding of HSEs can be used to refine quality metrics because raising the service quality is one of the key objectives of reformation.

Other actors in the healthcare ecosystem. For patient association managers, particularly those working with families with young children having congenital disorders and teenage children suffering from chronic illnesses, the current dissertation has provided an understanding of their customers' experiences. The present dissertation also highlighted the central role of patient associations and other peer-to-peer support platforms (e.g., online patient forums) in HSE co-creation and healthcare ecosystems in general, which can be applied to emphasize patient associations' role as "providers" of health and social services. This is important because the discussions on roles and funding models of the associations are ongoing due the reformation.

For technology companies working in or pursuing to work in healthcare, this dissertation demonstrated the barriers that hinder and complicate the actualization of value propositions in the healthcare gamification ecosystem. Unfortunately, validation processes, together with the lack of innovation-supporting structures within healthcare gamification ecosystems, slow down the development, implementation, and consumerization of medical games. The need to validate digital medical applications guide the focal actors (e.g., healthcare professionals, healthcare organizations, insurance companies, and social insurance institutions) and defines which rehabilitation and treatment methods they find credible. In public healthcare areas, the prevalent mindsets, norms, and routines promote stability and hinder the implementation of new technologies, such as medical games. However, there are ways to bypass the lack of innovation structures. Many private clinics or rehabilitation centers can be more flexibly try to implement new technologies like medical games. This knowledge can be useful for human–computer interaction professionals, who foster and develop a cooperative team for medical game development and design processes, as Doherty et al. (2010) have suggested.

5.4 Limitations and avenues for further research

The current study has some limitations. The qualitative approach followed interpretivist an epistemological view, so I must recognize that the findings, or "truths," are not absolute but relative. This means that the findings are contextualized to the Finnish healthcare setting and that the data could be differently interpreted by another researcher. Although the data sets utilized were extensive and provided a multisided view of the phenomenon, the data presented a relatively homogenous group of people in one geographical area. Hence, this limitation concerns the transferability of the findings (Miles and Huberman, 1994), meaning that it is not possible to generalize the results to a larger population and geographical areas. This is relevant because people from different backgrounds have been shown to assess healthcare experiences differently (Ahmed et al., 2014). Furthermore, previous research has argued that all healthcare systems can be considered different from each other because each healthcare system is strongly influenced by the respective society's underlying regulations, norms, values, history, and social and cultural expectations (Lameire et al., 1999), that is, the institutions of the healthcare ecosystem and wider society. This calls for further contextual healthcare ecosystem studies in different countries to understand the institutional differences between healthcare ecosystems and their respective co-created experiences. As described in the current study, the institutions do not only influence the composition of the healthcare ecosystem, but also how value and HSEs are co-created at the micro level of the ecosystem and how meso- and macro-level institutions influence the utilization of the understanding within the healthcare ecosystem. This means, for example, that the study was conducted in a Finnish healthcare setting, which relies strongly to public tax funding, but studies in different geographical areas could have differing experiences through, for example, a more intensive financial burden. Moreover, despite this research suggesting some influences of the institutions, it did not build a comprehensive direct understanding of the interlinkage of institutions and perceptions of HSEs. Hence, future research in different geographical areas and within different healthcare systems is highly encouraged.

In previous research, the patients' experiences have been connected, among other things, to positive health outcomes for individuals (Rave et al., 2003; Greenfield et al., 1988) and clinical effectiveness (Ahmed et al., 2014), but in these studies, the experiences are at best approached from a narrow coproduction perspective limited to hospital facilities. This dissertation provided a better understanding of the healthcare customers' HSEs over the patient journey, which includes experience co-creation in the everyday life setting of the patient and family. Because this view of HSEs and the patient journey differs from the traditional healthcare provider-centric views, further research may be needed to investigate the links between patients' experiences and health outcomes and clinical effectiveness and the overall well-being of individuals, including their quality of life. Furthermore, the provision of health services and provision of valuable HSEs can be extremely burdening for healthcare professionals (Vogus et al., 2020) because they are expected, for example, to deal with various emotional states of the customer and sometimes deliver possibly extremely saddening news. Hence, further research with customers' HSEs should study experiences of healthcare workers. In addition, an interesting avenue for further research is to empirically focus on how the provision of valuable HSEs influence the well-being of the healthcare ecosystem (discussed, for example, in

Frow et al., 2016; Frow et al., 2019) and how the optimal level of well-being at the individual and system levels can be achieved.

The families who participated in the interviews were limited to a few illness groups, so further studies should examine multidimensional HSE, the healthcare ecosystem, and patient journeys with families of different patient groups to refine the understanding generated in the present dissertation. Moreover, the informants were purposefully chosen to present a variation of illness groups with the help of healthcare specialists from a university hospital, which may have caused some bias by choosing "more successful" cases. To decrease the risk of a biased sample, I encourage researchers to seek participants, for example, through third-sector patient associations and societies and online patient communities of a certain illness. Moreover, the findings for HSE composition and touchpoints were generated based on the data from interviews with healthcare professionals and pediatric patient's parents. Although the understanding contributed to a critical gap in current HSE knowledge, future research could further the understanding by studying the experiences of child patients and comparing the experience responses of a patient and a family member to examine the differences. For child patients, the studies could utilize the method developed in this research to gain a broad, holistic account of the child's experiences as emerging over the patient journey within the complex healthcare ecosystem. This could guide health service providers even closer to a detailed management practice and in achieving the goal of truly family-centric care. Furthermore, longitudinal studies following HSE creation along the patient journey could gain a deeper understanding of the connections between touchpoints and experience emergence.

Although the present dissertation provided a detailed model of multidimensional HSEs, in reality these dimensions are not static but overlap, so a dynamic interplay between dimensions is likely to occur. Hence, research addressing a dynamic interplay would provide a differing view to the dynamics of HSE. That is, dynamic HSEs do not only emerge over the course of the patient journey as a whole (discussed in section 4.3) but also within a single encounter or event through the dynamic interplay of dimensions. Thus, an exploration of the dimension interplay could further the understanding further and provide important implications for designing the healthcare provision. Without such an analysis, it is difficult to understand the sequences of the interplay of the experience dimension, whether or not that type of interplay is constant and predictable, or whether the interplay has some variability that could hinder the provision of service.

Previous studies argue that members of the healthcare field typically overlook the softer qualitative assessments such as patients' experiences (Dagger et al., 2007), and the findings of this dissertation elaborated on how differently healthcare professionals and healthcare customers view the emerging experience. In addition, this dissertation showed how the predominant mindset and practices in the healthcare field hinders the utilization of HSE understanding and their development. Hence, an important avenue for future research would be to address how the mindsets, practices, and institutions of the healthcare ecosystem can be shaped to best enable and facilitate the development of value as an HSE and utilization of its understanding.

This study applied the concepts of patient journey and touchpoints with a customer-centric perspective. The customer journey concept draws from marketing and service design theory (Lemon and Verhoef, 2016; Shostack, 1982), which aims to manage and design organization's processes, activities, resources, interfaces and encounters to produce a valuable service for customers (Morelli, 2021). Thus, these concepts traditionally embed a presumption of some form of manageability of one's experience while taking a critical realism or even positivistic worldview. However, due the subjective and emergent nature of value as an HSE, the outcomes of co-creation are never fully controllable or predictable (cf. Vink et al, 2021). This does not however negate the importance of the customer journey or patient journey concepts in this dissertation. Contrary to the application of these concepts as pure management advisory tools, in this dissertation the concepts are applied to assist in interpretations and in sense-making of the events that shape value as an HSE. Nevertheless, limitations regarding the concepts needs to be discussed. In this dissertation, patient journeys were approached with and visualized as linear journeys comprised of a sequence of various touchpoints over time. In reality, the experience emergence is fuzzier and non-linear, as an emerging experience is shaped by past experiences, present choices, and imaginary experiences (cf. Jaakkola et al., 2015). Moreover, individuals have their own individual ways for seeking and achieving wellbeing, and the value as an experience can be interlinked to various other past, present or future "journeys" of the individual (Becker et al., 2020). Thus, the patient journeys are, even at best, an interpretation of one's subjective, dynamic experience with a managerial gaze. In addition, this dissertation defined touchpoints as distinct interaction points (Lemon and Verhoef, 2016). The conceptualization highlights the social nature of experience co-creation but arguably overlooks the importance of individuals' independent values, beliefs, norms, behavioral patterns, goals and imagination, all of which can influence the experienced value. These personal in-situ experiences cannot be captured by examining journeys retrospectively but requires longitudinal phenomenological studies that acknowledge the temporal nature of healthcare value as an experience (Helkkula et al., 2012).

While this dissertation provided insights on research methods to study individuals' HSEs (section 4.4.1 and original article V), the limitations of these findings must be discussed. The study focused only on a limited set of purposely selected research methods, which were treated as an exemplary methodological sample. Thus, these methodological experimentations provided an important but limited view on the full spectrum of applicable methods. Furthermore, the participants in these methodological experiments varied case by case, consisting of samples of child patients, child patients' parents and healthcare professionals. Inevitably, the sample of participants strongly influences the findings in each case, which weakens the comparability of the methodological examples in terms of the content the methods capture. However, the method examples provide some insights that help make sense how research design choices can influence explorative studies in pediatric healthcare context and shared lessons that we had learned when conducting the research.

Finally, as discussed in Article I, research has currently focused on creating positive emotional experiences and considered negative emotions to be avoided or ignored, though the customers can go through an emotional rollercoaster related to the service. This dissertation focused on one of those contexts—healthcare—but future studies are encouraged to explore the experiential value, customer and service experience composition and its emergence, and service ecosystems in other reluctant customer contexts that have a high potential of negative valence. Similar to healthcare services, these services can be part of the public services offered, for example, social and police services. Hence, such studies do not only help the individual customers and organizations providing these services, but also societies as a whole.

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APPENDIX

Appendix 1: Key concepts

Table 10. Key concepts of the dissertation.

Concept	Definition	Sources	Literature field	Relevance to and use in this research
People and other entities				
Individual	"A single human being as contrasted with a social group or institution; A particular person."	Merriam-Webster.com, 2022		A generic term to describe a person(s).
Patient	"An individual awaiting or under medical care and treatment", and a collaborator in the healthcare ecosystem and active cocreator of value.	Merriam-Webster.com, 2022; McColl-Kennedy et al., 2017a	Healthcare, service management	Term to describe the person(s) under medical care or other healthcare services; here, an ill child under pediatric services. The term excludes other individuals who are not under the medical care, including acquaintances and those closely participating to health service cocreation; thus parents of a child patient are excluded.
Customer	"One that purchases a commodity or service."	Merriam-Webster.com, 2022	Business, marketing	The term identifies one obtaining and co-creating service more inclusively than the term, "patient." The term is applied to describe patients as well as patients' family-members, who participate closely in health service co-creation along the child patient but are not directly under medical care.

Concept	Definition	Sources	Literature field	Relevance to and use in this research
Actor	A generic term to describe parties involved in service exchange and resource integration in the service ecosystem.	Vargo and Lusch, 2008; Vargo and Lusch, 2011	Service-dominant logic	Highlights systemic, reciprocal orientation to value creation rather than value provision of provider to consumer. The term is applied to describe all ecosystem entities (e.g., healthcare providers, other organizations, and families) who co-create value.
Concepts related to experience				
Value as an experience	"Individual service customers' lived experiences of value that extends beyond the current context of service use to also include past and future experiences and service customers' broader lifeworld contexts" (p. 59).	Helkkula et al., 2012	Service research	Provides a theoretical conceptualization to understand how value is determined by healthcare customers. The understanding yields insights for service providers to enhance their value creation with customers.
Multidimensional HSE	HSEs of healthcare customers are a complex, subjective, and multidimensional construct that manifests through sensory, emotional, cognitive, behavioral, and social dimensions.	Verhoef et al., 2009; Schmitt, 1999	Marketing	Multidimensionality provides a theoretical framework to analyze and understand various experiences of individuals that are related to health services. The understanding yields opportunities for health service providers to enhance their service offering.
Patient journey	Composition of all the touchpoints through which the HSE emerges	Lemon and Verhoef, 2016	Marketing and service management	Provides a conceptual metaphor to describe dynamic HSE emergence through all clinical and non-clinical touchpoints. Highlights that

Concept	Definition	Sources	Literature field	Relevance to and use in this research
	before, during, and after the actual core health services.			HSE is co-created in interaction beyond the focal health service provider. The understanding yields opportunities for service providers to enhance their service offerings.
Continuum of care	Span of all touchpoints in which the focal healthcare organization or one of its partners interacts with the patients and/or their family.	Wolf et al., 2014	Healthcare management	Provides a conceptual metaphor to describe composition of touchpoints between patient and a focal health service provider. Highlights the provider's view and control in customer's HSE emergence.
Touchpoint	A distinct interaction point.	Lemon and Verhoef, 2016	Marketing	Provides a conceptual framework to identify interactions, in which value as an HSE is cocreated.
Ecosystems				
Healthcare ecosystem	A system of individuals, organizations, and technologies related to customer's experiential value co-creation.	Dai and Tayur, 2019	Healthcare operations management	Concept is adopted to highlight the context of value cocreation, which is healthcare in this research, rather than the more generic service ecosystem concept.
Customer ecosystem	Systems of actors and elements related to the customer that are relevant concerning a specific service.	Voima et al., 2011; Lipkin, 2016	Customer-dominant logic	Provides a theoretical framework to highlight the customer's active involvement in value co-creation, and the customer's centric position in ecosystem emergence.

Concept	Definition	Sources	Literature field	Relevance to and use in this research
Service ecosystem	A relatively self-contained, self-adjusting system of resource-integrating actors connected by shared institutional arrangements and mutual value creation through service exchange.	Vargo and Lusch, 2016; Akaka et al., 2015	Service-dominant logic	Provides a theoretical framework to examine interactions across multiple levels of the ecosystem (micro, meso, and macro). Highlights a generic actor-to-actor perspective, in which those actors are co-creators of mutual value as an experience.

PUBLICATIONS

PUBLICATION
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Emotions in Customer Experience

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Emotions in Customer Experience

Abstract

The aim of this chapter is to display how emotions build experiences in interactive society. To map out the emotions' essential role in experiences, the chapter focuses to look over the literature on emotions in customer experience (CX), which is defined as an umbrella term for diverse experiences. The chapter introduces four key insights to underline the integral relation between emotions in CX in interactive society: 1) We identify eight different types and suggest a framework that captures these key types on how emotions build experiences, 2) emotions in CX are essential both in offline and online environments, 3) the diversity of emotions in interactive society is broad from positive and negative ones, and especially the role of the negative emotions should be acknowledged and further explored, and 4) we propose a set of definitions to clarify different terms used around emotions. The framework serves as a tool that guides practitioners and researchers and other professionals to acknowledge different facets of emotions when aiming to co-create experiences and manage them in the interactive society.

Keywords

Customer experience, emotions, feelings, affection, interaction

Introduction

Experiences are a fundamental part of everyday life in all levels of society, being created in various forms of interaction between individuals, organizations and social system. Thus, we as individuals, professionals and citizens in interactive society are all continuously creating experiences - building our own and shaping others'. This complex foundation makes experiences a fascinating research topic and furthermore experiences offer organizations a way to gain a competitive advantage by creating memorable experiences for their customers (Pine & Gilmore, 1998). To create these memorable experiences, scholars have highlighted the importance of emotions in experience (Bastiaansen *et al.*, 2018). Still, we know only a little about the connection between emotions and customers' experience. Hence, in this chapter, we are concentrating on building a comprehensive understanding of emotions in customer experience (CX) based on the CX literature.

CX is relevant for multiple industries from retail to wellness and travel to banking. We concentrate on CX as it is often applied as an umbrella term for different experiences including service experiences, user experiences, and patient experiences. CX emerges through the digital and face-to-face interactions customers have during the provision of different services (Bolton *et al.*, 2018). Thus, increasing the understanding how emotions build CX in diverse forms of interaction is a matter of numerous professionals in all levels of society. The interactions occur in different relations both directly and indirectly throughout the society: between customers and an organization, a brand, a product, a technology, other customers and networks of actors (Meyer & Schwager, 2007; Teixeira *et al.*, 2012; Jaakkola *et al.*, 2015). Hence, CX is a constantly ongoing part of interaction in individual, relational as well as system levels (Helkkula, 2011; Vargo & Lusch, 2016).

Despite the notions that emotionally fueled experiences are tightly related to interaction, the understanding how emotions relate to experiences in the interactive society is still missing. Thus far, only a few studies have explicitly linked CX and emotions. Some of these studies focused on the emotional dimension of CX and developed scales for measuring it (e.g. Jüttner *et al.*, 2013; Novak *et al.*, 2000), whereas others examined particular emotions in CX in specific contexts, such as luxury brands (Kim *et al.*, 2016), healthcare (McColl-Kennedy *et al.*, 2017), service failures (Balaji *et al.*, 2017) and service recovery (Mattila *et al.*, 2013). Although these studies among others emphasize the relevance of emotions embedded in various forms of interaction, the studies do not provide a comprehensive understanding on how emotions build CX. Therefore, in brief, more systematic, detailed, and structured analysis is needed to capture and present the diversity of emotions in CX. That is where we contribute.

The purpose of this study is to analyze the role of emotions in CX in individual, relational and society levels. We systematically reviewed 129 articles (see Torraco, 2005), from which we structurally mapped the diversity of research fields where emotions in CX are present so far, identified the theoretical approaches and terms applied to examine emotions in CX, and illustrated how emotions are present in CX research. As a conclusion, we build a structured, clarifying framework, which identifies eight conceptualization types for emotions in CX. By doing so, our study enables researchers and practitioners to use concepts and terms more systematically and to study, develop, and manage emotions in CX in a more advanced way.

We acknowledge that emotions can be studied from many disciplinary and theoretical perspectives, including, business, psychological, and sociological perspectives. In this chapter, we apply business, and particularly marketing and management perspective. The chapter is structured as follows: First, we start by discussing the theoretical background of the two key concepts, CX and emotions. We then explain the methods for data collection and analysis. We introduce key findings regarding emotions in CX from which we develop an integrative framework for emotions in CX. We conclude by suggesting the theoretical and managerial implications and suggest directions for future research.

Customer experience and emotions: feelers co-creating experiences in interactive society

Customer experience

CX research crosscuts many disciplines including economics, psychology, marketing and management. However, the importance of CX really started to develop in the early 1980s, when consumer research scholars began to consider customers as feelers, thinkers, and doers rather than as rational decision-makers (Holbrook & Hirschman, 1982). Shortly after, ignorance of the role of experience in the consumer research was widely noted (Belk, 1984; Fennell, 1985). Years after, we have seen a dramatic increase in CX research and the shift from a traditional product-based economy to an experience-based economy, where CX is seen as a competitive advantage that is difficult for competitors to duplicate (Pine & Gilmore, 1998; Grewal *et al.*, 2009). The shift is noted also in experience research throughout the disciplines, and several types of experiences are distinguished: user experience, service experience (Jaakkola *et al.*, 2015), consumer experience (Howard, 1965), product experience (Hoch, 2012) and customer experience (Verhoef *et al.*, 2009). In this chapter we focus on customer experience.

The emergence and interest towards experiences are fueled by the pivotal work of Vargo and Lusch (2004, 2008) on service-dominant logic that emphasizes the experiential nature of value. CX and customer's perceived value interrelate with each other. Value is at the same time an individual and contextual function in interaction between subjects which resides in the CX (Echeverri & Skålen, 2011). CX incorporates customer's cognitive, emotional, sensory, social and spiritual responses to all interactions with an organization or other actors (Jain *et al.*, 2017). This definition highlights CX as being strongly individual, while also recognizing the importance of social aspects, as experiences are always co-created (Vargo & Lusch, 2008). Therefore, CX is strongly connected to interactions as co-creation is defined as a function of interaction. Thus, CX is always co-created in interaction between customer and the organization and/ or other actors (Vargo & Lusch, 2004; Jain *et al.*, 2017).

The various interactions are taking place in the search, purchase, consumption, and after-sale phases a customer has with an organization through which CX emerges and evolves (Varma, 2012; Verhoef *et al.*, 2009). However, CX is more complex to manage compared to interactions, as CX is subjective, dynamic and unique interpretations of events and dependent on many personal and contextual factors (Zomerdijk & Voss, 2011). Moreover, in today's networked business environment multiple actors are participating to CX co-creation within a system of different actors (Vargo & Lusch, 2008). Customers are therefore increasingly encountering multiple providers during service delivery forming a social system, which are all affecting the dynamic evaluation of their experience.

Because of the reciprocal nature of the interaction, researchers and practitioners can examine CX from the perspective of either the provider or the individual customer (Helkkula, 2011). The provider perspective highlights a firm’s ability to understand every facet of the CX throughout all direct and indirect encounters (Frow & Payne, 2007) whereas the customer perspective highlights the subjective responses of the individual throughout the customer journey (Lemon & Verhoef, 2016).

Theoretical roots of emotions

Emotions play a major role in CX. Emotions are produced by an individual’s unique appraisal of experience, which is created from an evaluation and interpretation of actions and the prevailing environment. In other words, emotions are always experienced subjectively, and different people can have different emotional reactions to the same action under the same circumstances. Emotions play a significant role in determining behaviors and actions (Carlson *et al.*, 2007), and are therefore critical when investigating for example consumer behavior. Emotions are often accompanied by physiological processes and expressed physically (e.g., in gestures, posture, facial features). Just as emotions are perceived individually, they also vary and manifest in different ways. Similar to CX, emotions are also social in nature as, emotions are socially contagious meaning that people are attracted to the emotions displayed by someone with whom they interact (Huang, 2001).

Emotion research has roots in psychology (see Mehrabian and Russell, 1974). Emotions are usually studied by emphasizing their biological, cognitive, or social aspects, opening up this research area to not only psychologists but also neuroscientists, philosophers, educators, and even economists. This multidisciplinarity of emotions research may have led to nonsystematic use of emotion terminology (e.g., emotions, affects, and feelings) in business-oriented literature, with a few notable exceptions. According to Gentile *et al.* (2007), affective experience is generated at the system level based on the spectrum of *emotions, feelings, and moods*. These, in turn, can be further described according to their features, like intensity, duration, cause, awareness, and control (Scherer, 2005). Generally, moods are characterized by the enduring predominance of certain types of subjective feelings that affect a person’s experience and behavior and may last from hours to days (Scherer, 2005) or even months (Jalonen *et al.*, 2016). Although feelings are subjective experiences of individual persons, emotions are projected feelings and are typically manifested in social interaction (Jalonen *et al.*, 2016).

To sum up, experiences are created in various forms of interactions, in which value is resided and emotions embedded. Experiences are subjective in nature, while also socially and contextually constructed, mirroring the relevance of experience in the individual, relational and system level in the society. In other words, the interactive society is full of complex bundles of relations resulting in experiences shaped by emotions. To clarify, how emotions actually build experiences in different levels we next analyze and discuss how emotions are present in current CX literature.

Methodology

Research design of systematic literature review: gathering and identifying relevant articles

To analyze emotions in CX research, we followed an established research procedure for systematic literature reviews. It provides explicit methods for identifying and selecting relevant publications and questioning and analyzing them (see Booth *et al.*, 2012). To gather research on CX examining the emotional aspects, we used a two-phase search: We began by identifying and collecting all relevant research articles on CX and then, in the second phase, focused on those that examined emotions. We selected two databases, Web of Science (WoS) and EBSCO, as they cover a wide range of good-quality journals in marketing and management, and related fields such as technology and innovation management, as well as recent research from all geographic locations. In the first phase, we conducted a systematic search for all articles published before May 2018 in which the title, keywords, or abstract mentioned the words “customer experience.” The search yielded a total of 399 articles from EBSCO and 570 articles from WoS. Duplicates were checked and removed. As we focused on scholarly peer-reviewed articles, we excluded book reviews and editorials. This analytical round reduced the number of hits to 336 articles. In the second phase, from these identified CX articles we zoomed in on those that examined or were related to emotional aspects and included—in their title, keywords, or abstract—at least one of the following search terms or its variation: emotion, feeling, affection or sentiment. These delimitations and searches resulted in the selection of 129 research articles for final, detailed content analysis. The full citations of these articles are listed in Appendix 1.

Content analysis of selected articles

In the analysis phase, we conducted a content analysis of the 129 articles. Content analysis employs quantitative and qualitative textual analysis, requires minimal interference by the researcher in the phenomenon studied, and can handle large volumes (Krippendorff, 1980; Weber, 1985). We emphasized qualitative content and thematic analysis. We first read through all the articles to acquire a general view of the studies and then compared, categorized, and coded the contents. We focused on analyzing the classification of the forum and identifying the key conceptualizations on “emotion” as well as the major theoretical models and approaches. In addition, we classified the major research themes and empirical research contexts.

Researcher triangulation strengthened the analysis throughout the process: Four researchers representing different disciplines (marketing, management, service, and engineering) participated in interpreting and categorizing the data. Knowledge of diverse, interlinked research streams was needed in making decisions about categorization, and all the researchers collectively defined the coding procedures and limitations. The researchers assessed and jointly compared the key content of the articles, for example, by employing Excel and Word tabling to ensure consistency of categorization, and the researchers discussed their interpretations of the research findings to improve the quality of the findings, which are presented next.

Findings: how emotions in CX are co-created in interactive society

Overview to roles of emotions in CX

Emotions are, indeed, created in complex sets of interaction with other actors in online and offline environments but are always subjectively interpreted and experienced by an individual. In this chapter, we expand the current understanding of how emotions build CX in interactive society and provide an overview of our key findings followed by a more detailed discussion on each of them.

The discussion on emotions and CX is taking place mostly in individual and relational level even though it is acknowledged that emotions in CX are actually becoming real in complex systems. To clarify our findings we introduce an integrative framework (Figure 1) that illustrates how emotions build CX and highlights the diversity of emotions in CX in interactive society. The framework consists of eight different emotion types. Type 1 concerns emotions emerging in direct person-to-person and online encounters between a customer and an organization or its representative. The type 2 is emotional stimuli or cue (e.g. music or design) the service provider uses to affect customers' emotions. Type 3 addresses customers' emotional responses to providers' different cues. Type 4 focuses on how customers' evaluations of their experience are affected and processed in the emotional dimension (part of the cylinder in Figure 1), which is present in all interactions customer has with the organization or its' elements. The type 5 represents the emotional aspects in different phases of decision-making and buying process, including information seeking, evaluation, purchase, and post-purchase phases (represented as cylinder segments in Figure 1). In type 6, emotions are drivers of experience outcomes (represented as an arrow above cylinder in Figure 1). Type 7 focuses on emotional links and bonds, for example, towards an organization's brand or technology. Type 8 addresses the diversity of emotions in CX and their emergence in all levels in interactive society.

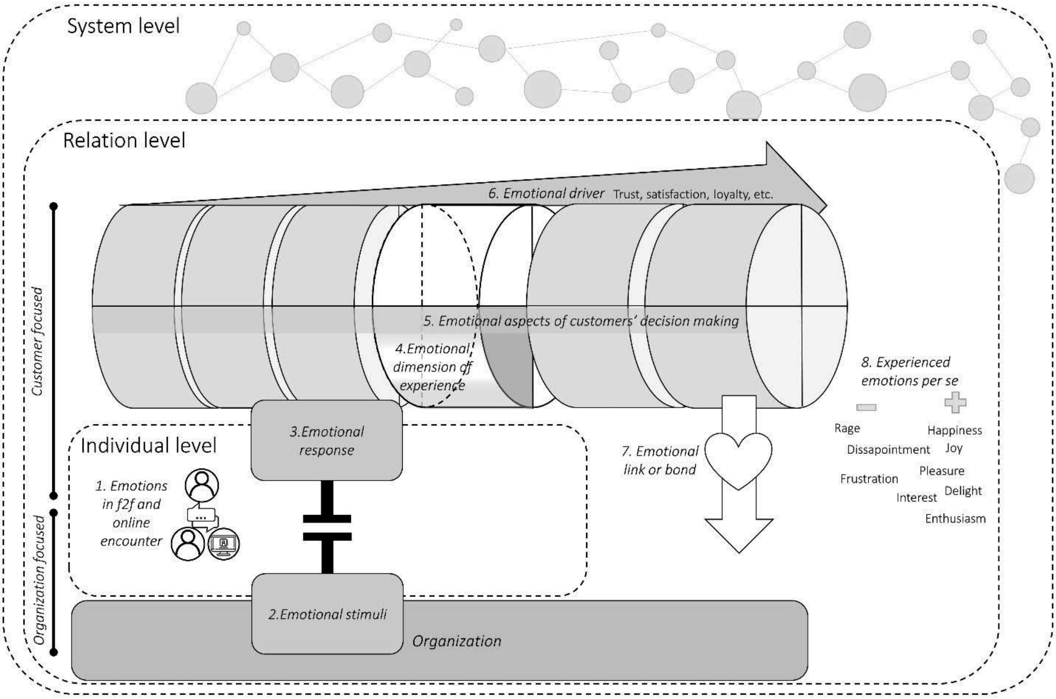

Figure 1. Framework for emotions in CX.

As said, emotions are building CX in both digital, online and offline environments. Driven by the digitalization, the recent literature emphasize building an understanding on how emotions in CX are created through various forms of interaction, particularly in online environments. That is, organizations also should focus on creating emotional attachment with the customers by, for example, improving the interactive components on their website. Operating only with the static attributes in online, like visual components, is not enough in the era of experiences and thus more emphasis should be given to improve the sociality on the online environments. Based on our study, it seems necessary also to highlight that the emotions emerging in interactive society are both positive and negative. Presently, positive emotions have gained a lot more attention in research than negative emotions, even though the diversity of emotions is extensive. Therefore, it is important to understand that also negative emotions define individuals' experiences and they should not be downplayed in research and practice.

In addition, we find it crucial to generate the consensus about the definitions related to emotions as the experience is present in various disciplines and the centrality of it is underlined in the experience era. However, the research on emotions and CX is still fragmented, and we noticed that this may have also caused some inconsistency in the terminology among scholars. That is, researchers addressing emotions in CX used a lot of different terms to describe emotions, for example feeling, mood and affection. The term "emotion" seem to be used as an umbrella term, which conceals the multidimensionality of the relationship between CX and various emotions. If these different terms are used interchangeably and without justification, the research field will remain fragmented and hinders the interdisciplinary research and fruitful discussion between the different businesses. Based on our study, we propose the following definitions for different terms: 1) "Mood" depicts a long-lasting subjective emotion that affects a person's behavior and experience, 2) "feelings" are subjective experiences that are shorter (from minutes to hours; e.g., joy, irritation), 3) "emotions" are also short-term feelings but are characterized by projected feelings, usually manifested in social interaction (e.g., love, hate), and 4) "affective experience" is based on the spectrum of all previous terms (emotions, feeling, and mood) and can be described by features like intensity, duration, and cause.

How emotions build CX in interactive society: major types and framework

We identified eight major types that capture how emotions are applied and conceptualized in CX research (see Table 1 and Figure 1). The framework uncovers relevant dimensions that distinguish the types, which all are the result of both direct and indirect interaction between the customer and organization or it's elements. Furthermore, emotions in CX can be conceptualized and studied from *the organization* or *customer* perspective. Based on our analysis, typically emotions in CX are studied from the latter, customer perspective, and thus, our categorization types emphasize this more.

The first type concerned providers' attempts to manage emotions but focused on *competencies, personnel, procedures, or online processes that manage emotions* in customer interactions. For example, the importance of employees' skills in managing customers' feelings during the customer experience was identified (Johnson *et al.* 2009), while Gabbott *et al.* (2011) emphasized emotional intelligence (EI) during service failures. The psychological phenomenon of EI was identified by Goleman (1995) and is considered a tool for leaders and employees to manage customer experiences. The articles suggested that positive emotions (Chahal & Dutta, 2014) and negative emotions, such as customer rage (Surachartkumtonkun *et al.*, 2015), should be managed by employees. Varma (2012), however, highlights that human emotions are not entirely predictable, and most customers' emotions remain unclear or even totally hidden. The article links CRM to management of customers' emotional states, noting that nothing can deliver a memorable customer experience better than motivated and engaged employees.

The second type focused on *service providers' attempts to manage emotions*. Because providers cannot manage emotions directly, they aim to manage emotions through indirect interaction, which includes stimuli and cues. The main goal for service providers seemed to be creating *positive* emotions among customers as positive emotions favorably affect, for example, customer experience, brand image, purchase intention, satisfaction, and loyalty. Although emotions were positive in principle, the importance of identifying and handling negative emotions should not be underestimated, as removing all cues from service provider performance that could create negative emotions is impossible.

The third type focused on *emotional responses* to different cues or elements of customer experiences. Emotional responses are embedded in customer's interaction with the organization or servicescape, capturing the customer's side in this reciprocal relation. For example, Madzharov *et al.* (2015) examined how scents elicit emotions and thus, affect customer experience, while Bagdare and Jain (2013) developed a scale for the experiential responses of retail customers. In this category linking emotions to customer experiences, the aspect is behavioral and customer-focused as these studies examined how customers respond to physical cues and service process elements, such as service failures.

The fourth type analyzed *emotional dimensions* of the whole customer experience, thus conceptualizing emotion as one facet. The other facets were cognitive and behavioral dimensions (Cruz *et al.*, 2010). Again, the customer perspective is emphasized. Customers are involved at different dimensions in all interactions between the organization and its' offerings.

The fifth type linked *emotions and decision making*, often in the retail context. Positive and negative emotions are usually related to price, information, assortment, process or interaction, which triggers purchase or repurchase intention. In a study in retail context, Puccinelli *et al.* (2009) state that for example confusing content in a website can induce frustration, which can affect to consumer's decision making negatively. Authors state that retailers should focus on identifying triggers and focus on interactive attributes, which would pace up consumer's favorable decision making.

The sixth type studied *emotions as a driver of experience outcomes* (e.g. loyalty, trust and satisfaction). In other words, different forms of interaction create emotions, which influence of experience outcomes. These studies link emotions to long-term relationships and dynamics between the customer and organization. Mascarenhas et al. (2006), for example, examined emotions as a driver of customer loyalty in several contexts.

The seventh type addressed *emotional links* and *emotional bonds* to, for example, a brand (Mollen and Wilson, 2010; Morgan-Thomas and Veloutsou, 2013), or technology and design (Zomerdijk & Voss, 2011). Emotional links and bonds are a result of customer's interaction with these objects (e.g. brand or technology) (Teixeira et al., 2012). These emotional bonds develop during the customer's interaction with the organization. The role of customer in interaction is active and thus customer perspective is dominant. Both Johnson *et al.* (2009) and Zomerdijk and Voss (2011) argue that an emotional connection strengthens the relationship with an organization and can be seen as a competitive advantage (Gabbott *et al.*, 2011) because emotional bonds usually are hard to break.

The eighth type focused on *various specific emotions per se*. Customers are usually interacting with various forms (e.g. with personel, brand or technology) during their customer journey and thus these relations evoke different emotions. Carreira *et al.* (2013) researched travel experiences and distinguished three categories of emotions: excitement and joy, annoyance and discontentment, and anxiety and fear. Chahal and Dutta (2014) and Arnold et al. (2005) highlighted the importance of identifying the range of emotions customers feel during terrible experiences. Surachartkumtonkun *et al.* (2015) highlighted the various emotions that customer rage arouses (e.g., disgust, hate, and fury).

Table 1. Types of emotions in CX in interactive society.

Category and its focus	How emotion is conceptualized	Example articles
1. Emotions in service encounters and interactions, managed by the firm's personnel *Provider-focused*	As part of front-line interaction, which requires management in online and offline contexts. Firms need to develop the EI of personnel and online practices to successfully manage service encounters characterized by diverse emotions.	Rose et al. (2012) and Martin et al. (2015) examined emotions in online services from the management perspective. Johnson et al. (2009) studied emotions in face-to-face service interactions.
2. Emotional stimuli or cues triggered by the firm *Provider-focused*	As a product of emotional stimuli and cues (three types: functional, mechanical, and humane) provided by the firm to shape and manage customers' emotions.	Wang et al. (2007) examined avatars as emotional stimuli (see also type 3).
3. Emotional response *Customer-focused*	As a response to an element of customer experience, a service process element or event, or other actors, e.g., personnel or other customers	Madzharov et al. (2015) examined how customers respond emotionally to scents in a retail environment. Wang et al. (2007) examined emotional responses to avatars that were considered social cues.
4. Emotional dimension of experience *Customer-focused*	As part of the multidimensional customer experience; others are cognitive and behavioral	Cruz et al. (2010) examined multiple dimensions of internet banking experiences.
5. Emotional aspects of customers' decision making *Customer-focused*	As influencing the decision-making, and particularly the purchasing, process.	Puccinelli et al. (2009) and Sachdeva and Goel (2015) studied how to manage customer experience and emotions in retailing, focused on the buying process.
6. Emotional driver *Customer-focused*	As a driver of long-term customer relationship dynamics because it shapes/affects trust, satisfaction, and commitment	Mascarenhas et al. (2006) examined loyalty and emotions in several contexts (e.g., Disney World, Blyth Industries, and Apple's iMac).
7. Emotional link or bond *Customer-focused*	As a link or bond to a brand, technology, etc.	Morgan-Thomas and Veloutsou (2013) included "emotional aspects" of brand relationships in their model of online brand experiences to

		supplement the dimension technology acceptance dimension.
8. Experienced emotion *Emotion-focused*	As diverse; different emotions are acknowledged as part of the customer experience.	Surachartkumtonkun et al. (2015) compared customer rage across countries.

CX with emotions co-created in digital environment

Many organizations in different fields have shifted to multichannel strategies by providing added value both in digital and offline interaction environments (Rajaobelina, 2018). The digitalization has also pushed researchers to address this shift and 19 of reviewed articles addressed online or virtual environments. These studies were fragmented under several industries including retail, banking, traveling, virtual, e-learning and online search engine mirroring the crucial presence of experiences throughout the interactive society in different contexts and levels.

In online environment, experience is formed in interaction between the individual, ie. customer, and attributes managed by the organization. Interaction in online takes naturally different shapes compared to face-to-face contexts, but still plays a crucial role in CX. Indeed, interaction shapes customer's aroused emotions and emotional attachment in online contexts, which influence customers' decision making (Bilgihan *et al.*, 2015; Lee, 2018), experience outcomes (e.g., loyalty or satisfaction) (Cruz *et al*., 2010), and future purchase intentions (Bilgihan *et al.*, 2015). At best, the online environment can create a flow experience (Bilgihan *et al.*, 2015) if interactive features generate highly positive emotions like fun, enjoyment and pleasure.

Emotions are strongly present in online context being embedded in customer's interaction with both static and social cues as well as the e-environment itself. Organizations may interact with their customers by providing a variety of static stimuli including text-based information, visual imagery, video or audio through their website or other e-environment (see eg. Rose *et al.*, 2012). Customer's interaction with the brand (Meyer & Schwager, 2007) occurs also in online context. Morgan-Thomas and Velautsou (2013) concentrated on online brand experiences that include an emotional affective state in the context of search engines. Their findings show that customer's interaction with brand should evoke emotions in order to build trust and loyalty. This is similar with offline retail context. In addition, organizations can influence to their customers and their emotions through social cues and sociality of their websites. This is highlighted by Bilgihan *et al.* (2015) who stress the importance for organizations operating online to note that to be able to create emotional attachment with the customers, they should shift the focus from static attributes even more to interactive components (Bilgihan *et al.*, 2015). These social components can be provided either as human or machine operated as Wang *et al.* (2007) note that 'customers treat computers as social actors even though they are fully aware that they are interaction with machines'. For example, Wang *et al.* (2007) study on sociality of websites showed that customers' interaction between the avatars influence positively on affect and shopping value of the customers. On the other hand, Gefen and Straub (2003) study in online travel agency context showed that social presence of organization has also an influence on consumer trust. However, the social interaction in online goes also beyond the organization - interaction with other actors may also influence on customer's emotions (Jaakkola *et al.*, 2015). For example, Tu and Zhang (2013) studied experience in a non-trading virtual community where, according to their findings, experience co-creation has two dimensions; emotional and relationship experience. Interaction with others including emotion sharing is an important building block of co-creation value in non-trading virtual community.

Multidisciplinary nature of CX with emotional aspects

The multidisciplinary nature of emotions in CX highlight that emotions in CX is a real matter of professionals and researchers in diverse disciplines and businesses. Our analysis uncovered the multidisciplinary nature, illustrating the presence of emotions in experiences through disciplines. Table 2 presents the main disciplines ranging from marketing to other related disciplines and the focuses regarding emotions in CX. For example, marketing highlights the role of emotions in CX in digitalization and engagement, whereas innovation and technology research emphasizes technological management of CX and its emotional dimension via customer relationship management (CRM) systems, thus also contributing to the emotional aspects of CX. Table 2 also presents the main forums in which research on emotional aspects in CX appeared.

Table 2. Multidisciplinary emotions in CX: disciplines and forums of articles on CX and emotions.

Discipline	Emphasis on customer experience and emotions	Main forums, i.e., journal examples	Number of articles linking customer experience and emotions
Marketing	Digitalization, co-creation, engagement, loyalty, branding, strategic marketing, satisfaction	*Journal of Marketing*, *Marketing Theory, The Marketing Review*	28 (22%)
Service	Co-creation, customer relationship, e-services, emotional engagement, quality, emotional labor, intangibility, competitive advantage	*Journal of Service Management*, *Journal of Service Research*, *Journal of Services Marketing*	21 (17%)
Management	Customer value, emotional bonding, service quality, corporate brand experience, experiential marketing	*Journal of General Management*, *Strategy and Leadership*	32 (25%)
Retail	Online customer experience, experiential consumption, dimensions of retail customer experience, satisfaction, loyalty	*Journal of Retailing and Consumer Services*, *Journal of Retailing*	16 (12%)

Innovation and technology	Customer relationship management (CRM), customer experience management, telecommunication, value creation, social presence, new service development	*International Journal of Innovation and Technology Management*, *Journal of Product Innovation Management*	14 (11%)
Others	E.g., travel experience context, virtual atmosphere	*Entrepreneurial Executive*, *Tourism and Hospitality Research*	18 (9%)
Total			129 (100%)

Researchers and professionals should be aware of how they talk and name emotions in CX, as we identified a wide range of terms used to describe emotions in CX. Many authors did not clearly justify why they had chosen to use, e.g., "emotion" instead of "feeling" or "affective experience," or used terms interchangeably, although many of the reviewed articles use psychology as a theoretical background. For example, several studies referred to Lazarus's (1991) work in psychology on the relationship between emotion and stress, as well as the role of cognition and motivation in emotions. In addition, scholars often applied Pine and Gilmore's (1998) seminal work on the experience economy. Two other key theoretical models that were identified was Schmitt's (1999) 15-item general scale of experience and Mehrabian's and Russell's (1974) PAD-model (pleasure, arousal, and dominance). Schmitt's model was utilized more on quantitative studies whereas the latter was more utilized in qualitative studies.

A rollercoaster between negative and positive emotions

It is valuable to understand, that interactive society is full of diverse emotions, which all need to be examined and managed, in all levels of society. Like our study reveals, a wide range of emotions is linked to CX varying from positive to negative (Table 3). Many articles we analysed concentrated on positive emotions like joy, enjoyment, or pleasure (Zomerdijk & Voss, 2011) or observed emotions based on their valence without specific identification (Carreira *et al.*, 2013; Gabbott *et al.*, 2011). Strongly *positive emotions* like fun, inspiration, and enjoyment were mostly studied regarding hedonic experiences (Liu *et al.*, 2017) whereas studies linked to utilitarian experiences emphasized other types of emotions, like trust and reliability (Banerjee, 2014; Bilgihan *et al.*, 2015). *Negative emotions* were examined in less detail except in a few papers (see Hudson *et al.*, 2017; Surachartkumtonkun *et al.*, 2015). In general, providers were encouraged to focus on avoiding negative emotions (Lucia-Palacios *et al.*, 2016), and the negative effect on experience outcome was outlined (Hudson *et al.*, 2017).

Table 3. Diverse emotions in CX research.

Positive emotions	Negative emotions	Example article

Joy, elation, enthusiasm	Disappointment, frustration, irritation, dislike	Johnson et al., 2009
Delight	Opposite of delight	Chahal and Dutta, 2014
	Rage, disgust, hate, fury, outrage, aggression	Surachartkumtonkun et al., 2015
Excitement, joy, happiness, pleasure, cheerfulness	Discontentment, annoyance, nervousness, fear	Carreira et al., 2013
Positive (not specified in more detailed level in the article)	Negative (not specified in more detail in the article)	Gabbott et al., 2011
Joy, awe, interest, affection, trust		Zomerdijk and Voss, 2011
Good, soft, endearing, friendly	Bad, unpleasantness	Varma, 2012
Peacefulness, excitement	Frustration, stress	Lucia-Palacios et al., 2016

Conclusions and implications

At this point we believe it is fair to say that in the very heart of experiences are emotions. Emotions are embedded to experiences in various ways being simultaneously influencing and being influenced by the experiences. In other words, emotions build experiences via interaction in individual, relational and ecosystem level in society. Thus, we are facing a fascinating research topic, which concerns academicians and practitioners in all disciplines in interactive society. The key contribution for both academicians and practitioners lays in our framework, which opens up our eyes to the embedded complexity of emotions in CX by identifying the types how emotions build CX in diverse relations in society.

We believe our study and framework guides researchers in their quest to investigate emotional aspects in experience. After all, emotions are uncontrollable, difficult to understand and complex to manage. Emotions in experiences are taking place in several relations between the actors, and thus requiring more emphasis on interaction when studying emotional aspects of experience. As we recognize emotions central in experiences in individual, relational and ecosystem level in the interactive society, we are facing a complex set which is hard to manage and control in systems, as well as in the continuously changing society. The framework help researchers to zoom to this complex phenomenon and illustrate the different forms of interactions, where emotions in experience are taking place and building experiences. The types guide researchers to focus their future studies on emotions in experience by providing guidance to position the studies in different contexts to micro, relational and system levels. By revealing the close connection between experiences, emotions and interaction, we highlight that the importance of emotions in interactive society should be taken under serious consideration.

For practitioners, who are aiming to enhance and develop experiences, the managerial usefulness of the framework lays in understanding the contrast between the two main perspectives – organization-focused and customer-focused perspectives – and the different types of emotions in CX. Importantly, the framework clarifies how focus on emotions in experiences actually requires practitioners' concentration on interaction. Framed in a provider-focused way, emotions may be seen as a managerial instrument controlled by an organization. Through this managerial lens practitioners can identify different types of encounters and emotional stimuli that create experiences for customers.

Thus, one important starting point in CX management development is proper recruitment and continuous training and support of employees' emotional intelligence, skills and behavior to successfully manage encounters that include ranging emotions. However, taking this one-sided perspective organizations may be facing a situation where service design, and operations and CX management monitoring may become blurred by the belief that emotions of customers are largely or solely managed by the organization. Indeed, some emotional types of CX are beyond the view and may be even beyond the control of the organization. The customer-focused perspective in framework helps organizations to open their eyes and to avoid such pitfalls. For example, even though organization designs carefully different kind of cues to arouse specific emotions and feelings in a customer (Type 2), it can never be defined, how the customer will respond to organization's cues (Type 3) – emotions are unpredictable and difficult to control. Therefore, practitioners should concentrate not only on creating and increasing positive emotions in encounters but also on understanding customers' emotions in-depth and systematically identifying different types of emotions, like emotions in decision-making, emotional drivers and emotional responses. By doing so, companies and other entities in society will be more informed on what they should and can manage in order to better design and implement cues for more appropriate service to fit customers' emotional types and stages.

We hope that our review provides managers and researchers with a deeper understanding of a growing field, yet encourages them. Given the fragmented current state of research and the complex nature of emotions in experience, several future research topics emerged from this study. We want to encourage researchers to carry out multidisciplinary research combining different methodologies as the importance of emotions in CX is widely noted in various disciplines. These further studies could test and validate our suggested types of emotions in CX. In addition, as our study concentrated mainly on emotions in experiences in individual and relational level, more studies in online and offline environments should be conducted concentrating on the ecosystem level. Moreover, we encourage researchers to pay more attention to the role and dynamics of positive and negative emotions in CX as review revealed clearly that researchers have focused on creating positive emotional experiences and considered negative emotions mainly to be avoided or ignored, although it may be an emotional rollercoaster for customers to go through services.

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Zomerdijk, L.G. and Voss, C.A. (2011), “NSD processes and practices in experiential services”, *Journal of Product Innovation Management*, Vol. 28 No. 1, pp. 63-80.

Appendix 1. Reviewed articles

Author	**Title**	**Publication**
Ali, F;., Kim, W.G., Li, J. and Jeon, H.M., 2018	Make it delightful: Customers' experience, satisfaction and loyalty in Malaysian theme parks	*Journal of Destination Marketing and Management*
Bagdare, S., 2015	Emotional Determinants of Retail Customer Experience	*International Journal of Marketing and Business Communication*
Bagdare, S., and Jain, R., 2013	Measuring retail customer experience	*International Journal of Retail and Distribution Management*
Bagdare, S., 2017	Retail customer experience: A research agenda	*International Journal of Research in Commerce and Management*
Balaji, M.S. Roy, S.K. and Quazi, A., 2017	Customers' emotion regulation strategies in service failure encounters	*European Journal of Marketing*
Başaran, A.S., and Nezahat, E., 2014	Experiential Marketing and Vacation Experience: The Sample of Turkish Airlines	*Procedia – Social and Behavioral Sciences*
Banerjee, M., 2014	Misalignment and Its Influence on Integration Quality in Multichannel Services	*Journal of Service Research*
Beltagui, A. and Gandi, M., 2018	Revisiting service quality through the lens of experience-centric services	*International Journal of Operations and Production Management*
Berry, L.L., and Carbone, L.P., 2007	Build Loyalty Through Experience Management	*Quality Progress*
Bhandari, S., 2016	Understanding the models of customer experience	*International Journal of Research in Commerce and Management*

Bolton, R.N., Gustafsson, A., McColl-Kennedy, J., Sirianni, N.J., and Tse, D.K., 2014	Small details that make big differences: A radical approach to consumption experience as a firm's differentiating strategy	*Journal of Service Management*
Brakus, J.J., Schmitt, B.H., and Zarantonello, L. 2009	Brand Experience: What Is It? How Is It Measured? Does It Affect Loyalty?	*Journal of Marketing*
Bramley, S., Dibben, N. and Rowe, R., 2016	The Utilisation of Music by Casino Managers: An Interview Study	*Journal of Gambling Studies*
Brun, I., Rajaobelina, L., Ricard, L. and Berthiaume, B., 2017	Impact of customer experience on loyalty: a multichannel examination	*Service Industries Journal*
Bustamante, J.C. and Rubio, N-, 2017	Measuring customer experience in physical retail environments	*Journal of Service Management*
Butcher, K., 2013	Differential impact of social influence in the hospitality encounter	*International Journal of Contemporary Hospitality Management*
Cachero-Martinez, S. and Vazquez-Casielles, R., 2017	Living positive experiences in store: how it influences shopping experience value and satisfaction?	*Journal of Business Economics and Management*
Calheiros, A.C., Moro, S. and Rita, P., 2017	Sentiment Classification of Consumer-Generated Online Reviews Using Topic Modeling	*Journal of Hospitality Marketing and Management*
Carreira, R., Patricio, L., Jorge, R.N., Magee, C., and Hommes, Q.V.E., 2013	Towards a holistic approach to the travel experience: A qualitative study of bus transportation	*Transport Policy*
Cayaba,Ma, C., Yuting, C., Jurgens, M., Mathews, P.J. and Sefton, A., 2016	Redesigning emergency rooms into experience rooms	*Marketing Health Services*
Cetin, G., Akova, O., and Kaya, F., 2012	Components of experiential value: Case of hospitality industry	10th International strategic management conference 2014
Cetin, G. and Walls, A., 2016	Understanding the Customer Experiences from the Perspective of Guests and Hotel Managers: Empirical Findings from Luxury Hotels in Istanbul, Turkey	*Journal of Hospitality Marketing and Management*

Chahal, H., and Dutta, K., 2014	Conceptualising customer experiences: Significant research propositions	*Marketing Review*
Chahal, H., and Dutta, K., 2015	Measurement and impact of customer experience in banking sector	*Decision*
Chang, T-Y., and Horng, S-C., 2010	Conceptualizing and measuring experience quality: The customer's perspective	*Service Industries Journal*
Chan, S.J., 2015	A Model Linking Store Attributes, Service Quality and Customer Experience: A Study Among Community Pharmacies	*International Journal of Economics and Management*
Choraria, S., 2015	Managing Emotional Connect between Front-Line Employee and Customers	*Pacific Business Review International*
Choudhury, M., Singh, R. and Saikia, H., 2016	Measuring customer experience in bankassurance: An empirical study	*Market-Trziste*
Cruz, P., Salo, J., Munoz-Gallego, P., and Laukkanen, T., 2010	Heavy Users of e-banking and Customer Experience Management: evidences on intrinsic motivation	*International Journal of Electronic Business*
de Villiers, R. and Po-Ju, C., 2017	Feeling Loyal? The Impacts of Affective Customer Experiences on Business.,"de Villiers, Rouxelle	*International Journal of Business and Economics*
de Villiers, R. and Po-Ju, C., 2017	Achieving Requisite Variety in Customer Experience Research for Improving Marketing Relationship Performances	*International Journal of Business and Economics*
Delcourt, C., Gremler, D.D., De Zanet, F. and van Riel, A.C.R., 2017	An analysis of the interaction effect between employee technical and emotional competencies in emotionally charged service encounters	*Journal of Service Management*
Delcourt, C., Gremler, D.D., van Riel, A.C.R. and van Birgelen, M.J.H., 2016	Employee Emotional Competence: Construct Conceptualization and Validation of a Customer-Based Measure	*Journal of Service Research*

Dennis, C., Brakus, J.J., and Alamanos, E., 2013	The wallpaper matters: Digital signage as customer-experience provider at the Harrods (London, UK) department store	*Journal of Marketing Management*
Deshwal, P. and Phuyan, P., 2018	Cancer patient service experience and satisfaction	*International Journal of Healthcare Management*
Dutta, N.S., 2015	Innovative Product Management Driving Enhanced Customer Experience Management (CEM)	*Telecom Business Review*
Ebrahim, R., Ghoneim, A., Irani, Z. and Fan, Y., 2016	A brand preference and repurchase intention model: the role of consumer experience	*Journal of Makreting Manageent*
Esmark, C.L., Noble, S.M. and Breazeale, M.J., 2017	I'll Be Watching You: Shoppers' Reactions to Perceptions of Being Watched by Employees	*Journal of Retailing*
Faria, S., Ferreira, P. and Carvalho, V., 2016	Are assortment variety and stock-failures management in Hypermarkets and Supermarkets an important factor for consumers to develop a store-type preference, willing to come back and continue to buy?	*Portuguese Journal of Marketing*
Gabbott, M., Tsarenko, Y., and Mok, W.H., 2011	Emotional Intelligence as a Moderator of Coping Strategies and Service Outcomes in Circumstances of Service Failure	*Journal of Service Research*
Gefen, D., and Straub, D., 2003	Managing User Trust in B2C e-Services	*e-Service Journal*
Gierlinger, S., 2017	Every Moment Matters: Cultivating a Culture of C.A.R.E.	*Journal of Healthcare Management*
Gilbert, D., and Gao, Y.F., 2005	A failure of UK travel agencies to strengthen zones of tolerance	*Tourism and Hospitality Research*
Gilboa, S., Vilnai-Yavetz, I. and Chebat, J.C., 2016	Capturing the multiple facets of mall experience: Developing and validating a scale	*Journal of Consumer Behaviour*

Gooding, N., 2008	An alternative player's approach against incumbent strategies to make the most of market share	*Journal of Telecommunications Management*
Grewal, D., Roggeveen, A.L., Sisodia, R. and Nordfalt, J., 2016	Enhancing Customer Engagement Through Consciousness	*Journal of Retailing*
Gudem, M., Steinert, M., and Welo, T., 2014	From LEAN product development to LEAN innovation: Searching for a more valid approach for promoting utilitarian and emotional value	*International Journal of Innovation and Technology Management*
Hakanen, T., and Jaakkola, E., 2012	Co-creating customer-focused solutions within business networks: A service perspective	*Journal of Service Management*
Hamzah, Z.L., Alwi, S.F.S., and Othman, M.N., 2014	Designing corporate brand experience in an online context: A qualitative insight	*Journal of Business Research*
Hong-Youl, H., and Perks, H., 2005	Effects of consumer perceptions of brand experience on the web: Brand familiarity, satisfaction and brand trust	*Journal of Consumer Behaviour*
Hsieh, Y.H. and Yuan, S.T., 2016	An application of technology-based design for exhibition services	*International Journal of Quality and Service Sciences*
Huang, R., Lee, S.H., Kim, H;. and Evans, L., 2015	The impact of brand experiences on brand resonance in multi-channel fashion retailing	*Journal of Research in Interactive Marketing*
Hudson, S., González-Gómez, H.V. and Rychalski, A., 2017	Call centers: is there an upside to the dissatisfied customer experience?	*Journal of Business Strategy*
Hung, Y.C., Zheng, X., Carlson, J. and Giurge, L.M., 2017	The weight of the saddened soul: the bidirectionality between physical heaviness and sadness and its implications for sensory marketing	*Journal of Marketing Management*
Jain, R., and Jain, S., 2008	Towards relational exchange in services marketing: Insights from hospitality industry	*Journal of Services Research*

Jain, R., and Bagdare, S., 2009	Determinants of Customer Experience in New Format Retail Stores	*Journal of Marketing and Communication*
Jain, R., Aagja, J. and Bagdare, S., 2017	Customer experience - a review and research agenda	*Journal of Service Theory and Practice*
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Juettner, U., Schaffner, D., Windler, K., and Maklan, S., 2013	Customer service experiences: Developing and applying a sequential incident laddering technique	*European Journal of Marketing*
Kandampully, J., Zhang, T.T. and Jaakkola, E., 2018	Customer experience management in hospitality A literature synthesis, new understanding and research agenda	*International Journal of Contemporary Hospitality Management*
Keiningham, T., Ball, J., Benoit, .,; Bruce, H.L., Buoye, A., Dzenkovska, J., Nasr, L. Ou, Y.C. and Zaki, M., 2017	The interplay of customer experience and commitment	*Journal of Services Marketing*
Kim, D. and Park, B.J., 2017	The moderating role of context in the effects of choice attributes on hotel choice: A discrete choice experiment	*Tourism Management*
Klaus, P., and Maklan, S., 2011	Bridging the gap for destination extreme sports: A model of sports tourism customer experience	*Journal of Marketing Management*
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Klaus, P., 2017	Luxury patient experience (LPX): review, conceptualization, and future research directions	*Service Industries Journal*
Kranzbühler, A.M. Kleijnen, M.H.P., Morgan, R.E. and Teerling, M., 2018	The Multilevel Nature of Customer Experience Research: An Integrative Review and Research Agenda	*International Journal of Management Reviews*
Kumar, A.. and Anjaly, B., 2017	How to measure post-purchase customer experience in online	*International Journal of Retail and Distribution Management*

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Lee, S., 2018	Investigating antecedents and outcome of telepresence on a hotel's website	*International Journal of Contemporary Hospitality Management*
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Liu, J.T., 2016	Research on Taiwan theme parks' experience marketing strategy and revisit willingness, purchase willingness and recommendation willingness	*International Journal of Organizational Innovation*
Liu, W., Sparks, B. and Coghlan, A., 2017	Fun, inspiration and discovery: from momentary experiences to overall evaluations	*International Journal of Contemporary Hospitality Management*
Lu, C. and Liu, S.J., 2016	Cultural Tourism O2O Business Model Innovation-A Case Study of CTrip	*Journal of Electronic Commerce in Organizations*
Lucia-Palacios, L., Perez-Lopez, R. and Polo-Redondo, Y., 2016	Cognitive, affective and behavioural responses in mall experience A qualitative approach	*International Journal of Retail and Distribution Management*
Madzharov, A. V., Block, L.G., andMorrin, M., 2015	The Cool Scent of Power: Effects of Ambient Scent on Consumer Preferences and Choice Behavior	*Journal of Marketing*
Malthouse, E.C., Calder, B.J., Kim, S.J. and Vandenbosch, M., 2016	Evidence that user-generated content that produces engagement	*Journal of Marketing Management*

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Mann, B., Jit S. and Rawat, J., 2016	The Role of Consumer Personality Trait and Brand Personality Trait in Creating Customer Experience	*The UIP Journal of Brand Management*
Martin, J., Mortimer, G., and Andrews, L., 2015	Re-examining online customer experience to include purchase frequency and perceived risk	*Journal of Retailing and Consumer Services*
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McColl-Kennedy, J.R., Danaher, T.S., Gallan, A.S., Orsingher, C., Lervik-Olsen, L, Verma, R., 2018	How do you feel today? Managing patient emotions during health care experiences to enhance well-being	*Journal of Business Research*
Moeller, J., and Herrn, S., 2013	Shaping Retail Brand Personality Perceptions by Bodily Experiences	*Journal of Retailing*
Mollen, A., and Wilson, H., 2010	Engagement, telepresence and interactivity in online consumer experience: Reconciling scholastic and managerial perspectives	*Journal of Business Research*
Morgan-Thomas, A., and Veloutsou, C., 2013	Beyond technology acceptance: Brand relationships and online brand experience	*Journal of Business Research*
Nunes, P.F., Bellin, J. Lee, I., and Schunck, O., 2013	Converting the nonstop customer into a loyal customer	*Strategy and Leadership*
Palmer, A., 2010	Customer experience management: A critical review of an emerging idea	*Journal of Services Marketing*
Palmer, A. and Bejou, D., 2016	Retrospective: service failure and loyalty: an exploratory empirical study of airline customers	*Journal of Services Marketing*
Park, G.W., Kim, Y., Park, K. and Agarwal, A., 2016	Patient-centric quality assessment framework for healthcare services	*Technological Forecasting and Social Change*
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Permutter, K. and Bradshaw, N., 2016	Addressing today's top brand challenges with sonic identity	*Journal of Brand Strategy*
Poncin, I., Garnier, M.B., Mimoun, M.S. and Leclercq, T., 2017	Smart technologies and shopping experience: Are gamification interfaces effective? The case of the Smartstore	*Technological Forecasting and Social Change*
Puccinelli, N.M., Goodstein, R.C., Grewal, D., Price, R., Raghubir, P., and Stewart, D., 2009	Customer Experience Management in Retailing: Understanding the Buying Process	*Journal of Retailing*
Rahman, Z., 2006	Customer experience management: A case study of an Indian bank	*Journal of Database Marketing and Customer Strategy Management*
Rajaobelina, L., 2018	The Impact of Customer Experience on Relationship Quality with Travel Agencies in a Multichannel Environment	*Journal of Travel Research*
Reydet, S. and Carsana, L., 2017	The effect of digital design in retail banking on customers' commitment and loyalty: The mediating role of positive affect	*Journal of Retailing and Consumer Services*
Rose, S., Clark, M., Samouel, P., and Hair, N., 2012	Online Customer Experience in e-Retailing: An empirical model of Antecedents and Outcomes	*Journal of Retailing*
Sachdeva, I., and Goel, S., 2015	Retail store environment and customer experience: A paradigm	*Journal of Fashion Marketing and Management*
Sato, Y. and Parry, M.E., 2015	The influence of the Japanese tea ceremony on Japanese restaurant hospitality	*Journal of Consumer Marketing*
Schanz, J. and De Lille, C., 2017	Customer Experience Strategy Turned into Hands-On Actions Through a Design Approach	*Design Management Journal*
Sharma, M., and Chaubey, D.S., 2014	An Empirical Study of Customer Experience and its Relationship with Customer Satisfaction towards the Services of Banking Sector	*Journal of Marketing and Communication*

Shim, S.I., Forsythe, S. and Kwon, W.S., 2015	Impact of online flow on brand experience and loyalty	*Journal of Electronic Commerce Research*
Shin, H. and Parker, J.	Exploring the elements of consumer nostalgia in retailing: Evidence from a content analysis of retailer collages	*Journal of Retailing and Consumer Services*
Shobeiri, S., Rajaobelina, L.,, Durif, F. and Boivin, C., 2016	Experiential motivations of socially responsible consumption	*International Journal of Market Research*
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Sangyeon, S., 2015	Identifying on-line shopping experiences from the perspective of shopping motives	*Academy of Marketing Studies Journal*
Stachow, G., and Hart, C., 2010	Exploring place image: Formation and measurement	*Place Branding and Public Diplomacy*
Steiner, F., and Harmon, R., 2009	The Impact of Intangible Value on the Design and Marketing of New Products and Services: An Exploratory Approach	Proceedings of PICMET 09: Technology Management in the Age of Fundamental Change, Vol. 1-5
Surachartkumtonkun, J., McColl-Kennedy, J.R., and Patterson, P.G., 2015	Unpacking Customer Rage Elicitation: A Dynamic Model	*Journal of Service Management*
Tehone, A.B., Zo, H.J. and Ciganek, A.P., 2015	Why do people use social computing? An experiential perspective	*Internet Research*
Terblanche, N.S., 2009	Customer experiences, interactions, relationships and corporate reputation: A conceptual approach	*Journal of General Management*
Terblanche, N.S., 2018	Revisiting the supermarket in-store customer shopping experience	*Journal of Retailing and Consumer Services*

Tosti, D.T., 2009	Customer experience and value: A performance view	*Performance Improvement*
Trudeau, H.S. and Shobeiri, S., 2016	Does social currency matter in creation of enhanced brand experience?	*Journal of Product and Brand Management*
Tu, J., and Zhang, M., 2013	Research on The Effect of Co-creation Customer Experience on Customer Co-created Value in Non-trading Virtual Community	2013 IEEE International conference on service operations and logistics, and informatics (SOLI)
Wall-Mullen, E. and Envick, B.R., 2015	Get a clue: How entrepreneurs can manage the service experience to differentiate themselves and provide value propositions that maximize customer satisfaction	*Entrepreneurial Executive*
van Tonder, C., 2017	More than Just a Stamp in My Passport	*International Journal of Business and Economics*
Varca, Philip E.	Emotional empathy and frontline employees: Does it make sense to care about the customer?	*Journal of Services Marketing*
Varma, R. T. R., 2012	Enhancing and Empowering: Customer Experience	*SCMS Journal of Indian Management*
Vinodhini, G. and Chandrasekaran, R.M., 2017	A sampling based sentiment mining approach for e-commerce applications	*Information Processing and Management*
Wang, L.C., Baker, J., Wagner, J.A., and Wakefield, K., 2007	Can a retail website be social?	*Journal of Marketing*
Wang, S., 2009	Emotional Design Based on Customer Experience Requirement	2009 IEEE 10th International conference on computer-Aided Industrial Design and Conceptual Design. CAID and CD 2009
Wattanacharoensil, W., Schuckert, M., Graham, A. and Dean, A., 2017	An analysis of the airport experience from an air traveler perspective	*Journal of Hospitality and Tourism Management*
Wijaya, A. P., 2017	Role of Experience in Customer Self-Congruity	*Entrepreneurial Business and Economics Review*

	to Maintaining Loyalty: A Study on Fashion Store	
Yang, Z-Y., and He, L-Y., 2011	Goal, customer experience and purchase intention in a retail context in China: An empirical study	*African Journal of Business Management*
Yakhlef, A., 2015	Customer experience within retail environments: An embodied, spatial approach	*Marketing Theory*
Yoon, S.J. and Lee, H.J., 2017	Does Customer Experience Management Pay Off? Evidence from Local versus Global Hotel Brands in South Korea	*Journal of Hospitality Marketing and Management*
Zaltman, G., Olson, J. and Forr, J., 2015	Toward a New Marketing Science for Hospitality Managers	*Cornell Hospitality Quarterly*
Zomerdijk, L.G., Voss, C.A., 2011	NSD Processes and Practices in Experiential Services	*Journal of Product Innovation Management*
129 in total		

PUBLICATION
II

What constitutes patient experience and journey in pediatric health services? Contrasting doctors and caregivers perceptions.

Litovuo, L., Jaakkola, E., Aarikka-Stenroos, L., Kaipio, J., Karisalmi, N., & Nieminen, M.

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What constitutes patient experience and journey in pediatric health services? Contrasting doctors and caregivers perceptions

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Purpose

Healthcare has become one of the most relevant service contexts for academic study (McColl-Kennedy et al., 2017; Frow et al., 2016; Osei-Frimpong et al., 2015; Gallan et al., 2013). Healthcare is of interest to researchers in many different disciplines, including service research: it has an important role to play in advancing healthcare to generate societal and individual wellbeing (e.g. Anderson et al., 2013). With regard to this intersection of service and health, recent calls urge service researchers to examine in particular the concept of customer experience in healthcare (Danaher and Gallan, 2016). The motivation for developing better understanding on customer experience (CX) in healthcare – conceptualized also as patient experience (PX) – is pivotal as experience is connected to how patients engage to their own care, which contributes to the cost-effectiveness of healthcare and positive health outcomes for the individual.

Facilitation of PX is nevertheless challenged by two particular shortcomings in extant understanding of PX. First, sufficient insight on what constitutes PX is still missing. Experience is an elusive concept and researchers have struggled to capture it holistically. In service and marketing literature, CX is considered as a multidimensional construct involving sensory, affective, cognitive, physical, and social dimensions (Verhoef et al., 2009; Schmitt, 1999). In healthcare, services, in which experiences are percept, are personal and sensitive as they are directed to patients' own body and psyche (Danaher and Gallan, 2016). Furthermore, PX emerges in (healthcare) services that *are needed but not necessarily wanted* (Berry and Bendabudi, 2007). Therefore, PX undoubtedly involves a vast range of thoughts, feelings, sentiments, and physical reactions due to the high sense of risk, invasiveness, and personal relevance of these services that may not emerge in other studied CX contexts. Furthermore, in some healthcare contexts such as pediatric and geriatric care, these experiential responses are evoked not only in the individual affected by a medical condition but also their caregivers and next-of-kin, making experiences collective in nature (cf. Jaakkola et al., 2015). *We nevertheless lack comprehensive insight into the multidimensional nature of PX.*

Second, CX emerges and is evolving through the customer journeys (e.g. Lemon & Verhoef, 2016), but such journeys are particularly complex in healthcare which complicates understanding and improving PX. The high degree of specialization in healthcare causes fragmentation of service delivery along the customer journey, and customers (patients and their families) therefore encounter a diverse set of healthcare professionals and other actors during the process of their care (Frow et al., 2014). Although these actors may be organizationally and spatially separated, together they form the patient's customer journey comprising versatile touchpoints (cf. Lemon and Verhoef, 2016) through which PX emerges. Therefore, PX should be approached cumulatively, acknowledging the myriads of touchpoints patients share with a diverse set of actors. *Few, if any studies however provide a comprehensive view of all the relevant touchpoints in a multi-actor environment that patients and their families go through during their customer journeys.*

Furthermore, despite the promotion of the patient-centered care approach in today's healthcare (NHS, 2013), a recent study implies that healthcare professionals still consider value of the healthcare service to revolve around the functional (utilitarian) rather than the experiential (hedonic) aspects of the healthcare service (Osei-Frimpong et al., 2015). Same study argues that patients consider the healthcare value as a total experience. This indicates that healthcare providers' perceptions of the PX and journey may differ from perceptions of the patient. In order to develop PX, this potential discrepancy between patient and service provider perceptions needs to be unveiled (Lemon and Verhoef, 2016).

To deepen extant understanding of, and facilitate the development of CX in healthcare, *the purpose of this study is to develop a comprehensive understanding on the nature of PX and journey as perceived by patients' families as well as their service providers.* We pose three research questions:

- RQ1: What constitutes the multidimensional PX?
- RQ2: What are the relevant touchpoints and actors constituting customer journey in healthcare?
- RQ3: How do healthcare service providers' and families' perceptions of PX and journey differ?

This paper applies the conceptual thinking of CX (Verhoef et al., 2009; Schmitt, 1999) and customer journey (Verhoef and Lemon, 2016) to examine the multidimensional PX. Theoretical background draws on CX and PX research from service research and healthcare literatures to bring insights into PX. We employ an extensive, qualitative study in the context of pediatric healthcare services in Finland to answer above presented research questions. The paper contributes to CX research literature and particularly to research focusing on the intersection between healthcare and service research by providing a conceptual model on PX.

The paper is structured as follows: First, literature on PX and customer journey in healthcare is briefly discussed and a tentative framework is summarized. Second, we present the empirical study. The subsequent sections report the study findings, followed by conclusion and implications for researchers and healthcare managers.

PX and customer journey in healthcare

We start by discussing our key concepts, namely experience and customer journey, in the field of healthcare. Experiences of an individual are internal, subjective, event-specific, and context-specific by nature (Helkkula, 2011). CX is said to be multidimensional by nature (Verhoef et al., 2009; Schmitt, 1999): this implies that customers assess experiences based on *sensory* perceptions including hearing, physical feeling and seeing but also by the *emotions* that are evoked by different situations and encounters. Experiences stimulate person's *physical behavior* and *cognitive* thinking. *Social* dimension implies that customers want and may relate themselves to different social groups and different social groups and single actors influence to an experience.

The concept of PX, that is a particular kind of CX, is an emerging concept and only a few studies have attempted to define and describe the concept in academic marketing and healthcare literature (Danaher & Gallan, 2016; Wolf et al., 2014). A relatively small body of literature in service research stream discusses experiences in healthcare. These studies focus on particular aspect of experience, such as experience quality in hospital, value co-creation processes in a patient-doctor dyad or value co-creation practices that unveil experience rather than examining the (patient) experience holistically (McColl-Kennedy et al., 2017; Frow et al., 2016; Ponsignon et al., 2015; Osei-Frimpong et al., 2015; Gallan et al., 2013). An article that has gained the most traction concerning the conceptualization of PX comes from the healthcare stream (Wolf et al., 2014). It aims to identify the key elements, constructs and themes that are commonly associated with the existing definitions of *PX.* According to this conceptualization work by Wolf et al. (2014), the most critical concepts around the concept of PX are related to emotional and physical lived experiences, personal interactions, continuum of care, shaped by organization and importance of partnership (Wolf et al., 2014). Comparing to how CX literature displays the phenomenon, their conceptualization is rather service provider focused definition and narrow as it focuses mainly on PX creation in hospitals and lacks experiences emerging beyond the service provider settings.

Healthcare is a unique context that has bearing on the nature of experience formation. For example, customers in healthcare, i.e. patients and their families, may need to make important and complex decisions in a short time frame although their status is greatly reduced by an illness or an injury that causes customers to be vulnerable, frightened, often in pain, medicated, exhausted and confused (Torpie, 2014). During their care, patients may go through myriads of distinct points, namely *touchpoints* (Lemon & Verhoef, 2016). All touchpoints in a multi-channel, multi-actor environment are synthesized to a holistic CX (Verhoef et al. 2009) and as individuals' earlier experiences effect on valuation of an experience (Heinonen et al., 2010) they evolve as a chronological *customer journey*. Touchpoints that customer interacts with can be divided to four categories: brand-owned, partner-owned, customer-owned and social touchpoints (Lemon and Verhoef, 2016). *Brand- and partner-owned touchpoints* are designed, managed and controlled by the focal firm (e.g. a healthcare firm) and one or more of its partners (e.g. care equipment supplier). These touchpoints include all facets of the healthcare system and all clinical and non-clinical interactions that occur during the continuum of care (Ponsignon et al. 2015). The latter two touchpoint categories extends the customer journey beyond customer-firm interactions (Haeckel et al., 2003; Maklan and Klaus, 2011). For example, typically illness or condition of the patient requires self-care that takes place in patient's social context and is part of patient's ongoing life to where healthcare companies have little or no control. *Customer-owned touchpoints* include actions that are not influenced by firm, its partners or others (Lemon & Verhoef, 2016). An example would be feeling symptoms of an illness. Due to collective nature of PX (cf. Jaakkola et al., 2015), customer journeys in healthcare includes also *social touchpoints* where individual's experience is influenced by peers (other patients) and other social actors of the given service context (Lemon and Verhoef, 2016). In a pediatric healthcare context parents may have critical role in these social touchpoints being guardians and emotionally attached to the child and making decisions concerning child's care and monitoring or putting self-care into practice.

In sum, this paper views PX as a multidimensional construct described through patient's sensory, affective, cognitive, behavioral and social responses emerging through different types of touchpoints over the customer journey. This approach allows us to examine holistic PX focusing on different parts of the experience and a range of clinical and non-clinical touchpoints. We will next use this framework to analyze our empirical material.

Methodology

In order to examine the multidimensional PX, we adopted an extensive qualitative research design (cf. Patton, 1980) that allows us to exploratively study the concept of PX and to compare families' and their service providers' perceptions on this emergent phenomenon. Our research followed an abductive process (e.g. Reichertz, 2007) as we iteratively moved back and forth between data and theoretical concepts to deepen understanding of both data and theory.

To achieve the aim of our study, we employed a purposive sampling method to select two data sets: one with healthcare professionals and one with patient's parents. The selected data sets provided naturally different perspectives that allowed us to analyze the same phenomenon from two different perspectives and to compare differences between their perceptions. The first data set comprised 23 semi-structured interviews with healthcare professionals from two University hospitals in Finland including 8 nurses, 4 staff nurses and 11 doctors. The data was collected late 2015. The second data set comprised 25 narrative interviews with Helsinki University Hospital's child and adolescent patients' parents, collected between late 2015 and mid-2016. Interviews included, e.g. constructing a timeline for the incident and identification of the experiences and emotions relating to the incident. The participating families belonged to two patient groups: families with a small child with a congenital disorder, and families with a teenage child with recently diagnosed chronic illness. Both parents were participating in 7 interviews and remaining 18 of the interviews were held with mother (n=13) or father (n=5) of the patient. All interviews were recorded and transcribed.

The aim of the analysis was to build and broaden the existing conceptual understanding of PX dimensions and customer journey touchpoints. The two data sets were analyzed through thematic analysis with QMiner Lite focusing on seeking descriptions of patients' experiences within the sensory, affective, cognitive, behavioral and social dimensions of PX and descriptions of touchpoints that are relevant for patients' experience formations. The two datasets provided knowledge on two perspectives of the same phenomenon, providers' and families' perspective. Findings from these two datasets are reported separately to analyze differences between perceptions. To increase the quality of findings the datasets were analyzed from multiple different perspectives that enabled theory triangulation.

Findings

Dimensions of PX

Our data demonstrated how different dimensions of PX manifested in pediatric health services (see Table 1). *Sensory dimension* of PX mainly related to the physical environment of the hospital as noises, colors and lightning in the hospital. Especially, healthcare professionals felt that colors and their clothing have an impact on children's PX, for example, they felt children enjoy seeing a doctor in an animal jacket rather than white doctor's jacket. Parents of the patient were more holistically assessing the whole ambiance in the hospital. Noteworthy, parents described situations in a waiting room where peeping noises were irritating and how unfamiliar devices made an uncomfortable feeling rather than colors. *Sensory dimension* also included pain and painlessness, related to either the illness or clinical operations made in the hospital, or in home, which was only described by the parents. Noteworthy, the sensory dimension of the PX also includes unwanted changes in the physical appearance of the patient; medication and clinical operations can change the body of the patient. Some of the medicine side effects may cause negative experiences as the following quote illustrates:

"Let's say if you get a huge dosage of cortisone after a transplantation your appearance changes dramatically at first, then you get anti-rejection medicine, which increases hair growth dramatically. Then, all of a sudden, when you have been a slender girl, you have become round-faced and mustache starts to grow. It's terrible." – A doctor

The *affective dimension* of PX concerns mainly strong negative emotions such as hate, anxiety, distress, grief and fear but also some positive emotions such as happiness. Noteworthy, most of the negative emotions were related to the early stages of customer journey as families were fearing if the illness will have grave consequences. Generally, negative emotions declined when patients go further in their patient pathways. This was due, for instance, by routine that build up when patients and their families go through multiple similar processes within hospital settings. However, setbacks may raise negative emotions later in customer journey, for instance because of unsuccessful interactions between healthcare professional and a family or cancellations of clinical operations that family has prepared.

"When first it's said that we're getting care and examinations and then it comes to a full stop. I think he [the patient] felt it unpleasant. In that state of health that he was, a month was a long time" – A parent

Interestingly, changes in personnel and in care plans evoked anxiety and even disappointment in patients and their parents and in some cases patients needed to explain their situation for unfamiliar personnel, which caused irritation.

In general, negative emotions dominated the *affective dimension* in PX but the interviewees also reported positive emotions related to PX. Positive emotions were associated with end of a hospitalization period, periods when the sense of emergency stabilizes, or the patient waiting to get back to hospital or some treatment to happen. Positive emotions were mostly described by the parents. One parent described her child's feelings:

"That insulin pump thing is very nice, she now waits that exited. She's like "yey!"" –A parent

Characteristic of *cognitive experiences* were concern about the patient's future with an illness, or having knowledge on what will happen in the treatment process (routine). Therefore, *cognitive dimension* of PX was strongly associated with knowledge. Patient's parents were more able to describe the cognitive processes that patients go through during their customer journeys than healthcare professionals were. It seemed that more increased knowledge on the care processes decreased negative thinking related to future operations for instance. Routine that builds up when patients have lived with the symptoms go through several operations in a hospital were seen as relaxing and providing confidence on coping with the illness.

"Of course when that bleeding started she was very hysteric. But when it happens every day you get used to it, that the patient is just that "it happened again"" –A parent

Behavioral dimension of PX majorly concentrated around the theme of self-care. Both of the interviewee groups described experiences that related either engaging to self-care or disengaging from self-care. Engaging to a self-care was seen as eagerness to practice self-care practices at home and in voluntary self-care clinics. Disengaging from self-care was often related to denial of an illness, getting tired of self-care, or a regression phase in child's behavior. The regression might also happen because of medication side-effects making a child unwilling to do anything. Some interviewees described how children's behavior have been changed dynamically over time.

"There was this one little girl to whom we had to inject medicine every other week. At the beginning, it always took like half an hour as the girl just ran away -- she was kicking and screaming. But, eventually the time it took got shorter and shorter and one day the girl just came to the room, sat down to the care bed and said "give me the shot", and I did. Then she left." –A doctor

Social dimension of PX relates to patients need for peer support and sensing and contagion of feelings of next-of-kin, for example parent's anxiety makes the patient to feel anxiety.

"Child senses if those parents are totally in distress and in anxiety and almost fainting" –A Healthcare professional

"Child have suffered a bit when she has noticed that dad and mom don't really cope as we are so tired..." –A parent

Parents of patients described experiences where patients felt that their illness have made them different from their peers of their normal social network; children of the same age but without an illness. Peer support provided the social relatedness experiences for those patients as they could socialize with peers. Parents also described experiences where they searched stories written by peers from online communities in order to increase their understanding of what will happen in the future. This usually took place close after the diagnosis. Stories that described a life with the diagnosed illness helped families to cope and in some cases even relieved their fear about the future. Long lasting relationships with particular healthcare professionals were also meaningful for the patients, especially in chronic illnesses. Table 1 summarizes health care professional and patient view on PX dimensions

Table 1. Findings on the multiple dimensions of PX in pediatric care.

Dimension of PX	**Healthcare professionals' view**	**Patients' and their parents' views**
Sensory	*Physical environment of a hospital (noises, colors and lightness) and clothing of personnel.* *Pain.*	*Pain and painlessness caused by care and illness.* *Ambiance in hospital (rush, noises and unfamiliar devices).*
Affective	*Range of emotions from fear to happiness.*	*Full range of emotions from strong negative emotions (anger, grief) to strong positive emotions (excitement, happiness).*
Cognitive	*Concern about future with illness.* *Routine of care operations and appointments.* *Confronted as an individual and alone.* *Having positive images of the care, not fears (e.g. fear of injections).* *Understanding the diagnosis and care operations, and playing them reflectively through.*	*Concern and overcoming the concern of future life with an illness.* *Negative mental images related to an illness, future operations and hospitalization periods.* *Thinking of functionality of a care plan, incurability of an illness.* *Being excited about the future and in shock (about diagnosis and causes of an illness).* *Building routine to operations and encounters.*
Behavioral	*Engaging and disengaging to self-care.* *Change in behavior during clinical operations.*	*Engagement to self-care.* *Changes in diet.* *Tiring out on self-care and life with an illness.* *Medication side effects effect to behavior, e.g. unwillingness.*
Social	*Relationships with care staff and next-of-kin.* *Engaging to peer support.* *Being able to connect to friends while in hospitalized.*	*Contagion of feelings between family members.* *Peer support and information finding from online communities.* *Relationships with care staff.* *Feeling different with children of same age.*

Touchpoints Constituting Customer Journeys in Healthcare

The analysis revealed that touchpoints constituting customer journeys in pediatric care extended well beyond hospital settings, as Table 2 shows. Two broad touchpoint categories were identified: 1) touchpoints in hospital settings and 2) touchpoints beyond hospital settings, such as care visits to home, self-caring at school and peer support activities. Touchpoints within hospital settings covered patients' and their families' interactions with healthcare providers and other actors such as hospital teachers and hospital clowns during the hospitalization period. In the Finnish healthcare system, patients can move between a municipal healthcare system and a specialized pediatric hospital that increases complexity of the customer journeys in pediatric healthcare. According to the parent interviews, a routine where patients' met the same healthcare professionals had a positive influence on their experience, but meeting with unfamiliar care personnel sometimes had a negative influence family's experience. Therefore, information sharing and information flow between the actors were also emphasized in the results because of the multiple actors who own the service provider touchpoints. Some of the touchpoints seem to have a more critical impact on the experience, for example, healthcare professionals emphasized the first contact at the hospital, as it had a great impact on the behavior of the patient in the next appointment. One critical touchpoint in customers' journeys is when the patient hears their diagnosis, this usually triggers emotional experiences in the patient. However, according to the healthcare professional interviews it is the feel of deflection rather than the diagnosis or illness itself:

"It is the same process as in any kind of crisis that when you get the diagnosis, first you deny it and feel fear and sadness, and then you accept it and so forth. But it of course depends on the age when you get the diagnosis, and effects [of the illness]. I mean, if you're just a baby [when you get the diagnosis], you have lived with it your whole life [with the illness] and you don't know about anything else." -Healthcare professional

Beyond the hospital setting, journey and its touchpoints are mainly facilitated by actors in patients' social network including patients' parents, friends, fellow patients and peers. Results of the patients' parent interviews showed clearly that illness of a child affects broadly the lives of family members. Parents of an ill child are often responsible of the self-care plan execution and medicating the child. Parents are also in a major role in the start of the customer journeys as they usually notice the first symptoms. Therefore, customer journeys usually start from patient owned and social touchpoints, that were described by parents. Subsequently, other social actors affect patients' journeys, such as communities (e.g. Facebook group for patients with a particular illness) and third sector healthcare societies (e.g. diabetes association). These actors were also seen as important in the system that influence to the patients and their families experiences, particularly influencing to the social dimension of the PX. Communities, particularly online communities, were described more often early in customer journey, after diagnosis, whereas interaction with third sector healthcare societies were more common described to be later in the journey.

Table 2. Touchpoints constituting customer journeys in pediatric health services.

Journey touchpoints	**Healthcare professionals' view**	**Patients' and their caregivers' view**
Within hospital setting		
Service provider touchpoints	• *Interactions during hospitalization period with e.g. doctors, nurses, psychologists, therapists and laboratory workers.*	• *Focusing on different phases of hospitalization period (municipal, private and pediatric hospital) interactions with e.g. doctors, nurses, therapists, social workers and secretaries.*
Patient-owned and social touchpoints	• *Mostly at least one of the parents is participating to the care and influences PX touchpoints.* • *Touchpoints with other patients.*	• *Family touchpoints took place in multiple points of hospitalization period.* • *Hospital visits of relatives and friends and touchpoints with other patients and their families.*
Touchpoints with other actors (partners)	• *Touchpoints with hospital pastor, teachers, interpreter and hospital clowns.*	• *Touchpoints with baby sitters, teachers, attendants, career instructors, cleaners, hospital clowns, priests and care equipment technicians.*
Beyond hospital settings		
Service provider touchpoints	• *Calls between healthcare professional and parent.*	• *Care visits to home (e.g. physiotherapist visits) and interactions to hospital online or via phone.*
Patient-owned and social touchpoints	• *Symptoms and seizures at home, self-care at home.* • *Touchpoints with child's own support network, third sector society actors and online communities.*	• Touchpoints with child's own support network including extended family and friends. Noticing and having symptoms, moments of everyday life changes (e.g. dietary change). Self-care and monitoring (including injections, medication, using care equipment, rehabilitation activities.) • Touchpoints with third sector society actors (e.g. diabetes association) and online communities (Facebook groups, blogs and forums), religious societies including peer support, information, stories of peers.
Touchpoints with other actors	• *Touchpoints with healthcare actors in schools, social*	• *Touchpoints with educational actors.* • *Touchpoints with alternative care professionals, pharmacies, care*

	welfare providers, care equipment suppliers.	*equipment suppliers, social welfare actors.*

Discussion and conclusions

This study sought to develop a comprehensive understanding on the nature of PX and journey as perceived by patients' families as well as their health service providers. Based on our findings, we developed a model (Figure 1) that illustrates how PX is constructed through sensory, affective, cognitive, behavioral and social dimensions (inner circle in Figure 1) and by the relevant actors in each touchpoint categories in PX (outer circle in Figure 1).

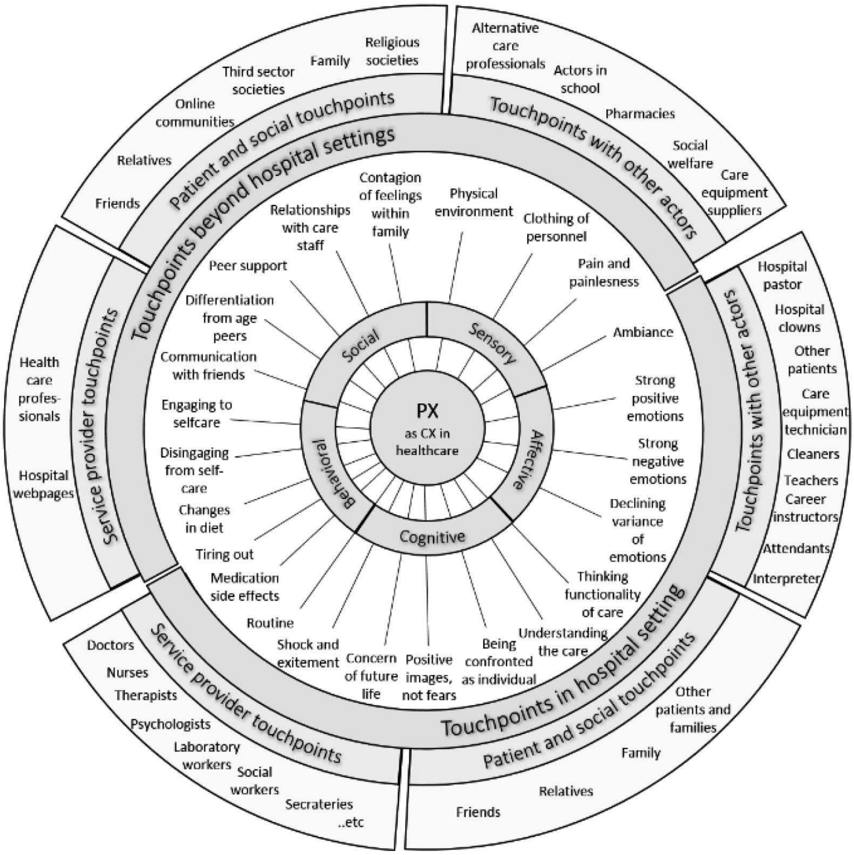

Figure 3. Model of PX dimensions, touchpoints and actors.

This paper contributes to the growing body of CX research (e.g. Lemon and Verhoef, 2016) by mapping the particular CX, namely PX. Thus, it contributes particularly to research focusing on the intersection between healthcare and service research (e.g. Anderson et al., 2013; McColl-Kennedy et al. 2017, Danaher and Gallan, 2016). First, this study examined what constitutes the multidimensional PX. Findings of this study demonstrated how PX is constructed by sensory, affective, cognitive, behavioral and social dimensions and in that way provides a comprehensive understanding of PX that has been lacking in service research. This study generated contribution to CX dimension research (Verhoef et al. 2009; Schmitt, 1999) by extending empirically our existing knowledge of dimensions of CX and elaborating how dimensions are constituted in a healthcare context. For example, in contrast to other CX contexts, such as retail (e.g. Schmitt, 1999), cognitive dimension of PX is positively influenced by routine building over time and foreseeability rather than surprise and intrigue, and behavioral/physical dimension is constituted by the unwanted physical transformations due offered services. This study also generated contribution to service research in a healthcare context (McColl-Kennedy et al. 2017; Osei-Frimpong et al., 2015; Anderson et al., 2013) by investigating constitution of PX and by further developing the concept.

Second, this study analyzed touchpoints and actors constituting customer journey in healthcare. Our study revealed that customer journey in healthcare encompass varying touchpoints within and beyond the hospital settings accompanied with several different actors. We contributed to customer journey literature (e.g. Lemon and Verhoef, 2016) by providing insights from a specific service context, healthcare context, where external touchpoints strongly influence to CX in varying points of a customer journey. We found that these external touchpoints also take place later in customer journey (e.g. patients participate to peer support) rather than during or right after the service provision as some prior studies suggest (see Lemon and Verhoef, 2016). This study also generated contribution to service literature in a healthcare context (e.g. Frow et al., 2014; Ponsignon et al., 2015; Osei-Frimpong et al., 2015) by providing insights into actors that influence to experience in healthcare and by opening up the touchpoints in pediatric healthcare context. For example, this study demonstrated that PX emerges through the multiple encounters and interactions with varying actors in the healthcare space but also through interactions with more voluntarily chosen actors such as peers and online communities.

Third, we compared healthcare service providers' and families' perceptions of PX and journey. Our analysis revealed that healthcare providers' perception of PX was rather narrow leaving touchpoints beyond hospital settings unrevealed. Caregivers also described a much broader set of actors. Dimensional comparison revealed behavioral matters such as tiring out to life with an illness and much richer cognitive dimension perceived by caregivers. By opening up the differences between families' and service providers' perceptions we generated contribution to service practice research in a healthcare context (e.g. Osei-Frimpong et al., 2015).

Managerial implications

Positing patient-centered care principles as one of the today's healthcare objectives it is important that healthcare managers adopt appropriate strategy that can improve their customers PX. The focus on facilitating multidimensional, yet holistic customer experience, enable healthcare managers and providers to enhance and retain high-levels of patient engagement and increase the cost-effectiveness of the healthcare services provided.

To enhance sensory dimension of PX, healthcare managers should focus on the overall ambiance of a hospital. This study suggest that unfamiliar devices in hospital settings may evoke some anxiety and loud and distinct noises can cause irritation, especially for patients waiting for their appointment. To enhance affective dimension, healthcare managers should enhance routine buildup and pay attention to patients in their first visits. In addition, first contact employees should be provided with necessary tools and knowledge to handle patients in crisis to enhance total PX through the journey. To avoid unwanted influences of behavioral dimension of PX, healthcare providers should consider how they can support patients' self-care and coping with an illness. To enhance cognitive dimension of PX, proactive mental support should be offered for patients in order to support and prevent patients' concerns and to prevent unwanted imaginary experiences. To enhance social dimension, this study suggest that healthcare professionals should extend their view beyond their service settings and try to understand the needs that patients and their families have in their everyday life. Although healthcare service providers do not own touchpoints beyond hospital and may have only a little possibilities to influence on an experience creation in some of the touchpoints, they can support them by, for example, providing proactively information on other actors such as online communities and third sector societies.

Limitations and future research

We acknowledge there are some limitations concerning our study. Although we collected an extensive data set, our insights are limited to one geographical context and to few illness groups that may influence to generalizability of our findings. We encourage further studies in other illness groups, with patients of different age and different geographical context. Our informants were purposefully chosen to present a variation of illness groups with the help of healthcare specialist from a University Hospital, this may have caused biased sample towards choosing cases that are more successful. To avoid biased sample, researchers could try to find participants through third sector societies and online communities of a certain illness.

With regard to future research, we urge researchers to explore holistic PX with methods that captures dynamically the development of dimensions of PX. It would also be managerially relevant to examine negative emotions in PX as they may have an influence to patient's and family's engagement on self-care. In addition, further research is needed in order to understand how and to which dimensions of PX each of the actors found in this study influence.

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Ecosystem approach on medical game development: the relevant actors, value propositions and innovation barriers

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Ecosystem Approach on Medical Game Development: The Relevant Actors, Value Propositions and Innovation Barriers

Full paper

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ABSTRACT

This paper explores the medical game ecosystem and reveals the reciprocal value propositions of the relevant actors of medical game ecosystems, as well as barriers that may be complicating or hindering realization of the value propositions. The case comprises an emerging medical game ecosystem in Finland in the traumatic brain injury (TBI) rehabilitation context. This study presents 12 actor groups, their value propositions, and the barriers between the actors. This paper gives a comprehensive view of the actual medical game ecosystem that is needed to utilize the full potential of gamification and serious games in the health care sector.

CCS CONCEPTS

Human-centered computing → Interaction design → Interaction design theory, concepts, and paradigms

KEYWORDS

medical game, health care, ecosystem, value proposition, innovation barrier

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1 INTRODUCTION

Healthcare costs in Western countries are rising to an alarming rate, and a need for preventive measures is obvious [1–3]. As financial pressure is combined with aging and growing populations and the proliferation of chronic diseases, health care providers, payers, and governments, among other stakeholders, are forced to reform health care systems and their operating models [4]. Importantly, there is a global need for delivering higher-quality, more accessible, and cost-efficient health care services [5,6]. Simultaneously, the potential of games as platforms and as tools for serious purposes rather than entertainment is being increasingly recognized [7,8]. These kinds of serious games in health care, namely medical games, could provide a way to achieve the triple aim health care is facing now (improved health outcomes, better patient care, and lower costs) by activating and engaging patients to manage their own health and care [9]. Positive results toward this have already been gained through empirical studies on gamification in health and wellness increasing the motivation of patients for their own care [10]. Moreover, medical games can be used as information-enabled self-management mechanisms that enable the shift from episode-based hospital treatment to continuous care, which is especially required to treat chronic illnesses [cf. 9], driving for reduced care costs for health care organizations. Even though researchers have shown increased interest toward gamification in health care, the literature lacks studies focusing on the actors participating in the development of serious games in health care and their motives to be a part of the promotion of health care gamification.

Development of serious games like medical games or other applications of digitalization may converge multiple traditionally-separated industries [cf. 9]. Medical games that are at the crossroads of games and health care sectors may therefore comprise a complex ecosystem. To use the full potential of gamification and medical games in the health care sector, there is a need for closer examination of the actual medical game ecosystem. Therefore, this paper addresses medical games as a tool for better health care. It focuses on exploring the medical game ecosystem and examines the diverse set of actors participating in game development. This paper provides useful information to actors in the health care gamification field (e.g. people working in game design to improve health and health care, health care professionals, and regulatory parties), and helps them to understand for whom they are developing the game and which parties are required in the medical game ecosystem. We will apply the service ecosystem approach, and respond to calls by Rantala and Karjaluoto [11] to expand the theory of value co-creation in health care into service ecosystems.

Motivation of actors to participate and engage with the medical game ecosystem arises from the reciprocal benefits, namely the value propositions that variant types of actors within the ecosystem offer and seek [12]. Therefore, besides identifying the actors participating to the game ecosystem, there is a need to examine the complex set of value propositions and understand how the ecosystem works. When value propositions are perceived as mutually beneficial among the ecosystem actors, they act as drivers for service exchange. However, if the value propositions are misaligned, then, assumedly, barriers arise, and actors need to modify their value propositions to achieve mutual benefits so the ecosystem can develop and prosper. Even though these barriers can seriously complicate health care game development, they have remained unstudied. Better understanding of barriers that might complicate developing health care games would enable game developers and related ecosystem actors to avoid and overcome undesirable barriers. In addition to exploring the medical game ecosystem, we address the need to reveal the reciprocal value propositions and the barriers complicating realization of these value propositions within the medical game ecosystem.

The research objectives are divided into three research questions (RQs): *RQ1) What are the focal actors participating in value co-creation in the medical game ecosystem? RQ2) How does each actor contribute to the medical game ecosystem via value propositions? RQ3) What are the barriers that complicate or hinder realization of the value propositions within the medical game ecosystem?* To solve the RQs, the focal study adopts a single case study and examines the ecosystem of a medical game in the case of traumatic brain injury (TBI) rehabilitation. We apply established qualitative methods that have been applied to health-care-related ecosystem analyses [13].

The article is structured as follows: First, following this introduction, we review the literature concerning ecosystems, value co-creation and propositions, and innovation barriers. Second, methods of exploring the ecosystem, value propositions, and barriers are presented. Third, results of the study are presented. Fourth, discussion of the topic is presented.

2 THEORETICAL BACKGROUND: INTEGRATING SERVICE ECOSYSTEM, VALUE CO-CREATION, AND INNOVATION BARRIER APPROACHES

2.1 Ecosystem Approach

The ecosystem approach has gained a great deal of recent traction in disciplines such as strategic management [14] and innovation and technology management [15–17]. The crux of the ecosystem approach is that instead of taking an isolated view, the focal set of actors (the firm/organization, product, etc.) is examined as a part of a broad and interdependent systems environment. The concept of *ecosystem* was originally adapted from biology to the business context by Moore [18], who coined the term *business ecosystem*. More recently, a broad range of labels have been presented to capture the nature of this approach. These include conceptualizations such as the *innovation ecosystem* [14,17], *platform ecosystem* [16,19] and *service ecosystem* [20–22]. In this paper, we apply the service ecosystem approach.

The service ecosystem approach draws from service-dominant logic (SDL) and underlines systemic value creation within a network of actors [23]. It emphasizes the contribution of all actors, including manufacturers, suppliers, retailers, customers, social networks like family and friends, and actors, like national governments, that control or allocate public resources [24], in value creation. SDL approaches ecosystems from a balanced, generic and actor-to-actor perspective [20], rather than positing entities as *producers* creating value and *consumers* destroying value. This normalization of entities has moved the conceptualization of networks to one of service ecosystems [25]. Ecosystem actors are co-creating value for the benefit of all by providing different applications of resources to the ecosystem (e.g. serious games to health care).

The SDL's service ecosystem view also elaborates the social aspects of resource integration and emphasizes the influence of institutions and the institutional logic of the value co-creation within a complex system [21,26]. Ecosystem actors participating to the service ecosystem are interconnected through shared institutions and the provision of service [24,26]. Therefore, the ecosystem is framed by a set of institutions, such as culture and behavioral norms, that guide the service exchange. This means that evaluations of a co-created value are always actualized in a specific context framed by the institutions [27]. Therefore, ecosystems and focal actors participating in value co-creation should be examined in a given context. As this paper concerns the medical game ecosystem, literature related to health care ecosystems are reviewed next.

2.2 Health Care Ecosystems

Naturally to all service ecosystems, co-creation of value is fragmented to many actors, and health care ecosystems typically comprise very divergent actors. Even though the actors of a health care ecosystem are heterogeneous, they all share a common goal of patient wellbeing [28].

Research on health care ecosystems is still nascent, but some studies can be found in the contemporary literature. McColl-Kennedy et al. [29] relate health care ecosystem to service-dominant logic and to the customer journey approach, in which customers, or patients, go through multiple encounters with several different actors. Frow et al. [30], also following the service-dominant logic stream, discuss co-creational practices within the ecosystem and elaborate on actors in the health care ecosystem. They suggest that the health care ecosystem comprises actors from different corners, including patients and their families and friends, other patients, health care professionals, hospitals, health support agencies, professional associations, health insurers, health care authorities, government agencies, and regulatory bodies. Service-science-related literature [28] suggests that, in addition to people and organizations, a health care ecosystem also comprises technologies that the ecosystem uses. Health-care-related literature [31] indicates that patients have multiple encounters during their care, but the actors concentrate purely on the health care sector, leaving the ecosystem in the least viable state. In human-computer interaction (HCI) research, Doherty, Coyle, and Matthews [32] elaborate on the importance of cooperative teams, including HCI professionals, health care professionals, and clients in health care technology development. It can be concluded that health care ecosystems are complex and comprise a variety of actors.

SDL draws from the idea of togetherness; actors in the ecosystem use their knowledge and skills to provide benefits or value reciprocally to others and themselves [9]. Therefore, it differs from the traditional economic measures of value and represents value deriving through the use of available resources [21]. The co-creation of value and value propositions within service ecosystems are discussed next.

2.3 Co-Creation of Value and Value Propositions Within Service Ecosystems

Value in ecosystems emerges through interactions and collaboration between ecosystems' actors, which are seen as resource integrators and co-creators of mutual value [24]. The value processes therefore take the form of mutual service exchanges that are created by collaboration [20,25] and facilitated by the capabilities and assets of actors in the ecosystem [33]. The service exchange occurs because no one actor in the service ecosystem has all the needed resources to operate in isolation from the surrounding world [12]. Therefore, actors need and can invite other actors to assist in service offering production via reciprocal value propositions and are required to participate in resource integration practices [12,20]. The real value emerges through practices and in the use of resources in the given context [34]. For example, Doherty, Coyle, and Matthews [32] discuss the advantages that health care professionals and health care practitioner clinics may bring to technology designers by participating in technology design in health care.

Recently, research on value propositions in the stream of service ecosystems has suggested that the concept of value propositions should shift from the dyadic view of a company proposing value for its customers to a more systemic approach including all stakeholders in an ecosystem and their value propositions [12]. As medical games are at the crossroads of games and health care, there is a diversity of reciprocal value propositions from various type of actors within the ecosystem. If these value propositions are perceived as mutually beneficial to the actors in ecosystem, then the service and resource exchange occurs and value propositions act as a driver for service exchanges. However, sometimes the value proposed is not seen as mutually beneficial to the actors (meaning that value proposed of other actor is not what the other sought) and the invitation for a service exchange may be rejected [12]. If the value propositions are misaligned, barriers assumedly arise, and actors need to modify their value propositions to achieve mutual benefits so the ecosystem can develop and prosper. Next, we will review the background of factors that hinder and complicate the realization of value within the ecosystem.

2.4 Barriers Within the Ecosystem: Applying the Innovation Barrier Approach

There are a variety of matters that hinder and complicate the realization of value propositions, particularly with regards to novel, innovative offerings. For instance, the degree of novelty of the focal innovation can trigger diverse innovation barriers [35]. For example, radically new offerings often lack developed networks and ecosystems, complicating their development and commercialization.

To examine these hindrances, we apply an innovation barrier approach. The concept of an innovation barrier captures a range of issues of different degrees, such as bottlenecks, challenges, concerns, dangers, difficulties, obstacles, and problems that inhibit, hinder, complicate, or impede innovation and lead firms to fail in innovating (see the review in [35]). Piatier [36] suggested an established distinction between internal barriers that a firm can influence and external barriers that are partially or completely beyond its control. Internal barriers relate to a firm's or organization's management and include issues related to financial resources, competencies, and mindsets. External barriers typically originate from a firm's environment and emerge when it interacts with other actors in the ecosystem; these barriers concern the behaviors of competitors, customers, partners, and other players [35,37,38].

Barriers are largely context- and actor-type-dependent, since different industries and different-sized players face different barriers [35,37]. Furthermore, the degree of novelty of the focal innovation is reflected in the emergence of barriers. In the case of radical innovations, the most significant internal barrier is related to restrictive mindsets [35]. The major external barriers concern undeveloped networks and ecosystems, such as the need for different network actors [39], inertia among actors [40], and complex industrial embeddedness as manifested in the interdependence of actors, which makes it difficult to introduce innovations that would require other organizations to change their behaviors [41].

3 METHODOLOGY

A qualitative ecosystem mapping approach was chosen to tackle the multifaceted and complex nature of the medical game development in an ecosystem [42] as it is an established method to examine emerging health care ecosystems [13]. The study builds on an exploratory case study approach [43] to identify the actors that participate in value co-creation and the respective value propositions and barriers that influence on the process. The empirical case comprises the emergence of a neuropsychological medical game ecosystem in the traumatic brain injury (TBI) context in Finland. Even if the emergence of the medical game ecosystem is only in its initial state, Finland is a pioneer in health technologies and e-health solutions [44], as well as a European hot spot in terms of the entertainment game industry.

Data was collected through thematic interviews to nurture the open-ended and exploratory nature of the study. A total of 24 interviews were conducted with 25 interviewees between November 2014 and April 2015. The expertise of the interviewees is divided into three main areas: games and technology, health, and health and games funding. The informants in the field of games and technology represent a university, a university of applied sciences, three companies that operate in the medical game industry, two associations related to health innovations, and four game companies inspecting the business opportunities in the medical games sector. The informants in the field of health comprise representatives from three rehabilitation organizations, a university, a university hospital, and a brain injury association. The informants in the funding category represent two private and two public health and medical sector funding agencies. These interviews were not focused on certain medical games or technologies, but provided insight into the transformation in which medical games and digitization shape the development of health care, and thus TBI rehabilitation. The interviewees were identified through a snowballing technique [42] until saturation, when certain patterns started to repeat themselves, bringing less and less new information relevant to the research questions.

The analysis of the data was directed by the research questions to identify relevant actors, value propositions, and innovation barriers. Each interview was transcribed and converted into written form to facilitate analysis. The transcriptions were read through several times interactively (while underlining and making notes). After that, they were organized with the help of NVivo into themes of actors, value propositions, and innovation barriers. Each of the themes were considered higher-order categories of related sub-themes and notions. Some of the identified sub-themes were more explicit, while others were more implicit. For example, the coding of innovation barriers required identifying texts that concern various disabling or enabling effects on game ecosystem development. Similarly, the coding for value propositions was aimed at identifying texts that related to expected and experienced costs, benefits, aims, goals, and potential uses of the medical game and the actors' positions in the ecosystem.

In the second round of analysis, all the sub-themes raised in the interviews were listed in an Excel spread sheet with the original citation and a condensed explanation of the challenge. For example, in the first round of coding, 59 different notions regarding innovation barriers were identified. These 59 notions were then further condensed to more general statements by combining their major features, resulting in twenty main challenges. These were then further coded into four sub-themes: challenges associated with the validation process, challenges associated with the commercial aspect, challenges associated with health care innovation structures, and challenges associated with user experiences.

4 RESULTS OF THE STUDY

4.1 The Composition of a Medical Game Ecosystem and Diverse Actors

Our analysis revealed the diversity of ecosystem actors who can participate in value co-creation in a medical game context. It seems that medical game companies are in a key position to act as a hub for other focal actors in the ecosystem. The composition of the medical game ecosystem also included health care organizations and professionals, patients and their next-of-kin, private and public funding agencies, insurance companies and social insurance institutions, regulatory parties, and ecosystem complementors such as academic institutions and different associations related to the industry. Table 1 summarizes the actors identified and their contributions to value co-creation.

4.2 The Contributions of Focal Actors to Value Co-Creation

In this section, we present our findings related to focal actors' contributions to the medical game ecosystem. We consider the contribution of each actor from the viewpoint of reciprocal value propositions in the health care ecosystem. We consider value propositions as value offered by an actor and value sought from the ecosystem. This offers several insights into the nature and wellbeing of the medical game ecosystem. Each ecosystem actors' contributions are presented next.

4.2.1 Serious Game Companies. Serious game companies are offering novel value propositions to the ecosystem by providing technological tools that reform the operations and mechanisms of the health care ecosystem. In the core of their value propositions is reducing the costs of care from other ecosystem actors, particularly health care companies' care costs.

Therefore, the value proposition of serious game companies is responding to the need of health care companies to reduce care costs. Serious game companies offer value to health care companies by offering a tool to activate and engage their patients with their own care. Medical games offered are capable of increasing patient motivation. For example, in rehabilitation, this reduces the care pressure of health care organizations and reforms operating models from episode-based health care in hospitals to patient-led self-care. Furthermore, serious game companies are offering new and innovative therapies and treatments for the use of health care organizations and patients. For individual patients, serious game companies offer increased wellbeing.

The core value sought by serious game companies from the ecosystem is business growth. Therefore, even if a medical game could improve individuals' lives significantly, the value proposition is not mutually beneficial as it might not be commercially feasible to develop. One interviewee, a co-founder of a medical game company summarized the situation:

> "In a way in this case, as you probably understand, the extent of the market is ridiculously small. I have calculated that approximately one out of a million people need the game currently."

The market for medical games must be competitively compelling to lure serious game companies to enter the medical game sector. Thus, proving that the medical game industry has commercial potential can lead to a virtuous circle, attracting talented entrepreneurs and resulting in success stories.

Table 1: Summary of Actors Involved in and Their Contribution to Value Co-Creation in a Medical Game Ecosystem

Diverse actors involved in value co-creation in the medical game ecosystem		**Actors' contribution to value co-creation**	
Actor types	**Focal ecosystem actors participating to value co-creation**	**Value offered by actor to the ecosystem**	**Value sought from the ecosystem**
Serious game companies	Medical game companies	Cost savings Patient engagement New therapies and treatments Increased wellbeing	Business growth
Customers	Health care organizations	Access to users Health care expertise	Cost savings via process enhancements, increased empowerment of patients Automated health care
	Health care professionals	Advisory knowledge on health care and patients' needs Recommendation power to patients and administrators	Tools to better treat patients Professional assets
Patients as end users	Patients and their next-of-kin	Clinical trials and game testing Knowledge on user needs, experiences, and preferences Recommendation power	More effective and accessible rehabilitation Support and feedback about care and visibility of progress
Funders	Private funders (e.g. angel investors)	Contacts to the field Health care business know-how	Return on investment
	Public funding agencies	Contacts Business know-how	Global and scalable business
	Insurance companies	Authority to guide customers Existing customer base	Cost cutting via health care process enhancements
	Social insurance institutions	Authority to guide customers Existing customer base	Cost cutting via health care process enhancements
Regulatory parties	Various national organizations (e.g. Valvira in Finland)	Credibility to the game	Safe and effective new treatments
Ecosystem complementors	Academic institutions	Academic knowledge needed for validation of the game Connecting health care and game worlds	Appreciation for institution Funding and ability to conduct research
	Game and technology associations, serious games networks, incubators	Know-how on association's related field Contacts and ability to connect actors	Advances in market emergence
	Patient associations	Information and recommendation power Expertise on illness or patient group	Better life and treatments for the patients

4.2.2 Health Care Companies and Professionals. The value proposed by health care companies and professionals for the medical game ecosystem derives from them being customers themselves and from providing knowledge of rehabilitation and patient needs. Health care professionals may leverage their understanding of the rehabilitation and treatment processes for the purposes of game development for serious game companies. Thus, health care professionals can be some of the most important actors for the wellbeing of medical game ecosystem.

> “The most important partners for us have been clinicians. They help to develop a product, understand the patient needs, and understand the field in general.” -A medical game company co-founder

Health care professionals are particularly important for implementing medical games in their rehabilitation practices and as influencers recommending the game for their patients. Health care professionals can use their authoritarian role to recommend the medical game to support self-care and as a form of treatment. Furthermore, health care organizations can influence the administrators of the health care sector by recommending the medical game be validated as an applicable treatment method.

In general, health care organizations offer value for serious game companies in the form of access to the end users of their application, patients. This study revealed that especially private hospitals are beneficial for serious game companies since they can offer a pilot platform for testing medical games more easily than public health care organizations.

The value sought by health care organizations from the ecosystem is advances in the process of increasing the patient’s role in treatment and rehabilitation and transferring treatments from health care organizations to people’s homes. This enables health care companies to cut care costs. The medical game also enables more tailored and individual rehabilitation, and facilitates a shift from individual rehabilitation to group rehabilitation because of the data it produces.

In addition, medical games enable health care professionals to allocate their resources more efficiently. For example, health care professionals do not necessarily have to stand next to a patient and give instructions, which can cut costs. One of the interviewees speculated on a shift toward *automated health care*. She pointed out that the data gained from medical games could be utilized to reduce the amount of those patients who need face-to-face meetings with health care professionals, further reducing costs and accelerating the efficacy of health care processes. Furthermore, provision of useful analytics was identified in several interviews as one of the most important value propositions for health care professionals. The value proposition of medical game development for clinicians is that a game facilitates the allocation of resources and makes the whole rehabilitation process more transparent and manageable. Thus, games can be an essential part of the reform of health care due to their features regarding objective health care data, enhanced patient participation, and self-efficacy, which are likely to become even more valued in the future. The greatest success could be achieved by recognizing those parts of health care processes or rehabilitation that are most tedious or cognitively the most burdensome, and developing and implementing a medical game that could potentially enhance treatment the most. By taking advantage of technology and using it to free the resources of therapists, medical games may also be used to hasten the start of the rehabilitation and could potentially benefit those patients waiting for the start of their rehabilitation

4.2.3 Patients as End Users. Besides possible monetary value, end users offer the ecosystem, and especially to serious game companies, benefits like knowledge of user needs, experiences, and preferences; recommendation power; and a platform for game testing and clinical trials. User needs, experiences, and preferences offer developmental value for game companies. The provided game can be also used for clinical trials, for example, to study functionality of treatment. In those cases, patients offer continuous objective data for analysis of the functionality of the treatment.

The most important value propositions a medical game provides to end users are a rewarding experience and an immediate feeling of health benefits. This rewarding mechanism is something that current, clinically-validated, computer-based methods have not been built upon, instead providing users concrete feedback about progress and reinforcing the motivation to engage in the exercise regularly:

> “When you're mentally engaged in something, the physical task of doing something becomes a lot less tiresome.” -A medical game company co-founder

With medical games, patients can measure their development more frequently as they are provided with frequent feedback and convenient access to it. Medical games may also work as a link between patients and doctors, encouraging continuous communication. By changing the value proposed in episodic face-to-face meetings with therapists, patients can feel more control over their own scheduling, yet the therapist can still intervene and change training programs when needed.

4.2.4 Private Investors and Public Funding Agencies. Public funding agencies are supplementing the financing method of companies together with private investments. Funders also offer value as in the form of contacts to the field, and investors or business angels may bring companies know-how and experience to enforce the concept and the business.

The value proposition to public funding agencies is simple: A medical game should have high commercial potential, which is realized in company success, creation of new jobs, and benefits to the national economy. Therefore, scalability and potential to enter global markets are important, regardless of whether the funders are private investors or public funding agencies.

For private investors, the business model and commercial potential comprise the value proposition of a medical game. The value they seek is the return on the investment they have made in the company.

4.2.5 Insurance Companies and Social Insurance Institutions. Insurance companies and social insurance institutions share a similar value proposition to the ecosystem as authorities, guiding customers and providing an existing customer basis. Insurance companies can act as a potential marketing channel for game companies as insurance companies seek value in the form of health care cost cuts. Insurance companies and social insurance institutions can use their authority for patients and make medical games mandatory for patients to use in order to get welfare support or discounts from insurers.

4.2.6 Regulatory Parties. Being accepted by relevant regulatory parties gives medical games the authority needed to, for example, convince health care organizations of the safety and effectiveness of the games. For regulatory parties, the medical games offer effective and safe new treatments to be used to increase the wellbeing of the people.

4.2.7 Ecosystem Complementors. This study found that academic institutions, game and technology associations, serious games networks, business-related partners and patient associations represent different type of complementors of the medical game ecosystem.

Research institutions and educational organizations can work as intermediaries between the game industry and health care actors, connecting two otherwise separate industries. Research institutions provide academic knowledge to support the actors of the ecosystem to attain validation for the game. Reciprocally, research institutions are seeking funding for conducting research and opportunities to gain appreciation for the academic institution.

Developmental organizations in Finland, such as Kuopio Innovation, the Finnish Funding Association for Innovation, and the Finnish Health Technology Association, are striving to help health technology start-ups seeking market emergence with regulatory procedures. They offer value in know-how in their related fields of expertise, such as health technology, regulations, software development, or business. However, relationships with developmental organizations, serious games networks, or technology associations were seen in a different light by interviewees. For some, these can be of great value, offering useful contacts that might develop into beneficial relationships, sparring of business ideas, or useful information. Nevertheless, they were also criticized for not having enough business insight or impact.

Similarly, patient associations offer value as know-how and expertise about particular types of illness. Patient associations may also make value propositions as recommenders and informants for game companies' products, increasing the market presence of game companies. Reciprocally, they are proposed with the value of better life and treatments for the patients they represent.

4.3 Barriers Complicating and Hindering Realization of Value Propositions

Institutions increase or decrease the lucrativeness of reciprocal propositions, and thus shape the ecosystem and its development. In other words, institutions motivate or demotivate actors to engage in interactions to realize reciprocal value propositions. In this paper, we have concentrated on and identified a set of barriers that complicate or hinder the realization of value propositions from the examined ecosystem. These are presented next and summarized in Table 2.

The main barriers concerned validation requirements in the health care sector, lack of innovation structures in the health care sector, and rising consumerization affecting the health care sector. Many identified innovation barriers seemed to be external and located in interaction and exchanges occurring between game development firms and other ecosystem actors.

4.3.1 Barriers Between Game Companies and Health Care Organizations. The public health care sector is a significant health care actor in the Finnish market and could potentially be an important client for medical game companies. However, selling to hospitals is extremely demanding for a start-up. Sales processes are established practices formed by traditional health care actors such as large pharmaceutical companies. Even getting a sales contact can be a challenge for a start-up. The true potential for medical game start-ups will be found in private clinics with decent resource bases that can implement the processes the technologies they find useful. These facilities have structures supporting innovation and new technologies, and they are striving to offer more effective and efficient services for their patients.

Creating a collaborative setting for continuous innovation processes within health care organizations would be desirable for game companies. However, as stated in several interviews in our study, the existing prejudiced attitudes in health care organizations toward medical games and new technologies in general hinder the development of innovation processes. It is a challenge to strike a happy medium between the two extremes, the agile game industry and the risk-avoiding health care industry. Therefore, the underlying innovation barrier that complicates the actualization of value propositions in value co-creational processes between game companies and health care organizations comes from the lack of a mutual innovation mindset, structure, and process. One interviewee, the CEO of a medical game company, described it thus:

> "When one has used the same routines and same methods since the 80s, everything that might change it is confronted with a little bit of resistance to change."

This resistance to change is in place in many ways, but the knowledge of business models and commercialization procedures in medicine and the health care sector is essential for breaking through. Therefore, the lack of structures supporting innovation in the public health care sector has a significant impact on the development and implementation of health care innovation. Furthermore, the lack of a culture encouraging people for open-mindedness is also challenging the actualization of value propositions between these two worlds. For example, one of the interviewees emphasized that their biggest challenge is to get clinicians to engage with a technological tool and integrate it as a part of their clinical practices.

Table 2: Summary of Barriers in Medical Game Ecosystem

Type of actor	Barriers that complicate or hinder realizing value propositions
Serious game companies	Lack of innovation structures and procedures hinders implementation of games to health care. The emergence of the medical game ecosystem interplays with the emergence of larger health care reformation and thus complicates the business aspect of medical games. Validation raises the need for external resources to obey and implement regulatory requirements and clinical studies in practice. Validation slows down the market entry and creates a barrier for market emergence.
Customers (health care companies and professionals)	Lack of innovation structures occupies a crucial role in terms of facilitating the validation process and the fits between the game world and the health care world. The mindset reflects the prevalent norms and routines in health care that promote stability and prevent the adoption of new technologies and consumerization. Health care professionals have a significant impact on the lack of innovation structures. Need for validation slows down the diffusion of medical games and their availability for health care organizations.
End users (patients)	Need for validation slows down the diffusion of medical games and their availability for patients. Business models may not be feasible for the patients.
Funders (public and private)	Investors are skeptical toward slow decision-making processes in public health care. The lack of clear structures and procedures hinders the emergence of gamification in health care. Scalability issues in games can act as a barrier.
Insurance companies and social insurance institution	Lack of or rigid innovation structures and procedures create extra costs due to unnecessary inefficiency resulting in increasing challenges in diffusion of new technologies.
Regulatory parties	Validation is required to be qualified as a medical device. For example, the FDA considers the inclusion of patient preference information into submissions for approval of medical devices. However, the actual testing and small-scale use of medical games is prohibited without validation.
Patient associations	Due the lack of innovation structures and procedures, inefficiency in health care is recognized as a major problem and a source of frustration

4.3.2 Barriers of Commercialization Related to Patients as End Users. Barriers related to commercialization to end users are related to the pricing models of medical games (e.g. how many in-app purchases can be offered and how much in-app advertisement is allowed). According to the interviews, in-app purchases are troublesome for serious games because it can easily give a “greedy touch,” which is something that should be avoided, especially if the target audience is young. On the other hand, a free-to-play pricing model is not feasible for game companies that are seeking revenue for their businesses.

4.3.3 Barriers Relating to Funders. The problem with offering a competitively compelling value proposition to public funding agencies is that the process of game development is risky in general. Even for skilled teams, it often requires multiple attempts the kind of game the target audience wants is created.

> “And because there is a risk that you don’t even get [the invested money] back and there is no upside that [the game] would earn the invested money back tenfold, [therefore] it is only just whether anyone wants to make that [game].” –CEO and founder of a game company

In the interviews, it was emphasized that the role of public funding should be minimized. Instead of funding the development of medical games with taxpayer money or public subventions, game companies should get profit primarily from customers.

Effectiveness studies were considered a prerequisite for funding in terms of investors and traditional TBI funders. The process of proving effectiveness is always crucial to ensure that the best possible methods are being used in rehabilitation. Funders are also interested in how implementing a new technology can cut costs, improve patient results, facilitate health care processes, and lower the assessed risk of the investment.

However, even though risks concerning the effectiveness of medical games can be proved, funders may still not be interested in value co-creation as there may be underlying risks of scalability. That is, due to strict regulations, it is hard to sell a game globally, and the technology is not easily scalable to other sectors. One major challenge related to medical game internationalization is that legislative issues and medical certificates vary globally. There are no global standards, nor even pan-European standards. Thus, if a company and a game is aiming to perform globally, they must go through a series of different validation processes depending on their target markets.

In addition, the current health care system is scattered, and decision-making is a complicated and slow process resulting in skepticism from investors. One of the interviewees, a managing director of the Finnish Health Technology Association, accentuated that a functioning health care service structure would offer a solid foundation for the development of health care innovations:

> "[Hopefully there will be] an ecosystem, in which needs-oriented innovations are going to be built more systematically, also keeping commercialization in mind."

4.3.4 Barriers Related to Regulatory Parties. Some medical games do fall into the category of medical devices (based on an EU directive on medical devices) depending on the intended use and health claims, resulting in certain obligatory procedures. The procedure of registering the medical game as a medical device may be challenging for game companies: It requires a great amount of time and money, and results in a prolonged development process that small health game start-ups with limited resources might see as a burden. As one of the interviewees reported, the process of planning, executing, and repeating a study of randomized controlled trials can easily take up to 10 years.

Several interviewees stated that proving the effectiveness and safety of a product is essential yet time consuming. Game companies may also not be used to considering factors such as whether or not their game could be harmful for their target audiences. When developing rehabilitation methods for TBI patients, it should be taken into account that, due to their deficits, patients can be vulnerable to different kinds of addictions related to gaming. This requires a lot of resources in terms of clinical effectiveness studies and understanding the regulatory requirements of each market. It was pointed out that the complexity and requirements of global regulations can result in the downfall of a whole medical game sector, and thus should be taken into account in the early stages of medical game development.

5 DISCUSSION AND CONCLUSIONS

This paper explored a medical game ecosystem and revealed the extensive composition, diverse actors, reciprocal value propositions, and innovation barriers within the ecosystem. Our study revealed that game companies are hub actors in the ecosystem that drive the development of medical games. To develop a medical game, serious game companies need to collaborate and participate in resource integration practices with several different actors. Actors within the medical game ecosystem are providing value propositions to other actors of the ecosystem but also reciprocally seeking value propositions to fulfill each actor's needs. In total, 11 other actor types within the medical game ecosystem were identified, and their reciprocal value propositions were analyzed.

5.1 Theoretical and Managerial Implications

We have contributed to the growing literature of medical games. Prior studies have been mainly focused on presenting the results of clinical studies [45], the usability of games in treatments, or how games are used for patient treatment [46]. This paper contributes by applying service ecosystem and innovation barrier approaches to the medical game context, revealing the reciprocal value propositions and barriers that hinder and complicate the actualization of those propositions. Therefore, this paper offers valuable insights for game companies and other actors participating in the medical game industry and acts as an overview of the ecosystem that is needed for resource integration and service exchange. It also answers the directive from Rantala and Karjaluoto [11] to expand the theory of service-dominant logic and value co-creation to service ecosystems in health care. Furthermore, we have revealed reciprocal value propositions that indicate that serious games utilized for health care proposes value the end users (the patients) of these games. The potential for patients to make their care progress visible and rewarding is seen as an issue in recent SDL literature on health care [21].

Our study also revealed that there are several innovation barriers that hinder and complicate the actualization of value propositions in medical game ecosystems. Validation processes together with lack of innovation-supporting structures within game ecosystems slow down the development, implementation, and consumerization of medical games. The need to validate medical games guides the focal actors operating in the health care business (e.g. health care professionals, health care organizations, insurance companies, social insurance institutions) and defines which rehabilitation and treatment methods they find credible. In particular public health care areas, there are prevalent mindsets, norms, and routines that promote stability and hinder the implementation of new technologies such as medical games.

However, there are ways to bypass the lack of innovation structures. Many private clinics or rehabilitation centers can more flexibly try to implement new technologies like medical games in their practices. This knowledge can be useful for HCI professionals that are fostering and developing a cooperative team for medical game development and design processes, as Doherty, Coyle, and Matthews [32] suggest. Our findings also indicate that actors within medical game ecosystems are developing new relationships in which value propositions are mutually rewarding and beneficial. This suggests that value propositions act as a balancing or aligning mechanism in the service ecosystem, as Frow et al. [12] proposed.

This paper provides empirical evidence in the medical game context to be used in innovation barrier research. The results indicated similarities with existing literature [35], as restrictive mindsets in health care and undeveloped ecosystems related to innovation were related to the emergence of innovation barriers.

5.2 Future Research and Limitations

We acknowledge that there are limitations to our research. Our research was conducted as a single case study focusing on only one type of medical game in Finland. However, we believe that we provide an interesting overview on medical game ecosystems, actors desiring to co-create value, and barriers that complicate those aspirations. Although the data is from Finland, some of the results are probably generalizable on a global scale. As different research parameters can yield different answers and address even more complex ecosystems, further research into different settings is encouraged. More extensive considerations of actors' value propositions and barriers are needed in order to reveal the dynamic nature of ecosystems.

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PUBLICATION
IV

Improving Hospital Services Based on Patient Experience Data: Current Feedback Practices and Future Opportunities

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Building Continents of Knowledge in Oceans of Data: The Future of Co-Created eHealth
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Improving Hospital Services Based on Patient Experience Data: Current Feedback Practices and Future Opportunities

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Abstract. Patient feedback is considered important for healthcare organizations. However, measurement and analysis of patient reported data is useful only if gathered insights are transformed into actions. This article focuses on gathering and utilization of patient experience data at hospitals with the aim of supporting the development of patient-centered services. The study was designed to explore both current practices of collecting and utilizing patient feedback at hospitals as well as future feedback-related opportunities. Nine people working at different hierarchical levels of three university hospitals in Finland participated in in-depth interviews. Findings indicate that current feedback processes are poorly planned and inflexible. Some feedback data are gathered, but not systematically utilized. Currently, it is difficult to obtain a comprehensive picture of the situation. One future hope was to increase the amount of patient feedback to be able to better generalize and utilize the data. Based on the findings the following recommendations are given: attention to both patients' and healthcare staff's perspectives when collecting feedback, employing a coordinated approach for collecting and utilizing patient feedback, and organizational transformation towards a patient-centric culture.

Keywords. Feedback, formative feedback, hospital nursing staff, hospital-patient relations, patient satisfaction, patient-centered care

1. Introduction

Like other organizations, hospitals have started to collect feedback from their customers, i.e. patients. Often, a large amount of data about patients' experiences is collected, but very little of it is used to improve care [1], so far. Such data provides opportunities to identify and address problems and gaps in service flow and to monitor the effects of interventions [2]. Additionally, it allows for the comparison of healthcare providers and benchmarking of hospital performance [3].

However, several challenges have been identified. First, healthcare has unique characteristics: in the hospital context, the relationship between clinician and patient is

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beyond customer service – it is a therapeutic relationship, which focuses on giving care to an individual patient, not only providing a service to a customer [4]. Secondly, patient experience (PX) is an emerging concept. While a commonly accepted definition is lacking [2,5], the PX concept encompasses various themes, such as continuum of care, focus on expectations, more than satisfaction alone, individualized care, and alignment with patient-centered care principles [5]. Multiple cross-cutting terms, such as patient satisfaction and engagement, make conceptual distinction of PX even more difficult [3]. Thirdly, gathering PX data would ideally exceed organizational boundaries, since a patient's continuum of care may include multiple encounters with several different healthcare professionals and providers [5,6]. These elements all influence the total assessment of experience. Healthcare providers who view themselves as part of a broader systemic network, i.e. a healthcare ecosystem, where PX is created and measured collaboratively, would be better able to design and provide services for their patients [7].

Several methods can be used to measure PX [2]. Questionnaires are widely used to gather numeric data for comparison, whereas qualitative methods can offer a richer understanding of needs, values, and improvement areas [8]. In order to capture a holistic view of PX, a mixture of quantitative and qualitative methods is recommended [1].

Analysis of PX is useful only if gathered insights are transformed into actions [1]. Beyond mere measurement, achieving real impact requires a strategic approach [9]. Healthcare organizations that have succeeded in fostering patient-centered care have adopted a broad, strategic approach that includes active measurement and feedback reporting of PX [9]. Thus, patient-centricity requires organizational change.

The aim of this paper is to promote collection and analysis of PX data at hospitals to support the development of patient-centered services. The reported study is part of the "Lapsus" research project, which focuses on researching PX in the context of children's hospitals in Finland. The project has received permission from the ethical committee.

In the article, the term '*feedback*' refers to data about patients' experiences and satisfaction. The study was designed to explore current practices of collecting and utilizing patient feedback in the context of three university hospitals and their pediatric departments in Finland. Based on qualitative interview data, we report the strengths and challenges of current practices and identify opportunities for future improvement. The research questions are: In the context of Finnish children's hospitals, what are the strengths and challenges of the current feedback collection and utilization practices? What opportunities exist for improving these practices in the future?

2. Method and Analysis

The study was conducted using semi-structured interviews. The interview framework included the following themes: (1) interviewee's background information, e.g. role and responsibilities at the hospital, connection to feedback process, and role in feedback utilization; (2) current practices for collecting and utilizing feedback, and reasons for collecting feedback; (3) evaluation of current feedback practices: strengths and challenges, attitudes towards feedback collection, utility of the gathered data; and (4) consideration of future possibilities for feedback processes.

Nine people from different hierarchical levels of three Finnish university hospitals participated individually in in-depth interviews (Table 1). First, interviews with five individuals working at university hospital A were carried out in March and April 2017. These interviewees worked in different hierarchical levels within the hospital and were chosen to be able to reflect knowledge of different parts and levels of the feedback process. Next, interviews with head nurses working in the pediatrics and adolescent medicine department of two other university hospitals (B and C) took place between May and October 2017. Participants were recruited from multiple organizations in order to obtain comparable data and validate the findings from the university hospital A.

Table 1. Background information of study participants

Organization	Participant ID	Title / role / responsibility
Hospital A	1–3	Planning manager, development manager, chief physician and head of digital and innovation services
Hospital A / Pediatrics and adolescent medicine department	4–5	Deputy nurse manager, nurse manager
Hospital B / Pediatrics and adolescent medicine department	6–7	Nurse manager, nurse administrator
Hospital C / Pediatrics and adolescent medicine department	8–9	Nurse manager, nurse administrator

Seven interviews were face-to-face interviews conducted at the workplace of the interviewees at a predetermined time. Two interviews were conducted via phone due to geographic distance. Each interview lasted approximately 30 to 60 minutes.

The data include recordings and detailed notes from the interviews. One of the interviewees did not allow recording. The analysis was conducted in two phases: (1) analysis of the data from five interviews at hospital A, and (2) analysis of four interviews from hospitals B and C. The first phase of analysis included the following tasks: organizing data into an excel sheet; categorizing the results under thematic areas (background, current data collection and utilization, positives and negatives, the future); and using an affinity diagram for further analysis. The second phase followed a similar procedure: after organizing the data into a spreadsheet and categorizing the results, findings were compared with the results gained from interviews 4–5. The aim was to find possible differences and similarities between the findings and to validate earlier results.

3. Results

Collected data showed several drivers that motivate the collection of patient feedback at the hospitals. The overall aim is to improve services, since the underlying principle is to work in a patient's best interest. Feedback provides understanding of how people perceive current services and helps to identify problem areas and improvement opportunities. Another important reason for collecting feedback is to receive comparable data between healthcare units and organizations. In general, our findings suggest that the three hospitals share similar situation and challenges with feedback practices, including low response rates, low utility of data, and staff motivation. No significant differences between the organizations were found.

Collecting and utilizing feedback: Four categories of feedback collecting practices were identified: (1) official and structured (e.g. web-based feedback forms or paper questionnaires); (2) unstructured (e.g. informal discussions with patients); (3) pilot projects (e.g. new ways of collecting data using digital devices such as tablets); and (4) occasional studies (e.g. nursing students' diploma work). Even though several official channels for feedback exist, a large amount of feedback is received through informal channels such as e-mail or face-to-face discussions with patients and their families.

Feedback is utilized at two levels. Official, structured feedback is processed at the hospital administration level, reported according to official processes, and delivered to individual units. Hence, the given feedback must be accurately linked to the unit, i.e. where the patient was treated. The managerial level processes feedback reports regularly and utilizes the data in various ways, e.g. to identify trends. In contrast, individual units are responsible for analyzing and responding to the three other feedback types. In particular, head nurses of individual care units have significant responsibility and influence regarding this data. In practice, utilization of feedback for service and care improvement depends on the unit. Typically, responses are given to unstructured feedback, which leads to further actions.

Strengths: The interviewees felt positive in terms of the direction that feedback practices and processes are moving. Collected feedback is processed regularly in care units. Official level (national and hospital-wide) questions were seen to be important because they enable the comparison of results between hospital districts.

Challenges: The way individuals deal with feedback varies between units and between different types of organizational and work roles. Current feedback collection practices do not seem to be fully aligned with the everyday work of nurses; in particular, the purpose of feedback collection is not always clear to nurses, leading to motivational challenges. Overall, current feedback processes were criticized as being poorly planned and inflexible. Some feedback data are collected, but not systematically utilized. There are several reasons for this. Current response rates are minimal, especially concerning official and structured feedback, leading to difficulties in receiving comprehensive and valid data. Feedback often does not focus on crucial aspects of the patient experience and is not informative enough to reveal specific improvement points that units feel they can influence. Furthermore, it is difficult to obtain a comprehensive picture of the situation, as unstructured 'hidden' feedback that isn't captured by official channels is prevalent, even as multiple channels for more official feedback are used.

Future opportunities: Some interviewees voiced a vision of a truly meaningful system that enables continuous improvement towards a more patient-centered hospital. Top management in particular emphasized the importance of being able to see the big picture and the feedback process as a whole. Currently, practices are quite fragmented across different units. The overall aim is to observe and measure crucial aspects of the patient experience that can be influenced. The feedback process should enable healthcare staff to identify key improvement opportunities but should also report positive feedback.

4. Discussion

Collecting and analyzing data on patients' experiences is fundamental for healthcare organizations to be able to improve their service quality [2,10]. The objective of this study was to describe benefits and challenges in current feedback collection and utilization practices at hospitals, as well as to identify opportunities for improvement.

From an ecosystem perspective, our findings indicate that healthcare staff take a positive stance toward both shared measurement of patient feedback and data sharing between organizations. However, measurement metrics and methods currently vary between units and are not easily comparable. One future hope was to increase the amount of feedback data to be able to better generalize and utilize the findings. A dual-sided improvement opportunity appeared: both giving and collecting feedback should be effortless from patients' and nurses' perspectives. This includes improving the accessibility and usability of feedback tools. Another approach envisioned a multi-channel feedback system that would make the data collection process constant and automatic, supporting real-time presentation and reporting of results. Digitalization will enable the usage of new channels (e.g. SMS and tablets), which makes more personalized and constant feedback collection possible. Moreover, cultural change was seen as a crucial aspect in improving attitudes towards feedback data gathering and utilization.

In summary, we recommend that hospital management consider the following:

- Attention to both patients' and nurses' perspectives when collecting feedback: Enhance patient awareness of opportunities to give feedback to avoid biased results. Make feedback collection instruments user-friendly. Automate feedback collection to fit together with nurses' everyday work.
- Coordinated approach for collecting and utilizing patient feedback: Measure experience instead of satisfaction. Identify relevant aspects and measure them to gather data which can be fully utilized. Apply a multi-channel approach and merge findings from all data sources.
- Organizational transformation towards patient-centric culture: Communicate the vision organization-wide. Work on motivating staff to collect and utilize feedback through understanding of the importance of feedback.

The study findings will be utilized in the Lapsus research project when co-designing feedback practices in children's hospitals in Finland.

However, the study has some limitations. The research focused strongly on the context of one university hospital. The sample size (N=9) was rather small due to limited resources available for the study. Besides, the setup was found appropriate for an exploratory study. The approach focused on describing the current situation as experienced by the interviewees, whereas including other perspectives (e.g. research on organizational structures) could have diversified the findings. Furthermore, patients', families' and nurses' viewpoints were not included in the study. Further research is needed to include these perspectives and to extend the research to other Finnish hospitals.

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PUBLICATION
V

Comparing three methods to capture multidimensional service experience in children's healthcare: video diaries, narratives, and semi-structured interviews

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Comparing Three Methods to Capture Multidimensional Service Experience in Children's Health Care: Video Diaries, Narratives, and Semistructured Interviews

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Abstract

Interest in studying experiences has grown rapidly; however, little attention has been paid to the applicability of qualitative methods for capturing the service experience in children's health care. This study examined and compared three data collection methods to capture the multidimensional service experience of child patients and their families: video diaries with child patients, narrative interviews with parents of a child patient, and semistructured interviews with health-care professionals working with child patients. The methods were analyzed with respect to their benefits and limitations and their applicability for capturing the multidimensional service experience presented by service experience co-creation framework, including the temporal, factual, spatial, locus, control, and organizational dimensions. The key findings are as follows: (A) The video diary method has the potential to capture the temporally broad and spatially complex phenomenon of child patients' service experience and enables researchers to capture service experience created beyond the hospital setting (e.g., through hobbies or in school). (B) Narratives with parents have the potential to capture the temporal, spatial, locus, and organizational dimensions through stories and are well-suited for mapping children's experiences and the actors influencing them. (C) Semistructured interviews with health-care professionals have the potential to capture a generalized but temporally narrow view of the service experience of child patients, concentrating on experiences within hospital settings. This is beneficial for developing health-care service providers' actions. Structured analysis and comparison of methods guides researchers to select appropriate methods to take a complementary approach in the understanding of experiences in the context of children's health care.

Keywords

service experience, health care, children, qualitative method, probing, narrative, interview

Introduction

Recent years have seen increasing interest in and research on experiences. Experiences are particularly pivotal in health care, as patients' experiences are connected to how patients engage in their own care (McColl-Kennedy, Hogan, Witell, & Snyder, 2017) and, thus, the cost-effectiveness of the health-care system and positive health outcomes for individuals. Due to its extremely personal and sensitive nature, health care has its own unique, context-specific characteristics (Bolton, Gustafsson, McColl-Kennedy, Sirianni, & Tse, 2014; Danaher & Gallan, 2016). These characteristics make health care an interesting field for examining experiences (Berry & Bendanpudi, 2007; Danaher & Gallan, 2016) but also imply that special attention should be paid to methodology: Researchers should simultaneously capture the complexity of the experience and avoid disturbing the sensitivity of patients, who may be undergoing painful experiences that influence their quality of life. In this article, we focus on qualitative data collection methods to capture the

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Table 1. Overview of Methods Applied to Study the Health-Care Experiences of Children

Method	Example Authors	Results and Lessons Learned From the Focal Method
Structured interview	Carney et al. (2003); Kortesluoma and Nikkonen (2004)	Structured interview method was an efficient method for collecting data from experiences, allowing the researcher to enhance the focus of the interview
Narrative interview	Forsner, Jansson, and Sørlie (2005)	Young children had difficulties describing their experiences when applying a narrative interview method. Older children did not have this problem
Visual methods	Carney et al. (2003)	Visual methods were appropriate for evoking visualizations of critical aspects of different locations of the experience and for capturing temporal snapshots of the experience
Mixed methods (drawing and semistructured interviews)	Sartain, Maxwell, Todd, Haycox, and Bundred (2001)	Drawing based on open suggestions was useful for prompting children to develop their own themes of experience. Children interviewed about home care had little to say about their experiences, whereas children interviewed about hospital care offered specific themes
Mixed methods (interviewing with roleplaying and playing with toys)	Curtis, Liabo, Roberts, and Barker (2004)	Combining play techniques with interviews allowed young children, even aged 4 or 5 years, to comment helpfully on their experiences

multidimensional service experience of child patients (Helkkula, 2011; Jaakkola, Helkkula, & Aarikka-Stenroos, 2015).

To date, little attention has been paid to service experience among children in health care or to the applicability of the variety of qualitative data collection methods (later methods) for capturing these experiences. A search of the academic literature revealed only a handful of studies reporting findings on the experiences of children (see Table 1). Among these, Carney et al. (2003) studied the appropriateness of verbal and visual structured and unstructured questionnaires in hospitalization experiences, and Curtis, Liabo, Roberts, and Barker (2004) utilized different methods to study children's health-care experiences while examining the data collection process. Some studies have used mixed methods that combine interviews with drawing or play techniques (Curtis, Liabo, Roberts, & Barker, 2004; Sartain, Maxwell, Todd, Haycox, & Bundred, 2001).

Building on existing studies (see Table 1), however, research on the experience of children in health care has been limited and further exploration is needed to elaborate on how different methods capture the multidimensional service experience of child patients. Researchers have approached the experience as an elusive concept, rather than a multidimensional, holistic phenomenon. Hence, more research is needed to yield structured knowledge of how different methods capture the service experience of child patients and with what kind of research designs including methods and informants child patients' experiences can be captured. Our study seeks to address this gap by empirically comparing a set of studies with different data collection methods on the service experience of child patients.

We conducted three studies with different data collection methods—video diaries, narratives, and semistructured interviews—to study the service experience of child patients in health care. The aim of the study was 2-fold: first, to analyze the benefits and limitations of using each method to study the service experience of child patients and, second, as *service experience* is conceptually multidimensional and rather elusive, to examine and compare each method's applicability for capturing different dimensions of the concept.

We examined service experience using Jaakkola, Helkkula, and Aarikka-Stenroos's (2015) *key dimensions of service experience co-creation* conceptual framework. Their framework consists of six dimensions, discussed below, that explicitly evoke the different dimensions of the service experience originating from established research streams. To our knowledge, this is the first attempt to utilize the framework in an empirical service experience study.

Background

In this article, we approach the phenomenon of child patients' experience as a service experience, which we define as a subjective, event-specific, context-specific, and *multidimensional* phenomenon that is simultaneously individual and social, emerging in various events through imagination or memory (Helkkula, 2011; Jaakkola et al., 2015). The "service" in "service experience" reflects not an output of an intangible product (as indicated by the plural form, "services"), but a process of using one's resources (e.g., skills or knowledge) for the benefit of another actor (Vargo & Lusch, 2008). From this perspective, an actor (e.g., patient) determines the service experience phenomenologically, not just while using a specific service, but through a wider phenomenological context that extends beyond the specific service and service network to the actor's everyday life (Gummesson, Mele, & Polese, 2013).

Service Experience in the Health-Care Context

The broad phenomenological service experience concept posits that service experience is created among multiple different actors (Vargo & Lusch, 2011; Verhoef et al., 2009). In health care, the scope of the service experience is particularly broad (Klaus, 2018), as patients may undergo a complex "journey" through different clinical, nonclinical, and social events, all of which influence their total service experience (Ponsignon, Smart, Williams, & Hall, 2015). These journeys include a myriad of interactions with various professionals and patients' social world actors (e.g., relatives and other patients), all participating in the service experience creation in their own way and in different locations (Frow, McColl-Kennedy, & Payne, 2016). Therefore, the methods used to study this phenomenon must capture a temporally and spatially broad spectrum of events among these actors, which have thus far gone unrecognized in service experience research (Banerjee, 2014). Furthermore, health-care context is highly emotional and may invoke a wide range of thoughts, feelings, sentiments, and physical reactions due to a heightened sense of risk, invasiveness, and personal relevance (Bolton et al., 2014; Danaher & Gallan, 2016), increasing the sensitivity and complexity of the phenomenon.

Zooming Into Service Experience in Children's Health Care

Accessing the service experience of children should be of great importance and interest in today's research, especially when focusing on children's health care. Without access to the content of a child's experience, we have very limited accounts of what the preferences and needs of children are in the period that may be physically and mentally debilitating for children and may influence their developmental story (Greene & Hogan, 2005). By accessing children's service experience, we will come to know more about their interpretations of events and their world that may differ from that of adults. This knowledge is pivotal for health-care sector to provide higher quality, safer, and more efficient services for child patients and their families.

When inquiring about the sensitive and complex service experiences of child patients in a health-care context, ethical matters should be considered carefully (Burns & Grove, 2001, p. 166; Phelan & Kinsella, 2013). As participants in research situations, children are more vulnerable and experience stress more readily than adults (Burns & Grove, 2001; Kortesluoma & Nikkonen, 2004). The research process can cause children emotional distress, particularly in situations that ask them to reflect on painful or invasive past experiences (Burns & Grove, 2001). In addition, the power imbalance between children and adult researchers must be considered (Greene & Hogan, 2005). Children may feel intimidated when talking to an unfamiliar researcher (Punch, 2002), and they may try to please the researcher by giving the "right answers" (Punch, 2002; Singh, 2007). Further, compared to adults, children have more difficulty understanding the implications of participating in a study (Kortesluoma & Nikkonen, 2004), including participation rights and study purpose. Finally, some level of cognitive competence, including language skills, thinking, reasoning, and understanding, is needed to fully access service experience (Ponsignon et al., 2015). Some previous studies have utilized visual or mixed methods rather than interviews (see Table 1) to overcome children's undeveloped storytelling and dialogical skills by making it easier for children, especially younger ones, to present their experiences (Forsner, Jansson, & Sørlie, 2005; Greene & Hogan, 2005).

In pediatric health care, service experiences are evoked among not only patients but also caregivers and relatives (McColl-Kennedy et al., 2017; Michaels, 2018). This makes it difficult to explicitly posit who is the main beneficiary of the experience and the subject for studies concerning experiences in children's health care: the patient, the parents, or the whole family. Because multiple actors experience the illness in pediatric care, some aspects of the service experience may be accessed through the child's parents, who are inextricably a part of their children's lives, or the pediatric health-care professionals responsible for the medical care of the children. However, researchers must remember that children's subjective service experience may differ, sometimes dramatically, from those of adults (Savage & Callery, 2005). Experiences are always shaped by an individual's unique values, actions, beliefs, motives, traditions, cultural background, possessions, and aspirations (Bolton et al., 2014; cf. Coyne, 2006); therefore, researchers should pursue methods that allow children of different ages to express themselves (Curtis et al., 2004; Forsner et al., 2005).

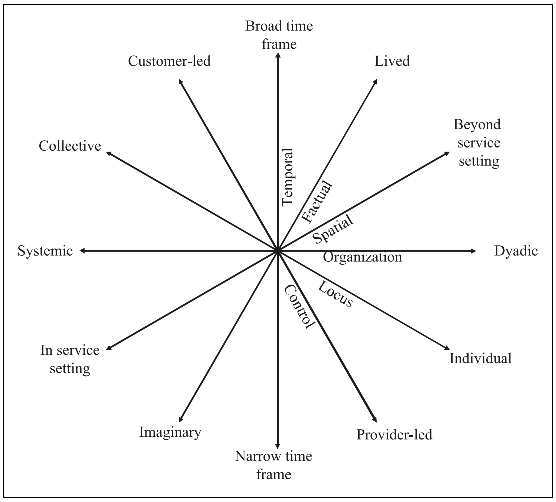

Figure 1. Dimensions of service experience. Adapted from Jaakkola, Helkkula, and Aarikka-Stenroos (2015).

Dimensions of Service Experience

A holistic understanding of the service experience requires acknowledging its multiple dimensions. Therefore, in this study, we utilize the key dimensions of the service experience co-creation framework proposed by Jaakkola et al. (2015; see Figure 1).

The framework divides the holistic phenomenon of the service experience into six dimensions to assist in the structuring of service experience studies. Below, each of the dimensions is discussed in detail based on Jaakkola et al. (2015).

The *temporal dimension* of the service experience reflects its dynamic nature; that is, an individual's earlier experiences affect his or her valuation of the present service experience and are dynamically updated through new experiences (Heinonen et al., 2010). Interpretations of experience can, therefore, be examined either through the standpoint of isolated moments in the present or through a wider lens incorporating past memories and the foreseen future (Jaakkola et al., 2015).

The factual dimension of the service experience assesses whether the experience is truly lived or imagined by the focal individual. This is especially relevant in the case of expectations, as each individual forms a mental image of the future that may influence the evaluation of a service experience at a particular point in time. In health care, patients assess their experiences based on real-life events, such as current doctor appointments, but also on past appointments and concerns over future operations and illnesses.

The spatial dimension of service experience refers to the location in which the experience is created: in the service setting or beyond the service setting. Parts of the service experience emerge beyond the service setting, in a focal individual's everyday life across all types of activities related to the phenomenon: ordinary, extraordinary, routine, mundane, and everyday (Heinonen et al., 2010). The other parts take place within the provider's service setting, such as the hospital setting in health care.

The organization dimension assesses how service experience creation may actualize in dyadic or more systemic interactions among multiple actors. For example, patients with chronic illnesses usually embark on long medical journeys during which they potentially encounter systematically several different health-care professionals.

The locus dimension indicates that the service experience can be examined at the individual or collective level. For example, in pediatric health care, collectiveness can refer to a situation in which a child's experience is created collectively through everyday interactions with his or her parents. Such a situation is also linked to the *control dimension*, which indicates that the service experience can be provider led or can emerge organically among patients and their relatives.

Method

Our study drew from three studies with different data collection methods conducted to examine experiences in children's health care. The studies were part of a larger research project, LAPSUS, which aims to study the experiences of child patients and their families in the context of a children's hospital. The research project and studies were approved by the ethical committee of the Hospital District of Helsinki and Uusimaa and are closely linked to the development and construction of a New Children's Hospital (n.d.) in Helsinki, the Finnish capital.

In this article, we follow the interpretivist/constructivist approach, rather than the positivist research approach, to understand the world of human experiences and rely on participants' views of the studied phenomenon (Creswell, 2003, pp. 7, 8). We conducted the qualitative research as a collective, instrumental case study with a phenomenological method, where the unit of analysis is the different data collection methods (Creswell, Hanson, Clark Plano, & Morales, 2007; Yin, 2003). We utilized an extreme case strategy with maximum variation sampling to select three different qualitative data collection methods for exploration (Patton, 1980, p. 105). We chose this approach to obtain broad data on different methods to analyze the benefits and limitations of each method and to compare their applicability to capture dimensions of the service experience. Furthermore, our approach enabled us to examine the topic from a research design level as our studies, in addition to utilizing different data collection methods, approached the service experience from different perspectives. The three selected studies were video diaries with child patients (Study 1), narrative interviews with parent(s) of a child patient (Study 2), and semistructured interviews with pediatric health-care professionals (Study 3; see Table 2). Method selection was based on the variability of data inquiry format and structure, perspective on the phenomenon, and temporal scope. Selected methods, therefore, were either structured or not, pure interview or a story, or comprised a mix of verbal, visual, and physical elements.

Table 2. Overview of Three Studies for Exploring the Service Experience of Child Patients in Health Care.

Study	Method	Participants *n*	Participating Group
1	Video diary	14	Child patients aged 10–16
2	Narrative interview	24[a]	Parent(s) of a 0- to 16-year-old child patient
3	Semistructured interview	23	Health-care professionals (doctors, head nurses, and nurses)

[a] Number of participating families from which one or two parents participated.

The studies were conducted from 2015 to 2016. The study participants were comprised of child patients, parents of child patients, and employees of two public university hospitals in Finland: the Children's Hospital in Helsinki and the Department of Pediatrics and Adolescence at Oulu University Hospital (see Table 2). Eight of the participating children in Study 1 belonged to the same family as a parent participant in Study 2; the rest of the participating children, parents, or health-care professionals had no family or professional connection to each other. Having family and professional connections were not seen as important in this study as socially constructed experiences were examined in a higher dimensional level rather than examining one's experience in-depth.

Study 1: Video Diaries With Child Patients

Video diaries were used to study the experiences of the child patients. The aim of the study was to determine how child patients express themselves and what they say about their experiences in their own words. When choosing this method, particular attention was paid to inspiring the child patients and acknowledging their vulnerability as participants (Gaver, Dunne, & Pacenti, 1999). To help the children express their feelings and experiences, the method was designed to allow the children to respond verbally, visually, and physically (Curtis et al., 2004; Sanders & Dandavate, 1999; Sartain et al., 2001; Wensveen, 1999). It was also hypothesized that the method's playful approach would enhance motivation to participate (Mattelmäki & Battarbee, 2002) and reveal otherwise hidden knowledge (Buchwald, Schantz-Laursen, & Delmar, 2009; Noyes, 2004; Rich & Patashnick, 2002) about chronically ill children. In this study, the classic diary was modernized into a video diary, since contemporary children are accustomed to watching and producing video clips on web-video platforms like YouTube. To ensure that the participants would express their own thoughts and feelings, the sample was chosen from an older age-group (10–16 years old).

At the beginning of the data collection process, nurses at the children's hospital contacted outpatients with chronic illnesses (rheumatism, diabetes, or inflammatory bowel disease). Patients and their parents were informed of the study and asked to participate. If they agreed, they were asked to complete a written consent form. A total of 34 families were contacted and 20 declined to participate (rejection rate: 59%). Children who were interested received a probe package, including a tablet for video diaries, a binder with tasks and instructions, three story cubes (with different pictures on each side to prompt storytelling), and a marker pen. The probe tasks were constructed to include playfulness (e.g., drawing and hobby crafting) and to prompt sensual, emotional, compositional, spatiotemporal, and social aspects of the children's experiences. The probe task themes varied daily and included drawing a patient path, explaining daily routines related to the illness, and creating a collage demonstrating "[a] dream vacation in the hospital" (for detailed information, see Karisalmi, 2016; Karisalmi, Stenhammar & Kaipio, 2018). The 14 participants were asked to record daily video clips on the given themes or tasks for 9 or 10 days. Within 2 weeks of returning the probe packages, they also participated in face-to-face interviews to clarify and elaborate on their responses. The method and probe package were pilot-tested, and minor changes were made to elucidate the instructions and task descriptions and improve the order of the tasks (so that easy and more demanding tasks varied on consecutive days).

Study 2: Narrative Interviews With Parents of a Child Patient

The narrative interviewing method was used to study experiences in children's health care and service experience dimensions of children from the perspective of child patients' parents. Narrative interviewing was chosen as a method because narrative interviews reveal the storyteller's experiences in story form, conveying meaningful events actualized in different locations and at different times (Helkkula & Kelleher, 2010). Therefore, this method enabled us to examine child patients' service experience holistically and dynamically. It was hypothesized that, as parents are inextricably part of child patients' care and social life, they could be used to study children's service experience.

The narrative interviews with the child patients' parents were carried out at the interviewees' homes or workplaces (see Mannonen, Kaipio, & Nieminen, 2017). Participants provided informed written consent. The participants were comprised of 24 families, including both families with young children with congenital disorders and families with teenage children suffering from chronic illnesses (from which eight teenagers were participants in Study 1). These illness groups were selected because young children (younger than 2 years old) were the hospital's largest patient group in terms of both resources and head count, and teenagers enabled comparisons between the experiences of the parents and the children in later phases of the research project. Participating families were selected in collaboration with the partner hospital, and families were first approached by the hospital. The rate of the rejections was not recorded. Interviews were conducted between winter 2015 and spring 2016, and each interview lasted 1–2 hr. In most families (14), only 1 parent was present, and in the remaining 10, both parents were present. The interviews were audio-taped and later transcribed verbatim. The interview structure was based on a modified version of the critical decision-making method (Klein, Calderwood, & Macgregor, 1989; Mannonen, Aikala, Koskinen, & Savioja, 2014; Mannonen et al., 2017). The four main themes covered were as follows: (1) a description of the incident or illness, (2) the construction of a time line for the incident, (3) an identification of related experiences and emotions, and (4) an identification of the communication tools used and partners and information sources consulted.

Study 3: Semistructured Interviews With Health-Care Professionals

The semistructured interview method was utilized with health-care professionals because it allowed us to focus on a particular theme and add depth to the interviewees' answers (see Carney et al., 2003). Semistructured interviews were conducted with doctors ($n = 11$), head nurses ($n = 4$), and other nurses ($n = 8$) working at the Pediatrics and Adolescent Medicine Department at Helsinki University Hospital and the Department of Pediatrics and Adolescence at Oulu University Hospital. All approached hospital professionals agreed to participate and provided verbal consent for participation. Interviews were conducted between September and December 2015, and each lasted for about 1 hr. The interviews were audio-taped and later transcribed verbatim. Participants were selected to represent a range of professional groups and specializations (e.g., rheumatics, neurology, cancer ward, and pediatric surgery).

The interviews covered six themes: (1) participant background, (2) patient experience, (3) patient journey, (4) patient experience quality measurement, (5) organizational culture, and (6) "New Children Hospital." The first three themes were designed to understand the health-care professionals' views concerning the experiences of children and their families, and the last three themes were used later in the project. The patient experience theme included six questions: (a) define patient experience, (b) describe things that influence experience, (c) describe a good experience using three adjectives, (d) describe how health-care professionals can influence patients' experiences, (e) describe how health-care professionals can influence parents' experiences, and (f) describe things that are important for patients' and parents' experiences. The patient journey theme included seven questions: (a) interaction points in the patient's journey, (b) emotional states at these points, (c) challenges in journey points, (d) things influencing flow, (e) memorable encounters with patients, (f) information-sharing during the journey, and (g) strengths and weaknesses of current way of operating.

Analysis of the Studies

Our analysis of the studies comprises two phases. First, we conducted a within-study content analysis for each of the conducted studies. Analyzed data included the filled binder, the video clips, interview transcripts from the video diary method, transcripts of narrative interviews, and transcripts of semistructured interviews. Our first-round analysis followed deductive approach and explored how the applied methods generated information on the dimensions of service experience. Each individual interview or personal data set was analyzed based on a predetermined framework and coding (Jaakkola et al., 2015; McCarthy & Wright, 2004) using a qualitative data analysis software. In addition, we analyzed each method's applicability for studying service experience in children's health care, including benefits and limitations. The applicability of each method was analyzed with respect to the method's ability to capture the dimensions of service experience and the appropriateness of using the method with the selected sample through discussions among the participating researchers.

Second, we conducted a cross-study analysis of the three studies. The cross-case analysis process drew on discussion within the research team and was based on experiences and interpretations from the first round of analysis. The aim of the cross-study analysis was to identify differences and similarities among the studies concerning capturing the six dimensions of the model. Therefore, units of the cross-study analysis were dimensions of service experience and two factors within each dimension (e.g., broad–narrow time frame in the temporal dimension). Each dimension and its factors were analyzed independently through discussion to compare the studies.

Results

The studies revealed that the methods varied in the broadness and depth with which they captured the dimensions of the service experience of child patients. The following sections present the results of the studies, concentrating on the benefits and limitations of each method and how each method captured the dimensions of child patients' service experience.

Benefits and Limitations of the Studied Methods

Video diaries with child patients. The data collected through the video diaries were verbally and visually rich, as the children reflected thoroughly upon their thoughts, feelings, and dreams through multiple pictures, screenshots, drawings, and daily video clips. The children mostly reported on school, family and friends, hobbies, and leisure time in their daily routines, suggesting that the child patients defined their experience through everyday events rather than through their illness. Such latent information might not have been revealed with more conventional and spontaneous methods (e.g., interviews).

Video diaries also captured the temporal dimension, as all informants described their past journeys and their encounters with different health-care professionals and other actors related to their illness. However, most of the children lived in the moment and worried about concrete, timely issues, such as food restrictions.

Some of the older children also described some imaginary experiences concerning the near future, such as how their illness would affect their high school studies and possible career options: topics more typical of adult interviews. These expressions of actual encounters with health-care professionals and future imaginary experiences imply that the video diary method can be used to capture the factual dimension of the service experience in children's health care.

The rich data gathered through the video diaries included several different experience locations within hospitals and children's everyday lives (e.g., home or hobbies). Therefore, the method captured the full spectrum of the spatial dimension of service experience. Related to the hospital locations, children recalled positive experiences with entertainment devices, board games, canteen snacks, and windows and negative experiences with the lack of privacy and medical equipment.

The children highlighted the importance of maintaining social relationships with hospital personnel and members of their everyday social environment, including family members, relatives, friends, and peers. This implies that the organization and locus dimensions can be captured using the video diary method with child patients. Concerning the control dimension, children expressed feeling that they had little control over service creation, including hospital visits, clinical procedures, and transfers among hospital units. Patient-led experiences were captured through children's expressions of experiences in home settings and other locations outside the hospital setting, beyond the health-care service provider's control.

Researchers utilizing this method may face challenges with their samples. The rejection rate in the video diary study was high, with 20 of the 34 contacted children declining to participate due to, for example, a lack of time, strength, or motivation. Teenage boys were especially unmotivated to participate. We believe that the sensitivity of the context, the lack of incentives, and the lack of familiarity with the video diary format as a research method and its laborious nature may have influenced children's willingness to participate (see Karisalmi & Nieminen, 2017). Participants' feedback on the method was contradictory; some participants appreciated the short daily time investment, while others would have preferred larger investments over fewer days. Because of these individual preferences, it is unclear whether a shorter time commitment would have improved the participation rate.

The high rejection rate in the video diary study may have yielded biased data, as all participants who did agree to participate were highly motivated to complete the study. Therefore, it is unclear whether unmotivated children with more severe illnesses, such as cancer, experience their illness and treatment differently. A few technical difficulties, such as noise, dim light, and the accidental deletion of some video clips, occurred during the study period but caused only minor issues in analyzing the data.

Narrative interviews with parents of a child patient. Narrative interviews with parents of a child patient captured the dynamic journeys of families with ill children through cumulative stories. Parents explicated family's navigation through myriads of clinical and nonclinical care encounters and the effects of the illness on their everyday lives beyond the hospital setting. Their stories also revealed the service experience of the child patients, as parents expressed their estimations of their children's experiences or reflected their children's own testimonies. This implies that, to some extent, parents may serve as experts on their children's experiences, at least for younger children. However, parents' estimations may also be incomplete and/or biased. Children, especially teenagers, may hide feelings and thoughts from their parents that may limit parents' views of their child's experience. Furthermore, parents' own emotions and their experiences related to the care may cloud their interpretations of their child's experiences.

The narrative method fully captured the temporal dimension of the service experience. The parents' cumulative stories both narrowly concentrated on meaningful events and broadly expressed how past and future experiences and scenarios influenced their own and their children's experiences. The events the parents described included hearing the diagnosis, being excited to return to the hospital, and the medicines and care beginning to work. Concerning past experiences, parents described past unsuccessful encounters, but also how past experiences influenced their children by, for example, familiarizing them with operations or injections. Future experiences included uncertainty and concerns about future operations and life with the illness. The breadth of the information shared about meaningful events suggests that parents' narratives are well-suited for capturing the factual dimensions of child patients' service experience, as they included both lived and imaginary experiences.

The narrative interviews captured the full range of the spatial dimension through the parents' stories, which included events in multiple locations, such as the hospital, school, social welfare sites, peer support sites, and families' everyday life surroundings. Parents also reflected on the influence of a wide variety of actors, including hospital personnel, patient associations, other patients and families, relatives, and school personnel. These insights enabled access to the organizational dimension from the parents' perspective and yielded useful data to examine different actors' capacities to influence service experience creation beyond the hospital setting in children's and their families' everyday lives.

The parents' narratives also captured the locus dimension of the service experience, as they described their children's individual experiences from their own perspective, but also shared collective experiences within the family. This suggests that narratives are well-suited for revealing and examining both individual and collective levels of service experience in children's health care.

With regard to the control dimension, the narratives revealed multiple events in which the control of service creation was in the hands of the service provider (e.g., surgery) but also events in which the control shifted to the patients and families (e.g., self-care, peer support). Thus, the control dimension was fully captured by the parent interviews.

Limitations concerning the narrative interviewing method include the inherent unverifiability of secondhand accounts and observations of actual encounters. Further, some parents found it difficult to review their experiences. This finding underscores the sensitivity of the studied context and the need to give particular attention to ethical considerations in these kinds of studies.

Semistructured interviews with health-care professionals. The semistructured interviews with the health-care professionals captured a generalized view of child patients' service experience. The interviewed health-care professionals had several years' experience in pediatric health care; therefore, they were able to provide an overall picture of children's experiences. Health-care professionals reflected on the service experience of child patients through their professional perspective by describing service experience creation in doctor–patient and nurse–patient encounters in the hospital. The professionals' lack of knowledge about the service experience of children and their families beyond the hospital setting limited the breadth of information captured by this method and sample.

Concerning the temporal dimension, the health-care professionals primarily described children's service experiences through snapshots of encounters with patients and their families. The health-care professionals stated that some patients go through multiple wards and meet various health-care professionals during their care. The health-care professionals' concentration on the hospital setting yielded rich data on the organization dimension.

Concerning the factual dimension of the service experience, the health-care professionals primarily described the patients' and families' actual lived experiences, including encounter situations, experiences of pain or painlessness, and waiting for appointments. The health-care professionals also gave examples of child patients' imaginary future experiences, such as fears of dying and concerns about future operations.

The spatial dimension was captured only partially, as the health-care professionals concentrated on describing service experience within the hospital. The health-care professionals emphasized the importance of the hospital environment, including personnel's clothing, technical devices, noises, colors, and playing areas, in providing a good service experience for children.

With regard to the locus dimension, the health-care professionals described the service experience as collective: a characteristic they considered specific to children's health care. The health-care professionals expressed that, although clinical and nonclinical processes focus on the child patient, they are experienced by the whole family due to the family's shared feelings and continuous participation. However, although the health-care professionals regarded the service experience as collective, they also emphasized the importance of seeing children as individuals and meeting their individual needs and concerns. Therefore, while the semistructured interviews captured both the individual and collective levels of the locus dimension, they concentrated purely on the hospitalization period, leaving a gap concerning the service experience beyond the hospital setting. This also applies to the information gained about the control dimension of the service experience, as the interviews with the health-care professionals yielded one-sided but detailed information on processes led by hospital personnel.

It is worth noting is that health-care professionals may give biased views of the service experience in children's health care. Interviews were held in the workplaces of the health-care professionals, and participants may have felt the need to be a representative of the health-care organization that they worked for. This may have influenced participants' will to answer questions in a socially desirable manner, causing bias. Health-care professionals may also be biased to answer in a manner that makes them look better. For example, data included little information about health-care professionals' own errors that could have influenced the service experience. However, the interviewees did share some errors made by *other* health-care professionals. To minimize bias, we suggest conducting interviews with health-care professionals outside work.

Analysis: Summarizing and Comparing Methods

Our studies with different methods and sources imply that it may be extremely difficult to obtain a complementary view on the service experience of child patients by using just a single method or source, although each method has strengths. The video diary method provided rich data on the subjective service experience of the child patients on their everyday life and surroundings and provided insights into chronically ill child's minds (see Table 3). The narrative method with the parents yielded data on the collective experience, providing insights into family dynamics in families with an ill child. Semistructured interviews with health-care professionals yielded data that provided an in-depth understanding of hospital processes that construct the patient experience.

The video diary method with the child patients and the narrative interviews with parents of a child patient were both useful for capturing the dynamic nature of service experience and the broad *temporal dimension*. Patients and their parents both described their care and life with an illness from a temporally broad perspective and elaborated on how some previous experiences influenced later experiences. Comparing to these two methods, the semistructured interviews with the health-care professionals yielded more temporally narrow information, focusing primarily on hospitalization periods and overlooking information on self-care and other experiences in patients' everyday life surroundings. Therefore, researchers using only semistructured interviews with health-care professionals can only partially capture the service experience of child patients. Video diaries and narratives, by comparison, can each capture the full spectrum of the temporal dimension.

Concerning the *factual dimension*, the narratives and the video diaries captured future imaginary experiences, such as concerns about future life with an illness. However, the parents' interviews yielded much deeper information, as the children tended to concentrate on present issues. Compared to these methods, the semistructured interviews with the health-care professionals concentrated more on lived actual encounters, such as appointments and clinical procedures. However, analyzing methods' applicability for capturing the factual dimension of child patients' service experience in health care is problematic as, without observation, it is hard to clearly show which experiences were actually based on past lived encounters and which were imagined by the informant.

Both the narrative interviews and the video diaries captured the *spatial dimension* of child patients' service experience beyond the hospital setting. The narrative interviews with the child patients' parents yielded comparatively deeper and broader data on the spatial complexity and multiparty nature of the service experience of child patients in health care. Video diaries completed at home, however, encouraged children to describe their experiences beyond the hospital settings, including events in school and through hobbies.

All methods captured both levels of the *organizational dimension* of the service experience in children's health care. Service experience evaluation through systemic interactions was emphasized across all collected datasets. The *locus* and *control dimensions* were also captured in all studies. However, data collected through semistructured interviews with health-care professionals concentrated mainly on the hospitalization periods, providing little information on patient-led experiences. Table 4 presents which dimensions of service experience were captured (marked as x in the table) in each of the study.

We acknowledge that our study has limitations. Our research design enabled us to examine the capability of different methods to capture the dimensions of service experience and to examine how a child patient's service experience can be captured through different informants, two factors that influence the ability to capture the multidimensional service experience. Hence, this study went beyond simple method comparison to the higher research design level, and it may be expected that some of the results were more related to the informants, but rather the method. For example, we expect that the detailed data from the narrative interviews on spatial complexity and the multiparty nature of service experience might have been related to the use of parents as informants rather than the narrative method. Therefore, having constant participant type in all three studies may have provided different results. The generalizability of our findings may be limited due to cultural and societal differences. All

Table 3. Lessons Learned From Studies on the Service Experience of Child Patients.

Method	Benefits	Limitations/Challenges	Considerations in Using the Method and Implications for Researchers	How the Focal Method Captured the Service Experience and Its Diverse Dimensions
Video diaries with child patients	– Verbally and visually rich data – Revealed otherwise hidden insights about chronically ill children's thoughts and feelings – Participants preferred this method over interviews or surveys and appreciated being able to use the diaries at home	– Sensitive surrounding; not all children had the time/strength/motivation to participate – Difficult to motivate participation, especially among teenage boys – Some found talking to the camera strange or the many tasks laborious – Technical difficulties occurred (e.g., noise, dim light, accidental deletion of video clips) – Bias was possible, since all participants were highly motivated	– It is important to find ways to motivate children and teenagers to participate – New channels must be considered to make participation even more convenient for children – The situation of the child needs to be evaluated through a wider lens when choosing the probing moment – This method is applicable in exploratory studies on the service experience of child patients due to rich, unstructured verbal and visual data	– Captured the subjective and dynamic nature of the service experience in the studied context – Revealed timely issues, but also children's past journeys; therefore, captured the temporal, spatial, and organizational dimensions. The method revealed the locus dimension through descriptions of experiences with parents and other patients – Without observations, it was hard to analyze the factuality of captured lived events. Imaginary experiences were also captured
Narrative interviews with parents of a child patient	– Parents were able to describe their children's experiences to some extent – Captured the dynamic and multiparty nature of child patients' service experience in detail – Clearly described the development of emotions	– Without observations of actual encounters, it was difficult to divide lived and imagined experiences – Some participants found it difficult to review their experiences – Did not capture children's subjective experiences. The parents may have been unaware of some of the children's experiences	– Collecting data from children's parents may capture a broader and more detailed picture of journeys with an illness than collecting data solely from children – Imaginary experiences may be enhanced if the subject of the study is sensitive – Researchers must consider whether the meanings of some experiences have changed as time has passed – Due to detailed journey descriptions, this method is applicable in exploratory studies on children's experiences that aim to map children's journeys and associated experiences	– Captured child patients' service experience from the parents' perspective – Captured the dynamic nature of service experience. Captured the temporal dimension through cumulative stories, including the locations and actors with whom the child patients' parents interacted and, thus, also revealing the spatial and organizational dimensions – The parents' descriptions of their experiences inside and outside the hospital elaborated on the locus and control dimensions – The line between actual lived experiences and imagined experiences could not be clearly defined

(continued)

Table 3. (continued)

Method	Benefits	Limitations/Challenges	Considerations in Using the Method and Implications for Researchers	How the Focal Method Captured the Service Experience and Its Diverse Dimensions
Semistructured interviews with health-care professionals	– Captured a generalized view of child patients' service experience in health care – Health-care professionals had a good view of which details positively affect children's experiences	– Poorly described experiences beyond the hospital setting – The subjectivity of the service experience of child patients was not captured – Health-care professionals may have been biased in describing their influence on experiences	– As health-care professionals tend to approach experiences from their own professional perspective, this method is less applicable if large parts of a child's service experience are created beyond the hospital setting – This method is applicable in studies concentrating on the management and processes child patients' service experience due the rich data on patient–doctor/nurse interaction	– Captured a generalized, secondary view of child patients' service experience, concentrating on actual lived encounters – Narrowly captured the temporal and spatial dimensions, as health-care professionals described short snapshots from hospital settings, excluding child patients' experiences in other locations (e.g., at home). Collective experiences were described in hospital settings, capturing the locus dimension – Captured organizational and control dimensions, as health-care professionals described health-care processes

Table 4. Service Experience Dimensions That Were Captured in Each Study.

Dimensions of Service Experience		Video Diary With Child Patients	Narrative Interviews With Parents of a Child Patient	Semistructured Interviews With Health-Care Professionals
Temporal dimension	Broad time frame	x	x	
	Narrow time frame	x	x	x
Factual dimension	Lived	x	x	x
	Imaginary	x	x	
Spatial dimension	Beyond service setting	x	x	x
	In service setting	x	x	x
Organization dimension	Dyadic	x	x	x
	Systemic	x	x	x
Locus dimension	Individual	x	x	x
	Collective	x	x	x
Control dimension	Provider-led		x	x
	Patient-led	x	x	

our study participants were Finnish citizens; therefore, we cannot conclude whether willingness to participate and share sensitive experiences differ based on cultural background. Early childhood education in Finland relies on playful learning methods, which may have facilitated our ability to implement playful video diary tasks. We also acknowledge that Finland's public tax-funded health-care system may have influenced the patients' experiences, potentially limiting our findings' applicability to countries with strong private health-care sectors. The possible influence of public versus private health care could be investigated in future studies.

Conclusions

Theoretical Contributions

The study was conducted to increase our understanding of the qualitative methods used to study the multidimensional service experience in children's health care, which is considered a complex research topic due to its subjective, unique, and dynamic nature (Zomerdijk & Voss, 2011).

First, the study contributes to qualitative method research by conducting three studies with different data collection methods and comparing how each captured a contemporary phenomenon: service experience. We extend knowledge from previous studies by showing that children are able to express their experiences through the playful, unstructured video diary method. These results reflect those of Curtis et al. (2004), who also found that playfulness and flexibility in research methods supports child patients' ability to describe their experiences. Our finding that child patients are capable of expressing their experiences in their everyday life surroundings, however, contradicts the findings of Sartain, Maxwell, Todd, Haycox, and Bundred (2001), who found that children had difficulties expressing their experiences in home settings. Hence, it could be hypothesized that playful, temporally and spatially flexible methods may help children express themselves and yield a deeper understanding of children's experiences, particularly in sensitive and invasive services (see Lovelock, 1983).

Second, the study contributes to experience research by providing novel structured knowledge on experiences in the setting of children's health care. The methods can be implemented in other contexts to gain broad, in-depth information on experiences created beyond the service settings and among the different actors (Banerjee, 2014). Our study went beyond simple method comparison and examined three different informant groups that may provide experience data on the service experience of child patients. Moreover, this study appears to be the first to apply and empirically examine the service experience dimensions presented by Jaakkola et al. (2015). Our study contributes to the service experience research (Danaher & Gallan, 2016; Frow et al., 2016) and suggests that the dimensions of the service experience in health care elaborate: a broad temporal dimension, a spatial dimension including both the service setting (hospitals) and far beyond (home, school), a systematic organizational dimension, strong imaginary experiences in the factual dimension, a collective locus dimension, and a control dimension including both provider-led to patient/family-led services.

Implications for Researchers and Practitioners

Video diaries seem to suit studies aiming to explore children's service experience. When choosing probing and video diaries as a method, the method's appropriateness for the participants must be considered. Children's situations must be evaluated through a wider lens, since the video diary method can be time-consuming to complete. Children, especially high schoolers and children with many hobbies, may not have time to complete the requisite tasks; therefore, the method may not always be suitable. To address this issue, researchers may consider increasing the method's time flexibility.

Through narrative interviews, the patients' parents were able to describe the entire span of interactions and encounters better than their children. This helps researchers map temporally prolonged experiences in detail but may also imply that parents' assessments of their children's experiences differ from the children's own assessments (see Savage & Callery, 2005).

However, narrative interviews with children's parents may be useful for studies aiming to map children's experiences and influencing actors, as well as for exploratory studies concentrating on the experiences of children in sensitive contexts, as they may be more convenient to implement than methods involving collecting data from children. We encourage researchers to complement their understanding of service experience in health care using data collected from both child patients and their parents. Although this does not triangulate the validity of subjective experience, it may increase researchers' understanding of the collective nature of the phenomenon, which is hard to achieve using a singular perspective.

Interviews with health-care professionals seem well-suited for studies concentrating on developing health-care service providers' actions to shape patients' service experience. This method should be used cautiously, however, if a large part of the patient's experience is created beyond the provider's service setting (e.g., in illnesses in which self-care plays a major role). In these contexts, provider-side professionals may provide only partial information, resulting in a narrow picture of the phenomenon. The use of video diary or narrative methods with individuals, children, or adults can help address this issue by providing patient perspectives and information beyond the service setting. In addition, the use of multiple methods and samples may enable researchers to zoom in and out on the phenomenon, depending on whether the study focuses on isolated moments or a broader temporal perspective.

Future Research Agenda

Future research concerning methodological insights into children's experiences could test how different technologies, gamification, and interactivity can be used to solve problems collecting the experiences of younger children, especially children at a low developmental stage with undeveloped language skills, through reading and supporting children's storytelling ability. The video diary method study revealed problems motivating children to participate. Further studies are needed to learn how to motivate children to participate in research. Papers that tackle these issues could assess new methods and channels to make it easier and more convenient for children to participate (see Karisalmi & Nieminen, 2017). Furthermore, our study examined a limited set of three purposefully chosen methods. The methods and our findings can be adopted into research and practice to improve the holistic service experience of child patients, not only within the hospital setting but also beyond it. However, we strongly encourage researchers from different disciplines to investigate the service experience of child patients using varying methods to advance this field of science even further. Finally, our three methods involved participants with little connection to one another (i.e., links existed only between some of the children participating in the video diary method and their interviewed parents). It would be interesting to study the experiences of children, their parents, and even their nurses to determine whether their experiences are cohesive or different.

Declaration of Conflicting Interests

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VI

Development of a boundary object supported method to study children's healthcare customer journeys

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Development of a Boundary Object Supported Method to Study Children's Healthcare Customer Journeys

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Abstract: Healthcare is a major service industry that contributes substantially to the gross domestic product of developed economies and employs a significant number of people. Understanding and developing customer experiences and the customer journeys of patients, has become one of the fundamental aims of today's high-quality healthcare systems. However, in healthcare, customer journeys, throughout which the customer experience emerges, are challenging to study and capture because they are complex spatial and temporal constructs. During the customer journey, a patient engages resources from a diverse set of actors within the healthcare ecosystem, not only in the settings facilitated by the healthcare providers, but also beyond healthcare settings, including family, friends, and patient networks. From the standpoint of a researcher or organization, understanding customer journeys from the perspective of the patient-healthcare provider dyad is therefore no longer adequate, and broader and more holistic approaches are needed to truly capture and understand such journeys. The study of customer journeys of young children, who may have difficulties describing their holistic and cumulative experiences due to potentially less-developed cognitive competencies and tendencies to address those experiences from narrower perspectives than adults, is particularly challenging. To support the shift toward a broader and more holistic understanding of children's healthcare customer journeys, this paper presents a novel qualitative data collection method for researchers and healthcare organizations. The method relies on functional, playful, and flexible boundary objects for translating the theoretical underpinnings of the spatial-temporal customer journey that is created in the healthcare ecosystem. Studies conducted using this method could provide a broader and more holistic understanding of children's healthcare customer experiences, which are formed during complex journeys that are difficult to examine with conventional methods. This, in turn, provides information critical for managers who are rethinking their service delivery and about aligning this delivery with other actors in the healthcare ecosystem or finding opportunities to develop further service offerings.

Keywords: boundary objects, qualitative research, customer journey, healthcare, children

1. Introduction

Healthcare is a major service industry. It contributes substantially to the gross domestic product of developed economies, employs a significant number of people (Danaher and Gallan, 2016), and all people are likely to be customers in this industry at some point in their lives. However, the current state and sustainability of many healthcare systems in developed countries are threatened by a variety of societal challenges, including the proliferation of chronic illnesses, aging populations, heightened patient demands, and rising costs of healthcare and well-being (Deloitte, 2019). Due to this alarming trend, scholars have called for a fundamental shift in healthcare: healthcare must evolve from supply-driven health systems towards patient-centered systems organized around patients' needs and aim for the maximization of value for patients (Porter and Lee, 2013). A pivotal part of creating value for patients is delivering valuable experiences for them (Porter and Lee, 2013). Understanding and developing patients' experiences have since become one of the fundamental aims of healthcare systems (Berwick, Nolan and Whittington, 2008). However, patients' needs, preferences, and experiences must be understood in-depth in order to achieve these aims.

Despite the acknowledged importance of experiences in healthcare, generating an empirical understanding of patients' experiences is challenging for several reasons, particularly so when the patient is a child. First, during the creation and perception of experience, patients interact with a diverse set of actors. These interactions occur not only in the settings facilitated by the healthcare provider, but also beyond healthcare settings, including with family and friends (Patrício et al., 2018). This demonstrates how the subjective assessment of the customer experience can span potentially long and complex journeys that are shaped by many interactions that form the complete healthcare customer experience (Lemon and Verhoef, 2016). From the standpoint of a researcher or organization, studying customer experiences and customer journeys with respect to the patient-healthcare provider dyad is therefore no longer adequate, and broader and more holistic approaches are needed to capture this complex phenomenon. Second, despite the acknowledged complexity of experience formation, research on customer experiences in healthcare is still dominated by conventional quantitative and qualitative methods that may provide limited accounts of a person's holistic experience and cumulative journey with multiple actors. This poses a challenge when studying the healthcare experiences of young children (Forsner, Jansson and Sørlie, 2005), who may have difficulties describing their holistic experiences due to potentially less-developed cognitive competencies and tendencies to address the experience and journeys from narrower perspectives compared to adults (Forsner, Jansson and Sørlie, 2005; Litovuo et al., 2019). Third, due to the extremely personal and sensitive nature of health services (Danaher and Gallan, 2016), particular attention should be paid to the methods used and ethical concerns when inquiring about patients' experiences. That is, researchers should simultaneously capture the complex experience while ensuring that patient confidentiality is not compromised especially when studying experiences of children, who are more vulnerable and experience stress more easily than adults (Kortesluoma and Nikkonen, 2004). To conclude, more efforts and innovation are needed in research on children's healthcare customer journeys. To support the shift toward a broader and more holistic understanding of customer experiences in healthcare and to enable the acquisition of in-depth information about those experiences, I seek to extend the methodological toolset by introducing a novel data collection method for inquiries on children's customer experiences and journeys.

2. Background

Research on experiences in different business contexts has increased rapidly in recent years. The creation of compelling experiences for customers is a leading management objective for modern businesses (Lemon and Verhoef, 2016), and the healthcare industry is no exception. Patients' experiences are, among other things, connected to how they and their families participate in care processes and engage with the care (Van Doorn et al., 2010). This, in turn, contributes to the cost effectiveness of healthcare and positive health outcomes for individuals (Rave et al., 2003; Greenfield et al., 1988). While patients' experiences have been widely discussed during the past decade, current research has focused predominantly on the clinician-patient dyad either from a patient perspective (e.g., Osei-Frimpong, Wilson and Owusu-Frimpong, 2015) or a primary health service provider perspective (e.g., LaVela and Gallan, 2014). However, recently, this has been challenged by a broader customer perspective comprising a myriad of interactions with various actors (Patrício et al., 2018). Applying this *healthcare ecosystem approach* is pivotal in healthcare due the complexity of health service delivery resulting from the high degree of specialization and fragmentation of the healthcare system and the need for joint efforts of multiple professionals to promote the well-being of patients (Patrício et al., 2018). Furthermore, a patient is likely to interact with individuals other than the main health service provider during activities, such as complementary therapies undertaken by other firms or organizations, and through interactions with family, friends, peers, and other patients (Sweeney, Danaher and McColl-Kennedy, 2015). Even though each of these interactions may take place at different periods and in *different settings*, they are bound together to some extent in the patient's mind (Tax, McCutcheon and Wilkinson, 2013) and therefore, form a cumulative *customer journey* through which the total customer experience emerges (Lemon and Verhoef, 2016). Thus, the study of customer journeys in healthcare should be approached holistically and cumulatively, acknowledging all the myriad clinical and nonclinical interactions patients have with a diverse set of actors in various settings.

The research methods applied to examine the customer experience and journey in healthcare must capture a temporally and spatially broad spectrum of events with various actors, and this principle has thus far, gained little attention in research on children's customer journeys. To date, researchers have attempted to create several sector-specific and generalized quantitative scales to measure customers' experiences (e.g., Brakus, Schmitt and Zarantonello, 2009; Verhoef et al., 2009), but with these scales, it is challenging to identify, in a detailed and comprehensive manner, the essence and full spectrum of events through which the experience emerges. That is, the customer's journey is a complex spatial and temporal construct (Lemon and Verhoef, 2016), and the experience emerging during it is subjective and contains tacit information. Therefore, communication with the patient and the collection of qualitative information is often critical to understanding the patient's experience.

The success of communication also relies heavily on the content of reciprocal communication. This might become a challenge, particularly with younger children, as the methods used in inquiry may fail to support children's storytelling, resulting in a lack of content. For example, narrative interviewing is widely used in customer experience research, as the method allows the participant to tell their experience in the form of a story, supporting the theoretical underpinnings of the customer journey approach (e.g., Helkkula and Kelleher, 2010). However, younger children have difficulties describing their healthcare experiences through such narratives (Forsner, Jansson and Sørlie, 2005). In tackling the issues related to inquiries into children's healthcare experiences, scholars have identified the benefits of functional, playful, and flexible methods. Such methods include, for example, combining drawing with interviewing (Sartain et al., 2001), role-playing with toys (Curtis et al., 2004), and the utilization of video diaries (Litovuo et al., 2019) to inquire about children's experiences while supporting their abilities to describe such experiences. Despite these attempts, the methods have gained little success in delivering broad and holistic information about customer experiences formed throughout the entire journey containing multiple actors. Hence, methodologies for studying children's customer journeys in healthcare need to be further developed.

3. Methods

This study was conducted to develop and introduce a novel data collection method to enable a broader and more holistic approach towards inquiries on children's healthcare customer journeys. The development of the method followed a design thinking approach (Stickdorn and Schneider, 2010) that included three stages. In the first stage, the literature on children's customer experiences, patient journeys, and customer experience research methods was reviewed to provide the research challenge and theoretical support for the development of a method. Drawing from previous studies that utilized tangible mixed-methods approaches (Curtis et al., 2004; Buur, 2018), we created a method that utilizes functional, flexible, and playful elements but applies them as tangible boundary objects to study children's customer experiences. Boundary objects are those "which help mediate in the boundary between actors with different perspectives, knowledge, skills, locations or status in social systems" (Moultrie, 2015, p. 2). The tangible boundary objects would, in this case, serve as an instrumental mediation at the researcher–child patient boundary and support the storytelling of the child while enabling functionality, playfulness, and flexibility for the data inquiry. Importantly, the objects could enable a shift toward a broader and more holistic systemic understanding by translating the theoretical underpinnings of the customer experience, patient journey, and healthcare ecosystem between the researcher and the child patient.

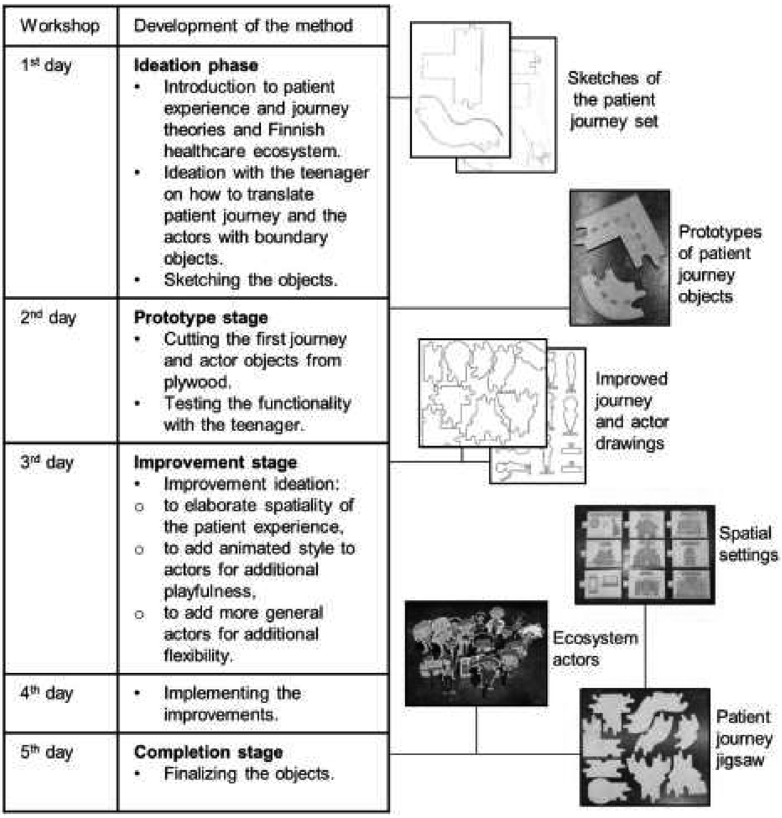
In the second stage, the knowledge from an earlier study on children's customer experiences and the relevant actors that shape experiences in the Finnish healthcare ecosystem was applied (Litovuo, 2017). This was critical in order to understand the complexity of such experiences and to develop a method that could probe for interactions with different actors. The study revealed that customer experiences are not only shaped by healthcare actors, such as doctors, nurses, and therapists, but also by actors supporting the ecosystem (e.g., pharmacists and health equipment suppliers), actors who provide social and welfare support, and actors in the child's own social network, such as parents, siblings, relatives, friends, educational actors and peers. In the same vein, the customer experience in healthcare can be formed in multiple different settings, including hospitals, and also beyond the settings characterized by the presence of health service providers—in other words, in various settings in the patients' daily and familial lives.

In the third stage, theories and findings from the previous stages were implemented for the boundary objects. The objects were developed and designed in a participatory design workshop with a 15-year-old teenager whose role was to support the design process from the perspective of a child. The workshop took place at Tampere University from April 1 to April 5, 2019. The objects were designed such that a customer experience inquiry would playfully and flexibly activate and support the child's storytelling. Simultaneously, the objects would support the translation of the underpinnings of a theory of customer journey, which is created through interactions with multiple ecosystem actors in different settings. The development of the boundary objects during the five-day participatory design workshop is illustrated in Figure 1.

4. Results: Boundary objects translating the theoretical underpinnings

The developed data collection method comprises three sets of tangible boundary objects: a patient journey jigsaw set, a spatial settings set, and an ecosystem actors set. The sets, their pieces, and the translations of theory are presented in Table 1.

The patient journey jigsaw puzzle supports the translation of customer journey theory into an information inquiry. Each piece of the jigsaw depicts an important moment or event in the patient's journey through which the child's total customer experience emerges. A total of nine differently shaped pieces were designed in the workshop. The jigsaw is designed to begin the inquiry about the experience; a child is asked to simultaneously explain and build his or her journey with an illness or injury from the pieces of the jigsaw. By combining the pieces, a child can build his or her own patient journey in a structured, cumulative, and theory-compliant way. The jigsaw thus supports a child's description of an experience by enabling them to build their own patient journey in a playful and flexible way while providing in-depth information about the patient journey and its different stages. The various jigsaw pieces are deliberately left without a strict meaning to allow participants the freedom and opportunity to find meanings of their own.



Workshop	Development of the method
1st day	**Ideation phase** • Introduction to patient experience and journey theories and Finnish healthcare ecosystem. • Ideation with the teenager on how to translate patient journey and the actors with boundary objects. • Sketching the objects.
2nd day	**Prototype stage** • Cutting the first journey and actor objects from plywood. • Testing the functionality with the teenager.
3rd day	**Improvement stage** • Improvement ideation: ○ to elaborate spatiality of the patient experience, ○ to add animated style to actors for additional playfulness, ○ to add more general actors for additional flexibility.
4th day	• Implementing the improvements.
5th day	**Completion stage** • Finalizing the objects.

Figure 1: Development of the method during a five-day participatory design workshop

Table 1: Developed boundary object sets and their role in the translation of theory

Boundary object set	Developed boundary objects	Translation of theory
Patient journey jigsaw	9 differently shaped jigsaw pieces	Customer journey theory: each piece of the jigsaw depicts an experienced event or moment of the child's cumulative customer journey.
Spatial settings	9 different spatial setting tags	Spatial nature of the customer experience: objects depict the spatial settings in which an experience is created/perceived.
Ecosystem actors	18 different actor figurines	Ecosystem theory: objects connect the ecosystem actors to patient journey events.

During the participatory design workshop, spatial setting objects were added to the method. The spatial setting objects support the translation of the spatial nature of the customer experience at the child patient-researcher boundary. This was important, as previous research implied the importance of examining the emerging experiences in relation to the places where those experiences occur. Based on the study by Litovuo (2017), the spatial setting set includes nine different settings: three different hospital settings, a home, camp, school, and travel setting, and settings related to technology and hobbies. The objects are integrated by the participant into each stage of the journey to depict the setting around which a given experience revolved.

The ecosystem actor figurines serve as an instrumental mediation to support the ecosystem approach to children's customer experience and journey inquiries. The purpose of these figurines is to probe for deeper and broader information on the creation of the customer experience in a wider ecosystem. The figurines represent different actors in the healthcare ecosystem (e.g., nurses, doctors, surgeons, janitors, therapists, and the hospital clown) and patients' own social systems (e.g., other children, friends, family, teacher). To gain information about the relevant actors who have influenced an experience, researchers can ask a child to place the actors near the relevant pieces of the journey and spatial setting. The child can also be asked to explain how each actor influenced the experience. Based on the discussions with the participating teenager, some of the figurines have clear roles (e.g., doctor), but others are more general, allowing the participant to decide their meaning. The figurines are built on a plywood base with a picture glued to them, and the illustrations have an animated style for additional playfulness. When the child finishes constructing the journey with objects, the interviewer can ask more defined questions about the experience.

5. Discussion and conclusions

Recent literature has stressed the importance of moving from a dyadic view of customer experiences to addressing the broader ecosystem that shapes the experience of complex customer journeys (Patrício et al., 2018). In developing customer experiences and journeys, it is critical to understand the needs and preferences of the patient who is experiencing the various interactions. Moreover, the emerging experience should be understood in relation to the context, time, and place in which it occurs. However, without access to the accounts of such interactions and the related information, any understanding is limited. This paper introduced a novel method for exploring children's customer journeys in healthcare to support the shift toward a broader understanding from the perspective of child patients. In so doing, the paper contributes to earlier work by extending the toolset available for use in research on children's customer experiences and journeys.

The method uses boundary objects that enable the collection of rich information about critical events in patient journeys and encourages participants to reveal information on the spatial settings of the emerging experiences. In addition to serving academic purposes, such information can be used by healthcare organizations in building understanding and redesigning service delivery. Furthermore, the method probes the interactions that children have with different ecosystem actors at various moments and during various events throughout the journey. This information is important for two reasons. First, the information can help researchers and organizations in the exploration of a child's customer journey by prompting a broader and more holistic account of this journey. Second, the information gained can assist healthcare organizations in identifying which of the interactions that influence children's experiences are controllable by the organization and which are controlled by, for example, partners of the organization or other third parties. Organizations can thus identify possibilities for better management, options for designing and aligning their service delivery with other actors in the healthcare ecosystem, and opportunities for future service offerings.

Based on this research, boundary objects have the potential to provide value by: translating the theoretical underpinnings of complex customer journeys, supporting the playfulness and cognitive abilities of the child, and identifying the critical events and ecosystem actors that shape the customer journeys of child patients. The tangible tool described in this paper is only one example of such boundary objects for eliciting data from child patients. The paper offers insights for future attempts to further develop such methodologies, such as the creation of boundary objects on a digital platform (e.g., a tablet). The digitalization of the method will be cost-effective for conducting studies but will also decrease the tangibility of the boundary objects. In any future attempts, however, great care must be taken regarding participants' comfort while conducting the inquiries due to the sensitivity of the topic. Child informants may be asked to reflect on possibly painful experiences that may have influenced their qualities of life; the journey can therefore be sensitive, personal, and highly emotional.

In the method described in this paper, the boundary objects were designed within the context and for the purpose of conducting research, but there remains the possibility of researcher bias. Further validation is still needed to determine the applicability of the method, and we plan on conducting this validation in the near future. This study clarifies the theoretical underpinnings and the planning and design stages of the boundary object method and will hopefully inspire other researchers to try out and develop novel methodologies for customer experience and journey research.

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