# A Personal Values-Based Approach to Understanding Users' Co-Creative and Co-Destructive Gaming Experiences in Augmented Reality Mobile Games

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## *Abstract*

**Background:** *Understanding how users evaluate their experiences has been recognized as being fundamental to designing services that meet the users' needs and support the emergence of positive rather than negative value outcomes in service use. Still, the current literature does not explicitly describe how the users' value determination unfolds or how the levels of experienced value could be measured to support service design. We address this gap in the context of augmented reality (AR) mobile games by scrutinizing users' personal values as a potential basis for achieving such an understanding.*

**Method:** *Through a qualitative content analysis of 43 in-depth laddering interviews with active Pokémon Go gamers in Finland, we uncover the focal personal values associated with the game. Furthermore, we determine the connection of these values to the users' co-creative and co-destructive gaming experiences.*

**Results:** *Our study defines eight personal values highlighted in Pokémon Go. The focal co-created values include pleasure, a sense of belonging, ambition, activity, and a healthy life. The most co-destroyed values in the game include social recognition and responsibility. Interestingly, the value of sociality is highlighted in both the co-creative and the co-destructive gaming experiences. While the findings may not be generalizable beyond the studied AR mobile game context, this study explains how users' personal values may serve as a basis for understanding the value structures of other digital service users to support service design.*

**Conclusion:** *Our study contributes to the literature by introducing personal values as a potential basis for understanding users' value-based drivers and service experiences to support the design of digital services. We theoretically conceptualize the users' dynamic value creation process based on personal values and, using empirical findings, offer novel insights into the value co-creation and co-destruction phenomena in AR mobile games.*

**Keywords:** Service-Dominant Logic, Value Co-creation and Co-destruction, Personal Values, Augmented Reality Mobile Games, Pokémon Go.

# Introduction

When designing services, it is essential to understand how they create value for their users. Understanding value as perceived by the users and enhancing the service experience through the co-creation of value have been identified as central aspects of digital service design (Ostrom et al., 2010, 2015; Tuunanen et al., 2010). In this regard, the emergence of service-dominant (S-D) logic (Vargo & Lusch, 2004, 2008, 2016) represents a significant shift in the understanding of value creation in digital services and has important implications for the design of these services (Chen & Vargo, 2010). S-D logic holds that the value of a product or service is always determined by the service beneficiary. Value emerges from the users' subjective experiences and interactions with the service provider (and other actors) (Vargo & Lusch, 2008). Consequently, the users' value co-creation experiences reflect the success of a service (Babin & James, 2010; Tuunanen & Peffers, 2018) and represent the very foundation of service value (Prahalad & Ramaswamy, 2004), that is, the perceived value of a service based on the subjective and contextual experiences of its users (Chandler & Vargo, 2011; Vargo & Lusch, 2008).

Aside from basing emergent value on users' subjective and contextual experiences, the current S-D logic literature does not explicitly describe how the users' value determination unfolds or how the levels of co-created value could be measured to support service design. Furthermore, while the S-D logic-founded body of literature tends to focus on the positive aspects of service exchange, more insights regarding the emergence of negative value outcomes and the concept of value co-destruction have been called for (e.g., Lintula et al., 2018; Vartiainen & Tuunanen, 2016). To understand how to co-create value with users, service providers should identify and evaluate both the value co-creative and co-destructive service experiences that may occur for the users (Lintula et al., 2018; Plé & Chumpitaz Cáceres, 2010; Sandström et al., 2008). Whereas most research has examined value co-creation or co-destruction as separate phenomena, understanding these two as dynamically interlinked dimensions of value creation has been suggested as an important direction for future research (e.g., Kokko et al., 2018; Li & Tuunanen, 2022).

To this end, Babin and James (2010) suggested that the value that emerges from service exchange is connected to the users' personal values (i.e., their enduring beliefs that a specific mode of conduct or end-state of existence is personally or socially preferable over its opposite), which are believed to affect the users' attitudes and, thus, their behavior and evaluation toward a service (Huber et al., 2001; Rokeach, 1973; Schwartz, 2012). From this perspective, service attributes (i.e., the tangible and intangible characteristics of a service) are regarded as being relevant to users due to the consequences they carry and the personal values that these consequences help realize for the users (Gutman, 1982). Investigating users' personal value structures, that is, values that users seek to realize through service use—as well as negatively perceived values—may provide the needed understanding of users' underlying values that act as drivers for service use (Tuunanen & Kuo, 2015; Tuunanen & Peffers, 2018). Such an understanding of personal values may be harnessed in the design and development of service attributes that enable proposing relevant value for the users and support the creation of positive rather than negative value outcomes (Lintula et al., 2018; Tuunanen & Peffers, 2018; Vartiainen & Tuunanen, 2016). As users' service experiences largely determine their future behavior, word-of-mouth, and brand perception (Åkesson et al., 2014), these insights should be of great interest to service design practitioners and researchers.

We address this gap by examining the phenomena of value co-creation and co-destruction in a specific digital service context: the augmented reality (AR) mobile game Pokémon Go. More specifically, we analyze laddering interview data from active gamers in Finland (n = 43) to uncover the focal personal values in the game that are connected to users' co-creative and co-destructive gaming experiences. While previous research has attempted to explain gamers' motivational drivers for gaming and the effects of these drivers on gamer engagement, loyalty,

and behavior in various gaming contexts (e.g., Boyle et al., 2012; Huang & Hsieh, 2011; Huang et al., 2017; Lee et al., 2018; Yee, 2006), the current study takes a step back and focuses on users' personal values as the antecedents of such needs and goals (i.e., drivers) for gameplay.

We employ the S-D logic (Vargo & Lusch, 2004, 2008, 2016) and related concepts for understanding users as the active co-creators, co-destroyers (e.g., Echeverri & Skålen, 2011; Plé & Chumpitaz Cáceres, 2010), and determinants of service value, and the means-end theory (Gutman, 1982), for investigating users' personal values as the basis for service value determination, that is, how the users subjectively and contextually perceive the value of the service based on their personal values. Furthermore, we apply the value typology framework by Tuunanen and Kuo (2015) as the theoretical basis for value classification. We set the following research questions:

**RQ1:** *"How can users' dynamic value creation process be conceptualized based on personal values?"*

**RQ2:** *"How can such users' personal values-based understanding be harnessed in service design?"*

By addressing these questions, we contribute to the literature in multiple ways. First, we theoretically conceptualize the users' dynamic value creation process based on personal values and, using empirical findings, add to the understanding of the value co-creation and co-destruction phenomena in AR mobile games. Second, our study reinforces the applicability of the value typology of Tuunanen and Kuo (2015) for classifying personal values and understanding the different dimensions of value to support service design. We also propose new value constructs to extend the value typology. Third, our findings may assist practitioners in attaining an understanding of which personal values drive the use of Pokémon Go and other similar location-based AR mobile games in which gamers are expected to be physically and socially active and integrate resources (e.g., time, skills, money, and gaming devices) with other gamers and the game application (among others) in the physical and virtual environments for value co-creation, and the underlying negative values related to users' experiences.

The remainder of our paper is structured as follows. The next section introduces the study's theoretical background, including the concepts of S-D logic, value co-creation and co-destruction, and service value determination. The section ends with a summary and a presentation of the users' dynamic value creation process based on personal values. The third section presents the research methodology, including the context of the study and the collection and analysis of data. Next, the fourth section presents the findings, while the fifth section, Discussion, considers the implications of the findings for research and practice. Finally, the sixth section presents our conclusions, summarizing the study, discussing its limitations, and providing suggestions for future research.

## Theoretical Background

### Service-Dominant (S-D) Logic

After being introduced by Vargo and Lusch in 2004, S-D logic has become a key logic utilized to explain value creation between actors. S-D logic (Vargo & Lusch, 2004, 2008, 2016) identifies the notion of service—the process of using one's resources for the benefit of others—as the fundamental basis for all exchange. Such exchange involves the integration of operand (tangible and static resources) and operant resources (competences such as skills and knowledge) for value co-creation by the involved actors and can be studied at various levels of aggregation (micro, meso, and macro) (Akaka & Vargo, 2014; Vargo & Lusch, 2016).

For example, one can zoom in to understand individual actors (micro-level), investigate group-level experiences (meso-level), or zoom out to gain a holistic understanding of the value co-creation process within society (macro-level) (Akaka & Vargo, 2014). This study focuses on the micro level and the value co-creation from the perspective of individual users (i.e., gamers) and how the service exchange with the AR mobile game (and other connected actors) facilitates value co-creation from the users' perspective. The level of investigation has been considered relevant also in previous studies examining users' value-based drivers for service use (e.g., Tuunanen et al., 2019; Tuunanen et al., 2010). For example, using the S-D logic lens to examine the use of consumer IS, Tuunanen et al. (2010) emphasized the role of individual users' values and goals in the process of value co-creation.

From the service users' perspective, the view of S-D logic holds that when designing services, service providers should focus on understanding and supporting the users' value creation processes rather than emphasizing service attributes (Heinonen et al., 2010; Payne et al., 2007; Reynolds & Gutman, 1988). That is, the value of a product or service does not exist as such but, instead, is a result of how the users subjectively perceive the value of the experiences it enables (Woodruff & Flint, 2006). In the same vein, S-D logic posits that service providers can only offer users value propositions (Vargo & Lusch, 2004). Value is created with or emerges for the users during the service process and is subjectively perceived and determined by them as value-in-context (Chandler & Vargo, 2011; Vargo & Lusch, 2008). Such a service-oriented and user-centric focus has been deemed essential for the success of digital services and has significant implications for their design (Chen & Vargo, 2010).

Besides having been widely conceptualized within the field of marketing, where it first originates (e.g., Grönroos, 2006, 2008, 2011 [service logic perspective]; Vargo & Lusch, 2004, 2008, 2016), S-D logic has been adopted in various other disciplines as well. It is considered foundational to service science (Maglio & Spohrer, 2007; Vargo et al., 2008), and in IS research, it has been applied, for example, to explain value co-creation in IT-enabled service innovation (Lusch & Nambisan, 2015) and development (Tuunanen et al., 2010) and to conceptualize the value co-destruction process for service systems (Lintula et al., 2017).

### *Value Co-creation and Co-destruction within the S-D Logic Framework*

In S-D logic, value co-creation is the core function of all services. It drives actions from service design and production to service use and user experience (Lintula et al., 2018). Value co-creation occurs through interactive service exchange and the integration of resources between the participating actors, "always including the beneficiary" (Vargo & Lusch, 2016, p. 8). This denotes that users as service beneficiaries should not be perceived as passive receivers of pre-determined value but as central actors who co-create it (Lusch & Vargo, 2006). Furthermore, S-D logic highlights the diversity among the different actors who may participate in value co-creation. For example, in the context of this study, the interactive value co-creation (and co-destruction) between the gamer and the AR mobile game does not occur in isolation but involves a broader network of actors (Chandler & Vargo, 2011; Vargo & Lusch, 2017). For example, the gamers' interactions with other gamers are central to co-creating the experience and the resulting value outcomes. In addition, non-users (i.e., onlookers) may impact the service experience (Lintula et al., 2018; Sergeeva et al., 2017).

When the co-creation of value functions properly, all participating actors are "better off" (Grönroos, 2008), or, as conceptualized by Vargo et al. (2008), at least one of the participating actors' well-being improves. The explanations of S-D logic have primarily centered on this positive aspect of the service provider and user interaction, overlooking processes with potential adverse outcomes. Plé and Chumpitaz Cáceres (2010) were the first to introduce the concept of value co-destruction into the S-D logic framework. The concept is based on the idea that interactions between service providers and users do not always result in co-created value but can produce negative outcomes (Plé & Chumpitaz Cáceres, 2010). In support of this

notion, Echeverri and Skålén (2011) argued that the perception of value co-creation in S-D logic is unrealistic and that co-destruction is an equally likely outcome of the value creation process. The most frequently cited definition of value co-destruction is that of Plé and Chumpitaz Cáceres (2010), who define it as an interaction of service systems that negatively affects the well-being of at least one of the participating actors, stemming from the accidental or intentional misuse of actors' resources.

Understanding the adverse value outcomes and their causes may assist service providers in avoiding value co-destruction from becoming the outcome of a service process designed to generate positive value for users (Plé, 2017). It can also help prevent undesirable outcomes such as negative word-of-mouth and the loss of users (Smith, 2013). Moreover, Lintula et al. (2018) note that gaining insights regarding value co-destruction in services that combine the physical and virtual worlds (e.g., AR mobile games) is especially important, as such services may result in more complex value co-destruction outcomes than virtual services alone.

Recent studies reinforce the notion that the co-creation and co-destruction of value are closely linked and should be studied together (e.g., Kokko et al., 2018; Li & Tuunanen, 2022). This stems from the belief that value co-creation and co-destruction interact dynamically, alternately gaining strength and dwindling in the service process (Kokko et al., 2018). Value is created or destroyed throughout a dynamic service process and not determined only at the end of the process (Grönroos, 2011). Furthermore, value co-destruction may manifest as a value imbalance between the interacting actors (Plé, 2017). Due to the subjective nature of user value perception, the same activities that create value for one user may destroy value for another (Echeverri & Skålén, 2011). Moreover, Vartiainen and Tuunanen (2016), who applied the contradiction theory to the study of value co-creation and co-destruction in the context of geocaching, found that an IS artifact may be internally contradictory and thus, result in simultaneously co-created and co-destroyed value for the user.

## *Service Value Determination*

This study defines service value as the perceived value of a service based on its users' subjective and contextual experiences (Chandler & Vargo, 2011; Vargo & Lusch, 2008). Service value determination is the process by which this value is uncovered for the users. The subjective and contextual nature of value is captured in the fourth axiom of S-D logic: "value is always uniquely and phenomenologically determined by the beneficiary" (Vargo & Lusch, 2016, p. 8). In this view, the service beneficiary determines whether the service exchange produces positive (co-creative) or negative (co-destructive) value outcomes. The value of a service may be evaluated differently by different users or by the same user in different contexts, such as time, place, or social and cultural environment (Akaka et al., 2012; Edvardsson et al., 2011).

Pertaining to service value determination, recent literature on S-D logic has emphasized institutions and their essential role as the coordination mechanisms for value co-creation in service exchange. This is reflected in the fifth axiom: "Value cocreation is coordinated through actor-generated institutions and institutional arrangements" (Vargo & Lusch, 2016, p. 8). In S-D logic, institutions are understood as the rules, norms, meanings, practices, and other similar elements enabling and constraining actors' resource integration and service exchange (Vargo & Lusch, 2016). In the context of AR mobile games, these can include, for example, the game's rules, shared beliefs, and the social environment surrounding the gamers. As explained previously, institutions and their arrangements can be viewed at micro, meso, and macro levels of aggregation. This study focuses on the individual users and their personal values. It has been suggested that this perspective on values provides valuable insight into the various ways in which individuals may relate to a particular institution (Kraatz et al., 2020).
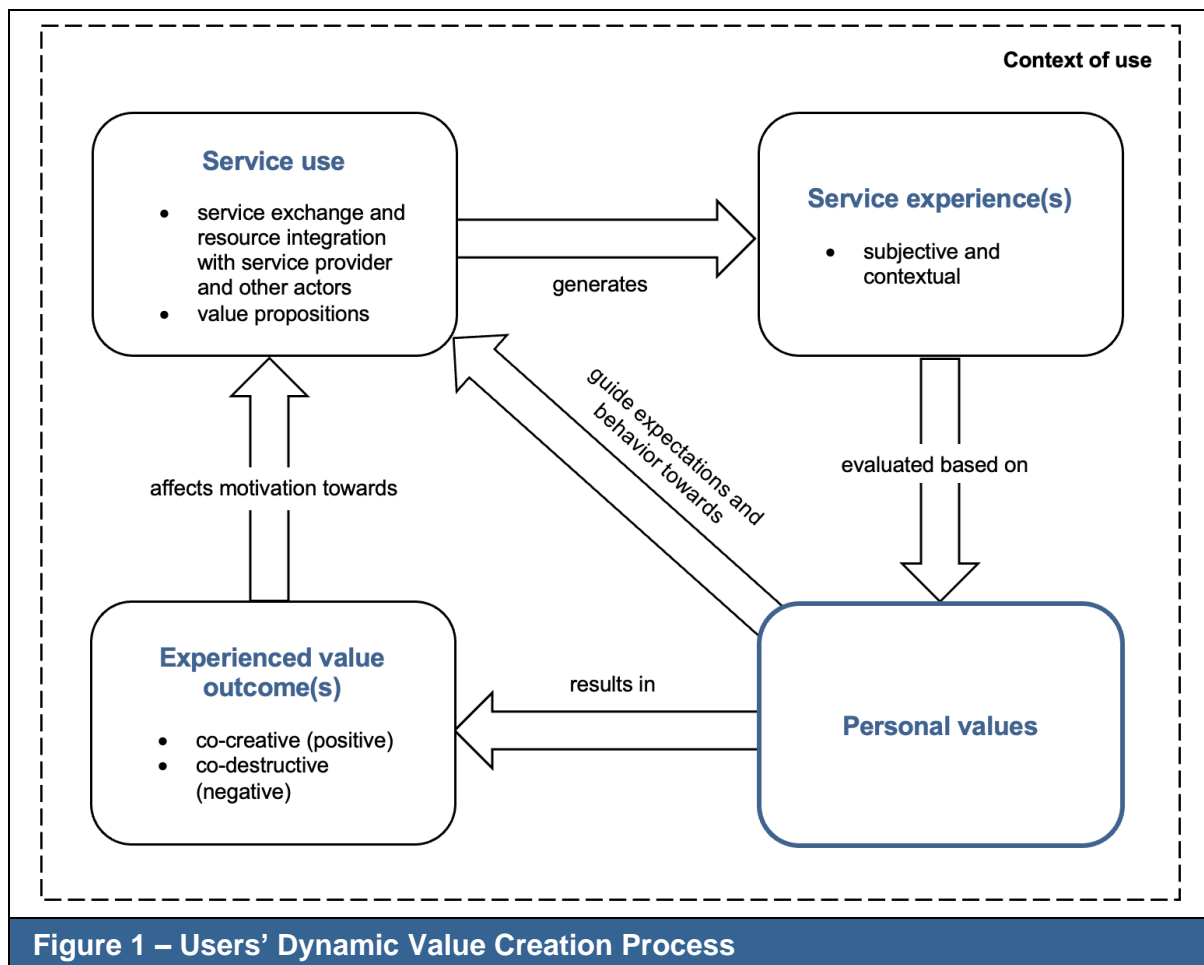
We adopt the means-end approach (Gutman, 1982) to explore users' value-based drivers and service value determination from the perspective of their personal values. We find that this approach to value provides a significant opportunity for understanding and measuring the complex and dynamic value outcomes that users derive from service use. The means-end approach (Gutman, 1982) connects the users' service experiences to their personal values, which Rokeach (1973) defines as an "enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to [its] opposite" (p. 5). The theory is based on the premise that users utilize services to achieve desirable ends (Khalifa, 2004). These ends represent the underlying personal values considered relevant by each individual user (Huber et al., 2001). Following this notion, Woodruff (1997) defines (perceived) value as a user's "perceived preference for and evaluation of those product attributes, attribute performances, and consequences arising from use that facilitate (or block) achieving the [user's] goals and purposes in use situations" (p. 142). In other words, a service has specific attributes, and the users determine whether these attributes produce the desired outcomes by relating the evaluation to their personal values (Bruns & Jacob, 2014; Tuunanen & Kuo, 2015; Tuunanen & Peffers, 2018).

Personal values, as adopted in this study, can be divided into four types (see Table 2). First, values can be divided into interpersonal or intrapersonal ones. The former refers to values associated with other people and social contexts (other-centered values), whereas the latter refers to those that are personally experienced and relevant to each user (self-centered). Second, values can be classified as terminal and instrumental. A terminal value represents a goal value (end-state of existence) that a user aims to achieve; an instrumental value represents a behavior value or a so-called "mode of conduct" value used to achieve an individual terminal value. Instrumental values are further divided into categories of moral and competency values, while terminal values are divided into personal and social values (Rokeach, 1973; Tuunanen & Kuo, 2015).

Personal values are influenced by culture, social environment, and beliefs and, in turn, motivate action, create needs and goals for the service use, serve as standards for guiding users' evaluation of actions, and are ordered by relative importance (Rokeach, 1973; Schwartz, 2012). Based on their values, the users make judgments about whether the service delivers the desired (co-creative) or undesired (co-destructive) outcomes and alter their behavior accordingly (Gutman, 1982). This judgment can be linked to the user's motivation to continue using the service and engage in further value co-creation.

### *Conceptualizing Users' Dynamic Value Creation Process*

Building on these theoretical underpinnings, we conceptualize that value emerges for users through interactive service exchange and integration of resources with the service provider and other actors (e.g., other users). The value outcomes are determined by how users subjectively experience value during their dynamic value creation processes. Co-creation and co-destruction of value are possible, dynamically strengthening and weakening outcomes of the value creation process (Kokko et al., 2018). Value determination in this process is explained through the means-end theory (Gutman, 1982), which connects the evaluation of the users' service experiences to their personal values. The personal values-based conceptualization of the users' dynamic value creation process is presented in Figure 1 and explained below.

**Figure 1 – Users' Dynamic Value Creation Process**

Following the S-D logic (Vargo & Lusch, 2004, 2008, 2016), the users' interactive service exchange and integration of resources with the service provider and other participating actors takes place via *service use*. The service provider offers the users value propositions, and the users interact with the service provider and other participating actors and integrate their own resources into the process. As value emerges as an outcome of an interaction between actors and depends on the context in which the service use occurs (Vargo & Lusch, 2008), service use creates the basis for value creation by specifying the context in which the process takes place.

Service use generates the *service experience(s)* for the users. Following the fourth and fifth axioms of S-D logic, the service experience is subjectively perceived, contextual, and coordinated by surrounding institutions (e.g., rules, norms, and culture) (Vargo & Lusch, 2016).

In this personal values-based conceptualization, the users' *personal values* constitute the determination of value. Based on the means-end theory (Gutman, 1982), it is proposed that the users' personal values dictate their needs and goals for service use. Moreover, personal values serve as the criteria for guiding the evaluation of the service experience (Huber et al., 2001; Rokeach, 1973; Schwartz, 2012). The users evaluate the service experience according to their personal values and determine whether it facilitates or hinders them from achieving their relevant personal values for the service use (Reynolds & Gutman, 1988). The desired value guides the assessment of the service experience, that is, how well or poorly the service performs in the eyes of the users (Woodruff, 1997).

Based on their personal values, the users make judgments about whether the service delivers desired (positive) or undesired (negative) consequences (Gutman, 1982). Consequently, the

experienced *value outcome(s)* might be either co-creative or co-destructive depending on the users' personal values-based evaluation of the attained value from the service experience. Positive value outcomes may emerge when users perceive that the service interactions support their personal values, whereas failure to support users' personal values or contradictions to the same are more likely to result in a negative value outcome. Moreover, value co-creation and co-destruction are closely linked and interact dynamically throughout the value creation process (Kokko et al., 2018). The value creation process can include both co-creative and co-destructive phases (Grönroos, 2011; Grönroos & Voima, 2013). Further, we propose that the experienced value outcome affects the users' motivation to continue using the service and engage in further value creation. If the co-creative value outcomes are highlighted, that is, the overall experience is positive, users are more likely to continue using the service. Thus, the process continues until the user stops using the service, creating a dynamic and continuous process cycle.

## Methodology

### Context of the Study

The context of this study is the AR mobile game Pokémon Go, which we conceptualize as a digital service platform where gamers directly or indirectly integrate resources (e.g., time, skills, money, and gaming devices) with the AR game platform, its in-game characters, the service provider (Niantic Inc.), other gamers and even non-gamers/onlookers to co-create value (i.e., to derive positive value outcomes such as improved physical/mental well-being, enjoyment, or social status). AR mobile games such as Pokémon Go that leverage location-based and AR mechanics (Kari et al., 2017), offer unique opportunities for value co-creation and co-destruction as they blend real-world and virtual-world elements into one interface (Lintula et al., 2018).

In Pokémon Go, users are considered Pokémon trainers who "search, capture, collect, train, evolve, and battle Pokémon creatures" (Paavilainen et al., 2017, p. 2493). The Global Positioning System (GPS) matches the gamers' real-world location with their avatars in the virtual world (Kari et al., 2017; Paavilainen et al., 2017), allowing gamers to advance in the physical world while their avatars follow in the virtual environment. When gamers encounter a Pokémon, they may decide to use the game's AR mechanics to reflect the animated character in their physical surroundings through their mobile devices (Kari et al., 2017). The gamers can collect Pokémon characters, eggs, and other game items from PokéStops, located near monuments and other landmarks in the real world, such as parks and other relevant public buildings and areas (Clark & Clark, 2016; Paavilainen et al., 2017). New Pokémon characters are discovered by exploring the real world or hatched from Pokémon eggs, which requires walking for two, five, or even ten kilometers, depending on the egg type. The gamers may choose to play against each other by competing in Gyms, which can be conquered and utilized to collect the game's virtual currency, PokéCoins. The game supports in-game purchases, so PokéCoins can also be bought for real money and used to buy more Poké Balls and other game items (Paavilainen et al., 2017). Regardless, gamers must be physically active to advance in the game (Baranowski, 2016).

Earlier studies have shown that playing Pokémon Go enhances the gamers' physical and psychological well-being (e.g., Althoff et al., 2016; Baranowski, 2016; Kari et al., 2017; Yang & Liu, 2017). The mobile game application has been found to increase the daily physical activity of its users significantly. Moreover, regular use of the application has been found to improve mental health, social capital, and social interaction among gamers (Clark & Clark, 2016). While having fun seems to be the primary motivation for gamers, they also engage in the game to combine fun and exercise (Kari et al., 2017). Therefore, Pokémon Go, by its

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nature, encourages people of all ages to be active (often outdoors) and explore their environment while gaming (Raj et al., 2016).

Based on the previous examples, it can be said that Pokémon Go offers the potential for users to co-create value and experience positive outcomes in various ways. While most research has focused on the positive effects of Pokémon Go, there have also been adverse reports regarding the game. Reported value co-destruction experiences include, for example, geographically linked biases (Colley et al., 2017) and safety risks such as accidents, injuries, and assaults, which can lead to negative value outcomes, such as frustration, disappointment, or a decreased sense of security for the users (Lintula et al., 2018). Therefore, it should be noted that value co-destruction may co-occur with value co-creation.

## Data Collection

We conduct a secondary analysis for a data set from Lintula et al. (2018) study. While the initial study investigated the causes of the value co-destructive service outcomes experienced by Pokémon Go gamers, we aim to discover the users' personal values that drive the service use and determine their connection to both the co-creative and co-destructive value outcomes perceived by the users. Although the initial study was conducted from the perspective of the users' co-destructive gaming experiences, it also revealed many positive experiences that the users had perceived while gaming. Therefore, it is possible to obtain insights from the data regarding both co-creative and co-destructive experiences.
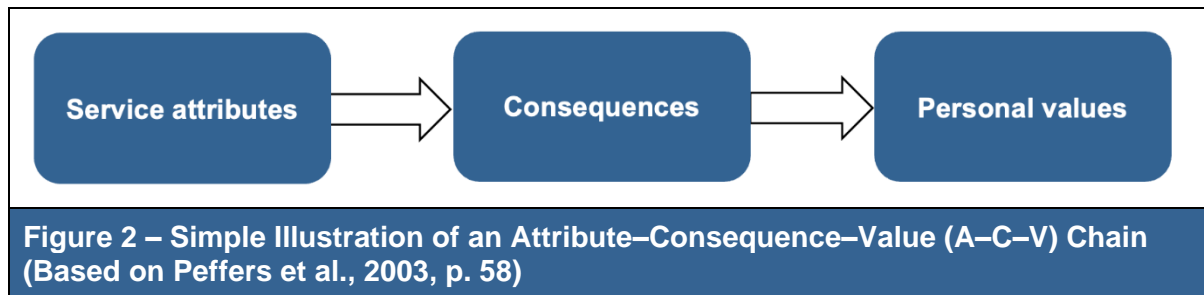
Preparations for the field study began in September 2016. The approach of the study involved identifying deviations from the users' expected value co-creation behavior. Therefore, participants with both positive and negative gaming experiences were sought to participate. Suitable participants were identified by conducting a preliminary survey. The study participants were recruited by posting notices on Finnish Pokémon Go Facebook groups with high numbers of active gamers. In total, 88 responses were collected through the pre-survey. All the answers included references to both value co-creative and co-destructive experiences. In fact, the participants reported more positive than negative gaming experiences in the pre-survey, and some even seemed to promote the game. Further, 50% of the 88 volunteer participants were actively gaming in central Finland, in a city with a population of 140,000, while the other 50% were active in a southwestern city of Finland with a population of 190,000.

Information-rich cases suitable for interviews were identified utilizing purposeful sampling (Patton, 2015), which assumes that participants should be identified and recruited according to their suitability for the study and the research objective. The selection criterion was that at least two examples of positive and negative gaming experiences had to have been reported by the participant in the pre-survey. Thereby, 48 of the enrolled gamers were invited for an interview. Due to five cancellations, 43 of the invited participants were interviewed (22 from the larger city and 21 from the smaller). The background information of the interview participants is presented in Table 1.

| Table 1 – Participants' Demographic Information and Level of Gaming Activity | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Gender** | **n** | **Age Group** | **n** | **Occupation** | **n** | **Level of Gaming Activity** | **n** |
| Female | 30 | 19–28 | 21 | Employee | 15 | Daily | 35 |
| Male | 13 | 29–39 | 14 | Student | 15 | Weekly | 4 |
| | | 39–48 | 6 | Entrepreneur | 6 | Occasional | 2 |
| | | 49–62 | 2 | Unemployed | 4 | Not Active | 2 |
| | | | | Retired | 2 | | |
| | | | | Stay-at-home parent | 1 | | |

The interviews followed the laddering technique (Reynolds & Gutman, 1988), which refers to an in-depth interviewing procedure employed to generate an understanding of how users translate service attributes into meaningful associations (Gutman, 1982; Reynolds & Gutman, 1988). The technique is suitable for modeling users' value structures, that is, eliciting chains of service attributes, consequences, and values from the users (Peffers et al., 2003; Reynolds & Gutman, 1988). The notion is that every service has specific attributes, and these attributes have specific consequences, which hold specific values for the user (Figure 2). The laddering interview technique is considered appropriate especially for studying users' personal value structures according to the means-end theory models (Modesto Veludo-de-Oliveira et al., 2006).



**Figure 2 – Simple Illustration of an Attribute–Consequence–Value (A–C–V) Chain (Based on Peffers et al., 2003, p. 58)**

Laddering interviews allow for a critical investigation of users' service experiences and the relationship of those experiences with users' personal values. Interpreting such in-depth insights allows the researcher to understand the users' motivations for using the service (Reynolds & Gutman, 1988). Moreover, in line with the objectives of this study, the laddering interview technique provides a means for identifying the co-created and co-destroyed values in service use from the participants' perspective.

The interviews were conducted between May and September 2017. As a part of the laddering interview technique, at the beginning of each interview, the interviewer presented the participants with a list of stimuli that were further explained by short written scenarios (Peffers et al., 2003). The preliminary survey and a conceptual framework for the value co-destruction process for service systems (Lintula et al., 2017) were utilized to design the stimuli collection. Since the objective of the study was to determine the basis for the experienced value co-destruction, the stimuli collection included nine scenarios with potential value co-destruction occurrences.

One of the researchers of the initial study conducted all 43 interviews. All participants were interviewed individually. 41 interviews were conducted face to face, while two were conducted via video conference. All the interviews were voice-recorded and carried out in a peaceful environment on two university campuses in Finland. They lasted 40–180 minutes, with an average duration of 60 minutes. Following best research practices, the first minutes of the interviews were used to present the research project and discuss the purpose of the interview. Next, the stimuli collection was presented to the participants, who were asked to select two scenarios they had experienced as particularly negative in their gaming experience. They were also informed that if they did not find the presented scenarios to be relevant, it was possible to create new ones. However, each participant could relate to at least two scenarios from the pre-designed stimuli collection.

Laddering interviews consist of a series of targeted probes, usually presented as "Why is this important to you?" questions. The objective is to determine a set of connections between the relevant service attributes (A), consequences (C), and values (V) for the user (see Figure 2) (Reynolds & Gutman, 1988). However, as the study focused on the participants' negative gaming experiences, the presented question was, "What in this scenario was particularly negative for you?" The participant then began to describe a particular experience connected

to that scenario. The interviewer continued probing by asking, "And why was this negative for you?"; and the participant continued their reflection on the same. The "why" line of questioning was continued, and the participants provided further explanations. At the end, when no further reasoning could be provided, the participants' ultimate personal value or goal was usually identified. Then, this segment of the interview ended, and the interviewer moved on to asking questions about the subsequent stimuli.
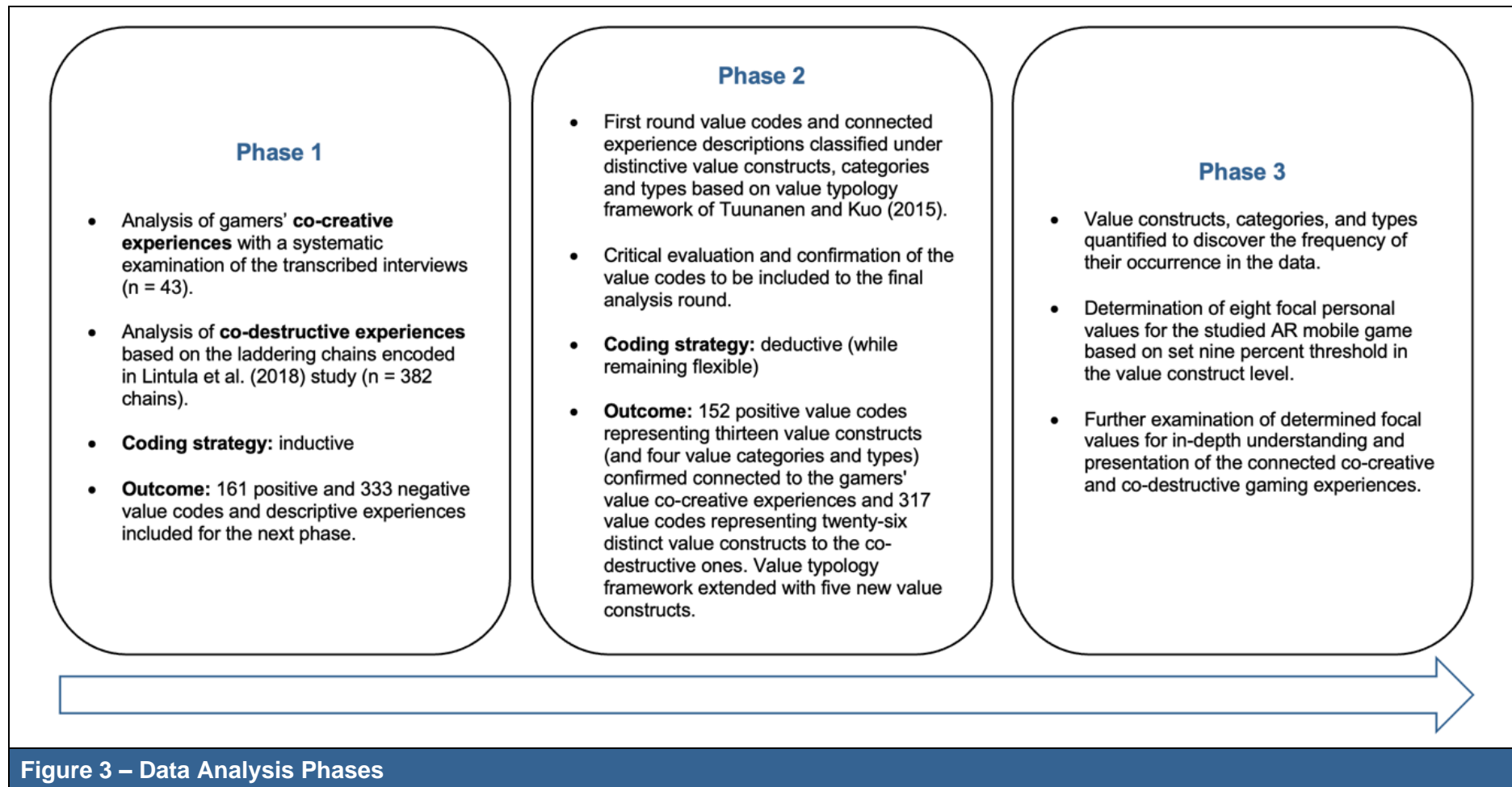
In addition to being voice-recorded (and fully transcribed at a later stage), the interviews were recorded in an Excel spreadsheet format during the interviews as chains of attributes, consequences, and values. The interviews with the 43 participants resulted in the gathering of 382 attribute–consequence–value chains, with an average of 8.9 chains per participant. While the probed chains represent the co-destructive experiences, the participants' positive experiences occurred "naturally" during the interviews and were coded as for their own chains during the analysis phase of this study.

The data analysis consisted of examining the Excel-coded service attribute (A), consequence (C), and value (V) chains for the negative experiences and values. The attributes represent the starting point or trigger for a negative experience, such as a system feature or the gamers' way of integrating their resources with the game. The reasoning statements of participants were recorded as consequence ladders. Typically, one ladder chain contained multiple consequence ladders. Finally, the underlying negative reasons that could not be explained further were recorded as value ladders, as illustrated in the following example: *I play in nature and the forest [attribute ladder] → the game causes its own stress [consequence ladder] → it brings excitement in Gym battles [consequence ladder] → I get stressed [consequence ladder] → I overexert myself [consequence ladder] → recovery takes time [consequence ladder] →it's difficult to calm down [consequence ladder] →it's difficult to fall asleep [consequence ladder] → I don't get enough sleep [consequence ladder] → lack of sleep, poor health [value ladder].*

Regarding positive experiences, the analysis was conducted by reviewing the full interview transcripts (Microsoft Word format), from which the first author highlighted all the positive experience-related points and then proceeded systematically towards determining the value codes. Further details on the analysis process are provided in the following subsections and Appendix A.

## *Data Analysis*

We conducted the secondary analysis by employing a qualitative content analysis—a method used for systematically examining qualitative data through which recurring meanings can be discovered and understood (Leavy, 2017; Schreier, 2014). The method was deemed especially suitable for the analysis, as it enabled the systematic identification and classification of the focal personal values and their connection to the gamers' co-creative and co-destructive gaming experiences. The analysis began with a preliminary examination of the material to achieve an overall view of the content, followed by outlining a plan for coding. The analysis was performed in three phases (Figure 3).

**Phase 1**

- Analysis of gamers' **co-creative experiences** with a systematic examination of the transcribed interviews (n = 43).

- Analysis of **co-destructive experiences** based on the laddering chains encoded in Lintula et al. (2018) study (n = 382 chains).

- **Coding strategy:** inductive

- **Outcome:** 161 positive and 333 negative value codes and descriptive experiences included for the next phase.

**Phase 2**

- First round value codes and connected experience descriptions classified under distinctive value constructs, categories and types based on value typology framework of Tuunanen and Kuo (2015).

- Critical evaluation and confirmation of the value codes to be included to the final analysis round.

- **Coding strategy:** deductive (while remaining flexible)

- **Outcome:** 152 positive value codes representing thirteen value constructs (and four value categories and types) confirmed connected to the gamers' value co-creative experiences and 317 value codes representing twenty-six distinct value constructs to the co-destructive ones. Value typology framework extended with five new value constructs.

**Phase 3**

- Value constructs, categories, and types quantified to discover the frequency of their occurrence in the data.

- Determination of eight focal personal values for the studied AR mobile game based on set nine percent threshold in the value construct level.

- Further examination of determined focal values for in-depth understanding and presentation of the connected co-creative and co-destructive gaming experiences.

**Figure 3 – Data Analysis Phases**

In the first phase, the analysis of the co-creative experiences began with a systematic examination of the transcribed interviews. The analysis of the co-destructive experiences was based on the laddering chains encoded in Lintula et al. (2018) study. The coding strategy was inductive, that is, the coding of users' personal values and connected experiences was performed in a data-driven manner by distinguishing the gamers' experiences and their associated personal values from the data. After the first coding phase, 161 positive and 333 negative value codes and connected experiences were identified and included for the next phase.

In the second phase, the value typology framework (Table 2) proposed by Tuunanen and Kuo (2015) was utilized as the theoretical basis for classifying the value codes. Furthermore, a classification dictionary from the same study was utilized to define the rules and specifications for coding. The value typology guided the classification such that each value construct and category was unique and distinctive. The value typology framework is based on the seminal list of 36 values proposed by Rokeach (1973) and was utilized in Tuunanen and Kuo's (2015) study to distinguish value differences between mobile service users from different cultures. Comparing the typology with other existing ones (e.g., Schwartz, 2012), we deemed that the framework, with its multi-level yet easy-to-grasp value classification and an extensive list of value constructs, would serve as an effective foundation for performing a systematic and reliable classification of the value codes in our study.

Employing the value typology framework, each value code and related experience description established during the first analysis phase were classified under one value construct and allocated to the associated value categories and types. The value constructs were further classified into two experience categories, namely co-creative and co-destructive. Central to the qualitative content analysis, we remained flexible when employing the original value constructs (Eriksson & Kovalainen, 2016). During analysis, we extended the typology with five new value constructs (Activity, a Healthy Life, a Sense of Belonging, Justice, and Sociality) to adequately cover the user values that emerged from our data. Furthermore, we merged the original constructs of Family Security and National Security into Security to better represent the variety of participants' security-related experiences.

| Table 2 – Value Typology Framework (Adapted from Tuunanen & Kuo, 2015, p. 5) | | |
|---|---|---|
| | Terminal | Instrumental |
| Interpersonal | **SOCIAL VALUES:**<br>A World of Peace<br>A World of Beauty<br>Equality<br>Family Security<br>National Security<br>Freedom<br>Social Recognition<br>True Friendship<br>Salvation | **MORAL VALUES:**<br>Forgiving<br>Helpful<br>Honest<br>Obedient<br>Polite<br>Responsible<br>Loving |
| Intrapersonal | **PERSONAL VALUES:**<br>A Comfortable Life<br>An Exciting Life<br>A Sense of Accomplishment<br>Happiness<br>Pleasure<br>Inner Harmony<br>Mature Love<br>Wisdom<br>Self-Respect | **COMPETENCY VALUES:**<br>Ambitious<br>Broad-Minded<br>Capable<br>Cheerful<br>Clean<br>Courageous<br>Imaginative<br>Independent<br>Intellectual<br>Logical<br>Self-Controlled |

The coding process was highly iterative, that is, the determined value constructs and categories were revised several times to ensure that the appropriate value codes were included under them. While the first author was primarily responsible for coding and analysis, the interpretations were frequently discussed among the authors to ensure the reliability of the analysis. The second author reviewed and evaluated the coding and interpretations at each stage. Furthermore, after the initial coding was complete, the third author, who has extensive experience with the laddering interview technique, independently coded the data using the value typology framework, classification dictionary, and the first author's extensive notes on the meanings and interpretations of the data. The findings supported the initial analysis with an intercoder reliability rate of 97%. The final set of codes was determined by the authors after a careful discussion of the few differing interpretations. Furthermore, before entering the final phase of the analysis, each value code and its included experience description were examined one more time to confirm that the information contained by the chain was clear enough to determine the final value construct. Accordingly, 152 positive value codes, representing 13 distinct value constructs, and 317 negative value codes, representing 26 constructs, were confirmed for the final analysis phase.

The third phase of analysis involved quantifying the value constructs, categories, and types to calculate the frequency with which they occurred in the data. This allowed us to compare the significance of the various constructs, categories, and value types in the gamers' co-creative and co-destructive gaming experiences. The quantitative analysis provided a basis for further qualitative examination, where the focus was on achieving an in-depth understanding of the determined focal values and the connected service experiences. We tested different significance thresholds to derive comprehensive yet concise findings and concentrate on the most focal personal values. We iteratively explored various thresholds and considered how to determine the optimal number of focal values in the studied AR mobile games context. We resulted in a 9% threshold (i.e., considered the values whose significance in co-creative and/or co-destructive experiences was more than 9%) when proposing the focal personal values that underlie the gamers' value co-creation and co-destruction experiences. Raising the threshold would have reduced the number of values, while lowering it would have increased the number of focal values. With the chosen threshold, eight values were determined, which was deemed sufficient.

## Findings

Table 3 shows the distribution of the personal value types and categories determined in the analysis, depicting the number of times each value type and category occurred in relation to the participants' value co-creative and co-destructive experiences. The percentages represent the totality of each value type and category, providing an overview of their relative importance in both co-creative and co-destructive experiences in the studied context.

| Table 3 – Overall Distribution of Value Types and Categories | | | | |
|---|---|---|---|---|
| Value category | Co-creative experiences | | Co-destructive experiences | |
| | n | % | n | % |
| Interpersonal | 42 | 28.00 | 202 | 64.00 |
| Intrapersonal | 110 | 72.00 | 115 | 36.00 |
| Terminal | 93 | 61.00 | 157 | 49.00 |
| Instrumental | 59 | 39.00 | 160 | 51.00 |
| Social | 20 | 13.00 | 96 | 30.00 |
| Moral | 22 | 15.00 | 106 | 34.00 |
| Personal | 73 | 48.00 | 61 | 19.00 |
| Competency | 37 | 24.00 | 54 | 17.00 |

As shown in Table 3, intrapersonal values (72%) are emphasized significantly more in the participants' co-creative experience descriptions than interpersonal values (28%), whereas interpersonal values (64%) are emphasized more in co-destructive experience descriptions than intrapersonal values (36%). In addition, terminal values (61%) are emphasized more than instrumental values (39%) in the descriptions of value co-creative experiences, but there is no apparent difference between terminal (49%) and instrumental (51%) value types in co-destructive experiences. Furthermore, terminal values (61%) are emphasized more in co-creative experiences than co-destructive ones (49%), and instrumental values (51%) are more in co-destructive experiences than co-creative ones (39%). Following the distributions on the value type level, personal values (48%) are the most emphasized category in the participants' co-creative experiences, followed by competency values (24%), whereas moral values (34%) and social values (30%) are emphasized in the co-destructive experiences.

### Distribution of Personal Values in Co-creative Gaming Experiences

Table 4 presents the value constructs associated with the participants' value co-creative gaming experiences. Value constructs representing at least 9% of the total number of co-creative or co-destructive gaming experiences are defined as focal values and highlighted in Tables 4 and 5 with a gray background color. The most significant of the four value categories is the personal values category, which relates to almost half of the gamers' co-creative experiences (48%). It contains the value construct of *Pleasure* (25%), which emerged as the most significant value gamers strive to achieve through engaging in value co-creation with the game. The construct includes feelings such as enjoyment, relaxation, and fun, as well as gamers' experiences of the game as a pastime. We found that playing Pokémon Go is an integral part of many gamers' daily lives:

*"...when you drink your morning coffee you open the game and spin the day's first PokéStop and catch that first Pokémon."* (Participant 29)

| Table 4 – Distribution of Values in Co-Creative Gaming Experiences (n = 152) | | | | | | |
|---|---|---|---|---|---|---|
| **Interpersonal** | Terminal **SOCIAL VALUES:** | | | Instrumental **MORAL VALUES:** | | |
| | | n | % | | n | % |
| | A Sense of Belonging | 20 | 13.00 | Sociality | 19 | 13.00 |
| | | | | Politeness | 2 | 1.00 |
| | | | | Responsibility | 1 | 1.00 |
| **Intrapersonal** | **PERSONAL VALUES:** | | | **COMPETENCY VALUES:** | | |
| | | n | % | | n | % |
| | Pleasure | 38 | 25.00 | Ambition | 19 | 13.00 |
| | A Healthy Life | 13 | 9.00 | Activity | 13 | 9.00 |
| | An Exciting Life | 12 | 8.00 | Independence | 3 | 2.00 |
| | A Sense of Accomplishment | 8 | 5.00 | Intellectuality | 2 | 1.00 |
| | Self-Respect | 2 | 1.00 | | | |

Another value highlighted in the personal values category is *A Healthy Life* (9%), which is connected to the described experiences of Pokémon Go supporting gamers' physical health and mental well-being, for example, in the form of coping with everyday life:

*"...in my opinion, this has been good for health so walking in great amounts, twenty-thirty kilometers a day...after all it is, it keeps people in good shape...we have spent time outdoors but never walked like this and yes, I do think it is only a good thing...for most people's health, it does good to be outdoors."* (Participant 10)

Competency values is the next most significant value category in the gamers' co-creative gaming experiences. Among its value constructs, *Ambition* (13%) and *Activity* (9%) were

determined as focal values. Ambition is associated with gamers' co-creative experiences through gaming supporting the realization of relevant goals (e.g., a desire to collect all the Pokémon) and positive competition with others and/or oneself, as participant 33 describes:

*"...my goal is to collect everything that you can get in Finland and all the different Pokémon...well mostly I'm competing against myself...I think it's a good thing that there is always something to achieve in the game."* (Participant 33)

Activity is positively perceived through experienced increases in physical activity supported by the game:

*"And for me the aspect of exercise is important here and then getting out with the device...it involves this outdoor activity and having to get away, getting away from that computer..."* (Participant 24)

The moral values category is the third most prominent value category in the context of the gamers' co-creative gaming experiences. However, the category contains only one focal value construct, *Sociality* (13%), stemming, for instance, from positive user experiences of spending time with family and friends while gaming and sharing experiences with others:

*"...of course, it's always nice to compare with a friend, for example, what stage you are at...and then of course if you've gone somewhere in a park and you see some children ... you are like, 'Hey, what team are you in...' Pokémon is good ice breaker for that discussion."* (Participant 39)

Similarly, the last significant category, social values, contains only one focal value, *A Sense of Belonging* (13%), which was supported, for example, through the social aspect of the game and a resulting sense of togetherness or community for the gamers. Moreover, our findings revealed families playing Pokémon Go together experiencing a greater sense of belonging, as participant 11 describes:

*"...I get to have more contact with the kid, or with my son...now that we are on these trips...for many hours... we end up talking about everything. I think we are much better off now and more open, or he is much more open and tells me more things than before [he started] to play this game."* (Participant 11)

### Distribution of Personal Values in Co-destructive Gaming Experiences

Table 5 presents the value constructs underlying the gamers' value co-destructive experiences. The most significant value category in this context is the moral values category. Within this category, the focal co-destroyed values in Pokémon Go are *Responsibility* (12%) and *Sociality* (12%). The first includes gamers' experiences of gaming activities contradicting the responsibility value, for example, due to choosing to play over other priorities, being late or neglecting work, or gaming while driving:

*"I have sometimes accidentally gone astray on my way to work when I've gone after a rare Pokémon, yeah, I have been late from work because of it... It is such an important thing, however, to be on time..."* (Participant 11)

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| Table 5 – Distribution of Values in Co-Destructive Gaming Experiences (n = 317) | | | | | | |
|---|---|---|---|---|---|---|
| **Interpersonal** | Terminal **SOCIAL VALUES:** | | | Instrumental **MORAL VALUES:** | | |
| | | n | % | | n | % |
| | Social Recognition | 41 | 13.00 | Sociality | 39 | 12.00 |
| | Equality | 18 | 6.00 | Responsibility | 37 | 12.00 |
| | Security | 17 | 5.00 | Justice | 16 | 5.00 |
| | A Sense of Belonging | 9 | 3.00 | Politeness | 11 | 3.00 |
| | A World of Peace | 6 | 2.00 | Helpfulness | 1 | 0.00 |
| | True Friendship | 5 | 2.00 | Honesty | 1 | 0.00 |
| | | | | Obedience | 1 | 0.00 |
| **Intrapersonal** | **PERSONAL VALUES:** | | | **COMPETENCY VALUES:** | | |
| | | n | % | | n | % |
| | Inner Harmony | 24 | 7.00 | Independence | 20 | 6.00 |
| | A Healthy Life | 13 | 4.00 | Ambition | 14 | 4.00 |
| | An Exciting Life | 7 | 2.00 | Capability | 6 | 2.00 |
| | Self-respect | 6 | 2.00 | Logic | 5 | 2.00 |
| | Pleasure | 6 | 2.00 | Activity | 4 | 1.00 |
| | A Sense of | 5 | 2.00 | Self-Control | 4 | 1.00 |
| | Accomplishment | | | Intellectuality | 1 | 0.00 |

Sociality value highlighted gamers' co-destructive experiences involving neglect of social relationships or time with family, as well as a lack of presence or in-game sociality when they prioritized the game over other responsibilities, hobbies, or essential relationships. Some gamers found it challenging to choose between gaming and maintaining social relationships outside the game. Some stated that they felt uncomfortable playing in the presence of non-playing friends or spouses but could not resist the temptation. The negative experiences arose because the game deprived them of the ability to be "present" in the moment. Also experienced lack of sociality within the game stemming from in-game technical issues, experiences of being left out from a group of friends, and other unmet expectations regarding sociality were reported:

*"I have probably not talked to any new people, just a couple of times, talking and taking down a Gym if it has happened to be there. That kind of community is missing from the game... they were promoting in the beginning that this is a common game, but it has never been a community game..."* (Participant 12)

The next most significant value category is that of social values. In this category, the focal value related to the gamers' co-destructive gaming experiences was *Social Recognition* (13%), which comprises gamers' experienced lack of acceptance and appreciation from others and their personal image suffering from playing the game. Such experiences were mostly related to negative gaming experiences with non-users (e.g., family, relatives, friends, or strangers), unfavorable attitudes toward Pokémon Go, or the overall lack of gaming knowledge, as participant 13 shares:
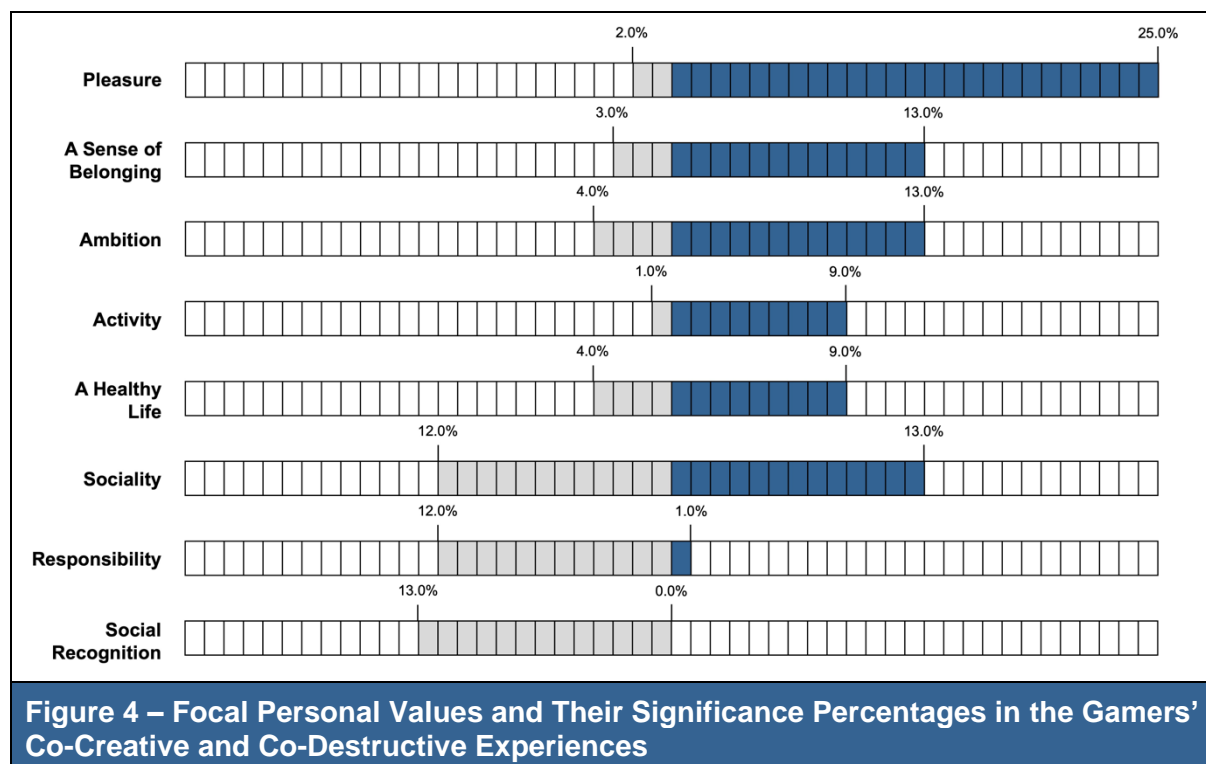
*"...at some point everyone was playing it, and at some point, it changed... maybe they are more like wondering that someone is still playing this..."* (Participant 13)

In the categories of personal and competency values, no personal value constructs arose beyond the set 9% threshold.

## Summary of the Focal Personal Values in Pokémon Go

The determined focal personal values and their relative significance in the context of gamers' co-creative and co-destructive gaming experiences are illustrated in Figure 4. The values are listed from the most positive to the most negative creating the "personal value structure" of the

studied AR mobile game. Further explanation of the focal value constructs, their classification, and examples of connected co-created and co-destroyed experiences with the game are presented in Appendix B.



**Figure 4 – Focal Personal Values and Their Significance Percentages in the Gamers' Co-Creative and Co-Destructive Experiences**

## Discussion

Our study introduces personal values as a potential basis for understanding users' value-based drivers and service experiences to support service design. As an answer to our first research question, we draw on the S-D logic (Vargo & Lusch, 2004, 2008, 2016) and the means-end theory (Gutman, 1982) to conceptualize users' dynamic value creation process based on personal values. We propose that service use generates service experiences that the users evaluate based on their personal values. This evaluation results in value outcomes that may be both co-creative and co-destructive depending on the users' perceptions of the experiences and how they align with the personal values relevant to them. Furthermore, we propose that the experienced value outcomes affect the users' motivation to continue using the service. Positive experiences will likely drive users to commit to the service and engage in further value co-creation. On the contrary, co-destructive experiences may have an adverse effect on the users and even lead to the termination of service use (see Figure 1).

Based on this premise, as an answer to our second research question, we demonstrate how an understanding of users' personal values and their connections to the co-creation/destruction of value can be attained to support service design. We determine eight personal values that underlie the emergence of positive and negative value outcomes in the studied AR mobile game. Five focal values are found to underlie the co-creative experiences, two the co-destructive experiences, and one to be equally emphasized in both experience categories. In line with the value propositions of Pokémon Go (The Official Pokémon YouTube Channel, 2015), our findings showcase that the game supports the personal values of *pleasure* and *a healthy life*, the competency values of *ambition* and *activity*, the moral value of *sociality*, and the social value of *a sense of belonging*. Therefore, the most emphasized value types underlying the gamers' co-creative experiences are intrapersonal and terminal. Our findings

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suggest that the gamers successfully integrate the resources provided by the studied AR mobile game for the co-creation of value. Regarding the co-destroyed values, we find that interpersonal values underlie gamers' co-destructive experiences with the game. Interestingly, the moral values of *responsibility* and *sociality* and the social value of *social recognition* emerged in conjunction with gamers' value co-destructive experiences, which contrasts with the value propositions offered by the game (The Official Pokémon YouTube Channel, 2015) and extends the findings of previous studies. Next, we discuss the theoretical and practical implications of our study.

## *Theoretical Implications*

As users generally associate leisure-oriented services with more hedonic than utilitarian-based value co-creation activities (Tuunanen et al., 2019), it is no surprise that the hedonic value of pleasure emerged as the most emphasized positive value construct for the game. In addition, previous Pokémon Go studies have found that gamers are highly motivated by the hedonic utility and goals of the game (e.g., Kari et al., 2017; Zsila et al., 2018). While our findings support previous studies that emphasize the central role of fun, relaxation, and enjoyment (Kari et al., 2017; Zsila et al., 2018), physical activity and well-being (Althoff et al., 2016; Kari et al., 2017; Paavilainen et al., 2017), and sociability (Kari et al., 2017; Lintula et al., 2018; Paavilainen et al., 2017) in Pokémon Go, we also introduce underexamined positive value-based drivers for gaming such as ambition.

As the negative side of AR mobile games remains relatively understudied, the findings of our study provide novel insights, especially in terms of co-destroyed values. Our findings indicate that value co-creation may be challenging to manage using general co-creation practices, such as adjusting value propositions and integrating resources for co-creation. Furthermore, as highlighted in previous literature (e.g., Grönroos & Voima, 2013; Vargo & Lusch, 2017), our findings reinforce the understanding that the service provider and users' interactions do not occur in isolation but as a part of a wider network of actors. For example, the users' interactions with other users and non-users are shown to greatly influence the service experience and value outcomes.

Employing personal values to understand users and their drivers for service use is not new in IS research. For example, the significance of understanding the value structures of the users has been highlighted in the context of mobile services (Tuunanen & Kuo, 2015), and users' mental models and value structures have been previously investigated to facilitate the understanding of users' preferences for service use (Tuunanen & Peffers, 2018). Furthermore, Tuunanen et al. (2010) have proposed that value co-creation is about the interplay between system value propositions and customer value drivers, which possess the values and goals of the users and, hence, drive them to co-create value. Our study adds to these views and demonstrates that the value perception based on personal values may indeed provide a solid basis for a user-centric, in-depth understanding of value co-creation and co-destruction to support service design.

Our findings also support the suggestion that users' experiences and service value determination may result in either positive or negative value outcomes (e.g., Kokko et al., 2018; Li & Tuunanen, 2022). Joint consideration of value co-creation and co-destruction provides a dynamic and comprehensive perspective on how a service presents itself to its users. Thus, we argue that an aggregated analysis of both positive and negative value determination is needed to establish a holistic understanding of users' service experiences.

Furthermore, as the value typology of Tuunanen and Kuo (2015) enabled us to systematically classify user values, we suggest that it may provide a useful foundation for studying and analyzing the user values that underlie other digital services as well. Moreover, we find that laddering interviews (Reynolds & Gutman, 1988) are particularly suitable for the analysis and

classification of personal values using said typology. Tuunanen and Kuo (2015) examined the user values at the value-category level and cautioned that, although the four categories are simple to apply, they reduce the ability to perform detailed comparisons of the differences among users concerning the specific value constructs. Thus, we classified the values to the value construct level, showcasing how individual value constructs may provide access to more detailed information about the values relevant to the users' experiences. However, a useful understanding was obtained from the users' value structures when considering the value types and categories. Thus, we suggest that the typology may serve researchers and practitioners in various ways, as it allows for adjusting the level of analysis according to the distinct needs of research and service design. A higher-level perspective may provide the necessary understanding if one wants to compare the emphasis on different value categories, for example, between several services or cultures, as reported in the work of Tuunanen and Kuo (2015). Although, as shown in this study, a more precise definition and examination of value constructs provide a better basis for achieving concrete design measures.

Finally, our findings support focusing on the user level when conceptualizing value creation, especially for service design purposes. The user perspective has been suggested, for instance, by Grönroos and Voima (2013) and Tuunanen et al. (2019). In contrast, Lintula et al. (2018) have acknowledged that a holistic ecosystem perspective, featured in the recent views of S-D logic, may be useful to account for the effects of value creation between multiple actors and complex service ecosystems. While we recognize the benefits of such meso and macro level investigations, our findings support the view that, especially when considering digital service design, it is essential to understand how the service value is created or emerges for its users. If the aim is to understand value as perceived by the users and develop methods for enhancing the service experience through value co-creation, the micro-level user perspective seems to be the most suited.

### *Managerial/Design Implications*

Our conceptualization of the users' dynamic value creation process based on personal values provides practitioners with an understanding of how the dynamic co-creation and co-destruction of value may occur in the value creation process from the users' perspective. For service managers/designers, such a personal values-based understanding can provide answers to questions such as "What is the value structure of our users?", "What are the focal values that our service supports for users?", "What values does our service destroy/not support?", "Are the values we propose relevant to users?", "Are there values that the users aim to pursue through the service that we have not considered/supported in our design?", "What values should we support through service design (positive)?", and "What values are negatively perceived and how can they be mitigated?"

Furthermore, we empirically define the user value structure for Pokémon Go (Figure 4). The value structure, depicted as a value meter map, presents the focal personal values in the studied AR mobile game and their significance in the users' gaming experiences. As a clear management/design implication, this knowledge may be translated into concrete measures to support the design of the game and other similar location-based AR mobile games. More broadly, such a value meter map may be used in other service contexts to identify and communicate the focal value-based drivers for service use and reveal negatively perceived values.

Also, for practice, our findings underline the need to pay close attention to the totality of value creation and the actual value outcomes as derived by users. That is, along with considering the potential benefits of co-creating value with the users, service managers/designers should also consider the possibility of value co-destruction and measure both the favorable and unfavorable service experiences of the users. Focusing merely on one side of value creation leads to an incomplete understanding of the users' experiences with a service.

Connecting the relevant service attributes and consequences to the values relevant for users helps pinpoint service attributes that facilitate value co-creation. Perhaps, more importantly, our exploration showcases the experiences and associated service attributes that underlie value co-destruction as perceived by users. Such a holistic exploration of the user values that underlie service value determination may be utilized for facilitating, directing, and prioritizing service design and development efforts, preventing negative value outcomes, and fostering value co-creation. Therefore, the approach introduced in our study may be used to design services that support positive value outcomes and motivate users to engage in value co-creation while minimizing the negative value outcomes that drive them away from the service. In addition, the value meter maps may be utilized, for example, for the value-based prioritization of requirements, for communicating the value structure of the users within an organization, or in marketing to emphasize the values relevant to the existing and potential users of a service.

## Conclusion

With our investigation of users' co-creation and co-destruction experiences in the AR mobile games context, we contribute to the literature by illustrating how personal values may be operationalized to support digital service design. Our conceptualization provides academics and practitioners with an understanding of how the dynamic co-creation and co-destruction of value may occur in the course of the dynamic value creation process from the users' personal values perspective. Moreover, through our empirical investigation, we add to the user-centric understanding of the value co-creation and co-destruction phenomena in AR mobile games and shed light on the values that drive the use of Pokémon Go (value co-creation) as well as the personal values highlighted by the users' negative experiences (value co-destruction). Our findings should be of the utmost interest and significance to AR mobile game managers and design professionals in the Asia Pacific Region, which plays a pivotal role in the development and consumption of AR mobile games and has the largest mobile gamer base in the world (Statista, 2022).

Regarding limitations, the data set employed in our analysis was collected from the perspective of the users' co-destructive gaming experiences. However, the richness of the data allowed for a credible analysis of gamers' co-creative experiences despite the fewer descriptions available. Efforts have been made to reinforce the reliability of the study by double coding the data set and with a comprehensive and transparent description of the analysis process. Second, our analysis is based on only one AR mobile game, Pokémon Go, and the interviews were conducted in only two geographical locations in Finland. As personal values are influenced, for example, by the associated culture and social environment (Rokeach, 1973; Tuunanen & Kuo, 2015), and service experiences may be perceived and evaluated differently by the users in different contexts such as time, place, or their social and cultural environment (Akaka et al., 2012; Edvardsson et al., 2011), even within the context of the investigated AR mobile game, the results may not generalize and indicate how the user values are distributed across different countries or user groups. We encourage future studies to investigate the personal values that underlie value co-creation and co-destruction experiences in different digital service contexts to better understand the value determination based on personal values.

Furthermore, future studies could continue to examine how the personal values-based understanding could be translated into actual design measures. This could enable the creation of a value-based service design method that would guide the service design process—from the acquisition and determination of personal values to the implementation of concrete values-based design actions. Further, the proposed conceptualization of the users' dynamic value creation process could be further validated through empirical studies, and the role of personal values and other phases in the process could be refined. For example, the notion proposed in this study of the experienced value outcomes affecting the users' motivation to continue using

the service and engage in further value co-creation could provide an interesting topic for future research.

Moreover, it could be analyzed how the types/connections of the personal values supported/destroyed during service interactions might affect the total value outcomes. For example, in this study, all participants described having both negative and positive gaming experiences with Pokémon Go. The positive descriptions highlighted terminal values (e.g., pleasure and a healthy life), which are considered the most significant values that individuals strive to achieve (Rokeach, 1973). Could this explain why the gamers, despite their negative experiences, remain active and enthusiastic toward the game? Answers to such questions may provide valuable insights into questions regarding the significance of different value constructs, categories, types, and their configurations for users to support service design.

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## Appendix A.

This appendix provides a detailed description of the three main phases of our secondary analysis.

### Data analysis: Phase 1

In the first analysis phase, the coding of users' personal values and related experiences was performed in a data-driven manner (inductive) by distinguishing the gamers' experiences and the associated personal values from the data. The first author systematically reviewed all 43 transcribed interviews. Audio recordings of the interviews were also available if required. All occurrences of positive experiences in the interviews, whether comprehensive or brief, were transferred from the original transcript to another file. Preliminary value labels were assigned to each experience, which formed the basis for further coding and value classification. After the 43 transcribed interviews were reviewed, the analysis was continued by confirming the value codes that emerged from each interview. Only values that had sufficient experience descriptions were included in the subsequent phase. Next, the positive experiences and value codes were recorded in a spreadsheet format. This involved arranging the value codes in one column and the experience descriptions in another for subsequent sorting and analysis.

To determine the value codes for the negative gaming experiences, the laddering interview chains encoded in the Lintula et al. (2018) study were reviewed by the first author. The value codes represented the negative values that the users had experienced with Pokémon Go. The first author systematically went through all the value codes by examining the entire attribute–consequence–value chain based on which the value code had been assigned. No significant differences were found between the interpretations of the values by the first author and the coders of the original study. After the first coding phase, 161 positive and 333 negative value codes and descriptive experiences were included for the second phase.

### Data analysis: Phase 2

In the second phase, the value typology framework proposed by Tuunanen and Kuo (2015) was utilized as the theoretical basis for classifying the value codes. The application and background of the framework are presented in detail in our manuscript. Furthermore, as assigning codes to content is an interpretive process, it was necessary to establish clear guidelines for the coding to ensure the quality and reliability of the analysis (Eriksson & Kovalainen, 2016). Consequently, a classification dictionary from the work of Tuunanen and Kuo (2015) was utilized alongside the value typology framework to define the rules and specifications for assigning the value codes under specific value constructs. During the coding process, the existing value constructs, categories (social, moral, personal, and competency), and types (interpersonal, intrapersonal, terminal, and instrumental) were interpreted according to the classification dictionary. This provided a structured foundation for the consistent classification of the values. The value types, categories, and individual value construct refinements were derived from the original definitions of Rokeach (1973).

While the first coding phase was data-driven, in the second phase, the final value constructs and categories were derived from the existing framework. Each of the value codes and related experience descriptions established during the first analysis phase were classified under one value construct and consequently allocated to the associated value categories and value types. The value constructs were further classified into two experience categories, namely co-creative and co-destructive, to allow a comparison between the two experience categories, as illustrated in the following example:

"*It truly provides me with so many fun moments, some extra enjoyment to life*" (experience description) → fun/enjoyment (inductive value code) → pleasure (value construct) → personal

*(value category)* → *intrapersonal (value type)* → *terminal (value type)* → *co-creative (experience category)*

However, crucial for the qualitative content analysis, we remained flexible when employing the original value constructs (Eriksson & Kovalainen, 2016). The coding was started deductively (i.e., with the predefined value constructs); but during the analysis, it was found that the typology should be expanded with new value constructs to adequately cover the user values present in the use of Pokémon Go. The proposed values are presented in the manuscript. Careful consideration was exercised when determining the new value constructs. Other existing value classifications and theories, such as the theory of basic values by Schwartz (2012), were explored to outline the new constructs. Before defining the new value constructs, we critically assessed the value codes and concluded that they would not fit under the existing constructs.

The coding process was highly iterative, that is, the determined value constructs and categories were revised several times to ensure that the appropriate value codes were included under them. To support the reliability of the analysis, the data was double-coded, and the interpretations were frequently discussed among the authors. Further, before entering the final phase of the analysis, each value code and its included experience description was examined once more to confirm that the chain contained clear enough information to determine the final value construct. If the value could not be unambiguously determined, the value code was discarded from the final analysis. In total, nine positive and 16 negative chains were identified through the examination. Therefore, 152 positive and 317 negative value codes and related experience descriptions were included in the final phase of the analysis.

### Data analysis: Phase 3

Qualitative content analysis enables not only a qualitative but also a quantitative analysis of the data (Boyatzis, 1998; Silverman, 2016). Furthermore, this "crossing over" from the qualitative nature of the interviews into a quantitative method of processing the data is also one of the distinct features of the laddering interview technique, which distinguishes it from other qualitative methods (Reynolds & Gutman, 1988). In this study, the coded data were analyzed both qualitatively and quantitatively. The data were first qualitatively interpreted as described in the previous sections and then quantitively interpreted to identify the focal personal values. The quantification of the value types, categories, and constructs made it possible to compare the different values and value types and the frequency of their occurrence in the gamers' co-creative and co-destructive gaming experiences. Further, the quantitative analysis provided the basis for another round qualitative interpretation, where the focus was on the in-depth understanding of the determined focal values and the connected service experiences.

Through the quantitative analysis, we determined how often different value constructs, categories, and types occurred in the coded data. We performed frequency measurements (Schreier, 2014), that is, counted the number of times each value construct, category, and value type appeared in the data. We determined 13 value constructs associated with the value co-creative experiences and 26 related to the co-destructive ones. To focus on the most focal personal values, we tested different significance thresholds and conclusively determined a 9% threshold in proposing the focal personal values underlying gamers' experienced value co-creation and co-destruction occurrences. The resulting eight focal values in Pokémon Go are further presented in Appendix B below.

## Appendix B.

| Table 6 - Overview of the Focal Personal Values in Pokémon Go | | | | |
|---|---|---|---|---|
| *Value construct* | *Classification* | *Description\** | *Examples of co-creative experiences* | *Examples of co-destructive experiences* |
| Pleasure | Intrapersonal Terminal Personal | The state of feeling pleased; fun, enjoyment. | Embraces gamers' experiences such as enjoyment, relaxation, and fun while gaming.<br><br>Includes gamers' experiences of the game as a pastime.<br><br>Pokémon Go as entertainment during traveling from one place to another. | Game hindering perceived fun or enjoyment (due to e.g., in-game technical issues, misbehaving fellow-gamers, fading initial interest, and the perceived simplicity of the game). |
| A Sense of Belonging | Interpersonal Terminal Social | The state of feeling or being an essential or important part of something. | Sociality of the game and a resulting sense of togetherness for the gamers.<br><br>Includes also experiences of nostalgia (e.g., childhood memories with the Game Boy console or Pokémon cards).<br><br>Families using the game together co-creating value by increasing a sense of belonging. | Perceptions of lack of gaming community.<br><br>Being excluded from the game based on geographic location. |
| Ambition | Intrapersonal Instrumental Competency | Desire for success or achievement; being hard-working, aspiring. | Gaming supports the gamers desire to collect all the Pokémon (goal orientation).<br><br>Positive competition with others and/or oneself. | Inability to achieve personal goals or succeed in competition (e.g., due to physical resources breaking down, other gamers violating the rules, game malfunctioning). |
| Activity | Intrapersonal Instrumental Competency | The state of being active. | Perceived increase in physical activity supported by Pokémon Go.<br><br>In some cases, increase in time spent outdoors was also connected to positive gaming experiences. | In-game technical issues discouraging gamers or hindering their goal of physical activity.<br><br>Gamers perceived boredom (inactivity) when gaming alone. |
| A Healthy Life | Intrapersonal Terminal Personal | Enjoying good health; physical (and mental) well-being. | Gaming supporting gamers' physical and mental well-being (e.g., coping with everyday life or improved quality of sleep). | Challenges in maintaining aspired health and well-being goals.<br><br>Gaming causing harm to health (e.g., lack of sleep and game-related physical concerns). |

| Table 6 - Overview of the Focal Personal Values in Pokémon Go | | | | |
|---|---|---|---|---|
| *Value construct* | *Classification* | *Description\** | *Examples of co-creative experiences* | *Examples of co-destructive experiences* |
| Sociality | Interpersonal Instrumental Moral | The action of individuals associating together; being social. | Spending time together with others (e.g., family and friends).<br><br>Gaming and sharing experiences with others. | Neglect of social relationships when choosing the game over other priorities (e.g., hobbies or important social relationships outside the game).<br><br>Game taking away gamers' capacity to be present in the moment (e.g., in social situations outside the game).<br><br>Experienced lack of sociality within the game (stemming e.g., from in-game technical issues, experiences of being left out from a group of friends, and other unmet expectations regarding sociality). |
| Responsibility | Interpersonal Instrumental Moral | The state of being responsible and accountable for something within one's control; reliability, dependability. | Accessibility of the service provider. | Gaming activities contradicting the responsibility value (e.g., choosing to play over other priorities, being late or neglecting work, playing while driving).<br><br>Value contradictions (pleasure of playing vs. values related on being responsible).<br><br>Experiences of personal effort in the game getting wasted (due to game not working, i.e., unreliable game). |
| Social Recognition | Interpersonal Terminal Social | The state of being recognized by others; acceptance, respect, admiration. | N/A | A sense of lack of acceptance from others and personal image suffering from gaming mostly related to non-users' (e.g., family, relatives, friends, or strangers) unfavorable attitudes towards Pokémon Go. |

\* Rokeach's (1973) value descriptions and a recognized online dictionary (Dictionary.com) have been utilized to establish the descriptions.

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