



Resemblance of religion and pervasive games: A study among church employees and gamers

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ABSTRACT

Previous research suggests that the experience and practices related to gaming and extended realities, and religion and spiritualism, share similarities. In this study, we explore how both the employees of the Evangelical Lutheran Church (n=156) and pervasive game players (n=98) perceive and make sense of these connections. We approach the qualitative data from the perspective of Durkheim, who, similarly to how game theorists view games, views religion as a multi-faceted system that incorporates the rules, practices and communities that comprise the religion. From the data emerges the following prominent connection as perceived by both groups of informants: systems of (1) shared premise, (2) resilience and restoration, (3) symbolism, (4) extended reality and (5) day-to-day structuring. A numerical view of the data shows that 42,5% of the participants did not perceive similarities, and examination of these responses suggested that while religion and pervasive games share functional similarities, they are further apart from a substantive perspective.

CCS CONCEPTS

• **Information systems** → *Massively multiplayer online games*; • **Human-centered computing** → **Ubiquitous and mobile computing systems and tools**.

KEYWORDS

Video games, Religion, Metaverse, Gamification, Augmented Reality, Pervasive games, Techno-Spirituality

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1 INTRODUCTION

Understanding how technology transforms and shapes human behaviour is regarded as one of the central pursuits of human-computer interaction (HCI) research. A key cultural area that has

seen relatively little attention in this broad area of research is that of faith, religion and spirituality (FRS) [68]. In HCI and adjacent disciplines, the research on the interconnections between technology and FRS has been carried out under the concepts of techno-spiritualism [10, 11], digital religion [13] and, in the context of the Christian faith, digital theology [86]. Together, these streams of research have looked into and discussed multiple manifestations of religious or spiritual elements in technological contexts, but have also explored questions that technology poses for religious systems [86]. Since recent HCI studies have emphasised the importance of differentiating spirituality from religion (e.g. [82]), in this study, we predominantly discuss religion specifically, and understand it as "a system of symbols by means of which people (a community) orient themselves in the world with reference to both ordinary and extraordinary powers, meanings, and values" [1, 68].

As video games have become a prominent part of contemporary culture, it is no surprise that these developments have also spurred research into the intersection of video games and FRS [14, 15, 94]. Religion is particularly interesting in this regard, as there is no time period in the history of large-scale human societies where religion would not have been present [38]. Religion has historically been significant in, for example, (1) guiding social interactions [30], (2) shaping perceptions of morale, and (3) facilitating large scale cooperation [84]. Now with the growing prominence of gaming as a pastime, we observe that there is interplay, on multiple levels, between religious systems and video games [15, 93]. Examples include religious funeral rituals organised in the digital space [81], presentation of religious ideas in video games [25], and even video game-inspired new belief systems that resemble religion [2].

Although religion in the cyberspace has been recently discussed by various scholars (e.g. [14, 93, 94]), religion in pervasive games has seen less attention [34, 60]. Pervasive games differ from other types of digital games in that they transform the real world into a playground, therefore mixing physical reality with augmented aspects [58]. This characteristic means playing is not confined inside a digital realm, but influences and directs players' actions and behaviour in the real world [48, 58, 61]. The research on locative pervasive gaming has demonstrated that in practice, the games have become intertwined with the active players' daily lives [27], influencing their movement when out and about [17, 21, 44] as well as social interactions both online and offline [6, 76, 77, 91]. As religious buildings are central points of interest (PoIs) in popular pervasive games such as Pokémon GO [4, 89], the games generate interactions between church employees and players. However, the general development of convergence between video games and religion [14, 15], as well as pervasive gaming and the real world [52], suggests that



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various religious phenomena may arise in pervasive gaming beyond face-to-face interactions between players and church employees. In this work, we investigate these phenomena in the context of the most popular religion and pervasive game in Finland. To this end, we collected two sets of open ended essay survey data from employees of the Evangelical Lutheran Church of Finland (N=156) and pervasive game players (N=98), asking them first openly about what similarities they see between the two phenomena, and posing follow-up questions to bring further understanding on the topic. We looked at the data through the lens of Durkheim [29] in order to uncover what similarities church employees and pervasive game players see between the two phenomena.

By addressing the inquiry of the resemblance of religion and pervasive games, we contribute new knowledge to the HCI literature related to FRS [68] such as techno-spiritualism [10, 11], and more specifically to the research on video games and religion [7, 14, 15, 22, 25, 34]. Our findings are also relevant to the literature on video game design and gamification [35], as we explore religious phenomena that are present in pervasive gaming, and how perhaps religions (in particular Abrahamic religions such as Christianity) may include elements that are commonly associated with gaming. The rest of the study is structured as follows. First we review the literature on video games and religion, followed by presenting our theoretical lens: Durkheim [29]. We then present our data collection procedure, analysis and findings. We discuss the key contributions to theory and practise, limitations and future work.

2 BACKGROUND

2.1 Games, gamification and religion

Gamification, in addition to describing the use of game elements in non-game contexts [26], can be understood as a holistic societal phenomenon where along with the prevalence of technology in society, our lives are transforming to be more game-like [35]. This change is fueled by the proliferation of technologies such as augmented reality [52], quantified self [95] and the metaverse [47], which lay a platform for gamifying individuals' lives. Gamification is prominently visible in cultural developments surrounding video games. Examples of areas where the inclusion of game-like elements are transforming the status quo include, but are not limited to, learning [78], sports and the transition towards eSports [37], and even freight transportation [50]. Viewing gamification as an ongoing process by which various real-world activities are transforming to becoming more gamelike, we now shift our focus back to religion.

As video games and religion are both broad phenomena, it is no wonder that the connections between the two are manifold and take place on multiple levels. Perhaps the most obvious connection is the representation of religious content in video games. Notable examples include Sid Meier's Civilization game series, where religion is one of the possible winning conditions in the game and a central part of the gameplay [16], and Ubisoft's Assassin's Creed game series, where players can explore religious themes and meaning via re-imaginings of real historical conflicts and struggles involving religion [25]. In addition to explicitly religious ideas, games can also deal with existential questions. One example is Frictional Games'

Soma, which explores what it means to be human and what digital immortality could look like. Some video games also contain representations of contemporary religious structures. For example, in Pokémon GO, Pikmin Bloom and Ingress Prime, religious buildings are key playing locations [88]. An interesting example of potential benefits of modelling and texturing contemporary religious buildings was seen in April 2019, when Notre Dame Cathedral burned. Ubisoft had previously created a detailed 3D model of the cathedral for their game Assassin's Creed Unity, and following the tragic fire that took down much of the real building, they made the game free to play on PC for players to see and enjoy the structure as it was before the fire ¹.

Through presenting players with religious ideas or content, video games may serve as vehicles to spark ruminations and discussions on religion. According to a recent study [24], there are four ways players approach religious ideas in video games: (1) rejecting; (2) debunking; (3) debating; or (4) connecting. These discussions can take place within the game setting, or outside it in the real world, being simply inspired by the games. In addition, video games can offer a platform for religious ceremony [81]. For example, players have organised digital funerals for their online friends who have passed away [81], and while some of these funerals do not include a religious context, they can follow or at least borrow from existing religious rituals.

Another religious aspect of video games is that they can act as mediums through which spirituality and the meaning of life can be explored [14, 20, 23, 24, 69]. Connected to this is eudaimonia [96], which refers to gratifications derived from truth-seeking and pondering of the ultimate, as opposed to hedonic gratification [70]. Research on eudaimonic gratification in video games has shown that in retrospect, players appreciate meaningful playing experiences more compared to fun experiences [69]. Particularly relevant elements that players remember from games are the music [55] and story [69]. This latter finding brings attention to the narrative construction of the game world, an aspect that can also be seen to manifest in various religious systems [38]. In games such as Brothers: Tale of Two Sons, the player is taken on a narrative journey that deals with life and death, companionship, adventure, meaning and loneliness. These themes are supported by the game mechanics [63], showcasing the unique capability of video games in facilitating the exploration of ideas relating to the meaning of life.

2.2 Theoretical lens: Durkheim

The theories for understanding religion can be broadly divided into substantive and functional theories [5]. Substantive theories observe religion through the believed content, whereas functional theories focus on the psychological and practical mechanisms of religion [5]. Our viewpoint for examining the interplay and similarities of video games and religion is that of Emile Durkheim, a functional approach as expressed primarily in his seminal work *The Elementary Forms of the Religious Life*, initially published in 1912 [29]. Durkheim frames religion as a product of human activity, not as a divine intervention, which makes the lens suitable

¹See <https://www.polygon.com/features/22790314/assassins-creed-unity-notre-dame-restoration-accuracy>, visited January 4, 2022

for looking at religious elements in non-religious contexts such as pervasive and location-based games. As several researchers such as Hoover [40], Wagner [93] and Morgan [66] have noted, Durkheim's understanding of religion and ritual is also structurally very similar to how many cultural historian and sociologists like Huizinga [41] and Caillois [12] argue games and play work: communities adhere to certain rules from which shared values arise. For this reason, we consider Durkheim's viewpoint a relevant theoretical lens for examining the similarities between games and religion.

Durkheim was an armchair anthropologist, mostly basing his observations on the data other researchers had collected in the field [62]. The main elements of his theory have been reaffirmed and reapplied over the years by various social scientists. Durkheim considered religion as a thoroughly social phenomenon—a shared world with collective representations. He established the concept of *collective consciousness* to describe shared beliefs and belief systems within human civilisations. This concept has since been broadly accepted, and it is referenced in books written for the general audience, perhaps most famously in Harari's seminal book *Sapiens* [38]. The concept of collective consciousness has been expanded upon by psychologists such as Carl Jung, who coined the term *collective unconscious*, referring to unconscious thought patterns that are present across humans in a similar way to Durkheim's collective consciousness [42]. Durkheim argued that religion symbolically reflects the community itself, and helps maintain and even reinforces a strong in-group spirit. By collectively sharing concepts, thoughts, ideas, symbols and ritual activities, the members of the community commit to a common conception of reality. [29]

This idea that religion is inherently a social phenomenon can explain why some of the strong shared narratives in game contexts have been given religious dimensions (e.g. [2, 59, 79]). For Durkheim, a core element of collective consciousness is *collective effervescence*. This concept describes a state of social enthusiasm which arises in moments when individuals in a community come together to perform rituals. As the members of the community participate in the same action, a certain energy, which Durkheim describes as an extra-individual force, is released, and transfers the individuals into a new extraordinary and spiritual realm.

When perceiving the world through the religion's symbolic conceptions, Durkheim suggested making a distinction between two fundamental categories: sacred and profane [29, p. 36]. Profane things are ordinary and mundane. By contrast, sacred things are set apart from the profane, which gives them special meaning. Durkheim distinguishes the sacred as shared beliefs and practices uniting a moral community of those who adhere to them, and as something that is forbidden from outsiders. The collective conscious or belief system of religion is, according to Durkheim, inherently linked to the concepts of sacred and profane. He states that "*a religion is a unified system of beliefs and practices relative to sacred things*" [29, p. 44]. Therefore, religious beliefs contribute to defining individual values and behaviour, but also social behaviour within small groups and the broader community.

Durkheim also emphasises the importance of recurring rituals, ceremonies and activities of the community as a way to strengthen sentiments that hold people together [29]. In pervasive gaming, this reassertion can manifest as activities that players organise themselves, or as cooperative endeavours facilitated by the developer.

Durkheim also notes that by acting together in the community, individuals do and achieve things they would not do alone [29]. There are multiple examples of individuals coming together to achieve something greater in pervasive gaming, such as five- and six-star raid bosses in Pokémon GO which require cooperative organising to complete [6] and territorial conflict where individuals fight over territory to reserve virtual areas for their team [73].

2.3 Applying Durkheim to gaming

One of the key elements of Durkheim's theory is the collective consciousness and shared narratives. These also appear as central unifying characteristics in some of the previous research on video games and religion [14, 59]. For example, players may share eudaimonic playing experiences with one another and discuss and even further develop the fictional world of video games [20, 24, 69]. Likewise, in the sphere of religion, people can share spiritual experiences through, for instance, song or ceremony, or share their experiences afterwards via testimony [39].

One of the video game series where the socially shared narratives have been studied the most is Pokémon (e.g. [34, 59, 79]). The game series has been linked to Shintoism in its origins [34] and discussed as an emergent religious phenomenon of its own [34, 79]. Other popular game and media franchises that have been studied for emergent religious phenomena include Halo [74], Harry Potter [2] and World of Warcraft [80] among others (see, e.g., [23]). Initially, the Harry Potter franchise received negative feedback from some religious groups, which according to Feldt, was the consequence of the series dealing with religious expressions and phenomena [32]. However, Harry Potter fans have also formed religious cults of their own, one of the most popular examples being "Snapeism", a religion focused around the character of Severus Snape [2]. Alderton argues that Snapeism fits the definition of religion, as it has the following elements (1) individual and social practises that mediate expression and community behaviour, (2) text or scripture that is paramount; and (3) a divine figure who is channelled [2]. Such emergent religious phenomena are not specific only to Harry Potter, but can be also seen to a degree in other contemporary cross-media franchises such as Pokémon [59, 79] and World of Warcraft [80].

Particularly when approaching religion from a functionalist perspective, the social elements are critical [29]. However, religions have multiple components within them, and some other mechanisms described by Durkheim such as sacred vs profane and collective effervescence have seen only little to no attention in the extant literature on religion in video gaming and pervasive gaming more specifically. In addition, it remains unclear how believers and gamers perceive these concepts and what similarities they see between pervasive gaming and religion. To address these research gaps, we proceeded to our empirical study.

3 MATERIALS AND METHODS

3.1 Data collection

In this work, we studied the similarities between religion and pervasive gaming by drawing from the perspectives of experts in the two fields. In order to obtain these perspectives, we observed the most prominent religion and the most prominent pervasive game

in Finland, a context the authors were familiar with. In this country, at the time of this study, the religion with the most followers was Evangelical Lutheran Christianity, and the most popular and widely played pervasive game in terms of monthly active users was Pokémon GO. In 2021, the Evangelical Lutheran Church of Finland had approximately 3.7 million members, equalling about 66,5% of the entire nation's population [87]. The church has 15,800 employees, making it a major employer in Finland. The church owns a lot of property in urban centres including some of the most visited landmarks such as cathedrals and old historical grounds [87]. Pokémon GO has been the most popular pervasive game in Finland ever since its launch in summer 2016. While the exact numbers of active players are not public information, as of December 2022 the most popular Finnish Facebook group for the game consists of some 12,000 players.

In the years leading up to this research, employees of the Evangelical Lutheran Church and Pokémon GO players had met each other in various circumstances, including sacred areas such as church grounds and cemeteries, which are key playing locations in Pokémon GO. These encounters may have also prompted the two sides to think about connections and possible collisions between virtual and the spiritual. In addition, there are some church employees who actively play pervasive games themselves. Conducting the study in Finland ensured that the authors had firsthand experience of the surrounding culture and environment. This helped the authors interpreting the data to pay attention to details pertaining to, for example, local history or linguistic nuances.

We conducted two waves of data collection. First, we collected the viewpoints of the employees of the Evangelical Lutheran Church through a structured online open-ended essay, and after the initial data analysis, we determined the analysis would benefit from drawing from viewpoints of the other party as well. Hence, we repeated the survey for pervasive game players. Next we describe these two data collection processes.

3.1.1 Wave 1: Employees of the Lutheran Church. We constructed a structured open-ended essay survey regarding the similarities and resemblance between the spiritual world of Christianity and the extended reality pervasive game worlds created by pervasive games such as Pokémon GO. This survey contained background questions (age, gender, occupation, employment duration, playing experience, religious stance) and open-ended questions related to the current research topic. To avoid leading the participants and to get their initial authentic response regarding the similarities, we first asked participants explicitly about the similarities between virtual game worlds and the spiritual world of Christianity (i.e., "What similarities do you see between virtual game worlds and the spiritual world of Christianity?") and only later included additional follow-up questions (see Table 1) to bring more nuanced perspectives to the responses. This was done to help us interpret the data, but to also see connections between themes more broadly. The questionnaire was implemented using a professional online survey distribution tool *Webropol*. In order to distribute the survey, we contacted the Evangelical Lutheran Church Education Office in January 2020. They forwarded our message to their employees through their own internal list. This was important to control the

Table 1: The survey questions. Note that after each question we added instructions such as "Please explain your reasoning in detail, and why you think this is the case."

Audience	Questions
Both	GDPR consent and permission to use replies in research. Background and demographic information.
Both	What similarities do you see between pervasive games (e.g., Pokémon GO) and spirituality such as Christianity?
Church employees	Have you seen pervasive game (e.g. Pokémon GO) players near churches or in the grounds of religious organisations? As an employee of the church, what opportunities do you see in reaching out to pervasive game (e.g. Pokémon GO) players? How would you define what kind of extended reality is suitable for churches? Can the spiritual world interact directly with augmented or extended reality?
Pervasive game players	Have you ever played Pokémon GO or other similar games near churches or in the grounds of religious organisations? As a Pokémon GO player, what opportunities do you see in Church employees to reach out to players? Do you think playing Pokémon GO or other similar games near holy sites such as church grounds or cemeteries can be problematic? Can the spiritual world interact directly with augmented or extended reality?

sample and ensure it consisted of only church employees. The survey was online for roughly one month until the end of February 2020. During this time, it was opened by 605 respondents, of whom 211 started responding. After removing incomplete responses and those who did not give us permission to use their responses for research, we were left with the final number of 156 full responses.

3.1.2 Wave 2: pervasive game players. We repeated the survey a year later (March-April 2021) for pervasive game players, but made some minor alterations to the continuation questions in order to contextualise the survey for the players. The questions are displayed in Table 1. We contacted moderators of the largest Pokémon GO Facebook group in the country as well as a Pokémon GO Telegram group, and they agreed to distribute our survey onward to their members. The survey was online for two weeks, during which time it was opened by 288 participants, of whom 170 started responding. After removing incomplete responses and those who did not grant permission to use their responses for research, 98 responses remained as the final number of responses to be included in the analysis.

Table 2: Demographic data of the church employee participants (n=156)

Employment	Gender		
reverend	25.0%	male	39.1%
vicar	5.1%	female	60.3%
youth worker	9.6%	other	0.6%
other church employee	60.3%		
Employment duration	Age		
less than a year	5.1%	18–25	1.9%
one to five years	18.0%	26–40	23.7%
five to fifteen years	32.1%	41–60	64.7%
over fifteen years	44.9%	>60	9.6%

Table 3: Demographic data of the Pokémon GO player participants (n=98)

Employment status	Gender		
employed	70.4%	male	51.0%
student	11.2%	female	46.9%
unemployed	9.2%	other	2.1%
stay-at-home parent	4.1%		
other	5.1%		
Playing experience	Age		
less than a year	0.0%	18–25	10.2%
1-2 years	7.1%	26–40	42.8%
2-4 years	14.3%	41–60	42.9%
over 4 years	78.6%	>60	4.1%

3.2 Participant information

The demographic information of the church employee participants is displayed in Table 2. Over 60% of the participants were other church employees than priests or youth workers. They included deacons, sacristans, family advisors, communications executives and coordinators. When comparing the demographic information to data about the overall employee demographics of the Evangelical Lutheran church [31], we notice no significant differences in terms of the demographic characteristics. Similarly to the employee demographic information, the majority of the respondents (60,3%) in our sample were female, and the age distribution also aligns with the Church’s self-published employee data [31]. Thus, with the exception of a bias towards individuals willing to respond to surveys (self-selection bias), we consider this sample a representative snapshot of church employees in Finland.

The demographic information of the pervasive gamer participants is displayed in Table 3. Here slightly over half of the participants were male (51,0%) and the participants were significantly younger than the church employees. Most (70,4%) were employed in the workforce. The others were students, unemployed, stay-at-home parents and pensioners. Perhaps due to the survey distribution method as well as the popularity of the game, all participants reported to have played Pokémon GO, with several mentioning

also other locative games such as Ingress Prime, Orna and Harry Potter: Wizards Unite. A large majority of the participants reported to have played Pokémon GO since the launch in summer 2016, indicating that they had more than four years of playing experience. This can be considered a positive sign with regards to obtaining viewpoints, since the players have had time to think, conceptualise and experience a broad range of phenomena related to pervasive gaming.

Looking at both samples together, the participants had varying degrees of expertise on both pervasive games and religion. There were participants who could claim expertise in both categories, but also participants who were experts in other religions besides Christianity and other pervasive games besides Pokémon GO. Due to our recruitment strategy, participants from all over Finland took part in the survey, meaning there were people from smaller towns, those living in the capital city, and everything in between. Thus, while the participants could be divided into two binary categories based on the sampling method, in reality the participants represented a spectrum of various viewpoints and experiences. For this reason, we chose to look at all the data together in our analysis.

3.3 Data analysis

We approached the data inductively [85] with the aim of discovering what high-level similarities the participants saw between Lutheran Christianity and pervasive gaming. In general, we sought to understand how church employees view Christianity, and how pervasive game players view pervasive games, as well as how both view the similarities between the two systems. In our analysis, we treated the participants as knowledgeable agents, as due to the sampling method, we could rely on the participants to be experts in their respective domain. Yet, qualitative scholars have argued for the importance of also critically evaluating participants’ responses [64]. Thus, as our understanding of the data increased, we identified outliers and disagreements between participants, and examined the backgrounds of participants to see whether and what kind of influence the participants’ background had on their views. Since the data was rich, we chose to interpret it through the lens of Durkheim [29], which allowed us to theoretically ground the discoveries into an existing conceptual framework.

As is typical with such inductive analysis approaches, the analysis process was iterative. However, the following three key steps were followed: (1) familiarisation with data; (2) formulation of a thematic framework to describe the data; and (3) coding of the data and refining the framework [72]. The first step, the familiarisation with the data, was carried out by the authors independently reading through the responses of both church employees and gamers to the questions in Table 1. The authors focused primarily on understanding all unique similarities, resemblances and connections, but also on the interplay between various concepts that the participants brought up. The authors further looked for mentions of religious phenomena as described by [29], such as collective effervescence, sacred vs profane and collective consciousness. We looked for these similarities in the first open question about the similarities, and only used the rest of the questions to bring nuances into our interpretation of the resulting themes.

In the second step, the authors discussed the data together, and formed preliminary thematic clusters for describing the data. We used sensitising concepts [8], namely those derived from Durkheim [29]: collective effervescence, collective consciousness, sacred vs profane and rituals, to inform the analysis and formation of the themes. Also when interpreting the nuances within the themes, we referred to these concepts for connecting our reasoning with the theoretical lens of Durkheim. While Durkheim thus guided the analysis, our aim was to come up with themes that were conceptually unique from one another, and that would reflect the participants' experiences as expressed in the data. These themes were tweaked several times along with our evolving understanding of the data. For example, as we first began coding the responses, we noticed we had poor inter-rater reliability due to poor initial definitions of the boundaries of the thematic clusters. Later on, we noticed that some thematic clusters had significant overlap in the coded responses, leading us to combining two themes together (escapism-related comments were grouped with comments on restorative effects), and further refinement of the themes.

In the third step, the researchers independently coded the responses to the question: *"What similarities do you see between virtual reality and spirituality such as Christianity?"*, as well as divided the coding responsibility for the rest of the questions. Each code was placed into a cluster of the thematic framework, and those items that did not match the framework were put aside for further analysis and returned to later (see previous step). While this study was first and foremost qualitative, the high number of responses (n=156 and n=98) offered us an opportunity to obtain a frequency measure for each of the themes as well through calculating how many participants mentioned each of the codes. We kept our primary focus on understanding the discovered phenomena more deeply than simply through numbers, and hence, we continued to look into the themes more carefully through participants' responses to the entire survey (see 1).

After the first round of coding, Cohen's Kappa values were calculated for inter-rater reliability as guided by Frey [33]. The thresholds for inter-rater reliability were set as follows: k between 0.41–0.6 can be considered moderate agreement, between 0.61–0.8 substantial agreement and more than 0.8 almost perfect [33]. At first, two authors reached substantial reliability or greater (Cohen's Kappa > 0.6) only in codes for two thematic categories. Consequently, we discussed unclear interpretations and redefined the boundaries of the thematic clusters. With the final version of the framework we reached substantial agreement (over 0.8) in all categories. The final themes, codes and examples are displayed in Table 4. The presented quotes were translated from the Finnish language into English by the first author.

Note that the codes given in Table 4 are the general codes used by the two coders, but they do not represent an exhaustive list. As the participants' thoughts and ideas were expressed in various forms, sometimes using convoluted language, we used our own interpretation to capture the idea behind the statements, rather than very strictly only coding responses based on explicit word choices. Furthermore, the themes had nuanced interconnections, which we explain next as we describe the themes in further detail.

4 FINDINGS

In addition to presenting the findings of similarities that the participants saw between Lutheran Christianity and Pokémon GO, we discuss the frequency of mentions of these categories, including a key finding that 42,5% of participants saw no similarities. The thematic clusters and the times they were mentioned by the participants are displayed in Table 5. The most often mentioned categories were nothing in common (n=108), shared premise (n=48), extended reality (n=35) and symbolism (n=29). The frequencies of how many participants mentioned each category is given in Table 5. Next, we present analysis of each of the categories and refer to our participants with pseudonyms. Lutheran church employees are denoted with the acronym LT followed by their number in the data (1-156), and similarly AR game players are denoted with the acronym AR, and followed by their chronological appearance in the data (1-98).

4.1 Shared premise

The theme of shared premise was mentioned in various ways and contexts, and in roughly 19% of all responses. This theme deals intrinsically with social relationships, and comprises collective beliefs, stories and shared thoughts, ideas and expectations. It was clear in the data that both pervasive gamers and religious practitioners are socially united by stories, narrative or beliefs. From the viewpoint of Durkheim, members of the church and pervasive gamers both get to experience social unity through collective consciousness [29]. The following quotes from our participants illustrate how the shared beliefs may unite people in both contexts:

"– Games seem to unite people and add a sense of being united. Players seem to trust each other and expect them to be willing to discuss the game. In a similar way the spiritual community experiences unity, and in a spiritual community there are similar experiences and wishes for mutual connection". (LT3)

"Those who understand and practice [Pokémon GO or religion] view the world differently than those unfamiliar with these." (AR6)

The idea of shared beliefs uniting a group and at the same time separating them from others is interwoven in the beliefs of Lutheran Christianity through a division into believers and non-believers, and in pervasive games through the division of players into teams, or the division between players and non-players. While shared beliefs unify groups, they may also create a stratification (e.g., believers vs non-believers) with potential adverse effects as explained by the following quote:

"People take it too seriously and start fighting from all kinds of things. Their own view is the only correct view" (AR97)

In Christianity, believers may gather together, for example for prayers or Sunday mass, and in a similar way, pervasive gamers may gather in the same place to play together, for example for a raid boss in Pokémon GO or farming items in Ingress Prime. According to Durkheim, these unifying activities driven by a shared narrative can be viewed as rituals that boost the social spirit of the group [29]. Durkheim posits that rituals are a core part of religious systems, and are guided by shared beliefs, social co-presence and sacred objects or space [29]. In this sense, by introducing players with social in-game activities, pervasive games set the stage for the players to enjoy some of the benefits associated with religious rituals, including collective effervescence and a sense of social

Table 4: Themes, codes and examples. AR denotes an AR game player respondent and LT an employee of the Lutheran Church.

Theme	Codes	Example quotes
Shared premise	belief, fiction, thinking, shared thoughts/ideas	"Typical for both is a tight community that shares similar beliefs and can discuss these matters with shared terminology." (AR15)
Extended reality	social, communal	"Games appear to unite people - and add a sense of being united" (LT3)
	hidden, invisible, unseen, concealed, enriched, extended, revealed, made visible, augmented	"You believe in a way in a thing you don't see. Also the spiritual world has augmented reality" (AR43) "Hymn 923 opens with the words "Open my eyes my God". In both realities you look at the world through enriching lenses, or you can hear a voice that gives additional meaning to the experience in space." (LT43)
Symbolism	signs, symbols, good vs evil, imagery, images icons, figures	"Both have values like cooperation, helping others, becoming better and a battle of good vs evil." (AR65) "You play the game and it has imagery, but the spiritual world of course also has imagery and interpretations that are widely used" (LT2)
Day-to-day structuring	habits, behaviours, activities, daily lives	"In both you gather to specific places because of the activity." (AR11) "Spirituality should be where people live in their daily lives. For example, it's presence in the game world would be desired." (LT134)
Resilience & Restoration	escapism, healing, restoration, resting, stress, anxiety, running away, detachment	"I would imagine that running away "from the real world" is related to both." (AR71) "The virtual world can help detach from the worries of "this world etc, like spirituality." (LT55)
Nothing in common	nothing, no connection, no similarities	"There are many kinds of spiritualities, but I wish nothing to be added to Christianity, nor I see any similarities [between Christianity and AR games]" (LT95) "I see no similarities" (AR80)

Table 5: Concepts, times mentioned and example quotes among the church employees (n=156) and AR game players (n=98)

Theme	church (n)	AR players (n)	cumulative (n)
Shared premise	16	32	48
Extended reality	28	7	35
Symbolism	27	6	33
Day-to-day structuring	18	8	26
Resilience and restoration	4	5	9
Nothing in common	66	42	108

belonging. The following quote exemplifies how rituals in both context may elevate the emotional level of the participants:

"In addition, communities form around spiritual and virtual worlds, and they are united by setting common goals and the ecstatic experience arising from reaching these goals" (AR64)

Some church employees argued against the idea of collective consciousness being central to the Lutheran Christian faith. This does not align with Durkheim's functionalism [29], but highlights how collective experiences may have a diminishing role in modern Lutheran faith. The following two quotes from employees of the Lutheran Church underscore how individualism and personal faith may play a central role not only in religion, but also in pervasive games:

"Everyone believes in their own way and common spirituality is challenging to achieve. The same applies to games" (LT11)

"People experience places and games in their own way. - For others belief is about sacred places, for others it is about their relationship with God. It's the same with games." (LT51)

The concept of a shared premise can be seen as a uniting force in both religion and pervasive games. It manifests primarily through shared stories which create a common view, or lens, through which the world is interpreted and understood. Some participants also drew parallels between religious rituals or ceremonies and in-game activities in pervasive games. These activities can only be performed when participants share a common code of conduct.

4.2 Extended reality

The theme of extended reality comprises the various ways in which both religion and pervasive games can bring something extra to a person's life. This "new content" can be, for example, a mental framework that directs behaviour or something hidden that is made visible through mobile devices or faith. It is noteworthy that the

theme was brought up significantly more often by church employees (mentioned by 18% of the participants) compared to gamers (mentioned by 7% of the participants). Related to the concrete extra layers that the spiritual and virtual bring to a person's life, the participants mentioned that both require something to access them:

"Virtual worlds cannot be seen without technology. The spiritual world cannot be seen without faith. Both require something to be seen." (LT42)

"Both realities are viewed through a lens that makes them visible." (LT60)

"Both are invisible worlds. The mobile phone makes Pokémon GO visible - maybe we can find a device that makes the spiritual world visible?" (AR7)

"Non-players do not see pokémon or pokéstops. And I do not see angels or things like that, or even acknowledge that they exist." (AR55)

The comparison between pervasive games and religion seems natural in this sense, since the idea of pervasive games is to extend observable reality via technology [43, 58], and according to Durkheim, religion adds a behaviour-directing socially shared narrative to the paramount reality [29]. Both pervasive games and religion therefore consist of material and social components. Pervasive games are tied to specific technologies, game designs and their operators, but the player community also influences when to play and how to play, generating additional (spoken and unspoken) rules on top of those imposed by the developer. Similarly, in religion there are physical components such as sacred objects, places, scriptures and structures, but also social hierarchies and positions (such as priests) that serve a special role in the community.

Also connected to the theme of extended reality is the idea of channelling a divine force, which is one of the defining characteristics of religion [2]. Believers can pray to God for answers or solace, and similarly pervasive gamers can contact the game admins to interfere with the playing field. While comparing a system admin to a divine figure may seem *prima facie* far-fetched, the admin in a way exists outside the game and can perform actions unavailable to anyone else. Similarly, for example, God in Christianity is believed to exist outside the physical universe. This idea was crystallised in the following quote:

"Both worlds have someone large who oversees the world and takes care of it." (LT16)

As a third key component of the theme of extended reality, some participants brought up imagination. For example, LT64 mentioned that both pervasive games and Lutheran Christianity contain mental images about the phenomena, the process of imagining things in the real world that cannot be visibly seen. Some pervasive games contain AR features that help users visualise digital content into the real world, and similarly in Christianity there are all kinds of visualisations from icons to stories and TV shows that help in visualising Biblical stories and testimonies. Prior research on pervasive gaming suggests that imagination is a crucial component of the genre and that one of the goals of AR technology in the games is to reinforce players' imagination [56, 92]. The following quote illustrates this aspect:

"You believe in the existence of things you cannot prove but you can imagine." (AR12)

Overall, the theme of extended reality covered how both Lutheran Christians and pervasive gamers utilise something to access otherwise invisible aspects of the world. For gamers this is technology, and for believers it can be, for instance, rituals, sacraments or prayer. Connected to this, both can also imagine unseen content in the real world. Both pervasive games and Christianity feature physical objects and rituals that guide and assist the processes of imagination.

4.3 Symbolism

The theme of symbolism relates to how in both pervasive games and Christianity ideas are expressed via symbols and images. The participants in our study mentioned objects used in rituals, crosses, and other symbols as a key part of religion, and similarly pervasive games such as Pokémon GO have symbols including icons and buttons that represent available actions and the fictional content in-game. A raid icon in Pokémon GO can be seen to invite players to perform a raid, which resembles how church bells call people to church. Participants further mentioned symbolic stories such as the battle between good and evil, and how these are a core part of both religion and pervasive games. Below we offer three illustrative quotes:

"In the game's lore you have certain God-figures" (AR1)

"This might be a bit far-fetched, but you could see Pokémon at gyms as some Gods to whom you need to sacrifice berries to keep them happy." (AR25)

"Good triumphs over evil - both in Christianity and in games". (LT21)

The last comment hints towards a battle between good and evil, a core archetypal story about balance between two polar opposites, also connecting back to the theme of shared premise where collectively shared stories were discussed. The duality that Durkheim talked about in the religious context was primarily that of the sacred and the profane. Abstractions such as good and evil are ways to share and understand what is beneficial and what is not. Assigning labels such as good and evil can help quickly make up what is preferable in religion and pervasive games. The symbolic parallels can exist also beyond the battle between good and evil. In fact, a few participants suggested the existence of a holistic parallelism between the spiritual and the virtual as follows:

"The spiritual world is virtual reality". (LT44)

Virtual worlds make use of the imagery of the Bible. (LT77)

These quotes also imply that virtual worlds, such as those experienced through pervasive games, are symbolic representations of something pre-existing. Following Durkheim, people cannot follow a higher purpose and goals unless they feel they belong to something greater, a collective [28]. This higher-level meaning, the symbolic god, is in fact the product of society and social pressure—the collective consciousness [28]. Since pervasive games fuse playing with real-world social interactions, the games become a part of the collective landscape of human interrelations that enables large scale cooperation.

Overall, on the broadest level the theme of symbolism relates to how the content is represented in both religion and pervasive games. For example, icons in pervasive games can be viewed as symbols, and similarly, the visual, haptic and audio feedback in the games all represent something in the game world, meaning

they are all symbols. Similarly, in Christianity there are various symbols that describe aspects in a world beyond this one, yet still present here and now. When extracting meaning from symbols, individuals always do interpretation, which again connects back to the socio-technological environment.

4.4 Day-to-day structuring

The theme of day-to-day structuring is related to how pervasive games and religion direct people's daily lives and mediate interactions with their environment. It also includes the various forms of practical interplay between two phenomena. The responses coded to this theme could be broadly divided into two categories. First, pervasive games offer a platform for representing religious content. Second, they use some geographical areas that for religion are sacred places. The following two quotes illustrate the aspect of harnessing AR for religious purposes:

"[The augmented game worlds] open up ideas, interaction opportunities and mutual solutions." (LT8)

"Virtual and augmented reality can be used to support and visualise spiritual content." (LT10)

These quotes hint towards the concept of convergence between the spiritual and the virtual. They frame pervasive games not as competitors, but as mutually beneficial, supportive co-existing concepts. Religious themes or elements can enhance the pervasive gaming experience and pervasive games can visualise religious content or direct players to, for example, walk pilgrim paths. Directing players can be done via placement of the playing locations, which were also discussed by our participants:

"PokéStops and gyms are located in the same places as church's spiritual locations. In other words, the game has selected the same geographical locations that are meaningful to religion." (AR91)

Using Durkheim's concepts of sacred and profane, we can understand holy sites and churches as sacred in that they are separated from the ordinary and given special meaning. While PokéStops and gyms also carry special meaning inside the game world, they may not be "sacred" in the same way, as due to their abundance, players may not treat individual Poles with special care. However, the interesting aspect arises when a physical sacred place is given special meaning also within the virtual world created by pervasive games.

In the data there were also mentions of experience where pervasive gamers and church employees had encountered each other. These stories were shared more frequently from the side of the Church employees, and were mostly located near the launch of Pokémon GO in 2016 when the player numbers were at their peak. The following quote from LT45 explains the observations made by one Church employee from this early time:

"Especially before there were a lot of Pokémon GO players moving in the vicinity of our grounds and the graveyard. When I came to this parish in Autumn 2016, it was very active. (...) You could also see slow moving cars, where there were one or more people inside with a phone in their hand. These same cars came to the graveyard parking lot multiple times a day."

However, in many cases the church employees were not only observers, but also actively interacted with the players. LT18 stressed that they wanted to *"let players know, that we are ordinary people*

just like them" and multiple employees saw it as an opportunity that pervasive game players arrived in the vicinity of the church grounds. For example, LT21 mentioned: *"I try to engage with the players regularly, exchanging a few words. Many have in fact been in the church before and it has been a pleasure seeing old acquaintances."* In addition, the church employees mentioned having organised various activities for players, such as lure events, coffee and juice for players, and letting players charge their phones. From the side of the pervasive gamers, such comments were missing. Instead, the responses seemed to emphasise being mindful and careful not to disturb anyone in areas such as graveyards. This was evidenced by the following quote:

"You don't want to be that guy, who's taking down a gym while a burial ceremony is going on." (AR72)

Overall, both pervasive games and religious systems guide the everyday thoughts and behaviours of individuals. Both are connected to the physical reality, with, for example, church buildings being visible on the streets and pervasive game players' playing being visible to onlookers. The participants also brought forward concrete overlap between pervasive games and religion, as pervasive games can be used to represent religious content and pervasive games can direct players to church grounds.

4.5 Resilience and restoration

The theme of resilience and restoration was connected to how both pervasive games and religion can support, enhance and improve individuals' quality of life by providing activities and practices that have restorative effects. This theme was brought up by only a few participants (N=9), even though both are daily activities that have enormous influence on individuals' lives. One of the discussed concepts here was escapism, of which one church employee explained as follows:

"The virtual world can help detach from the worries of our world, just like spirituality." (LT15)

This finding is interesting, as escapism [97] is a construct commonly associated with playing video games and spending time on the internet [46]. The data suggests that religion can serve as a form of escapism for some individuals, for example, due to providing a sense of comfort and hope in a higher power, or due to having a social community to belong to. Simultaneously, religion can provide a sense of purpose and meaning in life, rather than simply serving as a way to escape it. It depends on the individual and how they engage with their religion. Similarly, pervasive games can be harnessed for various purposes, supporting players' daily lives in multiple ways. One participant expressed that while both pervasive games and religion fill a void and a need in the human psyche, games only fill this void temporarily and cannot offer a lasting gratification in the same way as religion.

"– Both worlds address a void that we have. – The problem with virtual worlds is that they can only temporarily fill this void, and cannot offer a lasting peace the same way that a belief in Jesus Christ can offer." (LT100)

Escapism can be viewed as a coping mechanism, and may be partially subconscious. Christianity also features concrete rituals that may have restorative effects that aid in coping, such as confession, prayer and pastoral care. In pervasive games, restorative

effects may manifest through walks in nature environments or social interaction with other players. Another form of restoration may come in the form of a force that Durkheim [29] calls collective effervescence, or power of religion. This force lifts the members of the religious community into a state of collective emotional excitement that can be seen as a separate realm. This bears resemblance to immersion in pervasive games, and the rituals discussed in the theme of shared premise. These restorative processes may be drivers of long-term engagement, as participants may see the functional value they provide for their lives.

Overall, it can be seen that both pervasive games and religion offer valuable contributions to people's daily lives through the themes of resilience and restoration. While there are certainly similarities between the two, it's worth noting that Christianity offers unique practices such as confession, prayer, and pastoral care that are not present in pervasive gaming. However, certain aspects of religion, such as pilgrimage, have parallel experiences in certain types of pervasive games, particularly those that involve movement in the real world. Engaging in these activities can have a restorative and rejuvenating impact on one's life, offering a chance to relax and take a break from the worries of daily life.

4.6 Nothing in common

While our study was aimed at discovering the resemblance and similarities that participants see between pervasive games and religion, a high number of both employees of the Lutheran Church (n=66) and AR players (n=43), reported that they saw no similarities. Altogether these responses accounted for 42.5% of the total responses, making it the most frequent category. There were multiple given reasons as to why there were no similarities. First, both sides expressed that religion and pervasive games occupy two completely different spheres, and should therefore not be compared to one another. This response also highlights that while we adopted a functional lens for understanding the similarities, many participants had a more substantive view on their activities, and in that sphere, there were no similarities. Below are quotes that illustrate this line of thinking:

"Virtual environments are software and entertainment. By contrast, sacred spaces are part of this reality." (LT49)

"The other is a virtual game, and the other is a religion" (AR19)

"Fantasy and religion are things completely apart." (AR61)

In the data, another important reason for not seeing a connection between religion and pervasive games was a desire to keep the two concepts apart from one another. From a Durkheimian perspective, these comments could be interpreted as religion being part of the sacred, and hence detached from the ordinary, the profane. These comments were overwhelmingly more prevalent on the side of church employees, with only a single AR game respondent (AR8) bringing up this idea. Below we offer quotes from the participants that highlight these thoughts:

"I'd rather not have games played inside the church which create a memory trace of magic or the power of dark forces. The church should represent only the good." (LT52)

"Games should be denied from inside churches entirely. The church stands for goodness, and if anything is added to it, it should be respectful, holy, joy and light." (LT56)

"In my opinion holy places do not need any extensions to the reality, any games, or anything additional, since the greatness in holy sites is specifically in being there in the present, and investigating one's soul." (AR8)

In addition to the reasons given above, a significant portion of participants (n=42) across both samples mentioned they had not thought about the matter, or did not provide an answer at all. To further explore this finding, we looked at the given background information of the participants, and noted that only 84% of the church employees reported to be familiar with video games, and only 59% of the pervasive game players reported to be members of the Lutheran church. When looking at the responses of participants who reported to be familiar with both, 26% reported to see no similarities. This indicates two things. First, participants' lack of familiarity or lack of confidence alone only partially explain why a significant number saw no similarities, but are nevertheless important aspects to consider. Second, this observation suggests that while there are clearly functional similarities between religious systems and games or play, as evidenced by previous studies (e.g. [14, 15, 41, 93]) as well as the findings of this study, these similarities are not clear and obvious in the lived experiences of several church employees and pervasive game players.

Taken together, the data in this study showcased that there are individual differences in how religion and pervasive games are viewed, with some respondents (e.g., LT3, AR6, AR64), similarly to Durkheim, viewing both as collective social systems, while others highlighted a more personal approach towards the activities (e.g., LT11, LT51), and some rejecting the idea that the two share similarities (e.g., LT49, LT52, AR8, AR61). The presence of individual differences demonstrates the importance of looking at the phenomena beyond the lived experiences of individuals, but also calls into question whether theoretical descriptions of religious systems or pervasive games should be applied to describe the lived experiences of individuals without careful consideration.

5 DISCUSSION

In this section we outline implications of our findings for theory and practice. We discuss the limitations of our study and expand on fruitful avenues for future research.

5.1 Theoretical contributions

Our work has theoretical contributions primarily to three bodies of literature within HCI: (1) FRS; (2) Durkheim; and (3) gamification and pervasive gaming. Next we discuss these contributions.

First, the HCI literature on FRS and more specifically religion has explored multiple phenomena within the intersection of video gaming and religion [7, 10, 15, 23, 93], but only a few studies so far have looked into religion in augmented reality worlds and pervasive gaming specifically. The novel context of pervasive gaming can thus be seen as a contribution in the broad area of studies on FRS in HCI. Our findings add to the few prior studies within this context [34, 60] by offering an analysis based on empirical data of church employees' and pervasive gamers' viewpoints. Through elucidating the five dimensions of similarities: shared premise, extended reality, symbolism, day-to-day structuring and resilience and restoration, we offer a conceptual framework for describing

the resemblance. These dimensions, together with the category of seeing nothing in common, also offer a look into the viewpoints and perceptions of contemporary practitioners of both pervasive gamers and church employees. The finding that a large portion (42,5%) of participants saw no similarities between their respective systems is important for the field of study of interplay between religion and gaming, as it shows that while theory predicts that a various similarities exist [34, 41], a significant portion of stakeholders do not experience these similarities. Hence, while we are able to describe similarities through a functionalist lens on religion, this view does not encompass the entirety of religion [5], and alternative viewpoints are needed.

Second, as a way to inform our analysis and describe the findings, we referred to Durkheim's functionalism, which according to scholars such as Huizinga [41] and Caillois [12] is applicable for describing both religious systems, as well as games and play. The lens of Durkheim allowed us to relate religious experiences with experiences in pervasive gaming in a theory-guided manner. In our findings we discovered, for example, that as Durkheim describes religious ceremony and rituals to be powerful vehicles for promoting a strong in-group spirit, similarly in the popular pervasive game Pokémon GO, players gather (facilitated by the game) to legendary raids [6] that require social interaction and give players shared feelings of success. Our findings suggest that the concepts of sacred and profane could be used to understand how pervasive games highlight certain aspects of reality and give them a special purpose, something that a recent study on how pervasive games utilise geographic data has also noted [4]. Furthermore, pervasive gamers and Christians both contribute to their practitioners' common conception of reality, which enables them to see the world through a new lens, uniting practitioners through a shared premise. The impact of pervasive games, and video games more generally, as a uniting force is magnified by the popularity of the constantly growing industry². As we are experiencing various struggles as a society from on-going wars to the climate crisis and social media-induced polarisation [75], we need forces that bring us together. Both religion and pervasive games can unite people regardless of their socio-economic status, age, culture or gender, bridging generational gaps and demolishing some cultural and political barriers. Based on the observations of this study, pervasive gaming remains a promising area for future inquiry in terms of uniting people and providing meaningful experiences. These findings, together with all those articulated through the five themes, demonstrate how the lens of Durkheim can explain several phenomena in pervasive games. Consequently, our work supports the previous research on pervasive gaming [6, 34, 48, 76, 83] by introducing Durkheim as a lens for sense-making in this complex space of the real and the augmented.

Third, our work contributes to the literature on gamification [26, 35] by showcasing that some aspects traditionally associated with religion may play a role in the participation in social technologies and crafted experiences such as pervasive games. Our findings indicate that prior studies working to understand the uses and gratifications of games such as Pokémon GO [36, 90] should be expanded

by considering eudaimonic gratifications and more abstract social phenomena such shared premise, resilience and restoration, and day-to-day structuring. Our findings also offer insights into the interplay between gamified systems and religious institutions, a field that has been largely unexplored in the academic literature so far. We showcased that pervasive gamers and church employees interact in the physical world, guided by technology and the locations of the church grounds. We illustrate that some church employees have seen these meetings as opportunities for reaching out to pervasive gamers, while others have viewed the gamers as nuisance when they have brought in undesired activities on church grounds. With these findings, we expand the research on the interplay between organised religion and gaming.

5.2 Implications for practice

Our work has practical implications for technology designers, the society as a whole, and religious organisations. Next we discuss these three implications.

First, regarding technology design, the findings can guide pervasive game design in a direction that provides players with meaningful or eudaimonic experiences. As such, the findings build on top of the extant literature on pervasive game and pervasive game design [48, 83] by initiating the discussion on considering religious experiences as part of players' gaming experience. The findings of this study suggest that game design aiming to induce meaningful experiences should focus on constructing a coherent narrative and rules that can be socially shared, but also shared activities that scaffold an in-group spirit. While previous work has already extensively discussed the importance of multiplayer elements and social identity as part of the gaming experience (see e.g. [9, 51, 53]), our work goes further by suggesting that pervasive games can bare resemblance to religion-driven social unity. Collective real-world events such as raids in Pokémon GO [6] can be mirrored to religious meetings and spiritual social experiences. We encourage practitioners to experiment with drawing from religion and religious systems as one source of inspiration for game design, adding yet another approach to the already vast gamification and game design literature (e.g. [3, 26, 49, 65, 67]). For the purpose of making our findings more actionable for practitioners, we distilled the complexity of each of the themes into a set of key design takeaways. These are presented in Table 6. While aimed at pervasive game design, we encourage practitioners also in other game and technology genres to draw inspiration from, and experiment with, these design ideas.

Second, regarding society as a whole, our findings are useful for understanding the societal trend of gamification, where people's daily experiences are transforming to be more game-like [35]. As pervasive games are being played in conjunction with everyday activities such as shopping and commutes [52], the games also converge with multiple aspects of life, including what was focused on in this study: religious ideas, themes and sense-making. Past work has suggested that multimodal experiences within the manifestation of religion in games and the ability of games to expose players to new world views can direct players to seek and explore the meaning of life and existential questions [23]. Our findings demonstrate that ideas associated with religion can emerge in technology-contexts in a concrete way, as exemplified through the similarities identified

²For example, in 2020 the total overall estimated revenue of video games was 165 billion USD [71]

in this study. While secular beliefs are receiving more ground in Western societies, there might be an inherent need for a certain type of religiosity or eudaimonic exploration, and for this, pervasive games may offer a vessel. Some scholars have argued that even in societies where secular beliefs gain traction, religion and religiosity are not disappearing, but rather, they are transforming, and now manifest in games and other human activities [12, 24, 41]. Thus, we need to be aware of the societal changes that technology brings also at the level of individuals' beliefs, faith and morale, and more broadly, to society in terms of shared premises, behavioural norms and values.

Third, religious organisations can be viewed as conservative structures that represent an unchanging and stable force in contemporary society. However, there have been instances where technology has disrupted the way organised religion operates. Prime examples are the inventing of the printing press in the 1400s, which revolutionised how holy texts were distributed and read, and modern digital platforms, which offer tools for remote communication and virtual holy places among a multitude of other opportunities [18, 57, 86]. In addition to being opportunities, these examples can also be challenges, as religious organisations face questions such as should the technology be used and how, are there any theological or spiritual dilemmas involved, will the technology replace some existing ways of operation and elucidating what are the benefits and drawbacks of each specific technology. This work offers data points to religious organisations in assisting in this kind of decision making. For example, our findings suggest that pervasive games can be a meaningful avenue for meeting, connecting and reaching out to people, and are particularly suitable for mobile activities such as pilgrimages. As religious organisations have influenced the development of technologies, for example, by funding the development of religious games and movies, the Church or other organisations could consider making a big budget pilgrim-based pervasive application to boost people's spiritual lives. Overall, our findings can be useful for religious organisations in helping them reorient their praxis towards more harmony with the constantly changing socio-technical landscape.

5.3 Limitations and future work

There are limitations in this study that require further elaboration. First, as is typical with survey-based research, participation was voluntary, and this means the results of our qualitative inquiry should not be generalised to the global population without consideration. Particularly, the frequencies of the appearance of the categories in the participants' responses should be tested in future studies. We encourage future work to utilise alternative approaches such as in-depth interviews or ethnography to triangulate and test our findings. Second, due to the self-selection bias and the survey questions, participants may have focused overwhelmingly on positive similarities between the two phenomena, rather than the negative. We encourage future research to also look at the negative phenomena within religion and pervasive games and see if there is resemblance. Third, our research setting introduced certain particularities that should be considered. The research was carried out in the Global North, and in the context of Pokémon GO and Christianity. Due to this rather specific cultural environment, future research should

reproduce similar studies in other settings, particularly the Global South and other religions besides Lutheran Christianity.

In addition to addressing the limitations of this study, we suggest quantitatively exploring some of the themes discovered in our analysis, since most of the work on religious exploration and eudaimonic experiences within video games so far has been qualitative [19]. In particular, we invite scholars to focus on the effects that personal inclination towards religiosity has on engagement and immersion within pervasive games. This could further advance our understanding of the resemblance of pervasive games and religion, and whether secular societies could be currently compensating for the lack of personal and organised religion by engaging with technologies that scaffold similar activities. Furthermore, future qualitative research could employ alternative strategies for bringing further insights into this research topic, such as asking participants from both sides (religion and pervasive games) to describe their lived experiences, and doing the comparison only at the level of analysis, instead of asking participants to reflect on the similarities. Such approaches would provide knowledge on what similarities there are between religion and pervasive gaming, instead of answering the research question of what similarities participants themselves see.

Recent HCI research has also looked into aspects of FRS research that were not considered in this study, such as altered states of consciousness [45] and spiritual support [82]. We encourage expanding research in pervasive gaming also towards these directions, as they appear promising avenues and are closely related to the topics discussed in this work. Finally, we compared the functional aspects of religion and pervasive gaming through the lens of Durkheim [5], but future work could expand on our work through adopting a substantive view on religion and see whether any of the elements arising from that perspective bear resemblance to pervasive games.

6 CONCLUSIONS

In this work, we focused on the resemblance of religion and pervasive games by surveying the viewpoints of employees of the Evangelical Lutheran church (N=156) and location-based pervasive AR game players (N=98). Altogether five categories of similarities arose from the data. Looking at the frequencies of how many times each theme was brought up, 42,5% of participants saw no similarities, which suggests that while there are functional similarities between the two, a significant number of participants comparing the two do not see this resemblance. This can be explained by the argument that even if oftentimes Durkheim's functionalism reveals similarities with various activities and religion, in practitioners' view, even the functional similarities may not be obvious. Accordingly, substantive lenses may bring additional insights into the current research topic.

Our findings improve our understanding on how contemporary social technologies, such as pervasive games, may be related to behaviours commonly found in religious contexts. This work sheds light on how FRS may transform in our socio-technical future. For example, sacred rituals may be to some degree augmented with, or even replaced by technology-supported solutions. Our exploration of nuances within the five discovered themes can help designers be more conscious of religious elements in their products, and through

Table 6: The implications of the discovered themes for spiritually fulfilling pervasive game design

Dimension	Implication for pervasive game design
Shared premise	Construct narratives and logical story structures that can be socially shared and understood. These structures can help orient players' actions and communication under a shared premise, scaffolding meaningful interactions and social connectedness.
Extended reality	Provide players with augmented content that can help players see familiar places in new light, bringing them joy through discovery and meaning through stimulated imagination.
Symbolism	Consider the symbolic landscape of the pervasive game, and what higher level aspects they present. For example, consider what parts of reality to include in the game world of pervasive games.
Day-to-day structuring	Consider the interplay between pervasive gaming and real world activities and locations. Craft experiences that make the best use of important elements in the real world.
Resilience and restoration	Focus on design that has synergy with a healthy sustainable lifestyle in terms of e.g. exercise, social interaction and eating healthy.

e.g. the recommendations provided in Table 6, practitioners can begin to implement functional elements of religion in pervasive games and beyond. Employees of the church and other religions can benefit from this work by obtaining a conceptual view on how pervasive games and similar technologies may simultaneously (1) compete with religious organisations over people's time; (2) offer opportunities for reaching out to new people to join the activities of the religion; and (3) be harnessed for good, allowing people to enjoy the functional benefits of religion in a new technology context. In conclusion, through the perspective of Durkheim we learned that through their ability to provide a sense of community, create shared rituals and beliefs, and offer a means of escaping the mundanity of everyday life, both religion and pervasive games serve as powerful forces in modern society that can bring people together and provide a sense of meaning and purpose.

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