

Chapter 13

Player Experiences in Location-based Games: Memorable Moments with Pokémon GO

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Abstract. *Pokémon GO* was the first location-based augmented reality game to reach mainstream popularity. We present a qualitative survey study (n=2611) focusing on the *Pokémon GO* players' memorable experiences from the time when the game's popularity was at its peak and the experiences were fresh in players' minds. We analyzed the open-ended written responses with thematic analysis, resulting in seven categories with a total of 82 thematic codes. The categories we constructed were *Game Play & Game Content*, *People & Sociability*, *Location*, *Circumstances & Context*, *Negative Events*, *Feelings* and *Other Codes*. Through our analysis and findings, we provide insights to understand the *Pokémon GO* as a unique social phenomenon as well as a location-based augmented reality game more broadly. In addition to shedding more light on the *Pokémon GO* experiences and considering the potential for location-based games to engage players within the physical and social context around them, the findings capture what players found memorable about a massive phenomenon at its peak.

1. Introduction

Location-based games have a long history, dating back to pioneering experiments with mobile and GPS (Global Positioning System) technologies in the early 2000s. The designers of seminal projects like *ARQuake* (Wearable Computer Lab 2000), *Can You See Me Now?* (Blast Theory & Mixed Reality Lab 2001), *Botfighters* (It's Alive! 2001), *Mogi, Item Hunt* (Newt Games 2003) and *PacManhattan* (Frank Lantz and students 2004) sought to merge physical and virtual environments through the game interface. Players of these games were tracked through their mobile devices as they traversed the (usually urban) landscape, chasing or 'shooting' each other, collecting virtual items, and completing missions or quests (see de Souza e Silva & Hjorth 2009; Drakopoulou 2010; Leorke 2018). While these early projects relied on an ad hoc assemblage of custom-made and repurposed devices, the popularisation of smartphones in 2008 – featuring GPS tracking and cellular data coverage –

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introduced location-based gaming to a wider audience. Location-based game apps like *Parallel Kingdom* (PerBlue Entertainment 2008), *Shadow Cities* (Grey Area 2011) and *Ingress* (Niantic, 2012) built on the concepts of their predecessors, bringing digital gaming into public space. At the same time, they took advantage of the growing ubiquity of smartphones and app stores to both reach more players and achieve greater profits through microtransactions and data collection (see Leorke 2018, Ch 4).

According to Leorke (2018, Ch 3), location-based games have been subject to two overarching claims among scholars about their impact on players and the physical environment in which they are played. First, scholars have argued that location-based games create a “demarcated space for distanced and detached behaviour, allowing players to interact with strangers in ways they wouldn’t normally” (Leorke 2018, p. 48). For some, this creates the potential for chance encounters and stronger social ties (de Souza e Silva 2006; Lantz 2006; Mäyrä & Lankoski 2009); while for others, it can encourage intrusive, disruptive or anti-social behaviour (see Davies 2017; Flanagan 2009; McCall & Baillie 2017; Montola et al. 2009). Second, scholars argue that location-based games temporarily transform everyday locations into spaces for play. Some scholars argue this defamiliarises everyday locales and pushes players to explore areas they would not normally visit and see them in a ‘new light’ (de Souza e Silva & Hjorth 2009; McGonigal 2006; Henthorn 2016). Critics counter, however, that location-based games risk overwriting the everyday, lived conditions of these spaces and treating them as “an entertainment spectacle for an advantaged audience” (Flanagan 2009, p. 206; see also Farman 2012; Gazzard 2011).

When it was released in 2016, Niantic’s follow-up to *Ingress*, *Pokémon GO*, took location-based gaming to new heights of popularity. The game reached 65 million active players in its first months of release, and at the time of writing has generated over US\$2 billion in revenue, breaking previous records. More notably, it became a public phenomenon, with news media documenting its unprecedented popularity and ubiquity – as well as reports of accidents, injuries, trespassing, and intrusive behaviour by people playing the game (see Jones 2016). *Pokémon GO* thus occupies a unique position in the history of location-based games. It builds on the concept and legacy of previous location-based games, particularly *Shadow Cities* and *Ingress*. But it also capitalises on both Nintendo’s recognisable and hugely popular *Pokémon* franchise and the casual style of play afforded by smartphones (see Keogh 2016). Indeed, the franchise itself has also been the most significant reason for players to start playing *Pokémon GO* (see Alha et al. 2019). Fusing all these elements together enabled *Pokémon GO* to not only vastly surpass the player base and profitability of previous location-based games, but also to become an unprecedented social phenomenon in its own right. It simultaneously fulfilled the various rhetorical promises of location-based games – including their potential to both engage players with, and disconnect them from, their surroundings – all at once (Leorke 2018, p. 153–4).

Given its immense popularity, *Pokémon GO* has also attracted substantial scholarly attention alongside mainstream media coverage. The game’s player base continues to fluctuate since its release (Tassi 2018), but scholarly discussions and studies of the game continue to appear. Of these, empirical and ethnographic accounts of the game dominate. Various studies have explored the health benefits of the game, including its potential to encourage physical activity and exercise (Althoff et al. 2016; Barkley et al. 2017), address social isolation and mental health issues (Kato et al. 2017; Tateno et al. 2016) and improve general

wellbeing (Yang & Liu 2017). In the context of game studies and game design, researchers have focused largely on players' motivations and reasons for playing (Yang & Liu 2017; Zsila et al. 2017). There have also been a wide range of theoretical discussion of the game's social impact (see Hjorth 2017).

Yet only a handful of studies have empirically tested the claims outlined above about the potential for *Pokémon GO* to transform its players' relationship with the people and physical environment around them through the game. Of these, the study by Vella et al. (2017) is perhaps the most comprehensive to date. Drawing on intercept interviews with a handful of players and thematic analysis of forum posts about the game, the authors analyse the social outcomes for players and the game's impact on their connections with others. Their findings are largely positive, concluding that the game produced "a sense of belonging, facilitated conversations between strangers, and strengthened [social] ties", due in large part to the game's accessibility, ubiquity, and the level of enthusiasm and 'passion' from players (Vella et al. 2017, p. 15–16). Other studies of players' experiences of social interaction and public space include Lee et al.'s (2017) analysis of 'hotspots' where players exchanged advice and stories about the game; and Oleksy and Wnuk's (2017) analysis of the game's potential to facilitate 'place attachment' amongst players.

This paper explores the findings of a broad survey on *Pokémon GO*, focusing in particular on the memorable experiences. This allows for a self-selected approach that also highlights some of the discourse around the game. These findings are useful for researchers, developers and mainstream commentators interested not only in *Pokémon GO* but, as we argue, location-based games as a broader genre with a deeper lineage in public play and playful practices. The article begins with a necessarily detailed outline of our research question and methodology given the size and complexity of the data involved. The next section outlines the results, concentrating primarily on the categories we used to sort the survey respondents' answers. The final section discusses the findings in the context of broader discourses around *Pokémon GO* and location-based games generally, before we consider the unique nature of these findings in the conclusion.

2. Research Question and Methodology

Our main research question was as follows: *What kind of self-reported memorable experiences were described by Pokémon GO players; and what did these reveal about their experiences with location-based augmented reality gaming during the early period of Pokémon GO's release?*

In 2016, we designed an online survey focusing on game experiences in *Pokémon GO*. A range of questions was asked in this survey, including both quantitative and qualitative. We have studied the players' positive and negative experiences related to the game (see Paavilainen et al. 2017), and why players have started and continued playing the game, and if they had quit, why they did so (see Alha et al. 2019).

The survey was launched on September 1st, 2016 and was online until September 7th, 2016 with a total of 2616 respondents.¹ This was seven weeks after the game's European launch, and as a result captured the early period of enthusiasm and public attention the game received. Of the responses, two cases were removed due to false information and three cases due to technical problems in saving the responses. Therefore, the total survey data consisted of 2611 survey responses. Table 1 lists the background information and the playing frequency of the respondents.²

Gender			Age			Playing frequency		
	N	%		N	%		N	%
Female	1628	62.4%	Under 18	146	5.6%	Several times a day	1394	53.4%
Male	926	35.5%	18-24	721	27.6%	Once a day	483	18.5%
Other	57	2.2%	25-34	1067	40.9%	A few times a week	516	19.8%
			35-44	489	18.7%	More rarely	99	3.8%
			45 or more	188	7.2%	I don't play anymore	119	4.6%

Table 1. Background information and playing frequency of the respondents.

We emphasized the respondents' own narratives and meaning-making by allowing them to answer freely to some open-ended questions. This is a fruitful approach when studying new and emerging phenomena. In this article, we focus on the responses to the following question, as translated from Finnish:

“Could you tell us a memorable game experience with Pokémon GO?”

This question was formulated to explore what the participants themselves regarded as important or ‘shareable’ memories. We did not want to ask about *meaningful* game experience as that might have been misinterpreted by the participants, or might have resulted in self-judgment about what is a worthy response, guiding the participants to anticipate what the researchers would like to hear. Hence, we decided on the term ‘memorable experience’ as a better way to probe game experiences that the participants consider worth sharing in this context. Memorable experiences also play an important role in the *experience economy* (Pine & Gilmore 1998) where companies aim to design for memorable experience for their customer. In the case of *Pokémon GO*, it is particularly interesting to study how the game affords memorable experience through the social context of game play. As self-selected and self-reported data, the responses also provide an invaluable ‘snapshot’ of the features, experiences, and attributes of the game that stood out during its first few weeks of release when its player base and enthusiasm for the game was at its highest.

The responses to the ‘memorable game experience’ question were typically short, ranging from a sentence to a few sentences. Some of the respondents described more than one

¹ We tested the survey with 18 respondents and iterated the survey based on the feedback on usability, flow, and other issues that might affect the respondent experience. The final survey was distributed on Facebook in 15 Finnish *Pokémon GO* and other related groups. In the covering note, we encouraged respondents to further share the survey. Two Finnish gaming news portals, V2.fi and Dome also advertised the survey.

² Due to our method, the respondents can be presumed to be more active *Pokémon GO* players than the average player population. As an exploratory study on memorable experiences, the respondent sample was not aimed to be representative.

memorable experience. The question was mandatory to complete the survey, although 211 participants did not report any moments or said that there were none. These answers were coded as *Invalid*, leaving 2400 valid responses.

We used applied thematic analysis (Guest et al. 2012) for the qualitative analysis, where the open-ended answers were thematically coded. The data was coded primarily by one researcher with two researchers coding in specific points in the process. In the beginning, all three researchers coded a sample of the data (N=100) individually, taking notes and marking codes and their descriptions to a code guide. After the coding, the researchers gathered to talk, compare the codes, and merge similar codes together. One researcher continued to code with the code guide the next 1200 quotes. After this halfway point, the three researchers coded a further sample of the data (N=100) separately again with the help of the formed code guide. The resulting codes were compared and discussed. In the case of disagreement, a consensus was sought and the code guide was edited accordingly. After changes to the code guide, previous codes influenced by the change were corrected. After that, one researcher continued to code the rest of the data. This approach was used to make sure that the researchers shared a unified view and the one researcher could code the majority of the data alone, avoiding the high cost and time-consuming process of all researchers coding the whole data. In addition, using several researchers helped us to pinpoint challenging and problematic points, and solving these made the process more reliable.

In total, 117 codes were used to analyse the survey data. Due to the large number of codes and the fact that many of them related to only a few responses, in this article we excluded codes that occurred in less than 1% of the valid responses (i.e. 11 or fewer occurrences) for the purposes of brevity. This left 83 codes that were suitable for analysis. The resulting codes and occurrences are outlined in the next section. We consider occurrences that appeared at least in 5% (around 110 occurrences) of the cases to be quite significant, 35% being the highest amount of specific cases. In future research, we are aiming to also have a look at the outlier experiences. The codes we have used are likely to stay the same in our future studies, though the quantitative metrics might fluctuate when iterating on the data.

Although the codes allowed us to identify commonly recurring themes or keywords, they also provided a way to quantitatively measure the extent to which each aspect of the game and game play figured into players' memories. However, we did not seek to simply outline the most prominent types of memories and experiences players described, but also to test out the broader claims made about *Pokémon GO* and location-based gaming in general.

As discussed in the Introduction, scholars have for many years made claims about location-based gaming's potential to engage players with or disconnect them from the social and physical environment around them. *Pokémon GO* in particular has also been lauded as encouraging people to get outdoors, exercise, explore their local neighbourhood and public spaces they might not normally visit, strengthen ties with friends and family members and meet and interact with strangers in public. At the same time, it has also been criticised for spurring irresponsible, dangerous and criminal behaviour (e.g. Serino et al. 2016) and reinforcing geographical divides by neglecting rural and economically disadvantaged areas (Kooragayala & Srinani 2016; Paavilainen et al. 2017). Although this particular question about 'memorable experiences' was not framed to test out these claims, it formed a lens through

which respondents' anecdotes were understood and analysed, allowing us to reflect on *Pokémon GO* as both an example of location-based games as a genre and as a unique and quite specific social phenomenon.

In the following section, we present our findings from the coding and analysis, before providing an overall discussion of the responses in the subsequent section. All quotes from respondents have been translated from Finnish by one of the authors of this chapter fluent in both languages. Survey participants are indicated after the quotes by an ID number, gender and age.

3. Results

83 codes were sorted into seven categories for understanding the aspects of the game that the memories related to. These categories are *Game Play and Game Content*³; *People and Sociability*; *Location*; *Negative Events*; *Feelings*; *Circumstances and Context*; and *Other Codes*. The two categories with the largest number of codes - *Game Play and Game Content* and *People and Sociability* - were both divided into subcategories. Rather than providing the number of occurrences of each code, we have used percentages as a more general indicator to account for margin of error (see Table 2).

Game Play & Game Content					
Game mechanics		Pokémon		Play experience	
Catching	15%	Specific Pokémon	35%	Hardcore	4%
Lure	11%	Rare Pokémon	9%	Newbie	3%
Gym	8%	New Pokémon	5%	Effort	1%
PokéStop	7%	Strong Pokémon	3%	PokéWalk	1%
Hunting	7%	Favorite Pokémon	2%		
Finding	7%	Many Pokémon	1%		
Hatching	6%				
Team	3%				
Evolve	3%				
Sightings	3%				
AR (augmented reality)	1%				
Lucky egg	1%				
Incense	1%				
People & Sociability					
People		Social Interaction		Social Impact	
Friends	10%	Strangers	16%	Hysteria	4%
Many people	10%	Playing together	13%	Cross-generation	4%
Children (others)	8%	Game discussion	7%	Community	3%
Children (related)	7%	Helping	4%	Event	2%
Partner	6%	Making friends	2%	Forum	1%
Siblings	2%	Sharing happiness	1%	Co-present play	1%
Youth	2%	Bonding	1%	Hype	1%
Parents	1%	Boasting	1%		
Group	1%	Competition	1%		
Family	1%				
Relatives	1%				

³ Game play (verb) here is defined as separate from the game content, as it refers to the activity and behaviour of players while playing the game.

Location		Circumstances & Context		Negative Events	
Specific location (meso)	26%	Night	6%	Escape	4%
Specific location (macro)	11%	Early days	3%	Bug	2%
Specific location (micro)	1%	Weather	3%	Mistake	1%
Sightseeing	2%	Driving	2%	Out of Poké Balls	1%
Travelling	2%	Work	2%		
Transformation	1%	Cycling	1%		
		Pet	1%		
		Drinking	1%		
		Wild animals	1%		
Feelings		Other Codes			
Disappointment	4%	First time	13%	Unexpected	2%
Accomplishment	2%	Funny story	3%	Reflecting	2%
Thrill	2%	If not for Pokémon GO	3%	Spectating	2%
Nostalgia	1%	Exercise	2%	Positivity	1%
Shame	1%				
Frustration	1%				

Table 2. List of the categories and codes with percentages.

3.1 Game Play and Game Content

As might be expected, most of the memories described by respondents related to the game play and game content itself – namely, the process of catching, hunting, battling and training (levelling-up) Pokémon. Because of the large number of codes in this quite broad category, for the purposes of discussion we further divided it into three subcategories: *Game Mechanics*, *Pokémon* (which covers characteristics of the Pokémon, such as strong or rare Pokémon, and many Pokémon); and *Play Experience* (including play style and approach).

The most commonly mentioned game mechanics related to the process of **catching**, **finding**, and **hunting** Pokémon as well as the **lures**, **gyms** and **PokéStops**, which serve as the key mechanisms for locating and battling Pokémon.⁴ **Hatching** Pokémon from eggs also featured relatively prominently in the memories. The chosen **teams**, **evolving** Pokémon and **sightings** of them received fewer mentions, while **incense** (which is used to attract Pokémon only for one player, not others), the **lucky egg** (which doubles XP for 30 minutes) and the optional **AR** (augmented reality) feature, which allows players to see and catch Pokémon against the backdrop of their surrounds through their phone’s camera, were rarer.

The second subcategory, *Pokémon*, strongly overlaps with the first, in that many players mentioned capturing, encountering or sighting a **specific Pokémon** they named – typically a **rare** or **strong Pokémon**, **new** one they had not seen before, or a **favourite Pokémon** from their previous experiences with the franchise. There were also a handful of mentions of **many Pokémon** – where an abundance of Pokémon appeared.

The third subcategory relating to game play and game content is *Play Experience*, which encompasses the different ways people approached and experienced the game. The most common theme within this subcategory was the **hardcore** style of play. Some players reported being strongly invested in the game to the extent they went to extreme measures,

⁴ In the remainder of this article, the codes used are indicated with bold text.

played it for a long stretches of time, or walked long distances just to hunt, catch, and/or hatch Pokémon.

A 24-hour Poké trip. After that I was tired and everything hurt, but it was worth it. [...] (ID 812, female, 22)

Newbie was also a prominent code, which we used to denote respondents' memories that demonstrated a 'newbie-ness' – not knowing how the game works and making rookie mistakes, or more broadly simply being excited about the 'newness' of the game. In some cases, players also mentioned the amount of **effort** the game required, especially in the context of catching or encountering strong or rare Pokémon because they were particularly elusive or involved a lot of time and effort.

When I found Pikachu. I had walked circles in Kokkola probably for five hours and seeing it in the "nearby" mode many times, but never concretely found it. In Kajaani I accidentally found Pikachu and my joy was limitless. That was the Pokémon that was the most important to find for me. (ID 1012, female, 30)

Lastly, some players mentioned a specific practice which we translated as a 'Pokéwalk'⁵. This is a word invented by players to describe the activity of going out on a walk specifically to play *Pokémon GO*.

We don't go for walks with my spouse. Now we went for a two-hour Pokémon walk at 11pm. We walked along the quiet, nocturnal shores of Helsinki. It was fun and romantic. (ID 766, female, 31)

3.2 People and Sociability

As with the previous category, due to the large number of codes we further divided this broad category into three subcategories: *People*; *Social Interaction*; and *Social Impact* of the game.

The subcategory *People* was used to generally capture who featured in the responses – who the respondents encountered or played with, and their relationship to the respondents. **Friends** were most common, followed by children – which we divided into **children (related)** and **children (other)** – and **partner**, **siblings**, **youth**, **parents**, **family**, other **relatives** and **groups**.⁶ Also seeing **many people** gathering in one place to play the game was often a part of the respondents' memories.

⁵ For example, "pokekävely" or "pokemon-kävely" in Finnish.

⁶ In our coding, children (related) has been defined as players' own children and child relatives (niece, nephew, grandchild, godchild). Children (others) means non-related children. Partner means boyfriend, girlfriend, spouse, husband or wife. We defined Youth as young people who were not described as children by the respondents. We used Family when the respondent did not describe the family members more specifically. Relatives was used when other related people like nieces, nephews, uncles, aunts, grandparents, cousins or in-laws were mentioned. We coded Group, when the respondent mentioned being with a group of people.

In the *Social Interaction* subcategory, respondents described **playing together** with familiar people or encountering **strangers** while playing the game. We coded **strangers** when respondents described interacting with people they did not know previously.

Generally, it's been a joy to notice how playing connects people. For instance, in lure spots you notice right away who are playing and it's easy to exchange a few words with strangers. (ID 70, female, 25)

Many of these stranger encounters were with **children (others)** or **youth** who were eager to discuss about the game. Having something in common to talk about with strangers, **game related discussion** occurred often in the respondents' memories in addition to **helping** other players with the game. The latter often involved respondents telling others where they had seen some rare Pokémon the other players were after, or the other way around. Some players described **making new friends** while playing. Fewer respondents' memorable experiences were related to moments where someone else, usually their child, was very excited about the game, and the respondents were able to **share the happiness**. **Bonding** through playing *Pokémon GO* was also mentioned several times.

We have a common Whatsapp group with my siblings (we live in different cities), where we share our funniest game experiences and best catches as pictures. The game and our reciprocal goofing off has brought us closer together (the age difference of youngest and oldest sibling is 11 years). (ID 572, female, 27)

A few players **boasted** how they were the first from their friends to catch a specific Pokémon or they caught or have an especially strong Pokémon. Some players enjoyed the **competition** or competitive element of the game.

Within the *Social Impact* category, many players remarked on the **hysteria** caused by the game especially during the early days. When a rare Pokémon appeared in a park with hundreds of people, this might have caused a stampede when players were trying to catch that Pokémon.

On the street people were shouting that there's a Dragonite. Small kids were patrolling the main street and directing people who were searching for the Pokémon into the alley. Huge mass hysteria, people were cheering and throwing high fives. (ID 1737, female, 28)

Many players noticed or even admired the diversity of players *Pokémon GO* had. Respondents noticed especially the **cross-generational** audience of the game. Having so many people from across generations and from different backgrounds that were playing the game, also a sense of **community** emerged in many of the respondents.

A bit over 10-year-old boys asked me in a park near a lure: "Do u play pokemon too?" And I said I was on level 24. I continued my walk and heard as one of the boys said: "What a cool granny, and she's played way much." That has made me smile for many days already. (ID 366, female, 53)

Also during the night, walking in the streets felt safer than ever, as there was other people always around. The experience relieved the feel of loneliness and created a sense of togetherness. (ID 1924, female, 32)

Some players mention that their memorable experiences were related to *Pokémon GO* themed **events**. Some of these events were related to specific **forums** like Facebook or Whatsapp groups.

I'm in Pokemon Go Seniorit group on Facebook and we spent a day in Suomenlinna during the summer. It was a really fine experience to spend time with people who were interested in the same game. [...] (ID 68, female, 36)

A few players reported **co-present play**, in that they were playing in the same space with few people but did not have any interaction with them despite knowing that they were doing the exact same thing. Some players mentioned **hype**, often in the context of the early days of the game when people were excited about or anticipating playing the game.

3.3 Location

When a **specific location** was mentioned, we coded the responses based on three general types of location. These were **micro**, **meso**, and **macro** level sites. 'Micro' refers to very specific locations, such as a park bench, kitchen table or a doorstep. 'Macro' includes the general city, town, region or country where the memory took place. Lastly, 'meso' refers to sites in-between these levels. Unsurprisingly, the meso level was clearly the largest category of these. As such, we broke down the meso-level into subcategories of types of sites, consisting of the most prominent ones in descending order: park, Suomenlinna (an 18th century fortress near Helsinki and popular tourist destination), city center, house, church, forest and graveyard.

In addition to the general location where memories took place, respondents discussed **sightseeing** while playing the game, ending up in or discovering new places on their trips for hunting Pokémon. Respondents also discussed **travelling** specifically for Pokémon hunting or catching Pokémon while they were doing travelling for other reasons. Lastly, we used the code **transformation** to capture instances where respondents described a normally empty place being full of people playing *Pokémon GO* or when a familiar location was transformed by the presence of players.

In the early phases of the game I was just walking through Kaivopihka [mall]. The atmosphere was eerie, when usually rather hectic city environment was now full of people being totally silent and staying put. The feel was like from a Zombie movie or from Hitchcock's Birds, I felt that I have to walk silently and carefully not to wake the zombies and get attacked by the horde. (ID 1168, male, 45)

As a long-time gamer it was delighting to go to Ruttupuisto [park] and realise that for once, we gamers are the majority instead of ten geeks farming and 500 young adults drinking booze. Even the bathrooms didn't have queues, as people were playing, not boozing. For once, we were the mainstream! (ID 2039, male, 42)

3.4 Circumstances and Context

This category captures the conditions and contexts during the memories described. Many players had memorable experiences about when they had been playing during **nighttime**, or

from the **early days** of the game during its launch period in Finland (or even before) when a huge number of people were playing it.

[..] When the game was published to be downloaded, everyone, or 95% of people in Hervanta, seemed to play the game. People of all ages and appearances circled around with phones in their hands and shouted after Pokémon. It looked funny. (ID 2439, male, 22)

Many discussed the **weather**, whether it was especially nice or the respondents noticed that they went out to play even when it was raining. Many players had experiences playing from the car while they or someone else was **driving** or hunting Pokémon by **bicycling**. Some respondents played at **work**, or while commuting.

I opened the game at work, and by accident my phone had audio maxed out. The game's opening music made everyone around laugh and they started teasing that "you're not really playing some PokeGo, are you". I asked how would they recognize the sounds as Pokémon Go. Everyone was embarrassed and continued their work like nothing happened. In ten minutes, my boss emailed me to ask which team I would recommend. (ID 917, female, 32)

Sometimes players' memories included **pets**. In most cases, this was related to the respondents walking their dogs while playing. Some respondents were **drinking** or drunk in their memorable experiences, often having a beer at the park with friends. In addition to finding Pokémon, some players also encountered different **wild animals**, like hedgehogs, deers, and badgers.

3.5 Negative Events

Negative events made up a relatively small but still significant proportion of respondents' self-reported memories. The most common of these was when a particular Pokémon **escaped** without being caught. Some respondents also expressed being **disappointed** either with experiences like these (a Pokémon escaping) as well as with the game itself.

The most bitter disappointment while playing Pokémon was, when after many balls, berries and other persuasion, a Vulpix that I very much wanted escaped. This still stings. (ID 1424, female, 24)

During *Pokémon GO*'s early days, there were many bugs, technical glitches and GPS signal dropouts reported. We coded this by using the catch-all term **bug** to encompass these various issues or problems. When players reported these, they more commonly expressed disappointment but also **frustration**. Some memories involved players running **out of Poké Balls** to catch the Pokémon they were after.

After a few days of playing, the European exclusive Mr. Mime Pokémon spawned almost in my home yard -> my [GPS] location was acting up, and when the location finally worked, the game bugged and I couldn't "click" the Pokémon. Infinite annoyance, infinite. (ID 2387, female, 24)

Lastly, respondents recounted making **mistakes** while playing the game. Some of these were less serious incidents, like players accidentally breaking their phone or pushing a

wrong button in the game, resulting in deleting an important Pokémon. Others were more serious, such as driving into a ditch or tree or almost getting hit by a car or a cyclist.

3.6 Feelings

Pokémon GO has managed to elicit strong emotions. In addition to **disappointment** and **frustration** mentioned earlier, players often recognized feelings of accomplishment and thrill. **Accomplishment** was frequently related to being able to evolve a specific Pokémon, capturing an elusive Pokémon or conquering the gym. Players experienced **thrill** especially when they were trying to catch a rare Pokémon and having to throw multiple Poké Balls. Some players experienced **nostalgia** while playing *Pokémon GO*, whether it was related to encountering familiar characters from childhood related to games, animation or collectable cards, or through *Pokémon GO* finally being able to fulfill the dream of being a Pokémon trainer.

When I caught an Aerodactyl. This connects to a childhood trauma when in kindergarten my friend stole my Aerodactyl minifigure and I never got it back. Felt somehow wonderful to get my favorite Pokémon “back”!! (ID 475, female, 22)

When I played for the first time and was running around all jazzed up in my surroundings through meadows and hills, finally I found Weedle and caught it, felt like being an IRL Pokémon trainer. :D (ID 884, female, 24)

A handful of players described **embarrassment** related to playing the game.

When my brother announced that my favorite pokemon was at a nearby shop and I right away went bicycling in my pyjamas. I didn't catch the Pokemon but I felt amused and also a bit ashamed by my rushing. (ID 2368, female, 26)

3.7 Other Codes

Some of the occurring features in the respondents' memorable experiences did not seem to fit any of the categories created. Many of the memories related to something that the players did for the **first time**, whether it was for example seeing or catching a specific Pokémon or conquering the gym for the first time, or hatching their first 10km egg. Many of the respondents' memorable experiences were **funny stories**. These were from very diverse topics, for example funny situations with AR, giving funny names to caught Pokémon or putting low-level Pokémon to defend the gym.

When I met other players who recognized me as the “Magikarp man”, the player who had left a Magikarp to defend a gym as a joke. (ID 371, male, 27)

The game drove players to do things that they would not normally do **if not for Pokémon GO**. This could mean for instance having unusual social interaction, walking or going out more than normally or seeing new places.

[..] I was brave enough to talk to strangers even though I suffer from social anxiety. (ID 313, female, 24)

Getting **exercise** while playing also came up from time to time. Players also encountered **unexpected** events while playing, mostly encountering a rare Pokémon when they did not expect to see one, for example at their home. Some of the players' memorable experiences were related to **spectating** other players. Often this was admiring how parents and children are playing together.

I've seen a dad teach two excited young kids how to play in downtown. It was really sweet, and it's lovely that the game in some cases also attracts parents, who would not play with their children outside. (ID 1469, female, 22)

Some players were **reflecting** in their memories the effects the game has had. One example that was often mentioned was the unique experience of the early days of the game when it was extremely popular. Some respondents pondered how it was very easy to talk to strangers and how non-Finnish that is – or, conversely, how sometimes play situations actually were examples of stereotypical Finnish behavior.

[..] During summer nights it has been nice to sit in a group (of strangers) at a lure at the yard of the university even though nobody speaks to each other. Everybody just sits quietly and plays by themselves. Wonderfully Finnish. (ID 1655, female, 23)

I came to PokeStop that had a lure and no one else around. I stayed to use the lure, and in a moment, mother and son, a pierced and tattooed girl, a bit stubby nerd boy and about 4 young boys (about 7yo) arrived and everyone chatted freely about the game. Talking to strangers is quite rare to us Finns and the situation was even a bit amusing. (ID 179, male, 36)

Some players noticed varied **positive** consequences caused by the game. Some had seen how the game encouraged people to be more active, while others felt that walking during the night felt safer due to the game and players around them.

I had just started playing and was walking home alone during the night, when an unknown foreign man joined me – he was playing Pokémon too and going to the same direction. He gave me tips on how to play and I found out that he lived almost in our neighbour. The encounter left a good feeling and the realization that Pokémon decreases people's fear towards each other. (ID 1708, female, 35)

At one gym I bumped into a young man, who was in the same team with me. We conquered the gym together to our team. This man was quite untidy, and he told me that Pokémon GO has made him move again and leave home and go outside. Made me feel good. (ID 1304, female, 27)

4. Discussion

As the previous Results section illustrates, our question about memorable experiences yielded a large volume of data – 2400 valid responses – that related to a wide and diverse number of *Pokémon GO*'s features. Players commonly recounted memorable Pokémon catches and encounters; interactions with **strangers**; the **specific location** of their memories and exploring their surrounds (both familiar and new locales); and moments relating to the **first time** they played. 'Negative events' and 'Feelings' were less prominent

and the latter was more difficult to code, given that players' memories tended to centre on concrete events and incidents, or broader reflections about the game mechanics or game itself. The sheer range of memories, and the diversity of categories we used to code them, demonstrates the difficulty of analysing such a large dataset and extracting specific findings when there are so many thematic issues surrounding the game. Yet, this broad nature of the data is also an advantage, since it provides an insight into what players themselves consider memorable or worthy of mention about the game. It is also a highly unique dataset, as one of the largest sample sizes for an academic survey of *Pokémon GO* that was also conducted soon after the launch of the game in Europe, when its player-base was at its peak.

In what follows, we discuss the relevance of our findings in each of the seven categories, before focusing on the broader implications of the data as a whole.

4.1 Game Play and Game Content

The quantitative measurements (percentages) demonstrate that a majority of respondents' memories related to the game play itself – finding, catching, battling and training Pokémon – with many recounting a particularly memorable or exciting catch, encounter or gym battle. But it is important to emphasise that in many cases these were connected to experiences of social interaction, sharing moments with others, and other everyday experiences. As a location-based game, *Pokémon GO* players' actions frequently took place in outdoor, public places. Although some players recounted memories of just the game play itself – catching the Pokémon – many others commented on this experience taking place with others around them, or in specific locations where they played the game. As such, game play and game content should not be considered separate from this context.

One particularly notable game play related finding is the **hardcore** style of play reported by respondents. Although only 4% of responses were coded as **hardcore** experiences, this phenomenon is significant in the context of *Pokémon GO* as a casual game designed to be consumed as “play snacks (rather than meals) that are consumed at various moments throughout the day” (Alexander 2014, p. 196). The different types of hardcore play – spending long hours with the game, walking long distances to hatch eggs, and going to extreme lengths to catch Pokémon – suggest that for some respondents, at least during its early phase, their investment was more akin to a hardcore player devoted to the game. This reflects Leorke's findings based on in-depth interviews with a small sample of players of another location-based game, *Wayfinder Live* (Troy Innocent 2016). Players of that game similarly described going to extreme lengths (Leorke 2018, p. 230–231), suggesting that a certain type of location-based game player might become caught up in the location-based play experience, rather than treating it solely as a casual game played in brief ‘snatches’ of play.

Lastly, the low number (1%) of memories involving **AR** is worth noting. Given that less than 25% of our survey respondents reported using AR at least sometimes (with 9% using it regularly), this is to be expected. It also reflects the generally low uptake of *Pokémon GO*'s AR feature with most players preferring to turn it off to make catching Pokémon easier (see Paavilainen et al. 2017). Most memories mentioning AR were humorous or interesting views or photos taken of Pokémon with the camera, or simply the first time players tried out the

feature, suggesting that augmented reality is largely a novel, rather than integral, aspect of the game.

4.2 People and sociability

While game play and game content accounted for the largest percentage of codes, the richest findings related to the social interaction category. The **strangers** code, as mentioned, was used to capture memories where respondents described interaction with people they did not know previously. Although arguments have been made both for and against *Pokémon GO*'s potential to facilitate social interaction (see Davies & Innocent 2017; de Souza e Silva 2017; Lee et al. 2017; Winegarner 2016), the encounters with **strangers** reported by respondents provided strong evidence that the game did facilitate chance encounters and exchanges with strangers that would not have taken place without the game. Our findings resonate strongly with those of Vella et al. (2017), who found that *Pokémon GO* acted as an 'ice-breaker' for strangers playing the game around others in public. One respondent, for instance, wrote:

It has been a joy to notice that people talk to each other easier than before. Sociability between strangers has increased. For example, at one time when we went pokehunting we talked for a long while with a young immigrant boy, which we might not have done otherwise. (ID 826, female, 34)

The **bonding** code also supported Vella et al.'s findings that the game 'strengthened ties' among players, including with the respondents' **friends**, **partner** and **family** members (**child (related)**, etc.). One mother wrote,

[...] For me the game has meant greatly a new kind of binding with my children, although we were close before, but through the game there has become a one new way to share interest to something in common, many nice memories and experiences are related to that. (ID 1145, female, 36)

And lastly, the **community** code correlated strongly with Vella et al.'s findings that *Pokémon GO* helped establish a 'sense of belonging' for some players, what Vella et al. (2017, p. 10) paraphrase as 'feeling part of a community of players', 'enjoyment of sharing the game with large numbers of other players', 'being a part of something large'. Our survey respondents similarly mentioned feeling that the game 'connect[ed] people' and created a 'sense of community' and 'togetherness'. Furthermore, the **sharing happiness**, **competition**, **team**, and **boasting** codes demonstrated the wide social impact of the game, forging social connections among the game. And the survey responses also identified the phenomenon of **cross-generation** communication, whereby *Pokémon GO* facilitated interactions between players of different generations – usually older people (adults and grandparents) and children – who would not normally have any reason to communicate.

At the same time, it is important to note – following Vella et al. (2017) – that this social impact of *Pokémon GO* was largely due to its early popularity, massive player base and ubiquitous media coverage. Our survey, unlike Vella et al.'s research, also included a small number of instances in which players avoided social interaction or deliberately chose not to communicate with others. One player, for instance, described

an amusingly stereotypically Finnish encounter; I ended up to a gym at the same time with another player. We started conquering the gym [...] We also happened to belong to the same team. Throughout this whole time we didn't exchange a word, we probably didn't even look each other in the eyes, and we stood as far from each other as physically possible. [...] (ID 1103, female, 27)

These types of interactions were vastly outweighed by the more social encounters described above. And as this respondent point out, they may be due to the 'stereotypically Finnish' nature of interactions, whereby Finnish people are perceived as being particularly socially awkward. Nonetheless, they demonstrate that the game does not inherently encourage social encounters in all types of players.

4.3 Location and Circumstances & Context

As Leorke (2018, p. 58-61) points out, a second key claim made about location-based games concerns their potential to transform everyday locales through play and encourage players to visit new locations and see familiar locales from a new perspective. *Pokémon GO* itself has also been compared by numerous scholars and commentators with the Situationist International tactic of the *dérive* in encouraging exploration of the urban environment (see Farley 2016; Sparrow 2016). Although respondents did not use this kind of terminology to describe their experiences, our survey did demonstrate some examples of this potential to explore new places and defamiliarise everyday locales. Players reported **sightseeing** – seeing new sights and discovering places they would not normally go to or notice – as well as memorable moments that took place while **travelling**. One player described starting the game while “on summer vacation in Japan”:

Starting my own pokemon-adventure in the country where the games were originally born 20 years ago was an experience in itself, to that you can add all the interaction with locals while playing the game. (ID 1192, other, 28)

The **transformation** code also demonstrated the potential for the game to radically change or reinvigorate locales, often parks or city centres. Respondents described places normally empty or abandoned at night full of players, parks where people would normally be drinking alcohol instead playing the game, and crossing paths with other players in out-of-the-way parts of the city. These codes are not common in our analysis but nonetheless provide empirical evidence for *Pokémon GO*'s potential to engage players with their surrounds in new ways.

Lastly, the *Circumstances & Context* category reinforced the significance of the timing of this survey, taking place in July 2016 – during Finnish summer, and not long after the **early days** of the game's release. From the respondents' answers, it is clear how much these factors influenced their experiences with the game. When **weather** was mentioned, most of the time it was in a positive manner: it was nice to go out and play when it was sunny and warm. Players also often described playing during the **nighttime**, which would not be so pleasant in Finland during other seasons. In addition, summer vacation time makes it possible to spend time outside late in the evening.

4.4 Negative Events and Feelings

Negative memorable experiences were captured through two separate categories, *Negative Events* and *Feelings*. The former contains game specific events (e.g. **escaping** Pokémon, running **out of Poké Balls**) while the latter features personal emotions (e.g. **disappointment, embarrassment, frustration**). Earlier literature suggests that negative experiences such as frustration plays an important role in game experiences (Poels et al. 2012) and they can make the positive experience stronger (Korhonen et al. 2009). Negative experiences have not been studied rigorously in games research and their role in online game services could be important as highlighted by the relatively small but still significant number of respondents who chose to report these. Distinguishing the “good” negative events (those that motivate to “try again” for example) would be important from a game design point of view.

The criticised irresponsible and dangerous or at least careless behavior of the players also emerges in the memorable experiences, yet in very small numbers. Due to the open-ended nature of the survey question, however, our data cannot be used to validate perceived or actual risks involved in playing *Pokémon GO*.

Positive feelings like **accomplishment** and **thrill** also highlighted the unique nature of *Pokémon GO* as a social phenomenon that attracted large numbers of players. Both aspects of the game – its mechanics (catching Pokémon) and location-based features (playing in public locations, often with many other people around) – contributed to the memorableness of the game as an experience. Yet at the same time, nostalgia did not come up as often as one might expect, since for many players the reason to get into the game was due to the familiarity of the brand (Alha et al. 2019) and it was also one of the most common positive experiences in the game (Paavilainen et al. 2017). The surprisingly small representation of nostalgia is further evidenced by the relatively few occurrences of **favourite Pokémon**. These findings suggest that for many players, the game as social phenomenon contributed much more to their memorable experiences than previous experiences with the brand itself.

4.5 Other Relevant Findings

In this final discussion section, we wish to focus in particular on the specifically Finnish context of this survey as well as the broader global implications of our findings. As briefly mentioned above, some respondents observed the Finnish mentality, and how sometimes players seemed to act either in a non-Finnish or in a very Finnish way related to social actions. With Finnish people often perceived as socially awkward, some players felt that communicating with strangers as easily as they did while playing *Pokémon GO* was very non-Finnish behavior. On the other hand, when witnessing a situation where people were at the same place knowing that others are doing the exact same thing, playing the game, and not even a glance was exchanged, this was recognized as a very Finnish way of acting. These thoughts were captured through the *Other Code*, **reflecting**, in which respondents reflected on the potential for the game to literally change how people interact and behave in public. In some cases, these related to Finnish sociability particularly, but in many instances they were a broader reflection on the scale and reach of the game in everyday public life.

The sheer ubiquity of the game during its peak – with countless people visibly playing it on the city streets and in other public spaces – demonstrated the potential for just one location-based game product to have an enormous, very visible societal impact, however briefly. The **if not for Pokémon GO** code also captured this notable ‘phenomenon’ of the game, whereby people described doing things or behaving in ways that they would not normally – whether talking to strangers, finding they have something in common with people from a completely different generation, or going on walks and visiting locations that they might not otherwise. Although it is important to put these in context, with relatively few occurrences of both codes given the survey sample size, they nonetheless provide strong evidence for the momentarily transformative potential of *Pokémon GO*.

5. Conclusions

In this chapter, we have presented a thematic analysis made from an online survey answers related to players’ memorable experiences of *Pokémon GO*. Our findings show that there are two main areas for the memorable experiences within *Pokémon GO*: Game play and game content, and people and sociability. This shows that not only was *Pokémon GO* a successful game from a game play and game design perspective, but that it was a highly social experience for the respondents – at least during the game’s early period. The game’s nature as a location-based game is also demonstrated through the high number of codes connected to different locations the game was played in, and it also demonstrated a modest but still significant potential to transform and engage players with both new and familiar locales.

These results give us a deeper understanding of why *Pokémon GO* was such a success, and why playing it during its early period provided people so many memorable experiences. It is interesting to learn about the player experiences in a game that has been in many ways a unique phenomenon. Asking about memorable experiences let the players themselves choose which moments have been the most meaningful or otherwise important or special to them. As a result, we were able to let the data speak for itself, while also analysing them through the frame of broader mainstream and scholarly discussions about *Pokémon GO* specifically, and location-based gaming more broadly.

After our survey, the game has evolved and changed, and as fewer people play it regularly this also changes the social nature of playing, making many of the social experiences difficult to repeat. In addition to possible impact on sociability, novelty of the game may have had an effect on the strong focus in game play in the memorable experiences. If the survey would be conducted again, **hunting, finding** and **catching rare** or **specific Pokémon** might not be in such a major role. We managed to catch the game experiences when the game’s popularity was at its peak and the game still relatively new. After given the opportunity to play the game for a longer while, the emphasis of the memorable moments might shift and even reveal new memorable game experiences.

This chapter is a stepping-stone for further investigation concentrating more deeply on the specific areas of memorable experiences related to *Pokémon GO*. In future studies we are aiming to go deeper to different categories and themes and also present interesting outlier experiences that we were not able to mention in this broader overview of the findings.

References

- Alexander B (2014) Playing Stories on the Worldboard: How Game-Based Storytelling Changes in the World of Mobile Connectivity. In: Farman J (ed) *The Mobile Story: Narrative Practices with Locative Technologies*. Routledge, London and New York, p 196–204
- Alha K, Koskinen E, Paavilainen J, Hamari J (2019) Why do people play location-based augmented reality games: A study on Pokémon GO. *Computers in Human Behavior* 93:114-122 <https://doi.org/10.1016/j.chb.2018.12.008>
- Althoff T, White RW, Horvitz E (2016) Influence of Pokémon Go on physical activity: Study and implications. *Journal of Medical Internet Research* 18(12)
- Barkley JE, Lepp A, Glickman EL (2017) “Pokémon Go!” may promote walking, discourage sedentary behavior in college students. *Games for Health Journal* 6(3):165–179
- Blast Theory & Mixed Reality Lab (2001) Can You See Me Now?
- Davies H (2017) Towards an Ethics of Alternate Reality Games. In *Digital Studies, Le champ numérique*. Retrieved December 18, 2018 from <https://www.digitalstudies.org/articles/10.16995/dscn.36/>
- Davies H, Innocent T (2017) The Space between Debord and Pikachu. *Proceedings of the 2017 DIGRA International Conference*, 14(1). Retrieved November 1, 2018 from http://www.digra.org/wp-content/uploads/digital-library/88_DIGRA2017_FP_Davies_Debord_and_Pikachu.pdf
- de Souza e Silva A (2006) From Cyber to Hybrid: Mobile Technologies as Interfaces of Hybrid Spaces. *Space & Culture* 9(3):261–278
- de Souza e Silva A, Hjorth L (2009) Playful Urban Spaces: A Historical Approach to Mobile Games. *Simulation & Gaming* 40(5):602–625
- de Souza e Silva A (2017) Pokémon Go as an HRG: Mobility, Sociability, and Surveillance in Hybrid Spaces. *Mobile Media & Communication* 5(1):20–23
- Drakopoulou S (2010) A Moment of Experimentation: Spatial Practice and Representation of Space as Narrative Elements in Location-based Games. *Aether: Journal of Media Geography* 5A:63-76
- Farley M (2016) I Went Looking for Jigglypuff and Found Guy Debord. *City Paper*. Retrieved November 1, 2018 from <http://web.archive.org/web/20180110054303/http://www.citypaper.com/film/videogames/bcp-news-i-went-looking-for-jigglypuff-and-found-guy-debord-on-pokemon-go-20160729-story.html>
- Farman J (2012) *Mobile Interface Theory: Embodied Space and Locative Media*.

Routledge, New York

Flanagan M (2009) *Critical Play: Radical Game Design*. MIT Press, Cambridge, M.A.

Frank Lantz and students (2004) *PacManhattan*

Gazzard A (2011) Location, Location, Location: Collecting Space and Place in Mobile Media. *Convergence: The International Journal of Research into New Media Technologies* 17(4):405–417

Grey Area (2011) *Shadow Cities*

Guest G, MacQueen KM, Namey EE (2012) *Applied thematic analysis*. SAGE Publications, Inc

Henthorn J (2016) Rewriting Neighbourhoods: Zombies, Run! and the Runner as Rhetor. In: Wilson M & Leaver T (eds) *Social, Casual and Mobile Games: The Changing Gaming Landscape*. Bloomsbury Academic, New York, p 165–178

Hjorth L (ed) (2017) Special section: Pokémon GO: Playful phoneurs and the politics of digital wayfarers. *Mobile Media & Communication* 5(1)

It's Alive! (2001) *Botfighters*

Jones A (2016) Police: Popular 'Pokemon Go' Poses Numerous Risks To Players Including Robberies, Accidents. CBS New York. Retrieved December 18, 2018 from <https://newyork.cbslocal.com/2016/07/11/pokemon-go-robbery-injuries/>

Kato TA, Teo AR, Tateno M et al (2017) Can Pokémon GO rescue shut-ins (hikikomori) from their isolated world? *Psychiatry and Clinical Neurosciences*, 71(1)

Keogh B (2016) Pokémon Go, the novelty of nostalgia, and the ubiquity of the smartphone. *Mobile Media & Communication* 5(1):38-41 <http://dx.doi.org/10.1177%2F2050157916678025>

Kooragayala S, Srinivasa T (2016) Pokémon Go is Changing How Cities Use Public Space, But Could It Be More Inclusive? Urban Institute. Retrieved December 18, 2018 from <http://www.urban.org/urban-wire/pokemon-go-changing-how-cities-use-public-space-could-it-be-more-inclusive>

Korhonen H, Montola M, Arrasvuori J (2009) Understanding playful user experience through digital games. In: *Proceedings of Designing Pleasurable Products and Interfaces (DPPI)*, pp 274-285

Lantz F (2006) Big Games and the Porous Border Between the Real and the Mediated. *Receiver*, 16. Retrieved December 18, 2018 from https://web.archive.org/web/20070101235852/http://www.receiver.vodafone.com/16/articles/pdf/16_07.pdf

Lee JH, Windleharth T, Yip J et al (2017) Impact of Location-based Augmented Reality Games on People's Information Behaviour: A Study of Pokémon Go. iConference 2017 Proceedings, pp 459-468

Leorke D (2018) Location-based Gaming: Play in Public Space. Palgrave Macmillan, Singapore

Mäyrä F, Lankoski P (2009) Play in Hybrid Reality: Alternative Approaches to Game Design. In: de Souza e Silva A, Sutko D (eds) Digital Cityscapes: Merging Digital and Urban Playspaces. Peter Lang Publishers, New York, p 129–147

McCall R, Baillie L (2017) Ethics, Privacy, and Trust in Serious Games. In: Nakatsu R, Rauterberg M, Ciancarini P (eds) Handbook of Digital Games and Entertainment Technologies. Springer, Singapore, p 611–640

McGonigal J (2006) This Might be a Game: Ubiquitous Play and Performance at the Turn of the Twenty-First Century. Dissertation submitted to the University of California. Retrieved December 18, 2018 from

http://www.avantgame.com/McGonigal_THIS_MIGHT_BE_A_GAME_sm.pdf

Montola M, Stenros J, Waern A (eds) (2009) Pervasive Games: Theory and Design. Morgan Kaufmann, Burlington, M.A.

Newt Games (2003) Mogi, Item Hunt

Niantic (2012) Ingress

Niantic (2016) Pokémon GO

Oleksy T, Wnuk A (2017) Catch them all and increase your place attachment! The role of location-based augmented reality games in changing people-place relations. Computers in Human Behavior, 76:3-8

Paavilainen J, Korhonen H, Alha K et al (2017) The Pokémon GO Experience: A Location-Based Augmented Reality Mobile Game Goes Mainstream. In: Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems, ACM

<https://dl.acm.org/citation.cfm?doid=3025453.3025871>

PerBlue Entertainment (2008) Parallel Kingdom

Pine J, Gilmore J (1999) The Experience Economy. Harvard Business School Press, Boston, MA

Poels K, de Kort Y, IJsselsteijn W (2012) Identification and Categorization of Digital Game Experiences: A Qualitative Study Integrating Theoretical Insights and Player Perspectives. Westminster Papers in Communication and Culture 9(1)

Serino M, Cordrey K, McLaughlin L et al (2016) Pokémon Go and augmented virtual reality games: a cautionary commentary for parents and pediatricians. *Current Opinion in Pediatrics* 28(5):673-677. Wolters Kluwer <https://doi.org/10.1097/MOP.0000000000000409>

Sparrow J (2016) Live in the Moment: The Situationists and Pokémon Go. *Overland*. Retrieved November 1, 2018 from <https://overland.org.au/2016/07/live-in-the-moment-the-situationists-pokemon-go/?platform=hootsuite>

Tassi P (2018) 'Pokémon GO' is More Popular Than It's Been at Any Point Since Launch. *Forbes*. Retrieved November 1, 2018 from <https://www.forbes.com/sites/insertcoin/2018/06/27/pokemon-go-is-more-popular-than-its-been-at-any-point-since-launch-in-2016/#39b553cfcfd2>

Tateno M, Skokauskas N, Kato TA et al (2016) New game software (Pokémon Go) may help youth with severe social withdrawal, hikikomori. *Psychiatry Research* 246:848–849 <https://doi.org/10.1016/j.psychres.2016.10.038>

Troy Innocent (2016) *Wayfinder Live*

Vella K, Johnson D, Wan Sze Cheng V et al (2017) A Sense of Belonging: Pokémon Go and Social Connectedness. *Games & Culture*, In Press

Wearable Computer Lab (2000) *ARQuake*

Winegarner B (2016) Forget Pokémon Go, There's Another Augmented Reality Game That's Way Better. *Quartz*. Retrieved November 1, 2018 from <https://qz.com/732809/forget-pokemon-go-theres-another-augmented-reality-game-thats-way-better/>

Yang C, Liu D (2017) Motives matter: Motives for playing Pokémon Go and implications for well-being. *Cyberpsychology, Behavior, and Social Networking* 20(1)

Zsila Á, Orosz G, Bóthe B et al (2017) An empirical study on the motivations underlying augmented reality games: The case of Pokémon Go during and after Pokémon fever. *Personality and Individual Differences*