# **Phenomenological Strands for Gaming Disorder and Esports Play:**

**A Qualitative Registered Report**

# **Programmatic Stage 1, revised (version 2)**

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# **Abstract**

**The recent inclusion of gaming disorder in the ICD-11 as a mental disorder has further increased the importance of researching the health spectrum related to gaming. A critical area in this regard is the lack of clarity concerning the differences between gaming disorder and intensive play, the latter of which often involves several gaming hours per day without health problems especially among the players of the recently emerged esports games. In this study, we approach the above question by interpretive phenomenological analysis with interviews in two groups of highly involved videogame players: those who seek or have sought clinical help for their problems with gaming (n=5–15), and those who play esports more than 4 hours per day without self-reported health problems (n=10–15). The interviews will be carried out by using a new 53-point Phenomenology of Play (POP) interview frame. These data are contextualized with interviews of medical experts (n=5–15) who have experience of working with the former group. All player interviews are repeated after 12 months. The project has two publication outcomes, from first and second round data, respectively. [Red font: parts that represent second-round interviews and second output.]**

**Introduction**

For a long time, scholars have known play to be a significant component of human life. From childhood development (Piaget 2013) to adolescence growth (Pellegrini 2009) and adult recreation (van Leeuwen & Westwood 2008), various forms of playing belong to our lifecycles. Today, research on the topic is complicated by videogame play—gaming—which has become a popular type of play globally across age groups.

Many studies have found evidence indicating gaming to contribute to life quality. For instance, a large nationally representative study of children between 10 and 15 years found those who play videogames daily to have better psychosocial adjustment compared with the non-gaming group (Przybylski 2014). Similar results have also been found with adolescents and adults who can find videogames supportive for social health (Kowert, Domahidi & Quandt 2015), wellbeing more generally (Johannes, Vuorre & Przybylski 2021), and even gaming mediated psychotherapy (Ceranoglu 2010). Gaming is widely considered a potential means to several cognitive, emotional, and motivational benefits (Granic, Lobel & Engels 2014).

At the same time, negative associations between gaming and health have become an emergent research topic. In 2013, the American Psychiatric Association (APA) cautiously announced ‘internet gaming disorder’ in their *Diagnostic and Statistical Manual of Mental Disorders* (5th edition) as a condition in need for further study. In 2019, the World Health Organization (WHO) took a more drastic step and confirmed ‘gaming disorder’ to be included in their *International Classification of Diseases* (11th edition) as a mental disorder due to addictive behaviors. Consequently, an increasingly large body of varied research has emerged regarding the colloquially termed ‘videogame addiction’ and its epidemiology in particular (Kardefelt-Winther 2017; King et al. 2020; Van Rooij et al. 2017). Meanwhile, the nosology of this now-officialized mental disorder remains under active debate (Bean et al. 2017), and its ontology—what disorder-based gaming really *is*—largely unknown.

Considering the situation where gaming simultaneously gathers evidence for both negative and positive health associations, large groups of experts around the world systematically express confusion about the foundations of the two (Ferguson & Colwell 2020). As for gaming disorder, a foremost yet still unsolved issue has been the inability to distinguish empirically and theoretically between highly involved healthy videogame players and those who suffer from genuine gaming-related health issues (Billieux et al. 2019; Charlton & Danforth 2007; Nielsen & Karhulahti 2017). The relationship of these health issues and gaming is further complicated by the lack of causal evidence and theory, as it remains unclear whether the associated functional impairment and stress derive from gaming or the other way around (e.g., Jeong et al. 2019; van Rooij et al. 2017); or alternatively, if these links could be explained by a network theoretical or some other approach (see Fried et al. 2017; Stavropoulos et al. 2019). In practice, the lack of good answers to these questions means both false positive and false negative diagnoses, which can be seriously harmful when over and under medicating (or otherwise treating) people in opposing life situations—especially in child and adolescent groups, where medical decisions are often made by caregivers and parents.

To make progress in solving these issues, a frequent recommendation by numerous experts has been to study gaming phenomenologically with both treatment-seeking and highly involved healthy players (Castro-Calvo et al. 2021; Colder Carras & Kardefelt-Winther 2018; Griffiths 2016). Although the literature in the area is now beginning to emerge (Colder Carras et al. 2018; Karhulahti 2020), no studies have investigated the phenomenological nature of treatment-seeking players’ lived experiences in comparison to intensively gaming individuals who do not report related health problems. In this study, we do exactly that, with the latter group selected from the domain of amateur competitive gaming—esports—which has recently become one of the major forms of videogame play across cultures and a central point of related health discussions (Brevers, King & Billieux 2020).

The ambiguities related to treatment-seeking players must be noted separately. In previous literature, such groups have been addressed as ‘addicted players’, ‘problem players’, and ‘players with gaming disorder’, among other similar labels. Because the literature relies mainly on surveys, the labels typically derive from screening tools that claim to measure ‘videogame addiction’, ‘gaming disorder’, and other such constructs, which may or may not be consistent with the diagnostic criteria in the ICD-11 (King et al. 2020; Karhulahti et al. 2021). It is beyond the scope of this study to assess the clinical status of our participants—longitudinal studies with clinical expert interviews are needed to investigate the actual health scenarios of gaming treatment-seekers (see Ko et al. 2020; Starcevic, et al. 2020)—therefore, the link between our study and gaming disorder (in the ICD-11) is determined by treatment-seeking alone. Although this is arguably a much stronger link than those established by screening tools (see Satchell et al. 2021; van Rooij et al. 2018), we stress that our participants may not meet the diagnostic gaming disorder criteria despite their treatment-seeking. Likewise, as we term our other group ‘players without self-reported health problems’, we will not assess the clinical status of these participants either but identify them by self-reported health.

The general aim of this study is to discover the differences and similarities between the gaming experiences of treatment-seekers (potential gaming disorder) and those who self-report no related health problems. The findings will form a phenomenological basis that—hopefully with future replications consisting of different samples—will help modelling the differences between gaming disorder and healthy intensive play. Ultimately, this can improve both the accuracy of related screening instruments as well as the diagnostic understanding of gaming disorder at large. Our work is thus guided by the following research question:

*RQ1: How do the experiences and meanings of playing videogames—shaped by the individuals’ diverse types of sociocultural contexts—differ between those with related health problems (potential gaming disorder defined by treatment-seeking) and those who play esports games several hours per day without self-reported health problems?*

The research question is nonconfirmatory in the sense that we disclose two *qualitative hypotheses* for it. By qualitative hypotheses we mean that the goal is not to seek confirming and falsifying evidence, and we will not claim the data to (not) support the alternative hypotheses (or null). This is because qualitative research, at least in the presently applied interpretive phenomenological form, is not well suited for null hypothesis significance testing. That said, we do consider phenomenological research suitable for another kind of significance testing—significance as *meaning*—and because these forms of significance already have an existing basis in the literature, disclosing this basis openly in the form of qualitative hypotheses adds to the transparency of the work. Accordingly, we consider it important to set hypotheses *not to test hypotheses, but rather because we pursue to disclose our hypothetical biases*.

First, with reference to a recent phenomenological study (Colder Carras et al. 2018) that asked active gamers “What are signs of video game addiction, Internet gaming disorder, or disordered gaming?” and found the participants ranking the ‘neglect of needs/responsibilities’ and ‘loss of control’ as critical signs, we expect our participants with related health problems to share experiences of these types. Since earlier research has also frequently suggested social difficulties to be related to gaming problems (Kneer et al. 2014; Kowert et al. 2015; Snodgrass et al. 2019), we expect these participants’ experiences to occur in a distinct psychosocial context.

*QH1: We expect participants with gaming-related health problems (as defined by treatment-seeking) to talk about their gaming experiences in the context of neglected needs or responsibilities, loss of control, and social difficulties. For them, meaning(s) in gaming compensate for these issues. We do not expect our esports gaming participants (self-reporting no health problems related to gaming) to express the above.*

Second, based on recent phenomenological anthropology (Karhulahti 2020), interview studies (Himmelstein, Liu & Shapiro 2021; Siutila & Karhulahti 2021), and qualitative online discussion analyses (Kou & Gui 2020) that have found highly involved competitive videogame players to consider gaming meaningful to them—often manifested by commitment to self-development and perceived social value in the game (see also García-Lanzo & Chamarro 2018)—we expect these elements to surface in the experiences of esports-playing participants. To further clarify the manifestations of these meanings: by self-development we mean activities, attitudes, and behaviors that aim at improving or progressing oneself as a player or participant in the game, and by perceived social value we mean gaming constituting a meaningful part of one’s social identity, feelings of belonging, or social need satisfaction in general. If other types of self-development or social values emerge in the data, we report such findings explicitly.

Although the literature on gaming disorder is more limited in this regard, at least one interview study (Shi et al. 2019) has suggested similar meaningfulness to be part of those who meet the DSM5 criteria for ‘internet gaming disorder’. Hence, we expect the above elements also to be present in treatment-seekers’ experiences. However, because gaming disorder is conceptually based on significant clinical impairment and distress due to gaming, including social difficulties, we expect these meanings to produce significant life conflicts for the treatment-seeking players (see also Götzenbrucker & Köhl 2009; King & Delfabbro 2009; Karlsen 2013; Domahidi & Quandt 2015; Snodgrass, et al. 2018).

*QH2: We expect the esports gaming participants (self-reporting no gaming-related health problems) and the participants with related health problems (as defined by treatment-seeking) to find gaming meaningful to their lives, as expressed by pursued self-development in their games as well as the social value given to it—but only the latter to experience significant life conflicts because that meaningful behavior clashes with their other key values.*

For the second outcome (Study 2), we ask another nonconfirmatory research question regarding phenomenological development in time. Due to the difficulties and expenses of longitudinal research, temporal changes such as cyclicity and episodic play patterns have been studied relatively little and remain a topic of debate (e.g., Dullur & Starcevic2018). The second research question asks:

RQ2: *How do the experiences and meanings of playing videogames—shaped by the individuals’ diverse types of sociocultural contexts—evolve in those with related health problems (as defined by treatment-seeking) and those who play esports games several hours per day (while self-reporting no health problems)?*

Some previous longitudinal research regarding the stability of gaming-related health problems have been carried out over the years. Three studies (Colder Carras 2015; Mihara & Higuchi 2017; Richard et al. 2020) that review such findings report the results to be diverse, and gaming problems to persist in survey studies with up to an 84% stability rate over two years. However, high-powered studies seem to imply that many such health problems are cyclical and do not continue for 12 months, which is the time suggested for a gaming disorder diagnosis to be assigned by the WHO (e.g., Strittmatteret al. 2016; Thege et al. 2015; Weinstein et al. 2017). Although other longitudinal findings likewise indicate gaming to be an evolving activity in people’s lives (e.g., Götzenbrucker & Köhl 2009; Karlsen 2013; Karhulahti 2020), such changes often take longer than 12 months to surface. Therefore, we set the following qualitative hypothesis.

QH3: *We expect participants with gaming-related health problems (as defined by treatment-seeking) to talk about their gaming experiences in different contexts of meaning after 12 months. We do not expect the esports-playing participants (who self-report no related health problems) to express different meanings after 12 months.*

To investigate all the above, we conduct a comparative interview study by means of interpretive phenomenological analysis (IPA) with two primary participant groups: those recruited from local hospitals, therapy centers, and other medical institutions with gaming-related health problems (as defined by their treatment-seeking) and those recruited from local gaming communities with intensive esports play habits but no related health problems (as defined by their self-report). As an idiographic approach that allows for detailed investigation of complex experiences and even existential depth (Smith et al. 2009), the IPA is an efficient means to seek answers to the above. In addition, with the help of our collaborating institutions, we recruit medical experts for semi-structured interviews to exploratively contextualize and assess the differences between the treatment-seeking participants’ personal experiences and the views of those who treat them. The player interviews are repeated after 12 months, which allows carrying out a new analysis in the same methodological setting with an added focus on temporal changes. Following the ongoing development of qualitative preregistration protocols and open science practices, the interview transcripts will be stored in the Finnish Social Science Data Archive (FSD) for open scientific use (Haven et al. 2020; Haven & Van Grootel 2019).

# **Methods**

## **Ethics information**

The study is carried out according to a project plan that is funded by the Finnish Work Environment Fund. The research and data management plans received a positive appraisal from the Human Sciences and Ethics Committee in the University of Jyväskylä. The research will be carried out according to the Finnish National Board on Research Integrity guidelines and the Helsinki Declaration with its later amendments. Informed consent is collected from all participants. By signing the consent form, the participants agree to share their interview transcripts for later scientific use via the FSD.

Personal identifiers are removed from the transcripts carefully in a 4-step process: initial transcription, transcript editing, participant checking, and finally the processing of the transcripts for sharing by the FSD. If the participants wish not to share some transcript sections, these sections will be kept unshared. Considering the prospective challenges of finding consenting participants (Branney et al. 2019), we note that the FSD is experienced and one of the leading repositories for sharing qualitative data (Bishop & Kuula-Luumi 2017), which we expect to help in recruitment. Allowing the participants to review their transcripts will build further confidence and trust. The data will be stored pseudonymously until the end of the project following the GDPR; the need of the pseudonym key will be reevaluated regularly and when it is no longer needed, it will be destroyed, making the data fully anonymous. Being able to share reusable qualitative data is especially helpful with hard-to-reach respondents, as collecting such data is usually laborious for both researchers and participants. The below methodological details are further supplemented by a 32-point list of consolidated criteria for reporting qualitative research (Appendix 1).

## **Participants**

Two types of intensively gaming participants form the core groups. Additionally, a group of medical experts will be interviewed. A more detailed explanation of the groups and their role in the study is below. All participants are recruited simultaneously. The inclusion and exclusion criteria are mentioned in the call, and the participants’ fit will be double checked before the interview in private communication. The analysis of the transcripts is conducted by stages (see analysis plan). All participants must live or work in Finland; we may also interview participants in English if non-Finnish participants who meet the criteria contact us. Because our work concerns the adult working population, full-time students are excluded from all groups.

**Sample justification**. The participants’ experiences will be investigated in a semi-structured interview with a Phenomenology of Play frame (see below) via interpretive phenomenological analysis (IPA). Unlike in many of other forms of qualitative inquiry, data saturation “does not make sense to phenomenology” (Van Manen, Higgins & Van der Reit 2016) because there is no saturation point for phenomenological meaning. This premise was recently supported by a systematic assessment of interview data saturation (Hennink, Kaiser & Marconi 2017). In IPA research where the goal is to understand meanings in particularly complex experiences, it is unlikely that any number of interviews would ever saturate the data in terms of theoretical or other common forms of saturation (Saunders et al. 2018, see also Braun & Clarke 2020). Therefore, the rationale for our sample is based on a) the specific nature of IPA research, b) the limitations concerning the object of study, and c) the practical confines set by our funding and ethical committee approval.

a) In IPA, which we apply, samples are recommended to be small and homogenous because the primary idea is to study how a specific type of experience (e.g., gaming disorder) is personally experienced (Smith 1996; Smith, Jarman & Osborn 1999). Whereas general IPA sample size recommendations differ between *n*=1 and *n*=15 per topic, an average number of study participants has been estimated as six (Smith & Osborn 2007). Following the above, it is not helpful to think in terms of random or representative sampling; rather, the topic defines the boundaries of the relevant sample and its characteristics (Larkin & Thompson 2012).

b) Our study concerns gaming disorder, which in diagnostic practice is a new phenomenon. Cultural differences are of utmost significance here, nevertheless. For instance, in South Korea the government organizes systematic survey screening of gaming problems for local students annually, and those in the screening-based risk group are guided to receive an intervention (Jeong et al. 2018). This means that countries like South Korea can have thousands of individuals in medical interventions due to screening-based disorder risk. That said, due to the screening tools’ tendency to over-pathologize healthy individuals (Boonen et al. 2018; Ferguson, Coulson & Barnett 2011) and considering South Korea’s specific cultural context where it is common for parents to interfere with their children’s gaming (Carbonell 2017; Jeong, Ferguson & Lee 2019), a large part of the individuals participating in such intervention do not suffer from actual clinically significant symptoms (Starcevic et al. 2020). In Finland where our study will be carried out, in turn, medical services for gaming-related health problems are scarce and rarely used (see below), and the Finnish government does not screen schools or other institutions for gaming problems. This implies (but does not confirm) that people who end up seeking related medical support in Finland suffer from actual, clinically significant symptoms. In this project, we collaborate with two such major medical service providers, and their combined overall number of annual treatment-seekers roughly coheres with the recommended sample size of an IPA study (personal communication with our collaborators during project planning). Thus, even though we are not limited to the treatment-seekers of our two collaborators, there are good reasons to believe that the small number of actual gaming-related treatment-seekers in Finland will be a pragmatic element that sets sample size boundaries for this study as well. Finding a larger-than-recommended (more than *n*=15) sample of players with serious gaming-related health problems would require more time and resources. On the other hand, the probability that our participants suffer from genuine distress and functional impairment related to gaming is high.

c) Last, and related to the above, we note that this research is funded by the Finnish Work Environment Fund for years 2021 and 2022. As usual, in the application phase, we were required to report a priori sample size estimations, and the resources of the project were allocated to carry out two rounds of phenomenological interviews (2021, 2022) based on the recommended IPA sample sizes (*n*=5–15) for each year, respectively. Our ethical committee approval is based on this research plan. With more resources and time, it would be possible to find and recruit larger sample(s) that could further expand the data and possible findings; however, in the present study we are committed to carry out a study in a way that has been funded and ethically approved.

In summary, our sample size concerning people with gaming-related health problems—as defined by their treatment-seeking in the Finnish context where clinical treatment is scarcely provided and rarely sought—is based on (a) the current recommendations (*n*=1–15) of IPA methodology, (b) the topic in question with the specific sociocultural context taken into consideration, and (c) the practical boundaries of time, resources, and a priori project plan that has been approved by the ethics committee. Below, we describe each of the three interview groups in detail to further elaborate on their recruitment and role in the study.

For the second research question and QH3, which draw from longitudinal data and a second round of interviews 12 months after the initial interviews for Groups 1 and 2, we add an extra remark. In practice, sample sizes are one of the key challenges in longitudinal IPA research (Farr & Nizza 2019; McCoy 2017). Because cross-sectional IPA studies are already based on small in-depth samples, dropouts in longitudinal settings can be detrimental. The risk is further increased by the fact that IPA studies often deal with special populations, such as people with illnesses, which can have a negative impact on retention. We prepare for these challenges by informing our participants of study progress between the time points, and specifically, inviting them to review their interview transcripts and our interpretations of them, which we hope to build further transparency and trust.

***Group 1*.**This group consists of people whose gaming is expected to be related to health problems. Considering that the ICD-11 diagnosis of gaming disorder does not come into effect before 2022 (WHO 2021), the adversity of the participants’ gaming habits will be determined by their treatment-seeking. The participants are recruited from local hospitals, therapy centers, and other medical institutions, and a call for participation will be distributed in the above institutions both in their closed professional networks as well as openly in their social channels. Two such institutions have committed to collaborate during the project proposal phase and their networks are applied. As our call is open, we expect participants from outside of the collaborating institutions as well. As an inclusion criterion, the participant must have expressed treatment-seeking behavior related to gaming problems either personally or as encouraged by someone in their social networks. Any self-reported treatment-seeking of institutionalized help (psychological, psychiatric, therapeutic, etc.) will meet this condition. As exclusion criteria, we do not include individuals who seek treatment for their play of *gambling* games, and only non-student participants of 18 years and older are recruited. We do not set demographic criteria, and we highlight that our goal is not to assess the clinical validity of the participants’ health problems but rather to understand their experiences. ***Stopping and minimum***: after having successfully interviewed 15 participants, we stop recruitment; if we have difficulties finding participants, we set a minimum of five successful interviews as a requirement for carrying out this study to the second phase. Stopping is defined by the limits set by proper transcription, coding, and analysis of the data given the present design. The minimum is defined by the general recommendations of IPA sample sizes and the comparative setting—because we are comparing experiences, less than five participants (even though potentially prolific case studies) would not be enough for our group analysis. Five participants provide enough variation to enable group comparisons.

***Group 2****.* This group consists of people who actively play competitive esports games, while self-reporting no related health problems. Again, we rely on the participants’ self-reports in assessing their health; a separate clinical interview design would be needed to properly validate their health statuses. The same applies to ‘competitive esports’, i.e. it will suffice for the participant to identify as a player of such games—we may thus include players of titles that were not originally developed for esports play, such as *World of Warcraft* and videogames in speed running competitions. These participants are recruited with an open call in local online gaming communities and forums, starting from Kanaliiga (https://kanaliiga.fi) that is an ongoing amateur esports league for working adults in Finland. We use other similar amateur esports forums by recommendation of the Finnish Esports Federation (https://seul.fi), with whom we collaborate. Inclusion criteria include more than four daily hours of self-reported esports gaming and having a permanent job. The hourly limit is based on the DSM5 suggestion of ‘internet gaming disorder’ involving at least 30 weekly hours and previous research reporting 30 weekly gaming hours for those who identify as highly involved players (Vahlo et al. 2018). We do not consider 30 hours to be a universal cutoff, but it appears to represent a culmination point for intensive play in more than one instance. The requirement for a permanent job is applied to better investigate how high gaming involvement is integrated in life situations with regular working hours without expected links to negative health (Quandt, Grueninger & Wimmer 2009). As with the first group, participants less than 18 years are excluded. We also exclude professional and semi-professional esports players, live-streamers, and others for whom gaming is (part of a) profession; these can be considered special groups that would further complicate the present setting. In line with our methodology, the focus on non-professional players will enable us to interview a specified (but not too special) gaming group which makes analysis coherent—we will not be able to generalize across genres, but the material will be consistent, with the caveat that esports game design may also differ significantly between games. We pursue gender balance but do not set it as a definite requirement because it may be difficult to find research-consenting permanently working Finnish adult women who play esports more than four hours daily, within the present time constraints. ***Stopping and minimum***: the stopping point for this group is *n*=15 and the minimum *n*=10. Because participants meeting the requirements for this group are easier to find than those of the first group, we set a higher sample size minimum.

***Group 3****.* This group consists of medical experts such as doctors, nurses, and therapists who have helped at least one individual in their work with gaming-related health problems. Unlike the above two groups, these participants will not be interviewed phenomenologically but the function of studying them is to better understand the individuals in Group 1 via a shorter semi-structured questionnaire (attached). We will inquire these experts about how they see the experiences of people who could belong to Group 1, which provides us a view ‘from the outside’ and thus enables triangulating the primary phenomenological data. We separate these Group 3 interviews from our main research question and qualitative hypotheses to exploratively report how the phenomenological findings correspond with what the practitioners (who have treated such experiences) believe or think of them to be. As such, these Group 3 participants are recruited from the same or similar local hospitals, therapy centers, and other medical institutions by snowballing with the help of our institutional collaborators. Participants less than 18 years of age are excluded; we pursue gender balance but set no strict demographic criteria. ***Stopping and minimum***: for each Group 1 participant, we aim to recruit one Group 3 participant. Because the function of Group 3 interviews is to triangulate the findings of Group 1, we consider it reasonable to have an equal number of each. There is a possibility that Group 3 experts are reluctant to consent for an interview due to their role as medical professionals; this can make recruitment difficult, for which we set a minimum of five interviews so that, in case of recruitment issues in this group, the project can be completed and the main research questions answered even with less data from this section. Group 3 interviews are not part of the longitudinal setting and will not be repeated after 12 months.

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|  | **Minimum** | **Stopping** | **Interview type** | **Description** |
| **Group 1** | n=5 | n=15 | Phenomenological  (POP), IPA | Players with gaming-related health problems, as defined by treatment-seeking. |
| **Group 2** | n=10 | n=15 | Phenomenological  (POP), IPA | Esports players without gaming-related health problems, as defined by self-reported health. |
| **Group 3** | n=5 | n=15 | Semi-structured (12 questions), codebook coding | Medical experts who have work experience of people with gaming-related health problems. |

Table 1. Data collection plan. For the 12-month follow-up, we do not set minimum and stopping rules, but recruit as many participants as possible (see analysis plan).

### **Interviews**

Group 1 and Group 2 participants are interviewed with a semi-structured Phenomenology of Play (POP) interview frame. The development of this frame started in 2020 with a multicultural study (*n*=20) concerning the gaming experiences of people during the COVID-19 pandemic (Karhulahti et al. 2021). The feedback and findings gathered in the above enabled us to refine a specialized interview frame (POP) that is designed for mapping out diverse phenomenological dimensions of play. Specifically, the purpose of this interview is to understand how the interviewee experiences gaming and what gaming means to them in their unique biographically shaped sociocultural context. Temporality also has a central role in this interview: distinct parts concern the interviewee’s past, present, and future, respectively. Altogether, POP consists of 12 unique thematic sections (lead questions) that have 53 pre-structured follow-up paths. The frame serves as a guide that helps the interviewer to find avenues that are relevant for understanding each participant’s experiences as deeply as possible. A translated English version of POP is attached, but the Finnish version will be used in this study to enable the participants to express themselves in a native language (unless they prefer English). In the 12-month follow-up interviews, we use POP-UP frame (English version attached) that is similar to POP but also considers temporal phenomenological changes in the light of the interviewees’ previous answers. We will thus produce two separate transcripts from each participant who joins both interviews, the latter of which focuses on experiential *changes* in relation to those reported in the former.

Phenomenological IPA-analysis (Smith 1996; Larkin & Thompson 2012; Smith, Jarman & Osborn 1999; Smith & Osborn 2007) serves as a philosophical basis that influenced the development of POP and will motivate the understanding of the participants’ sensemaking during the interviews as well as in later coding and analysis. The same two researchers (MS and VMK) are present in each approximately 2-hour interview, unless unexpected conditions entail otherwise. The primary interview language is Finnish, and we use either face-to-face or remote interview format (Zoom software). The interviews are recorded by using two voice hardware devices (backup) and afterwards stored as digital audio files in the university's GDPR compliant archive. The audio is transcribed into text word-by-word by an assistant. Personal identifiers are removed with the help of the collaborating Finnish Social Science Data Archive (FSD) from the transcripts, which will be shared for open scientific use. We can remove parts of the transcripts to protect the participants’ privacy—the participants will be allowed to review their transcripts and point out parts that they do not wish to share for open scientific use. During this, the participants are also given the chance to comment on our initial interpretations of their experiences; we include these commentaries as part of the data and analyze them as such. After the transcripts have been successfully stored in the FSD, the audio files are destroyed. We do not currently have funds to translate the Finnish transcripts into English. After the interviews, both Group 1 and 2 participants will fill out various paper-based screening tools (Appendix 2); the scores will have no effect on our phenomenological analysis, but we will report them in a table as part of our participant descriptions.

Group 3 participants are interviewed with a separate semi-structured questionnaire with 12 questions (attached) that mainly concern their experiences and views regarding treatment-seekers for gaming-related health problems. The same two interviewers will carry out these interviews, which last approximately an hour (face-to-face or remote). These Group 3 interviews do not directly contribute to the research question but triangulate the phenomenological findings by providing external perspectives to our individual main cases. There is a possibility that Group 3 participants have treated or otherwise aided some of the Group 1 participants; however, we will not inquire about these relationships, with respect to the confidential relationships that medical professionals have with those whom they work. In the analysis and Stage 2 of this work, we present Group 3 findings as contextualizing data that shed light on the specific sociocultural context in which the main findings take place.

## **Analysis Plan**

The analysis of **Group 1** and **Group 2** transcripts follows the established IPA tradition (Smith 1996; Larkin & Thompson 2012; Smith, Jarman & Osborn 1999; Smith & Osborn 2007) with small modification. After these analyses are completed, we move to analyze **Group 3** transcripts. All analyses will be carried out in the language of the original transcripts, but thematic and other conceptual entities will be developed in English to facilitate reporting at Stage 2. The analytical processes of the first two groups are carried out separately, as follows:

a) Conduct idiosyncratic coding for three interviews. Cluster the codes into themes and superordinate themes. The initial structural connections across participants, are collected into a table-based iterative document, *phenomenological manual*.

b) Code the rest of the interviews one-by-one, with the phenomenological manual as an evolving point of reference.

c) Organize the themes across all (within-group) cases into a refined, visually presented meta-table, supplemented by a summary of each individual case.

The process is a double hermeneutic dialogue in which the researchers interpret the interviewee who, in turn, interprets their own experience(s). A more detailed explanation of all three steps is below.

a) After each Group 1 and Group 2 interview, the two interviewing researchers discuss their first interpretations of the meanings and meaning-making expressed by the interviewee. The researchers write down notes and this process is repeated for each interview. After all interviews have been carried out, three transcripts are randomly chosen for in-depth idiographic (*in vivo* inclined) coding from each group. Themes and subordinate themes concerning the meaning and meaning-making in gaming (each participant’s unique sociocultural context considered) are interpretively coded by two team members: a researcher who was present in the interview (master coder) and a researcher or assistant who was not present in the interview (reliability coder). In the end, all coders meet to construct a *phenomenological manual*, which describes the relationships between the themes of all three participants in table-based format (Group 1 and 2 separately). The evolving phenomenological manual documents the development of structural connections and is shared as a supplement, thus serving to increase transparency; we are not aware of previous IPA studies with this iterative element.

b) All participants are analyzed as individual cases, after which their content will be reflected against the phenomenological manual. As earlier, the interviewing researcher serves as a master coder with an assistant or other researcher as a reliability coder. Because quantitative coding reliability is suboptimal in IPA, the coders negotiate agreement for each transcript (Syed & Nelson 2015). Finally, a third non-coding researcher close reads each transcript and assesses the agreement for each interpreted case. In disagreement, new coding rounds are carried out until agreement. We use Atlas.ti software in this process.

c) Lastly, the researchers collectively assess structural connections across all within-group participants. The goal is to identify overlap between cases (what experiential themes and meanings are same or similar for two or more individuals) as well as those themes that may be highly important for only one individual. These relationships are integrated into the phenomenological manual, ultimately forming a meta-table that is further explained by recounting narrative details of the cases. The assessment process is carried out via meetings and remote communication (in a shared online document) between them. After agreement has been reached, the fourth team member (not part of interviews or coding) reads all transcripts and externally evaluates the validity of the two meta-tables (one for each group). If discrepancies emerge, agreement is either negotiated or a new external assessor is recruited to provide an alternative perspective.

After the above three steps have been carried out, the phenomenological macro structures (meta-tables) of both groups are compared to assess their similarities and differences (H1, H2). This is what we report as results. The process is repeated after 12 months, with the following amendments.

d) The focus on the analysis will be on experiential *changes*, i.e. the structural connections between cases will be assessed based on how their experiences have *evolved* rather than what they *are* at the time of the second interview. Four different types of change have been suggested as findings in longitudinal IPA research: narrative changes (new reported events), participant reinterpretations (old events restructured by the interviewee), researcher reinterpretations (old events restructured by the researcher), and the witnessing of no changes (McCoy 2017). We are also prepared to find and report other types of changes if such occur.

e) To carry out the above analysis, we use the data of the first interview as a point of comparison. For each participant involved in both interviews, a profile will be developed based on their first interview (descriptive biographic summary with a phenomenological overview in table form); their second interview will be analyzed against this profile. In the second interview, we will also share the profile verbally and visually with the interviewee to triangulate our interpretations (Birt et al. 2016). We use this form of member checking critically, i.e. the potential commentary provided by the interviewee will be analyzed with equal status to other transcript data. As earlier, the interviewees will also be invited to review their follow-up transcripts.

Following the recommendation of a recent review of 66 longitudinal IPA studies (Farr & Nizza 2019), we take into consideration the potential variation in retention and the subsequent issues of depth and breath. Due to foreseeable dropouts, we predict the second interview round to have less participants, yielding two alternative reporting paths. First, if four or more Group 1 and 2 participants (total *n*=8) join the second-round interviews, we will report the work as a standard *longitudinal IPA study*, considering that *n*=4 has been a fitting sample size for previous longitudinal IPA research in health psychology (Spiers et al. 2016). However, if only one, two, or three Group 1 participants join the second-round interviews, we will report the work as an in-depth longitudinal *case study*, following the conventional medical case study format (Group 2 moved into a supplement). To our knowledge, longitudinal IPA case studies of gaming treatment-seekers do not exist yet (but see Benarous et al. 2019); thus, the wealth of phenomenological data arising even from a small longitudinal sample of actual treatment-seeking participants will make an important contribution to the literature.

After we have finalized the analysis of the two above groups, we apply the final meta-table as a codebook for analyzing the **Group 3** medical experts’ transcripts. The idea is to see if the experts discuss the experiences and meanings of gaming (disorder) in the same way as they appear in the narratives of treatment-seekers and those players who self-report no related health problems. The codebook is adapted to allow coding alternative beliefs or explanations, too. In other words, for this study, we are only interested in a small part of the medical experts’ transcripts. As earlier, the coding is done with Atlas.ti software by the interviewing researcher with an assistant as a reliability coder. We list relevant codes as a supplementary file and report thematic findings via a table in comparison to Group 1 and Group 2 themes. Ultimately, this section serves as an exploratory contextualizing analysis that helps discussing the individual cases and the research questions concerning them.

# **Data availability**

The transcripts will be stored in the Finnish Social Science Data Archive for free open scientific use. Parts of the transcripts may not be shared to protect the participants.

# **Code availability**

The coding process will be documented idiosyncratically per each interviewee (case summaries with participant-specific themes shared) and all versions of the phenomenological manual will be shared (the number of versions depends on the amount of data). Due to the privacy concerns related to the qualitative nature of the data, we reserve the right to not share all details disclosed in the interviews and coding; in each such instance, we note that a part has been removed to protect the privacy of the participant.

# **Results**

Do **not** include a **Results** section.

# **Discussion**

Do **not** include a **Discussion** section.

**References**

Bean, A. M., Nielsen, R. K., Van Rooij, A. J., & Ferguson, C. J., (2017) Video game addiction: the push to pathologize video games. *Prof Psychol–Res Pr*, **48,** 10.1037/pro0000150

Billieux, J., Flayelle, M., Rumpf, H. J., & Stein, D. J. (2019) High involvement versus pathological involvement in video games: a crucial distinction for ensuring the validity and utility of gaming disorder. *Curr Addict Rep*, **6**, 323-330

Bishop, L. & Kuula-Luumi, A. (2017) Revisiting qualitative data reuse: a decade on. *Sage Open*, **7**, 2158244016685136

Boonen, C. S., Christiansen, M. V., Ilsøe, A. W., (2018) Staunstrup, M. M., & Nielsen, R. K. Contextualizing pathological gaming – a proof-of-concept study. In *Proc* *DiGRA’18*.

Branney, P., Reid, K., Frost, N., Coan, S., Mathieson, A., & Woolhouse, M. (2019). A context-consent meta-framework for designing open (qualitative) data studies. *Qualitative Research in Psychology*.

Braun, V., & Clarke, V. (2021). To saturate or not to saturate? Questioning data saturation as a useful concept for thematic analysis and sample-size rationales. *Qualitative research in sport, exercise and health*, *13*(2), 201-216.

Brevers, D., King, D. L., & Billieux, J. (2020) Delineating adaptive esports involvement from maladaptive gaming: a self-regulation perspective. *Current Opinion in Psychology,* **36**, 141-146

Carbonell, X. (2017) From Pong to Pokemon go, catching the essence of the Internet gaming disorder diagnosis. *Journal of Behavioral Addictions,* **6**, 124-127

Castro‐Calvo, J., King, D. L., Stein, D. J., Brand, M., Carmi, L., Chamberlain, S. R., et al. (2021) Expert appraisal of criteria for assessing gaming disorder: An international Delphi study. *Addiction,* <https://doi.org/10.1111/add.15411>

Ceranoglu, T. A. (2010) Video games in psychotherapy. *Review of General Psychology,* **14**, 141-146

Charlton, J. P. & Danforth, I. D. (2007) Distinguishing addiction and high engagement in the context of online game playing. *Comput hum behav*, **23**, 1531-1548

Colder Carras, M., et al. (2018) Gamers’ insights into the phenomenology of normal gaming and game “addiction”: a mixed methods study. *Comput hum behav*, **79**, 238-246

Carras, M. C. & Kardefelt-Winther, D. (2018). When addiction symptoms and life problems diverge: A latent class analysis of problematic gaming in a representative multinational sample of European adolescents. *European Child & Adolescent Psychiatry*, **27**(4), 513-525.

Domahidi, E., & Quandt, T. (2015) “And all of a sudden my life was gone…”: A biographical analysis of highly engaged adult gamers. *new media & society*, **17**, 1154-1169

Ferguson, C. J., Coulson, M., & Barnett, J. (2011) A meta-analysis of pathological gaming prevalence and comorbidity with mental health, academic and social problems. *Journal of psychiatric research*, **45**, 1573-1578

Ferguson, C. J. & Colwell, J. (2020) Lack of consensus among scholars on the issue of video game “addiction”. *Psychol Pop M*, **9**, 359-366

Fried, E. I., van Borkulo, C. D., Cramer, A. O., Boschloo, L., Schoevers, R. A., & Borsboom, D. (2017). Mental Disorders as Networks of Problems: A Review of Recent Insights. *Social Psychiatry and Psychiatric Epidemiology*, 52 (1). https://doi.org/10.1007/s00127-016-1319-z

García-Lanzo, S., & Chamarro, A. (2018). Basic psychological needs, passion and motivations in amateur and semi-professional eSports players. *Aloma: revista de psicologia, ciències de l'educació i de l'esport Blanquerna*, *36*(2), 59-68.

Granic, I., Lobel, A., & Engels, R. C. (2014) The benefits of playing video games. *Am psychol*, **69**, 66-78

Griffiths, M. D., et al. (2016) Working towards an international consensus on criteria for assessing Internet gaming disorder: a critical commentary on Petry et al. 2014. *Addiction*, **111**, 167-175

Götzenbrucker, G., & Köhl, M. (2009) Ten years later. *Eludamos. Journal for Computer Game Culture*, **3**, 309-324

Haven, T.L., Errington, T.M., Gleditsch, K.S., van Grootel, L., Jacobs, A.M., Kern, F.G., et al. (2020) Preregistering qualitative research: a delphi study. *Int J Qual Met*, **19**, 1609406920976417

Haven, T., & Van Grootel, D. L. (2019) Preregistering qualitative research. *Account Res*, **26**, 229-244

Hennink, M. M., Kaiser, B. N., & Marconi, V. C. (2017) Code Saturation Versus Meaning Saturation: How Many Interviews Are Enough? *Qualitative Health Research*, **27**, 591- 608

Himmelstein, D., Liu, Y., & Shapiro, J. L. (2021) An exploration of mental skills among competitive league of legend players. *Research Anthology on Rehabilitation Practices and Therapy*, 1607-1629

Jeong, H., Yim, H. W., Lee, S. Y., Lee, H. K., Potenza, M. N., Kwon, J. H., et al. (2018) Discordance between self-report and clinical diagnosis of Internet gaming disorder in adolescents. *Scientific reports*, **8**, 1-8

Jeong, E. J., Ferguson, C. J., & Lee, S. J. (2019) Pathological gaming in young adolescents: A longitudinal study focused on academic stress and self-control in South Korea. *Journal of youth and adolescence*, **48**, 2333-2342

Johannes N., Vuorre M. & Przybylski A. K. (2021) Video game play is positively correlated with well-being. *R. Soc. open sci*. **8** 202049

Kardefelt‐Winther, D. (2017) Conceptualizing internet use disorders: addiction or coping process? *Psychiat Clin Neuros*, **71**, 459-466

Karhulahti, V. (2020) *Esport Play: Anticipation, Attachment, and Addiction in Psycholudic Development*. Bloomsbury Publishing: New York

Karhulahti, V., Nerg, H., Laitinen, T., Päivinen, A., & Chen, Y. (2021). Eight Hypotheses on Technology Use and Mental Wellbeing: A Multicultural Phenomenological Study of Gaming during the COVID-19 Pandemic. Preprint. *PsyArXiv*. https://doi.org/10.31234/osf.io/5km3e

Karlsen, F. (2013) *A world of excesses: Online games and excessive playing*. Routledge: Abingdon

King, D. L., Chamberlain, S. R., Carragher, N., Billieux, J., Stein, D., Mueller, K., et al. (2020) Screening and assessment tools for gaming disorder: a comprehensive systematic review. *Clin Psych Rev*, **77**, 101831

King, D. L., & Delfabbro, P. (2009). Understanding and assisting excessive players of video games: A community psychology perspective. *Australian Community Psychologist*, **2**, 62-74

Kneer, J., Rieger, D., Ivory, J. D., & Ferguson, C. (2014) Awareness of risk factors for digital game addiction: interviewing players and counselors. *Int J Ment Health Ad*, **12**, 585-599

Ko, C. H., Lin, H. C., Lin, P. C., & Yen, J. Y. (2020). Validity, functional impairment and complications related to Internet gaming disorder in the DSM-5 and gaming disorder in the ICD-11. *Australian & New Zealand Journal of Psychiatry*, *54*(7), 707-718.

Kou, Y., & Gui, X. (2020) Emotion regulation in esports gaming: a qualitative study of league of legends. *CSCW2*, **4**, 1-25

Kowert, R., Domahidi, E., & Quandt, T. (2014) The relationship between online video game involvement and gaming-related friendships among emotionally sensitive individuals. *Cyberpsychology, Behavior, and Social Networking*, **17**, 447-453

Kowert, R., Vogelgesang, J., Festl, R., & Quandt, T. (2015) Psychosocial causes and consequences of online video game play. *Comp Hum Behav*, **45**, 51-58

Larkin, M., & Thompson, A. R. (2012) Interpretative phenomenological analysis in mental health and psychotherapy research In. *Qualitative Research Methods in Mental Health and Psychotherapy* (Thompson, A. & Harper, D. ed.) 101-116. John Wiley & Sons: San Francisco,

Nielsen, R. & Karhulahti, V. (2017) The problematic coexistence of internet gaming disorder and esports. in *Proc FDC’12*. ACM

Pellegrini, A. (2009) *The Role of Play in Human Development*. Oxford University Press

Piaget, J. (2013) *Play, Dreams, and Imitation in Childhood* (trans. Gattegno, C. & Hodgson, F.). Routledge: Abingdon

Przybylski, A. (2014) Electronic gaming and psychosocial adjustment. *Pediatrics*, **134**, e716-e722

Quandt, T., Grueninger, H., & Wimmer, J. (2009) The gray haired gaming generation: Findings from an explorative interview study on older computer gamers. *Games and Culture*, **4**, 27-46

Satchell, L.P., Fido, D., Harper, C.A. et al. Development of an Offline-Friend Addiction Questionnaire (O-FAQ): Are most people really social addicts?. Behav Res 53, 1097–1106 (2021). <https://doi.org/10.3758/s13428-020-01462-9>

Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., et al. (2018) Saturation in qualitative research: exploring its conceptualization and operationalization. *Quality and Quantity*, **52**, 1893–1907

Shi, J., Renwick, R., Turner, N. E., & Kirsh, B. (2019). Understanding the lives of problem gamers: The meaning, purpose, and influences of video gaming. *Computers in Human Behavior*, *97*, 291-303.

Siutila, M., & Karhulahti, V. (2021) Continuous play: leisure engagement in competitive fighting games and taekwondo. *Ann Leisure Res*. [10.1080/11745398.2020.1865173](https://doi.org/10.1080/11745398.2020.1865173)

Smith, J. A. (1996) Beyond the divide between cognition and discourse: Using interpretative phenomenological analysis in health psychology. *Psychology and health*, **11**, 261-271

Smith, J. A., Jarman, M., & Osborn, M. (1999) Doing interpretative phenomenological analysis. *Qualitative Health Psychology: Theories and Methods* (eds. Murray, M. & Chamberlain, K.) 218-240. Sage: London

Smith, J. A., & Osborne, P. (2007) Interpretative phenomenological analysis. In *Qualitative Psychology: A Practical Guide to Research Methods* ( Smith, J. ed.) 25-52. Sage : London

Smith, J., Larkin, M., & Flowers, P. (2009). *Interpretative Phenomenological Analysis Theory, Method and Research*. Sage.

Snodgrass, J., Bagwell, A., Patry, J. M., Dengah II, H. F., Smarr-Foster, C., Van Oostenburg, M., et al. (2018) The partial truths of compensatory and poor-get-poorer internet use theories: More highly involved videogame players experience greater psychosocial benefits. *Comp Hum Behav*, **78**, 10-25

Snodgrass, J. G., Dengah, H. F., Polzer, E., & Else, R. (2019) Intensive online videogame involvement: A new global idiom of wellness and distress. *Transcultural Psychiatry,* **56**, 748-774

Starcevic, V., Choi, T. Y., Kim, T. H., Yoo, S. K., Bae, S., Choi, B. S., et al. (2020) Internet gaming disorder and gaming disorder in the context of seeking and not seeking treatment for video-gaming. *Journal of psychiatric research*, **129**, 31-39

Stavropoulos, V., Gomez, R., & Motti-Stefanidi, F. (2019). Internet Gaming Disorder: A Pathway Towards Assessment Consensus. *Frontiers in psychology*, *10*, 1822.

Syed, M., & Nelson, S. C. (2015) Guidelines for establishing reliability when coding narrative data. *Emerging Adulthood*, **3**, 375-387

Vahlo, J., Karhulahti, V. M., & Koponen, A. (2018) Tasavallan core-gamer: videopelaamisen piirteet Suomessa, Kanadassa ja Japanissa. *Pelitutkimuksen vuosikirja,* 35-59

Van Leeuwen, L., & Westwood, D. (2008) Adult play, psychology and design. *Digit Creat*, **19**, 153-161

Van Manen, M., Higgins, I., Van der Reit, P. (2016) A conversation with Max van Manen on phenomenology in its original sense. *Nurs. Health Sci,* **18**, 4–7

Van Rooij, A. J., Ferguson, C. J., Colder Carras, M., Kardefelt-Winther, D., Shi, J., Aarseth, E., … Przybylski, A. K. (2018). A weak scientific basis for gaming disorder: Let us err on the side of caution. Journal of Behavioral Addictions, 1–9. <https://doi.org/10.1556/2006.7.2018.19>

Van Rooij, A. J., Ferguson, C. J., Van de Mheen, D., & Schoenmakers, T. M. (2017) Time to abandon internet addiction? predicting problematic internet, game, and social media use from psychosocial well-being and application use. *Clin Neuropsychiatry*, **14**, 113-121

WHO (The World Health Organization) (2021) International Statistical Classification of Diseases and Related Health Problems (ICD). Official Website. https://www.who.int/standards/classifications/classification-of-diseases

**References**

Benarous, X., Morales, P., Mayer, H., Iancu, C., Edel, Y., & Cohen, D. (2019). Internet gaming disorder in adolescents with psychiatric disorder: two case reports using a developmental framework. *Frontiers in psychiatry*, *10*, 336.

Birt, L., Scott, S., Cavers, D., Campbell, C., & Walter, F. (2016). Member checking: a tool to enhance trustworthiness or merely a nod to validation? *Qualitative health research*, *26*(13), 1802-1811.

Colder Carras, M. C. (2015). *Video Game Play, Social Interactions And Friendship Quality In Adolescents: A Latent Class Analysis* (Doctoral dissertation, Johns Hopkins University).

Dullur, P & Starcevic, V. (2018) Internet gaming disorder does not qualify as a mental disorder. *Australian and New Zealand Journal of Psychiatry* **52**, 110-111.

Farr, J., & Nizza, I. E. (2019). Longitudinal Interpretative Phenomenological Analysis (LIPA): A review of studies and methodological considerations. *Qualitative Research in Psychology*, *16*(2), 199-217.

McCoy, L. K. (2017). Longitudinal qualitative research and interpretative phenomenological analysis: Philosophical connections and practical considerations. *Qualitative Research in Psychology*, *14*(4), 442-458.

Mihara, S., & Higuchi, S. (2017). Cross‐sectional and longitudinal epidemiological studies of I nternet gaming disorder: A systematic review of the literature. *Psychiatry and clinical neurosciences*, *71*(7), 425-444.

Richard, J., Temcheff, C. E., & Derevensky, J. L. (2020). Gaming Disorder across the Lifespan: A Scoping Review of Longitudinal Studies. *Current Addiction Reports*, 1-27.

Spiers, J., Smith, J. A., & Drage, M. (2016). A longitudinal interpretative phenomenological analysis of the process of kidney recipients’ resolution of complex ambiguities within relationships with their living donors. *Journal of Health Psychology*, *21*(11), 2600-2611.

Strittmatter, E., Parzer, P., Brunner, R., Fischer, G., Durkee, T., Carli, V., Hoven, C.W., Wasserman, C., Sarchiapone, M., Wasserman, D. and Resch, F. (2016) A 2-year longitudinal study of prospective predictors of pathological Internet use in adolescents. *European child & adolescent psychiatry*, **25**:7, 725-734

Thege, B. K., Woodin, E. M., Hodgins, D. C., & Williams, R. J. (2015). Natural course of behavioral addictions: A 5-year longitudinal study. *BMC psychiatry*, **15**:1, 1–14 (2015)

Weinstein, N., Przybylski, A. K., & Murayama, K. A prospective study of the motivational and health dynamics of Internet Gaming Disorder. *PeerJ*, **5**, e3838 (2017).

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# **Author contributions**

Conceptualization: VMK. Data curation: VMK, MS. Formal analysis: VMK, MS. Funding Acquisition: VMK, JV, RK. Investigation: VMK, MS, JV, RK. Methodology: VMK. Project administration: VMK. Resources: VMK, RK. Software: VMK, MS. Supervision: VMK. Validation: VMK, JV, RK. Visualization: MS. Writing original draft: VMK. Writing review & editing: VMK, MS, JV, RK.

**Competing interests**

Veli-Matti Karhulahti is one of the PCI Registered Reports recommenders. JV is a CSO in Kinrate Analytics, which provides personalized game recommendations.

**Appendix 1: Methodological details (Group 1 and 2) according to:** Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. International journal for quality in health care. 2007 Dec 1;19(6):349-57.

**1. Interviewer/facilitator**

MS and VMK conduct all interviews.

**2. Credentials**

MS has an MA (media studies) and VMK has a PhD (title of a docent in gaming research).

**3. Occupation**

VMK is a senior researcher in University of Jyväskylä and MS is a PhD candidate in University of Turku.

**4. Gender**

MS identifies as a woman and VMK identifies as a man.

**5. Experience and training**

Both authors are trained researchers with previous interviewing experience.

**6. Relationship established**

Authors have not communicated with the interviewees before.

**7. Participant knowledge of the interviewer**

The purpose of the research is shared with the interviewees before the interview, and the interviewees are invited to ask questions related to the study before the interview. The authors do not systematically disclose their own histories, but if asked, they will share those openly.

**8. Interviewer characteristics**

MS and VMK are familiar with videogames, including esports. MS and VMK believe that gaming can be related to health problems and benefits in complex ways that are not yet well modeled or explained theoretically. The presented QH1–3 list selected literature that directly influence this specific study. Any related questions posed by the interviewees to the interviewers will be answered transparently.

**9. Methodological orientation and theory**

Interpretive phenomenological analysis, with an added ‘phenomenological manual’ that we use for systematically documenting the development of structural connections between cases and thematic iteration.

**10. Sampling**

Purposive sampling.

**11. Method of approach**

Open call distributed via collaborators and special institutions.

**12. Sample size**

See Table 1.

**13. Non-participation**

N/A

**14. Setting of data collection**

Remotely from home office and on-location.

**15. Presence of non-participants**

N/A

**16. Description of sample**

See Table 1.

**17. Interview guide**

Phenomenology of Play (POP) and its follow-up (POP-UP).

**18. Repeat interviews**

Follow-up in 12 months.

**19. Audio/visual recording**

Audio recording.

**20. Field notes**

Personal notes will be taken and discussed after each interview.

**21. Duration**

Average interview length expected 120 minutes for Groups 1 and 2.

**22. Data saturation**

Not used.

**23. Transcripts returned**

Transcripts will be shared with participants for verification; the participants may choose parts of the transcripts not to be shared openly for later scientific use (but we may still use those parts in our interpretive analysis).

**24. Number of data coders**

Lead coders (MS and VMK) and assistant coders (JV and RK).

**25. Description of the coding tree**

N/A

**26. Derivation of themes**

IPA-driven thematization with a ‘phenomenological manual’ for documenting progress.

**27. Software**

Zoom for interviews and Atlas.ti for coding.

**28. Participant checking**

Member checking is further applied by providing, during transcript checks, also our tentative interpretations in written format, and the participants are given the opportunity to comment on them. We will not automatically replace the old data with the commentary but take the commentary into consideration as reflective follow-up data.

**29. Quotations presented**

Cited with permission, idiosyncratic presentation.

**30. Data and findings consistent**

Two coders/interpreters for each case, and an external validation by third and fourth members.

**31. Clarity of major themes**

N/A

**32. Clarity of minor themes**

N/A

**Appendix 2: Screening tools for Group 1 and Group 2.**

All screening tools used with permission.

Gaming problems:

GAS7 (Lemmens et al. 2009)

* based on pathological gambling in the DSM-IV.

IGDT10 (Király et al. 2017)

* based on ’internet gaming disorder’ in the third section of the DSM-5.

GDT (Pontes et al. 2019)

* based on ’gaming disorder’ in the ICD-11.

THL1 (Salonen & Raisamo 2015)

* one-item gaming problems self-assessement without disclosed basis.

The Finnish translations have all been found valid in previous research (Männikkö et al. 2015; Männikkö et al. 2019; Karhulahti & Koskimaa 2019), except for GDT.

Other health:

BDI6 (Beck et al. 1996)

* depression, Finnish version (Aalto et al. 2012).

GAD7 (Spitzer et al. 2006)

* anxiety, Finnish version (Kujanpää et al. 2012).

PROMIS (Hays et al. 2009)

* general/global health, Finnish version (THL 2021).

PH1 (Weiss 1973)

* perceived loneliness, Finnish version (Tilvis et al. 2000).

WAI (Ilmarinen 2007)

* work ability index, short Finnish vesrion (von Bonsdorff ym. 2012)

Recovery from work (Kinnunen & Mauno 2009)

* originally developed in Finnish

Sources:

Aalto, A. M., Elovainio, M., Kivimäki, M., Uutela, A., & Pirkola, S. (2012). The Beck Depression Inventory and General Health Questionnaire as measures of depression in the general population: a validation study using the Composite International Diagnostic Interview as the gold standard. *Psychiatry research*, 197(1-2), 163-171.

Beck, A. T., Steer, R. A., & Brown, G. (1996). Beck depression inventory–II. *BDI-II manual*. San Antonio, TX: The Psychological Corporation.

Hays, R. D., Bjorner, J. B., Revicki, D. A., Spritzer, K. L., & Cella, D. (2009). Development of physical and mental health summary scores from the patient-reported outcomes measurement information system (PROMIS) global items. *Quality of Life Research*, 18(7), 873-880.

Ilmarinen, J. (2007). The work ability index (WAI). *Occupational medicine*, 57(2), 160.

Karhulahti, V. M., & Koskimaa, R. (2019). On the Prevalence of Addicted or Problematic Gaming in Finland. *Addictive behaviors reports*, 10, 100225.

Kinnunen, U. & Mauno, S. (2009) (eds.) *Irtiottoja työstä. Työkuormituksesta palautumisen psykologia*. Tampere: Yliopistopaino.

Király, O., Sleczka, P., Pontes, H. M., Urbán, R., Griffiths, M. D., & Demetrovics, Z. (2017). Validation of the ten-item Internet Gaming Disorder Test (IGDT-10) and evaluation of the nine DSM-5 Internet Gaming Disorder criteria. *Addictive behaviors*, *64*, 253-260.

Kujanpää, T., Ylisaukko-Oja, T., Jokelainen, J., Hirsikangas, S., Kanste, O., Kyngäs, H., & Timonen, M. (2014). Prevalence of anxiety disorders among Finnish primary care high utilizers and validation of Finnish translation of GAD-7 and GAD-2 screening tools. *Scandinavian journal of primary health care*, 32(2), 78-83.

Lemmens, J. S., Valkenburg, P. M., & Peter, J. (2009). Development and validation of a game addiction scale for adolescents. *Media psychology*, 12(1), 77-95.

Männikkö, N., Billieux, J., & Kääriäinen, M. (2015). Problematic digital gaming behavior and its relation to the psychological, social and physical health of Finnish adolescents and young adults. *Journal of behavioral addictions*, 4(4), 281-288.

Männikkö, N., Ruotsalainen, H., Tolvanen, A., & Kääriäinen, M. (2019). Psychometric properties of the Internet Gaming Disorder Test (IGDT‐10) and problematic gaming behavior among Finnish vocational school students. *Scandinavian journal of psychology*, *60*(3), 252-260.

Pontes, H. M., Schivinski, B., Sindermann, C., Li, M., Becker, B., Zhou, M., & Montag, C. (2019). Measurement and conceptualization of gaming disorder according to the World Health Organization framework: The development of the Gaming Disorder Test. *International Journal of Mental Health and Addiction*. doi:10.1007/s11469-019-00088-z

Salonen, A. & Raisamo, S. (2015) *Suomalaisten rahapelaaminen 2015: Rahapelaaminen, rahapeliongelmat ja rahapelaamiseen liittyvät asenteet ja mielipiteet 15-74-vuotiailla*. Helsinki: THL.

Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: the GAD-7. *Archives of internal medicine*, 166(10), 1092-1097.

THL (2021) PROMIS: Yleinen terveys. Finnish Institute for Health and Welfare. <https://thl.fi/fi/web/toimintakyky/toimintakyvyn-arviointi/kansallinen-promis-keskus>

Tilvis, R., Pitkälä, K., Jolkkonen, J., & Strandberg, T. (2000). Feelings of loneliness and 10-year cognitive decline in the aged population. *Lancet*, 356, 77-78.

von Bonsdorff, M. B., Seitsamo, J., Ilmarinen, J., von Bonsdorff, M. E., & Taina, R. (2012). Work ability as a determinant of old age dis- ability severity: Evidence from the 28-year Finnish longitudinal study on municipal employees. *Aging Clinical and Experimental Research*, 24, 354–360. doi:10.1093/occmed/kqh005

Weiss, R.S. Loneliness. *The experience of emotional and social isolation*. Cambridge, MA:MIT Press 1973.