

# Games in everyday life: Profiles of adolescent digital gaming motives and well-being outcomes

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## ABSTRACT

Especially since the 2010s, we have seen rapidly increasing discussion and research on the causal and correlational relations between digital gaming and different dimensions of well-being. This quantitative study presents a starting point of a four-year longitudinal study of the connections between adolescents' gaming motives, gaming culture participation, and different aspects of psychosocial well-being (digital engagement, internalising symptoms, and academic adjustment) in a sample (N = 2053) of actively gaming Finnish 6th and 8th graders (ages 11–14). Results show three distinct player profiles differing in gaming motives and well-being correlates: *escapist game players*, *achiever game players*, and *recreational game players*. These provide a starting point for exploring both the interactions between gaming and well-being and the stability of gaming motives over time.

## Introduction

Digital gaming both online and offline on computers, gaming consoles, and smartphones is a common pastime for adolescents, and for many of them an important part of social life and identity development (e.g. [1]). As such, gaming has invited close scrutiny from the point of view of psychosocial well-being, revealing a complex phenomenon of many interacting factors (e.g. [2–4]).

Games are played for a variety of reasons, from socialising and competition to escape and simply staving off boredom (e.g. [5,6]). Previous research, discussed in more detail in the background section, has shown that especially gaming motives<sup>1</sup> are closely connected to the relationship between gaming and well-being. Gaming motives can predict and are associated with well-being outcomes (e.g. [7–9]), making it important to identify and understand both individual motives and broader ways of gaming and how they relate to beneficial and detrimental outcomes. For example, intensive gaming combined with an escapist motive can indicate a situation in which a player tries to alleviate existing stress or anxiety (e.g. [10,11]). Depending on other factors, such as social support, this can be successful and result in increased well-being or exacerbate the problems [12].

Adolescence, the phase of life between childhood and adulthood, is

an important phase for personal development, as many considerable changes take place both biologically and societally: puberty sets in, and young people gain more rights and responsibilities and start becoming more independent of their parents. Because of these changes, adolescence has often been viewed as a time of increased risk, conflict, and vulnerability [13], and adolescents' well-being is often a central societal concern (e.g. [14,15]). In Finland, where this study was conducted, adolescents' active gaming prompts exploration: 76.2 % of 10–19 year olds play digital games weekly and 42.2 % do so daily, the age group's average weekly gaming time being 16.4 h [16].

This study examines and compares digital engagement, internalising symptoms, and academic adjustment based on digital gaming in two cohorts of adolescents using quantitative survey data collected amongst school students in Finland. The survey is a part of the research project *Growing Mind*, during which a four-year longitudinal study is conducted with two age cohorts, born in 2006 and 2008 respectively, in Helsinki, the capital city of Finland. A key part of the project is the study of sociodigital participation both in and out of school. Korhonen, T., Tiippana, N., Laakso, N., Meriläinen, M., & Hakkarainen, K. (2020). *Growing mind: Sociodigital participation in and out of the school context. Students' experiences 2019*. University of Helsinki, Department of Education.

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<sup>1</sup> In the literature, the words motive and motivations are often used interchangeably to refer to the internal reasons for individuals' gaming. For example, while all discuss similar constructs, Yee [6] and Wang et al. [9] use the word motivation while Chang and Ling [7] discuss motive.

On an individual level, understanding gaming motives and habits helps parents and professionals address gaming in both domestic and institutional environments. When considering that digital gaming has both a long history of unfounded moral panics [17] and a risk of actual adverse outcomes (e.g. [18]), a better understanding of why young people enjoy digital games can help support youth agency and well-being, reduce social conflict [4,19], and help identify both at-risk individuals and possible problems, such as depression or anxiety, underlying gaming (e.g. [20,21]). On a broader level, identifying gaming motives allows for a more nuanced exploration of young people's engagement with digital games, helping us understand the appeal of digital games and framing digital gaming in a way that highlights young people's agency as active users of games instead of passive consumers or victims, and to avoid technological determinism (see [15]).

Adolescents' gaming has been previously studied in Finland to a limited extent. Our study expands this body of literature by looking at young people's gaming motives more broadly, drawing primarily from self-determination theory approaches to gaming [5,22], to discern different reasons and ways they engage with gaming as well as the connections the motives and ways of engagement have to different well-being outcomes. By doing so we provide a more detailed picture of the phenomenon and further our understanding of youth gaming both in Finland and internationally.

## Background

The relations between digital gaming and different areas of psychological, physical, and social well-being have been studied from a variety of perspectives since at least 1979 ([23], referenced in [24]). Research has found evidence for both beneficial and adverse outcomes of game play, the beneficial impacts including for example reduced stress [11], mitigation of depression and anxiety [10], experiences of increased agency [25], and the formulation and maintaining of friendships [4,26], whereas adverse impacts include neglecting other areas of life due to excessive gaming [2,3,27], physical ailments such as back pains [28], sleep problems [29], poorer academic achievement ([30, 31]), and lower academic motivation and well-being [32], although in many cases the direction of effects is still unclear (e.g. [33]). Whether gaming has a positive or a negative impact is not a binary issue: gaming can simultaneously have both beneficial and adverse influences on well-being. For example, for a lonely player, social contacts in games can alleviate feelings of loneliness, yet at the same time maintaining these contacts at the expense of sleep or studies can cause problems in other areas of life (see [27]).

While discussions of young people's media use often revolve around the concept of "screen time" (see [1]), the amount of gaming is a poor predictor of well-being outcomes ([4,8,31,34]). Instead of time spent, player motives appear to be a key factor when assessing the impacts of gaming, and research has shown gaming motives to be closely connected to psychosocial well-being in both adult [35] and adolescent [9,34,36] game players. Especially escapist motives for gaming have repeatedly been shown to be connected to lower psychological well-being [7–9,11, 12,37], suggesting both coping behaviour, in which games are played to alleviate stress from life problems, and gaming potentially exacerbating these existing problems [11,12,37].

Several previous studies (e.g. [7–9]) have approached gaming through the construction of motive profiles. This approach, while giving broader categories precedence over individual experiences, allows the identifying of general tendencies of gaming and examining different well-being outcomes related to these tendencies. Particularly relevant to the study at hand are the studies by Chang and Lin [7] and Wang et al. [9], as both are longitudinal studies that identified motive profiles in adolescent game players.

Utilising Yee's [6] model of player motivations, Chang and Lin [7] examined gaming intensity and the motives of advancement, socialising, and escapism and their connections to different facets of well-being

(depression, problematic internet use, academic performance, stress). Noting that players simultaneously endorsed different motives for gaming, the study found that escapism was especially connected to negative outcomes, whereas advancement and socialising motives were related to less risk. Wang et al. [9] utilised the same motives to explore social withdrawal, anxiety/depression syndrome, and self-injury/identification problems. In their study they identified three distinct profiles: recreational players, their gaming marked by overall lower motives and less gaming, achievers, their gaming driven by a prominent achievement motive, and escapers, mainly motivated by escapism. Echoing Chang and Lin's [7] findings, escapist players had the lowest self-esteem and a higher risk of anxiety/depression syndrome and self-injury/identification problems when compared to the recreational players.

## Method and data

Our study addresses two research questions:

R1. What kind of profiles can be constructed of adolescents' gaming tendencies?

R2. How do the profiles constructed in response to R1 differ in gaming behaviour, digital engagement, internalising symptoms, and academic adjustment?

Our data consist of two samples drawn from larger cohort data, consisting of students who had responded to the survey's gaming-related items. The first sample consists of 6th grade elementary school students born in 2008 (aged 11–12 at time of data collection) ( $N = 1112$ , 49 % girls, 49 % boys, 2 % other), and the second of 8th grade middle school students born in 2006 (aged 13–14 at time of data collection) ( $N = 941$ , 45 % girls, 52 % boys, 3 % other). The participants generally reported having a good financial situation in their families (Sample 1  $M = 4.5$ ,  $SD = 0.74$ ; Sample 2  $M = 4.4$ ,  $SD = 0.82$  on a scale of 1 = poor to 5 = very good). The majority had Finnish as their main language at home (Sample 1 73 %; Sample 2 66 %). In addition, all respondents reported playing digital games at least monthly.

Data was collected from September to December 2020 in Helsinki, Finland's largest city with a population of approximately 650,000. The collection method was an online questionnaire using the software *Qualtrics*. Students answered the surveys during their school lessons, using a computer or a mobile phone. The research project had provided the schools with instructional short films to be shown to the students prior to participating in the survey, these videos explaining difficult terms and introducing the scales and response options. The teachers who conducted the lessons and ran the surveys had received written instructions and attended a webinar on the research project and the questionnaire. Participation in the study was voluntary, and it was possible to complete the survey without taking part in the study. Active consent was obtained in writing from all the students participating in the study as well as their parents, and the study adhered to the research ethical guidelines set by the Finnish Advisory Board of Research Integrity. The study was approved by the University of Helsinki Ethical Review Board in the Humanities and Social and Behavioural Sciences.

The full questionnaire addressed a large number of different themes (e.g. digital competencies, sociodigital participation, digital learning practices) and background variables, with digital gaming forming its own subsection. Detailed questions about gaming in were only shown to respondents who reported playing digital games at least once a month, in line with the Finnish Player Barometer studies (e.g. [16]), in which monthly gaming is the threshold for an individual to be considered an active game player. Digital gaming was a common activity, and both the 6th and 8th graders reported playing on average 7–14 h a week.

## Survey measures

### Digital gaming

Respondents' gaming was assessed using proprietary measures (see

Appendix A) that examined gaming motives, social gaming habits, engagement with digital gaming culture, and self-assessed gaming amounts.

The 10 motive items (e.g. “I play to ease negative feelings”) drew from self-determination theory approaches to gaming [4,5,22,38], and were answered on a 5-point scale (1 = completely disagree, 5 = completely agree). *Social gaming habits* were assessed with three items asking how often the respondent played games alone, with friends, and with strangers, with responses given on a 7-point scale (1 = never, 7 = daily). *Engagement with digital gaming culture* was assessed with four items asking about the frequency of different creative game cultural practices: game character customization, game modification, trans-media creation (e.g. cosplay, fanfic), and game design or creation (derived from [39–41]), using the same 7-point frequency scale. *Weekly gaming amounts* were assessed with a proprietary 7-point scale (1 = under two hour, 7 = over 60 h). Table 1 presents the univariate proportions and counts for the gaming motive indicators.

Digital engagement

*Bridging and bonding social capital* were measured using an adapted, shortened version of the Internet Social Capital Scale (ISCS) [42]. Four items per dimension (bridging and bonding) were selected from the

Table 1  
Univariate proportions and counts for the class indicators.

Indicator	Category	6th grade		8th grade	
		Prop	Count	Prop	Count
1. I play to gain peace and solitude	1	.191	197	.176	151
	2	.151	156	.124	106
	3	.227	234	.24	206
	4	.247	255	.269	231
	5	.184	190	.191	164
2. I play to relax	1	.126	130	.091	78
	2	.12	124	.092	79
	3	.207	214	.183	157
	4	.293	302	.347	298
	5	.254	262	.287	246
3. I play to ease negative feelings	1	.27	278	.271	233
	2	.172	177	.142	122
	3	.196	202	.198	170
	4	.184	189	.227	195
	5	.177	182	.162	139
4. It is important to me to develop as a gamer	1	.266	274	.276	236
	2	.165	170	.154	132
	3	.2	206	.207	177
	4	.2	206	.216	185
	5	.169	174	.147	126
5. I enjoy the competition and challenges in gaming	1	.079	81	.067	57
	2	.086	89	.089	76
	3	.174	179	.193	165
	4	.312	321	.349	299
	5	.35	360	.303	260
6. I gain a sense of competence and achievement from gaming	1	.078	80	.06	51
	2	.086	88	.074	63
	3	.203	209	.179	153
	4	.304	313	.35	300
	5	.329	339	.338	290
7. Gaming is an important hobby to me	1	.256	263	.262	224
	2	.165	169	.146	125
	3	.19	195	.211	181
	4	.167	172	.189	162
	5	.222	228	.192	164
8. I play to keep contact with my friends	1	.254	261	.27	231
	2	.155	159	.141	121
	3	.201	206	.196	168
	4	.248	254	.235	201
	5	.142	146	.159	136
9. I play to meet new people	1	.409	419	.394	337
	2	.17	174	.177	151
	3	.182	186	.185	158
	4	.149	153	.144	123
	5	.09	92	.101	86

original scale due to questionnaire length requirements, with a focus on social media based social capital. Items were modified suitable for the respondent age groups based on two pilot studies. Answers were given using a 5-point scale (1 = completely disagree, 5 = completely agree).

Respondents’ *problematic internet use* was assessed using a five-item scale (e.g., “I have tried to control my digital technology use without success”), developed in Finnish by Kaltiala-Heino et al. [43]. Answers were given on a 7-point scale (1 = completely disagree, 7 = completely agree). For evidence supporting the scale’s psychometric properties, see Salmela-Aro et al. [44] and Tóth-Király et al. [45].

Internalising symptoms

*Loneliness* was measured using a three-item (e.g. “How often do you feel that you lack companionship?”) version of the UCLA Loneliness Scale Version 3 (see [46] for description and psychometric properties). Items were rated on a 3-point scale (1 = hardly ever, 3 = often). *Depressive symptoms* were assessed using the 10-item Finnish Depression Scale [47], asking about the respondent’s mood during the previous month (e.g., “I have felt hopeless about the future”). Items were rated on a 4-point scale (1 = not at all, 4 = extremely). Evidence supporting the tool’s psychometric properties has been reported by Wang et al. [48].

Academic adjustment

*School belonging* was measured using the 10-item Simple School Belonging Scale (SSBS) [49], with items rated on a 5-point scale (1 = completely disagree, 5 = completely agree). *Academic buoyancy* was measured with a 3-item scale (e.g. “I think I’m good at dealing with schoolwork pressures”), shortened from Martin and Marsh [50], with items rated on a 7-point scale (1 = strongly disagree, 7 = strongly agree). *Grit* was measured using the short version of the grit scale [51], that uses three items (e.g. “I finish whatever I begin”) to measure perseverance of effort. The responses were rated on a 5-point scale (1 = not at all like me, 5 = very much like me). *School burnout* was examined with the short version of School Burnout Inventory [52]. The inventory consists of five items that measure school burnout: feelings of exhaustion, cynicism, and a sense of inadequacy at school. Responses were rated on a 6-point scale (1 = strongly disagree, 6 = strongly agree).

Descriptive values, Cronbach’s Alpha and McDonald’s Omega reliability coefficients for the auxiliary variables are presented in Table 2.

Analyses

The statistical analyses were performed using Mplus 8.6 ([53]) in conjunction with R version 4.0.3 and RStudio 1.4.1106 [54,55] and “MplusAutomation” package [56].<sup>2</sup> Tables, additional material, and code can be downloaded from <https://osf.io/x524a/> and data can be requested.

Preliminary analyses

As preliminary analyses we examined the data for multivariate outliers concerning the profile indicators as well as missing data, outliers due to careless or inattentive responding were determined with a rule-based response pattern approach ([57]) omitting respondents that had consistently used only a single response option for all class indicator variables. Further, we examined the descriptive values of all the study variables as well as internal consistencies and composite reliabilities of the composite variables used by estimating Cronbach’s Alphas and McDonald’s Omegas [58].

<sup>2</sup> In addition we relied on the following packages: “tidyverse” collection [99] for general data wrangling; “psych” [100] and “userfriendlyscience” [101] for general tools; “naniar” [102] for missing data analysis; and “openxlsx” [103] for exporting tables.

**Table 2**  
Variable descriptives.

Variable	6th grade				8th grade			
	Mean	SD	$\alpha$	$\omega$	Mean	SD	$\alpha$	$\omega$
<b>Gaming</b>								
Gaming hours	3.05	1.52	-	-	2.97	1.67	-	-
Playing to kill time	2.91	1.30	-	-	3.13	1.30	-	-
Playing alone	5.68	1.54	-	-	5.42	1.62	-	-
Playing with friends	5.32	1.68	-	-	5.11	1.84	-	-
Playing with unknowns others	4.71	2.27	-	-	4.51	2.26	-	-
Editing game characters	4.27	1.85	-	-	3.76	1.85	-	-
Editing game	2.84	1.96	-	-	2.66	1.85	-	-
Creating game content	2.20	1.80	-	-	1.80	1.55	-	-
Creating games	1.61	1.30	-	-	1.48	1.21	-	-
<b>Digital engagement</b>								
Bonding online social capital	2.94	1.29	.87	.87	3.26	1.30	.89	.89
Bridging online social capital	3.14	1.17	.87	.87	3.40	1.10	.86	.86
Problematic internet use	2.91	1.23	.78	.83	3.18	1.14	.76	.82
<b>Internalizing symptoms</b>								
Loneliness	1.99	1.04	.89	.89	2.22	1.05	.88	.88
Depressive symptoms	1.60	.68	.93	.94	1.78	.72	.94	.95
<b>Academic adjustment</b>								
School belongingness	3.76	.84	.85	.88	3.65	.84	.86	.89
Academic buoyancy	4.64	1.67	.86	.87	4.29	1.61	.88	.89
Grit	3.43	.85	.70	.73	3.39	.81	.69	.73
School burnout	2.55	1.18	.91	.93	2.85	1.10	.89	.92

*Class enumeration*

To estimate the gaming motive profiles we specified a set of Factor Mixture Analysis models (referred to as FMA from herein, see e.g. [59]) in which a general gaming motive “severity” was taken into account by a factor that affected all the gaming motive items (FMA3, for a thorough discussion see [59]). Adding this type of factor to LCA allows for controlling for a general severity influencing all items that may also reflect individual response style, while keeping the initial distributions of respondents’ answers. The variance of the general motive factor and the indicator thresholds were freely estimated in each profile, as the research question of interest was to examine the differences between profiles arising from differential response patterns to the items instead of differences in the general factor. Thus, traditional LCA models were also estimated for model comparison instead of comparing to other types of FMAs (see [59]).

In general, a benefit of mixture models is the variety of fit indices available to examine the best fitting profile solution. However, simulation studies have shown that none of the indices alone can provide reliable way to detect the proper solution across all combinations of, for instance, model specification, sample size or number of indicators [60–63]. For FMA model simulations with continuous indicators by Nylund et al. [64] suggest Bayesian Information Criterion (BIC) and Consistent Akaike’s Information Criterion (CAIC) as the best information criteria and show support for using bootstrapped likelihood ratio test (BLRT). CAIC assigns a greater penalty to complexity than BIC. Lower values of BIC and CAIC point towards a better fit to the data. However, regarding a FMA with categorical indicators like the present model, in which the increase in free parameters for any additional class is higher, the performance of the traditional information criteria is less known, especially regarding the likelihood ratio tests. In the present study we relied on BIC and CAIC and weighted the theoretical interpretability of the solution heavily.

*Class comparisons*

Finally, after landing on a final class-solution the classes were then compared across the background, validation and auxiliary variables utilising the BCH-method [65] which takes into account the classification uncertainty. Benjamini-Hochberg procedure was applied in interpreting the significance of pairwise comparisons to control for false discovery rate. In addition, the hierarchical nature of the data (students nested in classes in schools) were taken into account in the

class-comparisons with TYPE = COMPLEX adjusting of standard errors by clustering in Mplus. Standardised mean differences (Cohen’s *d*) were calculated and reported as effect sizes for statistically significant differences.

**Results**

*Preliminary results*

Our outlier treatment pattern identification process identified 78 participants from the 6th grader sample and 82 participants from the 8th grader sample that were omitted. The analytic samples thus comprised  $n = 1034$  and  $n = 859$  in the 6th and 8th grade samples, respectively. The analytical samples had 9.5 % items missing in the 6th grade sample and 13.1 % missing on the 8th grade sample. They were missing completely at random ( $\chi^2(8228) = 1402, p = 1$ ;  $\chi^2(2702) = 4685, p = 1$ ). Univariate proportions for the profile indicators are presented in Table 1 and descriptive values for the auxiliary are presented in Table 2. All variables had satisfactory reliabilities (6th grade sample Cronbach’s Alphas ranged from .70 to .93, McDonald’s Omegas from .73 to .94; 8th grade sample Cronbach’s Alphas ranged from .69 to .94, McDonald’s Omegas from .73 to .95) More detailed descriptives are presented in the supplementary files.

*Gaming motive classes*

For both samples the information criteria (see Table 3) BIC and CAIC suggested three classes and yielded substantively meaningful profiles with a reasonable number of participants assigned in each. BLRT showed non-convergence and was not considered. The LCA models estimated for comparison showed the lowest BIC and CAIC at a four-class solution. The BIC and CAIC values in the LCA models were, however, inferior (6th grader sample BIC = 25753.59, CAIC = 25900.59; 8th grader sample BIC = 21616.67, CAIC = 21763.67 with 147 parameters), showing that the FMA was able to produce a closer fit to the data with fewer parameters.

In response to R1, the three profile solutions (Figs. 1 and 2, see additional material for item response probabilities per class) in both samples reflected three profiles interpreted as 1) *escapist game players* (25 %,  $P_{\text{posterior}} = .82$  | 29 %,  $P_{\text{posterior}} = .86$ ), 2) *achiever game players* (30 %,  $P_{\text{posterior}} = .84$  | 33 %,  $P_{\text{posterior}} = .86$ ) and 3) *recreational game*

**Table 3**  
Factor mixture model information criteria.

6th grade					
Classes	Parameters	LL	BIC	CAIC	Entropy
1	45	-12598.55	25509.46	25554.46	1
2	83	-12306.22	25188.55	25271.55	.60
3	121	-12146.76	25133.41	25254.40	.67
4	159	-12064.68	25233.00	25392.00	.70
5	197	-11984.32	25336.05	25533.05	.72
6	235	-11925.42	25482.03	25717.03	.74

8th grade					
Classes	Parameters	LL	BIC	CAIC	Entropy
1	45	-10502.71	21309.42	21354.42	1
2	83	-10252.48	21065.68	21148.68	.59
3	121	-10082.11	20981.68	21102.68	.68
4	159	-9993.74	21061.65	2122.65	.70
5	NA	NA	NA	NA	.75
5	235	-9848.30	21284.21	21519.21	.75

players (45 %,  $P_{\text{posterior}} = .88 \mid 38 \%$ ,  $P_{\text{posterior}} = .86$ ). In terms of classification uncertainty, all classes showed over 80 % posterior probabilities for the participants to be assigned to said class. In the 6th grade sample, the classes showed no differences across gender or family’s self-reported economic situation, in the 8th grade sample there were slightly fewer girls assigned to the achiever player class than to the recreational player class and no differences across family’s self-reported economic situation (more precise results in supplementary material).

In the *escapist game player* profile gaming motive is typified by high probability of reporting that playing is used for peace and solitude, for relaxing, and to ease negative feelings. We have elected to use the word “escapist” here as it aligns with existing literature (e.g. Di Blasi et al., 2020; Kaczmarek & Drażkowski, 2014; [9,66]).

The second profile, *achiever game player*, is characterised by the domination of two motives, enjoyment of competition and challenge, and experiencing competence and achievement. Although these two motives are relatively high in all profiles, in the achiever profile the difference with the other motive item probabilities is larger. We use “achiever” here in line with Wang et al. [9].

The third and largest profile, *recreational game player*, is characterised by less intense, more balanced gaming motives. The profile is similar to the achiever profile, except that developing as a game player is

less important, playing to gain peace and solitude is slightly more important, and motives for gaming are less intense throughout (see [9]). To respond to R2, we next go over differences in gaming behaviour, digital engagement, internalising symptoms, and academic adjustment between the three profiles.

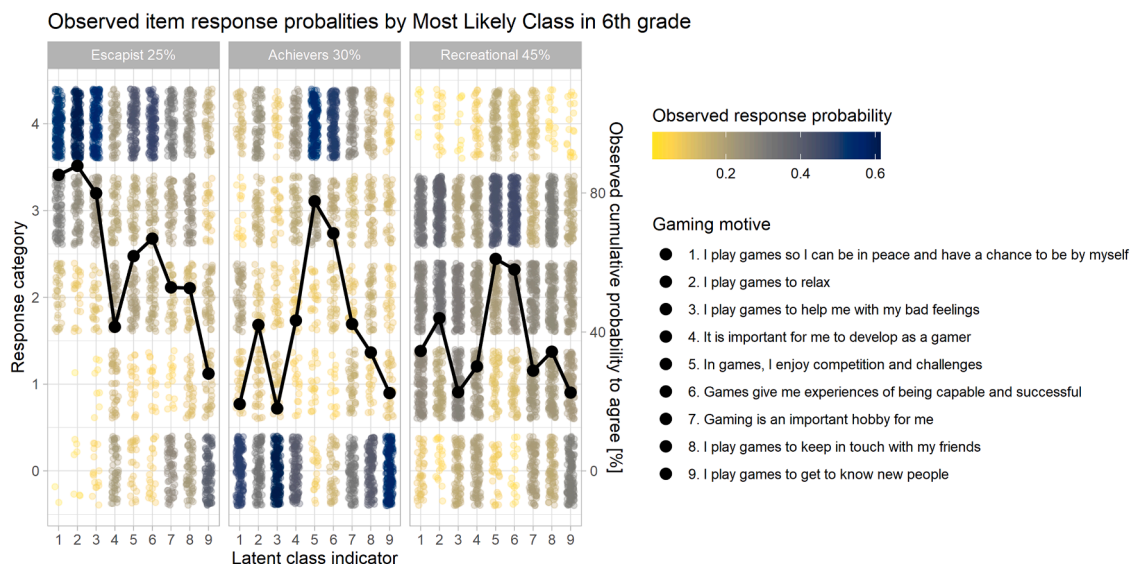
*Differences in gaming behaviour*

To validate the solution the classes were then compared across a range of other gaming-related variables (Tables 4 and 5). Based on these, in the 6th grade sample both the escapist and achiever player classes were further distinguished by reporting slightly more gaming in terms of self-reported time compared to recreational players ( $d = .38 \mid .24$ ). Players in the escapist class were more likely to play to kill time than the achiever or recreational players ( $d = .28 \mid .23$ ), most likely to play alone ( $d = .37; .27$ ), and more likely to play with strangers than the recreational players ( $d = .26$ ). Surprisingly, the achiever game players and recreational game players did not show different gaming behaviour in the 6th grade sample except in self-reported gaming hour.

In the 8th grade sample, the achiever profile players reported the most gaming hour compared to both the escapist ( $d = .29$ ) and especially the recreational game player ( $d = .44$ ), whereas the escapist and recreational profile did not differ in gaming time. The achievers were also most likely to play with friends or with strangers compared to the escapist or recreational game player ( $d = .48; .31 \mid .35; .25$  respectively). The achievers were also the least likely to engage in creating gaming content themselves compared to the escapist or recreational game players ( $d = .35; .28$ ). The escapist and recreational game players did not differ in the 8th grade sample, except that the escapist game players were more likely to play alone compared to the recreational game players ( $d = .28$ ).

*Differences in digital engagement*

The classes were compared across their more general digital engagement in terms of online social capital and, on the turnside, excessive internet use (Tables 4 and 5). In the 6th grade sample the escapist game players reported higher bridging online social capital than achiever or recreational game players ( $d = .38 \mid .23$ ), and were the most likely to report excessive internet use compared especially to achievers but also to recreational game players ( $d = .54; .37$ ). The achiever game players were the least likely to experience excessive internet use with a



**Fig. 1.** Black line indicates the observed cumulative probability to agree (responses 4 and 5) with the item, with the observed response probability distribution plotted in the background and colour weighted by proportion. Darker colour denotes higher density.

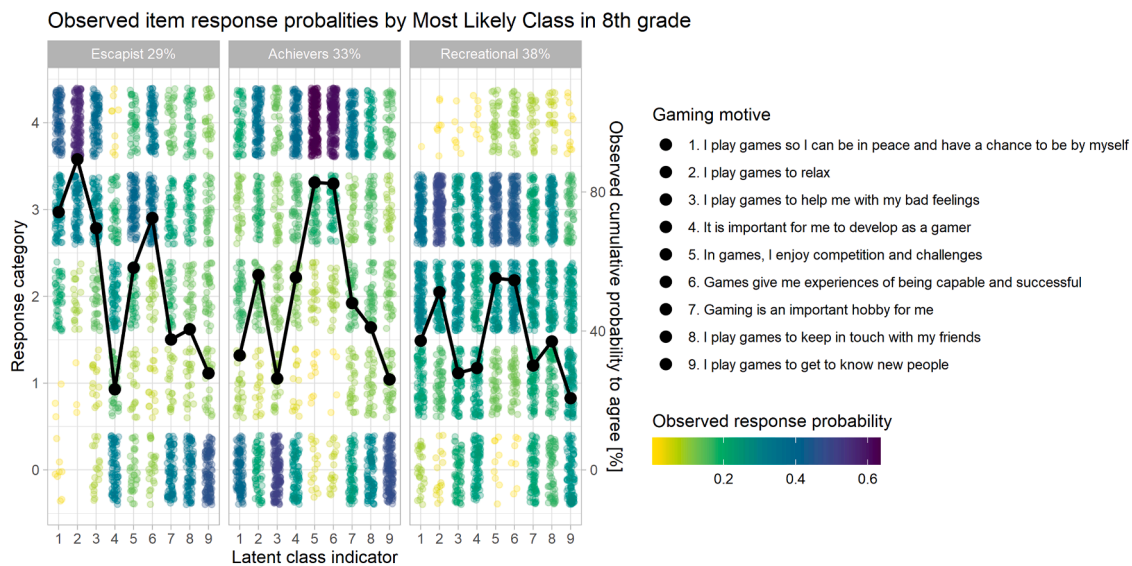


Fig. 2. Black line indicates the observed cumulative probability to agree (responses 4 and 5) with the item, with the observed response probability distribution plotted in the background and colour weighted by proportion. Darker colour denotes higher density.

Table 4

Auxiliary models: 6th grade. The PW (pairwise) column indicates which profiles differ statistically significantly from each other with Benjamini-Hochberg –correction.

		escapist		achiever		recreational		n	chi-square	df	p	PW
		Mean	SD	Mean	SD	Mean	SD					
<b>BACKGROUND</b>	Female	.48	.50	.48	.50	.53	.50	1008	1.81	2	.404	
	Economic situation	4.39	.78	4.60	.74	4.50	.70	834	5.46	2	.065	
<b>GAMING BEHAVIOUR</b>	Gaming hours	3.36	1.60	3.16	1.61	2.81	1.36	1030	15.92	2	.000	1,2! = 3
	Playing to kill time	3.15	1.39	2.75	1.50	2.88	1.07	1026	6.85	2	.033	1! = 2,3
	Playing alone	5.41	1.77	5.32	1.79	5.27	1.55	1028	.95	2	.623	-
	Playing with friends	6.03	1.36	5.43	1.83	5.66	1.38	1032	13.46	2	.001	1! = 2,3
	Playing with unknown others	5.14	2.27	4.56	2.46	4.57	2.11	1028	6.87	2	.032	1! = 3
	Editing game characters	4.51	1.96	4.30	2.06	4.12	1.62	1027	4.62	2	.100	-
	Editing game	3.13	2.10	2.75	2.15	2.73	1.72	1024	4.24	2	.120	-
	Creating game content	2.50	2.01	1.99	1.80	2.18	1.65	1023	5.73	2	.057	-
	Creating games	1.71	1.44	1.59	1.42	1.58	1.14	1018	.91	2	.633	-
<b>DIGITAL ENGAGEMENT</b>	Bonding online social capital	3.15	1.30	2.83	1.44	2.89	1.16	1031	5.42	2	.067	-
	Bridging online social capital	3.40	1.21	2.91	1.35	3.16	.98	1031	12.07	2	.002	1! = 2,3; 2! = 3
	Problematic internet use	3.31	1.33	2.59	1.34	2.89	1.01	1017	17.10	2	.000	1! = 2,3; 2! = 3
<b>INTERNALISING SYMPTOMS</b>	Loneliness	2.24	1.21	1.90	1.12	1.93	.85	841	8.24	2	.016	1! = 2,3
	Depressive symptoms	1.83	.78	1.49	.73	1.55	.56	832	16.45	2	.000	1! = 2,3
<b>ACADEMIC ADJUSTMENT</b>	School belongingness	3.57	.89	3.80	.97	3.85	.70	1030	12.07	2	.002	1! = 2,3
	Academic buoyancy	4.47	1.90	5.01	1.81	4.48	1.37	840	9.43	2	.009	1! = 2; 2! = 3
	Grit	3.27	.91	3.56	.93	3.43	.73	836	9.26	2	.010	1! = 2
	School burnout	2.83	1.35	2.36	1.23	2.52	1.00	840	8.90	2	.012	1! = 2,3

slightly lower mean than the recreational game players ( $d = .26$ ). In the 8th grade sample the classes did not differ in digital engagement.

Differences in internalising symptoms

In the 6th grade sample the escapist game players showed the highest loneliness and depressive symptoms with small to medium effect sizes compared to both achiever and recreational game players ( $d = .29; .45 | .32; .44$ , respectively). In the 8th grade sample the escapist game players also showed close to a medium effect higher loneliness and depressive symptoms compared to the achiever game players ( $d = .42; .47$ , respectively) and higher depressive symptoms compared to the recreational players ( $d = .18$ ). Interestingly, the achiever players reported the lowest symptoms of loneliness.

Differences in academic adjustment

Finally, the groups were compared across academic adjustment in

terms of sense of school belonging, academic buoyancy, grit, and school burnout. In the 6th grade sample the escapist game players showed lower school belongingness than the achiever or recreational players ( $d = .25 | .36$ , respectively). Interestingly also, the achiever players showed the highest academic buoyancy compared to both escapist and recreational players ( $d = .29 | .34$ ) and higher grit than escapist players ( $d = .20$ ). In turn, the escapist players reported the most symptoms of school burnout compared to both achievers and recreational gamers ( $d = .37 | .28$ ). In the 8th grade sample the achiever game players showed slightly higher school belongingness than the escapist game players ( $d = .29$ ), a medium effect higher academic buoyancy than the escapist game players ( $d = .43$ ) and lower school burnout than escapist game players ( $d = .39$ ).

Discussion

The results presented above have three important takeaways, discussed below in detail. First, our three game player motive profiles have

**Table 5**

Auxiliary models: 8th grade. The PW (pairwise) column indicates which profiles differ statistically significantly from each other with Benjamini-Hochberg –correction.

		escapist		achiever		recreational		n	chi-square	df	p	PW
		Mean	SD	Mean	SD	Mean	SD					
<b>BACKGROUND</b>	Female	.50	.50	.37	.48	.52	.50	833	1.39	2	.006	1! = 2; 2! = 3
	Economic situation	4.42	.81	4.47	.84	4.32	.81	620	3.00	2	.223	
<b>GAMING BEHAVIOUR</b>	Gaming hours	2.89	1.61	3.39	1.82	2.66	1.49	855	17.23	2	.000	1! = 2; 2! = 3
	Playing to kill time	3.25	1.33	2.92	1.47	3.22	1.07	858	5.58	2	.061	-
	Playing alone	4.70	1.91	5.61	1.88	4.99	1.65	857	2.36	2	.000	1! = 2; 2! = 3
	Playing with friends	5.61	1.45	5.51	1.78	5.19	1.57	858	8.65	2	.013	1! = 3
	Playing with unknown others	4.19	2.33	4.93	2.36	4.38	2.04	855	9.19	2	.010	1! = 2; 2! = 3
	Editing game characters	3.68	1.86	3.81	2.03	3.77	1.65	848	.34	2	.843	-
	Editing game	2.62	1.79	2.66	2.00	2.68	1.74	849	.09	2	.954	-
	Creating game content	2.05	1.80	1.50	1.33	1.89	1.48	848	1.24	2	.006	1! = 2; 2! = 3
	Creating games	1.55	1.41	1.39	1.10	1.50	1.14	848	1.49	2	.476	-
<b>DIGITAL ENGAGEMENT</b>	Bonding online social capital	3.22	1.34	3.35	1.44	3.21	1.14	856	1.18	2	.555	-
	Bridging online social capital	3.46	1.13	3.44	1.25	3.33	.92	855	1.84	2	.398	-
	Problematic internet use	3.30	1.16	3.03	1.22	3.21	1.04	850	4.37	2	.112	-
<b>INTERNALISING SYMPTOMS</b>	Loneliness	2.44	1.17	2.00	.96	2.25	.99	630	9.64	2	.008	1! = 2; 2! = 3
	Depressive symptoms	1.96	.75	1.62	.69	1.77	.69	620	13.16	2	.001	1! = 2,3
<b>ACADEMIC ADJUSTMENT</b>	School belongingness	3.52	.90	3.77	.85	3.64	.77	857	8.45	2	.015	1! = 2
	Academic buoyancy	3.92	1.58	4.65	1.77	4.26	1.41	624	11.53	2	.003	1! = 2
	Grit	3.32	.81	3.45	.80	3.38	.81	624	1.35	2	.509	-
	School burnout	3.08	1.03	2.65	1.16	2.84	1.06	620	9.22	2	.010	1! = 2

similarities with previous player profile research, suggesting broader phenomena. Second, there are small differences between profile groups outside of play motive, suggesting the limited impact of gaming on the measured variables. Third, the largest profile is characterised not by achievement or mood management, but by a lack of such distinctive game play motives. This important group receives little attention in either the field of game studies or research into problem gaming.

*Different playing profiles*

The results show that different gaming tendencies can be discerned in young adolescents. Our results indicate three differing gaming motive profiles: recreational game play, achiever game play, and escapist game play. These three profiles are similar to those identified by Wang et al. [9] in their one year longitudinal study of the gaming motives of adolescent boys (aged 16–17) playing MMORPGs in China. We found similar motive profiles in Finland among 11–14 year olds of various genders, which suggests a broader trend in adolescents’ gaming motives.

While both achievement and escapism have been repeatedly identified as common gaming motives (e.g. [6,9,36]), similar to the results of Wang et al. [9], a profile focused on socialising was not identified in the data. This can be considered somewhat surprising, as the maintaining and creation of social relationships has previously been identified as a common motivator for gaming [5,36]. There are several possible reasons for this. Playing games with friends was very common for our respondents, and it may simply be that social gaming is such an integral aspect of their gaming that it does not appear as a distinct profile. Another possible explanation is that due to the age of the participants they met most of their friends face to face during school days, reducing the importance of social gaming motives (cf. [26]).<sup>3</sup>

In the 6th grade sample, the escapist group differed from the two other groups. On average, players in this group were more likely to play alone than in the two other groups, exhibited more depressive symptoms and loneliness and lower school belongingness, and were more prone to excessive internet use. Taken together with previous research [9], this suggests playing games for mood management, sometimes possibly to excess. At this stage of the research, causality cannot be inferred: the results do not reveal whether mood management with gaming helps deal with life problems, causes them, or whether both hold true. However,

some previous findings do suggest that it is more likely for excessive gaming to be a result of life problems (e.g. [11,33,67]) and thus might reflect a form of coping or emotion regulation [66,68], either adaptive or maladaptive. It is important to keep in mind that escapism does not automatically imply problems or maladaptive coping (cf. [9]). Instead, it is precisely the escapist aspect of gaming that many players cite as being positive for their mental well-being (e.g. [69,70]), and the results also suggest that for many players in the escapist group gaming is an enjoyable and relaxing, sometimes solitary activity. Playing alone is not necessarily a sign of loneliness, but can for example simply indicate a preference for single-player games or for enjoying gaming in private.

In the 8th grade sample the most pronounced differences were between the achiever and the escapist groups, while the escapist group mostly aligned with the recreational players. In this sample, players in the achiever group were slightly more likely to report longer playing hour and to play with both friends and strangers. It is important to note here that the respondents in the recreational player group did not significantly differ from the two other profiles in terms of time spent gaming (cf. [9]) or who they played games with.

The better academic adjustment scores in the achiever group compared to the escapist group, present in both samples, warrant a mention. While there is likely no single explanation, it is plausible that adolescents who enjoy competition and achievement in gaming may also enjoy those elements in education. A previous study of Finnish high school students [71] found negative connections between gaming and school grades, as well as a link between intense gaming and avoidance of academic participation. However, success-oriented students as well as those students with no dominant achievement orientation were also likely to be active game players. Viewed alongside our results, this suggests a complex interplay of factors, of which gaming motives are just one (see [72]). For example, as respondents in the escapist group also reported higher levels of depression and loneliness, some of the differences in academic adjustment likely also depend on differences in life situation, family support, and overall psychosocial well-being.

Taken together, the differences that were found suggest that players with the escapist profile are somewhat more likely to be associated with alienation from school, loneliness, and depression. However, especially in the 8th grade sample the escapist player group typically did not differ from the recreational player group. Instead, the main differences were with the achiever group. The recreational profile complicates the matter as it sometimes aligned with the escapist profile, sometimes with the achiever profile.

<sup>3</sup> Note on COVID-19: In the Helsinki area schools stayed open throughout the autumn term in 2020 when the data was collected.

### *Effect sizes show small differences*

Although the profile groups differed in terms of gaming behaviour, digital engagement, internalising symptoms, and academic adjustment, effect sizes ranged mainly from small to medium. This finding suggests that while a connection exists between gaming motives and a variety of well-being metrics, their potential “real world” impact, whether positive or negative, should not be overstated. This is in line with previous research (e.g. [73]) that shows the limited impact of screen-based media use on well-being. As the role of digital technology, gaming included, in young people’s well-being is a hotly contested topic (e.g. [73–75]), it is vital to remember that there is a large quantity of variables impacting young people’s well-being, and digital media use is only one of them – and likely a fairly minor one on a population level.

While the effect sizes reported are mainly small, they are not negligibly so, and warrant acknowledgment and further exploration. The effect sizes reported here may very well be practically important in the long run [76]. Many of the relations reported, such as the interplay between gaming, escapism, and internalising symptoms, find purchase in earlier research and contribute to our broader understanding of young people’s digital gaming. This kind of knowledge is not simply important because of utilitarian framings of well-being or academic achievement: gaming is an important part of contemporary adolescence, and deserves exploration in itself. Having a more complete picture of this phenomenon is of considerable importance to parents and professionals alike. It is also crucial to point out that averages do not equate to individual experiences (e.g. [77]). Whether positive, negative, or both, on an individual level gaming can have a major impact (e.g. [20,72]).

The small effect sizes also suggest the artificiality of player groupings: while these are useful analytical tools and allow us to make some sense of general game play tendencies, they are also vastly simplified abstractions of complex human behaviour. We address this next.

### *Escape, achievement – and everything else*

While the results show three different groups, the practical relevance of these distinctions needs to be considered. It is tempting to view these different groupings as strictly delineated categories of different players, perceivable in everyday life, but it needs to be kept in mind that in reality they are a data-based model of game play motive profiles. The difference is not simply semantic, but ontological: instead of viewing an individual player as being for example an “escapist”, a more or less essentialist definition, we wish to draw attention to gaming motives as ambiguous and shifting.

The ambiguity of gaming motives is most apparent in what we have named the ‘recreational gaming profile’. In this profile, the most common in both samples, there is no single defining motive for game play. The finding highlights a key challenge in categorising players and game play, as a large segment of game players may be overlooked because they represent a baseline “ordinary player” (see [78]), typically visible only as a point of comparison. With much of the research on young people’s digital media use taking a concern-centric approach (Orben et al. 2020) or focusing on utilitarian benefits such as learning (e.g. [79]), gaming that does not stand out with clearly negative or positive outcomes can become “just gaming”, discounted in problem-centred research and game studies alike due to its unexceptionality.

It is understandable that in the field of game studies research often focuses on people for whom playing games is a particularly meaningful part of their lives and identity. Such people, exceptions from the majority, self-select into the surveys and interviews, they are vocal in public discussions, and they are visible as experts and in game-related jobs. They shape the culture of games in numerous ways, and it makes sense for game studies to be particularly interested in this group. Comparably, researchers looking into adverse outcomes of gaming also concentrate on players exhibiting such outcomes in their analyses. Such players again represent exceptions from the majority – and, again, it makes

sense for problem gaming research to concentrate on players exhibiting problematic behaviours and patterns. However, even while such research, in both game studies and problematic gaming research, is indicative of the different meanings of game play in important ways, both paint only a partial picture, and one defined by stark contrasts.

Not all, or even most of, gaming is important or central to the people playing games. Our recreational motive profile and previous research (e.g. [70,80–82]) show that gaming can often be quotidian, boring, interchangeable with some other activity, and simply not that big of a deal. Making this kind of recreational, non-specific game play motive visible is important, as it represents the common and possibly unremarkable experience shared by countless players. While it may not immediately seem particularly juicy from a research perspective, ignoring this everyday aspect of gaming risks disregarding the experiences of large groups of respondents, detaching gaming from its surrounding everyday life, and framing gaming, especially young people’s gaming, as a simplified balancing act between beneficial and detrimental outcomes. Gaming is a phenomenon already saddled with extremes; stereotypes [83,84], marketing hype [85], and moral panics [17], and research should strive to introduce more complexity and nuance, not less. Gaming does not have to be a defining part of an individual’s life in order to be important.

### *Moving beyond categories for methodological–substantive synergy*

Although players certainly have preferences for different ways of gaming, they are not mutually exclusive [7] and the results of the present study should not be seen as monolithic to avoid simplifying our understanding of game play practices. Already in 2009, Kallio, Mäyrä, and Kaipainen [86] noted that attempts to sort game players into categories according to their gaming habits and styles quickly resulted either in too many categories or categories that were too heterogeneous for any practical purposes (see also [72,87]). We endorse a similar view, and suggest that rather than categories of players, the profiles discussed in this study should be viewed as general latent play mentalities or tendencies. They are statistical models useful for establishing an overview of different approaches to game play and the probabilistic associations of these approaches with a variety of well-being outcomes; they are not deterministic descriptions of homogeneous player groups or individual game players, nor do they address all documented motives for playing digital games.

Game play is highly contextual [80,87,88] and the same player may well enjoy both escapism and achievement – and these two by no means rule each other out. Yee’s [6] early exploration of gaming motives was done with the goal of challenging the collapsing of all digital game players into a simplistic archetype. Similarly in current research we need to be wary of collapsing all players into several, only slightly more complex, archetypes. While previous research has shown that motives are relevant for understanding gaming, it is equally important to remember that in reality gaming is impacted by many factors besides individual motives (e.g. [25,70,72,89]), and by extension, so are its outcomes. Digital game play is not a separate, disconnected sphere of life, but an integrated and mundane part of an individual’s everyday life [70,80,81,88]. It follows that the impact, or non-impact, of gaming on well-being depends on a wide range of factors related for example to an individual’s life situation, gaming habits, and overall well-being, as well as which dimensions and markers of well-being are being explored. Adding more complexity is that what is often referred to as “digital gaming” is not a homogeneous activity but contains a wide variety of ways of playing [87], differing for example in intensity, the social situation of play, time spent, and the game played.

Our study reveals interesting connections between gaming motives and a variety of outcomes, and we will continue longitudinally exploring them through quantitative data, all of these connections would benefit from further, more detailed qualitative exploration through interviews, writing tasks, and open-ended questionnaires. Even large sets of



quantitative data simply lack nuance and fail to determine crucially important directions of causality. Previous qualitative explorations of young people's gaming have shed light on the dynamics of digital game play and well-being (e.g. [19,20,26,70,90]), and these approaches are needed to paint a fuller picture of a complex phenomenon by for example charting the experiences of people who strongly endorse specific gaming motives to discern how well actual experiences align with statistical abstractions.

As a final note, we wish to draw attention to the naming of profiles in future studies. While in this study we have followed previous research for easier comparison, the names chosen for the profiles are not without their issues. Escapism may carry negative connotations as it can be seen as primarily avoidance coping rather than enjoyable relaxation (see [91]), suggesting that playing for escapist motives is inherently problematic (cf. [66]). In contrast, achievement is often seen as a positive and denoting success, even though a goal-oriented drive to achieve can also have negative consequences, reflected in for example work-related burnout ([92]).

Arguably the most challenging profile to name is that of gaming characterised by casual, less intense game play motives. It is easy to fall into the trap of conceiving this profile only as a more muted, less important version of the other two. In existing literature this kind of engagement is often referred to as "casual", but we have avoided the word as it already has multiple meanings both in game studies and the game industry, and often has negative connotations ([93,94]). Although we followed previous literature (e.g. [8,9]) by calling the profile "recreational", the term lacks accuracy, as likely practically all the gaming described in this study is recreational, done primarily for enjoyment as opposed to for example professional esports gaming (see [95]). As gaming is studied across disciplines, the importance of accurate, unified terminology increases.

#### Strengths and limitations

This study represents the starting time point of a longitudinal study, and the initial results do not reveal causal relationships between the items studied, an issue our longitudinal setup will address in later publications. While future studies will provide us with more knowledge on the potential causal relationships between gaming and other life areas, we have published these initial results because of their contribution to our knowledge of adolescents' gaming in general, and Finnish adolescents' gaming specifically.

We consider our rich visualisations to be a key strength of our study. Person-oriented models such as presented in this study are often presented by only visualising the central tendencies of each profile. This gives the false impression of a homogeneous group following an identical pattern, whereas in the present study we attempted to provide a more nuanced picture by visualising (Figs. 1 and 2) also the distribution of the individual responses to show that not all participants with a high probability to reflect a certain profile follow an identical pattern. Moreover, it is important to understand that in mixture models a participant has a certain probability to belong to all classes – the allocation of participants to profiles is not mutually exclusive.

As for limitations, we have been forced to rely on self-assessment of gaming behaviour, while acknowledging that self-assessments of digital media use can differ wildly from actual use [96]. Because of this, as well as their limited use in assessing psychosocial outcomes [8,34], gaming amounts have been given limited consideration in the study. Although our data clearly indicates that gaming is used to manage negative moods, we do not know how severe the "bad feelings" reported by the respondents are. Because of differences in individual interpretation, they can conceivably range from minor frustrations and annoyances to severe anxiety or depression, and we have avoided making assumptions on the matter. This highlights the need for qualitative and mixed-method studies regarding young game players' psychosocial well-being.

To conclude, our work on gaming is part of a much larger survey study of Finnish adolescents, which has both limited the number of questions and items assessing gaming and necessitated the use of certain measuring instruments to maintain comparability with earlier work despite them not being optimal. For example, problematic digital technology use cannot be conflated with problematic digital gaming, but was used as a stand-in measure as it was not possible to include a dedicated problematic gaming instrument. In the gaming culture engagement item, we could only include a limited selection of ways to engage with gaming culture. Although the items describe common ways of game culture participation going beyond game play (e.g. [97,98]), they all focus on creativity aspects of participation, leaving out important activities such as engaging with gaming on social media, buying games and gaming merchandise, or following video content. Similarly, the limited number of items for assessing gaming motives means that our profiles are by no means an exhaustive listing.

#### Conclusion

Based on our data we constructed three profiles to make sense of the general motives of adolescents who play digital games: recreational gaming that is marked by a balance of different motives, escapist gaming in which using games to manage moods is prevalent, and achievement-oriented gaming where succeeding in the game and skill building are central. Our results suggest that these motive profiles are to some extent connected to well-being outcomes, but further exploration using both qualitative and quantitative methods is needed to discern the practical differences between them.

#### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

#### Data availability

The authors do not have permission to share data.

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#### Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.teler.2023.100104](https://doi.org/10.1016/j.teler.2023.100104).

#### Appendix A. Questions assessing digital gaming

##### 13. How often do you play digital games?

13.1. I play games on my own

13.2. I play games with people I know

13.3. I play games with other gamers whom I don't know

Rate on a scale:

1 = Never

2 = A couple of times a year

3 = Once a month

4 = A couple of times a month

5 = Once a week

- 6 = A couple of times a week  
 7 = Daily
14. *How often do you play digital games?*
- 14.1. I customize my character (e.g., appearance or name)  
 14.2. I customize the games I play (e.g., create new maps, levels, or quests)  
 14.3. I create content related to gaming (e.g., fanfic, drawings, cosplay)  
 14.4. I design and/or create my own games
- Rate on a scale:
- 1 = Never  
 2 = A couple of times a year  
 3 = Once a month  
 4 = A couple of times a month  
 5 = Once a week  
 6 = A couple of times a week  
 7 = Daily
15. *How well do the following statements about gaming describe you?*
- 15.1. I play games so I can be in peace and have a chance to be by myself  
 15.2. I play games to relax  
 15.3. I play games to help me with my bad feelings  
 15.4. It is important for me to develop as a gamer  
 15.5. In games, I enjoy competition and challenges  
 15.6. Games give me experiences of being capable and successful  
 15.7. Gaming is an important hobby for me  
 15.8. Gaming is pretty much killing time for me  
 15.9. I play games to keep in touch with my friends  
 15.10. I play games to get to know new people
- Rate on a scale:
- 1 = Completely disagree  
 2 = Mostly disagree  
 3 = Neither agree nor disagree  
 4 = Mostly agree  
 5 = Completely agree
16. *How many hour do you usually play games during a week?*
- Less than 2 h  
 2–7 h  
 7–14 h  
 14–20 h  
 20–40 h  
 40–60 h  
 More than 60 h

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