DOKTORI (PHD) DISSZERTÁCIÓ

Lajtai Ádám

The Potentials of Video Games in the Process of English Language Learning and the Practice of Language Teaching in the Hungarian Context

2022

EÖTVÖS LORÁND TUDOMÁNYEGYETEM
PEDAGÓGIAI ÉS PSZICHOLÓGIAI KAR

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DOI-azonosító: 10.15476/ELTE.2022.068

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Budapest, 2022

Acknowledgements

I would like to express my heartfelt gratitude to my supervisor, Brigitta Dóczi, for guiding me throughout my PhD dissertation project and for encouraging me to pursue doctoral studies after my completing my MA degree. Her practical attitude towards the requirements always helped me to regain my composure, push forward and only focus on what matters.

Also, I am thankful for the work of Kata Csizér for helping me learn everything that I know about research methodology and statistical analysis; without her help, I would never have been able to function as a researcher. I wish to extend my special thank so Éva Illés, whose encouragement helped me decide to conduct research in relation with the world of video games.

I also wish to acknowledge Krisztina Károly and Dorottya Holló, the Head and Director of Studies (respectively) of the Language Pedagogy Doctoral Programme for the immense amount of work they put into nurturing aspiring researchers and helping them through the maze of technicalities that is a part of being a doctoral student.

Furthermore, I am forever thankful to Nóra Nagy for our long theoretical discussions about language learning, knowledge and practice, which always gave me a short boost of motivation to do research and write.

I would also like to thank all the people who were respondents or interview participants in my research, and also the schools and colleagues who helped me organize the data collection.

I also wish to thank the leadership of Szabó Lőrinc Bilingual School (Tünde, Kinga, and Szilvi) for their support and understanding whenever I needed to take a couple of days off to collect data, to attend conferences, or to write my dissertation.

Lastly, I would like to thank my mother, without whose undying support I would never ever have got this far.

Abstract

Video games have been a part of popular culture since the mid-1970s; but despite the fact that the overwhelming majority of video games are in English, research interest in video games and their affordances for English language learning has only been growing in the last ten years. Although numerous studies have tested and affirmed the possibility video games provide for learners to acquire vocabulary, research dealing with the exact nature of the linguistic input and interaction in video games and the changes successful language use in games might bring about in language learners self-efficacy has been relatively scarce. Furthermore, apart from few examples, academic research has not focused on how commercial off-the-shelf (COTS) video games may be put into use in the language classroom and what obstacles hinder their implementation on the language teachers' side. Adopting a the theoretical framework of self-efficacy based in social learning theory (Bandura, 1986, 1988) and beliefs (Pajares, 1992), the studies presented here used a mixed methods design to understand teachers' beliefs, attitudes and experiences with video games and their usefulness for language learning via teacher interviews (N = 8); to understand the affordances of games through quantitative data from questionnaires and expert gamers' judgments; and to discover possible differences in the self-efficacy beliefs, outcome expectations, self-authenticity and motivation of gamers and non-gamers using a large sample (N = 461) questionnaire.

The study found important connections between teachers' first- or second-hand experiences with video games and attitudes towards them regardless of their age using the interview data and subsequent regression analysis from quantitative data. Furthermore, the study investigated Hungarian gamer-learners' interactions with the English in the in-game and beyond-game contexts and - using experts' judgments – focused on compiling a list of factors useful for evaluating the linguistic affordances of video games. Lastly, the investigation revealed significant differences ($p < .05$) between the self-confidence, motivation, engagement and outcome expectations of online gamers, offline gamers and non-gamers, and presented two structural models for the understanding of the relationships between a number of variables although the model was not deemed adequately valid to assess multi-group differences. The study concludes with implications for implementing video games into pedagogical practice and suggests directions for further research based on the data.

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1 Introduction

The last two three decades have brought about profound changes related to the practice of English language teaching and the process of language learning. Earliest empirical studies in the field of second language acquisition in the 1960s and 1970s were mostly conducted in contexts where English was an official second language or where immigrant learners were either keen or forced to learn English. Today, in contrast, due to the increasing permeation of English in cultures around the globe through the proliferation of the internet, social media, the overall process of globalization and inescapable English-language cultural artefacts, the settings for natural or naturalistic second language acquisition coveted by many since the studies of Krashen (1981, 1983, 1985) have spread to most countries in the world.

Possible language learners are increasingly gaining access (intentionally) and exposure (incidentally) to the English language. Settings that could foster language learning are accessible to learners either entirely or partially without having to leave the comfort of their couch, or, gaming chairs for that matter: As an example, the streaming service *Netflix*, offering thousands of hours' English-language entertainment and thus audiovisual input, is today available in over 190 countries worldwide; furthermore, day-by-day millions of gamers – young or old, boys or girls – play online games mediated by English, through which they may form friendships with other gamers countries apart or create English-language gaming content for a variety of native- and non-native speakers of English. A prime example, the now slightly notorious YouTuber, the Swedish PewDiePie started out as a comedic reviewer of video games in his second language English and has since received over 100 million subscribers and 24 billion video views, making him one of the most influential internet celebrities.

Video games have been a part of popular culture since the arrival of the arcade table tennis game *Pong* in 1972. Since then, the video game industry has surpassed films and music

in its overall revenue (Chatfield, 2009). Movies have been adapted into video games, and video games have found their way into the movie theatres as well; and since 2004, the British Academy of Film and Television Arts (BAFTA) has been honouring outstanding video games annually in the British Academy Games Awards. For about two generations of people, video games have already become as integral parts of everyday life as films or music.

1.1 Rationale

Crucially, however, the overwhelming majority of these computer games are developed in English and are played in English throughout the world, allowing for hundreds of millions of players to engage in a highly immersive and interactive activity that is mediated through English, which should theoretically serve as an excellent source of input for language learning. Arguably, most people in Hungary have heard anecdotal evidence about gamers who "learnt all their English playing video games." One such example in small corner shop in downtown Budapest served as a primary inspiration for the research presented here. When a man in his thirties was asked by the cashier (apparently his friend) where he had learnt his English, he replied with "Well, I played a lot of *GTA* and I grew up in the 7th district."

Although English language video games have been an integral part of our lives for decades, research interest into the affordances of video games for language learning has only gained momentum in the last decade. With first of a kind studies, Sundqvist and Sylvén (2012, 2014, 2016; Sylvén & Sundqvist, 2012) showed gaming to be an out-of-school activity highly conducive to language learning, while Henry (2013, 2014) directed attention to gamers' sense of self-authenticity, self-efficacy, and possible negative attitudes to learning motivation. Furthermore, Chik (2012, 2013, 2014), investigating autonomy and beyond-game English language use and teachers' beliefs about the possible language learning opportunities in video

games. Lastly, the work of Reinders (2012) must be highlighted, who edited the first ever volume on the topic of digital game-based language learning.

The growing interest in video games and language learning has spurred research in the topic in the last 10 years. The majority of the resulting studies focused on language proficiency (mostly vocabulary) gains in largely uncontrolled quasi-experimental designs (e.g. Sundqvist, 2009), or only made important remarks about how video games might influence a number of individual difference variables which might lead to positive or potentially negative outcomes for language learning (e.g. Henry, 2013, 2014). A number of other studies (notably, Reinders & Wattana, 2012, 2014, 2015; Sundqvist & Wikström, 2015), however, have put games and their direct impact on language learning under scrutiny.

Nevertheless, as the amount of evidence lending support to the highly useful nature of gaming is growing, commercial off-the-shelf (COTS) video games have yet to enter the language classroom (Blume, 2019). Teachers' reluctance to tap into the opportunities of video games may be explained by a lack of resources and time, but also by a general lack of experience with video games, a deficient understanding of what gaming entails and how language learning may benefit from it, and arguably a number of stereotypes related to video games (eNet, 2019).

However, as Blume (2019) notes, it is imperative that teachers' beliefs about video games and game-based language learning are understood and possibly formed to accommodate new techniques, knowledge and a range of new motivational strategies in a world where English is increasingly more easily accessible outside the school context (Henry et al., 2018).

1.2 The Aims of the Research

The studies presented in the following dissertation focus on three main clusters of questions related to video games and language learning. Firstly, a mixed-methods qualitative

to quantitative design will attempt to uncover teachers' experience with gaming and how their attitudes and openness to using or recommending video games for language learning. Secondly, based on questionnaire data from students, a list of commonly played video games will be compiled and analyzed by two gaming experts for the importance of language use. Lastly, a large-scale sample will be used to evaluate gamers, or "gamer-learners", language learning motivation, self-efficacy beliefs, outcome expectations from learning and related variables, which will be used as a point of contrast with non-gamers and as a basis for structural equation models addressing the issues of outcome expectations, attributions and self-authenticity in language learning.

Hopefully, the general learning and language learning theories discussed in the review of literature combined with the findings related to the above aims will be able to provide a basis that can serve as a springboard for further research into the topic, most importantly in the Hungarian context, which, despite being home to more than 400.000 "hardcore gamers" (eNet, 2019) and potentially more than a million casual gamers, sorely lacks empirical data on the topic.

1.3 An Overview of the Dissertation

The following parts of the dissertation are divided into five chapters. Chapter 2 reviews the literature relevant to the study. The first section of Chapter 2 gives an overview of what video games are, how the term video game is operationalized in the study and what gaming entails. The second section of Chapter 2 is devoted specifically to learning theories and how they may be used to understand video games. The third section moves on to discuss language learning theories and how potential language learning in video games might be understood. The fourth section delves into individual difference variables which might influence learners intake from gaming and self-efficacy beliefs connected to language learning, while the final

section elaborates on what roles teachers might play in the world of English language teaching that is increasingly dominated by technology and out-of-school affordances.

Chapter 3 outlines the research methodology used in the dissertation, addressing such issues as the rationale for the mixed methods research design, the selection of participants, the instruments including the interview protocol, two questionnaires and the related procedures, as well as steps of data processing and analysis.

Chapter 4 contains the description of the results of the study along with discussions which places the results into the context of extant findings of previous research studies.

In Chapter 5, the conclusions and implications (both research-related and pedagogical) are considered along with possible lines of future investigations. Following the references, the appendices include the instruments used for data collection (interview protocols and questionnaires) and some structural equation models, which were not presented in the results, but may serve as a basis for further research and replications.

2 Review of Literature

Theoretical studies on the topic of video games (Young et al., 2012; Qian & Clark, 2016) reviewed and performed a meta-analysis of over hundreds of papers on the topic and explained that while numerous studies regarding games and game-based learning point to the game-induced gains in affective, cognitive and motivational domains, "21st century skills" and knowledge in general. However, both articles warned that finding significant differences in motivation or knowledge acquisition does not necessarily lead to increasing embeddedness of game-based learning into education. It is emphasized that for successful utilization of gaming in learning, research on the topic must be rooted in theories of learning and must focus on understanding the intricate relationship of factors that contribute to learning in a game-based environment, especially after the findings of Wu et al. (2012), who noted in a review of more than 500 studies that most studies that had strong theoretical underpinnings in learning theory yielded more convincing and positive results. Furthermore, Van Eck (2007) notes that one of the key reasons games are not used in classrooms discounting time, money and resource constraints are the lack of theory-based research on gaming and learning and the resulting lack of guidance for learners and teachers. Therefore, through a rigorous review of theories of second language learning and learning in general, mainly – based on the suggestions of the above studies – Vygotskian sociocultural theory (1962, 1978, 1986) and Bandura's social cognitive theory (1986, 1988); and with a view to producing tangible practical advice for teachers, this dissertation hopes to be part of the remedy.

The present review of literature chapter is divided into five major sections. Section 2.1 presents why video games are a topic worth investigating in the framework of learning theories, while the following Section 2.2 goes into the fine details of what language learning opportunities video games might afford with relation to language learning theories.

Subsequently, Section 2.3 approaches video games from the perspective of cognitivist theories of second language acquisition in order to present the theoretical basis of implicit learning from computer games. Section 2.4 presents a number of further individual difference variables that have been found to have an important effect on the rate of successful second language acquisition. Lastly, Section 2.5 discusses the possible role of the language teacher in fostering learning from video games and a list of potential factors hindering teachers from doing so.

2.1 Video Games and Learning

Although video games have been an integral part of popular culture since the mid-1970s and have developed into a multibillion-dollar industry that according to some statistics has already surpassed film and music industry (Chatfield, 2009), it was only in the last decade and a half that they have gained considerable currency in pedagogical research. Furthermore, in light of the fact that recent large-sample surveys (Common Sense Media, 2015; Entertainment Software Association, 2015; Gametrack/Ipsos, 2016) have shown that gaming has become one of the most popular pastimes in the United States and the European Union, with teens playing games an average of 1,5 hours a day, it is deemed justifiable that the amount of research in language pedagogy should be commensurate with the degree of importance gaming has gained in the last decades. An important milestone in this direction has been Reinders' (2012) edited volume on the issue, which presented the state of the art in research into digital gaming for foreign language learning. A great number of studies investigating the use of educational, second language pedagogy-purposed games, which Reinhardt and Sykes (2012) have termed *game-based learning/pedagogy* (*game-mediated* being the overarching hypernym), have yielded convincing results and presented thought-provoking pedagogical implications; however, arguably these have outnumbered studies based on *game-enhanced*

learning/pedagogy, i.e. the application of commercial, off-the-shelf (COTS) or 'vernacular' games in the learning and teaching process (Reinhardt & Sykes, 2012).

This latter branch of research has produced significant findings pertaining to the affordances of playing COTS video games in relation to cognitive (Reichle, 2012) and affective (Chik, 2012; Reinders & Wattana, 2012) factors, and linguistic competence (Sundqvist & Sylvén, 2012) in general. Nevertheless, articles concerned with how game-enhanced learning is informed by language learning theories and learning-related research have been relatively sparse, with Filsecker and Bündgens-Kosten (2012) and Reinhardt and Thorne (2016) being two notable exceptions. Importantly, tapping into what language learners do in their free time has also become a prominent field of research, with numerous studies (Persson, 2011; Piirainen-Marsh & Tainio, 2009; Sundqvist, 2009; Sundqvist & Sylvén, 2012; Sylvén & Sundqvist, 2012) pointing out the importance of outside-the-classroom or *extramural* (Sundqvist, 2009) language learning.

2.1.1 Video Games and the Scope of the Study

An important term that needs to be defined beforehand pertains to what a *game* and what a *video game* is. As a summary of a variety of closely-linked definitions (Prensky, 2001; Salen et al., 2004; Shute, 2011), *games* may be defined as activities governed by pre-set rules involving an element of conflict and challenge that induce goal-oriented behaviour in the players, who interact with the game and other players and get constant feedback from them. The Encyclopaedia Britannica (Lowood, 2017) defines a video game as "any interactive game operated by computer circuitry" (para. 1.), with a distinction being made between the terms *video games* referring to the totality of platforms on which games can be played, including "computers, arcade consoles, video consoles connected to home television sets, handheld game machines, mobile devices such as cellular phones, and server-based networks" (para. 1.), and

computer games, which usually only refer to the narrower circle of games played on personal computers. The term *digital game* has also been applied in the field of educational research to refer to video games most probably as a way of distinguishing between video games that are played for entertainment purposes or *casual games*, and digital games that are used as an umbrella term for all types of electronic games, including casual games, *serious games,* which are usually simulations played not exclusively for entertainment purposes and *educational games* specifically designed for instruction (Breuer & Gente, 2010).

2.1.2 Commercial Off-the-shelf Video Games and the Gaming World

However, the present dissertation uses the word video game to refer to its matter of investigation firstly due to the scope of the study covering *commercial off-the-shelf (COTS) video games* (which include casual games, but exclude serious and educational ones), and secondly due to the fact that a considerable number of scholars (Benson & Chik, 2011; Sundqvist, 2011; Sundqvist & Sylvén, 2014; Sundqvist & Sylvén, 2012; Sylvén & Sundqvist, 2012) have also preferred the term video game in their studies. Besides, another important term to be defined is that of *gaming*, which the Cambridge Advanced Learner's Dictionary defines as “the activity of playing video games” (Cambridge, n.d.) , however, the present dissertation will restrict the use of gaming to refer to the playing of COTS video games. COTS video games come in all shapes and sizes, and different game genres cater for a highly varied group of users.

In terms of gender, reports show that the gaming community, contrary to popular beliefs of it consisting of predominantly male teenagers, shows high variance in age and gender: including men and women alike from as young as 6 years old to those in their 50s or 60s (ESA, 2015, 2019; Gametrack/Ipsos, 2017; Gametrack, 2019). The latest reports from the American Entertainment Software Association (ESA, 2019) that surveyed adult gamers show that the gender distribution among players is not as skewed as in popular belief, with an 54:46 male-

to-female ratio of gamers, a ratio that also holds true for all age groups according to a GameTrack report (2017). The GameTrack report also reveals that although there is a slight increase in the number of female players as they age, a modest difference persists in favour of male players. However, the ESA results also show that there is a marked gender-based difference in player profiles with male gamers aged 18-54 preferring racing, sports and shooter games, while female gamers of the same age group prefer racing casual racing games, puzzle, card and party games. Besides, males predominantly use personal computers (PCs) or gaming consoles (such as a PlayStation or an Xbox) for playing, compared to women who prefer games on smartphones and tablets. Reports from GameTrack (2019) shed light on the gaming among children in the European context with large scale surveys from the five most populous EU countries (France, Germany, Italy, Spain and the UK). The GameTrack (2019) survey shows that 76% of children between the age of 6 and 15 play video games on at least one device, with a discernible increase in the 11-14 age band, followed by a drop after age 14.

2.1.3 Video Game Genres and In-game Language Learning Affordances

This variety of casual COTS game genres may be divided into two broad categories based on the number of players involved (Sundqvist, 2013): firstly, *single-player games* (e.g. *The Elder Scrolls: Skyrim*, *Fallout*) where human players act alone against or in cooperation with computer-mediated elements, such as computer-controlled second players (often called "bots") or non-playable characters (NPCs), and secondly, *multiplayer games* (e.g. *World of Warcraft*, *Star Wars: The Old Republic*), where players play against or in cooperation with other players either through a "closed-circuit" Local Area Network (LAN) or the internet. However, it must also be pointed out that most games are not exclusively single- or multiplayer in their nature: many games that have gained fame for their single-player gaming modes have multiplayer modes as well (e.g. role-playing games like *The Last of Us* or *Grand Theft Auto*,

sporting and racing games like *FIFA* or *Gran Turismo*), and games predominantly played in multiplayer settings can also have story-driven single-player modes (e.g. the *Call of Duty* or *Battlefield* series) or can be played against computer-controlled bots (e.g. *League of Legends*, *DoTA*, *CounterStrike*). Furthermore, numerous games offer the possibility to have players playing against each other sitting in front of the same screen (e.g. in fighter, racing or sports games) and also to play in a co-operative fashion against the computer (so-called "couch co-op" games). The above discussed ESA report (2019), although conducted on a sample of adult gamers, shows that 63% of gamers play with others (p. 8) and that they engage in online multiplayer games more often than in offline multiplayer (e.g couch co-op) ones (4.8 hours to 3.5 hours, respectively).

There is a vast variety of casual game genres (Adams, 2009; Apperley, 2006) including *massively multiplayer online role-playing games* (or *MMORPGs*) (like the well-known *World of Warcraft)*, where thousands of players, assuming an in-game avatar, play together to accomplish their quests while in constant communication with other users; single-player *role-playing games* or *RPGs* (like the acclaimed *Fallout*, *Mass Effect*, or *The Elder Scrolls* series), in which players explore and interact with a vast world filled with NPCs, and where every single decision they make during the game might have a direct consequence to the storyline; *simulation games* (most famously *The Sims* series, but also including sports and business simulators) that engage players in real-world simulations; *multiplayer online battle arena games* or *MOBAs* (e.g. *Defence of the Ancients (DoTA)* or *League of Legends*) where players in teams of varying sizes must cooperate to achieve victory; or more recently *battle royale games* (e.g. *PlayerUnknown's Battlegrounds (PUBG)* and *Fortnite*), where around 100 individual players (or duos or smaller squads of 3-5) share a world, competing with all other players or squads. In contrast to casual games, *serious games* are defined as pieces of software "that merge a non-entertaining purpose (serious) with a video game structure" (Djaouti et al.,

2011, p. 2). Examples of serious games include the long-running *Microsoft Flight Simulator* series and other training games (e.g. *Pulse!*), the online virtual world *Second Life* and various serious *board and card games* such as chess, go or solitaire.

Crucially, however, for the sake of clarifying relevance to language learning, a further distinction must be made between the video games: one based on the amount, density, quality and difficulty of language encountered while playing them. Games like chess or solitaire do not involve any language other than the software's basic commands (e.g. 'Play', 'Options', 'Exit') and potentially a gaming tips section. In contrast, numerous single-player role-playing games are heavily reliant on language use: not only is the game played through a narrative that may include heavy use of texts and voice acting, but many times players' conduct with the world and other characters is language-mediated, with serious, story-deciding choices for the players to make (see *Figure 1* from *Fallout* below).

Figure 1

Conversation with a Non-player Character (NPC) in Fallout 4

Furthermore, other than the fact that MMORPGs are also made and played through the English language, as a multiplayer game they offer the opportunity for players to interact with each other through *text chat* (see *Figure 2* from *World of Warcraft* below). Furthermore, numerous multiplayer games including first-person shooter games, sports games, MMORPGs, MOBAs and battle royale games offer the possibility of *voice chat* using voice over IP (VoIP) technology. As such, any research that attempts to investigate how learners may acquire a language from video games must take into account the nature of the games that participants report to be playing according to the language used in the game.

As far as the scope of the present work is concerned, the studies conducted in the framework of the dissertation focus on COTS (commercial off-the-shelf) entertainment video games that may be single-player or multiplayer in terms of the number of people involved in gaming. Qualitative and quantitative data collection points in the dissertation all include items related to the nature and genre of computer games in relation to the English language in order to serve a basis for correlational or regression analyses and further understanding.

Figure 2

Text Chat in a World of Warcraft Guild (a group of players, here 173 players).

2.1.4 Video Game Genres and Beyond-Game Language Learning Affordances

Most research in the field of game-enhanced language learning has focused on linguistic gains through gaming experience; however, relatively little attention has been given to language learning from *beyond-game* contexts, even though these contexts have been argued to hold superior educational benefits for learning than gaming itself (Squire, 2011; Ryu, 2013). Numerous gamers engage in beyond-game receptive language use by reading online guides or watching gameplay videos to enhance their skill sets from other players' advice, or they may also be the creators of such videos, walkthroughs, guides (Gee, 2008; Ryu, 2013) or even fan-fiction (Black, 2009).This beyond-game foreign language use has been argued (Chik, 2012; Ryu, 2013) to be provide extra opportunities for learning a language on top of the incidental contact from the in-game context.

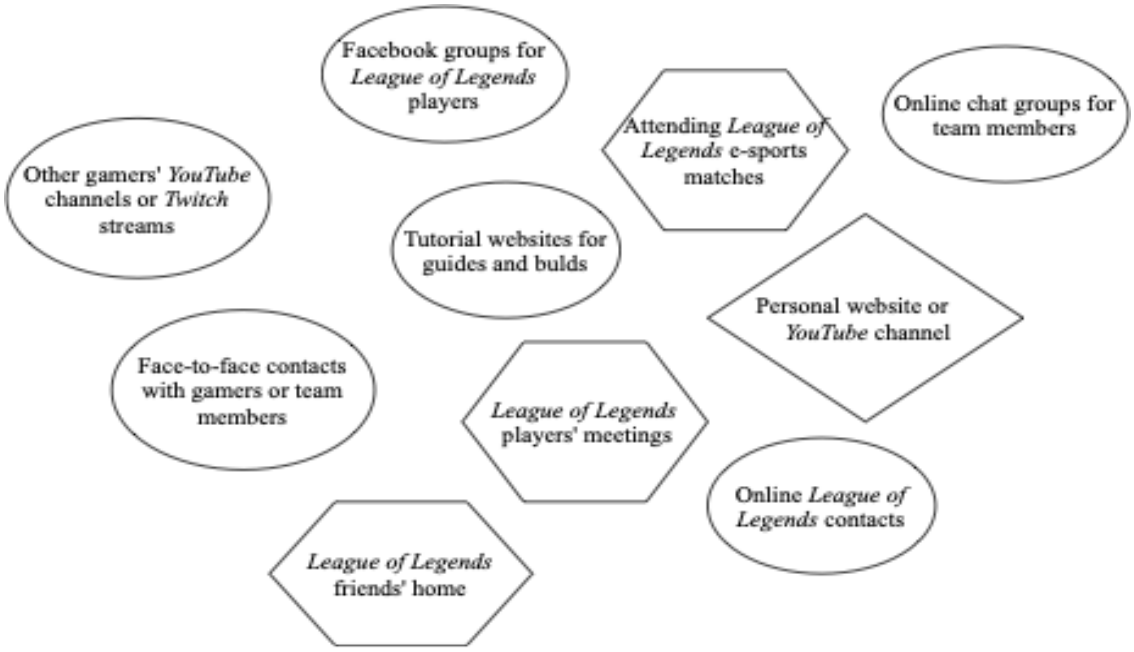
Therefore, as English-language interaction between two players may not solely happen inside the game (e.g., through text chat or voice chat), but also in online forums, Facebook groups or even in-person gamers' meetings, these environments should also be points of interest for further research on gaming-based language learning. Nevertheless, Ryu (2013) argues that the in-game and beyond-game environments cannot be artificially separated even when discussing linguistic gains as such opportunities are afforded by the general gaming culture players are parts of.

2.1.5 Video Games as Affinity Spaces for Learning

Connected to the beyond-game contexts of language use are new communities or *affinity spaces* (Gee, 2004, 2018), created by the proliferation of the internet around the world, where learners sharing an interest may get to know others and gain further affinity for the commonly liked activity and the members of the community.

Figure 3

Possible Affinity Spaces of a League of Legends Player (based on Gee, 2018).



Such environments allow learners or, in the present context, gamers to share information with each other and enhance their skills in relatively low-stakes, non-anxiety-inducing situations without having to leave the comfort of their homes (Yudintseva, 2015). These mostly intercultural affinity spaces, consisting usually of thousands of players, involve online forums, sites for guides and walkthroughs, and the sharing of advice, problems and even game-related fanfiction (see Figure 3 above for an example).

2.1.6 Video Games and Learning

As already discussed, psychological research has been concerned with video games since as early as the 1980s. Scholars at the time had already praised video games for creating an motivating form of play, where students are motivated to learn the rules and strategies of the game (Crawford, 1984), for being able to improve children's motor skills (Greenfield, 1984), and for supporting learning through hypothesis formation and generalization (Silvern,

1986), the latter two being almost invariably considered to be important concepts in theoretical models of learning (Shaffer, 1995; Vapnik, 2013; Vygotsky, 1962, 1978) and second language acquisition (Bley-Vroman, 1986; Corder, 1967; Schmidt, 1990, 1993).

Since then, video games have also been found to offer a plethora of benefits, for instance, improved adaptability (a cognitive-behavioural construct that affects how people perceive and adapt to different situations) and resourcefulness (being able to perform tasks independently through problem solving) (Barr, 2017), cognitive stimulation and systems thinking (understanding interdependent systems) on-line feedback and freedom from fear of negative consequences (Tannahill et al., 2012) that may enhance risk taking in actual language learning situations, which is also attested by willingness-to-communicate studies of gamers of Reinders and Wattana (2012, 2014, 2015).

Discussing the connections of gaming and learning, Shute (2011) convincingly argues that the exact nature of learning that is enabled by gaming is closely linked to the understanding of what makes games so enjoyable. In his seminal work, Gee (2007) identified a set of 36 key principles of the 'good' video games that the players usually engage in. The following is a summary of Gee's insights that are highly relevant to the present investigation:

- Good games focus on problem-solving, often through the use and manipulation of facts and information, but never just the memorization and retention thereof.
- Games afford learning by doing, and also reduce the cost of failure, which encourages learners to reevaluate their actions and strategies.
- Good games offer transferable skills (e.g. problem solving) that may be applied in real-world situations and later gaming situations.
- Online games connect playing to social interaction either through collaboration or competition.

- Games allow for differentiated learning as players can often set the level of game difficulty, and are – in an optimal case – not pressured to do everything as fast and well as others.
- Games provide contextualized language and meaning as input, where words are not associated with definitions or translations, but images, actions, goals, stories, places, or dialogue.

Contrary to popular belief about the engaging nature of video games, Gee (2003, 2007) argues that it is not the appealing graphics that are the key predictors to enjoyment; well-designed games enthrall players through an underlying design that is rooted in psychology. In accordance with the recommendations of Qian and Clark (2016), the following will offer an explanation of Gee's principles with a footing in the psychology of learning.

Key factors leading to engagement in gaming have been identified to be a sense of control, sense of mastery, sense of challenge, with additional factors being the need for social interaction, a sense of competition and escapism (Novak, 2005; Schute et al., 2011). Both Schute (2011) and Qian and Clark (2016) also convincingly argue that "good learning", if understood using the principles of sociocultural theory (Vygotsky, 1962, 1978) and flow theory (Csíkszentmihályi, 1975, 1990), can cater for learners' need to sense control, mastery and challenge. To further understanding on learning in games, Bandura's (1986, 1988) social cognitive theory will also be called upon.

2.1.6.1 Video games and learning in the framework of sociocultural theory. Sociocultural Theory (SCT) stems from the works of the so-called Vygotsky-Luria Circle of Russian developmental psychologists, and mainly from the writings of Vygotsky (1978) whose core idea concerns human cognition and humans' construction of the surrounding world as being "mediated by culturally organized and transmitted symbolic meaning" (Lantolf, 2012, p.

57). According to Vygotsky (1978; Kozulin, 1998), this mediation may occur using three different types of mediators: material / physical tools, psychological / symbolic tools, and other people. Of key relevance here are symbolic tools, devices used for higher-order intellectual processes (Vygotsky, 1978) that are only available to humans, including numbers or various forms of art (Guerrero-Nieto, 2007; Lantolf, 2000, 2012). Arguably, the most important symbolic tools mediating between humans and the outside world is language, which also makes humans capable of regulating specific facets of their brain functions. In other words, SCT postulates that understanding language as human's foremost meaning-making system amounts to mastering or controlling one's cognitive activities (Lantolf, 2012).

A term of key importance in SCT is mediation, the act of transmitting knowledge and codes by peers or teachers guiding learners to perform activities – an interpsychological process that is called other-mediation that happens on the social plane of learning. The following intra-psychological process is learners internalizing the other-mediated knowledge, allowing them to use it independently (Lantolf & Thorne, 2006; Lantolf et al., 2015).

Another crucial idea in Vygotskyan SCT is the Zone of Proximal Development (ZPD), the optimal stage of difficulty for a learner that allows for most psychological and cognitive development to happen (Vygotsky, 1962), mainly as learners in social interaction with "knowledgeable others" (e.g. teachers) can be guided toward internalization, independent performance, and altogether a better understanding of their own cognition. In terms of learning of a language, learners with often unsystematic and disorganized concepts about the language encounter a highly rational, organized system in the form of a mediating teacher (Santrock, 2004). This process, instructional scaffolding – which is seen as the first form of mediation – is the learner-centered idea of supporting learners during the entirety of the learning process in order to facilitate their understanding of ideas currently beyond their capacity through, for example, explicit explanation, guidance or modelling (Richards & Schmidt, 2013).

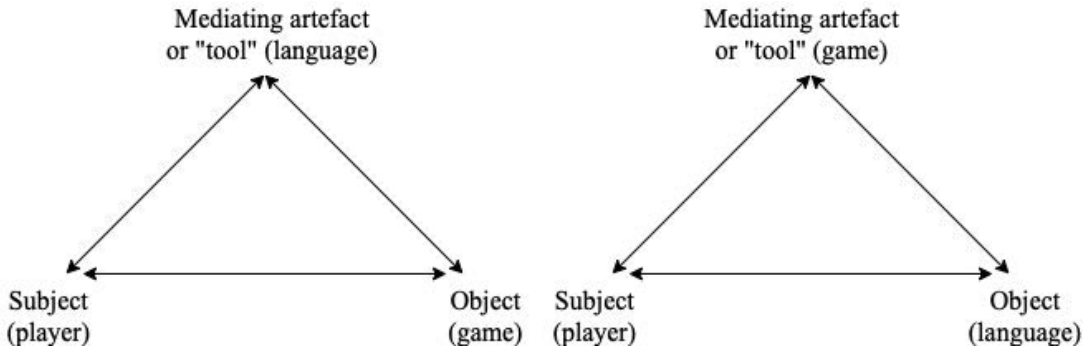
A second form of mediation is self-mediation or mediation by dialoguing with one self (Guerrero-Nieto, 2007), whose main manifestation is in inner speech, a low-voice but audible internal monologue with the primary purpose of mediating our own mental activity through self-guidance and self-regulation (Appel & Lantolf, 1994; Vygotsky, 1986), as opposed to social speech, whose main purpose is communication and mediation with and by others. The question whether inner speech or private speech is the proper term to denote the egocentric speech described by Vygotsky (1986) is controversial, especially due to its relation to similar phenomena studied by Piaget (as cited in Guerrero Nieto, 2007); however, since Wersch (1985) the term private speech has become the convention in the fields of cognitive psychology and linguistics. L2 private speech, i.e. internal monologues in a learner's mind with the aim of discussing metalanguage during the process second language learning, has been called an essential prerequisite of language learning success (Lantolf, 1997), and was extensively researched, though mostly with inconclusive findings and methodology-related obstacles (cf. Lantolf, 2012). Nevertheless, people playing any kinds of games have been found to regularly engage in inner speech to regulate their thoughts and behaviour (Duncan & Cheyne, 1999; Gortari et al., 2015; Krafft & Berk, 1998; Tomlinson & Masuhara, 2009).

Lastly, the third type of mediation in the concept of sociocultural theory is mediation through technology (Guerrero Nieto, 2007) which may be seen as an integration of using physical, psychological, symbolic tools and human interaction at the same time. Warschauer (1997) explains that the reasons for considering technology and especially computers as a separate means of mediation in SCT-L2 is the fact that it does not only afford long distance communicative acts independent of time and place, but also that it facilitates "many-to-many communication" in which users can engage in interactive and collaborative learning taking on the role of learner or a more competent, "knowledgeable other". In addition, computer-based technologies are also capable of recording and saving texts and audio-visual information that

allow learners "to retrieve that information and reflect about it, revise, and improve it" (Guerrero Nieto, 2007, p. 223). Thus, the focus of the present dissertation being language learning using video games, this facet of mediation in SCT-L2 will be accounted for in the study.

Figure 4

Sociocultural Theory-based Conceptualization of Learning from Gaming, adapted from Ryu (2013).



In general, sociocultural theory argues that good learning is active, socially-mediated, contextualized, goal-oriented and interesting for the learner. One way of understanding video games-based learning from computer games is by recognizing the language as a symbolic mediating artifact that is used to mediate the game and the gaming world for the player (see the left diagram in *Figure 4* above), an understanding of which is essential in achieving his or her goals to develop gaming skills. Another, though more subliminal process transpiring during gaming is that, players as active participants in the gaming world, interact with the game and other players, which both serve as mediators of knowledge (e.g., language) to the player. Hints, commands, interactions with non-player characters or other gamers offer audiovisual mediation to the learner to form and test hypotheses about the language and thereby pick up the language of the game (see the right diagram in *Figure 4* above).

Another essential idea of Sociocultural Theory that has gained a foothold in SCT-informed second language acquisition research is that of *Activity Theory* discussed and

pioneered by Leontiev (1981) and further advanced by Engeström (1999) in terms of general SCT and Lantolf in SCT-informed language learning research (2000, Lantolf & Thorne, 2006). While Vygotskyan activities are mainly focused on an individual and their goals and their interrelationship through mediating tools, activity theorists focus on the actions of an individual in a social and collaborative setting where the goal is not just that of a single individual, but that of a community. This perspective makes social collaboration an indispensable prerequisite of language learning (Lantolf & Thorne, 2006).

Activity theory research into the potentials of video games for language learning (e.g. Ryu, 2013; Thorne, 2008) has yielded interesting new perspectives into the understanding of what *beyond-game* elements of video games are conducive to language learning as several players engage in *beyond-game* content creation or communication in order to enhance their own skills in gaming with the help of other players or to help other players' achievements.

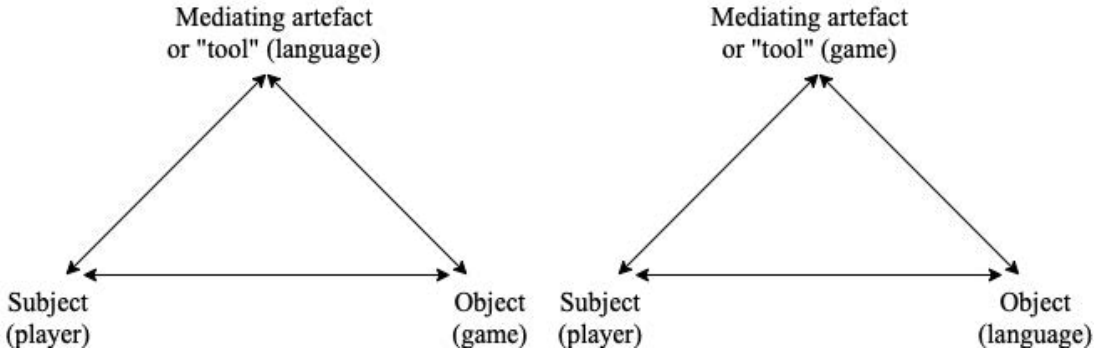
2.1.6.2 Video Games and Learning in the Framework of Social Cognitive Theory.

The social cognitive theory of Bandura (1977, 1978, 1986, 1988) is seen as a point of origin in modern research investigating the relation of learning, beliefs and experience. Whereas Vygotsky Sociocultural Theory (1962, 1978) postulated that every human activity, including learning, is primarily mediated by the historically-created sociocultural context; Bandura (1986), who was ostensibly strongly influenced by Vygotsky (Tudge & Winterhoff, 1993), rejects the unidirectional influence of the sociocultural context and proposes the idea of triadic reciprocality in which interpersonal variables (cognition, affect, beliefs), environmental variables (such as social influences) and actualized behaviour act upon each other in a bilateral fashion, also referred to as reciprocal determinism. Key to Bandura's theory is humans' unique capacity of self-reflection that allows people to examine their experience and behaviours by comparing them to their and others' experience and also by attributing causes of success or

failures to a variety of personal or environmental factors (1986, 1988; Pajares, 1996). The self-reflective process includes adjustments to people's perceived self-efficacy or self-efficacy beliefs, which are "beliefs in one's capabilities to organize and execute the courses of action required to manage prospective situations" (Bandura, 1997, p. 2). As far as experience is concerned in self-efficacy, Bandura (1997) explains the origins of self-efficacy as a function of four different types of experience: mastery experience (direct personal experience of mastering a task), vicarious experience (experience through observation of others, especially models), verbal persuasion (persuasion from peers), and emotions (different emotional states affecting our judgement).

Figure 5

Bandura's (1977, 1986) Model of Triadic Reciprocal Determinism (left) and the Model Superimposed on the Context of Playing English-language Video Games (right)



During gameplay, the player interacts with the environment and other players, and, in turn, the environment (or "the game") in well-designed games adapts to the players' developing skills and offers even greater challenges. Based on implicit or explicit assistance and feedback from the game and other players, players are able to develop their skills through imitation or discovery that later become internalized new knowledge.

Besides feedback from other players or the game, players use their skills of self-reflection to evaluate their performance, which, in turn, develops their self-efficacy beliefs. The development of stronger self-efficacy beliefs are further facilitated by players' mastery experience and positive emotions felt during flow-like states (see 2.1.6.3).

This dissertation also argues for the relevance of *outcome expectations* as another facet and key predictor of behavioural change (e.g. motivated behaviour or engagement) as described by Bandura (1977, 1978, 1986). Outcome expectations are defined as beliefs a person might hold as to whether or not the action he or she intends to take results in the expected outcome. Arguably, the idea that a person's evaluation of the effects of his or her action relevant to the valued outcomes is crucial in light of findings of studies (Henry, 2014; Henry & Cliffordson, 2017; Lajtai, 2020, Ryan and Mercer, 2011) that claim that learners consider naturalistic learning to be more effective than instructed language learning.

2.1.6.3 Video Games and Learning in the Framework of Flow Theory. The idea of the interconnected nature of challenge and skill and their influence on performance has been a mainstay of psychological research since Yerkes and Dodson's (1908) theory of optimum arousal. Decades of research into arousal, motivation, competence and self-determination were distilled into the concept of flow that has since permeated psychological research of the last four decades. The father of the theory of flow, Csíkszentmihályi (1975) describes the state of flow as a "holistic sensation that people feel when they act with total involvement", which has a set of characteristic features including an experience of intense concentration on the present moment, instantaneous and clear feedback on the performance, a sense of mastery and personal agency, a loss of reflective self-consciousness and the distortion in the sense of time in an activity that offers optimal levels of challenge and intrinsic rewards (Csíkszentmihályi, 1990; Nakamura & Csíkszentmihályi, 2009).

The flow experience also might be of key relevance to how motivation during gaming works and how the gaming experience is to be approached from a psychological-pedagogical perspective (Van Eck, 2007). It is a widely accepted fact that the sensation experienced during gaming can be described as a flow experience (Kaye, 2016) as games are played due to intrinsic motivation, offer immediate feedback and rewards, provide optimal challenges for players' level of skill, or if designed well, dynamically adjusts difficulty to skill in a process called *dynamic game difficulty balancing* that is specifically designed to foster a state of flow in players (Hunicke & Chapman, 2004; Miller, 2006).

Crucial to the integration of flow experience in game design is the Zone of Proximal Development in Sociocultural Theory (Vygotsky, 1962), which would mean that the game offers an ever-increasing, however, not anxiety-inducing challenge for players following the players' increasing skills (Habgood & Overmars, 2006; Kiili, 2005; Vervaeke et al., 2018), and offers scaffolding for the achievement of goals through either other-mediation (other players in an online game or the game itself). Research on gaming have invariably found gameplay to be a flow-inducing activity both as "solitary" (Eastin, 2006, 2007; Lim & Reeves, 2010) and social (Gajadhar et al., 2008, 2009; Kaye, 2016; Kaye & Bryce, 2014) activities. "Group flow" or "shared flow" between people, described as a phenomenon involving interaction between people and a sense of belonging and companionship on top of the general flow experience are often thought to induce an even stronger sense of flow (Nakamura & Csíkszentmihályi, 2009; Sato, 1988); however, in terms of gaming, the findings regarding the superiority of individual or group flow are inconclusive (Kaye, 2016).

Research in the fields of cognitive psychology and neuroscience connecting flow to learning argue that states of flow are in positive correlation with learning (Craig et al., 2004; Dietrich, 2004; Engeser & Rheinberg, 2008; Lee et al., 2013; Vervaeke et al., 2018) although findings are inconclusive on whether flow exerts a direct influence on learning outcomes (Craig

et al., 2004; Dietrich, 2004) or an indirect influence via enhanced engagement or a heightened sense of competence (Lee & Choi, 2013). Dietrich (2004) postulates that flow experiences induce learning that is essentially implicit in its nature (also supported by Vervaeke et al., 2018) and suppress parts of the explicit learning system that enable analytical thinking and meta-cognition. A simplified model of the connection between flow and learning is presented by Egbert (2004), showing external variables (mainly the features and difficulty of a given task) and learner variables (mainly levels of competence) contribute to the flow sensation which affects performance of the given task. This senstation can, in turn, be understood as having an impact on learner variables through changes in learners' perceived competence (Egbert, 2004).

In summary, flow experiences (Csíkszentmihályi, 1975, 1990) are key to a complete understanding of how games engage players and also why gaming can be such an addictive experience. Players who experience flow states during gaming feel a sense of complete control over the game and a sense of complete involvement (or "oneness") with the game, they do not feel anxiety due to the game's low-stakes nature and can evaluate their mastery in relation to the achievement of such goals through self-reflection (evaluation of mastery experience) and comparison to other players (evaluation of vicarious experience). The intrinsically-rewarding sense of achievement and mastery combined with the constantly rising, though not anxiety-inducing, challenge (that may also be understood as being in the Zone of Proximal Development (Vygotsky, 1962)) creates an extra, arguably self-perpetuating motivation for players to engage in gaming.

The state of flow experienced during gaming is seen as both providing an optimal setting for learning and second language learning; however, the extant body of literature does not offer any insight into the interrelationships of flow, gaming and language learning. It can be hypothesized that flow experience during English-mediated gaming may offer a possibility of implicit learning from the gaming experience; however, the ways and extent to which this

may occur could arguably only be demonstrated through cognitive experiments that are beyond the scope and resources of the research project presented here. However, as video games played by learners in the Hungarian context are predominantly English, investigating whether language learners experience states of flow while playing games in their second language and whether it affects learners language learning self-efficacy and linguistic confidence is seen as an interesting angle that might shed further light on the relationships between language learning motivation and gaming.

2.2 Video Games and Second Language Learning

In Section 2.1, a detailed discussion about the hypothesized connections between gaming and social cognitive theory (Bandura, 1986, 1988) have been presented along with numerous connections to self-efficacy, outcome expectations, sociocultural theory and flow theory. As a brief restatement of the ideas there regarding second language learning, it could be claimed that gaming provides low-stakes opportunities for players to encounter and use the target language in a goal-oriented and task-based manner in a flow-like experience, during which players would feel in control and develop a sense of mastery. This resulting mastery from the gaming environment translates into more positive self-efficacy beliefs about second language learning and second language use that have been found to influence students' motivated behaviour and self-regulation.

However, at the same time, the importance of outcome expectations in Bandura's (1986, 1988) social cognitive theory also has to be mentioned as language learning motivation in gamer-learners who, stemming from the positive mastery experience and perceived self-efficacy, might hold beliefs that state gaming is a more conducive medium of language learning than the school. Therefore, the relations of gaming as an out-of-school activity to possible linguistic gains need not only be analyzed for direct implicit learning from computer games,

but also in terms of how they may impact upon learners' autonomous behaviour and authenticity beliefs rooted in their self-efficacy and outcome expectations.

2.2.1 Autonomy, Extramural English or CALL in the Digital Wild

Numerous studies (Benson, 2011; Chik, 2012; Gee & Hayes; 2011; Leander et al., 2010) have argued that new mobilities have emerged for language learning (i.e., learning that does not take place in fixed locales such as schools or classrooms) in the last decade, that also includes outside-the-classroom, purely interest- and entertainment-driven learning, a category which includes learning using digital games. Although Benson (2011) contends that these types of learning situations are mostly unstructured, the fact that they encourage learners to take action, take control of their learning, and use the target language is argued to be key to fostering autonomy and target language competence. In line with his comments, Gee and Hayes (2011) also stress the ability of extracurricular learning to facilitate the development of learner autonomy by motivating learners to attend to the acquisition of new knowledge and skills at their own pace, according to their own needs, styles and preferences.

Understanding what happens outside the classroom in general has been known to hold incredible potentials for socially situated research. Research of *language learning in the wilds* has focused largely on computer-mediated online activities, which has been called *computer-assisted language learning* (*CALL) in the digital wild* (Sundqvist, 2019; Thorne et al., 2015). An important question relevant to understanding the potential of video games as a means of language learning is, therefore, related to what language learners do in general outside the classroom and how that may have an impact on their in-school performance and overall linguistic proficiency. More than a decade ago, Thorne (2008) had already suggested the existence of a "problematic school-world divide between the goals and processes of conventional institutionalized schooling on the one hand and students' increasingly mediated

personal, recreational, and professional lives on the other" (p. 305). Tapping into these two evermore separate worlds may justifiably be thought of as a major area of research in years to come.

Research into what language learners do outside of the classroom and how those activities are connected to their performance in the foreign language classroom, however, has gained considerable momentum in the past decade (Benson, 2011; Sundqvist, 2011; Thorne, 2008). An important conceptualization of outside-of-school learning comes from Sundqvist (2009, 2011), who uses the term *extramural English* to refer to learners' contact with the English language outside of the classroom environment. In Sundqvist's (2011) view, this term functions as an umbrella term for *out-of-school*, *out-of-class* or even *naturalistic* learning; however, she makes a distinction between *self-directed naturalistic* learning (Benson, 2011) and extramural contact English: the former meaning that learners are driven by a desire to learn the language and thus actively seek or create naturalistic contexts for learning, whereas in extramural learning learners may come into contact with the English language with only an intention to do an English-mediated activity.

The fact that out-of-school contact with the target language can impact learners' foreign language learning success has been a point of discussion since the 1980s. Pickard (1995), following a multiple-case study, commented that language learning should not be conceived as a process exclusively happening in the language classroom; and later research (Bialystok, 1981; Nunan, 1991) also pointed to evidence that functional use (i.e. out-of-school goal-oriented use) of the target language leads to greater proficiency.

The last two decades of research into extramural learning have yielded a number of important results. Various studies (Laufer & Hulstijn, 2001; Lin, 2014; Pegrum et al., 2005; Webb, 2007; Webb & Macalister, 2013) have shown that learners who are frequently engaged in activities that allow for extramural contact with the target language (e.g. through films or

reading) have a larger size of vocabulary and formulaic expressions. Olsson (2011) has also attested that these benefits do not only translate to receptive vocabulary knowledge, but also productive knowledge, as well. In her study, learners with more extramural contact with English used more varied vocabulary and longer, more complex sentences in their writing. Studies have not found any other strong relationship between extramural contact and gains in grammar or syntax (Sundqvist & Sylvén, 2016). This finding is intriguing in light of theories of the transferability of implicit and explicit learning (N. Ellis, 2005, 2015) and the findings of Sundqvist (2009, 2011), which showed that learners with more extramural contact with English have superior oral proficiency that manifested in both accuracy and fluency of language use.

Recent research on extramural contact with English has further attested the importance of out-of-school exposure with significant vocabulary gains found for learners playing with COTS games (Sundqvist, 2019; Sundqvist & Wikström, 2015) and overall proficiency effects observed for learners engaged in English-mediated games and social media (de Wilde et al., 2019). Additionally, a report by The Swedish National Agency of Education (as cited by Sundqvist & Sylvén, 2014) shows that 5th-year elementary school learners reported to have learnt more English from extramural activities than from classroom activities.

More importantly, however, Sundqvist (2011) has demonstrated that the amount of extramural English learners are engaged in is unaffected by most socio-economic background variables (number of books at home, cultural capital, travel opportunities, or parents' education). The only exception to the rule was the rural/urban divide, which was found to be a decisive factor in the extent of learner's extramural use of English, with learners from urban backgrounds reporting significantly more extramural English contact. Sundqvist's findings are therefore especially consequential as extramural English can prove to be a path for development for all learners, regardless of their socioeconomic background. It must also be noted that the Swedish context, which has also been suggested to be an ESL context

(Hyltenstam, Viberg, as cited in Sundqvist and Sylvén, 2014), is arguably distinct from the Hungarian setting as far as learning circumstances are concerned. It is important to point out here that, other than a few examples (Lajtai, 2020) there is a noticeable gap in Hungarian research considering the impact of extramural activities (or specifically gaming) on foreign language proficiency.

Sundqvist (2009) claims that English-based activities in these new locales, which she terms extramural contact, are by their very definition autonomously performed activities. Nevertheless, based on previous findings regarding extramural English contact and autonomy (Lajtai, 2020) that showed a lack of strong correlation between the two notions, the present dissertation questions whether the use of the target language in gaming can be characterized as autonomous language learning behaviour or self-directed naturalistic learning (as per Benson, 2011), since players in Hungary have effectively no choice regarding the language of the game (as only a meagre percentage of games are translated into Hungarian) and since gaming is an intrinsically-motivated activity where the fact that it might offer a possibility to learn English is a motive secondary to the enjoyment that games offer by their very nature.

2.2.2 The Question of Authenticity and Beliefs

One useful approach to the "problematic school-world divide" (Thorne, 2008, p. 305) is provided by Henry (2013; Henry & Cliffordson, 2017) who addresses the problem from the perspective of authenticity (based on the concept of Vannini & Burgess, 2009). The argument stems from the conviction that in countries like Finland (Piirainen-Marsh & Tainio, 2009) or Sweden (Olsson, 2011; Sundqvist, 2009), where English has become pervasive in everyday life, i.e. has become ubiquitous and more of an unofficial second language that is used and encountered extensively by learners in extramural settings, learners engage in English-mediated activities through English-language media (films, videos, news, etc.) and also in

creative and engaging activities that are meaningful for learners personally and offer cognitive, emotional and/or aesthetic stimulation (Henry, 2013; Henry & Cliffordson, 2015).

This is also supplanted by evidence that shows that Swedish school-age children spend at least around 20 hours a week doing the above-described English-mediated activities (Olsson, 2011; Sundqvist, 2009). Gaming may be seen as an activity that expects players to be active participants of the activity, to interact with other players and the game, to create new, unique artefacts in in-game environments, such as custom-built characters for themselves, and beyond-the-game (i.e., gaming-related but not in-game) environments, such as written guides or walkthrough videos for others or threads in game-related forums (Henry, 2013).

Partially corroborating this theory were findings from psychological research on game design that showed that a gamer's personal connection with an avatar (i.e. a virtual identity) increases their motivation and achievement (Kao, 2017; Kao & Harrell, 2017). The resulting sense of authorship in gaming and the fact that games provide pleasure, a sense of achievement and opportunities of socialization makes gaming a self-authentic, self-congruent activity for players, where English serves as a mediating artefact for learners' intrinsically-driven goals. Henry (2013), in what he calls the "authenticity gap" (p. 142), contends that "productive language use in the classroom is unlikely to match the more deeply meaningful and self-relevant experience that young people gain in online environments" (p. 143), or in other words, students feel a dissonance between in-school and out-of-school language use (Sundqvist & Sylvén, 2016), and even the most creative and communicative activities in the English classroom cannot evoke the same sense of authenticity that stems from emotional, cognitive and aesthetic involvement and authorship in gaming.

According to Henry (2013, 2014; Henry & Cliffordson, 2015), the combination of negative beliefs about the efficacy of learning in in-school contexts and the fact that gamers are engaged in an English-mediated, personally-meaningful activity may serve as a basis to

explain why gamers often consider classroom-based English learning unchallenging and as "providing a welcome opportunity for rest and relaxation" (Henry, 2014, p. 18).

The present study, based on comments from Henry and Cliffordson (2015) and Henry *et al.* (2018), also hypothesizes that authenticity is strongly connected to learners' outcome expectations about learning. Arguably, learners will hold outcomes to be valuable to them as long as they are congruent with the experience and goals about language learning they have established while learning a language inside and outside the school. Thus, presumably, language learners with high levels of interaction in English outside the school will consider in-school learning to be less self-authentic and therefore will be less inclined to think that engagement in lessons will result in outcomes that are valuable to them.

The Hungarian context is apparently somewhat dissimilar to the Swedish as it trails the high-achieving Sweden in the 50th position in terms of the proliferation of internet and "networked readiness" (World Economic Forum, 2019) and also as students' extramural contact with English is relatively lower (Lajtai, 2020). In addition, the fact that most Swedish learners are surrounded by English from a very young age due to the lack of dubbed movies and series (Henry, 2014) does not hold true for Hungarian learners, with dubbed movies still dominating both TV and cinema (Bodnár, 2017), which is often seen as a major hindrance in learners' development of English proficiency (European Commission, 2013). However, as English is generally the default language of video games (Waters, 2007), it is deemed worthwhile to investigate whether Hungarian learners who engage in non-gaming extramural English-activities and learners who regularly play video games exhibit any differences in their classroom motivated behaviour to learn English based on their perceptions authenticity and efficiency of instruction and naturalistic contact with English.

2.2.3 A Hypothetical Model of the Relations of In-School and Out-Of-School Learning to Self-Efficacy and Outcome Expectations

Based on the considerations presented in the previous section about the relations of video games and learning, it is proposed here (see *Figure 6* on the following page) that key to the understanding of how video games might indirectly facilitate language learning are learners' self-efficacy beliefs and outcome expectations, heavily rooted in their learning experience. The combination of relevant in-school and out-of-school (particularly gaming) learning experience (i.e., mastery experience, vicarious experience and related positive emotions in flow states) are keys to the emergence of positive self-efficacy beliefs which empower learners and motivate them to be more engaged in English-mediated out-of-school activities and in in-school language learning, as well. Furthermore, it is argued here that learners' expectancy evaluations of the valued outcomes pertaining to their intended behaviour also factors into their engagement, and similarly to self-efficacy beliefs these outcome expectations are also heavily rooted in language learning experience. Added to the latter line of variables, authenticity in language learning may also explain some of the variance in learners' outcome expectations of learning situations as they will evaluate learning opportunities based on how cognitively, aesthetically and emotionally congruent and how valuable they are to their own selves (e.g., their hobbies, interests, affinity spaces). Arguably, a lack of perceived authenticity of in-school language learning stemming from comparisons to mostly personally-mediated, emotionally positive and self-congruent language learning encounters during out-of-school activities may have a negative influence on outcome expectations, which may be found to counterbalance the more positive self-efficacy beliefs of learners stemming from positive out-of-school mastery experience.

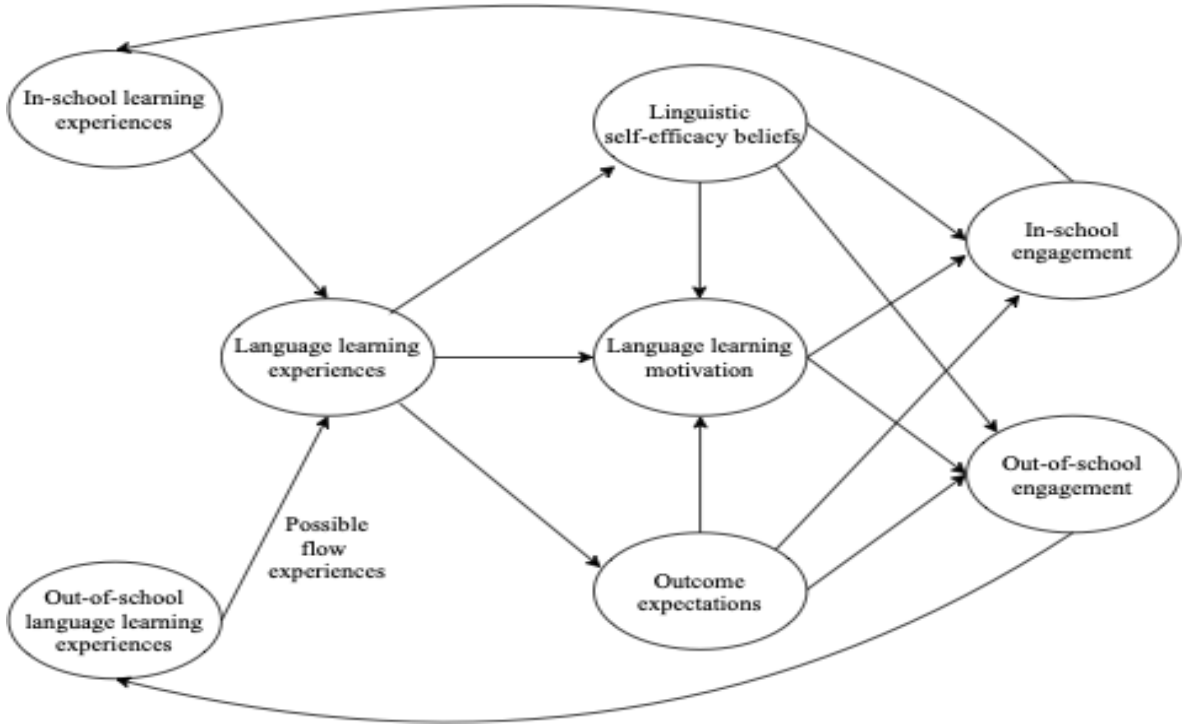
Lastly, it is argued that the engagement in and use of language learning opportunities influenced markedly by self-efficacy beliefs and outcome expectations is a direct precursor of

potentially positive in-school and out-of-school learning experience, which, therefore, reinforces the whole system of relationships in a circular fashion.

English-mediated gaming is seen as a *prima facie* case for an out-of-school activity that might reinforce positive self-efficacy beliefs for language learning due to a range of potentially important variables: the intrinsic, authentic and self-congruent interest in games that motivate players to engage in gaming regardless of English-related outcome expectations, mastery experience of English language use facilitated by low-stakes, non-anxiety-inducing situations, and positive emotions felt towards gaming in potentially flow-like states.

Figure 6

A Hypothesized Model of Relationships Between Self-efficacy, Outcome Expectations and Language Learning in In-school and Out-of-school Contexts



2.2.4 Unique Affordances of Video Games for Language Learning

With the psychological basis of the connections of gaming and learning established, the following section will turn attention to what video games can offer specifically for second language learning. Drawing on Reinhardt and Thorne (2016), three important qualities of video

games have to be highlighted which make them not only suitable, but also conducive to language learning: their interactivity, their motivating nature that is inherently based in personal motivation and reward systems, and, as also aptly pointed out by Gee (2007), copious amounts of meaningful and contextualized input. The subsections below will dissect the above statement and present a view of the unique opportunities afforded by video games for language learners.

2.2.4.1 Interaction and Interactivity. One term that is often mentioned in literature regarding game-based or game-enhanced learning is the adjective "interactive"; however, it is important to discuss whether it is used to denote in-game (or beyond-the-game) *interaction* that is mediated by language, or *interactivity*, a feature of game design.

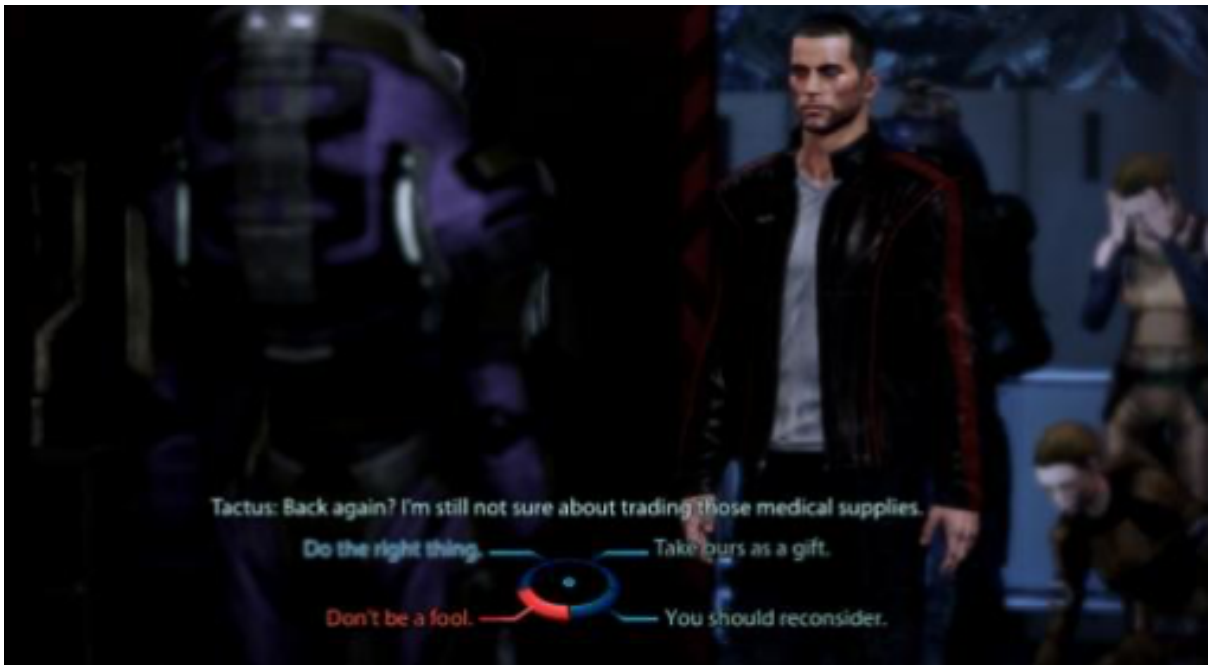
In the field of SLA, interaction is often considered to be a factor fundamental to the acquisition process (Sundqvist, 2011). The Interaction Hypothesis (Gass & Mackey, 2006, 2007; Long, 1981, 1983) emphasizes that exposure to language (input), production of output for interactive communication, intake stemming from the negotiation for meaning and feedback to the output are the key facilitators of the interlanguage development (R. Ellis, 1984; Gass et al., 2005; Sylvén & Sundqvist, 2012).

According to Reinhardt and Thorne (2016), interaction with the target language is an undoubtedly important condition for learning to happen, but language-mediated interaction is not a necessary feature of games. In well-designed games, designed interactivity, i.e. affording players to make choices that might lead to different outcomes, is a precursor to interaction. To extend this semantic juxtaposition to language learning, it is argued here that well-designed interactive games (single- or multiplayer) can offer a higher possibility of implicit linguistic gains if the choices that players have to make are mediated through the target language (see *Figure 7* below). However, a distinction should be made between video games depending on

what sort of interaction different games afford (Reinhardt & Thorne, 2016). Multiplayer games, and especially large-scale MMORPGs, by definition, require collaboration and cooperation on the players' side, which is facilitated by either in-game chat interfaces or an integrated voice-chat that allows for spoken online communication during the game. This is also corroborated by studies that have reported enhanced vocabulary learning (Sundqvist & Sylvén, 2012, 2016) or an increased higher willingness to communicate (Reinders & Wattana, 2012) in the second language.

Figure 7

A Dialog Wheel in Mass Effect 3



It could be argued that the linguistic interaction found in most other single-player video games is not akin to naturalistic language use and does not provide enough possibilities for real interaction, where there is a negotiation for meaning or where the players have to draw upon their linguistic or communicative competence to formulate meaningful and well-formed output (Sylvén & Sundqvist, 2012). While most immersive role-playing games provide copious input

(some popular games like *The Witcher 3: The Wild Hunt, Fallout 4* or *Mass Effect* may take 50 or even 100 hours to complete) for language learning, real interaction between the player and the non-player characters (NPCs) never takes place, as today's COTS games (almost) never require the player to form meaningful and/or well-formed sentences on their own, instead they are given a variety of pre-written responses to choose from. Thus, one might argue that the language learning potential of video games in this respect is reduced to that of a film or a book, that is, a rich source of input for implicit/incidental learning.

However, good games are interactive on a number of other levels: they are cognitively interactive as they engage learners in a multi-sensory fashion (graphics, sounds and music), and they draw learners into the game by an engaging storyline that makes them interact with an English-based narrative (Reinhardt & Thorne, 2016). Additionally, video games can be seen as having a major advantage over watching films or reading books in English: whereas watching a movie or reading a book in English outside-the-school is an important and useful *activity* that does not always involve a personally-defined goal and a sense of agency, gaming is an activity filled with *tasks*. The task-based nature of COTS video games has been recently evaluated by Thomas (2012), who mentioned that digital game-mediated language learning in several games may be amenable to Task-Based Language Teaching, and that "digital game-based language learning can be seen as part of a necessary reorientation, to develop task-based language learning approaches by foregrounding learners' communicative skills and abilities" (p. 26) Video games, being inherently goal-oriented (Reinhardt & Thorne, 2016), engage learners by challenging them with a variety of in-game tasks, most of which may only be negotiated through language use: multiplayer games require cooperation and collaboration on the players' part, role-playing games often necessitate the evaluation of linguistic/pragmatic options for the completion of tasks. Even relatively simple and straightforward shooter games compel learners to use the language to understand the task at hand.

Altogether, it may be said that well-designed video games engage learners' creativity with ever-increasing challenges and values their cognitive, aesthetic and emotional investment with rewards. Plainly speaking, gaming allows players to interact with the objects, characters, other players and other elements of the game to manipulate their environment and to make an individual impact on the story or the online community (DeKanter, 2004), which in turn creates a sense of authorship in learners (Henry, 2013).

2.2.4.2 Reward Systems for Extra Motivation. Lastly, an important aspect of games that has gained substantial attention in educational and business circles is the reward system they employ to motivate learners (Reinhardt & Thorne, 2016). These are almost invariably in-game rewards, thus material gains cannot serve as extrinsic motives for further engagement with the game. As such, we may state that the challenge-reward mechanism employed mostly invokes personal, self-determined motivation. This distinct quality of games has been taken up by several educationalists, who have applied and called for the use of this principle in restructuring motivational processes in educational and commercial institutions under the term *gamification* (Deterding, 2012; Deterding et al., 2011; Richter et al., 2015)

2.2.4.3 Meaningful and Contextualized Input that Allows for Naturalistic Learning. The importance of input in second language learning is unquestionable, and, as discussed thoroughly in Chapter 2, is seen as the cornerstone of language learning in all models of language learning.

Language use vis-à-vis video games is characterized by highly contextualized and meaningful language. Sylvén and Sundqvist (2012) mention that due to the fact that during gaming the (usually) English language input must be comprehended, it is not far-fetched to

hypothesize "that successful and frequent players of such games who do not have English as their mother tongue acquire some of their English L2 proficiency in the activity of gaming" (pp. 3–4). They also claim, drawing on research also presented in this proposal, that video games provide a "linguistically rich and cognitively challenging [context for learning] as learners receive ample L2 input, and in online games, scaffolded L2 interaction" (p. 2). Recent research into how L2 competence might be gained from extramural activities and specifically gaming has also found gaming to be feasible method of L2 vocabulary acquisition (Rankin et al., 2006; Sundqvist, 2011; Sylvén & Sundqvist, 2012; Turgut & İrgin, 2009) and improvement of oral (Sundqvist, 2011) and morphosyntactic (Reichle, 2012) proficiency. Reinhardt and Thorne (2016) also highlight that there is twofold contextualization in gaming: *context in the game* supplied by the narrative, and *context of the game*, which represents the cultural and situational context of the act of playing. As they argue, the "narrative schemata of the game (i.e. context in the game) and framing help (learners] to situate cognition and learning" (p. 420), which, in turn, facilitates interlanguage development and helps the recall of language learned from the game. In the foreword to Reinders (2012), Gee offers a fitting summary to the affordances of digital games in relation to meaningful and contextualized language use:

> […] The main thing games can do for language learning is to 'situate meaning'. Games associate words with images, actions, goals and dialogue, not just with definitions or other words. Learners come to see how words attach to the world's contexts or situations that they are about and help to create or manipulate. If learners can only 'cash out' words for words, they have a purely verbal understanding of talk and texts. This may be good for test passing but it is not good for deep understanding. If they can 'cash out' words for images, experience, actions, goals and dialogue – for a virtual

> theatre of motivated action in their minds – then they have deep understanding and real learning. (Gee, 2012, p. xiv)

Recent role-playing games like *Fallout 4* offer an abundant amount of contextualized and meaningful content for learners that can serve as written and often simultaneously auditory input: the game developers claimed to have recorded 111,000 lines of script for the game that is delivered by voice actors, (which does not include written lore) (Bethesda, 2015), which, at more than 1 million words, puts it level with *the Bible* or the complete combined *Harry Potter* series. This ample amount of input can serve as an excellent setting for implicit language learning from the input, the viability of which will be discussed later in Section 2.3.

According to Long (2014), instructed language learning using analytical syllabi (ones that put the communicative purpose for language use as its starting point) has aimed to provide, on the one hand, meaningful input for learners from which they are expected to be able to infer rules of grammar and usage; on the other hand, contexts for naturalistic (i.e. closely resembling the natural process of first language acquisition) language learning processes and authentic language use, in which learners' main task is to negotiate for meaning.

It has also been noted by a number of scholars (Benson, 2011; Chik, 2012, 2013; Gee, 2007) that game-mediated learning provides learners with novel ways of finding naturalistic settings for language learning. Taking into account the last decade's technological advancements and their new affordances in relation to CALL, Chik (2014) even argues for viewing digital games as instruments of *"naturalistic CALL"* (p. 835). This may be understood as video games offering a computer-based learning setting that afford learners to encounter the second language in meaning-form connections, form and test hypotheses about the language, and use the language to mediate meaning that helps them achieve certain goals.

Chik (2013) also claims that three facets of gaming are especially conducive to second and foreign language learning, which are also akin to naturalistic language learning by affording input (and arguably output): online interaction with other players, in-game consumption of language (texts and speech), and production of artefacts in beyond-game contexts (e.g. writing advice, walkthroughs, tutorials, videos, or even fan fiction).

As discussed in the sections above, video games as arguably an environment for naturalistic CALL afford opportunities for linguistic gains in an unstructured, usually incidental (i.e. unintentional) way in informal, out-of-school contexts by providing ample amounts of input, opportunities for interaction and output, and a somewhat addictive flow-inducing reward system, which altogether can strengthen learners' self-efficacy beliefs and lead to implicit learning of the target language.

2.3 Second Language Acquisition

The question of how implicit learning from video games may happen and what variables may influence its occurrence is connected to the field of second language acquisition. The following chapter will discuss a variety of theories related to implicit and explicit language learning based on a vast body of research.

2.3.1 English as a Second Language and Second Language Acquisition

The key object of inquiry and research of the present dissertation is English as a second language (ESL); however, the definition of what a second language (L2) entails is slightly vague due to its numerous interpretations. In general terms, any target language (TL) that someone attempts to learn after acquiring their first language (L1) in their infancy may be called a second language without distinction as to how many other "second languages" they

have subsequently acquired (Richards & Schmidt, 2013). In the field of academic research however, historically a distinction has been made between English as a second language and English as a foreign language (EFL). The former refers to the language being learnt in a context where English is either an official language or at least a key mediating language of education, business and public life (e.g., in Singapore or Nigeria), thus learners of ESL have ample opportunity to encounter and use English outside a language classroom; whereas EFL learners have limited opportunities to do so as English is not a relevant language of internal communication in the country (e.g., China, Brazil or Hungary), and therefore, its use is mostly restricted to the domains of instructed language learning in schools (Richards & Schmidt, 2013). The above distinction is also made in the Kachruvian Three Circle's model of World Englishes that places ESL countries in the norm-developing Outer Circle of English and EFL countries in norm-dependent the Expanding Circle (Kachru, 1985, 1992).

Nonetheless, the historically clear lines of the above difference have become somewhat blurred by the 21st century: in countries traditionally considered to be EFL contexts (e.g. Sweden and arguably in Hungary as well), English has become so widely accessible outside the classroom for wide strata of the society that, despite the fact that it has not been elevated to the position of an official language, it may be considered a second language instead of a foreign language (Sundqvist, 2009). Furthermore, as discussed by Mitchell and Miles (2004), despite differences in language learning opportunities afforded by the context, the purpose of learning English and its possible real-life uses, the cognitive and psychological processes underlying learning English as a second language and a foreign language are largely identical. Based on the above considerations and the fact that a majority of Hungarian teenage learners of English encounter the target language on a daily basis (Lajtai, 2020), the term "second language" is used throughout the dissertation.

The branch of the broader research field of applied linguistics investigating the processes of learning a second language is second language acquisition (SLA); however, the term is also used to denote the overall object of research, second language acquisition, i.e., the process by which a second language is learned (R. Ellis, 1994; Sundqvist, 2009). In order to avoid confusion stemming from the multiple meanings of the term, in the present thesis, the term second language (L2) learning is used to discuss the process of gaining proficiency in an L2, while the term second language acquisition is reserved to denote the general branch of research.

As the present study discusses Hungarian students' learning English through video games in online and offline circumstances, it is also deemed important to briefly mention that the process of second language learning and the field of second language acquisition is a "complex, multi faceted phenomenon […] that affords different perspectives" (R. Ellis, 1994, p. 667). The present study takes into account aspects of second language learning both as a cognitive and also as a social, sociocultural phenomenon that involves intra- and inter-psychological processes at the same time (Firth & Wagner, 1997, 1998; Thorne, 2008), with a conscious attempt not to negate the importance of either.

2.3.2 A Survey of Key Concepts in Second Language Acquisition

When discussing second language learning, the variety of terms describing a learner's ability to understand and produce the given language must be discussed. Traditionally, the terms competence and performance have been used based on Chomsky's Generative Theory (1965) to denote two specific facets of language knowledge, with competence describing the sum of a learner's knowledge of the grammar of his or her target language, and performance standing for the actual, "visible" ability of a learner to understand and produce language at a given point of time. However, the exact nature of competence has been the matter of

considerable debate since its inception by Chomsky, most notably by Hymes, who argued for a more socially-situated definition of competence that includes pragmatic aspects of language use in contrast with Chomsky's solely cognition-focused description (Hymes, 1971, 1972). Hymes' focus on the actual use of language in real-life contexts, his ethnographic model (1962) of communication and his call for a new model of language competence incorporating pragmatic and sociolinguistic aspects (1972) is a significant point of divergence, one that led to his coining of the term communicative competence, which was later further elaborated on and conceptualized in models of communicative competence by various scholars (e.g. Canale, 1983; Canale & Swain, 1980, Bachman, 1990; Bachman & Palmer, 1996). As an example, the most recent and widely adopted model (in terms of language testing) of the list, Bachman and Palmer's 1996 model of language ability distinguishes between organizational knowledge, including grammatical knowledge and textual knowledge (including cohesion, coherence, rhetorics), and pragmatic knowledge, which consists of functional knowledge (the learners ability to use the language to achieve his or her goals) and sociolinguistic knowledge (including knowledge about culture, register or dialects). The present paper, thus, will use the word "competence" and its synonym "proficiency" (as per Taylor, 1988) to denote the whole of communicative competence described above, instead of solely concentrating on grammatical knowledge as the object of inquiry.

2.3.3 A Survey of Cognitivist-Interactionist Theories of Second Language Learning

Although the influence of Chomsky's work on language acquisition cannot be overstated as it engendered a vast body of research on the structure of linguistic competence, he has never actually written about processes in second language acquisition. It was only in the late 1970s that one of the first comprehensive explanations of how second languages are

acquired was presented. Krashen's *Monitor Theory* (1985) is the culmination of his work on second language learning and a collection of five hypotheses about the nature of successful language learning, with a primary focus on the first one, the eponymous comprehensible input hypothesis. Krashen argues that progress in the interlanguage (i) may only stem from learners being exposed to ample amount of input that is always somewhat more complex than where the learner's interlanguage is currently at (i + 1). A second hypothesis, that of the affective filter postulated that learners' emotions during language learning – whether they be positive or negative – may facilitate or hinder the process. The third, the natural order hypothesis posits based on then contemporary theories and research (e.g., Bailey et al., 1974; Brown, 1973; Corder, 1967; Dulay & Burt, 1973; Larsen-Freeman, 1974) that there is a fixed, natural order in which particular elements of a language are learned (cf. R. Ellis, 2015, pp. 77-97). The fourth part of the model, the acquisition/learning hypothesis, states that language acquisition and learning are two distinct phenomena, i.e. the former being automatic, unconscious learning of a language, while the latter is instructed and conscious, with little to no interface between the two types of learning and the learned proficiency. The fifth hypothesis, the eponymous monitor hypothesis, is closely connected to the acquisition-learning dichotomy as it states that consciously learned knowledge is only effective in monitoring (i.e. checking for errors) the output that is based on acquired knowledge of the language. Krashen's *Monitor Theory* has been widely challenged in many aspects; however, its importance is unquestionable as it served as a catalyst for theoretical and empirical research in the field of second language acquisition (Mitchell et al., 2013).

An important aspect of Krashen's views on comprehensible input is what form it should take: Krashen himself called for written and audial language learning materials to be graded in order to make the input more comprehensible; however, did not explicitly mention the relevance of native speakers or high-level speakers of the language in the process of providing

input (Mackey et al., 2012). Later, one of the first to revise Krashen's Input Hypothesis along the lines of this issue was Long, who acknowledged the indispensability of comprehensible input, but in his *Interaction Hypothesis* (1981, 1983) argued for incorporating interaction between language learners and native speakers (or more competent learners) in models of second language learning as the negotiation for meaning and resulting linguistic modifications in these communicative acts served essentially as comprehensible input and thus a basis for L2 development.

Also influenced by Krashen's views, Swain (1985, 1995), based on her multiple-year investigation of the French immersion programmes in Canada, acknowledged the importance of comprehensible input for second language learning, but contended that without ample opportunity to produce meaningful linguistic output in their L2, learners would fall short of achieving their language learning goals. Her *Output Hypothesis* (1985) postulated that, next to comprehensible input, output plays a consequential role in gaining competence as it allows learners to test hypotheses about the language, to practice production of language thus making it more automatic and effortless, and to focus on gaps in their own interlanguage, especially when compared to a native speaker or a more proficient peer. Although Swain's hypothesis was later subsumed by subsequent interactionist models of SLA (Mackey et al., 2012), it served as an important addition to theories of second language learning and an important stepping stone for empirical research into output, which later found supporting evidence of the essential nature of output (e.g. R. Ellis & He, 1999; de la Fuente, 2002).

Similarly to Swain, Schmidt (1990, 1993) presented an important addition to the field of SLA as he took issue with the conscious-subconscious dichotomy in Krashen's acquisition/learning hypothesis. Schmidt contended that it is impossible for second language learning to happen entirely subconsciously, and by extension, that comprehensible input is not sufficient to provide learners with the opportunity to learn the L2. In his *Noticing Hypothesis*

(1990), Schmidt argued that some level of conscious attention is necessary for learners to notice gaps between their competence and that of a native speaker or a competent L2 speaker, and "convert input into intake" (p. 129), i.e. allow input to be understood, acquired, and internalized in the learner's interlanguage. The importance of awareness, attention and frequency of linguistic forms will be discussed later in the chapter.

The work of the scholars above and also by Gass and Varonis (1994) on the interrelation of input, interaction and production prompted Long (1996) to update his Input Hypothesis to include the significance of output and conscious attention for noticing, which lead to adjustments in the learner's interlanguage. In his words, "negotiation for meaning, and especially negotiation that triggers interactional adjustments by the native speaker or more competent interlocutor, facilitates acquisition because it connects input, internal learner capacities, particularly selective attention, and output in productive ways" (Long, 1996, p. 451).

More recently, Gass and Mackey (2006, 2007) presented an updated and more detailed version of the interactionist paradigm of second language learning, the basis of which is highly similar to the constructs quoted from Long (1996) above: exposure to ample and comprehensible input, production of language (output), and the noticing of linguistic elements that stems from interaction and feedback from other interlocutors. The variant of the Interaction Hypothesis offered by Gass and Mackey (2006, 2007) places particular emphasis on explicit and implicit feedback in both real-life and instructed contexts of language learning. Feedback, a way of drawing learners' selective attention to input and gaps in their interlanguage is a key feature of interactionist L2 learning, and also topic of a vast body of research whose findings have supported the positive impact of feedback on building L2 competence (for an overview, see Mackey et al., 2012).

In summary, the cognitivist-interactionist paradigm of second language acquisition has generated a vast body of research and numerous theories and interrelated hypotheses regarding the nature of second language acquisition that have been incorporated into modern language teaching approaches: for example, the Natural Approach (Terrell, 1986) or Communicative Language Teaching (Savignon, 1987, 1997) which have more or less defined the language teaching landscape of the last four decades.

2.3.4 Implicit Second Language Learning

An issue highly relevant to the topic of the present dissertation due to its relation to in-class and out-of-class learning experience is the extent to which particular pieces of knowledge or skills can be acquired without any conscious attention, and also what role awareness, attention and the frequency of the item to be learned plays in the process.

The scholarly literature of cognitive psychology and cognitive linguistics generally distinguishes between two main forms of learning based on the conscious attention and awareness attached to the learning process: implicit learning and explicit learning. R. Ellis (2012) makes a distinction between the two along the lines of attention and awareness, saying that implicit learning is a form of learning that does not burden the central attentional resources of the brain and results in the creation of sub-symbolic knowledge that the learner is unaware of, whereas explicit learning encumbers the brain's attentional resources to create explicit, symbolic knowledge about newly learned facts that learners are aware of and are subsequently able to verbalize.

Crucial and highly controversial regarding the implicit-explicit divide was Krashen's (1985) claim of acquisition and learning being in a non-interface position without the possibility of transferring explicitly "learned" knowledge into the domains of the implicitly "acquired", with the entire debate being dubbed "the interface question" (R. Ellis, 2009; for a

brief review, see R. Ellis & Shintani, 2014). A related issue of more primary significance than the transferability of learned knowledge connects to the question whether there are two different learning systems in humans' brains that allow for two markedly different kinds of learning. R. Ellis (2012) reported after surveying the extant literature that the controversy still persists with research in the field of cognitive- and neuroscience yielding results in both favour of a single, unified system of learning (Reber, 1976; Kinder et al., 2003) and in favour of distinct learning systems (Hazeltine & Ivry, 2003; Paradis, 2009).

An important discussion about the explicit-implicit dichotomy and the possibility of an interface between the two is found in Lantolf et al.'s (2015) discussion of Paradis' findings (2009), who, while pointing out that the dual learning systems view (i.e. explicit and implicit) is unsubstantiated by neurological research of the human brain, uses the dichotomy of procedural and declarative memory systems to account for differences in learning and retention. Paradis contends that the procedural memory system that stores one's "knowledge" of their first language, which the speaker usually cannot consciously access, wanes in its capacity in adulthood, giving way to learning using the learner's declarative memory system, that may store information about a second language. In addition, she, along with a number of researchers (e.g. N. C. Ellis, 2015; Lantolf et al., 2015; VanPatten & Rothman, 2015) subscribes to the view that there is no possibility of transfer from the declarative system (which would be "learning" in Krashen's hypotheses) to the procedural system ("acquisition" for Krashen). Importantly, however, Lantolf et al. (2015) emphasize that this view does not discount the possibility of a second procedural memory system emerging via intensive and extensive encounters with a foreign language although they concede that this is only likely to happen in immersion settings and not instructed ones.

Although some doubts still remain over the exact nature and relation of implicit and explicit learning, due to its embeddedness in the field of SLA, its support by multiple SLA

theorists (N. C. Ellis, 1994; R. Ellis, 2009, 2012; Lantolf et al., 2015) and for the sake of operationalization in the design of the studies presented here, the Implicit-explicit dual learning systems dichotomy will be used here.

An important challenge to the acquisition/learning dichotomy from Schmidt (1990, 1994, 2001) questioned the idea of purely subconscious learning by introducing the idea of noticing, the act of turning selective attention to L2 input in order to notice a "gap" which influences the amount of actual intake stemming from input, and also deconstructed Krashen's notion of consciousness into intentionality in learning, awareness of learning, attention to learning and control over learning (R. Ellis, 2012; Schmidt, 1990, 1994, 2001), all of which will be discussed throughout the review of literature.

What is understood as regards video games is that learners encounter copious amounts of meaningful and authentic input, which is unique in a way that it is supported by audio-visual representations of the input and may instantly be interacted with in the game. The question of how much of this input may be converted into intake is the matter of awareness and intentionality, which are discussed in the following section.

2.3.4.1 Intentional/Incidental Language Learning and the Role of Awareness. The intentional-incidental dimension of learning processes, as opposed to the implicit-explicit dichotomy, is also important to discuss. Intentional learning is considered to be a form of learning when the learner consciously intends to learn either implicitly from language input or explicitly from instruction (Dóczi & Kormos, 2015). In contrast, incidental learning is characterized by a lack of such intention to learn and thus all learning happens unconsciously, by picking up language (Hulstijn, 2003; Richards & Schmidt, 2013). Several scholars have warned against the conflation of the two ideas (Leow; 2015, Paradis, 1994; Schmidt, 1994) as implicit learning processes may incidental in their nature; however, incidental learning does

not necessarily happen in settings for implicit learning, especially as learners may vary in their way of interacting with given tasks (Leow, 2015). When applied to the implicit-explicit dimension, incidental learning may be considered to be almost exclusively implicit in its nature, whereas intentional learning may happen with or without consciousness in implicit or explicit ways (Bruton et al., 2011; Hulstijn, 2003). Importantly, Schmidt (1990) argues that subliminal learning or exclusively incidental learning without any attention turned to the input is impossible as learners will be unable to notice features of the language, and therefore, will not be able to turn the input into intake. In his discussion of the practicability of incidental learning, Schmidt (1990) concludes that it is the given task or the material that needs to focus learners' attention to the given features of the input. Altogether, a substantial body of research is concordant in the view that while learning may be intentional or unintentional, a certain degree of attention to input is a strong prerequisite of second language learning.

As far as awareness in learning is concerned, most studies (Schmidt, 1990; Tomlin & Villa, 1994) attributed a role to it in the process of converting input into intake (Loew, 2015), In Schmidt's Noticing Hypothesis (1990, 1994), a low level of awareness of learning called upon by attentional systems is considered to be a key prerequisite of noticing the gap. However, in Tomlin and Villa's (1994) challenge to this view from a cognitive-neurolinguistics stance, they state that awareness is not necessary to either phase of turning attention to input: alertness, orientation or detection. In their view, detection, which denotes the "cognitive registration of some stimuli" (p. 190), is the last phase of the attentional process, which may happen without any conscious awareness of learning or the input itself.

Robinson (1995) connects the views expressed by both Schmidt (1990, 1994) and Tomlin and Villa (1994) to the question of memory. According to Robinson (1995, 2003) the first type of input registration occurs in the short-term memory and input is processed in a data-driven manner through maintenance rehearsal before entering long-term memory. Robinson

points out that this automatized process of registration leads to items being rehearsed in the phonological loop of the Working Memory (as per Baddeley, 1997) before being stored in the long-term memory as non-productive, unanalyzed elements or chunks, which may only be broken down into productive elements as more related information becomes available for analysis in the memory (N. C. Ellis, 1996). In contrast, input registered with focal attention (with awareness) is stored in the Working Memory in a "heightened state of activation" (Robinson et al., 2012), and is processed in a conceptually-driven manner that involves elaborative rehearsal, a non-automatic process of establishing relationships between the input and the long-term memory and testing previous hypotheses in light of the novel elements.

In Combs' (2014) view, data-driven learning is often seen as the process of learning involved in implicit acquisition of a given language as it does not make significant demands on the central attentional resources of the mind, whereas conceptually-driven learning usually necessitates explicit learning and instruction. As far as the practical-pedagogical relevance of the above paragraph is concerned, Robinson (1997, 2002) argues that as language learners vary in their overall aptitude for data-driven learning and conceptually-driven learning based on differences in primary and second order abilities, their success regarding learning from implicit, incidental or explicit exposure and thus different learning settings will reflect their aptitude for the different modes of learning. For instance, learners with strong primary order abilities of speed of perception and pattern recognition will have a superior secondary order ability for noticing the gap (Robinson, 2002).

In summary to the role of awareness in second language learning, the general scientific consensus is that awareness (conscious attention) for noticing is non-essential, though beneficial, and awareness has been found by several studies to facilitate implicit learning (Leow, 2000; Marsden & Chen, 2011; Mitchell et al., 2013; Williams, 2005). Regarding video games, the extent to which players in a state of flow can consciously attend to linguistic input

that is non-essential for their in-game goals is dubious and is arguably strongly dependent on learners' actual linguistic competence, the strength of mental representations of various linguistic features, and their secondary order abilities for noticing the gap.

2.3.4.2 Input and Input Modification. Based on the above considerations, it is uncontentious that the optimal conditions for any kind of implicit language learning can only be created if there is sufficient input (R. Ellis, 1994; Krashen & Terrell, 1983; Lantolf et al., 2015; Schmidt, 1990) available to learners to notice grammatical features (Robinson, 1997; Schmidt, 1990, 1993), pragmatic elements (Bardovi-Harlig, 1999) or lexis (Laufer, 1998; Laufer & Hulstijn, 2001) and subsequently infer their rules or meanings (Reinders & Ellis, 2009). Video games, the topic of inquiry in the present research project, supply ample input for learning although the problem of the comprehensibility of their language is a question that requires further research to answer.

However, with the above-mentioned theories of turning input into intake in mind, it is justifiable to say that while video games in theory provide adequate settings for implicit language learning by supplying copious input, it is questionable that they can serve as standalone instruments of language learning. These doubts bring forth questions of whether and how the input afforded by authentic material accessed by the learners, in this case video games, may be utilized and what interventions may be taken to maximize learning from the given input. As Sharwood Smith (1995) argues there are two separate routes of possibilities that may contribute to higher salience of elements of the input: internally-derived salience raising that occurs due to changes in the learner's cognitive system that helps them notice certain elements of the input better, and externally-derived salience raising whereby elements of input becomes more noticeable as a result of modifications to the input itself or attention being turned to the input explicitly by teacher intervention.

An externally derived method of salience raising artificially is raising the salience of given linguistic elements (Sharwood Smith, 1993, 1995), which may be done in two main ways: by *input enhancement* and *input enrichment* (Reinders & R. Ellis, 2009), which both increase the salience of the item. One way of externally derived enhancement means that key linguistics elements that are to be learned are visually enhanced (e.g. bolded or highlighted in colour) as a measure of positive enhancement. In contrast, enrichment entails an artificial increasing of the number of occurrences of the item (Bruton et al., 2011; Reinders & R. Ellis, 2009). However, it must be pointed out that some studies (e.g. Reinders & R. Ellis, 2009) have combined explicit noticing training (already a form of enhancement) and enrichment into one "input enhancement" construct.

Several studies have discussed the effectiveness of input enhancement and enrichment. Doughty (1991) used marking in the instruction of relative clauses to enhance learning and found marking-based input enhancement to be a facilitating factor for language learning. In one of the key studies, Robinson (1997) was one of the first to prove that learning using enhanced (raised salience) input, though inferior to explicit instruction, is slightly superior to (intentional) implicit learning, while completely random, incidental learning is significantly inferior to the other modes of learning. However, several scholars have pointed out the complexity of salience raising as a facilitator of learning. Dóczi and Kormos (2015) comment that salience alone cannot facilitate acquisition without the presence of intentionality for learning on the learner's part, which – as also present in the learning modes in Robinson's (1997) study – already casts doubt on whether learning via input modification constitutes implicit or explicit learning. Combs (2004) discusses the somewhat contrasting results of salience raising pedagogical experiments (e.g., Doughty, 1991; Leow, 2001; Robinson, 1997; White, 1998) and contends that one of the key reasons input enhancement experiments failed to produce positive results was a lack of attention on the learners' part, advising as per Doughty

(1991) that teachers call students' attention to specific features of the input and that they do not rely on input enhancement alone.

As for video games, the textual input in video games (e.g., descriptions, hints, subtitles of dialogue) could, in theory, be modified to raise the salience or the frequency of target input; however, to the author's knowledge, there are no such COTS games that would do this. Theoretically, the file structure of multiple games would allow the textual input to be modified in a way that few key linguistic features would be highlighted (e.g., by capitalizing the first-person singular *-s* on all relevant verbs to raise the salience of the target feature); however, such input modification is most probably beyond the means of language teachers or language learners, as well. Altogether, it must be said when discussing video-games and game-enhanced learning that language teachers virtually have no means of enhancing or enriching input in games; thus, such an approach is impracticable.

2.3.5 The Implicit/Explicit Interface and The Role of Instruction

As mentioned above, explicit learning mostly consists of processes of conscious memorization of facts, which puts a heavy burden on working memory, which results in the formation of symbolic (explicit) knowledge (R. Ellis, 2009). An important distinction must be made along the lines of implicitness/explicitness in terms of whether *learning* or *knowledge* is discussed. Schmidt (1994) offers the argument that the two are "related but distinct concepts" (p. 20), where the term learning refers to the process of acquiring certain knowledge, and knowledge refers to the output (or the product) of said process. Crucially, Schmidt (1994) also suggests that the notion of *instruction* is handled separately from that of *learning* as in many cases implicit instruction of language does not necessarily lead to implicit learning.

Another key element regarding the implicit/explicit divide and the role of instruction is whether explicit instruction can in any way influence the rate of implicit learning and if yes,

how. Discussing the possibilities and limitations of implicit learning without any explicit metalinguistic knowledge, Hulstijn (2015) argues that while it might be possible for learners to attain an CEFR A2 or B1 (Council of Europe, 2001) through extensive input in possibly target language settings, fossilization at that stage is bound to occur without explicit instruction about higher-level linguistic rules. At the very least, both Hulstijn (2015) and DeKeyser (2003) argue that explicit metalinguistic information about the language will facilitate the language learning process by boosting its speed and efficiency.

Research (VanPatten 1996, 2015) inspired by cognitive psychology investigated the origins of above said long-lasting failures and fossilization in learning given linguistic elements even from vast amounts of input. One problem often discussed regarding question of input processing is the various effects of learned attention (N. C. Ellis, 2015) that stems from mechanisms ingrained in learners when processing their L1: for example, the Lexical Preference Principle by which learners prefer to process lexically-encoded meanings before grammatically-encoded ones or the First-Noun Principle, i.e. learners identifying the first noun in a sentence as the subject of the sentence (Van Patten, 2015, p. 119). Based on his findings, VanPatten emphasized the importance of form-focused instruction in helping learners shift their approach to processing the given L2 input by providing new input-processing strategies to counter the problems of learned attention and/or low salience in the input (VanPatten, 1996).

In similar vein, other cognitive linguists (Cubukcu, 2008; DeKeyser, 2003; N. C. Ellis, 2002, 2005; R. Ellis, 2002; Hulstijn, 2015; Norris & Ortega, 2000; for a contrasting argument, see Paradis, 1994, 2004) have identified the explicit instruction of pedagogical-grammatical knowledge and the development of metalinguistic awareness as keys to ensuring a higher intake from activities involving implicit language learning. While conceding to Paradis's (1994, 2004) argument that metalinguistic information per se does not enter the realms of implicit language knowledge, N. C. Ellis (2002, 2005) contends that metalinguistic information learned

from explicit instruction is at a dynamic interface with implicit learning: metalinguistic information and other explicit knowledge may prime the linguistic system for the parsing of an otherwise ambiguous input by providing context, allowing for the "gaps to be noticed", and thus might "put the system into a new coordinated state" (N. C. Ellis, 2005, p. 325).

Drawing upon Baars (as cited in N. C. Ellis, 2005, p. 337), N. C. Ellis also states that metalinguistic information is also present and put into use in the Working Memory, the part of human memory that stores input registered with conscious attention and processes information in a way that cognitive links are made between newly encountered elements and long-term memory.

In research about language learning from video games, studies have successfully demonstrated a teacher-based approach of raising awareness to the language by creating tasks or word lists for gamers, an approach that was conducive to either intentional or incidental language learning using the input provided by video games (Miller & Hegelheimer, 2006; Ranalli, 2008). Surprisingly, this strand of research was largely discontinued in spite of the positive effects on vocabulary gains.

2.3.6 A Summary of Language Learning Through Video Games in the Context of Language Learning Theories

The previous sections provided a review of cognitivist-interactionist theories of second language learning / second language acquisition, including questions ranging from the interconnected role of input, interaction, and output; through the question of noticing and intake; to the problematic world of implicit and explicit learning, their interface and the related issue of memory, awareness and attention. *Table 1* on the following page offers a brief review of all the summarized points and their hypothesized connection to the process of language learning via video games.

Table 1

Concepts in Second Language Acquisition Theory and Their Hypothesized Relation to Learning from Video Games

SLA Concepts	Hypothesized Relation to Video Games
Input and implicit learning	Input is considered the *sine non qua* of language learning. English language video games offer an ample amount of varied, highly contextualized, authentic, and multimodal input that may or may not turn into actual implicit intake based on how much of it is salient and, thus, is noticed. The effectiveness of implicit learning depends on the proficiency of the language learners and the characteristics of the input (e.g., its quality and the level of morphosyntactic and pragmatic salience).
Salience, noticing and input modification	The input in video games has morphosyntactic and pragmatic language elements of varied salience that allows for input to be noticed with varying degrees of difficulty. Therefore, implicit learning that might happen solely through input from video games is assumed to have questionable effectiveness. Input modification would hypothetically allow input to be enhanced or enriched to raise the salience and, thus, raise the probability of noticing and intake; however, it is deemed highly impracticable for English teachers.
Interaction and output	Interaction allows for negotiation for meaning during communication, which provides an opportunity for the learners to notice the gaps between their linguistic proficiency and that of natives or other learners with a higher proficiency. It is argued that multiplayer video games (like MMORPGs or MOBAs) provide contexts for such interaction to occur between gamers on a daily basis; thus, such games might be best suited for language learning to happen without any explicit instruction. Furthermore, producing output in multiplayer video games might be viewed.
Explicit learning and instruction	Instruction and explicit learning provided by teachers may enhance the intake from implicit means of language learning, learning from video games in this given case, by helping learners develop metalinguistic awareness and mental representations to the language, which might allow learners to attend to input more consciously and, thus, improve the likelihood of implicitly faced input being converted into intake.

2.4 Individual Differences in Second Language Learning

After some of the key theories in SLA and most important concepts relevant to the study have been discussed, the following sections will address factors in second language learning internal to the learners, that are referred to as individual difference (ID) variables. Two

such intra-learner variables that have been in the focus of SLA research since the 1960s are age (Lenneberg, 1967) and language aptitude (Caroll & Sapon, 1957; Primsleur, 1966). The combination of these two robust predictors accounts minimally for 50-60% of the variance in scores of ultimate L2 attainment (Dörnyei & Skehan, 2003; Long, 2014), with around 30% predictive power for age – although there are significant differences between learning in immersion and instructed environments (DeKeyser, 2012) – and at least 30% for aptitude (Skehan, 2014). However, these figures mean that at least 40% of the variance in achievement has to be explained by other factors. A non-exhaustive list of the most widely discussed ID variables other than age and aptitude includes personal variables such as gender; cognitive variables like intelligence, working memory, learning styles, learner beliefs, self-efficacy; metacognitive variables that may include learning strategies and autonomy; affective variables like personality, emotions, motivation, anxiety, attitudes; and socio-educational variables like educational level, literacy and cultural capital (R. Ellis, 1989; R. Ellis & Shintani, 2014; Gass & Mackey, 2012; Long, 2014). The present chapter will briefly discuss the questions of gender, before honing in on variables of more immediate relevance to the topic of the present dissertation: motivation, affect, anxiety, emotions, beliefs, self-efficacy and learning strategies.

2.4.1 Gender

As far as the present dissertation is concerned, the question of gender is relevant to the investigations for one important reason. There is a general view in the public – although not fully supported by reports on gaming (ESA, 2015; Ipsos, 2017) – that the overwhelming majority of learners engaged in playing video games are boys, and therefore it is deemed indispensable to understand whether there are any gender-based differences that might account for this phenomenon or might influence language learning.

Gender differences in language learning and academic achievement in general have been in the focus of research for at least four decades. In instructed settings, a discernible difference has been found in favour of females in terms of language learning (Burstall, 1975; Carr & Pauwels, 2006; Dörnyei, 2008; R. Ellis, 1999), while large-scale worldwide Programme for International Student Assessment (PISA) studies have invariably shown that female students significantly outperform males in their reading competence (PISA, 2019). Studies until the 1990s mostly presumed there were some cognitive differences that per se allowed girls to perform better than boys in many aspects of language learning. The last two decades have produced investigations attending to various social factors that might influence the (language) learning achievements of males and females.

Research on gender-related influences in language learning has mostly focused on motivational differences. Mori and Gobel (2006) found significantly stronger Integrative motivation for females in Japan; Fernández Fontecha (2010) reported significantly higher motivation for female students in relation to vocabulary production; while studies involving Dörnyei and Csizér (You et al., 2016; Dörnyei et al., 2006) have also found general tendencies of female learners having a more positive attitude towards languages and learning, and also more often have a clearly visualised image or a vision about their language learning that is closely linked to their overall motivation. In the Swedish context, Klapp-Lekholm (2008) investigated the English language and overall academic achievement of Swedish secondary school students and their related motivation. Her investigation yielded results that not only showed that female learners generally outperformed males, but that a bulk of this difference is explained by female learners' higher interest and motivation to engage in learning. In a four-year longitudinal study also in Sweden, Henry (2009), working in the framework of Dörnyei's Motivational Self System (2005) for second language learning, found positive changes for female learners' motivational self-concepts whereas those of males' weakened. A subsequent

study by Henry and Cliffordson (2013) although did not find gender-based differences along the lines of self-concepts for motivation to learn English as a second language, the authors comment that such differences did appear in learning an L3, for which they offer the explanation that English has become such a pervasive, prestigious and indispensable language in Sweden as an official second language would (as discussed in Section 2.1).

A highly important discussion shedding further light on the above differences is found in Henry and Cliffordson (2013), who, drawing on social psychology (Brown & Diekman; 2010; Diekman & Eagly, 2008), claim that socially-imposed gender roles and role-congruent behaviour stemming from expectations from such roles may have considerable influence on learners' motivation. In a large-scale study of English-speaking language learners, Carr and Pauwels (2006) in their aptly-titled volume "Real Boys Don't Do Languages" found gender-related differences in favour of females in terms of motivation, but importantly, they have emphasized the importance of social roles and social expectations as contributing factors to boys' inferior motivation: for example, boys reported a fear of being considered effeminate for concentrating on language learning. The influence of social perceptions on male learners' motivation are also corroborated by questionnaire- and interview-based mixed-methods data in Kissau and Quach's (2006) study in Canada, who found that fear of negative backlash from peers and being considered unmanly exerted a strong negative influence on males' motivation to pursue learning French.

Regarding the scope of the research presented here, considering the fact that the majority of gamers are actually male, it will be important to look at the possible interconnections between gender, motivation, achievement and involvement in gaming as such findings might give important insights into second language learning and teaching in not only the Hungarian context, but also the global context.

2.4.2 Affect, Anxiety and Emotions

The fact that language learners' affective states influence cognitive processes has been a well-established fact for not just decades, but centuries, with Arnold (2011) citing St. Augustine in the 4th century BC and Erasmus of Rotterdam in the 17th century as two significant thinkers to discuss the interconnectedness of language learning and emotions. As had been described in Section 2.3, Krashen (1976, 1985) in one of the first models of second language learning postulated the existence of an Affective Filter, a sort of emotional obstacle created by negative experience encountered during the process of language learning, thus serving as an impetus for research into affect in second language learning. Despite Krashen's compelling argument and voluminous neurobiological and neurolinguistic research substantiating the connections between affect and learning Jensen, 1998; Schumann, 1994; Stern, 1983), affective variables other than foreign language anxiety, which has been extensively researched by Horwitz (1986; Horwitz et al., 1986), were generally on the sidelines of research until the turn of the century (Albert et al., 2019).

The reinvigoration of research into affect and its influence on language learning may be attributable to the emergence of positive psychology as a culmination of the decade-long studies of psychologists Seligman and Csíkszentmihályi (2000). Emotions experienced during learning processes have come into the spotlight as potential explanations for success in learning or lack thereof.

One researcher in the field of emotion research, Izard (2010) identified some of the core elements of the highly complex and elusive definition of what an emotion is: a mixture of neurobiological and perceptual-cognitive processes and the existence of a "feeling". Izard (2007) also recognized that emotions may have very different origins depending on the person experiencing them and may also lead to a highly varied range of behaviours. It must also be noted that it is not only emotions that can influence cognition, cognitive processes are also

necessary to develop certain emotions in the process of evaluating experience (Lazarus, 1991) which later may influence people to adjust their cognitive, affective or motivational resources. The said process of evaluation involves two distinct phases: primary evaluation that might be seen as an instantaneous, reflexive judgement on the experience; and secondary evaluation consisting of more conscious cognitive evaluation. The operationalization of emotions in terms of educational research has been forwarded by Izard (2010) who identified six primary emotions: curiosity, enjoyment, sadness, anger, disgust and fear, all of which might be encountered in their purest form in childhood before the secondary, cognition-based evaluation comes into the forefront.

Further studies related to positive psychology were performed by Frederikson (2003a, 2003b), who emphasized the role of positive emotions in fostering openness in people for new experience, broadening people's "momentary thought-action repertoires (…) that build intellectual, physical, social and psychological resources for the future" (2003a, p. 333). Several researchers have subscribed to this view proposed by Frederikson, and the fact that elements of positive psychology are of high value with regard to language learning has gained considerably currency (Czimmermann & Piniel, 2016; Dewaele & MacIntyre, 2004; Gregersen et al., 2014; MacIntyre et al., 2016; MacIntyre & Mercer, 2014; MacIntyre & Vincze, 2017, Piniel & Albert, 2018). This has resulted in further research operationalizing emotions and validating instruments related to the role of emotions academic contexts, such as the Achievement Emotions Questionnaire (AEQ) by Pekrun et al. (2005) and Epistemically-Related Emotion Scales (ERES) by Pekrun et al. (2017), both of which have been reported to have high reliability and validity. A Hungarian-language questionnaire based on the above discussed instruments and insights from Piniel and Albert (2018) has been developed and is currently in the process of validation (Albert et al., 2019) with 12 distinct emotion scales, five

of them positive (enjoyment, hope, pride, curiosity, excitement) and seven negative (boredom, anxiety, apathy, confusion, anger, shame).

Emotions have been found to be an important factor in developing learners' intellectual and psychological resources, and thus have a key relevance to self-efficacy as one of the four sources of self-efficacy beliefs proposed by Bandura (1986, 1988). Therefore, it is justifiable to claim that they might have a direct effect on the cognitive processes involved in language learning per se and on other affective variables such as motivation or beliefs through which emotions might exert an indirect influence on language learning. As such, the present study tries to understand how emotions may provide insight into why and how engaging in playing video games may have a unique impact on the process of second language learning.

2.4.3 Motivation

As R. Ellis and Shintani put it "without motivation, an aptitude for learning an L2 is of little value" (2014, p. 303) due to the fact that language learning is a highly work-intensive process where effort cannot be spared. It is not surprising that in the individual differences subfield of SLA, language learning motivation has been arguably the most thoroughly investigated fields that has been found to be a powerful predictor of L2 attainment (Csizér & Dörnyei, 2005a; Dörnyei, 2005; Dörnyei et al., 2014; Dörnyei & Skehan, 2003).

2.4.3.1 Gardner's (1985) Model of Instrumental and Integrative Motivation. Theories of second language learning motivation have gone under several stages of development since the 1980s when Gardner (1985) postulated two distinct types of motivation based on the orientation of the motivation: integrative motivation where the learners is motivated to learn the L2 to engage with the TL community, and instrumental motivation that

learners might experience when they wish to achieve some goal with an L2 (e.g. college admission or promotion at the workplace).

2.4.3.2 Self-Determination Theory. Later research informed by cognitive psychology, most importantly the *Self-Determination Theory* (SDT) originating in humanistic philosophy and psychology, initiated first by Deci (1971, 1975) found its way into research into second language learning (Noels et al., 2000). SDT drew on the two main incentive motives relevant in motivation: intrinsic (motives internal to the learner that offer a reward through personal enjoyment and discovery) and extrinsic motives (motives external to the learner where reward comes in the form of needs, orders or avoidance of punishment). Later research by Deci and Ryan (1985, 2000) expanded on factors contributing to intrinsically-motivated behaviour and identified these as three basic human needs: competence, relatedness and autonomy. Here, competence refers to people's sense of mastery and a perceived control of the outcomes of an activity, relatedness to a sense of belonging and connection to other people, and autonomy to people's sense of control over their own life. A sub-theory of SDT, Cognitive Evaluation Theory (CET) sheds further light on how external or interpersonal factors may influence a person's intrinsic motivation to perform a given activity. According to the processes of CET, people use their cognitive resources to decide how much motivation to expend by evaluating the extent to which performing that activity comes from the three facets of self-determination (Deci, 1975; Deci & Ryan, 1985, 2000). An important idea related to SDT and CET is what is referred to as "motivational crowding out" that posits the controversial question of whether extrinsic rewards for an otherwise intrinsically-motivated behaviour reinforces and facilitates that given behaviour or, conversely, results in lowered motivation (Frey, 2000). Although debates still exist concerning the reliability of relevant studies, the consensus view (Gneezy et al., 2011) remains that the crowding out phenomenon happens when tangible, extrinsic rewards

are offered in advance for an otherwise intrinsically-motivated activity. This is of particular importance when transposed to the question of whether teachers should or could reward students for engaging in out-of-school, purely intrinsically-driven English language activities, such as playing computer games.

2.4.3.3 Attribution Theory. Another important theory, Attribution Theory (Weiner, 1979, 1986) also informed research into second language learning (Dörnyei, 1994; Hsieh & Kang, 2010; Hsieh & Schallert, 2008; Peacock, 2009; Williams & Burden, 1999). In general, *Attribution Theory* posits that attribution happens when a person attempts to explain the outcome of an activity based on affective or cognitive reactions to the behaviour or outcome. This theory when superimposed to the issues relevant in second language learning, was used to understand the combined matrix of internal or external factors (e.g. their own ability or their teacher's help), controllable or uncontrollable factors (e.g. effort or ability), and stable or unstable factors (e.g. task difficulty or luck) that learners attribute their successes or failures to. It is suggested (Dörnyei & Ottó, 1998; R. Ellis & Shintani, 2014, Williams & Burden, 1999) that learners' attributional patterns play a key role in their attitudes toward learning by having an influence on learners evaluation of the learning experience, and also in their motivation to learning by influencing goal-setting, choices and the magnitude of effort to expend.

2.4.3.4 Dörnyei and Ottó's (1998) Process Model of L2 Motivation. The above two theories also include elements that will later be relevant in the discussion of learner beliefs and self-efficacy (Section 3.5); however, their relevance is better explained by the fact that they helped generate interest in research into motivation in second language learning. Dörnyei and Ottó's (1998) process model of second language learning motivation integrated elements from Gardner's model (1985), Self-Determination Theory (Deci & Ryan, 1985) and Attribution

Theory (Weiner, 1985) to explain the complex nature of motivation that R. Ellis and Shintani (2014) break down into three major components: motivational orientation, behavioural motivation and attributional motivation. These components largely, though not completely, correspond to the three-phase Action Sequence of Dörnyei and Ottó (1998), consisting of a pre-actional phase, an actional phase, and a post-actional phase, which are also impacted on by various motivational influences such as the integrative/instrumental orientation of motivation and self-determination (influencing goal setting in the pre-actional phase), external factors that contribute to or undermine the learning process (affecting the action phase), and learners' attributional styles (influencing post-actional evaluation). Crucially, Dörnyei and Ottó's model recognizes the dynamic, fluctuating nature of motivation, regarding motivation rather as a state in contrast with earlier theories addressing it as a trait.

2.4.3.5 Dörnyei's (2005) L2 Motivational Self System and Related Constructs. A more recent theory of second language learning motivation that has gained considerable currency is Dörnyei's L2 Motivational Self System (2005). Dörnyei, drawing on theories related to self-beliefs; for example, the *Possible Selves Theory* of Markus and Nurius (1986) and Higgins' *Self-Discrepancy Theory* (1989); as well as Ushioda's (2001) notions of causal motivation derived from language learning experience and teleological motivation directed towards future goals, conceptualized L2 motivation as the function of three distinct elements. The first element is the *Ideal L2 Self*, a sort of teleological motivation that reinterprets integrative motivation (Gardner, 1985) and intrinsic motivation (Deci, 1975) as a construct encompassing learners' future ambitions and desires and idealized visions of themselves in connection with learning a second language. The second teleological element, *Ought-to L2 Self* that refers to learners' visualizations of themselves in light of external motives (e.g. paternal or peer pressure, financial incentives, or avoidance of negative outcomes), as such the *Ought-to*

L2 Self subsumes parts of Gardner's (1985) instrumental motivation and extrinsic motivation in SDT (Deci & Ryan, 1985). Lastly, a causal source of motivation in Dörnyei's model is *L2 Learning Experience*, which is the function of the present learning setting learners are involved in and all the past language learning experience they have accumulated. It is important to note here that when juxtaposed with self-efficacy beliefs, this sort of language learning experience is more closely equated with positive emotional experience with learning and not mastery experience. Dörnyei's model was validated based on large-scale questionnaire data (Csizér & Dörnyei, 2005a, 2005b; Dörnyei et al., 2006) and has since been used extensively in L2 motivational research and has been found to be have strong predictive power of the actual effort expended by learners, or in other words, their motivated behaviour (Csizér & Kormos, 2009; Csizér & Lukács, 2010; Csizér & Tankó, 2005; Dörnyei & Ushioda, 2009; Kormos & Csizér, 2008; Kormos et al., 2011; Lajtai, 2020; Lamb, 2012; Piniel & Csizér, 2013, You & Dörnyei, 2016).

As mentioned above, the factors underlying learners' language learning-related motivated behaviour have been widely discussed. Besides the three main used in Dörnyei's (2005) L2 Motivational Self System, self-confidence, learners' interest in and attitudes towards the target language culture and the real or imagined target language community, their frequency of contact with the target language, and their intention to travel have all been shown – to varying degrees – to have a direct or indirect effect on language learning effort (Clément et al., 1994; Csizér & Dörnyei, 2005a, 2005b; Dörnyei et al., 2014).

Linguistic self-confidence (Clément, 1980; 1986; Clément et al., 1994; MacIntyre et al., 1998), a notion also connected to the above discussed Self-Determination Theory, is described as learner's self-perceived competence of being able to use and communicate in the target language without anxiety, which has a direct influence on their Ideal L2 selves and a reciprocal connection to L2 Learning Experience. Self-confidence also leads to a heightened willingness

of communicate (WTC) and is a function of the communicative competence (MacIntyre *et al*., 1998), quantity and quality of social contact and positive language use experience (MacIntyre *et al*., 1998) the learner has had in the given language.

Csizér and Dörnyei (2005a, 2005b) have also claimed that learners' *attitudes towards the target culture* indirectly impact their motivated learning behaviour through their *Ideal L2 Self,* the construct that subsumes integrative motives. Both studies also show a strong effect of positive target culture attitudes on L2 attitudes (subsumed by *L2 Learning Experience* in Gardner's (1985) motivational model) as a predictor of integrative motivation and as such this variable has also been used in various studies of L2 learning motivation (Csizér & Dörnyei, 2005a, 2005b; Ryan, 2006; Yashima & Zenuk-Nishide, 2008) as having indirect impact on motivated behaviour through L2 Learning Experience. Notably, studies proposing the possible effects of attitudes towards the TL community largely focused on English as a Second Language contexts where learners have ample opportunity to meet the TL community. Therefore, the studies of Yashima and Zenuk-Nishide (2008) and Ryan (2006) introduced the term *imagined international community*, which refers to an accessible community envisioned by learners who do not have a direct link to an actual target language community. The latter construct is closely linked to the concept of *international posture* put forward by Yashima and her colleagues (Yashima, 2002; Yashima et al., 2004). International posture is regarded as a substitute for Gardner's (1985) notion of integrative motivation in strongly unicultural contexts like Japan (or Hungary for that matter). Yashima postulates that in cultures where there is a lack of opportunities to have social contact with native speakers of the target language, learners tend not to envision themselves as possible members of the target language community but that of an international community of native and non-natives speakers of the target language (Yashima & Zenuk-Nishide, 2008). Positive attitudes to both real and imagined communities

have been shown to enhance learners' willingness to communicate and motivated learning behaviour.

To provide context for the Hungarian setting, a 2018 large-scale, nationwide survey of foreign language learning in Hungary (Öveges & Csizér, 2018) showed an interesting discrepancy between learners' levels of motivation as reported by learners themselves and as perceived by teachers. Lajtai's (2020) related findings have implied an underlying difference between learners' beliefs in the usefulness of in-school and out-of-school language learning.

The question, therefore, is whether in the monolingual Hungarian setting, where English is not considered a second but a foreign language, and therefore, a majority of learners are not afforded significant out-of-school contact, learners who engage in a predominantly English-mediated activity such as playing computer games show different motivational patterns from those without such amounts of contact with English. Based on the above discussed body of research on motivation, it seems justifiable to hypothesize that ample amounts of authentic, real-life – though online – contact with English might boost learners' L2 self-confidence and attitudes towards target language or imagined international communities which might exert indirect influence on their motivation to learn the language. These questions are deemed to be of exceptional importance in light of the fact that gaming is predominantly an activity engaged in by boys, and female learners might have different attitudes and motivations related to gaming than their male counterparts (Henry & Cliffordson, 2013).

2.4.3.6 Flow in Second Language Learning. Superimposing the notion of flow to the question of second language learning, a relatively small number of studies (Czimmermann & Piniel, 2016; Egbert, 2004; Piniel & Albert, 2017) have substantiated the potential of flow states to create an optimal setting for L2 learning. Egbert (2004) elaborated on her simplified model of flow in the context of language learning, expanding the improved performance

induced by flow as being the function of more motivated learning involving repetition, exploration and risk-taking that creates satisfaction in learners, which ultimately influence language learners' linguistic skills and repertoire. Drawing on Egbert (2004), Piniel and Albert (2017) point to the intrinsically rewarding nature of flow as a predictor of "emergent motivation" (Csíkszentmihályi, 2014, p. 234), which through the enjoyability of the activities and the improvement of learners' skills, exert an indirect influence on language learning outcomes. In their study, they found that flow experience, indeed, impact on language learners' perceived self-efficacy (discussed later in Section 3.5.) which served as a moderate predictor (*Beta* = .48) of motivated learning, the key motivational index variable discussed in detail in the previous section.

*2.4.4 Learner Belief*s

Pajares (1996), interpreting a century-long tradition in research, posits that beliefs, an affective-cognitive construct rooted in prior experience, are a "a filter through which new phenomena are interpreted and subsequent behavior mediated" (p. 544). In the field of language learning, studies by Horwitz (1987, 1988), Wenden (1986, 1987), and later Kern (1995) found that learners' preconceptions or beliefs about language learning, stemming from learner's experience with learning the language and their personal or cultural values, have an influence on their learning behaviour. In his seminal article about beliefs in learning and teaching, Pajares (1992) also mentions that beliefs, which are relatively static constructs, can be key precursors to certain actions in learning and teaching. Although the direct predictive power of beliefs on language learning success has been deemed moderate at maximum (R. Ellis & Shintani, 2004), numerous studies (for a summary, see Yang, 1999) have shown that learner beliefs about language learning have an effect on learners' approach to language learning, their choice of learning strategies and their readiness to become autonomous; therefore, beliefs may

predispose learners to commit to certain actions in the language learning process. One of the most widely-used instruments to assess learning beliefs is Horwitz's (1987, 1988) Beliefs About Language Learning Inventory (BALLI) that examines learners' preconceptions about the existence or importance of aptitude, the overall ease or difficulty of language learning, the process of language learning, expectations about language learning, and strategies related to language learning and communication.

Furthermore, findings (e.g. Henry, 2014; Henry & Cliffordson, 2017; Ryan & Mercer, 2011) related to self-efficacy and the relative perceived efficacy of instructed and naturalistic language learning have shown that learners' beliefs can exert an impact on motivated behaviour. Stemming from learning experience, this lack of positive outcome expectations about the efficiency of instructed learning (even as compared to naturalistic learning) may even negate the facilitative effect of self-efficacy on motivation.

2.4.5 Self-regulation, Learning Strategies, Engagement

Another set of individual difference variables deemed relevant to the present study are *self-regulation*, and l*earning strategies*, both of which are, although to varying extent, theoretically tied to Bandura's (1986, 1988) social cognitive theory. Although the concepts are tightly interconnected, it is highly important that they are delineated for better understanding and operationalization.

The idea that the conscious use of *language learning strategies* might strongly contribute to language learning success has generated a substantial body of research (R. Ellis & Shintani, 2014) ever since since Rubin's (as cited in Wong, 2005) characterization of "good" language learners as ones consciously paying attention to meaning, seeking opportunities to practice the language, are willing to take risks and guesses about the language and are able to monitor the output of others and themselves. Although there are numerous ambiguities about

what activities can be labelled as strategies, A. Cohen (2011) defined strategies as "thoughts and actions consciously selected by learners to assist them in learning and using language in general, and in the completion of specific language tasks" (p. 682). Taxonomies of learning strategies for second language learning oriented towards the then-emerging notion of communicative competence have been developed by both Oxford (1990) and Stern (1992), which albeit with slight differences, included cognitive (strategies about learning and memorizing), metacognitive (planning and management), affective (related to motivation, anxiety, attitudes), and experiential/compensation strategies. In the area of second language learning, findings have pointed to the interrelations between the learners' self-efficacy and the usage of language learning strategies (Horwitz et al., 1986; Oxford & Shearin, 1994).

Such learning strategies were found in various studies of vocabulary acquisition in video games (for a summary, see Yudintseva, 2015) to be conductive to language learning as numerous learners reporting vocabulary gains reported cognitive strategies (e.g. guessing from contextual clues, language repetitions) and a variety of social strategies (e.g., talking to peers, listening to native-speaker gamers or gamers with superior proficiency). Strategies that seemed to disrupt the flow of gaming (e.g. note-taking, dictionaries, word lists) were deemed impracticable by most players.

It must be pointed out that later research (as summarized in R. Ellis and Shintani, 2014, pp. 309-310) has, however, yielded largely inconclusive results on the general effects of strategy training on language learning gains. Nevertheless, R. Ellis & Shintani conclude by pointing to the role of verbalizing strategies for effectiveness and strategy training for the maintenance of motivated behaviour as consensually important and efficient techniques for learners and teachers.

As Mills (2014) notes, as the limelight of research has moved in the last two decades from the learning product to the process, so has the focus shifted from learning strategies to

self-regulation (p. 11), prompted among others by Dörnyei's (2005) argument that instead of honing in on how people use strategies, research should focus on how much they are "active participants in their own learning" (p. 191). Self-regulation is often defined as a person's ability to purposefully adjust their conduct towards to accomplish their goals by using strategies and exercising control over their own thoughts, beliefs, environment, emotions and behaviours (Carver & Scheier, 2010; Pintrich & De Groot, 1990; Zimmermann, 1998; 2000). As an offshoot of social cognitive theory, self-regulation is also understood as stemming from the interaction of personal, behavioural and environmental variables known as the triadic reciprocal determinism (Bandura, 1986, 1988; Zimmermann, 2000). Regarding how self-regulation is actualized, Kuhl (1985) was the first to conceptualize a taxonomy of self-regulatory strategies that people use to control their behaviour. His strategies involved control over cognitive, emotional, motivational and environmental processes. Studies based on Kuhl's (1985) framework have validated a taxonomy of five major types of strategies (Tseng et al., as cited in Kormos & Csizér, 2013): commitment control, metacognitive control (related to controlling concentration), satiation control (control over boredom), emotion control, and environmental control (creating a suitable studying environment). Research on the relation of self-efficacy beliefs and self-regulation strategies have found that more self-efficient learners tend to engage in more self-regulation and select more task-appropriate strategies (Zimmermann, 1998; Mills et al., 2007).

Kormos and Csizér (2013) pointed to the intricate links between autonomy, self-regulation, strategy use and motivation. Notably, whereas some (Reeve et al, 2008) have equated effective self-regulation with autonomous behaviour, Kormos and Csizér argue for autonomy to be seen as "control over a wider range of phenomena than self-regulation" (p. 280) as autonomy also encompasses responsibility for the overall process of learning and its related environment. Their survey of research on the topic of self-regulation, autonomy and

motivation implied the possibility of a reciprocal relationship between motivation and autonomy. In their study, Kormos and Csizér (2013) used structural equation modelling and validated a model that integrates motivation, autonomy and self-regulation, where motivated learning behaviour is present as a regressional predictor of self-regulation for learning, which, in turn is actualized as autonomous use of resources and technology for learning.

Lastly, students' actual engagement is a concept worth understanding, especially as this engagement (either in-school or out-of-school) can be equated to the behavioural part of Bandura's (1986) triangle of reciprocal determinism. However, engagement should not be conceptualized as an individual difference variable, but most probably as the function of a variety of such intrapersonal variables, with a number of studies in SLA mostly focusing on its relation to motivation, presuming engagement to be "motivation in action", the actualized form of the intended effort (e.g. in Csizér & Dörnyei, 2005a, 2005b). It has also been found that language learning motivation is a strong predictor of students' autonomy and self-regulatory practices (Kormos & Csizér, 2003). Nevertheless, despite the fact that motivation is strongly associated with actual engagement, it should not be considered a sole prerequisite of engagement (Appleton et al., 2006). Additionally, they note, engagement is also related to self-efficacy, affect, relatedness, self-regulation, or cultural capital, and operationalize the engagement construct in their survey as consisting of academic (e.g. being on task, completion of assignments), behavioural (e.g. participation, autonomy), cognitive (e.g. self-regulation, use of strategies, goal-setting), and psychological (e.g. belonging, relatedness to teachers and peers) facets, a taxonomy also applied to various extents in other questionnaires as well (e.g. Handelsman et al., 2005; Pekrun & Linnenbrink-Garcia, 2012; Philp & Duchesne, 2016). As the present study finds self-efficacy and social cognitive learning theory of Bandura key to the understanding of gaming and video games, it is surmised (similarly to Csizér and Kormos, 2013) that engagement should not only be treated as the coveted criterion measure of models,

but should be thought of as a point of origin for possible mastery experiences. Ideally, learners who are more engaged in the classroom process of language learning are arguably more likely to derive mastery experiences charged with positive emotions, which in turn will directly and indirectly influence learners' future engagement in learning.

Engagement, self-regulation and learning strategies are of key relevance to the research agenda of the present dissertation. As Kormos and Csizér (2013) note, "autonomous learning and effective self-regulatory strategies are increasingly important in foreign language learning; without these, students might not be able to exploit learning opportunities outside language classrooms" (p. 275). Although it has been claimed (Sundqvist, 2011) that learners getting involved in English-mediated activities such as gaming is a realization of language learning autonomy; however, doubts have been cast over the correlation of out-of-school contact with English and conscious learning autonomy (Benson, 2013; Lajtai, 2020).

As far as self-regulation and its application in out-of-school language learning contexts is concerned, learners have been shown, although with great variance, to rely on a wide range of strategies to cull potentially learnable language from out-of-school input; however, the necessity of learner training for learning beliefs and metacognition from teachers was underscored as a predictor of potential learning (Lai & Gu, 2011).

Regarding the question of engagement, the comments of Henry (2013, 2014; Henry & Cliffordson, 2015) about self-authenticity are also considered crucial due to the assumption that learners encountering in-school learning experiences that are incompatible with what they, with experience of language use outside the classroom, feel stimulating and self-authentic will be generally less engaged in the language classroom. Therefore, the study presented here will focus on the possible direct or indirect relationship between self-authenticity and engagement.

2.4.6 A Summary of the Theoretical Background on the Relations of Video Games to Individual Difference Variables

The literature review of the study looked at the connections of language learning and video games from a multiple angles; however, it took a social cognitivist approach (Bandura, 1977, 1978, 1986, 1988, 1997) to understanding the role of in-school and out-of-school *mastery experiences* and *outcome expectations* on learners' *self-efficacy beliefs*, *motivated behaviour*, and *engagement* in a certain activity; i.e. language learning. In other words, it was hypothesized that language learners involvement in English-mediated out-of-school activities like playing video games gives them a sense of achievement (mastery experience) that impacts on their self-efficacy beliefs, motivation, and engagement in in-school and out-of-school language learning, while also affecting their belief of the usefulness of in-school language learning (outcome expectations).

Important additions to the hypothesis were the concept of *self-authenticity* in language learning and *flow*. Self-authenticity as put forward by Henry (2013, Henry & Cliffordson, 2015) refers to the fact that some language learning activities are more personally meaningful, self-relevant, and emotionally-cognitively stimulating than others: learners who have ample amounts of such language learning experience (e.g. through gaming) may find in-school language learning to be inauthentic, and therefore, less useful for achieving the overall goal of language mastery. Also, flow theory (Csíkszentmihályi, 1975, 1990, 2014) was invoked as video games have long been considered as a flow-inducing activity (Kaye, 2016; Van Eck, 2007) as they fit most, if not all, of the defining factors of flow states: they are played for self-relevant reasons (intrinsic motivation), there is immediate feedback for the player, it requires intense focus, the challenge is adjusted to the player's level of expertise, and players often experience a loss of their sense of time. It is hypothesized in the study that it is this state of

flow experienced while playing English-mediated games contributes to learners considering it a positive and self-authentic mastery experience.

Besides the above presented variables connected to self-efficacy as per Bandura's social cognitive theory, various other language learning-related individual difference variables are also discussed, including language learning motivation as per Dörnyei's L2 Motivational Self System (2006), where motives related to the Ideal L2 self can be understood as stemming from learners intrinsic interest in games and their future self-image as competent English-speaking gamers, and the Ought to L2 self as the expected language learning competence of gamers. Learner beliefs and attributin theory are also discussed in relation to language learning.

The literature review presented an overview of why video games might be considered to hold great potentials for language learning. Drawing on Reinhardt and Thorne (2016), three important qualities of video games are highlighted that make them not only suitable, but also conducive to language learning: their interactivity in both implicit and explicit senses; their motivating nature that is inherently based in personal (intrinsic, integrative) motivation that is often called upon in theories of gamification in learning; the goal-oriented behaviour that allows learners to focus on achieving a goal while using the language, and, as aptly pointed out by Gee (2007), meaningful, contextualized, authentic language use.

Furthermore, it is also argued that computer games allow for language learning that involves a naturalistic context supplemented with authentic language that affords implicit learning, that facilitates the development of learner autonomy, and that is underlain by the principles of task-based learning. Various aspects of language learning, especially implicit learning and its interface with explicit learning are also discussed.

Table 2 on the next page provides a brief overview of the discussed individual difference variables and their connection to potential language learning through video games.

Table 2

Key Individual Difference Variables in Second Language Acquisition and Their Hypothesized Relation to Learning from Video Games

ID Variables	Hypothesized Relation to Video Games
Motivation	As per Dörnyei's L2 Motivational Self System (2005), gamer-learners might derive motivation from an Ideal L2 Self that is connected to them viewing themselves as active and competent users of the L2 in the gaming world. They might also derive motivation from external expectations in the gaming community (Ought-to L2 self) to become proficient users of the L2. Furhermore, they might develop positive language learning experiences and positive attitudes towards language learning while playing the video game, which – as Dörnyei argues – is another important factor in motivation.
Self-authenticity and its connection to engagement	Playing video games is often seen to be a self-congruent, motivating, stimulating and personally relevant experience (Henry, 2013). Thus, video games might serve as a factor of motivation to use and engage in English language activities; however, they might be at odds with the non-authentic in-school learning experiences of students, thus lowering their level of engagement.
Flow	Video games have been associated with flow in literature for decades as they also involve immense concentration, heightened awareness, loss of self-reflection, sense of control, and a distorted perception of time. Such positive flow experiences may give learners positive mastery experiences with using the L2 in a sort of authentic environment; and thus, might improve learners' self-efficacy beliefs.
Self-efficacy and outcome expectations	Self-efficacy beliefs have been at the heart of the social cognitive theory (Bandura, 1977), one of the key psychological theories that serve as a basis of the current study. It is argued that gamer-learners might be gaining various types of positive learning experiences: mastery experiences from their own successes and vicarious experiences from other people's successes in using the language, which, in turn, develops their self-efficacy beliefs – a concept closely related to learning motivation. Furthermore, another idea connected to self-efficacy is that of outcome expectations. When faced with decisions, people evaluate their actions depending on how likely they are to bring positive outcomes. The gamer-learners positive mastery and vicarious experiences may bring about positive expectations towards learning languages via gaming, while their perceptions about in-school language learning may be less positive.

2.5 The Possible Role of Teachers

The above sections presented a review of research on the potentials of video games in the framework of multiple learning and language learning frameworks and on the general nature of language learning. As attested by research discussed in Section 2.3.4, language teachers have an important role not only in providing ample amounts of input for the learner and developing learners' mental representations of linguistic features through explicit instruction, but also in equipping learners with language learning strategies (including input-processing strategies), metacognitive and metalinguistic awareness, which may help learners in attending to the input and noticing the gap and also in consolidating mental representations through input. It is argued here that English language teachers today are faced with a multifaceted problem that is a function of two distinct, but co-occurring 21st-century phenomena: the emergence of *new digital literacies* and the spread of English meditated by globalization and the internet.

Firstly, although is clear that new technologies change people's concepts of what a text is or what reading involves (Swenson et al., 2005), the emergence of new digital literacies cannot be equated with the emergence of digital technologies as the latter are only tools in a world made up at times of entirely new spaces of meaning-making (Lankshear & Knobel, 2007) and new types of texts and composition (Swenson *et al.*, 2005) as seen for instance in video games, blogging or numerous social networking sites, which are governed by new socially constructed and recognized ways of communication and negotiation (Lankshear & Knobel, 2006). Emerging new digital literacies involve an altogether new ethos different from conventional literacies in that it allows for more democratic, participative and collaborative processes of meaning-making (Lankshear & Knobel, 2007). The relevance of such an ethos is crucial to the role of the teacher; by allowing for participation and collaboration, new literacies are by their very nature less expert-dependent, which questions the role of the teacher as the

sole purveyor of knowledge. Concerning digital technology, Sprague (2004) controversially states that teachers have constantly been on the backfoot when new potentially digital technologies emerge and are often in a decade's worth of delay behind the currently used technologies, which is seen as an ominous sign in an era, in which digital literacy can become a currency for teachers among learners (Becker, 2007).

Secondly, with the proliferation of the internet and thereby English as the main mediating language of the Web (Bruthiaux, 2003; Sundqvist & Sylvén, 2016), learners have been provided a never-before-seen opportunity to encounter English through various media without ever having to leave the comfort of their homes. Although numerous languages before have served as a *lingua franca* (e.g. Latin or French); English is seen as fundamentally different and superior in its geographical and intercultural diffusion and the variety of domains it serves (Dewey, 2007). The now almost ubiquitous status English has achieved through globalization and the proliferation of the internet is seen as a factor transforming the overall work of English language teachers, who are faced with learners using highly diverse language they may have acquired from extramural contact with English and a strongly related gradual erosion of the importance of native-speaker norms (Sundqvist & Sylvén, 2016).

As such, an issue crucial to the potential of video games relates to the possibilities of their implementation in actual pedagogical practice, the understanding of which requires review of what teachers do in (and outside) the classroom and what intrapersonal system involving attitudes, beliefs, knowledge and experience may influence their behaviour.

2.5.1 Teacher Cognition

Language teachers' pedagogical knowledge, beliefs and attitudes – or teacher cognition as per S. Borg's (2009) umbrella term – have been the topic of an extensive body of research since the 1990s (Calderhead, 1992, Kern, 1995, Pajares, 1992), and have been shown to be at

the core of teachers' decision-making in terms of in-class pedagogical choices and planning processes as well (S. Borg, 2011, Fives & Buehl, 2012; Fives et al., 2014; Lunn et al., 2015).

An important factor at play regarding teachers' beliefs, attitudes, and by extension pedagogical choices is often considered to be their own learning experience (S. Borg 2003, 2009; Moddie, 2016, Pajares, 1992) via *apprenticeship of observation* (M. Borg, 2004, Lortie, 1975), however, it must be pointed out that in many cases negative experience as learners can lead to an inverse effect, a so-called *anti-apprenticeship of observation* (Moddie 2016), where teachers strive to avoid copying their own teachers' techniques. As such, the ways current in-service English teachers learned the language might hold key insights into their beliefs and thus, their pedagogical practice.

2.5.1.1 Factors Influencing Teachers' Adoption of New Technologies. In the last decades, studies focusing on teachers' cognition and the teacherly use of new technologies, have also shown teacher's beliefs, attitudes and underlying first-hand experience to be a significant factor in their willingness to adopt digital technologies. Numerous recent studies have linked teachers' knowledge and beliefs (influenced by experience and knowledge) regarding new digital technologies (Albirini, 2006; Becker, 2007; Blume, 2019; Kessler, 2007; Tondeur et al., 2017) to their application, or lack thereof, in language learning classrooms.

A widespread model of understanding teacher's attitudes towards implementing new technologies (e.g., ICT devices) in their practice is the Technology Acceptance Model (TAM) of Davis (1989), which, rooted in social cognitive theory (Bandura, 1977, 1986), states that perceived ease of use and perceived usefulness are the two main predictors of acceptance, both of which are significantly impacted on by knowledge of and experience with the technology (Blume, 2019; Hsu, 2016). Another important conceptualization of the factors influencing teachers' decisions to accept innovation showed that teachers' willingness to try new

technologies depended on the perceived advantages of the technology, its compatibility with teaching practices, a relative lack of complexity and the presumption of observable results (Rogers, 1995).

It has also been argued (McGrail, 2005) that when faced with a choice, teachers apply a practicality ethic to their decisions (i.e., focusing on achieving beneficial outcomes for students) against a rationale ethic (i.e., suggestions and expectations from researchers and administration). However, many studies have identified a list of other barriers hindering teachers from adopting new technologies such as video games in their everyday pedagogical practice, including teacher's beliefs and attitudes, technological pedagogical content knowledge, a lack of relevant experience, institutional challenges, lack of time and resources and an overwhelming focus on exam results (Albirini, 2006; Kadel, 2005; Watson et al., 2013).

2.5.1.2 Factors Influencing Teachers' Adoption of Video Games. Even though video games have become a well-known pastime across all social groups, the use of digital games in formal teaching has remained on the sidelines of research interest (Blume, 2019; de Grove et al., 2012). De Grove et al.'s study (2012) broadly working in a social cognitivist framework used structural equation modelling (SEM) to understand the factors influencing the acceptance of digital games in the classroom and found that the perceived usefulness, ease of use and the learning opportunities afforded by digital gaming were the strongest predictors of teachers' intention to use video games in their classes, underlain by teachers' experience with computer games that factored into perceptions about ease of use and curricular relatedness.

Still outside the context of language learning, Becker (2007) offers an interesting insight into the development of teacher cognition regarding video games: teachers who were afforded the opportunity to acquaint themselves with game design reported a newfound sense

of relatedness to their learners engaged in gaming by understanding more about video games and gaming culture even without becoming regular gamers themselves.

As far as the context of English language teaching is concerned, Blume (2019) pointed out that despite the fact that numerous other digital and especially CALL technologies have gradually entered the practice of English language teaching (Albirini, 2006; Burston, 2014; Li & Walsh, 2011), it is argued that digital games have not found their way into the English language classroom. Her research succinctly points out an important discrepancy between educational beliefs that young *digital native* (as per Prensky, 2001) pre-service teachers are the "gatekeepers to technological change" (Blume, 2019, p. 2) and the actual relative lack of digital knowledge and competence on pre-service teachers' side as attested by her results. Her results also indicate a relevance of the apprenticeship of observation effect (Moddie, 2016, Pajares, 1992) on pre-service teachers' beliefs about digital technologies and video games as their experience of learning English in high schools were found to be significantly correlated with their said beliefs.

Nevertheless, studies (Lambert & Gong, 2010; Martin, 2015) on integrating ICT skills into teacher training curricula have shown a highly positive influence on pre-service teachers' attitudes and self-efficacy; therefore, it should be argued that it is indispensable that teacher training courses equip pre-service teachers with knowledge to understand and harness the English language learning potentials found in video games and other out-of-school activities.

Lastly, in reflection to the changing roles of teachers owing to the widespread proliferation of English in people's everyday lives, Henry et al. (2018) comment that as learners' motivations and engagement is bound to be different due to the constant exposure to English, teachers' roles and techniques related to motivating learners are changing, and call for the extensive use of authentic materials (e.g. possibly video games) with possibilities of authentic usage in the context of instructed language learning, which allow for creative self-

expression for students. As far as the question of video games and teaching is concerned, Lombardi (2012) addresses similar issues and suggests that language teachers should become "*edurectors* […], an amalgamation of educator and director" (p. 47), who may inspire learners to play video games for language proficiency gains and other than teaching the language and emphasizing the role of awareness, may also help them by directing their attention to game-related input or interaction significant for language learning. In the same vein, Egenfeldt-Nielsen (2007) also points out that language instruction definitely needs to attempt to get involved with video games; however, he is wary of the possible consequences of instruction intervening into an otherwise intrinsically-motivated activity, but still commenting that familiarity with the gaming world and dismantling preconceptions about gaming should be considered an important first step towards integrating gaming into the curriculum.

2.5.2 A Summary of the Role of Teachers' Beliefs, Knowledge and Attitudes

Based on the brief review of literature in this section, it is argued that experience with gaming must be a cornerstone to positive attitudes about games, which might manifest itself in teachers helping their students exploit the learning potential in video games. Arguably, the degree of connection towards games (i.e. whether it is first-hand experience or experience connected to close friends or relatives) might be an important factor in the formation of such positive attitudes. Importantly, such experience can positively impact teachers' attitudes towards gaming, their perceptions of the usefulness of gaming, and the perceptions of games' relevance to the process of language learning.

It must be noted, however, that despite the apparent importance attributed to beliefs and attitudes in pedagogical processes, multiple studies have pointed to discrepancies between beliefs and actual in-class behaviour (Basturkmen, 2004, 2012; Phipps & S. Borg, 2009), all stemming from the complexity of teaching as a profession and a vast array of institutional,

personal and interpersonal hindrances. Thus, teachers' responses in the present study may not be fully reflective of their actual teaching practice.

The present study, therefore, puts a focus on teachers' beliefs, knowledge and attitudes towards the nature and perceived potential of learners' contact with English in out-of-classroom settings (extramural English) and in particular in the context of gaming, and explores how that set of beliefs and attitudes may have an effect on teachers' decisions to recommend out-of-school activities such as video games.

3 Research Design

The present chapter presents the design and the procedure of the investigations in the dissertation. The chapter opens with a brief examination of the perceived research gap that the investigations intend to fill and a discussion of the general aims of the study, followed by a list of research questions. As the overall research project adopted a mixed-methods approach, several arguments will be presented to explain the epistemological and methodological rationale behind not restricting the design to either the qualitative or the quantitative paradigm. Subsequently, the instruments of data collection and the participants involved in the study are described with reference to said aims and research questions. With regards to participants, a detailed discussion will be presented regarding the sampling procedures for the study that can also serve as a gauge for the generalizability of the results. The chapter ends with the presentation of the variety of statistical methods used in the quantitative data analysis and a discussion of the rationale of using a given statistical method or procedure.

3.1 Research Niche

Based on the review of literature presented above, three important gaps in research have been identified which the present study attempts to fill. Firstly, there has been relatively little research (for a summary, see Peterson, 2016) on the ways in which gaming can influence a range of learner variables such as motivation, self-efficacy, authenticity and beliefs and how such variables may therefore influence in-class and out-of-class engagement with the second language. Secondly, most extant studies in the topic have been exploratory in their nature with relatively small samples and almost invariably used quantitative methods (Chik, 2012, 2013; Sundqvist, 2011; Sylvén & Sundqvist, 2012) with little in-depth data on how video games might indirectly influence language learning. Thirdly, literature on the topic of the relation of

language learning and video games is virtually non-existent in Hungary, and also in general the majority of studies have been conducted in English as a second language countries like the United States of America, Hong Kong, or in Sweden and Finland, where English is an official first (USA) or second language (Hong Kong) or (as discussed in 2.2.2) often regarded as a second language instead of a foreign one (Sweden, Finland).

3.2 The Aim of the Research Project

Based on the review of extant literature of second language learning, individual differences variables influencing the process of second language learning, and gaming and its relevance to language learning, the broad aim of the present dissertation has been devised.

The investigations reported here and the overall research project primarily aimed to give insight into the language learning motivations, beliefs and attitudes of Hungarian English learners who engage in playing video games that, especially when compared to non-gamer learners, may explain the perceived advantages and disadvantages of video gaming for language learning with an intricate set of intrapersonal variables.

Secondly, with an eye to possible implications and advice for the practice of second language teaching, another aim was to take stock of Hungarian English teachers' experience, knowledge, attitudes and practices regarding video games and language learning. Data collection for this second point of interest served three aims: firstly, to provide experience-based insights from Hungarian teachers that can complement research findings from countries like Sweden or Finland that have a different linguistic landscape from Hungary; secondly, to understand Hungarian teachers' attitudes towards and beliefs about gaming and gamer-learners with due regard paid to intrapersonal factors influencing these variables; and thirdly, to use teachers' insights and experience that, combined with theoretical underpinnings of learning research and findings of game-based or game-enhanced language learning, may be

instrumental in drawing up pedagogical implications and devising proposals to ensure a deeper understanding of how video games may be applied to language learning education.

3.3 Research Questions

In line with the aims and research gaps stated in the above sections, three main research questions have been drawn up with a line of detailed subquestions for each. The first broad research question focuses on the teachers and on drawing insights related to the potential of video games from teachers' experience. The second broad research question is at an intersection of teachers' and learners' perspectives as it attempts to compare both groups' usefulness beliefs related to in-school, out-of-school and gaming-mediated language learning. The third research question focuses entirely on the language learners and the dynamic network of intrapersonal variables (e.g., self-efficacy, motivation, self-authenticity) that may shed light on how gaming may have a positive influence on learners' attitudes and motivations towards learning English and their overall classroom engagement. It should be highlighted here that in order to avoid the constant use of such roundabout phrases as 'learners of English who engage in video games' or 'English learners who play video games', the terms 'gamers' and 'gamer-learners' will be used throughout the rest of the dissertation. The three main research questions of the study and the corresponding sub-questions are found in *Table 3* on the next page:

Table 3

Research Questions and Related Subquestions Used in the Present Study

Main research question	**Subquestions**
RQ1. What views do Hungarian teachers of English hold in relation to the potentials of commercial off-the-shelf (COTS) video games for language learning?	1.1 What are Hungarian teachers' views about the possible advantages and disadvantages of COTS video games with regards to language learning? 1.2 What possibilities do Hungarian teachers of English see feasible in terms of incorporating video games in their language teaching practice? 1.3 What are Hungarian teachers' views of language learners who they perceived as gamers in terms of their proficiency, motivation, self-confidence and in-class engagement? 1.4 Are there any differences in Hungarian teachers' contact with and perceptions of video games as compared to other out-of-school English-mediated activities? 1.5 To what extent are Hungarian teachers' attitudes towards recommending video games for language learning a function of their age, contact with video games and beliefs about the usefulness of gaming for language learning?
RQ2. What forms of English language use occur in the video games Hungarian gamer-learners report playing?	2.1 To what extent do Hungarian gamer-learners use the English language in in-game and beyond-game contexts? 2.2 How important is language use to the gameplay of the most popular video games for Hungarian gamers? 2.3 What forms of linguistic input and interaction is afforded by single-player games that Hungarian gamer-learners report to be playing?
RQ3. In what ways (if any) are gamer-learners different from their non-gamer counterparts in terms of variables influencing second language learning?	3.1 Are there any significant differences in self-efficacy beliefs, outcome expectations and perceived sense of authenticity of language learning between online gamers, offline gamers and non-gamers? 3.2 Are there any statistically significant differences in self-reported language learning motivation, self-confidence, boredom and engagement in classroom contexts between online gamers, offline gamers and non-gamers? 3.3 To what extent do gamers' language use experience in games predict their general language learning self-efficacy beliefs? 3.4 In what ways are the examined language learners' engagement and motivation a function of their outcome expectations, self-efficacy beliefs, self-authenticity, experience and L2 selves? 3.5 What differences are there between gamers and non gamers in the models of language learning motivation and engagement examined in RQ3.4?

3.4 The Rationale behind the Mixed Methods Approach

The question as to whether the qualitative or the quantitative paradigm of research should be used in social sciences has been fraught with conflict and controversy. The dominant quantitative research paradigms is defined by the positivist ontological-epistemological postulate that there is a singular reality that can be understood possibly by dividing it into parts and categories, and this understanding can be achieved through complete objectivity on the researcher's part. In contrast, qualitative research is defined by the assumption rooted in phenomenology that there may be as many multiple realities as people (or participants), and therefore these realities cannot be assessed entirely objectively (Maykut & Morehouse, 1994). Although the author of the present dissertation considers himself a positivist and has had more experience in the quantitative paradigm, due to the fact that anecdotal evidence (presented in the introduction) and personal experience about the controversial nature of gaming had served as a key impetus for the research project, it was seen best not to restrict this dissertation to the quantitative paradigm.

The last two decades of social science research has seen the emergence of the "paradigm-defying" mixed methods research (Creswell, 2003; Dörnyei, 2007), which, other than advocating to forgo the advantages of either paradigm, attempts to enhance the validity of research by combining research methods that complement each others'. Implementing the idea of methodological triangulation, i.e. combining multiple data sources for the multi-level analysis of a single problem area, is also widely seen as both a means of achieving a more comprehensive understanding of the problem and a means of corroborating results with each other (Dörnyei, 2007). Dörnyei also argues that a mixed methods approach is a "more comprehensive means of legitimizing findings than do either QUAL [qualitative] or QUAN [quantitative] methods alone by allowing investigators to assess information from both data

types" (p. 62).

Crucially, however, there have been warnings (Dörnyei, 2007; Maxwell & Loomis, 2003) that mixing of methods should be done in accordance with the principle that any two methods should supplement each other and that the methods comprising a mixed methods study should also adhere to the general, although somewhat differing, definitions of research validity in both paradigms. In the design process of the present research project, the fact that anecdotal evidence about language learning through computer games served as one of the key inspirations for the investigation, a narrative-based, qualitative angle should not be eschewed since it can serve as a basis for a large-scale quantitative study during the process of drawing up an item pool by assisting in the creation of new items and also in adopting items for the Hungarian context. This example of mixed methods approach is described by Dörnyei (2007) as a 'qual → QUAN' approach, where the focus is predominantly on the quantitative phase of the investigation; however, the small-scale qualitative phase informs the quantitative phase by acting "as a valuable source of ideas for preparing the item pool" (p.171).

3.5 Participants

The following section gives a description of the participants involved in each stage of the research project with the rationale behind the sampling procedures also elaborated on.

3.5.1 Participants for RQ1

In order to present a relatively representative sample of the Hungarian population of teachers and to shed light on a phenomenon that is seemingly ubiquitous in Hungary, the author attempted to involve English language teachers from all around the country, and to represent all types of primary and secondary education.

3.5.1.1 Participants in the Interviews. The sample for the interview was made up of 8 teachers with an average age of 43. The majority of the teachers were teaching in secondary grammar schools at the time. For collecting participants for the interview, a *maximum variation sampling* procedure (Dörnyei, 2007) was used to extend the scope of the data collection to people who have distinctly different teaching experience and experience with gaming. This procedure was deemed critical as gaming seemed to be a niche activity among teachers. Therefore, a sample was drawn up of 8 teachers ranging from experienced former-gamer teachers and also teachers who, when contacted, explicitly claimed to have very little interest or "positive things to say" in connection with gaming. This variation is also seen as one of the key advantages of this sampling method, namely if common themes are found across this variation of participants, it may be considered a relatively stable and important feature (Dörnyei, 2007). The table below presents the most important background information on the involved teachers.

Table 4

A Description of the Participants in the Teacher Interview (All names are pseudonyms)

Name (Gender)	Age	Teaching experience, current school type	Gaming experience
Angela (F)	50	27 years, primary school	Little second-hand experience
Carl (M)	46	15 years, secondary grammar and vocational schools	None
Erica (F)	34	6 years, secondary grammar school	Considerable second-hand experience
Isabella (F)	43	21 years, secondary grammar school	None
Lena (F)	51	27 years, primary and secondary grammar school	Little second-hand experience
Otto (M)	25	2 years, secondary grammar school	Casual gamer
Robert (M)	27	4 years, secondary grammar school	Casual gamer
Tamara (F)	50	20 years, secondary grammar school	Little second-hand experience

3.5.1.2 Participants in the Teacher Questionnaire. The sample for the teacher questionnaire (TQ) consists of 100 Hungarian teachers of English as a foreign language. The participants at the time of completing the questionnaire were around 44 years of age (M = 43.91, SD = 10.26) and have had experience as teachers of English of 19 years on average (M = 19.05, SD = 10.17). The participants in the sample were predominantly female, with 88 female respondents completing the questionnaire compared to 12 males; however, this distribution very closely reflects the general Hungarian gender distribution of language teachers (Illés & Csizér, 2018).

As there was a conscious effort to involve participants from a variety of different schools and school types and also from a number of different locations in Hungary, the predominant sampling method for contacting participants was snowball sampling as recommended by Dörnyei (2007). This non-probability sampling method involved the author consciously attempting to find participants from different regions of Hungary, and then asking them to share the online questionnaire with local colleagues. The resulting sample, therefore, included a relatively equal number of teachers from primary schools, secondary grammar schools (*gimnázium*) and secondary vocational schools (*szakgimnázium, szakközépiskola*), with 34, 38 and 28 respondents respectively. Also, the resulting sample included 36 teachers from Budapest, the capital city, 28 from various towns with county rights (*megyei jogú város*), and 35 from smaller townships. Therefore, the location-based distribution is also relatively equal, albeit Budapest is slightly overrepresented when compared to the actual distribution of population.

3.5.2 Participants for RQ2

Finding answers for RQ2 involved two distinct points of data collection: the students' questionnaire discussed later in Section 3.6.4 with over 451 participants (see the following

section for detailed information) and expert raters' judgments of the importance of video games. For the latter, two gamers with close to 20 years' experience in gaming and work experience in gaming journalism were selected to act as raters.

Table 5

A Description of the Two Raters Asked to Provide Judgments

Rater (gender)	Age	Gaming experience	Gaming journalism
Rater 1 (M)	31	20 years' experience in gaming	2 years
Rater 2 (M)	28	18 years' experience in gaming	4 years

3.5.3 Participants for RQ3

The sample for answering and RQ3 (and also RQ2) consisted of over 450 participants. Students who play computer games were not pre-selected for the questionnaire as the aim of the data collection was to gather a large enough sample that could serve as a basis of statistical comparison. Thus, a large enough sample has to be attained so that, even provided that only 10% of the participants play games regularly, an ample sample size will remain that provides sufficient statistical power for the subsequent analyses. Altogether, 461 students filled out the questionnaire with gamers making up a 45.7% subset of the whole sample (n_{gamers} = 211) compared to the 54.3% of non-gamers ($n_{non\text{-}gamers}$ = 250). As for gender-based differences, the sample consisted of 215 male (46.6% of the sample) and 246 female (53.4%) participants. Inspired by the teachers' interview data, for more in-depth analysis, the gamer subset was further subdivided into an 'online gamer' group (n_{online} = 151) and an 'offline gamer' ($n_{offline}$ = 60) group so that differences based on possible online interaction can be revealed, as well. Acquiring such a large sample size was also beneficial as many statisticians claim that 150 observations are minimally required for structural equation modeling (SEM) with high statistical power (Hoogland & Boomsma, 1998; Boomsma & Hoogland, 2001; Kline, 2005).

Cross-tabulations of the gender and the non-gamer/gamer background variables showed a clear and statistically significant ($\chi^2(2) = 158.4$, $p < .05$) unequal distribution regarding the male-to-female ratio in gaming, and a Cramér's V measure showed a strong association ($V(481) = .546$, $p < .05$) between the distribution of the gender and gaming engagement variables.

Table 6

The Gender/Gaming Distribution in the Sample

	$n_{non\text{-}gamers}$	n_{gamers}	$n_{offline}$	n_{online}
Males	51	164	40	124
Females	199	47	23	24

The sampling method for contacting participants was *quota sampling* in the first phase as it was important to make sure that both students from schools in the capital city and students outside the capital city are represented in the sample, especially since their answers may significantly vary due to the importance of English pertaining to their everyday contact with the language (Dörnyei & Csizér, 2007; Sundqvist, 2009). The participants came from 12 different schools from around the country and formed a more closely representative sample than that in the teachers' questionnaire: 19.3 % ($n_{Budapest} = 89$) participants studied in Budapest, 41% ($n_{large\ town} = 189$) in larger towns of a population over 50,000 people, and 39.7% ($n_{small\ town} = 183$) from smaller towns below said population level.

The schools and classes that were approached as a location of data collection were chosen using *convenience sampling*, i.e. ones where the author has close contact with the teachers and through him/her the students, as well.

The participants in the sample were students from ages 12 to 17 (years 7 to 10 in the Hungarian educational system) with an average age of 14.77 ($SD = 1.32$). This age group was

specifically targeted as reports suggest this stratum to be the most frequently involved in gaming (Gametrack/Ipsos, 2016, 2017, 2019). The participants came from a variety of schools from above said locales and therefore had a highly varied language learning experience, having learned English for 6.37 years (*SD* = 3.02) at the time of the data collection. Furthermore, the overwhelming majority (85.5%) of students in the sample was learning English as their first foreign language and had on average 4.3 (*SD* = 1.39) in-school English lessons a week.

3.6 Instruments

The following section discusses all the instruments of data collection used in both qualitative and quantitative data collection points in the study with a brief description of the procedures involved.

3.6.1 Instruments for RQ1

In general, RQ1 necessitated a complex solution as subquestions 1.1, and 1.2 were posited to gather in-depth qualitative data from a variety of teachers, the thematic units emerging from whose answers were used to inform the design of a questionnaire to gain numerical, quantitative data for subquestions 1.3, 1.4 and 1.5.

3.6.1.1 Teacher Interviews. The instrument for RQs 1.1-1.2 involved a single-session, semi-structured interview with 8 ELT practitioners. As maximum variation sampling was used to find and contact participants for the interviews, it was seen as important that a semi-structured format be used to accommodate the great variety in teachers' experience with and knowledge about video games. The semi-structured format therefore allowed for slight deviations to follow up on interesting topics emerging during the interview (Friedman, 2012).

The interviews took between 31 and 55 minutes and elicited responses on teachers'

interest in, beliefs about, attitudes toward and experience with video games as a means of English language learning. The interviews were recorded using a dictaphone and later transcribed and imported into *ATLAS.ti* computer-aided qualitative data analysis (CAQDAS) software for coding, categorizing and preparing a thematic analysis. The transcripts of the recordings were also sent back to the interviewees for approval and in order to ensure a higher validity and reliability.

The *interview guide* was first drafted based on the preliminary readings and the overarching research question (RQ1) and then piloted with one participant in order to refine the questions based on her feedback. Then, a final interview guide was designed, the hypothesized constructs (themes) seen in the following list, while the complete guide is found in *Appendix A*.

1. Teachers' first-hand or second-hand knowledge of the varieties and mechanics of video games
2. Teachers' conceptions of video games
3. Teachers' understanding of the popularity of video games
4. Teachers' beliefs and experiences about the advantages and disadvantages of video games for language learning
5. Teachers' role in helping language learners take advantage of playing video games
6. Teachers' ideas about the possibilities of using video games in the practice of English language teaching
7. Teachers' needs in understanding and helping to exploit the potentials of video games in language learning
8. The possibility of teachers recommending playing video games as a form of English language learning

3.6.1.2 Teacher Questionnaire – Closed-ended Questions. The instrument used to collect quantitative data for RQs 1.3, 1.4 and 1.5 was an online questionnaire using Google Forms (see Appendix B). The participant teachers were asked to provide factual background information (sex, age, location of school, computers/games consoles at home, relatives'/friends' gaming habits), attitudinal information about their beliefs about and attitudes toward video games and their potential for language learning (which will be identical to those of the student questionnaire for the sake of comparability); and behavioural data about their experience with gaming and the extent to which they incorporate video games in their in-class teaching and/or recommend them as an extracurricular activity. Several items and scale of the questionnaire included questions about experience of and beliefs about out-of-school English learning to serve as a point of comparison for experience of and beliefs about video games.

The closed-ended part of the questionnaire consisted of 58 items recorded on a 5-point Likert-scale, with a few extra questions eliciting background information. The following is a list of the scales used in the process of data collection, with a description of the theoretical construct, a sample item and the number of items on the scale.

1. *Perceptions of gamers-learners' proficiency* (3 items): This scale was designed to measure whether teachers perceive gamer-learners as more proficient speakers of English than their non-gamer counterparts. Sample item: "I feel that students of mine who play video games have a better overall proficiency of English than other students."
2. *Perceptions of gamers-learners' linguistic self-confidence* (3 items): This scale measured whether teachers perceive gamer-learners to be more confident in their use of the English language than their non-gamer counterparts. Sample item: "I feel that students of mine who play video games speak out more bravely in English than other students."
3. *Perceptions of gamers-learners' in-class engagement* (3 items): This scale was designed to measure whether teachers perceive gamer-learners to be more actively engaged

in the English lessons than their non-gamer counterparts. Sample item: "I feel that students of mine who play video games are more active during the lessons than other students."

4. *Perceptions of gamers-learners' language learning motivation* (3 items): This scale measured whether teachers perceive gamer-learners to be more motivated to learn English than their non-gamer counterparts. Sample item: "I feel that students of mine who play video games are more motivated to learn English than other students."

5. *Perceptions of the usefulness of gaming for language learning* (3 items)*:* This scale was designed to measure the extent to which teachers feel that gaming is a useful pastime for potential gains in English proficiency. Sample item: "I believe that video games can help a lot in improving students' English."

3. *Positive attitudes towards video games* (3 items): This scale was designed to measure the extent to which teachers feel positively about video games. Sample item: "I believe playing video games is just a waste of time. (Inversely coded item)"

4. *Beliefs in the effectiveness of in-school learning (4 items):* This scale was designed to measure the extent to which teachers believe that in-school language learning is effective in improving learners' proficiency. Sample item: "I believe that if my students work hard during the English lessons, their proficiency will improve."

5. *Beliefs in the effectiveness of out-of-school learning* (5 items)*:* This scale, a point of contrast with the previous scale, measured the extent to which teachers believed out-of-school English-mediated activities are conducive to gaining English proficiency. Sample item: "I believe that the more English language my learners encounter outside the English lesson, the better their proficiency will be."

6. *Recommending out-of-school English activities for language learning* (5 items)*:* This scale was designed to measure how much teachers recommend different out-of-school English-mediated activities for learners to practice English. Sample item: "I recommend to

my students that they watch English-language series."

7. *Recommending gaming as an activity for learning English* (3 items)*:* This scale measured how much, as a point of comparison to the previous scale, teachers recommend playing video games as a means of practicing English. Sample item: "I recommend to my students that they play English-language video games."

8. *Teachers' own experience of out-of-school learning* (5 items): This scale was designed to measure the extent to which teachers, by their own admission, learned English themselves from out-of-school activities. Sample item: "As a language learner, I watched lots of English language series or films to improve my English."

9. *Teachers' own experience adopted into methods* (4 items): This scale was designed to measure the extent to which teachers feel their own experience of learning English have translated into their methods. Sample item: "My own language learning experience influenced how I teach today."

10. *Teachers' extramural contact with English* (6 items): This scale measured teachers' general everyday extramural contact with English at the time of the data collection. Sample item: "I read English books in my free time."

11. *Teachers' experience with gaming (3 items):* This scale measured the frequency of teachers' first-hand or second-hand experience with gaming. Sample items: "I play video games in my free time." / "I have close friends who play video games in their free time."

12. *Teachers' knowledge about students' out-of-school activities* (5 items): This scale was designed to measure how much teachers think they know about their students' involvement in out-of-school activities in general. Sample item: "I know what kinds of movies my learners watch."

3.6.1.3 Teacher Questionnaire – Open-ended Questions. The above questionnaire also included a qualitative element consisting of 6 open-ended questions that stemmed from the theoretical underpinnings of the project and themes emerging in the preceding teacher interviews. The following is a list of the six open-ended questions:

1. Do you think video games have any language learning-related advantages? If so, what?
2. Do you think video games have any language learning-related disadvantages? If so, what?
3. Do you think playing video games can influence learners' motivation to learn a language? If so, how?
4. Do you think playing video games can influence learners' self-confidence to speak the language? If so, how?
5. Do you think playing video games can influence learners' engagement during English lessons? If so, how?
6. What do you think a teacher can do to harness the language learning potential in video games? What assistance would you need to do this?

The whole questionnaire took an average of 15 minutes to complete and included a requirement to fill out each question. In compliance with ethical standards of Eötvös Loránd University and the stipulations of the General Data Protection Regulation (GDPR), participants were thoroughly informed about the research, anonymity and the uses of their data. At the end of the questionnaire, participants were allowed to go back and make changes to their answers, and they were also provided contact details in case of any concern.

3.6.2 Instrument for RQ2

The data collection to answer Research question 2 involved two instruments. Firstly, a questionnaire (explained in more detail in 3.6.4 as the instrument for RQ3) was administered to a sample of 461 students around Hungary, in which around half of the students were found to be gamers. The questionnaire included additional open-ended and closed-ended items for

gamers, in which they were asked to indicate what games they are currently playing or have been playing lately as of the time of the questionnaire and background information about their gaming habits including the average amount of time played, language of video games they played, contact with foreign speakers online, to mention a few of them. Based on the students' answers, a list of video games was compiled based on the number of mentions in the questionnaire. This list was then turned into the basis of a *Google Form* questionnaire that was sent to two gaming experts who acted as raters to judge the importance of English language use in the games on the list and to provide information about the language learning affordances of a select number of games. Below is a sample question, where answers were to be indicated on a 4-point semantic differential scale (see next page):

How important is it to understand the language of the game for the enjoyment of *The Sims 4?*
"Not important at all" 1 2 3 4 "Highly important"

After the raters' judgments were juxtaposed and analyzed for inter-rater reliability, both raters were individually asked to comment on a number of discrepancies between the ratings.

3.6.3 Instrument for RQ3

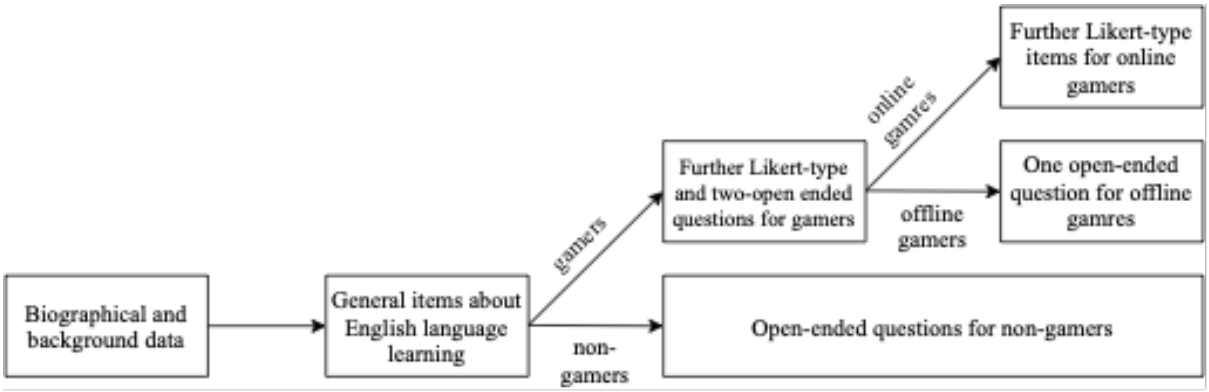
The instrument used for collecting data to answer RQ3 (and also was used in data collection for RQ2) was a student questionnaire (SQ) eliciting factual, attitudinal and behavioural information from the participants (found in Appendix C). The first section of the questionnaire focused on background data on the participants (sex, age, school, residence) and behavioural information on extracurricular activities and extramural contact with English. A second part of the questionnaire elicited information about the respondents regarding motivation based on Dörnyei's L2 Motivational Self System (2006), classroom anxiety, perceptions of self-efficacy and linguistic self-confidence. Furthermore, items regarding self-

authenticity in learning English and beliefs about the effectiveness of in-class and out-of-class language learning were adapted from Henry and Cliffordson (2015), while items measuring students' self-reported behavioural, cognitive and social engagement during lessons were adapted from the surveys of Appleton et al. (2006) and Philp and Duchesne (2012), which was considered a key criterion measure in possible structural equation models. Then, participants who play video games on a regular basis (at least 5 hours a week) were asked to complete a third section, which elicited further questions with regards to interactions with other players, motivational selves, self-efficacy, effectiveness of gaming as a means of language learning and flow. With the exception of the flow scale, which was adapted from Rheinberg et al. (2003), all gaming-related items (e.g. self-efficacy in gaming) and scales were designed for the purposes of this research project, with inspiration from the above-mentioned articles.

Piloting of the questionnaire happened in early 2019 with 35 participants, then after refining the questionnaire based on the statistical data (Cronbach's reliability and factor analysis) and comments collected for the pilot, the online, Google Form-based questionnaire was administered in computer rooms of various schools around the country, with the author of the study being present in most cases. There was a complex rationale behind using the online questionnaire: it did not necessitate the printing of more than 5000 pages, it allowed for much faster data processing and pre-empted issues of possible errors in transcribing data from paper-questionnaires into *SPSS,* and also afforded multiple pathways, which meant that there were two points of divergence programmed into the questionnaire: one to divide gamers and non gamers, and another one to separate online gamers from offline gamers (see *Figure 8* on the following page). In order to avoid issues arising from one group (particularly non-gamers) finishing earlier and therefore frustrating the other groups, extra open-ended questions were asked after the general scales about English language learning.

Figure 8

The Pathway of the Questionnaire for Non-Gamers, Offline and Online Gamers



The questionnaire took an average of 30 minutes to complete and included a requirement to fill out each question. Similarly to the teachers' questionnaire, participants were thoroughly informed about the research, anonymity, and the uses of their data, and they completed the questionnaire out of their own will. Furthermore, as per the ethics regulations of Eötvös Loránd University, the participants were asked to have a parent or legal guardian sign a form of consent before the data collection. Similarly, headmasters of the schools involved were also informed about the procedures and purpose of the data collection and asked to sign a form of consent.

Altogether, the part of the questionnaire common for each respondent consisted of 95 items recorded on a 5-point Likert-scale, with a few extra questions eliciting background information. The following is a list of the scales used in the process of data collection, with a description of the underlying construct, a sample item and the number of items on the scale.

1. *Perceived usefulness of in-school English learning (6 items)*: The purpose of the scale was to measure, based on Bandura's (1977, 1986) construct of outcome expectations, the extent to which students believe in the effectiveness of in-school language learning for gaining proficiency. Sample item: "In general, I find my English lessons useful for helping me achieve my language learning goals."

2. *Perceived usefulness of out-of-school English learning (6 items):* The purpose of this scale was to measure learners' outcome expectations related to the effectiveness of engaging in out-of-school English-mediated activities as a means of gaining proficiency. Sample item: "The consumption of English-language media (films, series, music, books, games, etc.) helps me to understand and learn the English language."

3. *Motivated learning behaviour (5 items):* This scale measured the amount of effort learners are willing to expend to learn the English language. Items for the scale were adopted from Csizér and Dörnyei (2006). Sample item: "I am willing to make a serious effort to learn the English language well."

4. *Ideal L2 self (4 items):* As part of Dörnyei's L2 Motivational Self System (2005), this scale measured the extent to which learners have internal, visualized guides to learn the language. Items for the scale were adopted from Csizér and Dörnyei (2006). Sample item: "I like to imagine my future self as somebody who can speak English well."

5. *Ought-to L2 self (5 items):* Also pertaining to Dörnyei's system, this scale measured the extent to which learners are driven by external motives (societal, parental or peer pressure) to expend effort to learn a second language. Items for the scale were adopted from Csizér and Dörnyei (2006). Sample item: "It is expected from people in today's world to speak English well."

6. *In-school language learning experience (5 items):* This scale measured the extent to which learners have a positive experience of learning the language in in-school contexts. Items for the scale were adapted from the questionnaire of Lamb (2012), who also was working in the framework of Dörnyei's self-system (2005). Sample item: "I like the atmosphere of my English lessons."

7. *Out-of-school language experience (6 items):* This scale was designed to measure the extent to which leaners have positive experience of encountering the language

in their everyday lives. Items for the scale were inspired by the questionnaire of Lamb (2012). Sample item:

8. *Linguistic self-confidence (4 items):* The self-confidence scale measured how much learners felt they were confident, uninhibited users of English. Sample item: "I don't feel anxious when I have to speak in English."

9. *Self-efficacy – general L2 (4 items):* The self-efficacy (general) scale measured how much learners perceived themselves to be self-efficient in terms of learning English as a foreign language. Sample item: "I am sure I have the ability to learn the English language."

10. *Self-efficacy – English lessons (6 items):* The self-efficacy (in-school) scale measured how much learners perceived themselves to be self-efficient in terms of successfully participating in activities in English lessons. Sample item: "I am sure I am able to understand what others say to me in the English lessons."

11. *In-school mastery experience (6 items):* This scale was designed to measure the extent to which learners have positive in-school experience of successfully achieving something in the English lessons. Sample item: "I have a lot of positive experience of being able to answer my teacher's questions correctly."

12. *Out-of-school mastery experience (5 items):* In contrast to the above scale, this scale was designed to measure the extent to which learners have positive experience of successfully communicating or using English outside the school. Sample item: "I have a lot of positive experience of being able to express myself in English."

13. *Self-authenticity (5 items):* This scale was designed to measure the extent to which students feel that in-school English learning feels authentic and congruent with their personality and everyday needs. These items were adapted from Henry and Cliffordson (2015). Sample item: "What we learn during English lessons is closely connected to my

everyday problems."

14. In-school engagement (15 items): This scale measured students' self-reported active participation or engagement during their English lessons. Sample item: "During my English lessons, I usually pay attention to the activities."

15. Out-of-school engagement (6 items): This scale was intended to measure students' self-reported autonomously chosen, conscious participation in English-mediated activities outside the school. Sample item: "In my free time, I try to do activities where I can chat / speak to others in English.."

16. Out-of-school contact with English (7 items): This scale was designed to measure the amount of extramural English students encounter in their everyday lives. Sample item: "I watch English language films, series or videos."

Respondents who reported to be playing video games at least 5 hours a week were asked to fill out a second round of questions with 4 extra scales. A second point of divergence was also coded into the questionnaire for 'online gamers' who reportedly communicate with foreign people in English while playing online games. A list of these 16 (+ 10) items along the 3 (+2) scales are described on the following page:

1. *English gaming self-efficacy* (5 items): This scale was designed to measure the gamer-learners' perceived levels of self-efficacy while playing English-mediated games. Sample item: "I am certain I can understand the instructions in English-language games."
2. *English mastery experience while gaming* (4 items): The purpose of this scale was to measure how positive experiences gamer-learners have of being able to use the language while gaming. Sample item: "I have had many good experiences when I managed to understand the English narrative of the game I was playing."
3. *Flow during gaming* (13 items): This scale was designed to measure whether

learners experience a state of flow while engaging in gaming, including a feeling of control, loss of sense of time, complete involvement, a sense of optimal challenge, and lack of anxiety. The Flow Short Scale questionnaire was adopted from Rheinberg, Vollmeyer & Engeser (2003). Sample item: "While gaming, I often lose track of how much time has passed."

4. *[Online gamers only] Self-efficacy – gaming online* (4 items): This scale was designed to measure the gamer-learners' perceived levels of self-efficacy while playing English-mediated games. Sample item: "I am certain I can understand other players when playing English-language online games."
5. *[Online gamers only] English mastery experience while communicating online* (6 items): The purpose of this scale was to measure how positive experience gamer-learners have of being able to use the language while talking to other players while gaming online. Sample item: "I have had many experiences when I was able to easily make myself understood while gaming online.

3.7 Data Analysis

The following section gives an overview of how the data collected using the instruments presented above were processed and analyzed in order to find answers to the research questions.

3.7.1 Qualitative Data Analysis

The qualitative analysis was performed using all the recorded and transcribed interviews and open-ended questions in the questionnaire. During and after the interviews, as well as during the coding process, *memos* were written to reflect on the data, codes, patterns as a general way of guiding the analysis.

The approach used for the analysis of the textual (written and transcribed) data was

content analysis involving systematic coding using the method of constant-comparison (Boeije, 2002; Maykut & Morehouse, 1994). As advised by Friedman (2012), a three-step coding procedure was followed based on the recommendations in grounded theory research (Glaser & Strauss; Strauss & Corbin, 1998). It must be noted that the three-step coding procedure is based on the pioneering research of grounded theorists working in largely post-positivist and completely inductive ontological-epistemological framework (Glaser & Strauss, 1967; Strauss & Corbin, 1993, 1998) that advises the complete disregard of pre-research literature review as a way of pre-empting the influence of researcher at any stage of the data collection. More recent grounded theory research (Bryant, 2002; Charmaz, 2003, 2008; Kelle, 2005) has adopted a constructivist ontological-epistemological philosophy to qualitative data collection which does not require that researchers forgo all pre-existing theories, which has also been called *informed grounded theory* (Thornberg, 2012). Such research uses pre-existing theories and findings of extant research on a given topic as a *heuristic tool* that helps the researcher zoom in on data arguably with more detail.

The three steps of content analysis were *open coding,* which involved an initial step of assigning codes to the textual data; *axial coding,* which involved the constant comparison of codes and categories across the different sources of textual data as a way of finding patterns and establishing a network of connections; and lastly *selective coding,* in which core ideas are identified and the transcripts are re-read in relation to the core idea (Friedman, 2012).

In line with the constant-comparative method (Maykut & Morehouse, 1994), responses, therefore, were pre-added to any given category, but the salient categories and relationships were allowed to emerge from the data. As data in the transcripts were constantly coded, compared and categorized until the point of data saturation, when no newly recorded and analyzed data was added to the already existing set of codes.

In contrast to the two main quality criteria (i.e., validity and reliability) in quantitative

research, qualitative research requires an alternative set of criteria for trustworthiness (Dörnyei, 2007; Friedman, 2012; Lazaraton, 2003). An alternative to reliability in qualitative analysis is that of *dependability* (Lincoln & Guba, 1985), referring to the requirement that a researcher provides a rich description of the data to show the robustness of codes and categories; while the term *credibility* refers to the "truth value" of the study (Dörnyei, 2007) grounded in the integrity of the researcher and his or her honest and knowledgeable interpretations that may also be guaranteed by peer checking, using co-coders and member checking. A last alternative concept is that of *authenticity* (Lincoln & Guba, 2000) that is attained by researching being open about their "value systems, possible biases, and stances" (Friedman, 2012, p. 194) that might affect the data collection and analysis.

To avoid personal biases and to enhance the credibility and authenticity of the data analysis, a co-coder was required for the qualitative phases of the study. Also, the transcripts and subsequent conclusions from the interviews were discussed later with the interview participants for member checking. The coding, categorization and networking of data was performed in the *ATLAS.ti* CAQDAS software.

3.7.2 Quantitative Data Analysis

The dominant part of the present dissertation is based on quantitative data collection and data analysis. Quantitative research postulates and prescribes the existence of numerical data that is usually divided up into four levels of measurement: *nominal* (non-numerical data with arbitrarily assigned numerical values), *ordinal* (numerical data where values are ranked but the increments between two values are arbitrary) and *interval* (numerical data where distances between values are equidistant and non-arbitrary) and *ratio* (similar to the interval level but with the existence of a value of zero), with the latter two also commonly also referred as a *scale* in *SPSS* (Dörnyei, 2007).

As had been described before, the data collection instruments used 5-point Likert-type scales to collect data on the respondents' behaviours, attitudes and opinions. Mathematically speaking, data collected using Likert-scales are recognized to be yielding ordinal data as the increments between values are arbitrary (e.g. it is an arbitrarily construct that there is a difference of 1 between "Agree" that is coded as 4 and "Strongly Agree", coded as 5). However, in the field of humanities it is common practice to use analysis usually performed on interval data on data yielded from Likert-scales, especially as interval-based statistical analyses tend to provide more precise results (Dörnyei, 2007).

The data analysis and reporting thereof starts with a *descriptive* summary of indices of central tendencies (mean or median) and dispersion (variance or standard deviation). Later, *inferential statistical* analyses were performed to find intergroup or intragroup differences, correlations (Pearson's *r*) for strength of interrelatedness of scales, and to find hypothetically causal links using simple or multiple linear regression.

Each section discussing the results of the quantitative segments of the dissertation will include a number of *hypotheses* based on theoretical understandings provided by literature review and the preceding thematic analyses of qualitative data. Hypotheses are considered to be testable statements based on a robust understanding of the interrelated ideas that can be either confirmed or rejected using inferential statistics (Dörnyei, 2007). The *research hypothesis* or *alternative hypothesis* (H1) that presumes that a given testable statement is true (e.g. "Gamer-learners have significantly more negative beliefs about the efficiency of in school learning than non-gamers."), whereas the corresponding *null hypothesis* (H0) will state that there is no such difference. In inferential statistical hypothesis testing, *p values* (probability values) are used to indicate the probability that difference is statistically significant due to the presence of a *Type I statistical error,* i.e. a false positive. In the field of social science, s*tatistical significance* is said to be achieved if the null hypothesis can be rejected with a 95% certainty

(a 95% *confidence interval*) that the difference does not stem from chance or a sampling error and therefore contains parameters true for the whole population. In other words, results are commonly interpreted as statistically significant if the *p* values are lower than 5% ($p < .05$), which is commonly denoted in tabular presentations of data with a single asterisk. Provided that the sampling procedure and sample size is adequate, it is possible to generalize such results to the whole of the investigated population (Dörnyei, 2007). Or in more simple terms, a result found to be significant with a confidence interval of 95% (necessitating a maximum *p* value of .05) can be expected to be found 95 times out of 100 other points of data collection (Larson-Hall, 2012).

With exceptions to non-normally distributed data, parametric statistical tests will be used to find statistically significant differences: independent samples *t*-tests for between-group differences, paired sample *t*-tests for differences between two sets of observations, one-way analysis of variance (ANOVA) for between-group differences with at least three groups. Such parametric tests are considered to have high statistical power with large sample sizes. however, the data to be analyzed has to be normally distributed. When assumption of the normality of the distribution is rejected, nonparametric equivalents are used: for example, the Mann-Whitney *U* test for between-group differences, the Wilcoxon signed-rank test for differences between two sets of observations in dependent samples, and the Kruskal-Wallis *H* test (ANOVA) for between-group differences with at least three groups; all of which use rank ordering of the data and median instead of the mean to analyze differences.

As Qian and Clark (2016) point out in relation to gaming-based research, effect sizes are often overlooked for statistical significance, which means that findings with a *p* value lower than the cutoff point of .05 are reported as positive findings without indicating whether the effect was weak, moderate, or strong (0.2, 0.5, 0.8 for Cohen's *d* used for difference-based effect sizes; J. Cohen, 1988). Therefore, effect sizes are also calculated throughout the data

analysis as a way of understanding the amount of impact gaming might have on the list of language learning-related personal variables.

To find causal links between scales, simple and multiple linear regression was used on the teacher questionnaire. However, in the student questionnaire, to explain a more complex set of relationships between scales, data was subjected to structural equation modelling (SEM). Such structural models involve the integration of observed variables (questionnaire items) and hypothesized unobserved (latent) variables, and the possible causal or correlational links between such latent variables (Dörnyei, 2007).

Furthermore, various statistical indices were applied to ensure the *reliability* of the scales used in the data collection instruments. The most common measure of reliability is *Cronbach's alpha (Cr. α)* used to measure the commonality of items in a scale designed for the study. As suggested, scales of at least 3-4 items were designed to ensure a higher reliability and only scales with a Cronbach's alpha coefficient of over .7 were included in further data analysis (Dörnyei, 2007).

The last preliminary step before new index variables (or scales) were computed out of the observed variables (items) was data reduction using *principal component analysis (PCA)* on the hypothesized scales. Before the data reduction procedure, a combination of Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's test of sphericity was performed on the samples to ensure the suitability of the data for factor analysis. With both datasets (teachers' questionnaire and students' questionnaire), the KMO value was always above .8 and the Bartlett's test was always found to be significant, both implying that factor analysis could be performed on the dataset (Barna & Székelyi, 2004).

In the process of data reduction with principal component analysis, the statistical software analyzed the levels of correspondence between observed variables and calculated the loadings of the items on a hypothetical principal component. If computed out of the items, this

principal component has a high Eigenvalue, meaning that it contains an adequate amount (set to .5 in the analyses) of the information of the observed variables and would explain a high level of variance across them (Dörnyei & Csizér, 2012). The 'Total variance explained' tables and scree plots in *SPSS* show the Eigenvalues for latent variables, an understanding of which was necessary for decisions in data reduction.

The data collected using the teacher and student questionnaires on *Google Forms* was first saved in *Google Spreadsheets* and there the data was cleaned and various forms of data were re-coded into numerical data. After the data cleaning, the datasets were analyzed using statistical procedures with the *IBM SPSS Statistics* software package including *AMOS* for structural equation modelling.

3.7.2.1 Data Analysis for the Teacher Questionnaire. As regards the teacher questionnaire, statistical analysis was performed using the background information as independent variables to find whether there are statistically significant differences between groups (e.g. males/females, capital city/town/countryside, school types, years of English teaching, computers or gaming consoles in the household). Also, in the case of this questionnaire simple linear regression and multiple regression analyses were performed to find relationships between the different constructs. The sample size of 100 was deemed inadequate to subject the data to structural equation modelling (SEM) as most guidelines recommend a minimum sample size of 150 or 200 (Hoogland & Boomsma, 1998; Boomsma & Hoogland, 2001; Kline, 2005; Muthén & Muthén, 2012 – cf. Tinsley & Tinsley, 1987). Therefore, instead of SEM, a path analysis using multiple linear regression in *SPSS* was performed to find variance-based relationships of causality between scales computed out of items after various tests of reliability.

3.7.2.2 Data Analysis for the Expert Raters' Judgments. Finding valid and unbiased answers to Research question 2 necessitated the use of two expert raters. To assess the reliability of the raters judgments, two types of inter-rater reliability tests were performed in *SPSS.* Firstly, for nominally-observed items between the two raters the Cohen's kappa (κ), a statistic which also factors chance agreement into the reliability, was calculated. A kappa coefficient of .61 is desirable for substantial inter-rater reliability (Landis & Koch, 1977). Secondly, for inter-rater reliability between two raters' judgments for non-nominal items (ordinal or scale), one-way random intraclass correlation (ICC) was calculated in *SPSS* as the items to be rated were not randomly sampled but rather explicitly chosen from a list. There are different approaches to the interpretation of ICC coefficients; however, a value of .7 is desirable for adequate reliability (Cicchetti, 1994).

3.7.2.3 Data Analysis for the Student Questionnaire. Similarly to the teachers' questionnaire, the first round of data analysis in the student questionnaire was performed using *IBM SPSS* to provide descriptive statistics of the background independent variables regarding the whole sample with special detail given to gamer-learners in the sample. Based on two questions ("Do you play video games at least 5 hours a week?" and "Do you play multiplayer games with foreign gamers on a regular basis?") in the online questionnaire that led to three different diverging "endings", the intergroup differences regarding the general scales about language learning were analyzed using a one-way analysis of variance (or ANOVA) or the nonparametric equivalent Kruskal-Wallis *H*-test with the grouping variable being whether the respondents belong to the "non-gamer", "online gamer" or "offline gamer" group. Related post hoc tests (e.g. Tukey for ANOVA and Dunn's for the Kruskal-Wallis H) and independent-samples t-tests (and the nonparametric Mann-Whitney U test) were used to assess differences between two groups.

Later, based on several hypotheses discussed in the Review of literature section, several scales representing constructs were first correlated and then analyzed for explanatory power using regression analysis. Then, hypothesized measurement models were drawn up and tested for goodness-of-fit using various indices (e.g., TLI, SRMR, RMSEA, CFI) to confirm a structural model.

3.8 A Summary of the Research Design

Table 7 shows a structured summary of the research design decisions, including participants, sampling, instruments, and analysis, for each research question.

Table 7

A Summary of the Research Design

Research questions	Participants	Instrument	Data analysis
RQ1. What views do Hungarian teachers of English hold in relation to the potentials of commercial off-the-shelf (COTS) video games for language learning? **(RQ1.1, 1.2)**	**8 teachers selected** with maximum variation sampling to represent a wider range of beliefs, **and 100 other teachers** providing answers in a questionnaire	8 **interviews with teachers** about games, with additional **open-ended questionnaire data**	**Qualitative content analysis** using three-step coding and constant comparison
RQ1. What views do Hungarian teachers of English hold in relation to the potentials of commercial off-the-shelf (COTS) video games for language learning? **(RQ1.3, 1.4, 1.5)**	**100 English teachers** answering an online questionnaire	**An online questionnaire** with a variety of closed-ended (Likert-scale) and open ended questions	**Statistical analyses:** descriptive analyses, t-tests for differences and regression analysis
RQ2. What forms of English language use occur in the video games Hungarian gamer-learners report playing?	A sample of **461 students** providing information in a questionnaire **and two gaming experts** acting as raters	**An online questionnaire for the students' data,** and **a second questionnaire for the raters** followed up by **discussions** on the results	**Statistical analyses:** descriptive analyses; Cohen's kappa and intraclass correlation for inter-rater reliability
RQ3. In what ways (if any) are gamer-learners different from their non-gamer counterparts in terms of variables influencing second language learning?	A sample of **461 students** from a variety of locations and school types across Hungary	**An online students' questionnaire** administered in person **with scripted points of divergence for gamer and non-gamer students**	**Statistical analyses:** descriptive analyses, parametric/nonparametric t-tests and ANOVA for differences, Spearman's correlation coefficients, regression analysis, principal component analysis and confirmatory factor analysis for structural equation modelling

4 Results and Discussion

The following long chapter describes the process of data analysis and the results of each analysis for the research questions with a detailed discussion of the implications of the results as connected to the extant literature on the topic, to the hypotheses formulated for each quantitative element of the research project, and their relevance to the design of subsequent data collection instruments and findings reported in this dissertation.

The presentation of the results for each research question will be preceded by a short summary of the instrument, the participants and the methods of data collection and analysis as shown in *Table 5* (previous page).

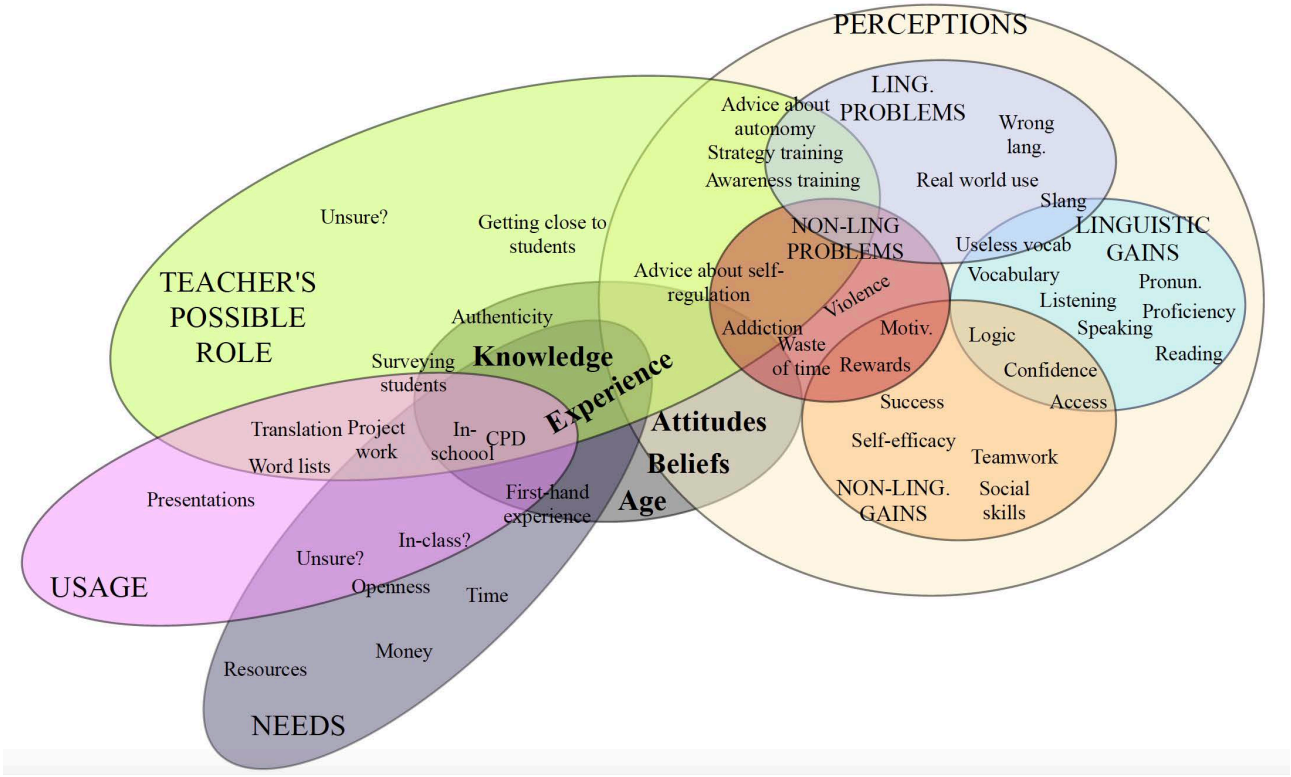
4.1 Results and Discussion for Research Questions 1.1 and 1.2

The interviews and the responses to the open-ended questions in the questionnaire were first open coded one by one involving constant comparison of codes; then, the initial codes were subsequently double-checked by the co-coder, and member checking was used with the interviewees to ensure the credibility of the data. As a subsequent step in the content analysis, the codes were tentatively grouped based on their common content into categories. The following stage in the procedure was axial coding, where codes and categories across the various texts were cross-referenced and compared for similarities and differences. Furthermore, the Code Manager feature of the *Atlas.ti* CAQDAS software was used to measure the number of occurrences of each code and later the Code Relation Manager feature was used to reveal co-occurrences of codes in the texts and transcripts. The emerging categories were checked for overlaps and possibilities of merging or dividing; as an example, in the initial coding phase teachers' experience of gamer-learners proficiency and behaviour were categorized into an *Advantages* and *Disadvantages* category, both of which were later

subdivided into *Linguistic gains/problems* and *Non-linguistic gains/problems*, while all of these categories were subsumed by an overarching *Perceptions category* to distinguish teachers' own experience with games from their perceptions about gamers and gaming. Lastly, the codes and categories were analyzed for core ideas (or themes) that co-occur with or may shed light on the categories. In the selective coding phase, the codes and categories in the data were again checked by the author and the co-coder for their relevance to the core ideas, and then the data from the open-ended questionnaires were used to achieve content saturation. A Venn-diagram-based representation of the codes, categories and core themes was compiled to develop an initial understanding of the qualitative data (see *Figure 9* below).

Figure 9

A Venn-diagram-based Initial Representation of Codes, Overlaps of Categories and Core Ideas (in Bold)



In general, one clean pattern emerged on cross-examining the interview quotes and codes along the lines of which the results will be reported below. Teachers' experience and relevant knowledge about video games were ostensibly connected to their attitudes and beliefs about video games; however, they were not key determinants of their overall openness to video games. First-hand experience and perceptions about gamer students were commonly related to their views of the language learning benefits and possible caveats of playing video games. However, teachers were quite divided as far as the roles of teachers in the process of harnessing the potentials of computer games were concerned, with most respondents believing that they as teachers should only be actively seeking to counterbalance the negative linguistic and non-linguistic effects of gaming. A relationship of gaming-related experience with the above issue is clearly present, similarly to how they imagine video games can be used in or outside the classroom. Lastly, teachers comments on what they perceive they would need to make good use of games were largely varied based on their overall attitude; nevertheless, most agreed that gaining insights into the gaming world and professional development workshops with applicable ideas would be necessary.

4.1.1 Core Ideas: Teachers' Experience, Knowledge, Attitudes and Age

As seen in *Figure 9* on the previous page, some of the most frequent codes emerging in the interview quotes as being connected to teachers' perceptions of video games and their possible implementation in their teaching practice was their knowledge of and experience with video games. However, most clearly visible linkages were found between the positivity of teachers' attitudes toward games and their experience. Participants who had played video games before or had close relatives or friends heavily involved in gaming held mostly positive attitudes about gaming and its usefulness.

> "I used to play a bit less than I do nowadays. Since I've had my *Xbox*, I've been playing almost every day. They helped me immensely in learning English. I sometimes tell my students that if I hadn't played *Age of Empires* or *Heroes [of Might and Magic]*, I would never have become an English teacher." (Robert, 28, casual gamer)
>
> "I don't play because looking at the screen really irritates me. I have a son, who's 21, now and he used to play all kinds of games, these mindless shooter games, too. But there were games where he had to build his character. […] And I really liked one of those because he had to communicate with others." (Angela, 50, non-gamer with second-hand experience)
>
> "I used to play *World of Warcraft* a lot, I still play it occasionally. And it really helped me because I met some native speakers in the game with whom I could chat. Not only did I use the language, but I learned a lot about their culture and traditions while talking to them." (Otto, 25, casual gamer)

As the quotations show, teachers even with little second-hand experience with gaming hold positive attitudes about how games can be conducive to language learning. As for teachers with little experience, one commonly appearing idea was that they "are too old" to know about this. Interestingly, however, this did not necessarily lead them to assess gaming negatively; however, they show a greater degree of uncertainty and indifference.

> "I don't play, I'm not really against it, but I just don't care about gaming because of my age. I don't even have any friends who play games." (Isabella, 43, non-gamer)
>
> "I'm too old for this and I couldn't care less for it. […] But I don't want to say kids shouldn't play them. It's better than nothing, at least for English." (Carl, 43, non-gamer)

Interestingly, the question of age and its relevance to their attitudes also appeared with teachers like Angela, who did not express holding negative beliefs about gaming overall; however, she focused on an authenticity-deficit that she indeed connected to her age, unlike Tamara and Isabella, for whom authenticity emerged with a lack of knowledge about games.

> "This wasn't a thing when I was young, and when they appeared, they really started to irritate me. I'm not the kind of person to talk about this. I am not a very authentic source of knowledge." (Angela)
>
> "What I really would need is to try these games as I don't want to talk about it without having tried the games that kids play not." (Tamara, 50, little experience)
>
> "If I want to do anything with games, I should learn a lot about them because I don't want to show off with something I don't know about." (Isabella)

As far as teachers' knowledge about video games, which may explain authenticity, was concerned, the participants' responses with no gaming experience showed an overall lack of knowledge about video game titles, genres and what gaming entails in general.

> "Surely there are games that can help them learn English, but honestly I don't know about it and I don't really care. […] I guess there are games that are about destruction and ones that are about construction. That's all I know." (Carl)
>
> "I know there was this *Warcraft,* but I only heard it from kids. […] I think maybe there are games where they play against each other. There's likely a lot of violence involved, which is really repelling for me." (Isabella)

Nevertheless, teachers with even some second-hand gaming experience from their family or friends already seemed to have a qualitatively more in-depth grasp of gaming. One such interviewee, Erica was vociferous in her views about her own knowledge as compared to other teachers in general, emphasizing the need to be constantly familiar with games. The latter sentiment was also shared by one of the gamer-teachers as well, who pointed out the fast-changing world of video games as a reason why they need to be up to date.

> "I see that there are levels, challenges that they have to complete. And there are games where many players form a team and do the tasks together. […] And also, there was *Sims,* which was a simulation game that girls are often crazy about." (Angela)
>
> "I don't really play games myself but my husband used to be a professional esports gamer, so I'm quite familiar. […] I think anyone who doesn't know about computer games and doesn't think they can be useful is just afraid of new things or is just simply too lazy to put in some extra effort." (Erica, 34, considerable experience)
>
> "I know and have played loads of games, but I still need to be open to the newest ones and learn about what they are playing now. Maybe they can even recommend some games." (Robert)

Teachers' answers to the first questions of the interview related to their experience and knowledge about the gaming world often brought about the emergence of attitudes about video games during the discussion. Although some participants showed profound dislike of and negative attitudes towards video games, during the course of the interview none of them disapproved generally of others, or, in particular, their students being involved in gaming. This was seen as a refreshing difference from the findings of Chik (2012) in the context of Hong Kong teachers, who generally tended to view video games as only time-consuming consumer

products; nevertheless, her respondents today would probably also be more positively inclined.

Altogether, the selected quotes from the teachers highlighted the importance of teachers' first- or second-hand experience and related knowledge, which may serve as keys to getting insight into how useful they perceive computer games to be for language learning, what roles they attribute to themselves as teachers in harnessing video games' potentials and how they see themselves using games in their teaching and lastly, what sort of needs, personal or institutional developments they hold important for incorporating games into their practice.

4.1.2 Results and Discussion – Teachers' Views on the Advantages and Disadvantages of Video Games (RQ1.1)

The first research question in the qualitative phase of the study was concerned with gaining insights regarding teachers' views on the possible advantages and disadvantages of video games. As for the coding procedures related to the above question, codes related to advantages were marked similarly (and the same was applied to disadvantages) and then grouped into an overarching 'Improve' and 'Problem' category; however, following a decision with the co-coder, the categories were refined and divided into a double dichotomy of 'Linguistic gains'/'Linguistic problems', referring to advantages and disadvantages related to the development of the learners interlanguage, and 'Non-linguistic gains'/'Non-linguistic problems', which referred to benefits and pitfalls of video gaming unrelated to the language itself. However, there were multiple intersections between the four categories, with a number of codes judged to be at the interface of linguistic and non-linguistic gains or linguistic gains and linguistic problems. Lastly, due to the high level of variance in teachers' experience with video games, an initial experience category was revised into the all-encompassing 'Perceptions', a term deemed more fitting for the variety of teachers with first- or second-hand or no experience about gaming.

As for ‘Linguistic gains’, quite predictably, vocabulary was mentioned on the most occasions by each participant, who emphasized the obvious nature of vocabulary gains through computer games with phrases like “It obviously improves vocabulary”, “It definitely helps them vocabulary-wise”, “Primarily it is a tool for improving vocabulary”. Also, in the open-ended questions in the questionnaire, the phrase “Vocabulary development” or similar phrases came up 90% of all times, with some respondents only pinpointing this facet to be improved by video games. Also, around half of the respondents mentioned that they believe that gamers have a better vocabulary than their non-gamer counterparts.

However, most intersections between the ‘Linguistic gains’ and ‘Linguistic problems’ categories were also related to vocabulary (see *Figure 9*), with participants highlighting the emergence of slang, swearing “useless” and passive vocabulary and vocabulary pertaining to a single topic as main problems.

> “Obviously it helps [..] vocabulary too. But if somebody is playing games with tanks exclusively, he shouldn’t be surprised. I guess he will know all parts of a tank in English, but where can he use it?” (Carl)
>
> “Sometimes they come up with some really useless words and phrases, like from fighting games, which even I don’t understand. Sure, it might help their confidence to know such words […] but they can’t be used in the real world. (Isabella)
>
> “… they might pick up some slang or some vulgar phrases as well.” (Otto)

As far as general English proficiency games are concerned, the participants were divided as to what aspects of language proficiency might benefit from video games. Most participants who had known about online gaming mentioned benefits related to speaking competence while negotiating for meaning with other online gamers. However, important codes from the ‘Non-linguistic gains’ category, including a lack of anxiety, self-confidence, self-efficacy and access

to native speakers, frequently co-appeared with codes about speaking benefitting from gaming. Also, teachers expressed some complaints about the passive and useless vocabulary that they perceived students learn from video games:

> "They'll definitely learn to speak without inhibition because they don't need to talk face-to-face, but in a normal, comfortable state." (Lena, 50)
>
> "I can definitely say that my gamer-learners speak better and are more communicative, and I believe online gaming helps develop them to become more open-minded." (Robert)
>
> "I guess their speaking improves because they need to communicate and need use the vocabulary in online games, […] which gives them a sense of success that they can use in other situations." (Isabella)
>
> "They are forced to speak with others online on TeamSpeak [*a voice chat software*] when they are looking for people to play with. […] I feel that those who communicate with foreigners online speak better overall and have much stronger self-confidence…. It helps break that certain barrier." (Erica)
>
> "[…] by using the words they learn in the games online they might gain the respect of their friends, classmates and possibly their teachers, which certainly boosts their confidence." (Questionnaire respondent)

Related to self-confidence and self-efficacy, numerous teachers in the questionnaire and the interview pointed to gaming being useful to a certain limit, and have also mentioned communicative language teaching and the proliferation of English media as problems leading to the creation of a certain 'ceiling' for development. Nevertheless, one participant offered a different perspective.

> "[they learn to communicate] and if the point of learning a language is to communicate, then they win. But then they stop at a B2 level." (Isabella)
>
> "I have discovered a major pitfall. They get to a certain level, and then they stop. This is the nature of English, you have to work hard to get to a C1 level." (Lena)
>
> "The problem is that English is a language where if you know a lot of words, you don't need a lot of grammar, you just put them together in the right order" (Carl)
>
> "In my experience, the kids who start playing at a young age don't stop learning English until they have an advanced [C1] language exam." (Lena)

The above issue also was found more than 15 times in the closed-ended questionnaire data, which points to teachers having legitimate concerns about this hypothetical 'ceiling' or point of fossilization, which plateaus before the advanced level is also attested by Richards (2008). Such problems and related issues about motivation for gamers are key points of discussion in Henry *et al*. (2018), who claim that teachers today need a different set of skills to approach learners and motivate them to always improve beyond their current levels.

Both questionnaire respondents and interview participants frequently mentioned that learners might encounter "wrong language"; however, the descriptions of perceived wrong language included bad translations of text in games, erroneous lexis, or informal uses of words or syntactic forms (e.g. "they use *wanna* instead of *want to,* which is fine but they can't use it in an exam"). Interestingly, however, none of the teachers in the interviews or in the questionnaire mentioned gains related to 'grammar' or morphosyntactic competence, with one participant explicitly ruling out its possibility, which was surprising as many have mentioned an overall gain in the 'proficiency', which was deemed a relatively vague category, which often was mentioned in relation to lexical phrases or 'chunks' (as per Lewis, 1993).

> "What I see in kids is that they improve generally, but what they mostly learn are longer phrases." (Tamara)
>
> "They learn whole expressions and chunks, and their pronunciation, too. So there's an overall improvement." (Angela)

It is also possible that what the participants here were referring to are formulaic expressions, which have already been attested as easily learned through out-of-school exposure (Lin, 2014). Such expressions are possibly even easier to learn incidentally than single words as they such expressions might appear multiple times as textual or audial input for gamers during a single gaming session. As for disadvantages, the respondents in the questionnaire and the interview participants could not mention linguistic drawbacks not mentioned above. However, plenty of non-linguistic disadvantages were perceived by the teachers, mainly related to addiction, a loss of motivation and wasting time that could be used for learning.

> "Maybe they're more motivated to learn what they can use in the game, but we can't give them this in class, so they become demotivated." (Questionnaire Respondent)
>
> "Sometimes my kids try to schedule how much they want to play, but they always fail to keep to that because it's so addictive." (Tamara)

Many participants complained about the fact that it is very hard, as teachers, to identify students who are addicted to gaming. However, one of the participants connected the above ideas into a coherent, interrelated system, by pointing to the addictive, reward-based or social motivation in video games, which may serve as an important indicator.

> "In video games, they have a very structured reward system to give the players a sense of success, which may be good for learning the language, but might also lead to

> addiction. Some kids only feel this success at home when playing, so it's no surprise that they get addicted." (Otto)

It is certainly possible that there are learners who only get a sense of self-efficacy while playing in computer games. The low-anxiety, anonymous nature of gaming and the alternative reality where they can create alternate versions of themselves as video game characters may provide the best possible circumstances for forming self-efficacy beliefs through in-game success; which might translate into "real life" self-efficacy; however, it may also result in an "addiction" to the escapism touched upon by the interview participants.

In summary, the main theme that emerged in the interviews that relates to the proposed research questions was that teachers have a number of positive and negative perceptions about the usefulness of video games for language learners, which could be categorized according to lingustic and non-linguistic gains and problems, including a number of different codes (see *Figure 9*). Firstly, it must be pointed out that in contrast to Chik's (2012) study, where the majority of teachers mainly associated neutral-to-negative linguistic and negative non-linguistic outcomes with COTS video games (e.g. as a waste of time, addiction and violence), such negatively-skewed perceptions were relatively rare among the participants. One respondent in the questionnaire even admitted to hating video games; however, conceded that in terms of language learning video games can only be beneficial. Regardless of their experience with computer games, most language teachers have identified a number of points where video games can help learners directly develop their language or indirectly develop self-efficacy, self-confidence or willingness-to-communicate that are invariably seen as important individual difference variables affecting language learning, which is largely in consensus with the hypotheses of Henry (2013) and Sundqvist (2011). However, there was a relatively high rate of disagreement as to whether video games offer linguistic benefits other than vocabulary

(as seen in Sundqvist, 2009), and whether the vocabulary learning in video games is unanimously beneficial or may be ridden with drawbacks. Another point of interest in the responses was the question of authenticity, which was also discussed by Becker (2007), who observed that teachers having undergone a course in games design would be viewed as more authentic and more likeable for the students through an increased rapport between the two. However, teacher authenticity should definitely be paid attention to when getting involved in affinity spaces they do not feel comfortable in as a lack of congruence between the teachers' self and teaching persona may negatively skew students' perceptions of them.

4.1.3 Results and Discussion – Teachers' Views on the Feasibility of Using Video Games in the Practice of Language Teaching (RQ1.2)

As the interview participants mentioned a variety of linguistic and non-linguistic issues, it was important to gain insights into what possible role teachers see for themselves in helping learners exploit the possibilities offered by language learning, whether it is a role of providing advice to learners or a more direct role through using it in the language classroom. Furthermore, teachers' needs related to the possible use of games in their teaching practice were elicited.

As for the question of what role teachers should play in facilitating language learning from computer games, a common emerging among teachers was that they were "unsure" about the need to be involved in this, with one participant saying "I don't know if I should have anything to do with this".

However, other participants and questionnaire respondents listed a variety of roles and tasks that teachers should attend to in order to help their students. Relevant codes were merged into an "Advice" category, which advisory role is seen to be connected to helping learners overcome or avoid linguistic and non-linguistic problems emerging while playing video games.

Possible advisory roles for the teachers in the interview data included recommending

game choices, awareness and a conscious, autonomous approach to language use while gaming, whereas the category was saturated by further codes from the open-ended questionnaire. One interesting idea that appeared three times in the interviews, and specifically with non-gamer teachers, was that teachers should try to make students realize that they might actively learn something from the game. These teachers feel that students without metalinguistic awareness might not even realize that gaming is teaching them language.

> "Firstly, I would tell them that they should be conscious about the fact that while he's playing, he's also learning a language." (Tamara)
>
> "For the kids that I teach, I don't think it even occurs that they connect gaming with learning. It's just about fun." (Angela)

Whereas a number of teachers said provided that they had experience and knowledge about video games, they would try to steer learners towards particular games; however, due to the lack of such knowledge they would advise that learners play a variety of different games to enhance their vocabulary in many different topics.

> "I guess one thing I could tell them is that they should play different games: strategy games, shooter games, farming games or whatever. This way they may learn different words from different games. (Isabella)
>
> "What I could tell them is that they should play games that are connected to different aspects of life, like making pizza or running a shop." (Carl)

The quotes above are particularly important when juxtaposed to the problems perceived by the teachers related to the "uselessness" of vocabulary learnt from games. In the interview participants' view, it would be highly important that learners experience functional language use in a variety of situations during gameplay. Gamer teachers emphasized that with experience

in games, a number of words or phrases emerging during language lessons may be connected to games by the teacher, which is a reciprocal process compared to the quotes above that connects the language lesson to the games and possibly reinforces the incidental learning with explicit cues.

> "Sometimes I bring up examples that I know they are familiar with from games, like […] what 'loading' is, and of course the gamers knew immediately." (Peter)
>
> "If a teacher knows some games and a student has told him or her about some of the things he plays, then I think it's easy to find some words or other points of connection for this student." (Otto)

Another emerging theme was concentrated around the possible role of the teacher in getting informed about games and what their own students play in their free time, with different codes relating teachers actively seeking to understand what games students play or just generally getting to know more about gaming, the latter of which was also closely connected to the theme of teachers' needs.

> "As a teacher, I would certainly try to discover, maybe using a survey, what kind of games my students play and then look them up to see if they're of value." (Erica)
>
> "A teacher might want to get informed about who plays what, with who, and what kind of experiences they encounter in the game." (Otto)
>
> "It should be a good step to get to know learners' free time activities and use them somehow in the lessons, and this also goes for gaming. But a teacher doesn't have to be an active gamer to know what she's talking about." (Questionnaire respondent)

The question whether teachers should get to know more about gaming is, as discussed above, tightly intertwined with what the respondents perceive necessary for more use of or

reliance on games in the practice of language teaching. Based on the number of mentions in the open-ended questionnaire responses, the following main themes: teachers need experience with and knowledge about gaming (65% of respondents mentioned it), resources including time, money and ICT devices (32% of respondents), good practices through professional development courses or workshops (18% of respondents), with about 5% of the respondents claiming they have no idea due to a lack of knowledge. As far as professional development was concerned, the teachers mentioned workshops outside the school and also the possibility of them sharing ideas with each other in some teaching "clubs".

> "I think what we'd mostly need is some professional development and workshops, where they show me 3-4 games and what I could do with them." (Isabella)
>
> "I can imagine some workshops about this, like also here in school like an "afternoon club", where we can share good practices including ones about video games." (Tamara)
>
> "We'd need a lot of training regarding games and ICT, and of course better equipment in public education." (Questionnaire respondent)

As far as the possible uses of video games were concerned, one intriguing pattern emerged among the interview participants: many of the non-gamer participants were familiar with the beyond-game context involving gameplay videos, streaming and text-based content and mentioned them amongst the possible classroom uses of gaming, whereas such ideas did not emerge from the gamer teachers. This might be explained by the fact that the beyond-game context might be second nature to them and do not see any special relevance or by the fact that they have quantitatively less experience in teaching and might not have encountered interesting cases of students using their English online by creating content.

In what follows, a list of teaching ideas mentioned by the teachers for using games for language learning is presented, followed by a discussion of the practices and related themes:

- Presentations, reviews, stories: One interview participant (Elena) and several respondents mentioned that an easy approach to incorporating games into language learning is by giving them opportunities to talk about what they like and what they play with. As mentioned, in this way "they are forced to try to use what they have learnt in the game in another context, which might help to consolidate that knowledge" (Questionnaire respondent). In similar vein, few respondents mentioned that tasks such as writing a review could easily be adapted for computer games. Similarly to films, books or music albums, numerous video game reviews are found on the internet, which the author thinks might serve as an important and authentic basis for discussing rules of the review genre in a way that is self-congruent and stimulating for gamer-learners.
- Word lists: One participant mentioned that students might be asked to compile a list of words they use or encounter during gaming. As she commented, "learners could work together to make a list of words about games and then teach them to other gamers, for whom it might be interesting." (Elena) The advantages of word lists and other supplementary materials for language learning from computer games has been attested by research (Miller & Hegelheimer, 2006; Ranalli, 2008), and the present version, which makes learners into not only users but creators of word lists might doubly reinforce learning from computer games by strengthening learners' linguistic awareness to useful or unknown words or language.
- Project work: Some participants vaguely mentioned that projects could be built around games, but did not elaborate on it. However, one questionnaire respondents said that sandbox or simulation games could be useful for projects, commenting that "students might be asked to collaborate in building a city or a house in game, in school or at home, then they would have to talk about their city and the choice they made."
- Understanding, creating or working with beyond-game content: Three participants in the

interview and other respondents mentioned that gamers with an interest in creating content should be given the homework of creating gameplay videos or guides for their classmates sharing an interest in video games. Interestingly, some teachers (e.g. Tamara and Elena) familiar with the gaming world of their learners mentioned translating texts connected to gaming or creating subtitles (either English subtitles for the speech or a Hungarian translation thereof) for game-related videos, like gameplays or funny videos.

- Games as authentic material: Two respondents in the questionnaire commented that games could be used a "kind of virtual authentic material" for teaching, with some suggesting that screenshots of learners' computer games could be used for picture description and one respondents mentioned game *Fortnite* "as quite useful in teaching geography or describing people".
- Creating stories, fan-fiction: Lastly, an addition from the author that is based on own teaching and learning experience considers games and their story as a basis for writing. Numerous single-player games like role-playing games or simulation games or multiplayer games involve players assuming an in-game character and getting immersed in a story. Games as storytelling devices may not only be useful for teaching and creating a self-congruent opportunity to use narrative tenses and narrative devices in English, but may also inspire learners to highly creative endeavor of writing fan-fiction based on their own stories for their characters (as seen discussed by Black, 2009).

Altogether, the ideas presented here are all connected by three core features. Firstly, the teaching ideas discussed above all emphasize using instruction to make implicitly learned and used knowledge explicit in either a beyond-game or non-game context, while none of the teachers mentioned practices (except possibly the 'word list') that would try to constrain explicitly learned language or the teaching of learning strategies on the out-of-class language.

Secondly, most of the ideas presented above are in line with the comments of Henry *et al*. (2018) about teachers' role in connecting the outside world to the classroom: teachers could arguably facilitate the sense of self-authenticity of learners (as discussed by Henry, 2013) in the English language classroom getting learners engaged in personally relevant, creative activities, which they might see immediate use of inside and outside the classroom. Thirdly, as a personal comment from the author, the majority of the ideas above are easy to implement with only little knowledge about video games and the gaming world. As for teachers and what role they perceive in harnessing the potentials of gaming, there seems to be wide-spread uncertainty that most probably is also connected to a lack of experience with video games and possible preconceptions about them, a sentiment also discussed by Lombardi (2012), who answered the question by emphasizing how successful involving games in language learning may be, which, although not in the context of in-lesson gaming, was confirmed by teachers' perceptions of gamers described in 4.1.2. However, it mostly seems that teachers imagine their roles in harnessing the affordances of video games in non-intrusive ways, which preempts the possibility of a loss of meaningfulness in gaming for learners and the interruption of flow to complete tasks as discussed by Egenfeldt-Nielsen (2007) and Van Eck (2007); however, also makes the topic exponentially harder to investigate through empirical means.

4.2 Results and Discussion – Quantitative Data on Teachers' Knowledge, Experience and Beliefs (RQ 1.3, 1.4, 1.5)

The second part of the overarching Research question 1 was focused on the beliefs, experience and attitudes of teachers regarding the potentials of video games and language learning. The section gives information about the reliability of the scales of the instrument described in 6.5.1.2, then presents descriptive statistical data on the means, highlighting a number of potentially interesting results related to teachers' beliefs and knowledge about

gaming and various other out-of-school English-mediated activities. Later, results of the data analysis for both research questions are presented in detail, followed by a discussion of relevant research and pedagogical implications.

Based on the combination of numerous learning-related advantages associated with video games discussed in the literature review and the emergent themes from the teachers' interviews and teachers' responses to open-ended questions, a number of hypotheses were posited regarding research questions 1.3 to 1.5:

- H_1 (RQ1.3): Language teachers will perceive gamer-learners to be significantly more proficient and self-confident in their use of English.
- H_2 (RQ1.3): Language teachers will perceive gamer-learners to be significantly less motivated and less engaged in terms of in-class English learning.
- H_3 (RQ1.4): Language teachers' contact with video games will be significantly less than about other English-mediated out-of-school activities.
- H_4 (RQ1.4): Language teachers' knowledge about their learners' interest in video games will be significantly less than about other English-mediated out-of-school activities.
- H_5 (RQ1.4): Language teachers will be significantly less likely to recommend video games as a means of language learning than to recommend other English-mediated out-of-school activities.
- H_6 (RQ1.5): Language teachers' age, contact with video games, attitudes towards video games and perceived usefulness of video games will directly influence the likelihood of them recommending computer games.
- H_7 (RQ1.5): Language teachers' age, contact with video games and attitudes towards will be at least moderately correlated ($r > .5$) with each other.
- H_8 (RQ1.5): Language teachers' perceptions of gamer-learners' proficiency and of the usefulness of games for language learning will be at least moderately correlated ($r > .5$)

4.2.1 Reliability Analysis of the Scales

The scales designed for the study were first subjected to Cronbach's alpha reliability analysis in *SPSS,* which showed the interrelatedness of the items on a scale measuring a latent construct. As *Table 8* (next page) shows, 12 of the 15 scales were found to have a reliability coefficient of over .7 as recommended by Dörnyei (2007). with the *Engagement* scale having a markedly poor reliability (α = .455). Two scales, namely *Contact with gaming* (α = .691) and *Adoption of own experience to methods* (α = .633) were found to have a reliability deemed "questionable" (DeVellis, 2012); however, due the former's perceived importance to the understanding of teachers' beliefs and attitudes and the closeness of the reliability coefficient to the advised .7, it was retained for further analyses. The other two scales mentioned above were not computed into *index variables* for statistical analyses due to their low reliability.

4.2.2 Results and Discussion – Teachers' Perceptions of Gamer-learners' Proficiency, Self-confidence, Engagement and Motivation (RQ1.3)

The present research question was focused on Hungarian teachers' views of gamer-learners' proficiency, motivation, self-confidence and in-class engagement. Crucially, all items on the scales were phrased in a way that teachers had to mark their perceptions of gamer-learners relative to the entirety of their students (e.g. "I feel that students of mine who play video games are more active during the lessons than other students."). As the midpoint of a 5-point Likert-scale is 3, mean values above 3 could be interpreted as gamer-learners being perceived as more proficient users of English or more self-confident in their use of English. Overall, teachers perceived their gamer-learners as generally more proficient (M = 3.62; SD = .397), slightly more confident in their use of English (M = 3.38; SD = .117) and marginally more motivated to learn English (M = 3.19; SD = .496) and also only slightly more engaged in learning in English lessons (M = 3.16; SD = .21).

Table 8

Cronbach's Alpha Measures of Reliability for the Scales and Descriptive Statistics

Scale	No. of items	Cr. alpha	Mean	St. Dev.
Perceptions of gamer-learners' proficiency	3	.813	3.62	.39
Perceptions of gamers-learners' linguistic self-confidence	3	.832	3.38	.11
Perceptions of gamer-learners' in-class engagement	3	.455	3.16	.21
Perceptions of gamer-learners' motivation	3	.830	3.19	.49
Perceptions of the usefulness of gaming for language learning	3	.721	4.07	.12
Positive attitudes towards video games	3	.878	3.5	.98
Beliefs about in-school language learning	4	.834	4.04	.74
Beliefs about out-of-school language learning	5	.908	4.81	.47
Recommending out-of-school English activities for language learning	5	.846	4.24	.75
Recommending gaming as a means of language learning	3	.768	3.78	.92
Own experience of out-of-school learning	5	.765	3.76	.82
Adoption of own experience to methods	4	.633	3.33	.69
Extramural contact with English	5	.747	3.77	.76
Contact with gaming	3	.691	3.37	.95
Knowledge about students' out-of-school activities	6	.863	3.37	.8

A statistical procedure to measure whether the observed values are statistically significantly different from a hypothesized mean is a one-sample *t*-test, where the hypothetical test value is marked as 3. However, the Normal Q-Q plots of the variables showed a graphically normal distribution, a one-sample Kolmogorov-Smirnov goodness-of-fit test found that all values on all three scales were non-normally distributed ($p < .05$). Therefore, instead of a one-sample *t*-test, a nonparametric one-sample Wilcoxon Signed-Ranks Test was used with a hypothesized median of 3. The Wilcoxon Signed-Ranks Tests indicated that the observed data

on both the *Proficiency* scale ($Z(100) = 6.509$, $Mdn = 3.667$) and the *Self-confidence* scale ($Z(100) = 4.31$, $Mdn = 3.333$) were both statistically significantly different from the hypothesized median of 3 ($p < .05$), while the data on the *Motivation* and *Engagement* scales was not found to be significantly different.

In summary, the data confirmed the first hypothesis (H_1) about teachers' perceptions based on experience with gamer-learners' linguistic proficiency and self-confidence, which claim was primarily based on the data in teachers' interviews and partially on the qualitative data of Chik (2012, 2013). This finding is unique as to the author's knowledge, no other quantitative study so far has focused on teachers' perceptions of gaming. As for parallels with the qualitative data of Chik, the teachers in the Hungarian sample held on average more positive beliefs of the linguistic and non-linguistic affordances of playing COTS video games than their Hong Kong counterparts; however, this might also be explained by the 8 years between the two studies, during which gaming has arguably permeated the general sphere of educators even more.

Although the interview data and hypotheses related to attributions and self-authenticity (Henry, 2013; 2014) suggested a lack of motivation and engagement for gamer-learners, the data rejected the second hypothesis (H_2) about a significantly different engagement and motivation as teachers did not perceive gamer-learners to be different from the average in this respect.

Although teachers' perceptions of gamer-learners relative to other learners were not compared with two different sets of variables respectively but to a hypothesized central tendency, the results still can be interpreted as implying that in the experience of the teachers in the sample, the gamer-learners are statistically significantly more proficient in English and are more self-confident when having to use English. It is believed that the main merit of this element of the study is in uncovering teachers' underlying beliefs about gaming, which,

combined with the interview data, should serve as a basis for pedagogical recommendations for using games as a tool for helping learners gain English proficiency.

4.2.3 Results and Discussion – Teachers' Contact and Perceptions of Video Games and Gamers (RQ1.4)

The second research question the quantitative instrument was designed to find answers for was concerned with differences between teachers' contact with and perceptions of video games as compared to other out-of-school English-mediated activities and the postulated hypotheses all assumed that, in general, teachers will be less knowledgeable about video games and will be less likely to recommend video games than other English-mediated out-of-school activities.

Five scales were of relevance to the analysis: firstly, *Extramural contact with English* (5 items) and *Contact with gaming* (3 items) collected data that could be used to compare teachers' own personal contact with gaming and other English-mediated activities; secondly, the *Knowledge about students' out-of-school activities* scale collected answers regarding how aware teachers are of their students' extracurricular activities including gaming (represented with one item); and lastly, two scales (*Recommend out-of-school English activities; Recommend gaming as a means of language learning)* about how likely teachers are to suggest that their learners engage in a variety of English-mediated out-of-school activities. A descriptive statistical data of the scales is found in *Table 9* on the next page.

In order to find answers for the hypotheses, various statistical tests were performed on the data to find differences between the activities based on central tendencies. Similarly to the data presented for RQ1.5, the preliminary normality tests (one-sample Kolmogorov-Smirnov goodness-of-fit test) showed non-normal distribution for the data on each scale ($p < .05$); therefore, a nonparametric related-samples Wilcoxon Signed-Ranks Test was used to compare the median values of gaming and non-gaming scales to find statistically significant differences.

The first medians-based test was performed on the *Contact* scales, where the Wilcoxon Signed-Ranks Test found a statistically significant difference between teachers' personal contact with video games and other English-mediated activities ($Z(100) = -5.26$, $p < .05$), a scale that was additionally calculated from the means of non-gaming activities (watching films and TV series, browsing the internet, reading books and magazines, listening to music).

Table 9

Descriptive Statistics for Various English-mediated Out-of-school Activities on the Five Scales (Last row calculated from the means of all non-gaming activities)

	Mean values (SD) of *Contact* items	Mean values (SD) of *Knowledge* items	Mean values (SD) of *Recommending* items
Video games	*3.37 (.8)*	*3.16 (1.19)*	*3.78 (.927)*
Films	4.18 (1.04)	3.62 (.92)	4.7 (.61)
TV series	3.75 (1.34)	3.57 (.99)	4.41 (.98)
Internet content	4.5 (.86)	3.07 (1.02)	4.32 (1.01)
Books, magazines	4.11 (1.08)	3.37 (1.07)	4.49 (.986)
Music	4.23 (1.12)	3.46 (1.04)	4.35 (1.09)
Non-gaming avg.	*4.15 (1.01)*	*3.41 (.98)*	*4.45 (.95)*

In terms of teachers' self-reported knowledge about their learners engagement in outside-the-school activities in general and gaming in particular, the Wilcoxon Signed-Ranks Test yielded a significant difference between these two facets of knowledge ($Z(100) = -1.98$, $p < .05$) implying that teachers are significantly less knowledgeable about their learners' engagement in video games than other activities.

As far as recommending the games are concerned, the Wilcoxon Signed-Ranks Test found a significant difference between the likelihood of teachers' recommending games and recommending other English-mediated activities ($Z(100) = -4.501$, $p < .05$), with a significantly

lower likelihood of recommending games for language learning.

As a conclusion for the results related to Research question 1.5, the results yielded by the statistical procedures confirmed all three hypotheses (H_3, H_4, $H5_)$, thereby implying that teachers in the sample are in general less knowledgeable about games and gamer-learners and are less likely to recommend games for language learning. The findings parallel those of Blume (2019) who reported a general lack of experience and related less positive beliefs about gaming in language learning with pre-service teachers. Furthermore, despite almost a decade's difference between Chik's studies (2012, 2013) and the present study, the findings reported here show that there has probably (as the data cannot be compared straightforwardly) been little change as to teachers' knowledge about video games. The results are not surprising either in light of the results from teachers' interviews and short closed-ended answers reported in section 4.1. However, it must be pointed out that although the differences are significant, they are most definitely not as sharp as one would have predicted as teachers in the sample turned out to be generally knowledgeable and not at all dismissive about video games as some answers in the qualitative data showed. Altogether, the findings presented here should serve as a call to attend to the fact that video games, a cultural artefact with profound effects and wide-spread proliferation in the last decade are still in the dead spots of teachers, and as such, the data presented here may also serve an important basis to inform teachers, school principals, teacher trainers and educational policymakers involved in the development of teaching professionals.

4.2.4 Results and Discussion – A Pathway Model Explaining Teachers' Attitudes, Perceptions and Willingness to Recommend Games (RQ1.5)

The importance of the findings for RQ 1.3 and 1.4 are particularly relevant to the last sub-question of RQ1, whose focus was finding possible explanatory variables behind teachers' attitudes towards recommending games as a means of language learning, with due regard paid

to teachers' age, contact with video games, beliefs about the usefulness of gaming for language learning and experience with gamer-learners as independent variables in the analysis. The hypotheses for RQ 1.5 posited

- that the extent to which teachers are likely to recommend games for learning are directly predicted by their attitudes towards gaming, contact with video games, perceived usefulness of video games for language learning and their age (H_6);
- that language teachers' age, contact with video games and attitudes towards video games will at least be moderately ($r > .5$) correlated (H_7);
- and that the proficiency of gamer-learners as perceived by language teachers will be at least moderately correlated ($r > .5$) with their perceptions of the usefulness of gaming for language learning (H_8).

As a means of understanding what variables may have an impact on the likelihood of teachers recommending games for language learning, multiple linear regression was used with *Recommending video games* as the dependent variable and *Age, Attitudes towards video games, Contact with video games* and *Perceived usefulness of video games* acting as independent variables. The method of analysis for linear regression was set to 'Stepwise', meaning that an automatic fitting procedure in the software filtered out non-significantly correlated variables from the regression model.

Table 10

*Regression Analysis Summary for Predicting the Recommending Video Games scale (*p < .05)*

Independent variable	*B*	*SE B*	*Beta (β)*
Attitudes towards video games	.632	.075	.539
Perceived usefulness of video games	.508	.125	.325
R^2		.608	
F		77.758*	

As shown in *Table 10*, the results of the regression indicated that two predictor variables, positive attitudes towards video games (β = .539, t = 6.667; p < .001) and teachers' perceived usefulness of video games for language learning (β = .325, t = 4.01; p < .001) explained 65.1% of the variance (R^2 = .651; F(2,97) = 77.758; p < .05). Therefore, the analysis rejected the hypothesis (H_6) that teachers' age and contact with video games would emerge as a predictor of the likelihood of recommending games.

In order to find out whether age, contact with video games and experience with gamer-learners were in any way related to the regression model, a pathway analysis was performed, where the two independent predictor variables served as a subsequent dependent variable for each analysis, which altogether would comprise a pathway model. Firstly, *Attitudes towards video games* was used as a dependent variable with the remaining variables (*Perceptions of the proficiency of gamer-learners, Age, Contact with video games)* serving as independent variables.

As presented in *Table 11*, the results of this multiple linear regression analysis showed two predictors explaining 40.% variance in the dependent variable (R^2 = .405; F(2,97) = 34.697; p < .05): *Contact with video games* (β = .584, t = 7.438; p < .001) and *Age* (β = -.2.482, t = -2.482; p < .05). The yielded statistics show that more first- or second-hand contact with video games results in more positive attitudes towards them, and that older teachers tend to hold slightly less positive feelings towards video games.

Table 11

*Regression Analysis Summary for Predicting the Attitudes Towards Video Games scale (*p<.05)*

Independent variable	*B*	*SE B*	*Beta (β)*
Contact with video games	.606	.081	.584
Age	-.018	.007	-.195
R^2		.405	
F		34.697*	

A second strand of regression analysis was performed with *Perceived usefulness of video games* serving as a dependent variable. The analysis showed a linear regression model (see *Table 12* below) in which 32.6% of the variance ($R^2 = .326$; $F(2,97) = 23.432$; $p < .05$) in the dependent was explained by two predictor variables: *Perceptions of gamer-learners' proficiency* ($\beta = .387$, $t = 4.534$; $p < .001$) and *Contact with video games* ($\beta = .343$, $t = 4.016$; $p < .001$).

Table 12

Regression Analysis Summary for Predicting the Perceived Usefulness of Video Games for Language Learning Scale (p < .05)*

Independent variable	*B*	*SE B*	*Beta (β)*
Perceptions of gamer-learners' proficiency	.368	.081	.387
Contact with video games	.254	.063	.343
R^2		.326	
F		23.432*	

The second and third hypotheses for the present research question (H_7 and H_8) postulated that teachers' age, contact with video games and attitudes towards video games would be at least moderately correlated ($r > .5$) and that the perceived proficiency of their gamer-learners' would also be at least moderately correlated ($r > .5$) with perceived usefulness of gaming. As the data had already been found to follow a non-normal distribution, a Spearman's rank-correlation coefficient (Spearman's ρ) was calculated for correlations instead of a simple parametric Pearson's product-moment correlation coefficient. The correlation matrix (see *Table 13* on the next page) for the three variables tested for H_7 showed a strong and statistically significant bivariate correlation ($\rho = .673$, $p < .01$) between *Contact* and *Attitudes,*

which can ostensibly be interpreted as first- or second-hand experience positively influencing attitudes towards video games, which positive attitudes would logically motivate people to engage in more gaming or related activities. Interestingly, the data shows that teachers' age is not an important factor in the complex picture related to gaming: age was not significantly correlated with contact and was only weakly, though significantly and inversely correlated (ρ = -.244, $p < .05$) with positive attitudes towards gaming. Therefore, the hypothesis (H_7) is partially rejected by the data as age was not found to be even moderately correlated ($r > .5$) with either variable.

Lastly, as hypothesized (H_8), moderate and significant correlation was found between (ρ = -.496, $p < .01$) perceived usefulness of gaming for language learning and the perceptions of gamer-learners' proficiency, which could be interpreted not only a one-way influence of experience-based perceptions of gamer-learners' higher proficiency on the overall usefulness of gaming, but also a general theory of the effectiveness of gaming in terms of language learning possibly rendering teachers more aware of gaming and therefore being able to recognize learners who benefit from gaming.

Table 13

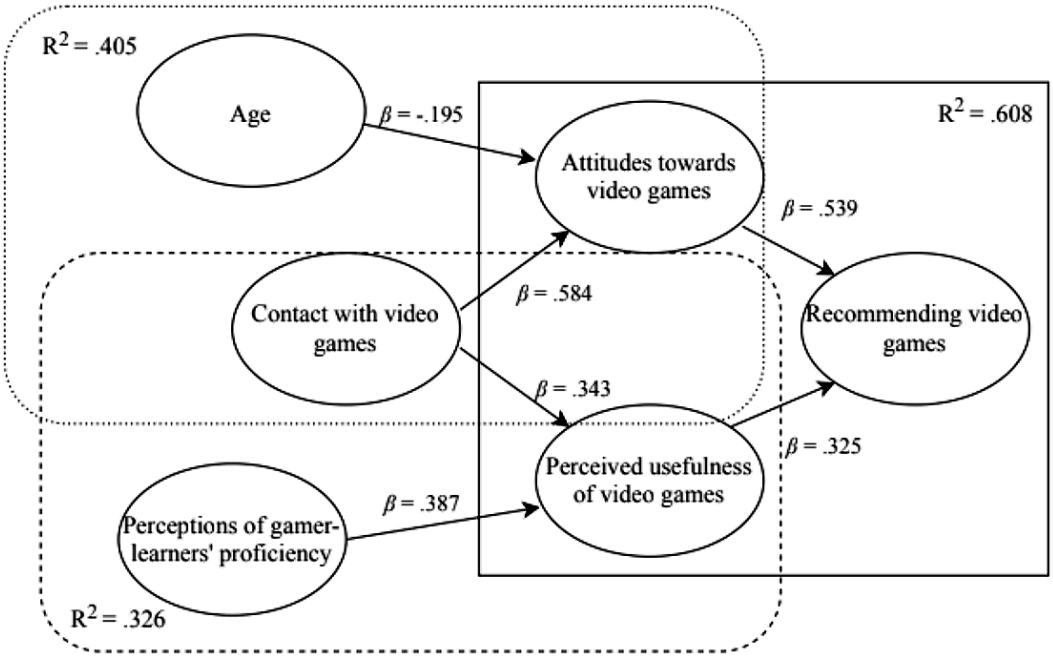
Spearman's ρ Rank-correlation Matrix of the Age Variable and the Attitudes and Contact Scales (p < .05, ** p < .01)*

	Age	Attitudes towards video games	Contact with video games
Age	-	-.244*	-.126
Attitudes towards video games	-.244*	-	.673**
Contact with video games	-.126	.673**	-

Based on the connections discovered using the regression analysis, a pathway model was drawn up (see *Figure 10* below) to explain the dependencies of the variables towards the likelihood of teachers recommending video games.

Figure 10

A Pathway Model of the Dependencies Between Variables as Yielded by Multiple Linear Regression Analyses



One of the key ideas emerging from the pathway model is that although *Contact with games* did not appear in the list of significant predictor scales of the likelihood that teachers recommend video games, it does exert an important influence on the key dependent variable indirectly through the *Attitudes* and *Perceived usefulness* variables. Furthermore, age was not found to be a central to the pathway model, only exerting a weak negative influence on attitudes towards gaming.

Regrettably, the sample size (N = 100) did not allow for a confirmatory factor analysis via structural equation modelling using individual observed items and hypothesized latent variables; however, it is seen important that the present analysis and the emergent model can

be used as a springboard and a point of comparison for further research on the topic utilizing larger sample sizes.

An important finding of the results presented here is the relative lack of importance of teachers' age related to their attitudes to gaming, which chimes in with the findings of Blume (2019), who had observed in Germany that despite beliefs that young "digital native" (Prensky, 2001) pre-service teachers may lead the change in this respect, their attitudes and experience with gaming and its usefulness in language learning will definitely be a major hindrance to such profound changes.

Combined with the interview data and findings reported in 4.2.2 and 4.2.3, it seems that there may be an overall openness on the teachers' part towards computer games; however, experience with games, which is also found to be crucial for change in the study of Albirini (2006) regarding ICT, is sorely missing even though it could strengthen these attitudes. As teachers' contact through first- or second-hand experience is seen to be at the core of the pathway presented in this section, the calls of Becker (2007) to incorporate experience with gaming and games design into teacher training are particularly resonant even more than a decade later. Not only would getting acquainted with video games help the teachers develop a "cool" image among students, but it would also enable them to look at games as a potentially effective tool for learning a language.

The prevalence of English-language games along with other English-language extramural activities in the everyday life of students is an opportunity seen "ripe for the taking" for language teachers; however, it also requires a variety of different techniques and motivational strategies on the teachers' part (Henry *et al*. 2018) to harness the creative language learning opportunities found in artefacts designed for entertainment or simply non-educational purposes.

4.3 Results and Discussion – Video Games and their Affordances for Language Learning

In general, Research question 2 was concerned with understanding what forms of English language use occur in the video games that Hungarian players play as a way of informing the community of teachers about the affordances of video games and thereby suggesting possible routes to harnessing these to facilitate learning through video games.

4.3.1 Results – Video Games and Related Language Use (RQ2.1)

In order to provide a rich context for the understanding of the findings of the analysis made to answer Research question 2.1, which focused on the extent of Hungarian use the English language in in-game and beyond-game contexts, the following paragraphs will discuss the answers to a number of closed-ended and open-ended questionnaire items in the students' questionnaire designed to collect data on who the gamer population consists of, what kind of games they play, on what platforms and for how many hours, what language they play the games in, whether they chat or talk to foreign gamers in English, whether they use the language in beyond-game contexts, and whether they have created or are interested in creating English gaming-related content.

The respondents were asked in two open-ended questions to enter their current favourite games and two more games that they had been playing in the last year prior to the data collection. Altogether, the gamers mentioned more than 34 different games (types) with above 600 instances (tokens) of those games. The top 16 games were subsequently compiled in *Table 14* on the next page. The table clearly shows that five (or arguably six if *Minecraft* is played online) of the 10 games with the highest number of tokens were multiplayer games usually played with other players online. The number one game on the list was *Grand Theft Auto (GTA) V*, which is well-known for being the most profitable video game of all time despite its PEGI 18 rating and several controversies around it (e.g., Bramwell, 2014).

Table 14

An Overview of the Video Games Hungarian Gamer-Learners Reported to Be Playing with Data about Genres, Release Years, and PEGI (Pan European Game Information) Ratings

Game title	Nr. of mentions	Yr. of release	Game genre	PEGI rating	Single / multiplayer
Grand Theft Auto V	58	2013	Role-playing game	18	Predominantly single-player
Minecraft	52	2011	Sandbox open world	7	Single and multiplayer
Rainbow Six: Siege	43	2015	First-person shooter	18	Predominantly multiplayer
Fortnite	39	2017	Battle royale	12	Multiplayer
Counter Strike: Global Offensive (CS:GO)	36	2012	First-person shooter	18	Multiplayer
League of Legends	36	2009	MOBA	12	Multiplayer
FIFA (19/20)	35	2018 / 2019	Sports	3	Single and multiplayer
Playerunknown's Battlegrounds (PUBG)	28	2017	Battle royale	16	Multiplayer
Forza Horizon 4	25	2018	Racing	3	Single and multiplayer
The Sims 4	16	2014	Life simulation	12	Single player
Roblox	16	2006	Game creation	7	Single and multiplayer
Rocket League	14	2015	Racing / sports	3	Single and multiplayer
Call of Duty series	12	2019	First-person shooter	18	Predominantly multiplayer
World of Tanks	10	2010	War simulation	12	Multiplayer
The Witcher 3	8	2015	Role-playing game	18	Single player

Most gamers (41.2%) in the sample reported playing computer games for 1-2 hours on a daily basis, while the second most frequent answer (25.2%) was 3-5 hours a day. Around 11% of all gamers reported playing for more than 5 hours on a daily basis, with 22.5% engaged in playing for less than an hour. There was a visible difference between online and offline gamers regarding the hours spent playing; however, a Chi-square test performed on the nominal (online/offline) and ordinal (time spent playing) variables revealed no significant difference ($\chi^2(3) = 6.65.$, $p = .08$). Gamers were also asked to mark the platform(s) they use for gaming: the most frequently-used platform (69%) for playing video games was the personal computer (PC), with xBox being the second most popular platform (37.6%) and the PlayStation the third most popular (19%).

As for the in-game language use regarding gaming, the overwhelming majority of respondents reported playing English-language video games (92%), with only 8% engaged in gaming in the Hungarian language. This ratio is not surprising given the lack of video games translated into the Hungarian language, but shows the reason behind gaming being considered as one of the most salient settings for extramural contact (Sundqvist & Sylvén, 2012; Sylvén & Sundqvist, 2012). Over two-thirds of the gamer-learner sample (69%) was regularly engaged in English-mediated communication with other players in the game, which served as a basis for separating an *online gamer* group from an *offline gamer* group.

Sections 2.1.4 and 2.1.5 of the literature review discussed the importance of the beyond-game context of gaming, which may be considered equally important in affording players opportunities for language use, especially from a socio-cultural perspective. 68% of the players in the sample reported that they regularly watch English-language videos on YouTube or streams on Twitch; while 47% said that they regularly read English websites or forums connected the games of their preference. Only 21% of the respondents indicated that they are not engaged in either activity above. Rearding content creation, almost a fifth of the

respondents (18.5%) said that they have already created English-language content about gaming (e.g. videos, guides) and 23.5% said they intend to do so in the future. Slightly more than one-third of the gamer-learners (36.5%) have no intentions of creating English-language content about gaming, while 23% was undecided as of the time of the data collection. When asked about whether they communicate with foreign players in English outside the in-game context, 27% of the online gamers said they had several foreign gamer-friends they communicate with outside the game in English, while 38% said they have one or two such acquaintances, with only 35% reporting having no such gamer-friends.

In light of the results and previous findings related to gaming as an activity providing an opportunity for extramural contact with English (Sundqvist & Sylvén, 2012; Sylvén & Sundqvist, 2012), it seems clear that games' potential for facilitating English learning is not to be ignored even without analyzing the in-game linguistic input and interaction since an overwhelming majority learner-gamers spend around 1-3 hours every day in an English-mediated activity. Furthermore, although the instrument did not elicit detailed information on the beyond-game activities of players, the results indicating that at least half of sample is engaged in English-based beyond-game activities (watching videos or streams, reading forums, creating content, talking to foreign gamer-friends) should be considered highly important and informative for the practice of English language teaching, especially as the beyond-game context is seen valuable in pedagogical terms for language teachers according to the interview data presented in Section 4.1. Furthermore, while it was deemed highly infeasible based on the responses of the interview participants and open-ended questionnaire respondents that video games could be part of classroom learning due to a lack of knowledge, experience and resources, the beyond-game context might be considered more worthwhile for language teachers as it does not require an in-depth understanding of games to be put into practice.

4.3.2 Results – The Importance of English for Gaming Enjoyment (RQ2.2)

Secondly, RQ2.2 addressed the question of the importance of language knowledge for enjoyable gameplay in English-language video gamers that the gamers in the sample reported to be playing. As answering this question was deemed infeasible for the author due to a lack of knowledge of some of the video games and possible biases, two experienced gamers and gaming journalists were asked to serve as raters to evaluate the importance of English for a variety of games (N = 18) and game genres (N = 11).

During a preliminary discussion, the raters were asked to signal whether they are unfamiliar with any of the games on the list, and therefore, those games were deleted from the list. Based on their suggestions, two games not mentioned by the gamers in the sample, however still popular in gaming circles were added: them being the well-known MMORPG *World of Warcraft* and the award-winning role-playing game *Fallout 4.* In order to measure inter-rater reliability, an intraclass coefficient was calculated between the two raters. The analysis found a high degree of reliability between the two raters for the 21 measurements: the average measure ICC was .802 with a 95% confidence interval from .476 to .916 ($F(28,29)= 8.48$, $p < .001$).

In the description of the task for the raters, it was stated that they should evaluate the importance of language in relation to the possibility of linguistic deficits causing an interruption in potential flow experience by creating confusion and thereby a loss of a sense of control and the emergence of anxiety for the learners. The raters, admitting to be slightly unfamiliar with the system of foreign language proficiency levels, were not asked to comment on what levels of language proficiency the games required.

The importance ratings shown in *Table 15* (next page) were generally in line with the raters' comments. Recent open-world role-playing games like *GTA, The Witcher* or *Fallout 4* and the now-classic MMORPG *World of Warcraft* were deemed to be highly dependent on

language for enjoyment. These games feature a complex storyline with a highly immersive gaming experience where players can customize and constantly develop their characters. In contrast, despite *Minecraft* having been mentioned to be useful for language learning on three occasions in the interviews by teachers largely unfamiliar with games, the understanding of English was judged to be unimportant by the raters.

Table 15

The Importance of English Language Proficiency for the Enjoyment of Video Games

Game title	Game genre	Importance of language (on a scale of 1-3)
Grand Theft Auto (GTA) V	Role-playing game	Highly important (3)
Minecraft – single-player mode	Sandbox open world	Not too important (1)
Minecraft – multiplayer mode	Sandbox open world	Quite important (2)
Rainbow Six: Siege	First-person shooter	Not too important / quite important (1.5)
Fortnite	Sandbox / Battle royale	Quite important (2)
Counter Strike: Global Offensive	First-person shooter	Not too important / quite important (1.5)
League of Legends	MOBA	Quite / highly important (2.5)
FIFA series	Sports	Not too important (1)
Playerunknown's Battlegrounds	Battle royale	Quite important (2)
Forza Horizon / Motorsports	Racing	Not too important (1)
The Sims series	Life simulation	Quite important (2)
Call of Duty series – single-player mode	First-person shooter	Quite important (2)
Call of Duty series – multiplayer mode	First-person shooter	Not too important / quite important (1.5)
The Witcher 3	Role-playing game	Highly important (3)
Brawl Stars	MOBA	Not too important (1)
Rocket League	Racing / sports	Not too important (1)
World of Warcraft	MMORPG	Highly important (3)
Fallout 4	Role-playing game	Highly important (3)

On the discrepancy, Rater 2 commented that "[…] all you need to understand in *Minecraft* in terms of language is a nice couple of words about different materials, probably a hundred, but you don't really have to know the words because they are nicely represented by little images or symbols." Nevertheless, when it came to *Minecraft* as a multiplayer game the importance of language was judged to be greater by the raters.

As far as overall video game genres were concerned, the raters were almost unanimous in their rating about the importance of language. As *Table 16* (next page) shows, the single-player role-playing games and MMORPGs judged to rely most heavily on language use and interaction. The raters later elaborated on the importance of language in these types of games:

> "In story-based RPGs, you are really invested in your story and your character. It's like an interactive movie that you can't enjoy if you don't know what's going on. With single-player games, comprehending in-game texts and dialogues is really important. I don't see how you can really enjoy these games if you don't understand what's happening around you." (Rater 1)

> "When you are playing an MMO, it can be really immersive and it feels like a second life to you. You can make lots of friends that you do quests with, I would even say it's a need to form some connections because you can't do some quests alone." (Rater 2)

Table 16

The Importance of English Language Proficiency for the Enjoyment of a Variety of Genres of Video Games

Game genre	Examples of games	Importance of language (on a scale of 1-3)
Single-player role-playing game (RPG)	*GTA V, Witcher 3, Fallout 4, Detroit: Become Human*	Highly important (3)
Single-player first person shooter (FPS)	*Call of Duty, Battlefield*	Quite important (2)
Massively multiplayer online role-playing game (MMORPG)	*World of Warcraft, Star Wars: The Old Republic*	Highly important (3)
Multi-player first person shooter (FPS)	*Call of Duty, Battlefield, Apex Legends, Overwatch*	Quite important (2)
Multiplayer online battle arena (MOBA)	*Brawl Stars, League of Legends, DoTA*	Not too important / quite important (1.5)
Battle royale (online)	*PUBG, Fortnite*	Quite important (2)
Sports	*FIFA, NHL*	Not too important (1)
Racing	*Forza Horizon / Motorsport, Gran Turismo*	Not too important (1)
Simulation	*The Sims, SimCity, Cities:XL*	Quite important (2)
Strategy	*Sid Meier's Civilization, Total War*	Quite / highly important (2.5)

Other online games, such as MOBAs, battle royale games and multiplayer FPS games were rated to be less heavily reliant on language; however, Rater 1 commented that "it varies because if you're playing it competitively as an e-sport, then communication is everything. For these games, is a minimum that you communicate in chat, but it's better if you have a voice chat connection to your teammates". Lastly, *Table 13* shows that English language was considered unimportant in racing and sports games that is further explained by Rater 2's comment "in these kinds of games, you only need to understand some basic instructions and words to play; basically, you just need to know which button does what".

As had been mentioned at the start of the section discussing results for Research question 2, it is important that the language learning affordances of video games are not judged with gaming as a single monolith. As a broad generalization, the raters judged story-driven role-playing games and MMORPGs to be most dependent on the understanding of language, while also arguing that other competitively played multiplayer games also require constant communication.

Although the rating procedure arguably should also be performed with a larger sample of gamers (potentially gamer students), the gaming experts' ratings could serve as a first point of reference for any English language teacher attempting to understand the connections between video games and English, and for further studies possibly focusing the scope of inquiry on the linguistic affordances of one or a couple of games in particular.

4.3.3 Results – Video Games' Affordances for Input and Interaction (RQ2.3)

Lastly, subquestion 2.3 was focused on forms of linguistic input and interaction afforded by single-player games played by Hungarian gamer-learners in the sample. Communication in online games was not further investigated as the results in 4.3.2 have provided an ample description of how multiplayer games may impose language use on players via text or voice chat. For the analysis, a list of such video games from *Table 12* was firstly compiled and then put under scrutiny, for example as to whether they have features that provide English language input for the learners and/or whether they provide interactive features where players' dialogue decisions affect the overall story. The two raters were asked to rate whether the statements in *Table 15* (see next page) are true or untrue for the games in the list. To measure inter-rater reliability across these categorical (nominal level of measurement) data, Cohen's kappa coefficient was calculated to determine the agreement between the two raters' judgments on the linguistically important features of the video games. The results revealed a

substantial agreement between the two raters' judgements ($\kappa = .751$, $p < .001$).

As *Table 17* shows, the gameplay of many role-playing games (*The Witcher 3, Fallout 4, GTA V)* offer copious amounts of English language input through a narrative that also features voice acted characters; therefore, potentially impacting on gamers' reading and listening skills as well as their vocabulary. The raters agreed that there were two games on the list that gave the learners an opportunity to interact with characters through dialogues in ways that would have an effect on the story (*The Witcher 3, Fallout 4*), which further reinforces the importance of a deeper than surface level understanding of English text in the game.

One of the games where the two raters were in disagreement on two counts was the first-person shooter (FPS) *Call of Duty.* When asked to further comment on their judgments about the reliance on language in the story and task-completion of this game, the raters both emphasized that the understanding of the language was important but not indispensable for gameplay:

> "I wouldn't say that language is really important, but if you read the instructions carefully and you understand what other characters say, you can beat the levels much more easily." (Rater 1)
>
> "This is the kind of game where basically you can 'shoot your way through' the different levels. It's a case of trial-error-retry. The game always shows you where to go and if you are an experienced gamer, you will understand what to do without having to read anything." (Rater 2)

Table 17

Table of Features of Single-player Video Games Relevant to English Language Input or Interaction (Yes = both raters agreed; No = both raters disagreed; ? = raters disagreed).

Statement	*The Witcher 3*	*The Sims*	*Fallout 4*	*Call of Duty* (single-player)	*Forza Horizon*	*Grand Theft Auto (GTA)*
Basic vocab. enough	No	?	No	No	Yes	No
Complex mechanics require lang.	Yes	Yes	Yes	No	No	?
Voice-over	Yes	No	Yes	Yes	No	Yes
Players' choices affect the story	Yes	No	Yes	No	No	?
Understanding of language is required to for the story	Yes	No	Yes	?	No	Yes
Understanding of language is required to complete tasks	Yes	Yes	Yes	?	No	Yes

The last game characteristic to be discussed is complexity of the game mechanics. It is argued that games that offer wide-ranging freedom to players to navigate the world with their characters use a much more complex game mechanic. These games do not revolve around a single activity (e.g. "shooting to get through levels" in *Call of Duty*, or driving in *Forza Horizon*) and often involve a next-to-infinite number of non-player characters, locations and items that can be interacted with. Such games often cover numerous different aspects of life (e.g. horse-riding, getting a haircut, getting involved in a variety of jobs, or even relationships), and are therefore argued to provide input that is more congruent to learners' everyday life and studies. The relationship between the importance of English and the complexity of the game mechanics was expressed succinctly by Rater 1: "The more complex the game, the more language you need to understand to figure out what you have to do."

4.3.4 Discussion – Video Games and Their Affordances for Language Learning (RQ2)

The second research question of the study was focused on gaining insights into the linguistic affordances of video games; a variable that is often neglected when discussing potential English proficiency gains from video games. Although Sundqvist (2013) categorized video games potential for language learning according to the social interaction they afford, her study did not discuss what specific input and interaction is afforded by video games.

It should be clearly emphasized that there should be no broad generalizations regarding the relative value of language learning opportunities in video games as each video game offers English language input of varied quantity and quality, a complexity which led to the conclusion that it was judged to be a variable that is impossible to control for in statistical analyses. However, as different types of games and their affordances came up multiple times in teachers' interviews, it was seen important to provide an in-depth and preferably unbiased analysis of gamer-learners' contact with English in in-game and beyond-game contexts and of the reliance of the games on English language proficiency. It is seen important that studies from the fields of corpus analysis and discourse analysis concerned with English in gaming contexts are also called upon when attempting to form a general understanding of what kind of language use is transpiring when playing a game or being involved with gaming otherwise.

In general, the students' responses implied that a vast majority of gamer-learners are in extramural contact with English through video games for usually 1-3 hours a day, and that the majority of gamers have already made online acquaintances with foreign players and are involved in beyond-game English-mediated activities, both of which are generally in line with findings about gamers' extramural contact with English (Sundqvist & Sylvén, 2012; Sylvén & Sundqvist, 2012). Gamers' responses about their preferences in computer games revealed a dominance of multiplayer games that, as attested by the expert raters, impose English language use on the learners via text or voice chat. Furthermore, a small number of single-player role-

playing games were also mentioned by the respondents, which were also deemed to hold important potentials for learning based on the linguistic input and interaction they provide.

One key angle that provides further understanding of gamers and their gaming habits is a comparison between teachers' knowledge of games and game types and those reported by players. Only two interview subjects with negligible first-hand experience of gaming indicated knowledge of multiplayer games, which is intriguing in light of the students' responses. Furthermore, while a majority of the interviewees and respondents in the open-ended part of the questionnaire only mentioned a perceived positive effect on vocabulary from gaming, raters' judgments and comments about online multiplayer video games explicitly underscored the importance of between-player communication, which arguably can be further connected to perceptions in the interview data about learners' linguistic self-confidence, a hypothesis investigated in Section 4.4.

It is believed that the findings presented above may be particularly important to inform teaching practice especially as many teachers in the interviews complained that it is a lack of knowledge about and experience with video games that hinders their application in the language classroom. Although the results do not provide data or give recommendations as to whether particular games should be used in English lessons, teachers may find the results useful in assessing their students' gaming habits and the language learning opportunities in their preferred games. Furthermore, the findings presented here may assist teachers in giving advice to their students related to choosing games that have English learning potentials and in developing homework and project work ideas tailored for gamers.

4.4 Results and Discussion – The Relations of Language Learning Self-efficacy, Mastery Experience and Motivation of Gamer and Non-gamer Learners (RQ3)

Research question 3 was focused on discovering differences between the language learning-related individual difference variables of gamers and non-gamers, and on answering how online and offline gaming experience may influence the general self-efficacy beliefs and outcome expectations of gamer-learners with variables such as authenticity of learning, mastery and flow experience added to the equation.

A list of hypotheses were formulated for each subquestion of Research question 3:

- H_1 (RQ3.1): Gamer-learners will have significantly more positive self-efficacy beliefs to learning English in general than non-gamers, with online gamers having superior self-efficacy beliefs to offline gamers (online gamers > offline gamers > non-gamers).
- H_2 (RQ3.1): Gamer-learners will have significantly less positive outcome expectations of in-school language learning than non-gamers, with online gamers having the least positive expectations. (non-gamers > offline gamers > online gamers).
- H_3 (RQ3.1): Gamer-learners will evaluate in-school language learning as significantly less self-authentic than non-gamers, with online gamers having judged them as self-authentic (non-gamers > offline gamers > online gamers).
- H_4 (RQ3.2): Gamer-learners will be significantly more motivated to learn English in general than non-gamers with online gamers being the most motivated group (online gamers > offline gamers > non-gamers).
- H_5 (RQ3.2): Gamer-learners will be significantly more self-confident in their use of English than non-gamers with online gamers being the most self-confident group (online gamers > offline gamers > non-gamers).
- H_6 (RQ3.2): Gamer-learners will report significantly less self-perceived engagement during English than non-gamers with online gamers being the least engaged group (non-gamers > offline gamers > online gamers).

- H_7 (RQ3.3): Gamers' positive language use experience and related self-efficacy will predict an amount of the variance in their general language learning self-efficacy beliefs.
- H_8 (RQ3.4): Learners' self-authenticity, perceived usefulness of learning and self-efficacy will impact upon language learning motivation and engagement in a structural model.
- H_9 (RQ3.5): There will be moderate multi-group differences between the models of motivation/engagement based on whether the analyzed group involves online gamers or non-gamers.

As a first step, scales designed and adapted for the study were subjected to Cronbach's alpha reliability analysis in *SPSS* which showed the interrelatedness of the items on a scale measuring a latent construct. As *Table 18* on the next page shows, the 20 of the 2 scales were found to have a reliability coefficient of over .7. As per statistical recommendations (Dörnyei, 2017; Dörnyei & Csizér, 2012), the *Ought-to L2 self* scale (α = .683), the *Out-of-school mastery experience* (α = .625), and the *Flow in gaming* (α = .612) were deemed to have questionable reliability. Due the former's already validated importance to the understanding of language learning motivation as regards Dörnyei's L2 Motivational Self System and due to the closeness of the reliability coefficient to the advised .7, it was retained for further analyses. The other two scales, *Out-of-school mastery experience* and *Flow in gaming* were not reduced statistically into index variables due to their questionable reliability.

Furthermore, as a means of ensuring the statistical quality of the scales and subsequent analyses, the data was subjected to principal component analysis extraction threshold value of .5 to understand whether any items need to be deleted from the scale for an optimal one-factor solution for the index variable with high Eigenvalues. In general, the analysis showed that negatively worded and therefore reverse-coded items loaded more onto a second latent factor than the hypothesized principal component. Such items (e.g. two items on the *In-school mastery experience* scale, four items on the *In-school engagement* scale, one item on each of the *Usefulness of in-school learning, In-school experience, Out-of-school experience, Mastery*

experience in online gaming scales) were therefore deleted from the scales. The complete questionnaire with all the items is found in *Appendix C.*

Table 18

Cronbach's Alpha Measures of Reliability and Descriptive Statistics for the Scales in the Students' Questionnaire

Scale	Nr. of items	Cr. alpha	Mean	St. Dev.
Perceived usefulness of in-school English learning	5	.913	3.88	.96
Perceived usefulness of out-of-school English learning	6	.933	4.43	.79
Motivated learning behaviour	5	.852	4.15	.79
Ideal L2 self	4	.890	4.46	.75
Ought-to L2 self	5	.683	3.99	.70
In-school language learning experience	5	.893	3.67	.9
Out-of-school language learning experience	4	.791	4.46	.77
Linguistic self-confidence	4	.833	3.71	.96
Self-efficacy – general L2	4	.874	4.3	.81
Self-efficacy – English lessons	6	.914	3.95	.87
In-school mastery experience	4	.706	3.91	.85
Out-of-school mastery experience	4	.625	3.33	.69
Self-authenticity	4	.739	3.63	.86
In-school engagement	8	.879	3.75	.8
Out-of-school autonomous engagement with English	6	.920	3.37	.8
Out-of-school contact with English	3	.821	3.45	.86
Self-efficacy – gaming in English (offline)	5	.926	4.11	.85
Mastery experience while gaming (offline)	3	.869	4.23	.83
Flow during gaming	9	.612	4.01	.71
Self-efficacy – online gaming	4	.858	4.17	.79
Mastery experience while gaming online	3	.839	4.08	.83

4.4.1 Results and Discussion – Gamers' and Non-gamers' Self-efficacy, Self-authenticity and Perceptions about the Usefulness of Instruction (RQ3.1)

The first subquestion of Research question 3 was focused on finding significant differences in self-efficacy beliefs, outcome expectations and perceived sense of authenticity of language learning between online gamers, offline gamers and non-gamers (RQ3.1). The hypotheses (H_1, H_2, H_3) posited that there will be a linear correspondence between engagement in gaming and the above variables: gamer-learners (and online learners in particular) will have stronger self-efficacy beliefs regarding English learning, less positive perceptions of the usefulness of in-school language learning and weaker sense of self-authenticity of school learning than non-gamers.

The general approach to answer the questions would have required an independent samples *t*-test for between group differences (gamer vs. non-gamer) and a one-way ANOVA for to find a stochastic dominance for one of the groups (online gamer vs. offline gamer vs. non-gamer) with a follow up *post hoc* test. Despite the Normal Q-Q plots of the scales showing a graphically a generally normal distribution, a one-sample Kolmogorov-Smirnov goodness-of-fit test found that all values on all three scales were non-normally distributed ($p < .05$); therefore, in order to ensure a higher validity for the analysis, a nonparametric Mann-Whitney *U*-test and a Kruskal-Wallis *H*-test (or one-way ANOVA on ranks) was performed on the data to find differences. As both nonparametric tests used the medians of the scales for ranks-based analysis, an overview of the medians and ranges for each grouping system is shown in *Table 19* (next page).

The results of the independent samples Mann-Whitney *U*-test showed significant differences between the gamer and non-gamer groups regarding the *Perceived usefulness of in-school language learning* scale ($Z(461) = 3.73$, $p < .01$, $r = .17$, see *Figure 11* on the next page) and the *Self-authenticity* scale ($Z(461) = 2.1$, $p < .01$), while no such difference was

found for general *Self-efficacy* beliefs for learning English. However, as the effect sizes ($r = Z / \sqrt{N}$) calculated from the standardized test statistic (Z) and the sample size (N) show, even the effect size of the difference on the *Perceived usefulness of in-school learning* scale is small.

Table 19

Medians and Dispersion for the Three Scales across the Different Grouping Variables

	Non-gamers – Median (and range)	Gamers – Median (and range)	Offline gamers – Median (and range)	Online gamers – Median (and range)
Self-efficacy for English learning	4.5 (1.0 - 5.0)	4.5 (1.25 - 5.0)	4.5 (1.25 - 5.0)	4.75 (2.25 - 5.0)
Usefulness of in-school learning	4.2 (1.0 - 5.0)	4.0 (1.25 - 5.0)	4.0 (1.6 - 4.75)	3.8 (1.0 - 5.0)
Self-authenticity of in-school learning	3.75 (1.5 - 5.0)	3.5 (1.25 - 5.0)	3.75 (2.0 - 4.75)	3.5 (1.25 - 5.0)

Figure 11

A Horizontal Bar Chart Representing the Gamer/Non-Gamer Ranks-based Differences on The Perceived Usefulness of In-school Language Learning Scale from the SPSS Output

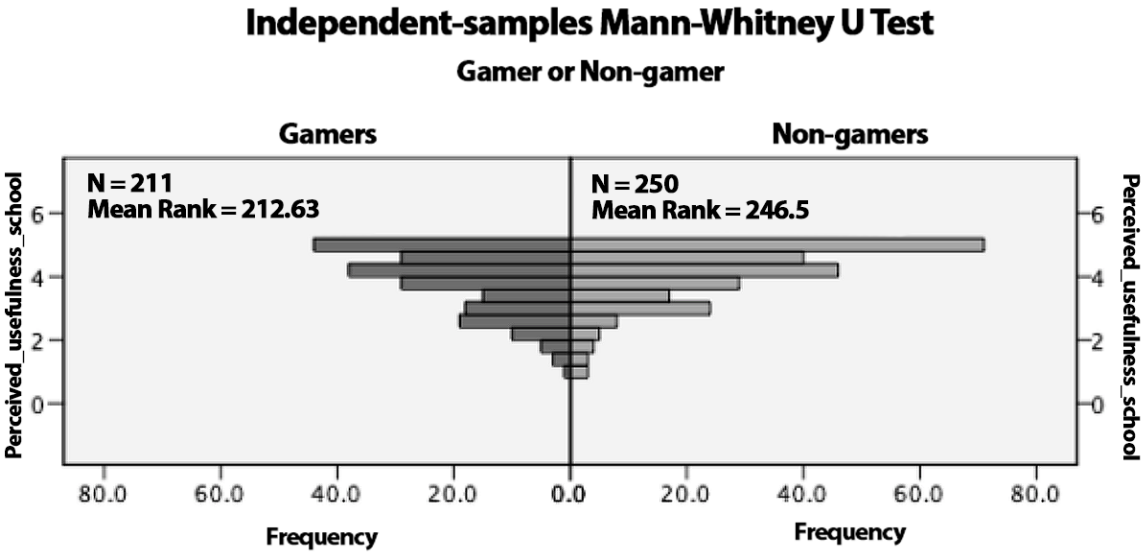
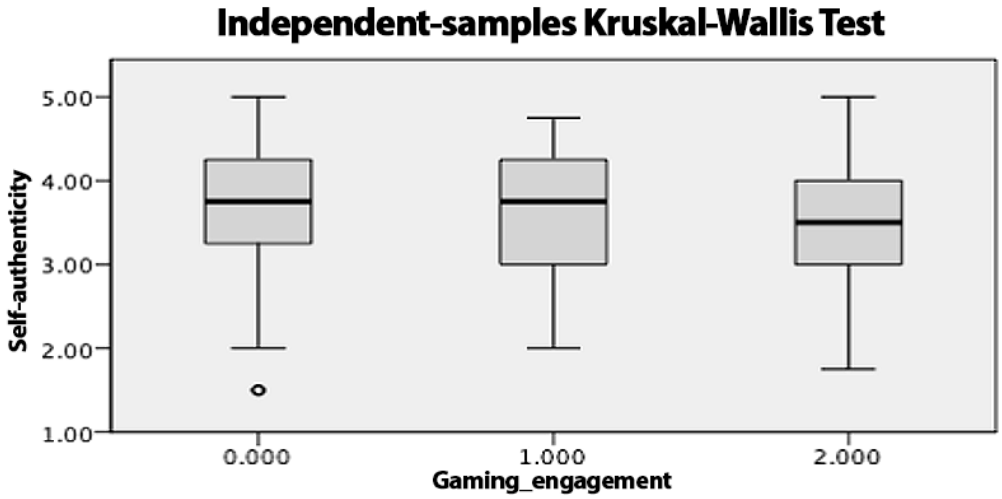


Figure 12

Boxplot of the Kruskal-Wallis H-test on Ranks across the Three Groups for the Self-Authenticity of In-school Language Learning Scale



For further analysis based on the nature of learners' engagement in gaming, the data was subjected to a Kruskal-Wallis *H*-test, with engagement in gaming as the grouping factor (0 = non-gamer; 1 = offline gamer; 2 = online gamer). Similarly to the Mann-Whitney *U*-test, this ANOVA on ranks also revealed a significant difference in the distributions in the *Usefulness of in-school learning* ($H(2,461) = 9.99$, $p < .01$) and *Self-authenticity* ($H(2,461) = 6.73$, $p < .05$) scales across the three categories. Subsequent pairwise Dunn's *post hoc* test on the results revealed that online gamers had significantly less positive perceptions of the *Perceived usefulness of in-school English learning* than the two other groups (2 > 1, 0), and similarly these online gamers felt that in school-learning was significantly less *self-authentic* (see *Figure 12* above) than the two other groups (2 > 1, 0). As for *Self-efficacy,* no significant difference in the distributions emerged across the three groups.

As for the three hypotheses for RQ3.1, H_1 postulating a significant difference across the gamer/non-gamer groups for S*elf-efficacy beliefs* had to be rejected based on the data. As for

H_2 and *H_3*, the results of the statistical analyses only partially confirmed the hypotheses. Although significant differences were found between gamer and non-gamer groups in general, the effect sizes yielded by the statistics showed a weak effect of gaming on *Perceived usefulness of in-school learning* and *Self-authenticity of in-school learning* scales. The statistically significant differences in the distributions across the groups, therefore, were attributable to unique features in the online gamer group as compared to non-gamers and gamers who only play offline games.

Therefore, the results can be interpreted as implying that it is only online gaming that influences learners' views on the efficiency of in-school learning. These findings are in consensus with the general idea that online gaming in itself as an extramural activity can positively influence language learning-related variables (Peterson, 2016; Sundqvist & Sylvén, 2016; Sylvén & Sundqvist, 2012).

Furthermore, as others (Henry, 2014; Henry & Cliffordson, 2015; Sundqvist, 2011) have suggested the difference may come from the fact that online gaming affords functional language use opportunities for players where negotiation for meaning is important between players and communication is necessitated by the game. However, contrary to expectations about stronger self-efficacy beliefs for online gamers (Henderson et al., 2009; Henry, 2014; Sundqvist, 2011), the present results did not show any significant differences between online gamers, offline gamers and non-gamers, as all groups were found to have relatively positive self-efficacy beliefs.

The results also confirmed the hypotheses postulated here (*H_3*) and by Henry (2013, 2014) pertaining to a decreased sense of self-authenticity in in-school language learning situations for online gamers although with a small effect size. Potentially, it is this regular functional use of English in cognitively and emotionally self-congruent situations (i.e., online gaming situations) that may influence their evaluation of the expectancy of valued outcomes

in in-school language learning (*Perceived usefulness of in-school learning)* as also touched upon by various other studies (Henry, 2013, 2014; Henry & Cliffordson, 2015). However, the relations between the latter attribution-based variable and self-authenticity have not been tested with quantitative research designs.

Regression analysis and structural equation modelling on online gamers' self-efficacy beliefs may reveal that the important mastery experience filtered out in lessons are compensated with mastery experience in online gaming. Online gamers may not hold more positive self-efficacy beliefs about being able to learn English; however, it is important to delve further into what other variables their self-efficacy beliefs enter into association with.

4.4.2 Results and Discussion – Gamers' and Non-gamers' Motivation, Self-confidence and Engagement (RQ3.2)

The second subquestion of Research question 3 was focused on finding significant differences in in-school language learning motivation-related variables (learning motivation, self-confidence and engagement) between gamers (with the two subsets of offline gamers and online gamers) and non-gamers. Similarly to RQ3.1, the hypotheses (H_4, H_5, H_6) suggested the existence of a linear correspondence between engagement in gaming and the above variables, with a positive correlation for self-confidence and motivation and a negative correlation with engagement.

Table 20 on the next page shows the central tendency and dispersion for the three scales across the different groups. Again, with nonparametric tests rank ordering of the answers and resulting median scores were used in the statistical analyses. Thus, similarly to the analyses for RQ3.1, nonparametric tests (Mann-Whitney *U*-test and a Kruskal-Wallis *H*-test) were used due to a non-normal distribution in the data to ensure a higher statistical validity, even at the expense of statistical power.

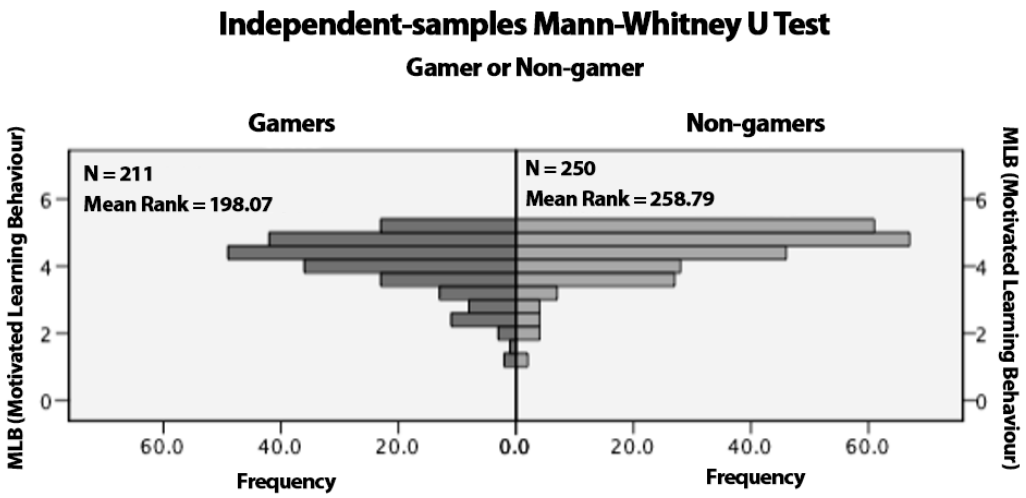
Table 20

Medians and Dispersion for the Three Scales across the Different Grouping Variables

	Non-gamers – Median (and range)	Gamers – Median (and range)	Offline gamers – Median (and range)	Online gamers – Median (and range)
Motivated learning behaviour	4.6 (1.2 - 5.0)	4.2 (1.2 - 5.0)	4.0 (1.2 - 5.0)	4.2 (1.2 - 5.0)
Linguistic self-confidence	3.75 (1.0 - 5.0)	3.75 (1.0 - 5.0)	3.5 (1.0 - 4.75)	4 (1.75 - 5.0)
Engagement in in-school English lessons	4.0 (1.4 - 5.0)	3.625 (1.4 - 5.0)	3.625 (1.6 - 4.8)	3.685 (1.4 - 4.8)

Figure 13

A Horizontal Bar Chart Representing the Gamer/Non-gamer Ranks-based Differences on the Motivated Learning Behaviour Scale from the SPSS Output



Firstly, a nonparametric independent-samples Mann-Whitney *U*-test was applied to the data with engagement in gaming or no engagement being the grouping variable. The results of the test showed a significant difference between the gamer and non-gamer groups regarding the *Motivated learning behaviour* ($Z(461) = 6.09$, $p < .01$, see *Figure 13*), with non-gamers

reporting to be more motivated to learn the language and willing to expend more effort. Also, subsequent calculations yielded a medium effect size (r = .28) for the difference.

Furthermore, a statistically significant difference was found between gamers and non-gamers in terms of their self-reported *Engagement* in English lessons; non-gamers were found to be more active and engaged participants of the lessons than their gamer counterparts (Z(461) = 4.58 , p < .01, r = .21). As was observable in *Table 18* (previous page), no significant difference was found for gamers' and non-gamers' linguistic self-confidence.

In order to gain more in-depth insight, the data was subjected to a Kruskal-Wallis H-test, with engagement in gaming serving again as the grouping factor (0 = non-gamer; 1 = offline gamer; 2 = online gamer). As expected from the results of the independent samples test, the Kruskal-Wallis test on ranks found significant differences in the distributions of the *Motivated language learning* scale (H(2,461) = 25.27, p < .01) and the *Engagement* scale (H(2,461) = 21.05, p < .01). Regarding motivation, a subsequent Dunn's *post hoc* test (with Bonferroni error correction) applied to the data showed that non-gamers were significantly more motivated to learn English than both the offline (p < .01) and online gamers (p < .01), and no such difference was found between offline and online gamers (0 > 1, 2). For the *Engagement* scale, the *post hoc* tests found a highly similar pattern, with non-gamers emerging to be significantly more engaged in in-school learning than their offline (p < .05) and online gamer counterparts (p < .01).

In contrast to the independent samples test with only gamer vs. non-gamer being the grouping variable, the Kruskal-Wallis test found a statistically significant difference in the distributions of the *Self-confidence* scale across the three groups (H(2,461) = 21.05, p < .001). Crucially, Dunn's *post hoc* tests revealed a threefold pairwise difference between the groups (see *Table 21,* next page). Online gamers reported to be statistically significantly more self-confident in using English than both offline gamers (p < .01) and non-gamers (p < .01).

However, contrary to the expectations postulated in the hypothesis, non-gamers were found to be more self-confident users of the language than offline gamers ($p < .05$)

Table 21

Pairwise Comparisons of Self-confidence across the Three Groups Using a Dunn's Post Hoc Test

Pairwise comparisons	*t*	*SE*	Relation
Online gamer (2) - offline gamer (1)	4.148**	19.95	2 > 1
Online gamer (2) - non-gamer (0)	2.747**	13.76	2 > 0
Offline gamer (1) - non-gamer (0)	- 2.012*	18.7	0 > 1

Altogether, the results of the statistical tests have completely rejected the alternative hypothesis (H_4), which stated that gamers (and online gamers in particular) would be more motivated to learn English. Non-gamers have been found to be significantly more motivated to learn English, which might stem from their more positive outcome expectations regarding language learning (as seen in 4.4.1), more positive in-school learning experience or relatively high amounts of contact with English through other media which might counterbalance gamers' contact with English through video games.

H_5 was partially rejected by the results as in general terms no differences were found between gamers' and non-gamers' self-confidence. However, the *post hoc* tests revealed a significant difference in favour of online gamers (2 > 0 > 1), who reported stronger confidence levels to use the language than their offline gamer and non-gamer counterparts, the latter of which was also found to be more self-confident than offline gamers. The literature review and the teachers' interviews conducted for the present study offer a theoretical and practical background as to why online learners may be more self-confident, namely that they are

afforded largely anxiety-free situations for functional language use with peers connected to an intrinsically rewarding experience.

The lack of such language use opportunities is key to the understanding of why this sense of self-confidence does not emerge in offline gamers; however, this still does not provide adequate understanding to why non-gamers in the sample are more self-confident than offline gamers. Therefore, to establish whether this discrepancy was only specific to the present sample or there have been important variables not included in the present study impacting on offline gamers' attitudes and behaviour, further statistical tests were conducted based on differences between offline gamers and non-gamers.

A list of observed variables and computed index variables that were seen as potentially influencing self-confidence was compiled, which included the following: years of learning English, number of lessons per week, age, self-efficacy, in-school mastery experience, in-school language learning experience, out-of-school extramural contact with English, personal contact with native or non-native speakers of English (Item 15, part of the *Out-of-school contact* scale). A Mann-Whitney U-test revealed two possible points of divergence between the two groups: in-school mastery experience ($Z(311) = -2.34$, $p < .01$, $r = .13$) and number of lessons a week ($Z(311) = -2.69$, $p < .01$, $r = .15$). A Spearman's rank correlation coefficient (Spearman's ρ) was calculated between the two variables and showed number of lessons and the frequency of mastery experience in lessons were significantly correlated ($p < .05$), however, with the strength of the correlation was negligible ($\rho = .11$).

As a follow up, the two variables were used as independent variables in a multiple linear regression analysis to explain self-confidence as the dependent variable. The stepwise regression analysis restricted for the offline gamers found the number of English lessons a week to be an insignificant predictor of self-confidence; however, in-school mastery experience was found to explain 61% of the variance ($R^2 = .61$; $F(2,60) = 50.74$; $p < .05$; $\beta = .785$). However,

the question remains as to how and why offline gamer-learners might have fewer positive mastery experiences as compared to their non-gamer peers. As the offline gamer sample is also more evenly balanced in terms of gender, it is seen beyond the scope of the present study with the extant datasets to explain the issue with offline gamers, as the variance in their self-confidence and mastery experience might be caused by one or a combination of multiple confounding variables unobserved by the present study.

The results also confirmed the expectations postulated in hypothesis H_6 as gamer learners reported lower levels of *Engagement* in school language learning than their non-gamer peers, with statistically insignificant differences appearing between online and offline gamers. This lower level of *Engagement* can be attributed to similarly lower levels of *Motivated learning behaviour,* a construct designed to measure the effort learners intend to expend to learn a language (Dörnyei, 2005); therefore, these findings are in line with Henry's hypotheses (2013, 2014) about the motivation and engagement of gamers, who, with self-efficacy stemming from playing self-authentic activities are less engaged in in-school learning scenarios that do not provide the same levels of self-congruent cognitive or emotional relatedness. However, a reminder must be made that the previous section of results only attested stronger, although not significantly stronger, self-efficacy beliefs for online gamers and not offline gamers.

Furthermore, teachers' perceptions about gamer-learners' motivation and the findings of extant research relating self-efficacy to language learning motivation are in a discrepancy with these results; however, it is argued that there is a range of latent variables (*Perceived usefulness of English, Self-authenticity)* with observed data in the dataset that may be used to explain gamers' significantly lower levels of motivation and therefore, engagement.

4.4.3 Results and Discussion – A Model for Self-efficacy and Mastery Experience

The third subquestion related to the students' questionnaire was concerned with whether gamers' language use experience in games predict their self-efficacy beliefs for learning English. The related hypothesis (H_7) state Gamers' positive language use experience in gaming will be a strong predictor of their general language learning self-efficacy beliefs. As the results discussed in 4.4.2 found marked differences between online and offline gamers, the two groups will be analyzed separately. Based on the review of literature, previous findings in 4.4.1 and 4.4.2 and the interview data, a hypothetical model was produced for online learners' self-efficacy and learning experience, which measurement model was analyzed using confirmatory factor analysis in *SPSS AMOS,* and the resultant structural model was later further analyzed for theoretical connections and confounding variables. Due to the separation of the two groups, the offline gamers' sample size was reduced to 60, which did not allow for reliable structural equation modelling; therefore, for this group a path analysis will be presented.

4.4.3.1 Results and Discussion – A Model for Self-efficacy and Mastery Experience for Online Gamers (RQ3.3). For the online gamer group, a Spearman's rank-correlation coefficient (Spearman's ρ) matrix was first produced in *SPSS* to judge whether the hypothesized online gaming mastery experience and resulting gaming-related self-efficacy were indeed correlated with general self-efficacy for learning English. Furthermore, formal learning experience (*In school mastery experience* scale) and resulting school-related self-efficacy beliefs were deemed important to both online gaming self-efficacy and general English-related self-efficacy as positive experience with English learning and English use should in theory positively influence self-efficacy in any context. *Table 22* (next page) shows the 5x5 correlation matrix for the five scales included in the analysis.

Table 22

Spearman's ρ Rank-correlation Matrix of the Scales Related to Online Gaming (p<.05,**p<.01)*

	Self-efficacy – general	Self-efficacy – online gaming	Mastery exp. – online	Mastery exp. – school	Self-efficacy – English lessons
Self-efficacy – general	-	.571**	.528**	.581**	.732**
Self-efficacy – online gaming	.571**	-	.678**	.402**	.493**
Mastery exp. – online	.528**	.678**	-	.560**	.522**
Mastery exp. – school	.581**	.402**	.56**	-	.685**
Self-efficacy – English lessons	.732**	.493**	.522**	.685**	-

The Spearman's rank-correlation coefficients showed moderate to strong covariance (ρ between .402 and .732) between all of the scales presumed to be correlated. An interesting significant and moderately strong correlation ($\rho = .560$, $p < .01$) was found between the two mastery experiences, which indicated the possibility that the English activity-related mastery experience and the self-efficacy beliefs are connected, and experiences are easily transferred between the two domains.

Subsequently, a stepwise regression analysis was performed with the *Self-efficacy – general* scale being the dependent variable to be explained by the *Self-efficacy – English lessons* and *Self-efficacy – online gaming* scales. The results of the regression indicated that two predictor variables, and *Self-efficacy – English lessons* ($\beta = .627$, $t = 11.5$; $p < .001$) and *Self-efficacy – online gaming* ($\beta = .282$, $t = 5.02$; $p < .001$) explained 65.4% of the variance ($R^2 = .654$; $F(2,149) = 133.81$; $p < .001$) in the *Self-efficacy – general* scale (see *Table 23* on the next page).

Table 23

*Regression Analysis Summary for Predicting the Self-efficacy – General Scale (** p < .01)*

Independent variable	*B*	*SE B*	*Beta (β)*
Self-efficacy – English lessons	.633	.057	.627
Self-efficacy – online gaming	.282	.056	.282
R^2		.654	
F		133.81**	

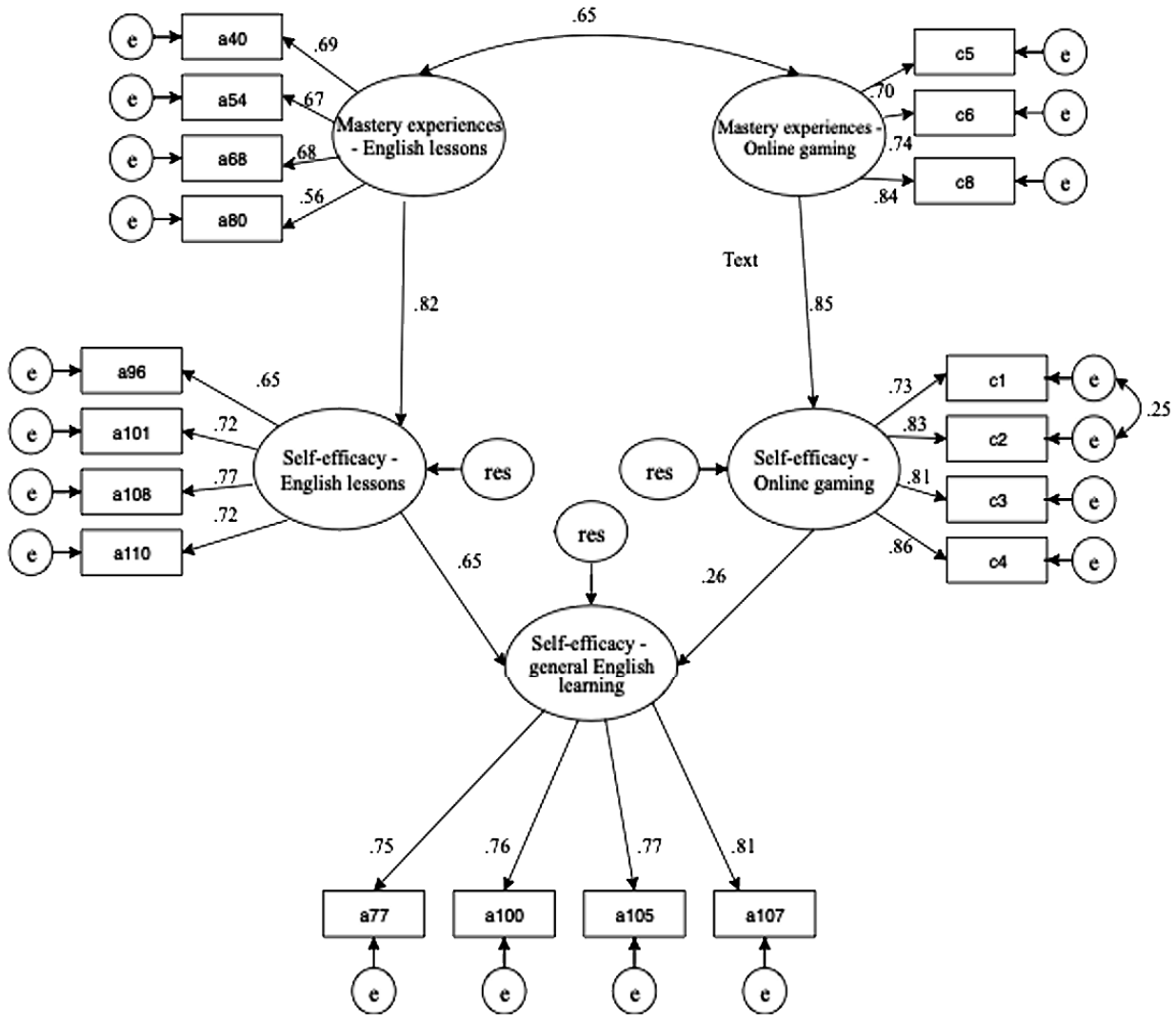
Based on the theoretical assumption that gamer-learners' *Self-efficacy – online gaming* could further be analyzed as a regression function of *Mastery experience while gaming online* and *Flow in gaming* (as a cognitive-affective variable), a second regression analysis would have been performed, had the flow scale not been found unreliable. Therefore, as further regression analysis with *Self-efficacy – online gaming* and *Self-efficacy – English lessons* as the dependent variables would not have provided more insight than simple correlation, the analysis proceeded to the confirmation of a model based on the observed variables with *Mastery experience while gaming online* being assumed as a predictor for *Self-efficacy – online gaming* and *In-school mastery experience* for *Self-efficacy – English lessons.* The covariance- and variance-based connections between the scales established, a measurement model was designed in *SPSS AMOS* to perform a confirmatory factor analysis of the hypothesized relationships between the scales. As mentioned in the discussion of the Research design chapter (Chapter 4), the measurement model was drawn up in order to check whether the observed data provided for the questionnaire items adequately measured the latent variables (or scales). In the model on the next page (*Figure 14)*, observed variables are represented with rectangles and the number of the item on the questionnaire, while latent variables are unobserved variables including error terms (abbreviated as "e") representing unique variance that is not shared

between the observed items and residuals (abbreviated as "res") that are also variance unaccounted for by other variables in a regression model. Single-headed arrows symbolize regression weights accounting for the variance in latent variables, while double-headed arrows represent correlations accounting for covariance.

Structural equation modelling in *AMOS* also allowed for an in-depth look into whether error terms could be correlated to improve the overall fit of the model; in the model below error terms for items 'c1' and 'c2' were therefore correlated, which is most probably explained by the fact that item wordings were somewhat similar.

Figure 14

The Measurement Model Designed for Confirmatory Factor Analysis in SPSS AMOS



As previously shown in *Table 20,* moderate and significant correlation was found between the two scales measuring mastery experience in different contexts; consequently, they were presumed to be correlated in the measurement model as well, which was also suggested by the output data in *AMOS.*

After the construction of the measurement model, the confirmatory factor analysis performed on the data yielded a number of goodness-of-fit indices (*Table 24*) that showed how well the observed data measure the latent variables and also how closely latent variables are related in variance and covariance (i.e., how well the measurement model fits the observed data). The indices shown below indicate an acceptable fit (Kenny, 2015; Kenny & McCoach, 2003; Kline, 2015); however, the most well-known "rule of thumb" (Hu & Bentler, 199) about goodness-of-fit indices in SEM advises a CFI of over .95 for good fit. Nevertheless, it is also

Table 24

Goodness-of-fit Indices for the Measurement Model Shown in Figure 14

	CMIN/df	*p*	*CFI*	*TLI*	*RMSEA*	*SRMR*
Measurement model	1.93	.001	.929	.912	.075	.049

Despite the acceptable fit found for the measurement model, it is clearly visible in the measurement model that the items designed to measure *In-school mastery experience* had relatively low regression weights on the latent construct, indicating a slight underrepresentation of the latent construct in the observed data. This crucially indicates a need for the refinement of this scale and related items for any subsequent research working in similar models.

Furthermore, it is hypothesized that there are at least two important constructs that theoretically should be integral parts of the model: *Out-of-school mastery experience,* which

probably would be correlated with the two other mastery experience scales, and *Flow in gaming,* which has been mentioned above as a theoretical predictor of *Self-efficacy – online gaming*. However, due to poor reliability of the scales, they were excluded from the analysis. Therefore, refining of the questionnaire items and the sample is definitely necessary for a better fitting measurement model that could also include the above two scales.

Lastly, it must be pointed out that the overall fit of the model does not mean that the measurement model presented above is the only model that can fit the data well. As there are a number of interrelated variables in psychological and general social studies research of this kind, a variety of explicitly different models could possibly be drawn up with similar fit indices.

In summary, the confirmatory factor analysis performed using structural equation modelling confirmed the hypothesis (H_7) for online gamers that mastery experience gathered while gaming are indirectly related (β = .28) to their general English-related self-efficacy beliefs through self-efficacy beliefs about using English when gaming online, which can be interpreted as implying that online gamers' encounters with English in games and positive experience can indeed impact on their overall self-efficacy. Similarly to the correlation matrix, the two mastery experience were found to be strongly correlated (r = .65) in the model, which indicate a strong relationship and transfer of mastery experience between contexts involving the use of English. As for the entirety of the model, however, self-efficacy beliefs connected to in-school language learning were found to have a much more profound effect (β = .65) on general English-related self-efficacy beliefs. As self-efficacy beliefs have consistently been found (Hsieh & Schallert, 2008; Mills *et al*., 2007; Piniel & Csizér, 2013, 2015) to be strong predictors of English language learning motivation, the importance of gaming-related mastery experience and resulting self-efficacy beliefs are therefore argued to be worth considering when attempting to create a deeper understanding of how online gamers might reap the language learning benefits of communication with foreign speakers in the game, as seen in the

structural model below (*Figure 15*) designed based on the fit indices of the confirmatory factor analysis (*CMIN/df* = 1.932, *CFI* = .929, *TLI* = .912, *RMSEA* = .075; *SRMR* = .049).

As related to research on gaming and self-efficacy, the results lend support to claims (Henry, 2013, 2014; Sundqvist, 2011) that gaming as a creative and highly immersive out-of-school activity may strengthen learners' self-efficacy beliefs through emotionally positive, self-authentic experience inducing a feeling of mastery of language use. As mentioned in a number of studies (Piirainen-Marsh & Tainio, 2009; Sylvén, 2004; Sundqvist, 2011) functional, goal-oriented and task-based language use and authentic interaction with others afforded by online video games in a relatively low-stakes environment definitely impact positively on learners' self-efficacy, which, in turn, boosts learners' English-related self-confidence and willingness-to-communicate. However, although many have warned (Henry, 2013, 2014; Henry & Cliffordson, 2015; Henry *et al*., 2018; Sundqvist & Sylvén, 2016; Thorne, 2008) about possible discrepancies arising from the differences between in-school English learning and out-of-school incidental learning of English through activities like gaming, the structural model presented above still shows the central nature of in-school learning for self-efficacy beliefs stemming from mastery experience.

However, this may be partially explained by the differences between the Swedish/Finnish context of most studies above and the Hungarian context as the latter arguably does not provide learners with as many possibilities of out-of-school language use as the Swedish/Finnish context. Therefore, Hungarian learners' main point of reference when evaluating their language learning related self-efficacy is the school context, which might explain its dominance in the self-efficacy structural model presented above.

Lastly, it must be noted that the dual nature of mastery experience from in-school and out-of-school sources also reflect theories of second language acquisition and imply an interplay between the instructed and incidental modes of learning. As discussed thoroughly in

2.3 and 2.4, instruction may equip learners with mental representations, linguistic awareness and various strategies (e.g. processing or metacognitive strategies) to help process input into intake (N. C. Ellis, 2005; VanPatten, 1996) from incidental sources, which, in turn, strengthens the mental representations of morphosyntactic elements of the language that will help learners during the process instructed language learning, altogether enabling them to have more mastery experience and more positive emotion-filled experience with language learning in and outside the school.

4.4.3.2 A Model Explaining Self-efficacy and Mastery Experience for Offline Gamers (RQ3.3) In order to understand whether self-efficacy relations of the offline gamer group work in a similar way to their online gamer counterparts, a stepwise multiple linear regression analysis was performed with *Self-efficacy – general* as the dependent variable and *Self-efficacy – gaming (offline)* and *Self-efficacy – English lessons* as predictor variables. The stepwise analysis yielded a simple linear regression model (see *Table 25*) with the exclusion of the *Self-efficacy – gaming (offline)* scale (β = .096, t = .89; p = .32) and only *Self-efficacy – English lessons* was found to be a significant and powerful predictor (β = .675, t = 8.36; p < .001) of *Self-efficacy – general* for offline gamers (R^2 = .526 ; $F(1,61)$ = 69.88; p < .001).

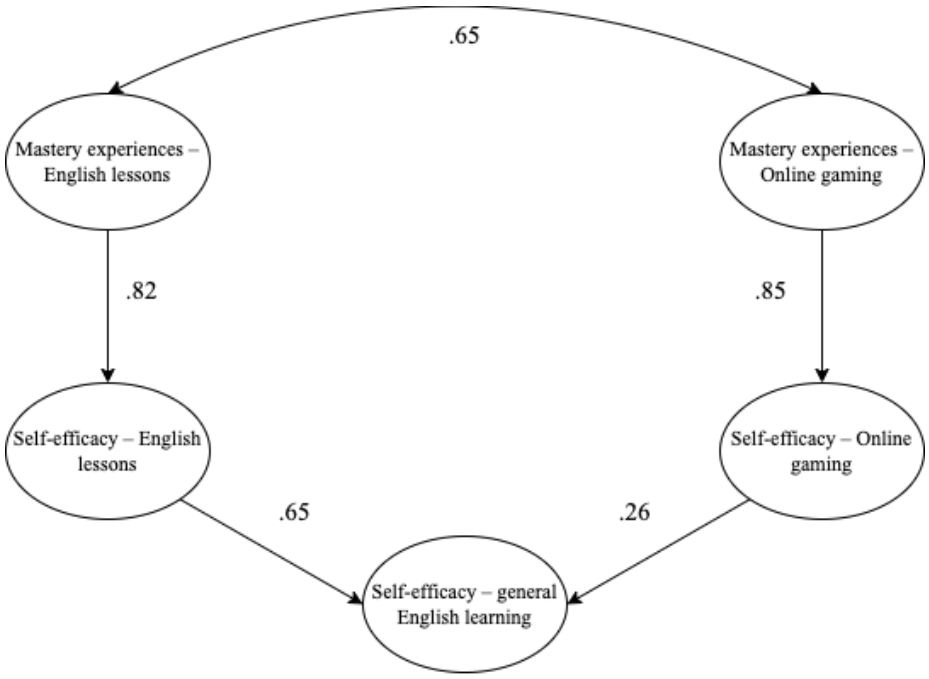
Table 25

*Regression Analysis Summary for Predicting Self-Efficacy – General with Offline Gamers (** p <.01).*

Independent variable	*B*	*SE B*	*Beta (β)*
Self-efficacy - English lessons	.611	.097	.675
R^2		.526	
F		69.88**	

Figure 15

Structural Model of the Relationships of the Constructs Based on the Results of the Confirmatory Factor Analysis



Thus, despite the fact that there is an ostensible relation between *Mastery experience of gaming (offline)* and presumably resultant self-efficacy beliefs in gaming ($\rho = .67$ $p < .01$) for offline learners, the latter self-efficacy beliefs do not significantly impact on these learners general self-efficacy beliefs, or at least not in a way that these effects are not skewed or explained by lesson-related self-efficacy beliefs. The question unanswered by the analyses pertains to whether this was caused by a clear lack of transfer of self-efficacy beliefs from simply playing an English language game to general self-efficacy, or an error in the questionnaire design by which items related to the two scales (i.e, *Self-efficacy – gaming (offline)* and *Self-efficacy – English lessons).* In order to assess the possibility of the latter, an exploratory factor analysis was conducted with maximum likelihood extraction and orthogonal

Varimax rotation to evaluate the possible factor cross-loadings on the scales. Small coefficients with communalities below .3 were suppressed in the analysis.

The results indicate that there is a clear two factor solution based on the observed data; however, there are some weak cross-loadings with coefficients of above .3. However, as a rule of thumb, items that cross-load onto another factor with a coefficient more than .2 less than the average of said factor should also be eliminated from the factor structure. If this rule is applied to the data in *Table 26* (see next page), a clearly delineated two factor solution emerges, which reinforces the validity of the scales and items designed for the questionnaire.

As a result, as discussed thoroughly in Section 4.4.1 and 4.4.2, these results imply that there is clearly a marked difference between online and offline gamers. The strong relationship between *In-school mastery experience* and *Self-confidence* for offline gamers had already been discussed in 4.4.2, and similar results emerge for such mastery experience and general English-related self-efficacy beliefs ($\rho = .69$, $p < .01$), which altogether may be either interpreted as either a possible sampling error for offline gamers, a lack of possible transfer of gaming-related self-efficacy or potentially an unobserved confounding background variable (e.g., personality traits) that are unique to the offline gamers, or a combination of these explanations.

Further studies on whether playing with offline single-player video games may positively impact language learning through self-efficacy therefore need to gain more in-depth data from offline gamers either using a case study design or potentially a validated personality test combined with a questionnaire similar to the one used in the present study.

Academic deliberations about gaming and language learning (Sundqvist, 2009; Reinders, 2012) have mostly lent support to gaming in general being a potential extramural tool of language learning for many learners; however, the results indicate that it is only online gamers who may feel such benefits as already hinted at by numerous scholars (Chik, 2014; Henry, 2013, 2014; Sundvist & Sylvén, 2012, 2014, 2016).

Table 26

Factor Matrix with Varimax Rotation of Items Measuring the Self-efficacy – Gaming (offline) Scale ('b' items) and the Self-efficacy – English Lessons Scale ('a' items) (**p<.01)

Construct / Items	M	SD	Cr. Alpha	Loadings - Factor 1	Loadings - Factor 2
Self-efficacy – gaming (offline)			.926		
b24	4.2	.89			.855
b25	4.18	.98			.862
b26	4.12	.96		.339	.811
b27	4.1	.99		.379	.755
b28	3.97	1.01			.776
Self-efficacy – general L2			.914		
a78	4.01	1.06		.809	
a96	3.84	1.05		.801	.355
a99	3.78	1.11		.674	
a101	4.03	1.01		.716	.335
a108	4.05	1.01		.808	
a110	4.01	1.02		.834	

Nevertheless, it is deemed important based on the data that further investigations are made into whether it is only the lack of online interaction with other players or the function of several intrapersonal variables that hinder the effect of offline gaming on language learning-related benefits. The data presented here is unique in the way that it separated online gamers from offline gamers, a grouping move also advanced by Sundqvist (2013) that should arguably be followed by further studies in the field.

4.4.4 Results and Discussion – A Structural Model for Engagement and Motivation (RQ 3.4)

Referring back to the theoretical underpinnings of the study, it was hypothesized that learners today encounter the English language in more personally-relevant contexts: where they use

English in cognitively, emotionally and/or aesthetically engaging, or – simply put – authentic (Henry, 2013, 2014; Henry & Cliffordson, 2015) situations driven by personal goals, and where their successes might impact their self-efficacy beliefs. One prime example of such context is gaming (Henry, 2013), in which gamer-learners may even experience a sense of authorship by shaping their own characters, building the world around them and interacting with the narrative in the game, or creating content (e.g, videos, guides) for other players in the beyond-game context. However, a lack of congruence between in-school learning and these self-congruent or self-authentic experiences may call the authenticity of the lessons into question. The review of literature argues for self-authenticity to be a key predictor for outcome expectations (Bandura, 1977, 1978, 1986), evaluations learners make based on their beliefs as to whether their actions and expended effort will result in a particular outcome beneficial for them. As learners' use of English is increasingly personally-mediated, the actions they evaluate for preferred outcomes will be aimed at self-authentic goals, not just a general goal of learning the language for its own sake. These outcome expectations, similarly to self-efficacy beliefs are also rooted in experience and have been attested to be in association with self-efficacy beliefs and motivation, and through an interplay with self-efficacy and motivation, outcome expectations have been found to predict behaviour.

In the measurement model hypothesized here, self-authenticity, outcome expectations (the *Perceived usefulness of in-school learning* scale) and self-efficacy, along with mode traditional motivation constructs, like Ideal L2 self and Ought-to L2 self (Dörnyei, 2005) and linguistic self-confidence (Clément *et al.*, 1994; MacIntyre, *et al.*, 1998) were used to explain language learners' motivated learning behaviour (or the effort they intend to expend for learning) and their self-reported engagement in learning.

The first step in the analysis was creating a Spearman's rank-correlation coefficient (Spearman's ρ) matrix with the scales presumed to be interrelated. All of the scales were

significantly correlated (with ρ values between .167 and .769), which is explained by the relatively large sample size ($N = 461$).

A few key correlations to be highlighted are the strong correlation between the *Perceived usefulness of in-school learning* and *Self-authenticity* ($\rho = .769$, $p < .01$), which serves as a basis for the relationship of outcome expectations and self-congruent goals and related valued outcomes, and the similarly strong correlation between *Perceived usefulness of in-school learning* and *Engagement* ($\rho = .658$, $p < .01$).

The latter is of particular interest when compared to the relatively less marked relationship between *Self-efficacy – general* and *Engagement* ($\rho = .401$, $p < .01$). An r-to-z test of correlation strength in dependent samples revealed that the first correlation (between *Perceived usefulness of in-school learning* and *Engagement*) to be significantly greater than the one between *Self-efficacy – general* and *Engagement* (z (461) = *-6.201;* $p < .01$). In turn, self-efficacy beliefs are slightly more strongly correlated with motivation than the *Perceived usefulness of in-school learning* scale. Furthermore, the matrix also reveals a strong correlation between *Motivated learning behaviour* and *Engagement* ($\rho = .639$, $p < .01$), or in other words, intended and actually expended behaviour.

In line with 15 years of research done in the framework of Dörnyei's L2 Motivational Self System (2005), *Ideal L2 self* was found to be in a significant moderate to strong correlation ($\rho = .658$, $p < .01$) with *Motivated learning behaviour.*

Based on the review of literature and the hypothetical system of relationships between constructs seen in *Figure 6* (Section 2.2.3), a measurement model was drawn up to explain the relations between the variables (see *Figure 16* on the next page*)*. After the main elements of the model were created, a number of alterations to the model were implemented based on the modification indices produced by the *AMOS* output, which were correlation between some of the error terms for the observed variables. In the majority of these cases, the correlations were

justified due to a pair or pairs of similarly worded items, and in a minority of the cases (e.g., for *Engagement* or *Perceived usefulness*) the correlations may have been the result of acquiescence bias on the participants' part.

Table 27

Spearman's ρ Rank-correlation Matrix of the Scales Related to Motivated Learning Behaviour and Engagement (p < .05, ** p < .01)*

Scales	Motivated learning behaviour	Self-auth.	Engage-ment in class	Ideal L2 self	Ought-to L2 self	Self-confidence	Useful-ness of school learning	Self-efficacy - general
Motivated learning behaviour	-	.464**	.639**	.577**	.389**	.393**	.469**	.514**
Self-authenticity	.464**	-	.517**	.355**	.285**	.371**	.769**	.377**
Engagement in class	.639**	.517**	-	.384**	.334**	.333**	.658**	.401**
Ideal L2 self	.577**	.355**	.384**	-	.518**	.433**	.317**	.632**
Ought-to L2 self	.389**	.285**	.334**	.518**	-	.167**	.229**	.310**
Self-confidence	.393**	.371**	.333**	.433**	.167**	-	.320**	.582**
Usefulness of school learning	.469**	.769**	.658**	.317**	.229**	.320**	-	.348**
Self-efficacy - general	.514**	.377**	.401**	.632**	.31**	.582**	.348**	-

The confirmatory factor analysis performed on the measurement model provided goodness-of-fit indices (*Table 28*) that showed how closely the model of observed and latent variables and their relationships fit the data.

Figure 16

Measurement Model For Predicting Engagement As The Criterion Variable

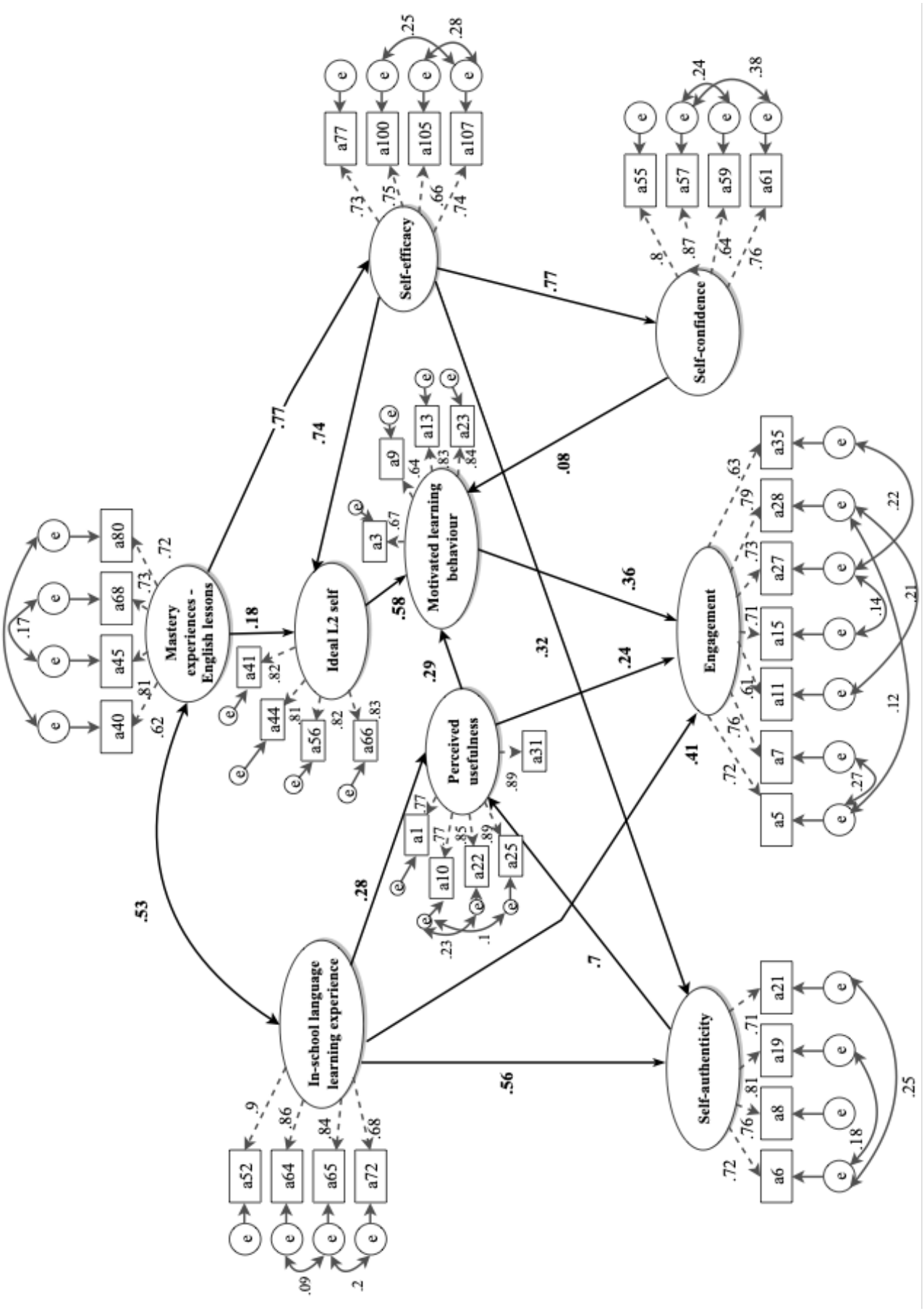


Table 28

Goodness-of-fit Indices for the Measurement Model Shown in Figure 16

	CMIN/df	*p*	*CFI*	*TLI*	*RMSEA*	*SRMR*
Measurement model for the complete sample	2.35	.001	.92	.912	.054	.074

The symbols in this complex model were slightly changed to improve clarity: black arrows are used for regression weights and correlations between latent variables, dashed lines are used in arrows for regression weights from latent variables on observed variables and grey arrows are used for error terms and residuals.

The indices shown above indicate an acceptable fit (Kenny, 2015; Kenny & McCoach, 2003; Kline, 2015); however, the CFI value, similarly to the model presented in Section 4.4.3.1 falls short of the preferred cutoff point of .95 (Hu & Bentler, 1999).

The criterion measure of the model is *Engagement* represented by 8 observed items and is most strongly influenced by *In-school language learning experience* (β = .41), which, distinctly from mastery experience, covers the general emotions related to the in-school English lessons. The second strongest regression predictor of *Engagement* was *Motivated learning behaviour* (β = .36), which means that intended behaviour to expend effort becomes actualized behaviour during the lessons. Lastly, *Perceived usefulness of in-school language learning* was found to be a third predicting variable (β = .24) for *Engagement*, thus learners who hold more positive outcome expectations of the getting engaged in language lessons are indeed more engaged according to students' self-reports.

In order of the predicting power of latent variables, *In-school language learning experience* was found to be strongly correlated with *In-school mastery experience* (r = .53). What this implies is that the frequency of positive mastery experience in the lessons may lead learners to think about language learning in school more positively. Similarly to the findings

of the previous model presented here, *In-school mastery experience* were strong predictors of learners' self-efficacy beliefs (β = .77). Furthermore, through the covariance with mastery experience, positive experience in the school lesson also indirectly affects self-efficacy beliefs to a lesser degree. These findings reflect the original theory of triadic reciprocal determinism (Bandura, 1977, 1986, 1988), which had treated mastery experience and positive emotional experience as keys to facilitating positive self-efficacy beliefs. In terms of research on second language learning, the findings are also in line with the findings of Piniel and Csizér (2013, 2015), who had shown positive language learning experience as predictors of self-efficacy. These experiences are of particular importance due to the strong regression weight (β = .71) from the *Self-efficacy* scale into *Ideal L2 self,* the most powerful predictor of motivation. The relationship is well-explained by Maddux (2005) who added "imaginal experience" to Bandura's (1997) four sources of self-efficacy as a visualization of success and effective behaviour in situations and was also attested by studies on language learning motivation (Murray, 2011; Ryan, 2009).

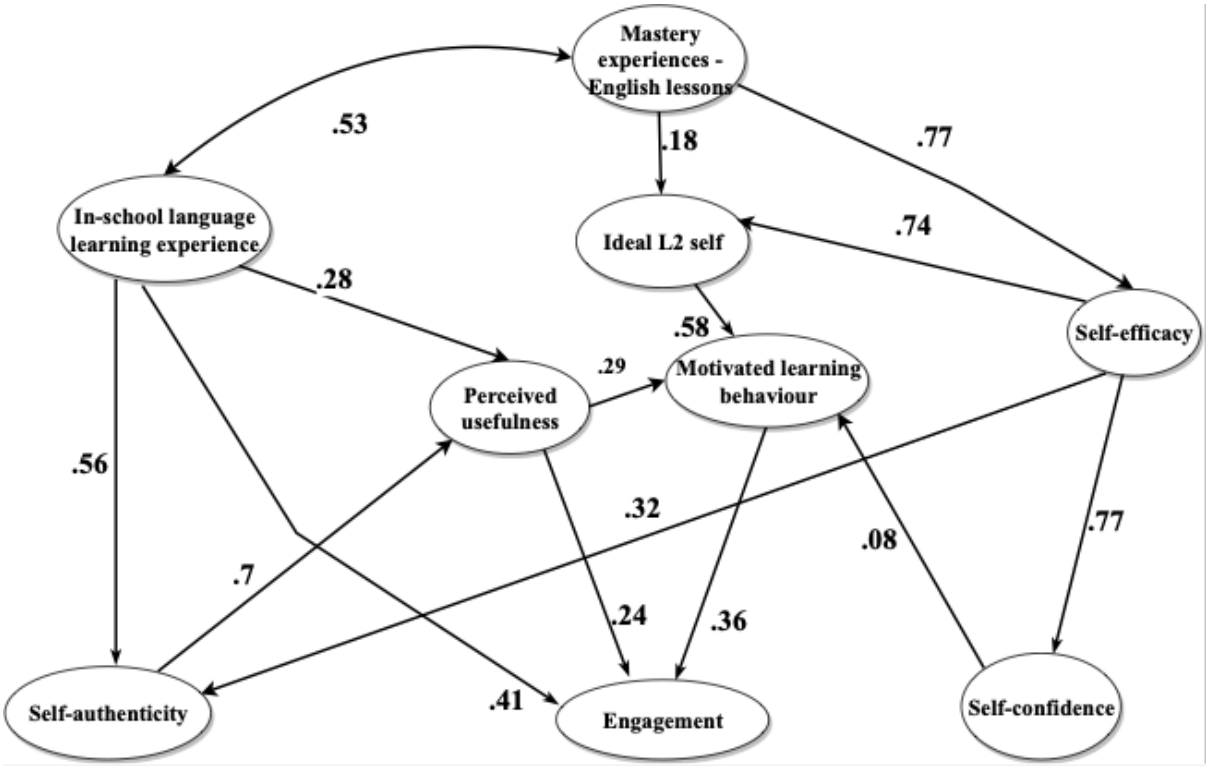
Secondly, *Motivated learning behaviour* which is the criterion measure in a number of reference studies (Csizér & Dörnyei, 2005a; Csizér & Kormos, 2009; Dörnyei & Csizér, 2005; Henry & Cliffordson, 2015; Papi, 2010) is strongly predicted (β = .58) by the *Ideal L2 self,* meaning that the discrepancy between "Current L2 selves" and "Ideal L2 selves" are keys to the emergence of intentions from students to learn the language, which is also attested by a long line of studies (e.g. Dörnyei & Csizér, 2005; Henry & Cliffordson, 2015; You & Dörnyei, 2016). This finding is believed to further strengthen the validity of the Ideal L2 self construct of Dörnyei's L2 Motivational Self System as a predictor of motivation. However, the *Ought-to L2 self* construct could not be fitted into the model as it was found to explain a very low percentage of motivation. Nevertheless, a somewhat similar, construct that is related to instrumental motivation, *Perceived usefulness of in-school learning* was found to be an

important predictor of *Motivated learning behaviour* (β = .29), similarly to the Attribution Theory-related deliberations of Hsieh (2012) and the findings of Henry and Cliffordson (2015), who had also shown that beliefs in the usefulness of instructed learning to English proficiency gains were strongly related to the effort learners intended to expend on learning. Lastly, although numerous studies have found linguistic self-confidence or its antithesis, anxiety, to be a predictor of language learning motivation (Clément, 1980; 1986; Clément *et al*., 1994; MacIntyre *et al*., 1998, Piniel & Csizér, 2013), the *Self-confidence* scale was only negligibly related to *Motivated learning behaviour* (β = .08) and was also not a significant predictor of actual engagement either. These results are particularly intriguing in light of the findings presented in 4.4.2 showing online gamers to be significantly more self-confident than either non-gamers or offline gamers. A further discrepancy is also visible when compared to 4.4.1; the model shows that self-efficacy beliefs are very strong predictors (β = .770) of self-confidence; however, there were no group based differences in the strength of self-efficacy beliefs. A later multigroup model in the study attempts to uncover the self-confidence differences between the groups.

Lastly, the *Self-authenticity* variable should be discussed, which was measured with a scale inspired by the study of Henry and Cliffordson (2015). Their model postulated that *Self-authenticity* would be a direct predictor of motivation; however, was deemed to have inadequate goodness-of-fit. The model established here posited that *Self-authenticity* would not directly predict motivation, but feed into the *Perceived usefulness of in-school learning* scale, thereby indirectly influencing motivation. The regression weights in the model clearly indicate a moderate predictive power for self-authenticity on the perceptions about the usefulness of instruction (β = .7). It is therefore argued that feelings of self-authenticity do play a role in fostering motivation but in a way that they influence learners' evaluations of usefulness of instructed language learning in view of its relation to their own experience.

Figure 17

Structural Model for Predicting Engagement as the Criterion Variable Based on The Measurement Model in Figure 16



It is important that no direct parallels are drawn between the present study and that of Henry and Cliffordson (2015), as the differences between the Swedish and the present Hungarian context and differences between the two instruments are taken into consideration. As Henry and Cliffordson argue learners' frustrated self-authenticity may be the result of self-efficacy gained during English-mediated activities that are personally relevant to the learners and, as such, offer a sense of self-congruence of English use to the learners. While the model shows that general self-efficacy beliefs are related to self-authenticity, due to the lack of a reliable scale measuring self-efficacy gained in out-of-school activities, the relationship between such experience and self-authenticity could not be measured. It is therefore argued that further research with adequate sample sizes for structural equation modelling should

further attempt to uncover the nature of relationships between self-efficacy, out-of-school language contact, self-authenticity and motivation.

Although it is impossible to make comparisons between the Hungarian and the Swedish context on account of a lack of comparable data from Sweden and the failings of the scales pertaining to out-of-school experience, it is seen important to underscore the importance of *In-school mastery experience* in the Hungarian context. It had already been argued in 2.2.2 that, despite the obviously growing permeation of English as a global language into the Hungarian setting, the English language most probably has not attained a prestige and a level of proliferation as in Sweden either at the level of the school curriculum or the media. Arguably, at the time of the completion of this thesis, for the majority or at least a substantial percentage of Hungarian learners, the English lessons provided by the schools are the primary source of contact with the English language.

In conclusion, the model presented above, despite the less-than-perfect goodness-of-fit indices, may be seen as a relevant addition to the extant knowledge on the interrelated nature of motivation, engagement, self-efficacy by integrating outcome expectations and self-authenticity into a structural equation model. As research interest related to the possible language learning affordances of gaming and other out-of-school activities has been steadily growing in the last decade, models with quantitative studies with even more rigorous sampling procedures and scale design should hypothetically be able to build out-of-school experience and resulting self-efficacy beliefs into a structural model, for which it is hoped that the model presented here might serve as a possible basis.

4.4.5 Results and Discussion – Multi-group Analysis of the Structural Model Showing Differences between Gamers and Non-gamers (RQ 3.4)

In order to understand whether there are any differences between gamers and non-gamers as related to the above proposed model, a multi-group analysis was performed in *AMOS* with the three groups separated for analysis based on their engagement with gaming.The important question was whether the differences related to *Self-confidence, Perceived usefulness of in-school learning, Motivation* or *Engagement* described in 4.4.1 and 4.4.2 would be represented in the structural model as well. Such differences could give insight as to whether slight differences in learners' self-efficacy beliefs or in-school experience (positive emotional or mastery) can impact on the overall motivational dynamics of gamers and non-gamers.

Firstly, the group of offline gamers was preemptively eliminated from the confirmatory factor analysis as the sample size of below 100 ($n_{offline}$ = 60) would have definitely not guaranteed adequate model fit indices. Therefore, the multi-group analysis was only performed between the online gamer and non-gamer groups. However, as the goodness-of-fit indices for the two further measurement models show (see *Table 29*), only the non-gamers' model was deemed to be adequately fitting the data although still with a mediocre CFI value. The fit indices of the online gamers' model show less-than-acceptable CFI and TLI values, while the SRMR and RMSEA are in the acceptable range. The comparison between the fit indices of the overall measurement model and the two group-based models imply that the lack of the large sample size in the overall model (N = 461) was penalized in both models. For a complex model of the large number of parameters, a sample size of 151 (offline gamers) is definitely not enough based on suggestions for having at least 5 observances for each parameter (Kline, 2005). Therefore, only hypothetical conclusions may be drawn regarding group-wise differences (the measurement models are found in *Appendix D*).

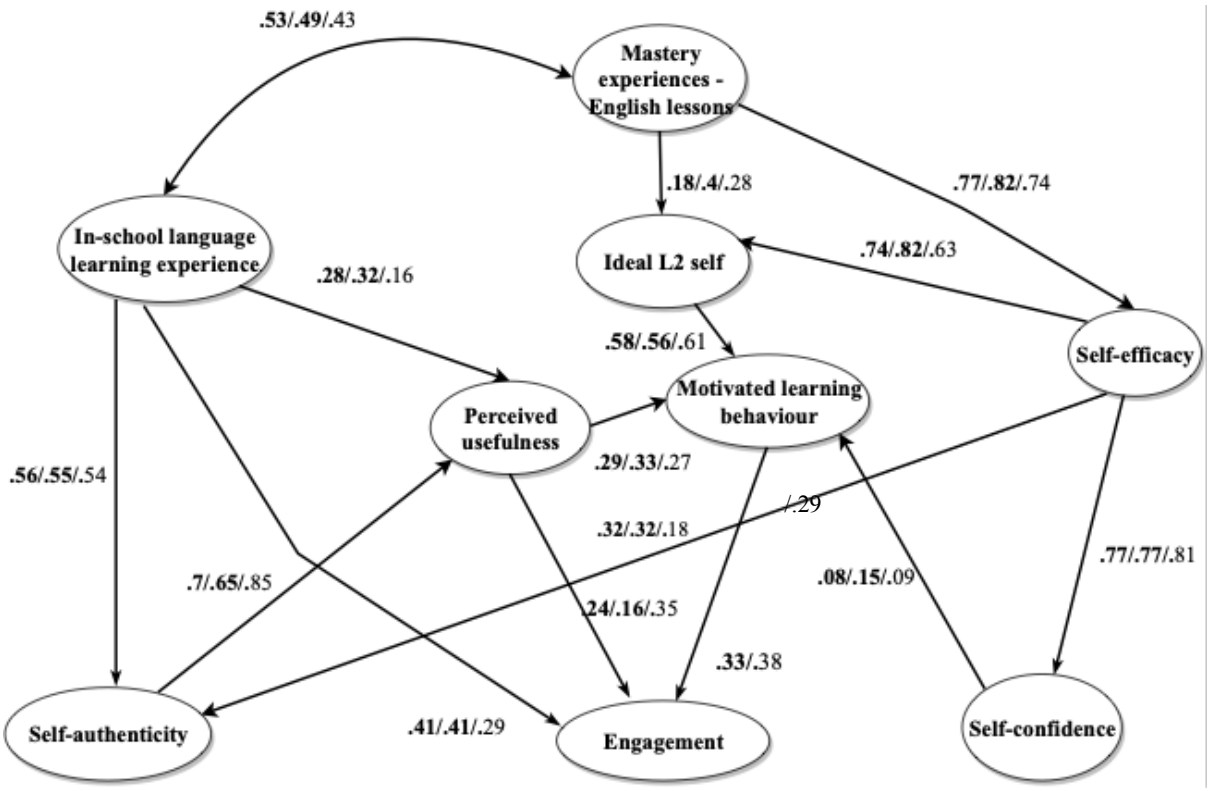
Table 29

Goodness-Of-Fit Indices for the Measurement Model Shown in Figure 16 and for the Structural Model Shown in Figure 18

	CMIN/df	*p*	*CFI*	*TLI*	*RMSEA*	*SRMR*
Measurement model for the complete sample	2.34	.001	.919	.911	.054	.072
Measurement model for non-gamers	2.25	.001	.91	.903	.064	.068
Measurement model for online gamers	2.05	.003	.87	.884	.087	.085

Figure 18

A Structural Model Representing the Correlations and Regression Weights of the Three Models: Overall Model / Non-Gamers / Online Gamers



As seen in *Figure 18* above, there are marked differences between regression weights and covariances in the overall model and the models applied to the non-gamer and the online gamer group. Some of the differences between the groups include a distinctly larger regression weight for the gamers from *Self-efficacy* to *Self-authenticity,* from *Self-authenticity* to *Perceived usefulness* and from that to *Engagement;* while non-gamers seem to derive more motivation indirectly from *In-school mastery experience* and general positive language learning experience than their online gamer counterparts. However, as the model fit indices for the online group were found to be under the acceptable cutoff value, such comparisons have to be reserved for later studies with possibly larger sample sizes for the number of parameters.

5 Conclusion

The present concluding chapter first gives an overview of the study itself with the main research questions and related research methods. The second section presents a brief summary of the findings for each research question and their relations to extant literature. Then, the third section discusses limitations related to the choice of research methods and the generalizability of the findings. In the fourth section of the conclusion, implications for classroom practice are discussed, while the last section makes suggestions for further research on the topic.

5.1 A Brief Overview of the Study

The focus of the study presented in this dissertation has been threefold: the first research question concentrated on mapping teachers' beliefs regarding video games and their possible uses and usefulness in language learning, the second research question strove to present an analysis of language use related to gaming and the language related affordances of a number of video games, while the third and last research question focused on finding differences between gamers and non-gamers related to a number of individual variables related to language learning and constructing a structural model for subsequent analyses.

The main theoretical background for the study stemmed from the social cognitive learning paradigm (Bandura, 1986, 1988), who emphasized the importance of self-efficacy in understanding human behaviour and conceptualized it as a function of a number of experience variables, including mastery experience, vicarious experience and positive emotions. The research presented here also laid focus on getting insights as to what sorts of linguistic input and interaction are provided by video games for language learners, and how such affordances may benefit the practice of English language teaching, while also discussing what possible roles teachers may have in facilitating language learning from video games. Lastly, a number

of language learning-related individual difference variables were discussed, but main attention was turned to motivation, self-confidence, self-efficacy, and two variables not often discussed in gaming-related research, outcome expectations and self-authenticity.

The study adopted a mixed-methods approach to its design with a section of qualitative interview data with 8 teachers and its subsequent content analysis informing later quantitative sections of the design, for example by helping the author refine scales and hypotheses for the questionnaire studies. The first questionnaire study presented here involved 100 English language teachers from all around Hungary and elicited data related to their attitudes, experience and beliefs regarding video games and their usefulness in English language learning in order to connect it with their attitudes to possibly recommending video games for language learning. The second part of the study involved a list of video games provided by a relatively large sample of learners from Hungary in a questionnaire and the subsequent analysis of said games by expert gamers/journalists for the importance of English to their enjoyment and the possible linguistic opportunities they provide, while also providing descriptive analysis of the English language contact the Hungarian learners in the sample are afforded by video games. Lastly, the third part of the study focused on finding differences between gamers (offline and online) and non-gamers in terms of a number of variables related to self-efficacy (outcome expectations and self-authenticity) and motivation using an online questionnaire of 461 students from over 10 schools in multiple locations in Hungary.

5.2 A Summary of the Findings

The analysis of the data collected for Research question 1 found a general sense of openness and positive attitudes on the teachers' part as regards video games and their relation to language learning, especially as related to the results of Chik (2013). While the quantitative and qualitative data showed that overall teachers lack the amount of experience necessary for

implementing COTS games-based learning in their practice, they see video games as having potential as an outside-of-school activity that may help students improve their vocabulary and encounter language-related experience that may boost their self-efficacy and self-confidence. Furthermore, the findings of the quantitative analysis on teachers' knowledge and beliefs showed that teachers are generally less knowledgeable about gaming and learners involved in gaming than in other out-of-school activities, and would be less likely to recommend gaming as a source of language learning than any other activity. Also, although age has been mentioned on many occasions as hindering teachers from dealing with video games, the results showed it is experience with video games (or contact) that is key to more positive attitudes about video games and more positive evaluations of their usefulness.

Findings for the second research question included important results related to the amount of English language contact gamers are provided via video games, especially online multiplayer games, which other than necessitating talk to others in the game in English, also facilitate beyond-game contact with foreign speakers of English in a shared affinity space. In addition, about 40% of the learners indicated a general willingness to create English content related to the game, which is an opportunity that may be harnessed by English language teachers. As for the English language input and interaction afforded by video games, expert raters judged single-player role playing games and multiplayer games to afford the most amount of opportunities for language learning, either through immersive gameplay, language-based options that influence the narrative or through the opportunity to talk to other speakers of English online and work with or compete against each other in a goal-oriented activity, where English serves as the main tool of mediation.

Lastly, the third part of the study found intriguing differences between online gamers, offline gamers and non-gamers. Offline gamers were invariably found to have lesser degrees of self-confidence, motivation and engagement than the two other groups, a finding that was

further analyzed through statistical means; however, the data pointed to either a sampling error or a latent observed confounding variable, possibly personality-related, that may explain the differences. Online gamers were found to be more self-confident (as also attested by teachers) than the other groups; nevertheless, they held less positive outcome expectation beliefs regarding in-school language learning and were also found to be generally less motivated to learn English and less engaged in language lessons than non-gamers, which might be linked to sense of frustrated self-authenticity during in-school English lessons that do not provide the same levels of self-congruent stimulation as gaming does. Later, a simple structural model with acceptable goodness-of-fit indices were presented that showed that gamer-learners' English-related self-efficacy beliefs are indeed affected by mastery experience of using English while playing video games; however, due to a low reliability of a scale measuring flow experience while gaming and mastery experience derived from other outside-the-school activities, the model cannot be claimed to account for a large portion of the effects of gaming on gamers' self-efficacy beliefs. Lastly, a more complex model was drawn up and presented, which integrated the construct of self-authenticity and outcome expectations (as a *Perceived usefulness of in-school learning* scale). The model was shown to have acceptably good fit with the data, but signs of caution were issued due to the lack of a scale integrating out-of-school activities into the model and due to the less-than-perfect model fit. Unfortunately, due to a small sample size for multi-group analysis, the same model could not be tested for online gamers and non-gamers for differences.

5.3 Limitations

Throughout the results and discussion sections in the present dissertation, a number of limitations were discussed that should be taken into account when interpreting the robustness of the analyses and the generalizability of the findings.

Firstly, it is was felt that longer and more in-depth interviews with a larger sample of teachers could have provided better data for subsequent analysis, and possibly an even less structured interview guide should be used in further studies investigating teachers' beliefs, attitudes and knowledge related to computer games as the present guide may have been too profoundly influenced by extant findings related to teachers' cognition.

As for the teachers' questionnaire, it has already been mentioned that the sample size of 100 was not adequate to create a structural model with confirmatory factor analysis. Besides, as snowball sampling was used to draw in respondents for the questionnaire, a possible sampling bias also might have had an effect in skewing the data as most probably it was more proactive teachers who filled out the questionnaire and thus cannot be claimed to adequately represent the population of Hungarian English language teachers. In order to obtain more robust findings, random sampling procedures should later be used to find teachers who are willing to participate; however, such procedures would definitely necessitate ample financial and institutional resources.

Regarding the linguistic input and interaction afforded by computer games, it must be emphasized that only two raters were asked to provide judgments on the importance of language in video games. However, due to a general lack of research related to categorizing video games based on linguistic affordances, it is argued that the present study managed to fill some of the existing research gap and provide useful data for teachers. Nevertheless, it is deemed important that later studies also involve a sample of the student gamer population as the raters' judgments might have been distorted due to the differences in age and education between them and the students. Also, observational case study designs and designs involving corpus analysis and discourse analysis may be useful for creating a more in-depth understanding of English language use in video games.

As for the largest quantitative part of the study, an important limitation was the sample size, which even at 461 was inadequate to provide good model fit indices for structural equation modelling with multiple groups. For a replication of the study, a sample size of at least 600 is desirable, in which each group involves 200 learners. Furthermore, two important constructs (flow and mastery experiences in out-of-school settings) were eliminated from the data analysis due to poor reliability. This was a major setback for the planned structural equation modelling, and it was felt that a large portion of the variance is left unexplained due to the lack of items measuring flow-related positive experiences while gaming and mastery experiences while using language outside-the-school. Also, an intriguing difference between offline gamers and all other learners in the sample was found, which was unexplained by the observed data. It has been hypothesized that a background variable such as personality may be responsible for the difference, which is a variable that needs to be addressed in further analyses.

5.4 Pedagogical Implications

As a study involving large samples of language teachers and current language learners, there are evidently numerous possible implications of the findings presented here that are relevant to classroom practice, teachers' professional development and teacher training.

Firstly, a highly important implication of the findings related to the answers of Research question 1 is that teachers should become aware of what English-related activities learners are involved in in their free time to aptly assess any point where they intervene to facilitate language learning. However, this recommendation has two separate facets: firstly, teachers should get acquainted with video games and the gaming world in general with the help of friends, relatives, students or professional development training as a way of developing an understanding of what gaming entails and what possibilities it might hold for language learners; and secondly, teachers should actively seek to gain insight into their own students'

out-of-school English-mediated activities by conducting short surveys to get information. Such an understanding of gaming and individual students' preferences and gaming practices may equip teachers with the information necessary to create engaging and creative activities that take into account learners' varied interests.

Related to the question of student engagement, as the results and theories regarding the issue self-authenticity in language learning especially for gamers showed, it is felt important based on the advice of Henry *et al.* (2018) that teachers adopt motivational strategies and teaching techniques that accommodate the vast array of out-of-school learning experiences of their students. In order for teachers to avoid their students from perceiving the English lessons as useful due to a lack of congruence with their identities formed by cognitively and emotionally stimulating, personally relevant language use, English lessons need to incorporate creative activities that learners feel are authentic with how they want to use the language. As such, teachers should consider giving project-based work for their gamer students that involves activities learners feel relevant to gaming and congruent with their identities, such as creating videos in English, subtitling English gaming videos for Hungarian viewers (or vice versa), writing walkthroughs and guides for other learners and players, peer teaching about computer games or creating tests and word lists for other gamers in the class.

Most interview participants and questionnaire respondents were in agreement as to whether video games themselves could be used in the context of classroom learning due to a general lack of resources and computer rooms for language teachers, and were also wary of the affordability of video games. However, as for practices not involving gaming *per se* in the classroom, numerous teachers also mentioned that they are unsure where to start with incorporating gaming into their teaching practice. Thus, it is imperative that teachers can get access to good practices over the course of teacher training and through professional development workshops and conferences. It is the general impression of the author that current

language teacher training in Hungary does not provide skills for pre-service teachers that would help them with understanding their changing role in a world increasingly mediated through English and with catering for students engaged in activities such as gaming. Research conducted by pre-service teachers with experience in gaming may also have numerous merits and as such should be motivated and made accessible to language teachers in practical teaching-related articles and workshops.

5.5 Possible Directions for Further Research

Pertaining to the general focus of the present study and the related findings, it is suggested that empirical investigations related to gamers' and non-gamers' motivation and self-efficacy beliefs should be continued and possibly, building upon the findings presented here, studies with more robust designs and larger sample sizes should be able to reveal the relations of congruent and frustrated senses of self-authenticity to language learning. Also, studies with multiple case study design focusing on the gaming experiences of different learners, possibly online and offline learners, may be able to provide a better understanding of what specific kinds of language use and interaction occurs during gaming and how they might explain differences between learners. Studies with experimental designs may also shift focus back on the possible role of instruction and explicit learning in implicit learning-related language use in games, by examining how certain treatments (e.g. the training of cognitive or metacognitive strategies) might affect learning outcomes in video games.

Lastly, it is believed that Vygotskyan sociocultural theory and related activity theory may be of specific interest to scholars researching gaming and language learning. Arguably, the goal-oriented and task-based nature of gaming, where the English language is a mediating tool, may induce English-based self-mediation of the activity and thinking processes that become manifested in gamers developing inner speech or private speech in English. Secondly,

from an activity theory perspective, further case studies should be conducted into how learning ecologies found in the beyond-game context or the "gaming culture" may be conducive to learning and what roles teachers might play in helping students gain the most from both the in-game and beyond-game experiences.

References

Adams, E. (2009). The designer's notebook: Sorting out the genre muddle. https://www.gamasutra.com/view/feature/132463/the_designers_notebook_sorting_.php

Albert, Á., Piniel, K., & Lajtai, Á. (2019). Középiskolás diákok angolórákkal kapcsolatos érzelmei egy kérdőíves felmérés tükrében, *Modern Nyelvoktatás, 25*(2), 27-41.

Albirini, A. (2006). Teachers' attitudes toward information and communication technologies: The case of Syrian EFL teachers. *Computers & Education, 47*(4), 373-398.

Appel, G., & Lantolf, J. P. (1994). Speaking as mediation: A study of L1 and L2 text recall tasks. *The Modern Language Journal, 78*(4), 437-452.

Apperley, T. H. (2006). Genre and game studies: Toward a critical approach to video game genres. *Simulation & Gaming, 37*(1), 6-23.

Appleton, J. J., Christenson, S. L., Kim, D., & Reschly, A. L. (2006). Measuring cognitive and psychological engagement: Validation of the Student Engagement Instrument. *Journal of School Psychology, 44*(5), 427-445.

Arnold, J. (2011). Attention to affect in language learning. *Online Submission Anglistik: International Journal of English Studies, 22*(1), 11-22.

Asher, J. J. (1981). The total physical response: Theory and practice. *Annals of the New York Academy of Sciences 1981*, 324-311.

Bachman, L. F. (1990). *Fundamental considerations in language testing.* Oxford University Press.

Bachman, L. F., & Palmer, A. S. (1996). *Language testing in practice: Designing and developing useful language tests*. Oxford University Press.

Baddeley, A. D. (1997). *Human memory: Theory and practice*. Psychology Press.

Bailey, N., Madden, C., & Krashen, S. D. (1974). Is there a “natural sequence” in adult second language learning?. *Language Learning, 24*(2), 235-243.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191-215.

Bandura, A. (1978). The self system in reciprocal determinism. *American Psychologist*, *33*(4), 344-458.

Bandura, A. (1986). Social foundations of thought and action. In D.F. Marks (Ed.), *Health psychology reader* (pp. 94-107). Sage.

Bandura, A. (1988). Organisational applications of social cognitive theory. *Australian Journal of Management, 13*(2), 275-302.

Bandura, A. (1997). *Self-efficacy: The exercise of control.* Macmillan.

Bardovi-Harlig, K. (1999). Exploring the interlanguage of interlanguage pragmatics: A research agenda for acquisitional pragmatics. *Language Learning, 49*(4), 677-713.

Barr, M. (2017). Video games can develop graduate skills in higher education students: A randomised trial. *Computers & Education*, *113*, 86-97.

Basturkmen, H. (2012). Review of research into the correspondence between language teachers' stated beliefs and practices. *System, 40*(2), 282-295.

Basturkmen, H., Loewen, S., & Ellis, R. (2004). Teachers' stated beliefs about incidental focus on form and their classroom practices. *Applied Linguistics*, *25*(2), 243-272.

Becker, K. (2007). Digital game-based learning once removed: Teaching teachers. *British Journal of Educational Technology, 38*(3), 478-488.

Bley-Vroman, R. (1986). Hypothesis testing in second-language acquisition theory. *Language Learning, 36*(3), 353-376.

Benson, P. (2001). *Autonomy in language learning.* Longman.

Benson, P. (2011). What’s new in autonomy. *The Language Teacher, 35*(4), 15-18.

Benson, P. (2013). *Teaching and researching: Autonomy in language learning.* Routledge.

Benson, P., & Chik, A. (2011). Towards a more naturalistic CALL: Video gaming and language learning. *International Journal of Computer-Assisted Language Learning and Teaching (IJCALLT), 1*(3), 1-13.

Bialystok, E. (1981). The role of linguistic knowledge in second language use. *Studies in Second Language Acquisition, 4*(1), 31-45.

Blume, C. (2019). Games people (don't) play: An analysis of pre-service EFL teachers' behaviors and beliefs regarding digital game-based language learning. *Computer Assisted Language Learning, 33*(1-2), 109-132.

Boomsma, A., & Hoogland, J. J. (2001). The robustness of LISREL modeling revisited. Structural equation models: Present and future. *A Festschrift in honor of Karl Jöreskog, 2*(3), 139-168.

Bodnár, Zs. (2007). A magyar szinkron legendás, minek nyelveket tanulni? *HVG.hu.* https://hvg.hu/kultura/20170508_szinkron_vs_felirat_nyelvtanulas_nyelvtudas

Borg, M. (2004). The apprenticeship of observation. *ELT Journal*, *58*(3), 274-276.

Borg, S. (2003). Teacher cognition in language teaching: A review of research on what language teachers think, know, believe, and do. *Language Teaching, 36*(2), 81-109.

Borg, S. (2009). Language teacher cognition. In A. Burns & J. Richards (Eds.), *The Cambridge guide to second language teacher education* (pp. 163-171), Cambridge, UK: Cambridge UP.

Borg, S. (2011). The impact of in-service teacher education on language teachers' beliefs. *System, 39*(3), 370-380.

Borg, S., & Al-Busaidi, S. (2011). Teachers' beliefs and practices regarding learner autonomy. *ELT Journal, 66*(3), 283-292.

Breuer, J., & Bente, G. (2010). Why so serious? On the relation of serious games and learning. *Journal for Computer Game Culture, 4,* 7-24.

Brown, R. (1973). *A first language: The early stages.* Harvard University Press.

Brown, H. D. (2000). *Principles of language learning and teaching.* Pearson.

Brown, E. R., & Diekman, A. B. (2010). What will I be? Exploring gender differences in near and distant possible selves. *Sex Roles, 63*(7-8), 568-579.

Bruton, A., Lopez, M. G., & Mesa, R. E. (2011). Incidental L2 vocabulary learning: An impracticable term?. *TESOL Quarterly, 45*(4), 759-768.

Bruthiaux, P. (2003). Squaring the circles: Issues in modeling English worldwide. *International Journal of Applied Linguistics*, *13*(2), 159-178.

Burstall, C. (1975). Factors affecting foreign-language learning: A consideration of some recent research findings. *Language Teaching, 8*(1), 5-25.

Calderhead, J. (1991). The nature and growth of knowledge in student teaching. *Teaching and Teacher Education, 7*(5-6), 531-535.

Cambridge. (n.d.). Gaming. In *Cambridge Advanced Learner's Dictionary.* Retrieved October 21, 2019, from https://dictionary.cambridge.org/dictionary/english/gaming

Canale, M. (1983). 1983: From communicative competence to communicative language pedagogy. In J.C. Richards & R.W. Schmidt (Eds.), *Language and communication* (pp. 2-27). Longman.

Canale, M., & Swain, M. (1980). Theoretical bases of communicative approaches to second language teaching and testing. *Applied Linguistics, 1*(1), 1-47.

Carroll, J. B., & Sapon, S. M. (1957). *Modern Language Aptitude Test.* Psychological Corporation.

Carr, J., & Pauwels, A. (2006). *Boys and foreign language learning: Real boys don't do languages.* Palgrave Macmillan.

Carver C. S., Scheier M. F., & Segerstrom S. C. (2010). Optimism. *Clinical Psychology Review, 30*, 879-889.

Celce-Murcia, M. (1991). Grammar pedagogy in second and foreign language teaching. *TESOL Quarterly, 25*(3), 459-480.

Celce-Murcia, M., Dörnyei, Z., & Thurrell, S. (1997). Direct approaches in L2 instruction: A turning point in communicative language teaching?. *TESOL Quarterly, 31*(1), 141-152.

Chatfield, L. (2009). Videogames now outperform Hollywood movies. *The Guardian.* https://www.theguardian.com/technology/gamesblog/2009/sep/27/videogames-hollywood

Chik, A. (2012). Digital gameplay for autonomous foreign language learning: Gamers' and language teachers' perspectives. In H. Reinders (Ed.), *Digital games in language learning and teaching* (pp. 95-114). Palgrave Macmillan.

Chik, A. (2013). Naturalistic CALL and digital gaming. *TESOL Quarterly, 47*(4), 834-839.

Chik, A. (2014). Digital gaming and language learning: Autonomy and community. *Language Learning & Technology, 18*(2), 85-100.

Choi, J., & Yi, Y. (2012). The use and role of pop culture in heritage language learning: A study of advanced learners of Korean. *Foreign Language Annals, 45*(1), 110-129.

Chomsky, N. (1965). *Aspects of the theory of syntax*. MIT Press.

Cicchetti, D. V. (1994). Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological assessment*, *6*(4), 284-290.

Clément, R. (1980). Ethnicity, contact and communicative competence in a second language. In H. Giles, W. P. Robinson, & P. M. Smith (Eds.), *Language: Social psychological perspectives* (pp. 147-154). Pergamon.

Clément, R. (1986). Second language proficiency and acculturation: An investigation of the effects of language status and individual characteristics. *Journal of Language and social Psychology, 5*(4), 271-290.

Clément, R., Dörnyei, Z., & Noels, K. A. (1994). Motivation, self-confidence, and group cohesion in the foreign language classroom. *Language Learning, 44*(3), 417-448.

Cohen, A. D. (2012). Strategies: The interface of styles, strategies, and motivation on tasks. In S. Mercer, S. Ryan & M. Williams (Eds.), *Psychology for language learning: Insights from theory, research and practice* (pp. 136–150). Palgrave Macmillan.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences.* Routledge.

Combs, M. C. (2014). "Performing Goofiness" in Teacher Education for Emergent Bilingual Students. In Y. Freeman & D. Freeman (Eds.), *Research on Preparing Preservice Teachers to Work Effectively with Emergent Bilinguals* (pp. 287-312). Bradford, UK: Emerald Group Publishing Limited.

Common Sense Media. (2015). *The Common Sense census: Media use by tweens and teens.* Rideout.

Corder, S. P. (1967). The significance of learner's errors. *IRAL-International Review of Applied Linguistics in Language Teaching, 5*(1-4), 161-170.

Council of Europe. (2001). *Common European framework of reference for languages: Learning, teaching, assessment.* Press Syndicate of the University of Cambridge.

Craig, S., Graesser, A., Sullins, J., & Gholson, B. (2004). Affect and learning: An exploratory look into the role of affect in learning with AutoTutor. J*ournal of Educational Media, 29*(3), 241-250.

Crawford, C. (1984). *The art of computer game design.* Washington State University.

Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches.* Sage.

Csíkszentmihályi, M. (1975) *Beyond boredom and anxiety: The experience of play in work and games.* Jossey-Bass.

Csíkszentmihályi, M. (1990). Flow: The psychology of optimal experience. *Design Issues, 8*(1), 75-77.

Csíkszentmihályi, M. (2014). *Flow and the foundations of positive psychology*. Springer.

Csizér, K., & Dörnyei, Z. (2005). Language learners' motivational profiles and their motivated learning behavior. *Language Learning, 55*(4), 613-659.

Csizér, K., & Dörnyei, Z. (2005). The internal structure of language learning motivation and its relationship with language choice and learning effort. *The Modern Language Journal, 89*(1), 19-36.

Csizér, K., & Kormos, J. (2008). Modelling the role of inter-cultural contact in the motivation of learning English as a foreign language. *Applied Linguistics, 30*(2), 166-185.

Csizér, K., & Kormos, J. (2009). Learning experiences, selves and motivated learning behaviour: A comparative analysis of structural models for Hungarian secondary and university learners of English. In Z. Dörnyei (Ed.), *Motivation, language identity and the L2 self* (pp. 98-119). Multilingual Matters.

Csizér, K., & Lukács, G. (2010). The comparative analysis of motivation, attitudes and selves: The case of English and German in Hungary. *System, 38*(1), 1-13.

Csizér, K., & Tankó, G. (2015). English majors' self-regulatory control strategy use in academic writing and its relation to L2 motivation. *Applied Linguistics, 38*(3), 386-404.

Cubukcu, F. (2008). A Study on the Correlation between Self Efficacy and Foreign Language Learning Anxiety. *Journal of Theory and Practice in Education, 4*(1), 148-158.

Czimmermann, E., & Piniel, K. (2016). Advanced language learners' experiences of flow in the Hungarian EFL classroom. In P. D. MacIntyre & S. Mercer (Eds.), *Positive psychology in SLA* (pp. 193-214). Multilingual Matters.

Damasio, A. R. (1994). Descartes' error and the future of human life. *Scientific American, 271*(4), 144-144.

Day, E. M., & Shapson, S. M. (1991). Integrating formal and functional approaches to language teaching in French immersion: An experimental study. *Language Learning, 41*(1), 25-58.

De Grove, F., Bourgonjon, J., & Van Looy, J. (2012). Digital games in the classroom? A contextual approach to teachers' adoption intention of digital games in formal education. *Computers in Human behavior*, *28*(6), 2023-2033.

De La Fuente, M. J. (2002). Negotiation and oral acquisition of L2 vocabulary: The roles of input and output in the receptive and productive acquisition of words. *Studies in Second Language Acquisition, 24*(1), 81-112.

Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology, 18*(1), 105-112.

Deci, E. L. (1975). *Intrinsic motivation.* Plenum Press.

Deci, E. L., & Ryan, R. M. (1985). The general causality orientations scale: Self-determination in personality. *Journal of Research in Personality, 19*(2), 109-134.

DeKanter, N. (2005). Gaming redefines interactivity for learning. *TechTrends, 49*(3), 26-31.

DeKeyser, R. (2003). Explicit and implicit learning. In C. Doughty & M. H. Long (Eds.), *The handbook of second language acquisition* (pp. 313-348). Blackwell.

DeKeyser, R. (2012). Interactions between individual differences, treatments, and structures in SLA. *Language Learning, 62*, 189-200.

Deterding, S. (2012). Gamification: designing for motivation. *Interactions, 19*(4), 14-17.

Deterding, S., Sicart, M., Nacke, L., O'Hara, K., & Dixon, D. (2011, May). Gamification. using game-design elements in non-gaming contexts. *CHI'11 Extended Abstracts on Human Factors in Computing Systems* (pp. 2425-2428).

DeVellis, R. F. (2012). *Scale development: Theory and application.* Sage.

Dewaele, J. M., & MacIntyre, P. D. (2014). The two faces of Janus? Anxiety and enjoyment in the foreign language classroom. *Studies in Second Language Learning and Teaching, 4*(2), 237-274.

Diekman, A. B., & Eagly, A. H. (2008). Of men, women, and motivation. In J.Y. Shah & W. L. Gardner (Eds.), *Handbook of motivation science* (pp. 434-447). Guildford Press.

Dietrich, A. (2004). Neurocognitive mechanisms underlying the experience of flow. *Consciousness and Cognition, 13*(4), 746-761.

Djaouti, D., Alvarez, J., & Jessel, J. P. (2011). Classifying serious games: the G/P/S model. In F. Patrick (Ed.), *Handbook of research on improving learning and motivation through educational games: Multidisciplinary approaches* (pp. 118-136). IGI Global.

Dóczi, B., & Kormos, J. (2016). *Longitudinal developments in vocabulary knowledge and lexical organization*. Oxford University Press.

Doughty, C. (1991). Second language instruction does make a difference: Evidence from an empirical study of SL relativization. *Studies in Second Language Acquisition, 13*(4), 431-469.

Dörnyei, Z. (1994). Motivation and motivating in the foreign language classroom. *The Modern Language Journal, 78*(3), 273-284.

Dörnyei, Z. (2005). *The psychology of the language learner: Individual differences in second language acquisition.* Lawrence Erlbaum Associates

Dörnyei, Z. (2006). Individual differences in second language acquisition. *AILA Review, 19*(1), 42-68.

Dörnyei, Z. (2007). *Research methods in applied linguistics: Quantitative, qualitative, and mixed methodologies*. Oxford University Press.

Dörnyei, Z., & Csizér, K. (2005). The effects of intercultural contact and tourism on language attitudes and language learning motivation. *Journal of Language and Social Psychology*, *24*(4), 327-357.

Dörnyei, Z., Csizér, K., & Németh, N. (2006). *Motivation, language attitudes and globalisation: A Hungarian perspective*. Multilingual Matters.

Dörnyei, Z., Henry, A., & MacIntyre, P. D. (Eds.), (2014). *Motivational dynamics in language learning.* Multilingual Matters.

Dörnyei, Z., & Ottó, I. (1998). Motivation in action: A process model of L2 motivation. *Working Papers in Applied Linguistics, 4*, 43-69.

Dörnyei, Z., & Skehan, P. (2003). Individual differences in second language learning. In C. J. Doughty & M. H. Long (Eds.), *The handbook of second language acquisition* (pp. 589-625). London.

Dörnyei, Z., & Thurrell, S. (1991). Strategic competence and how to teach it. *ELT Journal, 45*(1), 16-23.

Dörnyei, Z. and Thurrell, S. (1992). *Conversation & Dialogues in Action*. Prentice Hall.

Dörnyei, Z., & Ushioda, E. (Eds.), (2009). *Motivation, language identity and the L2 self*. Multilingual Matters.

Duncan, R. M., & Cheyne, J. A. (1999). Incidence and functions of self-reported private speech in young adults: A self-verbalization questionnaire. *Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement, 31*(2), 133.

Eastin, M. S. (2006). Video game violence and the female game player: Self-and opponent gender effects on presence and aggressive thoughts. *Human Communication Research, 32*(3), 351-372.

Eastin, M. S. (2007). The influence of competitive and cooperative group game play on state hostility. *Human Communication Research, 33*(4), 450-466.

Egbert, J. (2004). A study of flow theory in the foreign language classroom. *Canadian Modern Language Review, 60*(5), 549-586.

Egenfeldt-Nielsen, S. (2007). *Educational potential of computer games*. Continuum.

Ellis, R., & Shintani, N. (2014). *Exploring language pedagogy through second language acquisition research.* Routledge.

Ellis, N. C. (1994). *Vocabulary acquisition: The implicit ins and outs of explicit cognitive mediation.* Academic Press.

Ellis, N. C. (1996). Sequencing in SLA: Phonological memory, chunking, and points of order. *Studies in Second Language Acquisition, 18*(1), 91-126.

Ellis, N. C. (2002). Frequency effects in language processing: A review with implications for theories of implicit and explicit language acquisition. *Studies in Second Language Acquisition*, *24*(2), 143-188.

Ellis, N. C. (2005). At the interface: Dynamic interactions of explicit and implicit language knowledge. *Studies in Second Language Acquisition*, *27*(2), 305-352.

Ellis, N. C. (2015). Implicit and explicit learning: Their dynamic interface and complexity. In P. Rebuschat (Ed.), *Implicit and explicit learning of languages* (pp. 3-23). John Benjamins.

Ellis, R. (1994). *The study of second language acquisition*. Oxford University Press.

Ellis, R. (1999). *Learning a second language through interaction.* John Benjamins.

Ellis, R. (2002). Does form-focused instruction affect the acquisition of implicit knowledge?: A review of the research. *Studies in Second Language Acquisition, 24*(2), 223-236.

Ellis, R. (2003). *Task-based language learning and teaching*. Oxford University Press.

Ellis, R. (2009). Task-based language teaching: Sorting out the misunderstandings. *International Journal of Applied Linguistics, 19*(3), 221-246.

Ellis, R. (2012). *Language teaching research and language pedagogy.* Wiley & Sons.

Ellis, R. (2015). The importance of focus on form in communicative language teaching. *Eurasian Journal of Applied Linguistics, 1*(2), 1-12.

Ellis, R., & He, X. (1999). The roles of modified input and output in the incidental acquisition of word meanings. *Studies in Second Language Acquisition, 21*(2), 285-301.

eNet. (2019). *Egyre többet költünk videójátékra.* https://enet.hu/hirek/egyre-tobbet-koltunk-videojatekra/

Engeström, Y. (1999). Activity theory and individual and social transformation. In Y. Engeström, R. Miettinen & R-L. Punamaki (Eds.), *Perspectives on activity theory*, (pp. 19-38). Cambridge University Press.

Entertainment Software Association. (2015). Essential Facts about the computer and video game industry. https://www.theesa.com/wp-content/uploads/2015/04/ESA-Essential-Facts-2015.pdf.

Entertainment Software Association. (2018). Essential Facts about the computer and video game industry. https://www.theesa.com/wp-content/uploads/2018/05/2018-Essential-Facts-About-the-Computer-and-Video-Game-Industry.pdf.

European Commission. (2013). *Study on the use of subtitling: The potential of subtitling to encourage foreign language learning and improve the mastery of foreign languages*. Final Report.

N. Fernyhough, C., & Fradley, E. (2005). Private speech on an executive task: Relations with task difficulty and task performance. *Cognitive Development, 20*(1), 103-120.

Fontecha, A. F. (2010). Gender and motivation in EFL vocabulary production. In R. M. Catalán (Ed.), *Gender perspectives on vocabulary in foreign and second languages* (pp. 93-116). Palgrave Macmillan.

Filsecker, M., & Bündgens-Kosten, J. (2012). Behaviorism, constructivism, and communities of practice: How pedagogic theories help us understand game-based language learning. In H. Reinders (Ed.), *Digital games in language learning and teaching (pp. 50-69).* Palgrave Macmillan.

Firth, A., & Wagner, J. (1997). On discourse, communication, and (some) fundamental concepts in SLA research. *The Modern Language Journal, 81*(3), 285-300.

Firth, A., & Wagner, J. (1998). SLA property: No trespassing!. *The Modern Language Journal, 82*(1), 91-94.

Fives, H., & Buehl, M. M. (2012). Spring cleaning for the "messy" construct of teachers' beliefs: What are they? Which have been examined? What can they tell us. *APA Educational Psychology Handbook, 2,* 471-499.

Fives, H., Lacatena, N., & Gerard, L. (2014). Teachers' beliefs about teaching (and learning). In H. Fives & M. G. Gill (Eds.), *International handbook of research on teachers' beliefs* (pp. 249-265). Routledge.

Fredrickson, B. L. (2003). Positive emotions and upward spirals in organizations. *Positive Organizational Scholarship, 3*, 163-175.

Fredrickson, B. L. (2003). The value of positive emotions: The emerging science of positive psychology is coming to understand why it's good to feel good. *American Scientist, 91*(4), 330-335.

Frey, L. R. (2000). Diversifying our understanding of diversity and communication in groups: Dialoguing with Clark, Anand, and Roberson (2000). *Group Dynamics: Theory, Research, and Practice, 4*(3), 222–229.

Gajadhar, B. J., De Kort, Y. A. W., & Ijsselsteijn, W. A. (2008). Shared fun is doubled fun: player enjoyment as a function of social setting. In *Proceedings to International Conference on Fun and Games* (pp. 106-117). Springer.

Gajadhar, B. J., De Kort, Y. A. W., & IJsselsteijn, W. A. (2009). Rules of engagement: Influence of co-player presence on player involvement in digital games. *International Journal of Gaming and Computer-Mediated Simulations (IJGCMS), 1*(3), 14-27.

Gardner, R. C. (1985). *Social psychology and second language learning: The role of attitudes and motivation.* Arnold.

Gass, S. M., & Mackey, A. (2006). Input, interaction and output: An overview. *AILA Review, 19*(1), 3-17.

Gass, S. M., & Mackey, A. (2007). Input, interaction, and output in second language acquisition. In B. VanPatten & J. Williams (Eds.), *Theories in second language acquisition: An introduction* (pp. 175-199). Routledge.

Gass, S. M., & Mackey, A. (2012). *Data elicitation for second and foreign language research.* Routledge.

Gass, S. M., & Varonis, E. M. (1994). Input, interaction, and second language production. *Studies in Second Language Acquisition, 16*(3), 283-302.

Gass, S., Mackey, A., & Ross-Feldman, L. (2005). Task-based interactions in classroom and laboratory settings. *Language Learning, 55*(4), 575-611.

Gee, J. P. (2003). What video games have to teach us about learning and literacy. *Computers in Entertainment (CIE), 1*(1), 20-20.

Gee, J. P. (2007). *Good video games + good learning: Collected essays on video games, learning, and literacy.* Peter Lang.

Gee, J. P. (2018). Affinity spaces: How young people live and learn on line and out of school. *Phi Delta Kappan*, *99*(6), 8-13.

Gee, J. P., & Hayes, E. R. (2011). *Language and learning in the digital age*. Routledge.

Gneezy, U., Meier, S., & Rey-Biel, P. (2011). When and why incentives (don't) work to modify behavior. *Journal of Economic Perspectives, 25*(4), 191-210.

Gregersen, T., Macintyre, P. D., & Meza, M. D. (2014). The motion of emotion: Idiodynamic case studies of learners' foreign language anxiety. *The Modern Language Journal*, *98*(2), 574-588.

Gortari, A. B., Pontes, H. M., & Griffiths, M. D. (2015). The game transfer phenomena scale: An instrument for investigating the nonvolitional effects of video game playing. *Cyberpsychology, Behavior, and Social Networking, 18*(10), 588-594.

Guerrero Nieto, C. H. (2007). Applications of Vygotskyan concept of mediation in SLA. *Colombian Applied Linguistics Journal, 9*, 213-228.

Handelsman, M. M., Briggs, W. L., Sullivan, N., & Towler, A. (2005). A measure of college student course engagement. *The Journal of Educational Research, 98*(3), 184-192.

Harley, B. (1989). Functional grammar in french immersion: A classroom Experiment. *Applied Linguistics, 10*(3), 331-360.

Hazeltine, E., & Ivry, R. B. (2003). Neural structures that support implicit sequence learning. *Advances in Consciousness Research, 48*, 71-108.

Henderson, M., Huang, H., Grant, S., & Henderson, L. (2009). Language acquisition in Second Life: Improving self-efficacy beliefs. *Same places, different spaces. Proceedings of Ascilite Auckland 2009* (pp. 464-474). Auckland University of Technology.

Henry, A. (2009). Gender differences in compulsory school pupils' L2 self-concepts: A longitudinal study. *System, 37*(2), 177-193.

Henry, A. (2013). Digital games and ELT: Bridging the authenticity gap. In E. Ushioda (Ed.), *International perspectives on motivation* (pp. 133-155). Palgrave Macmillan.

Henry, A. (2014). The Dynamics of L3 Motivation: A Longitudinal Interview/Observation-Based Study. In Z. Dörnyei, P. D. MacIntyre & A. Henry (Eds.), *Motivational dynamics in language learning* (pp. 315-343). Multilingual Matters.

Henry, A., & Cliffordson, C. (2013). Motivation, gender, and possible selves. *Language Learning, 63*(2), 271-295.

Henry, A., & Cliffordson, C. (2015). The impact of out-of-school factors on motivation to learn English: Self-discrepancies, beliefs, and experiences of self-authenticity. *Applied Linguistics, 38*(5), 713-736.

Henry, A., Korp, H., Sundqvist, P., & Thorsen, C. (2017). Motivational strategies and the reframing of English: Activity design and challenges for teachers in contexts of extensive extramural encounters. *TESOL Quarterly*, *52*(2), 247-273.

Holec, H. (1981). *Autonomy in Foreign Language Learning*. Pergamon.

Hoogland, J. J., & Boomsma, A. (1998). Robustness studies in covariance structure modeling: An overview and a meta-analysis. *Sociological Methods & Research, 26*(3), 329-367.

Horwitz, E. K., Horwitz, M. B., & Cope, J. (1986). Foreign language classroom anxiety. *The Modern Language Journal, 70*(2), 125-132.

Horwitz, E. K. (1986). Preliminary evidence for the reliability and validity of a foreign language anxiety scale. *TESOL Quarterly, 20*(3), 559-562.

Horwitz, E. K. (1988). The beliefs about language learning of beginning university foreign language students. *The Modern Language Journal, 72*(3), 283-294.

Hsieh, P. P. H., & Kang, H. S. (2010). Attribution and self-efficacy and their interrelationship in the Korean EFL context. *Language Learning, 60*(3), 606-627.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*(1), 1-55.

Hulstijn, J. H. (2003). Connectionist models of language processing and the training of listening skills with the aid of multimedia software. *Computer Assisted Language Learning, 16*(5), 413-425.

Hulstijn, J. H. (2015). *Language proficiency in native and non-native speakers: Theory and research*. John Benjamins.

Hunicke, R., & Chapman, V. (2004). AI for Dynamic Difficulty Adjustment in Games. In *Challenges in Game Artificial Intelligence AAAI Workshop.* The AAAI Press.

Hymes, D. H. (1962). The ethnography of speaking. In T. Gladwin & W. Sturtevant (Eds.), *Anthropology and human behavior* (pp. 15–53). Anthropological Society of Washington.

Hymes, D. (1971). Sociolinguistics and the ethnography of speaking. In E. Ardener (Ed.), *Social anthropology and language* (pp. 47-93). Routledge

Hymes, D. (1972). On communicative competence. *Sociolinguistics, 269-293.*

Gametrack/Ipsos Connect (2017). *GameTrack Digest: Quarter 3 2017*. https://www.isfe.eu/sites/isfe.eu/files/gametrack_euro-pean_summary_data_2017_q3.pdf

GameTrack. (2019). In-Game Spending Stud: Nov 2019. https://www.isfe.eu/wp-content/uploads/2019/12/GameTrack-In-Game-Spending-2019.pdf

Izard, C. E. (2010). The many meanings/aspects of emotion: Definitions, functions, activation, and regulation. *Emotion Review, 2*(4), 363-370.

Jensen, L. L. (1998). The role of need for cognition in the development of reflective judgment. Doctoral dissertation. University of Denver.

Kachru, B. B. (1985). The bilinguals' creativity. *Annual Review of Applied Linguistics, 6,* 20-33.

Kachru, B. B. (Ed.). (1992). *The other tongue: English across cultures*. University of Illinois Press.

Kadel, R. (2005). How Teacher Attitudes Affect Technology Integration. *Learning & Leading with Technology, 32*(5), 34.

Kaye, L. K. (2016). Exploring flow experiences in cooperative digital gaming contexts. *Computers in Human Behavior, 55,* 286-291.

Kaye, L. K., & Bryce, J. (2014). Go with the flow: The experience and affective outcomes of solo versus social gameplay. *Journal of Gaming & Virtual Worlds, 6*(1), 49-60.

Kenny, D. A. (2015). Measuring model fit. http://davidakenny.net/cm/fit.htm

Kenny, D. A., & McCoach, D. B. (2003). Effect of the number of variables on measures of fit in structural equation modeling. *Structural Equation Modeling*, *10*(3), 333-351.

Kern, R. G. (1995). Restructuring classroom interaction with networked computers: Effects on quantity and characteristics of language production. *The Modern Language Journal, 79*(4), 457-476.

Kessler, G. (2007). Formal and informal CALL preparation and teacher attitude toward technology. *Computer Assisted Language Learning, 20*(2), 173-188.

Kiili, K. (2005). Digital game-based learning: Towards an experiential gaming model. *The Internet and Higher Education, 8*(1), 13-24.

Kinder, A., Shanks, D. R., Cock, J., & Tunney, R. J. (2003). Recollection, fluency, and the explicit/implicit distinction in artificial grammar learning. *Journal of Experimental Psychology: General*, *132*(4), 551.

Kissau, S., & Quach, L. (2006). Student control in the second language classroom: An analysis of gender differences. *Journal of Applied Linguistics, 3*(1), 49-67.

Klapp-Lekholm, A. (2008). Grades and grade assignment: effects of student and school characteristics. Report nr.: Acta Universitatis Gothoburgensis 269. Gothenburg, Sweden: University of Gothenburg.

Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York, NY: Guilford.

Kormos, J., & Csizér, K. (2008). Age-related differences in the motivation of learning English as a foreign language: Attitudes, selves, and motivated learning behavior. *Language Learning, 58*(2), 327-355.

Kormos, J., Kiddle, T., & Csizér, K. (2011). Systems of goals, attitudes, and self-related beliefs in second-language-learning motivation. *Applied Linguistics, 32*(5), 495-516.

Krafft, K. C., & Berk, L. E. (1998). Private speech in two preschools: Significance of open-ended activities and make-believe play for verbal self-regulation. *Early Childhood Research Quarterly, 13*(4), 637-658.

Krashen, S. D. (1976). Formal and informal linguistic environments in language acquisition and language learning. *TESOL Quarterly*, 157-168.

Krashen, S. (1977). The monitor model for adult second language performance. In M. Burt, H. Dulay & M. Finocchiaro (Eds.), *Viewpoints on English as a second language* (pp.152-161). Regents Publishing.

Krashen, S. (1981). *Second language acquisition and second language learning*. Pergamon.

Krashen, S. (1982). *Principles and practice in second language acquisition*. Pergamon.

Krashen, S. (1983). Second language acquisition theory and the preparation of teachers. In J. Alatis, H. Stern and P. Stevens (Eds.), *Applied linguistics and the preparation of teachers: Toward a rationale*. Georgetown University Press.

Krashen, S. (1985). *The input hypothesis: Issues and implications*. Longman.

Krashen, S., and Terrell, T. (1983). *The natural approach: Language acquisition in the classroom.* Pergamon.

Kuhl, J. (1996). Who controls whom when" I control myself"?. *Psychological Inquiry*, *7*(1), 61-68.

Kumaravadivelu, B. (1993) The name of the task and the task of naming: methodological aspects of task-based pedagogy. In G. Crookes and S. Gass (Eds.), *Tasks in a Pedagogical Context* (pp. 69–96). Multilingual Matters.

Lado, R. (1957) *Linguistics across cultures: Applied linguistics for language teachers.* University of Michigan.

Lado, R. (1964) *Language teaching: A scientific approach*. McGraw Hill.

Lajtai, Á. (2020). Hungarian EFL learners' extramural contact with English. In In S. L. Krevelj & R. Geld (Eds.), *UZRT 2018* (pp. 128-149). FF Press.

Lamb, M. (2012). A self system perspective on young adolescents' motivation to learn English in urban and rural settings. *Language Learning*, *62*(4), 997-1023.

Lambert, J., & Gong, Y. (2010). 21st century paradigms for pre-service teacher technology preparation. *Computers in the Schools*, *27*(1), 54-70.

Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics, 33*(1), 159-174.

Lantolf, J. (1997). The function of language play in the acquisition of L2 Spanish. *Contemporary perspectives on the acquisition of Spanish*, *2*, 3-24.

Lantolf, J. (2000a) Introducing sociocultural theory. In J. Lantolf (Ed.) *Sociocultural theory and second language learning*. Oxford University Press.

Lantolf, J. (2012). Sociocultural theory and the pedagogical imperative. In R. B. Kaplan (Ed.), *The Oxford handbook of applied linguistics*. Oxford University Press.

Lantolf, J., and Thorne, S. (2006) *Sociocultural theory and the genesis of second language development.* Oxford University Press.

Lantolf, J., Thorne, S., & Poehner, M. E. (2015). Sociocultural theory and second language development. In B. VanPatten & J. Williams (Eds.), *Theories in second language acquisition: An introduction* (pp. 207-226). Routledge.

Larsen-Freeman, D. (1976) An explanation for the morpheme acquisition order of second language learners. *Language Learning 26(1)*, 125–34.

Larson-Hall, J. (2012). Our statistical intuitions may be misleading us: Why we need robust statistics. *Language Teaching*, *45*(4), 460-474.

Laufer, B. (1998). The development of passive and active vocabulary in a second language: Same or different?. *Applied linguistics*, *19*(2), 255-271.

Laufer, B., and Hulstijn, J. (2001) Incidental vocabulary acquisition in a second language: the construct of task-induced involvement. *Applied Linguistics, 22(1)*, 1–26.

Lazarus, R. S. (1991). Cognition and motivation in emotion. *American Psychologist*, *46*(4), 352-364.

Leander, K. M., Phillips, N. C., & Taylor, K. H. (2010). The changing social spaces of learning: Mapping new mobilities. *Review of Research in Education*, *34*(1), 329-394.

Lee, H. J., Choi, J., Kim, J. W., Park, S. J., & Gloor, P. (2013). Communication, opponents, and clan performance in online games: A social network approach. *Cyberpsychology, Behavior, and Social Networking*, *16*(12), 878-883.

Lenneberg, E. H. (1967). The biological foundations of language. *Hospital Practice, 2*(12), 59-67.

Leow, R. P. (2000). A study of the role of awareness in foreign language behavior: Aware versus unaware learners. *Studies in Second Language Acquisition*, *22*(4), 557-584.

Leow, R. P. (2001). Attention, awareness, and foreign language behavior. *Language Learning*, *51*, 113-155.

Leow, R. P. (2015). Explicit learning in the L2 classroom: A student-centered approach. Routledge.

Lewis, M. (1993). *The lexical approach.* Language Teaching Publications.

Li, L., & Walsh, S. (2011). Technology uptake in Chinese EFL classes. *Language Teaching Research, 15*(1), 99-125.

Lim, S., & Reeves, B. (2010). Computer agents versus avatars: Responses to interactive game characters controlled by a computer or other player. *International Journal of Human-Computer Studies*, *68*(1-2), 57-68.

Lin, P. M. S. (2014). Investigating the validity of internet television as a resource for acquiring L2 formulaic sequences. *System*, 42, 164–176.

Littlewood, W. (1999). Defining and developing autonomy in East Asian contexts. *Applied Linguistics*, *20*(1), 71-94.

Long, M. (1981) Input, interaction and second language acquisition. In H. Winitz (Ed.), *Native language and foreign language acquisition* (pp. 259–78). New York Academy of Sciences.

Lombardi, I. (2012). Computer games as a tool for language education. *G|A|M|E – Games as Art, Media, Entertainment*, *1*(1), 43-52.

Long, M. (1983). Does second language instruction make a difference? A review of the research. *TESOL Quarterly 17*(3), 359–82.

Long, M. (1988). Instructed interlanguage development. In L. Beebe (Ed.), *Issues in second language acquisition: Multiple perspectives* (pp. 105-121). Newbury House.

Long, M. (1991). Focus on form: A design feature in language teaching methodology. In K. De Bot, R. Ginsberg & C. Kramsch (Eds.), *Foreign language research in cross-cultural perspective* (pp. 39–52). John Benjamins.

Long, M. (1996). The role of the linguistic environment in second language acquisition. In W. Ritchie & T. Bhatia (Eds.), *Handbook of second language acquisition.* Academic Press.

Long, M. (2014). *Second language acquisition and task-based language teaching*. John Wiley & Sons.

Lortie, D. C., & Clement, D. (1975). *Schoolteacher: A sociological study.* University of Chicago Press.

Lowood, H. E. (2017). Electronic games. In *Encyclopaedia Britannica.* https://www.britannica.com/topic/electronic-game

Lunn, J., Walker, S., & Mascadri, J. (2015). Personal epistemologies and teaching. In H. Fives & M. G. Gill (Eds.), *International handbook of research on teachers' beliefs,* (pp. 319-335.). Routledge.

Macaro, E. (2001). *Learning strategies in foreign and second language classrooms: The role of learner strategies.* Continuum.

MacIntyre, P. D., & Mercer, S. (2014). Introducing positive psychology to SLA. *Studies in Second Language Learning and Teaching*, *4*(2), 153-172.

MacIntyre, P. D., & Vincze, L. (2017). Positive and negative emotions underlie motivation for L2 learning. *Studies in Second Language Learning and Teaching, 7*(1), 61-88.

MacIntyre, P. D., Clément, R., Dörnyei, Z., & Noels, K. A. (1998). Conceptualizing willingness to communicate in a L2: A situational model of L2 confidence and affiliation. *The Modern Language Journal*, *82*(4), 545-562.

MacIntyre, P. D., Gregersen, T., & Mercer, S. (Eds.). (2016). *Positive psychology in SLA*. Multilingual Matters.

Mackey, A., Abbuhl, R., & Gass, S. (2012). Interactionist approaches. In S. M. Gass, & A. Mackey (Eds.), *The Routledge handbook of second language acquisition* (pp. 7-14). Routledge.

Marsden, E., & Chen, H. Y. (2011). The roles of structured input activities in processing instruction and the kinds of knowledge they promote. *Language Learning*, *61*(4), 1058-1098.

Martin, B. (2015). Successful implementation of TPACK in teacher preparation programs. *International Journal on Integrating Technology in Education*, *4*(1), 17-26.

Maxwell, J. A., & Loomis, D. M. (2003). Mixed methods design: An alternative approach. In A. Tashakkori & C. Teddle (Eds.), *Handbook of mixed methods in social and behavioral research* (pp. 241-272). Sage.

Maykut, P., & Morehouse, R. E. (1994). *Beginning qualitative research: A philosophical and practical guide.* Falmer Press.

McGrail, E. (2005). Teachers, technology, and change: English teachers' perspectives. *Journal of Technology and Teacher Education, 13*(1), 5-24.

Miller, M., & Hegelheimer, V. (2006). The Sims meet ESL Incorporating authentic computer simulation games into the language classroom. *Interactive Technology and Smart Education*, *3*(4), 311-328.

Mills, N. (2014). Self-efficacy in second language acquisition. In S. Mercer & S. Ryan (Eds.), *Multiple perspectives on the self in SLA* (pp. 6-22.). Multilingual Matters.

Mills, N., Pajares, F., & Herron, C. (2006). A reevaluation of the role of anxiety: Self-efficacy, anxiety, and their relation to reading and listening proficiency. *Foreign Language Annals*, *39*(2), 276-295.

Marsden, E., Mitchell, R., & Myles, F. (2013). *Second language learning theories*. Routledge.

Moodie, I. (2016). The anti-apprenticeship of observation: How negative prior language learning experience influences English language teachers' beliefs and practices. *System*, *60*, 29-41.

Mori, S., & Gobel, P. (2006). Motivation and gender in the Japanese EFL classroom. *System*, *34*(2), 194-210.

Muthén, L. K., & Muthén, B. O. (2012). *MPlus: statistical analysis with latent variables--User's guide*. Muthén & Muthén.

Nakamura, J., & Csikszentmihalyi, M. (2009). Flow theory and research. In S. Lopez & C. Snyder (Ed.), *Handbook of positive psychology* (pp. 195-206). Oxford.

Noels, K. A., Pelletier, L. G., Clément, R., & Vallerand, R. J. (2000). Why are you learning a second language? Motivational orientations and self-determination theory. *Language Learning*, *50*(1), 57-85.

Norris, J. M., & Ortega, L. (2000). Effectiveness of L2 instruction: A research synthesis and quantitative meta-analysis. *Language Learning*, *50*(3), 417-528.

Novak, J. (2005). *Game development essentials: An introduction.* Thomson Delmar Learning.

Nunan, D. (1991). Communicative tasks and the language curriculum. *TESOL Quarterly*, *25*(2), 279-295.

Olsson, E. (2011). ‘‘Everything I read on the Internet is in English’’ – On the impact of extramural English on Swedish 16-year-old pupils’ writing proficiency. Licentiate’s thesis, University of Gothenburg, Gothenburg

Oxford, R. (1990). Language learning strategies. In A. Burns & J. C. Richards (Eds.), *Learning English as a second language* (pp. 81-91). Cambridge UP.

Oxford, R. L. (2003). Language learning styles and strategies: Concepts and relationships. *IRAL*, *41*(4), 271-278.

Oxford, R., & Shearin, J. (1994). Language learning motivation: Expanding the theoretical framework. *The Modern Language Journal*, *78*(1), 12-28.

Öveges, E., & Csizér, K. (2018). Az idegennyelv-oktatás keretei és hatékonysága a köznevelésben [The framework and efficiency of foreign language education in public education]. Budapest, Hungary: Emberi Ero˝források Minisztériuma és Oktatási Hivatal. https://www.oktatas.hu/pub_bin/dload/sajtoszoba/nyelvoktatas_kutatasi_jelentes_2018.pdf

Pajares, F. (1992). Teachers’ beliefs and educational research: Cleaning up a messy construct. *Review of Educational Research*, *62*(3), 307-332.

Pajares, F. (1996). Self-efficacy beliefs and mathematical problem-solving of gifted students. *Contemporary Educational Psychology*, *21*(4), 325-344.

Paradis, M. (1994). Neurolinguistic aspects of implicit and explicit memory: Implications for bilingualism and SLA. In N. Ellis (Ed.), *Implicit and explicit learning of languages* (pp. 393-419). Longman.

Paradis, M. (2004). *A neurolinguistic theory of bilingualism.* John Benjamins.

Paradis, M. (2009). *Declarative and procedural determinants of second languages.* John Benjamins.

Peacock, M. (2009). Attribution and learning English as a foreign language. *ELT Journal*, *64*(2), 184-193.

Pegrum, M., Hartley, L., & Wechtler, V. (2005). Contemporary cinema in language learning: From linguistic input to intercultural insight. *Language Learning Journal*, *32*(1), 55-62.

Pekrun, R., & Linnenbrink-Garcia, L. (2012). Academic emotions and student engagement. In *Handbook of research on student engagement* (pp. 259-282). Springer.

Pekrun, R., Vogl, E., Muis, K. R., & Sinatra, G. M. (2017). Measuring emotions during epistemic activities: the Epistemically-Related Emotion Scales. *Cognition and Emotion*, *31*(6), 1268-1276.

Pekrun, R., Goetz, T., & Perry, R. P. (2005). Achievement emotions questionnaire (AEQ). User's manual. Unpublished Manuscript. University of Munich.

Persson, L. (2011). *Language learning in the 21st century: Foreign language acquisition through informal language contact at home.* Paper presented at the 21st Annual Conference of the European Second Language Association, EUROSLA 21, Stockholm University, Stockholm.

Peterson, M. (2016). *Computer games and language learning*. Springer.

Phipps, S., & Borg, S. (2009). Exploring tensions between teachers' grammar teaching beliefs and practices. *System*, *37*(3), 380-390.

Philp, J., & Duchesne, S. (2016). Exploring engagement in tasks in the language classroom. *Annual Review of Applied Linguistics*, 36, 50-72.

Pica, T. (1983). Adult acquisition of English as a second language under different conditions of exposure. *Language learning*, *33*(4), 465-497.

Pica, T. (1984). L1 transfer and L2 complexity as factors in syllabus design. *TESOL Quarterly*, *18*(4), 689-704.

Pienemann, M. (1984). Psychological constraints on the teachability of languages. *Studies in Second Language Acquisition*, *6*(2), 186-214.

Pienemann, M. (1989). Is language teachable?: Psycholinguistic experiments and hypotheses. *Applied Linguistics*, *10*(1), 52-79.

Piirainen-Marsh, A., & Tainio, L. (2009). Other-repetition as a resource for participation in the activity of playing a video game. *The Modern Language Journal*, *93*(2), 153-169.

Piniel, K., & Albert, Á. (2017). L2 motivation and self-efficacy's link to language learners' flow and anti-flow experiences in the classroom. In S. L. Krevelj & R. Geld (Eds.), *UZRT 2016* (pp. 90–103). FF Press.

Piniel, K., & Albert, Á. (2018). Advanced learners' foreign language-related emotions across the four skills. *Studies in Second Language Learning and Teaching*, *8*(1).

Piniel, K., & Csizér, K. (2013). L2 motivation, anxiety and self-efficacy: The interrelationship of individual variables in the secondary school context. *Studies in Second Language Learning and Teaching*, *3*(4), 523-550.

Piniel, K., & Csizér, K. (2015). Changes in motivation, anxiety and self-efficacy during the course of an academic writing seminar. In Z. Dörnyei, A. Henry & P. D. MacIntrye (Eds.), *Motivational Dynamics in Language Learning* (pp. 164-194). Multilingual Matters.

Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, *82*(1), 33.

PISA (2019). *PISA results.* OECD's Programme for International Student Assessment. https://www.oecd.org/pisa/Combined_Executive_Summaries_PISA_2018.pdf

Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon*, *9*(5), 1-6.

Prensky, M. (2011). The reformers are leaving our schools in the 20th century. *On the Horizon, 19,*1-18.

Primsleur, P. (1966). *Primsleur Language Aptitude Battery.* Harcourt.

Qian, M., & Clark, K. R. (2016). Game-based Learning and 21st century skills: A review of recent research. *Computers in Human Behavior*, *63*, 50-58.

Ranalli, J. (2008). Learning English with The Sims: exploiting authentic computer simulation games for L2 learning. *Computer Assisted Language Learning*, *21*(5), 441-455.

Rankin, Y. A., Gold, R., & Gooch, B. (2006). 3D role-playing games as language learning tools. *Eurographics,* 33-38.

Reber, A. S. (1976). Implicit learning of synthetic languages: The role of instructional set. *Journal of Experimental Psychology: Human Learning and Memory*, *2*(1), 88.

Reeve, J., Ryan, R. M., Deci, E. L., & Jang, H. (2008). Understanding and promoting autonomous self-regulation: A self-determination theory perspective. In D. H. Schlunk & B. J. Zimmermann (Eds.), *Motivation and self-regulated learning: Theory, research, and applications* (pp. 223-244). Lawrence Erlbaum.

Reichle, R. V. (2012). Sprites and rules: What ERPs and procedural memory can tell us about video games and language learning. In H. Reinders (Ed.), *Digital games in language learning and teaching* (pp. 139–155). Palgrave Macmillan.

Reinders, H. (Ed.). (2012). *Digital games in language learning and teaching.* Palgrave Macmillan.

Reinders, H., & Ellis, R. (2009). The effects of two types of input on intake and the acquisition of implicit and explicit knowledge. In *Implicit and explicit knowledge*

in second language learning testing and teaching (pp. 281–302). Multilingual Matters.

Reinders, H., & Wattana, S. (2012). Talk to me! Games and students' willingness to communicate. In H. Reinders (Ed.), *Digital games in language learning and teaching* (pp. 156–189). Palgrave Macmillan.

Reinders, H., & Wattana, S. (2014). Can I say something? The effects of digital game play on willingness to communicate. *Language Learning & Technology.*

Reinders, H., & Wattana, S. (2015). Affect and willingness to communicate in digital game-based learning. *ReCALL*, *27*(1), 38-57.

Reinhardt, J., & Sykes, J. M. (2012). Conceptualizing digital game-mediated L2 learning and pedagogy: Game-enhanced and game-based research and practice. In H. Reinders (Ed.), *Digital games in language learning and teaching* (pp. 32–49). Palgrave Macmillan.

Reinhardt, J., & Thorne, S. (2016). Digital games and L2 pedagogy. In F. Farr & L. Murray (Eds.), *Routledge handbook of language learning and technology* (p. 415-430). Routledge.

Richards, J. C., & Schmidt, R. W. (2013). *Longman dictionary of language teaching and applied linguistics*. Longman.

Richter, G., Raban, D. R., & Rafaeli, S. (2015). Studying gamification: the effect of rewards and incentives on motivation. In T. Reiners & L. C. Wood (Eds.), *Gamification in education and business* (pp. 21-46). Springer.

Robinson, P. (1995). Aptitude, awareness, and the fundamental similarity of implicit and explicit second language learning. In R. Schmidt (Ed.), *Attention and awareness in foreign language learning* (pp. 303-357). University of Hawaii.

Robinson, P. (1997). Generalizability and automaticity of second language learning under implicit, incidental, enhanced, and instructed conditions. *Studies in Second Language Acquisition*, *19* (2), 223-247.

Robinson, P. (Ed.). (2002). Individual differences and instructed language learning. John Benjamins.

Robinson, P. (2003). The cognitive hypothesis, task design, and adult task-based language learning. *University of Hawai'i Second Langauge Studies Paper, 21*(2), 45-102.

Robinson, P., Mackey, A., Gass, S. M., & Schmidt, R. (2012). Attention and awareness in second language acquisition. In S. Gass and A. Mackey (Eds.), *The Routledge handbook of second language acquisition* (pp. 247-267). Routledge.

Ryan, S. (2006). Language learning motivation within the context of globalisation: An L2 self within an imagined global community. *Critical inquiry in language studies: An International Journal*, *3*(1), 23-45.

Ryan, S., & Mercer, S. (2011). Natural Talent, Natural Acquisition and Abroad: Learner Attributions of Agency in Language Learning. In G. Murray, X. Gao, & T. Lamb (Eds.), *Identity, Motivation and Autonomy in Language Learning* (pp. 160-176). Multilingual Matters.

Ryu, D. (2013). Play to learn, learn to play: Language learning through gaming culture. *ReCALL*, *25*(2), 286-301.

Salen, K., Tekinbaş, K. S., & Zimmerman, E. (2004). *Rules of play: Game design fundamentals*. MIT Press.

Santrock, J. W. (2004). *Educational psychology*. McGraw-Hill.

Sato, H. (1988, June). A data model, knowledge base, and natural language processing for sharing a large statistical database. In *International Conference on Scientific and Statistical Database Management* (pp. 207-225). Springer.

Sato, C. (1988) Conversation and interlanguage development: rethinking the connection. In R. Day (Ed.), *Talking to Learn: Conversation in Second Language Acquisition* (pp. 23–45). Newbury House.

Sato, C. J. (1990). *The syntax of conversation in interlanguage development.* Gunter Narr Verlag.

Savignon, S. J. (1987). Communicative language teaching. *Theory Into Practice*, *26*(4), 235-242.

Savignon, S. (1990). Communicative language teaching: Definitions and directions. *Georgetown University Round Table on Languages and Linguistics*, *1*, 207-217.

Savignon, S. J. (1997) *Communicative Competence: Theory and Classroom Practice (2nd edition).* McGraw-Hill.

Schmidt, R. W. (1990). The role of consciousness in second language learning. *Applied Linguistics*, *11*(2), 129-158.

Schmidt, R. W. (1993). Awareness and second language acquisition. *Annual Review of Applied Linguistics 13*, 206–26.

Schmidt, R. W. (1994). Deconstructing consciousness in search of useful definitions for applied linguistics. *AILA Review, 11,* 11–26.

Schmidt, R. W. (2001). Attention. In P. Robinson (Ed.), *Cognition and Second Language Instruction* (pp. 3–32). Cambridge University Press.

Schumann, J. H. (1994). Where is cognition?: Emotion and cognition in second language acquisition. *Studies in Second Language Acquisition*, *16*(2), 231-242.

Shute, V. J. (2011). Stealth assessment in computer-based games to support learning. *Computer games and instruction*, *55*(2), 503-524.

Shute, V. J., Rieber, L., & Van Eck, R. (2011). Games... and... learning. *Trends and Issues in Instructional Design and Technology*, *3*, 1-31.

Seligman, M., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist, 55*, 5–14.

Sharwood Smith, M. (1993). Input enhancement in instructed SLA: Theoretical bases. *Studies in Second Language Acquisition*, *15*(2), 165-179.

Shaffer, J. P. (1995). Multiple hypothesis testing. *Annual Review of Psychology*, *46* (1), 561–584.

Silvern, S. B. (1986). Classroom use of videogames. *Educational Research Quarterly*, *10* (1),10–16.

Skehan, P. (2014). Foreign language aptitude and its relationship with grammar: A critical overview. *Applied Linguistics*, *36*(3), 367-384.

Stern, H. H., (1983). *Fundamental concepts of language teaching: Historical and interdisciplinary perspectives on applied linguistic research*. Oxford University Press.

Sundqvist, P. (2009). Extramural english matters: Out-of-school english and its impact on Swedish ninth graders' oral proficiency and vocabulary. Unpublished doctoral dissertation. Karlstad University, Sweden.

Sundqvist, P. (2011). A possible path to progress: Out-of-school English language learners in Sweden. In P. Benson & H. Reinders (Eds.), *Beyond the language classroom* (p. 106-118). Palgrave Macmillan.

Sundqvist, P. (2013). The SSI Model: Categorization of digital games in EFL studies. *The European Journal of Applied Linguistics and TEFL*, *2*(1), 89–105.

Sundqvist, P. (2019). Commercial-off-the-shelf games in the digital wild and L2 learner vocabulary. *Language Learning and Technology, 23*(1), 87–113.

Sundqvist, P., & Sylvén, L. K. (2014). Language-related computer use: Focus on young L2 English learners in Sweden. *ReCALL*, *26* (1), 3–20.

Sundqvist, P., & Sylvén, L. K. (2012). World of VocCraft: Computer games and Swedish learners' L2 English vocabulary. In H. Reinders (Ed.), *Digital games in language learning and teaching* (pp. 190–209). Palgrave Macmillan.

Sundqvist, P., & Wikström, P. (2015). Out-of-school digital gameplay and in-school L2 English vocabulary outcomes. *System*, *51*, 65–76.

Swain, M. (1988). Manipulating and complementing content teaching to maximize second language learning. *TESL Canada Journal*, *6* (1), 68–83.

Swain, M., & Lapkin, S. (1995). Problems in output and the cognitive processes they generate: A step towards second language learning. *Applied Linguistics*, *16*(3), 371–391.

Sylvén, L. K., & Sundqvist, P. (2012). Gaming as extramural English L2 learning and l2 proficiency among young learners. *ReCALL*, *24*(3), 302–321.

Swain, M., & Lapkin, S. (1982). *Evaluating bilingual education: A canadian case study.* Multilingual Matters.

Swain, M., & Lapkin, S. (1989). Canadian immersion and adult second language teaching: What's the connection?. *The Modern Language Journal*, *73*(2), 150–159.

Swain, M., & Lapkin, S. (1998). Interaction and second language learning: Two adolescent French immersion students working together. *The Modern Language Journal*, *82*(3), 320–337.

Tannahill, N., Tissington, P., & Senior, C. (2012). Video games and higher education: What can "Call of Duty" teach our students? *Frontiers in Psychology*, *3*, 210–213.

Terrell, T. D. (1986). Acquisition in the natural approach: The binding/access framework. *The Modern Language Journal*, *70*(3), 213–227.

Thomas, M. (2012). Contextualizing digital game-based language learning: Transformational paradigm shift or business as usual. In H. Reinders (Ed.), *Digital games in language learning and teaching* (pp. 11–31). Palgrave Macmillan.

Thomas, M., & Reinders, H. (2010). *Task-based language learning and teaching with technology*. A&C Black.

Thorne, S. L. (2008). Transcultural communication in open internet environments and massively multiplayer online games. In S. Magnan (Ed.), *Mediating discourse online* (pp. 305–327). John Benjamins.

Thorne, S. L., Sauro, S., & Smith, B. (2015). Technologies, identities, and expressive activity. *Annual Review of Applied Linguistics*, *35*, 215–233.

Tinsley, H. E., & Tinsley, D. J. (1987). Uses of factor analysis in counseling psychology research. *Journal of Counseling Psychology*, *34*(4), 414–442.

Tomlin, R. S., & Villa, V. (1994). Attention in cognitive science and second language acquisition. *Studies in Second Language Acquisition*, *16*(2), 183–203.

Tomlinson, B., & Masuhara, H. (2009). Playing to learn: A review of physical games in second language acquisition. *Simulation & Gaming, 40*(5), 645–668.

Tondeur, J., Scherer, R., Siddiq, F., & Baran, E. (2017). A comprehensive investigation of TPACK within pre-service teachers' ICT profiles: Mind the gap!. *Australasian Journal of Educational Technology*, *33*(3), 46–60.

Tudge, J. R., & Winterhoff, P. A. (1993). Vygotsky, Piaget, and Bandura: Perspectives on the relations between the social world and cognitive development. *Human Development*, *36*(2), 61–81.

Turgut, Y., & İrgin, P. (2009). Young learners' language learning via computer games. *Procedia – Social and Behavioral Sciences, 1*(1), 760–764.

Van Eck, R. (2007). Building artificially intelligent learning games. In *Games and simulations in online learning: Research and development frameworks* (pp. 271–307). IGI Global.

Van Ek, J. A. (1977). *The threshold level for modern language learning in schools.* Longman.

Vannini, P., & Burgess, S. (2009). Authenticity as motivation and aesthetic experience. In P. Vannini & J. P. Williams (Eds.), *Authenticity in culture, self and society* (pp. 103–120). Ashgate.

VanPatten, B. (1996). *Input processing and grammar instruction in second language acquisition.* Greenwood Publishing Group.

VanPatten, B. (2015). Input processing in adult SLA. In B. VanPatten & J. Williams (Eds.), *Theories in second language acquisition: An introduction* (pp. 113–134). Routledge.

VanPatten, B., & Rothman, J. (2015). What does current generative theory have to say about the explicit-implicit debate. In P. Rebuschat (Ed.), *Implicit and explicit learning of languages* (pp. 91–116.). John Benjamins.

Vapnik, V. (2013). *The nature of statistical learning theory.* Springer.

Vervaeke, J., Ferraro, L., & Herrera-Bennett, A. (2018). Flow as spontaneous thought: Insight and implicit learning. *The Oxford handbook of spontaneous thought: Mind-wandering, creativity, and dreaming* (pp. 309–321). Oxford University Press.

Vygotsky, L. (1962). *Thought and Language.* MIT Press.

Vygotsky, L. (1978). *Mind in Society.* MIT Press.

Vygotsky, L. (1986). *Thought and Language (Revised edition).* MIT Press.

Warschauer, M. (1997). Computer-mediated collaborative learning: Theory and practice. *The Modern Language Journal*, *81*(4), 470–481.

Waters, J. K. (2007). On a Quest for English: Online Role-Playing Games, Which Take Players on Explorations of Medieval Fantasy Worlds, Are Showing the Potential to Be a Powerful Tool for ESL Learning. *THE Journal (Technological Horizons In Education)*, *34*(10), 26.

Webb, S. (2007). Learning word pairs and glossed sentences: The effects of a single context on vocabulary knowledge. *Language teaching research*, *11*(1), 63–81.

Webb, S., & Macalister, J. (2013). Is text written for children useful for L2 extensive reading?. *TESOL Quarterly*, *47*(2), 300–322.

Weiner, B. (1979). A theory of motivation for some classroom experiences. *Journal of Educational Psychology*, *71*(1), 3–15.

Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological review*, *92*(4), 548–573.

Wenden, A. L. (1986). What do second-language learners know about their language learning? A second look at retrospective accounts. *Applied Linguistics*, *7*(2), 186–205.

Wenden, A. (1987). How to be a successful language learner: Insights and prescriptions from L2 learners. In A. Wenden & J. Rubin (Eds.), *Learner strategies in language learning* (pp. 103–117). Prentice Hall.

Wertsch, J. V. (1985). *Vygotsky and the social formation of mind*. Harvard University Press.

White, J. (1998) Getting the learners attention: a typographical input enhancement study. In C. Doughty and J. Williams (Eds.), *Focus on form in classroom second language acquisition (*pp. 85–113). Cambridge University Press.

Wilkins, D. (1974). Notional syllabuses and the concept of a minimum adequate grammar. In Corder, S.P., & Roulet, E. (Eds.), *Linguistic insights in applied linguistics.* Didier.

Wilkins, D. (1976). *Notional syllabuses*. Oxford University Press

Williams, M., & Burden, R. (1999). Students' developing conceptions of themselves as language learners. *The Modern Language Journal*, *83*(2), 193-201.

Wode, H. (1981). Language-acquisitional universals: A unified view of language acquisition. In Winitz, H. (Ed.), *Native language and foreign language acquisition* (pp. 218–234). New York Academy of Sciences.

Wong, M. S. L. (2005). Language learning strategies and language self-efficacy: Investigating the relationship in Malaysia. *RELC Journal*, *36*(3), 245–269.

Wu, W. H., Chiou, W. B., Kao, H. Y., Hu, C. H. A., & Huang, S. H. (2012). Re-exploring game-assisted learning research: The perspective of learning theoretical bases. *Computers & Education*, *59*(4), 1153–1161.

Yang, N. D. (1999). The relationship between EFL learners' beliefs and learning strategy use. *System*, *27*(4), 515–535.

Yashima, T. (2002). Willingness to communicate in a second language: The Japanese EFL context. *The Modern Language Journal*, *86*(1), 54–66.

Yashima, T., & Zenuk-Nishide, L. (2008). The impact of learning contexts on proficiency, attitudes, and L2 communication: Creating an imagined international community. *System*, *36*(4), 566–585.

Yashima, T., Zenuk-Nishida, L., & Shimizu, K., (2004). The influence of attitudes and affect on willingness to communicate and second language communication. *Language Learning, 54*, 119–152.

You, C. J., & Dörnyei, Z. (2016). Language learning motivation in China: Results of a large-scale stratified survey. *Applied Linguistics*, *37*(4), 495–519.

You, C., Dörnyei, Z., & Csizér, K. (2016). Motivation, vision, and gender: A survey of learners of English in China. *Language Learning*, *66*(1), 94–123.

Young, M. F., Slota, S., Cutter, A. B., Jalette, G., Mullin, G., Lai, B., & Yukhymenko, M. (2012). Our princess is in another castle: A review of trends in serious gaming for education. *Review of Educational Research*, *82*(1), 61–89.

Zimmerman, B. J. (1998). Developing self-fulfilling cycles of academic regulation: An analysis of exemplary instructional models. In D. H. Schunk & B. J. Zimmerman (Eds*.), Self-regulated learning: From teaching to self-reflective practice* (pp. 1–19). The Guilford Press.

Zimmerman, B. J. (2000). Attaining self-regulation: A social cognitive perspective. In M. Boekarts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 13–39). Academic Press.

Appendices

Appendix A - The Interview Guide Used for RQ1.1 and RQ1.2

1. How old are you and how long have you been teaching English?
2. What kind of language teaching certificate do you have?
3. What classes and age groups do you teach at the moment?
4. What do you think are the characteristics of a successful language learner?
5. How do you think contact with English outside the classroom influences the process of language learning?
6. What role do you think you have in preparing your students for language use outside the classroom?
7. What do you know about video games? (Have you or anyone close to you played video games?)
8. How would you characterize video games and what happens in them?
9. Why do you think video games have become so popular among teenagers?
10. In your experience, what could be some of the advantages of video games for language learning? What could be some drawbacks?
11. What do you think you as a teacher could to help students learn as much as possible from video games?
12. What do you think learners should do to exploit the language learning opportunities of video games?
13. Could you imagine using video games as an in-class activity or maybe as an activity for homework?
14. What would you need as a teacher to exploit the language learning opportunities of video games for your learners?
15. Altogether, would you recommend that your students video games? Why (not)?

Appendix B - Teachers' Questionnaire

Dear Colleague!

My name is Ádám Lajtai, currently a doctoral candidate at the Doctoral Programme of Language Pedagogy at Eötvös Loránd University, and a teacher of English at …… secondary school. In the following, I would like to ask you to provide help for my research in the form of the present questionnaire, which takes approximately 20-25 minutes altogether. The questionnaire is completely anonymous, the data will only be used by me for my research. You may change your answers at the end of the questionnaire if necessary.

Biographical questions:

1. How old are you?
2. Are you male or female?
3. How long have you been teaching English?
4. In what kind of school do you teach? *Secondary grammar school - vocational secondary school - primary school upper grades - primary school lower grades - language school*
5. In what kind of settlement do you teach? *Budapest - county capital - town with 20-50 thousand people - town with less than 20 thousand people*
6. In which region of Hungary do you teach?

Close ended questions:

Please mark on the scale how true these statements are for you. (5-point scale from "Not true at all" to "Completely true")

1. I play video games in my free time.
7. I used to play video games in my free time.
8. I find the world of video games interesting.
9. I believe that video games are generally harmful for children.
10. I have close friends or relatives who play video games.
11. I have played video games myself.
12. I think video games have mostly negative effects on children.
13. I believe that playing video games is a waste of time.

Please mark on the scale the extent to which you agree with these statemens. (5-point scale from “I don’t agree at all” to “I completely agree”)

1. I believe that students who play video games generally have a better English proficiency than those who don’t.
14. It’s a good idea for students to play computer games because it helps them with their language.
15. I believe that students who play video games have generally stronger self-confidence to speak in English.
16. I think that students who play video games are motivated to improve their English skills.
17. I believe that students who play video games have better-than-average English language skills.
18. I think it would be wise to suggest that students play video games to help with their English.
19. I find that students who play video games are braver when having to speak English.
20. I think that students who play video games are generally less active in the lessons.
21. I find that students who play video games generally have fewer problems expressing themselves in English.
22. Altogether, I would recommend that students play video games to improve their English.
23. I feel that students who play video games have a better vocabulary than those who don’t.
24. I find that it is harder to keep students who play video games active during lessons.
25. I find that students who play video games are generally motivated to learn English.
26. I believe that as far as English is concerned, it is useful to play video games.
27. I believe that video games can help a lot in learning a language.
28. I find that students who play video games are generally more often bored during the language lessons.
29. I think students who play video games are ready to put effort into improving their English.

Please mark on the scale the extent to which you agree with these statemens. (5-point scale from “I don’t agree at all” to “I completely agree”)

1. I recommend to my students that they play video games in English
30. I know what kind of books my students read.
31. I know what kind of films or series my students watch.
32. I think that if students work harder during the language lessons, their proficiency will improve.
33. I think the more English my students encounter outside the classroom, the better they will

understand English language texts.

34. I feel that if my students paid more attention in the English lessons, their proficiency would be better.
35. I base my teaching on how I learned the language myself.
36. The majority of my English comes from the fact that I used English-language media for learning.
37. I think my students' vocabulary will improve if the meet a lot of English in their free time (in videos, books, music, games, etc.)
38. I think that if my students use English more in their free time, their proficiency will improve.
39. I know what kind of series my students watch.
40. As a language learner, I watched a lot of films and series to improve my proficiency.
41. My experiences with learning English influence how I teach today.
42. In my free time, I watch English TV series.
43. In my free time, I ready English-language books.
44. In my free time, I often read or watch English content on the web.
45. My students vocabulary will improve if they always do their tasks well in the lessons.
46. In my free time, I watch English films.
47. I recommend to my students that they read English books.
48. I know what kind of music my students listen to.
49. In my free time, I often listen to English-language music.
50. In my teaching, I try to use techniques that helped me as a learner.
51. I think if my students use the language outside the school, their English will improve.
52. I recommend to my students that they find English language content on the internet.
53. If my students prepare for the English lessons, their proficiency will improve.
54. I know what kind of Internet content my learners consume.
55. In my free time, I play computer games.
56. As a language learner, I acquired a part of my skills with out-of-school activities.
57. My own language learning experience helped me become the teacher I am today.
58. I recommend to my students that they watch English-language movies.
59. As a language learner, I read lots of books to improve my English.
60. If my students had more English lessons, their proficiency would improve.
61. I recommend to my students that they listen to English-language music.
62. I recommend to my students that they use language learning software or apps.

Please mark on the scale the extent to which you agree with these statements. (5-point scale from “I don’t agree at all” to “I completely agree” with an “I don’t know option”).

1. My learners like
   - English language video games
   - English language music
   - English language films
   - English language series
   - English language books
   - English language internet content

Please mark on the scale how often you use the following authentic materials in your lessons. (5-point scale from “Never” to “On a daily basis”)

1. Full-length English language movies or series
63. English language videos or film excerpts
64. English web content, websites
65. English books, journals, magazines
66. English-language video games or mobile games
67. English language songs

Open-ended uestions:

1. Do you think video games have any language learning-related advantages? If yes, what?
2. Do you think video games have any language learning-related disadvantages? If yes, what?
3. Do you think playing video games can influence learners’ motivation to learn a language? If yes, how?
4. Do you think playing video games can influence learners’ self-confidence to speak the language? If yes, how?
5. Do you think playing video games can influence learners’ engagement during English lessons? If yes, how?
6. What do you think a teacher can do to harness the language learning potential in video games? What would you need to do this?

Appendix C - Students' Questionnaire

Dear Student!
My name is Ádám Lajtai, currently a doctoral candidate at the Doctoral Programme of Language Pedagogy at Eötvös Loránd University, and a teacher of English at …… secondary school. In the following, I would like to ask you to provide help for an important study in the form of the present questionnaire, which takes approximately 30 minutes altogether.

The questionnaire is completely anonymous, the data will only be used by me for my research. You may change your answers at the end of the questionnaire if necessary. The questionnaire will not ask for any background data other than your age and gender, and it will not be possibly to identify your answer and connect it to you. There are no correct or wrong answers in this questionnaire; what I am interested in is what you think or feel about the statements connected to language learning.

Thank you very much in advance for devoting time to help my research!
Ádám Lajtai

Biographical questions:

1. How old are you?
68. Are you male or female?
69. How long have you been learning English?
70. In which town or city is your school?
71. Which year are you in currently?
72. How many English lessons do you have a week?
73. Do you learn English as your first or as your second language?

Close ended questions (Items for each respondent, labelled with letter 'A')

1. Overall, I find my English lessons useful for language learning.
74. During my English lessons, I enjoy working with others.
75. I am determined to learn English.
76. When we learn something new in English class, I try to connect it with what I already know.

77. During my English lessons, I pay attention to the feedback from my teacher.
78. I feel that I will be able to use in my life what I have learned in English lessons.
79. During my English lessons, I pay attention to the tasks and my teacher s explanations.
80. During English classes we learn about many things that I connect to my daily life.
81. I can say that I do my best to learn English.
82. My English classes prepare me to understand English in real life (e.g. English speakers, internet, movies).
83. If I do not understand something during the English lessons, I will work on it until I understand it.
84. During English classes, I usually pay attention to what my groupmates are saying.
85. Learning English is an important thing in my life.
86. Consuming English-language media (movies, series, music, videos, articles) prepares me to understand English in real life (English speakers, internet, movies).
87. During the English lessons I actively participate in the tasks.
88. When learning a new grammar or phrase in English class, I try to rephrase the new material in my own words.
89. Overall, I find it useful to consume English-language media (movies, series, music, videos, articles) for language learning.
90. I am willing to make serious efforts to learn English very well.
91. I feel that studying for an English lesson is useful for my leisure activities.
92. Consuming English-language media (movies, series, music, videos, articles) is a great help for understanding and learning English.
93. What we learn during English lessons is closely related to my everyday problems.
94. My English lessons are useful in preparing me for real-life language use.
95. It is very important for me to learn English.
96. Consuming English-language media (movies, series, music, videos, articles) helps me learn English faster and better.
97. My English lessons are useful in helping me achieve my English learning goals.
98. During English classes, I try to help my classmates if I feel I can do something better than them.
99. During my English lessons, I deal with task that was given to us.
100. Usually, during my English lessons, I pay attention to what my teacher is talking about.
101. If I don t understand something during my English lessons, I ask the teacher for help.
102. Consuming English-language media (movies, series, music, videos, articles) is helpful

in helping me achieve my English learning goals.

103. My English lessons really help me understand and learn English.

104. There are few things I can learn in English lessons that I can use in everyday life. (reverse coded)

105. Sometimes during English lessons, I just pretend to work. (reverse coded)

106. During English classes, I try to get help from my classmates if I feel they know better than me.

107. During my English lessons, I actively take notes or read parts of the textbook.

108. During English classes, I often deal with other non-English things. (reverse coded)

109. Consuming English-language media (movies, series, music, videos, articles) is helpful in preparing you for real-life language use.

110. My English lessons help me learn English faster and better.

111. I feel others expect me to learn to speak English well.

112. On several occasions I felt that my English education had paid off, as I obtained good grades.

113. I like to imagine my future self as someone who can speak English.

114. When I read or watch a video in English, I can understand what an unknown word might mean.

115. In today s world, people are expected to speak English well.

116. I can imagine myself speaking English in the future with other people my age.

117. On several occasions in the classroom, I felt that English learning had paid off, as I was able to express myself well.

118. I like to learn English from music, movies, videos or games.

119. I try to engage in free time activities where I can write chat in English.

120. I access a lot of interesting videos movies writings in English.

121. I try to do leisure activities where I can practice English.

122. In my spare time I try to find situations where I can read in English.

123. Doubled item.

124. I like the things we do in English lessons.

125. For people around me, speaking English is a part of being educated.

126. I have a lot of positive experiences when I was able to answer the teacher s questions well in English lessons.

127. I am confident that I can use English well.

128. When thinking about my future, using English is an important part of my vision.

129. I feel that I can communicate my thoughts well in English.
130. It annoys me if I have to use English in my daily life. (reverse coded)
131. I don t feel nervous if I have to speak English.
132. During English classes I have often been disappointed that I could not express myself in English.
133. Even if I don t speak perfectly, I like to speak in English.
134. It s good to hear English speaking in movies, games, or live from English speakers outside of school.
135. During English lessons I have already felt disappointed for not understanding a task.
136. My English teacher makes English lessons very interesting.
137. I like my English lessons at school.
138. I want to be a person who speaks good English.
139. In my spare time, I try to find situations where I can use English.
140. I have a lot of good experiences from English lessons when I could easily understand a harder text.
141. In my spare time I always try to find situations where I can hear English.
142. In my spare time I always try to find situations where I can expand my English vocabulary.
143. According to my parents, I have to do my best to learn English very well.
144. There is usually a good atmosphere in the English lessons.
145. Nowadays one cannot get ahead in the world of work without English knowledge.
146. It feels good to use English in my daily life.
147. I have people that I talk to online or face-to-face in English.
148. Unfortunately, I have failed to get myself understood in English outside the school.
149. I m sure I have the ability to learn English.
150. I am confident that if we listen to foreign language texts during the English lesson, I can do the related tasks.
151. It is embarrassing for me to speak English in front of other students.
152. I have many positive experiences of being able to express myself in the English lessons.
153. I enjoy being able to solve tasks in the English class.
154. I used to watch movies, series, videos in English.
155. I felt disappointed many times because I didn t understand what I wanted in English.
156. I feel that my English has paid off, as I can usually express myself well in English.
157. I find it hopeless that I will ever learn English at school.

158. It is hopeless for me to learn English in my current group.
159. I attend cultural programs (festivals, theater, evenings, museum programs, performances, cinema) that are in English.
160. I get embarrassed if I don t understand every single word that is spoken to me in English.
161. My classmates set a good example for learning English.
162. I feel it is hopeless for me to succeed in English class.
163. It s frustrating if I don t understand an English text.
164. I do not believe that with the help of such tasks as we do in the class I can learn this foreign language.
165. I usually listen to music in English.
166. I find English lessons boring.
167. I usually read web pages in English.
168. I am confident that I will be able to answer English questions in the classroom.
169. I usually read books, newspaper or internet articles in English.
170. I had a lot of fun when I could easily understand something in English.
171. I am confident that I will be able to do the spoken exercises in the English class.
172. I m sure I can learn and understand English.
173. I m sure I can do the written assignments during the English lesson.
174. I m tired of having to talk to my classmates during class. (reverse coded)
175. I enjoy the process of learning English.
176. I enjoy when I can speak English with others during my class.
177. If it depends on me, I can certainly learn English.
178. I play computer games in English.
179. I am sure I will be able to understand the system of English language.
180. I m sure I can complete the reading exercises during my English classes.
181. There are many good examples of how well someone can learn English among my family and close friends.
182. I m sure I understand what English is saying to me in the language class.
183. Language class tasks are boring.
184. I see with on classmates and peers that it is possible to learn English.
185. It makes me angry if I fail to solve the task assigned by the teacher in the English class.

Close ended questions (Items for gamer respondents, labelled with letter ‘B’)

1. I feel the video games are just the right challenge for me.
186. During the game, my thoughts flow easily and smoothly.

187. During the game I worry a lot about what happens if I fail in a task.
188. Many times during the game I do not notice how fast time passes.
189. I can always concentrate on the game well.
190. I feel like I have a completely clear mind while I am playing.
191. I feel like the game has completely sucked me in'.
192. During the game, I feel as though everything happens by itself.
193. I am totally lost in my thoughts while playing.
194. During the game, I feel something important is at stake.
195. I always know exactly what to do during the game.
196. I feel like I m in control of everything during the game.
197. During the game I am afraid of making mistakes.
198. Overall, I find English video games useful for language learning.
199. English-language video games help me to understand and learn English.
200. English-language video games are useful in preparing you for real-life language use.
201. Video games in English help me learn English faster and better.
202. English video games are useful in helping me achieve my English learning goals.
203. English-language video games prepare me to understand English in real life (English speakers, internet, movies).
204. I have a lot of good experiences when I could easily understand something in English in a game.
205. I have many positive experiences of understanding the text and instructions of the game.
206. I ve felt disappointed many times because I didn t understand what I wanted in an English game.
207. It is a positive experience for me to understand the story of a game.
208. I m sure I can do the tasks in English games.
209. I m sure I can understand the story in English games.
210. I m sure I can understand instructions or descriptions in English games.
211. I m sure in English games I can understand what the characters in the game are saying.
212. I m sure I can solve the even most difficult puzzles in English games.
213. English games encourage me to develop my English skills on my own.
214. English games are good for me to develop my skills on my own.

Close ended questions (Items for online gamer respondents, labelled with letter 'C')

1. I m sure we can win in games even if I have to talk to others in English.

215. I'm sure that in English games I will be able make myself understood with other players in English.
216. I am sure that in English games I will be able to understand other players in English.
217. I'm sure I can communicate in English with my fellow players in online games.
218. I had a lot of good experiences when I could easily understand something another player told me in English.
219. I have many positive experiences of being able to express myself well in English in a game to other players.
220. Unfortunately, I have failed many times in making myself understood with others' in a n English game.
221. I feel that my English learning has paid off, as I can usually express myself well in English in games before others.
222. I felt disappointed many times because I did not understand what another person said in English in a game.
223. I have had good experiences of using English online as we often reach our goal by talking to other players in English.
224. My gamer mates are a good examples of how one can learn English.
225. I can see on other players that it is easy to learn English.
226. Among the players I know, there are many good examples of how well someone can use his or her English.
227. Learning English is important because those I play with expect me to speak English.
228. I learn English because other players also think it's important to know English.
229. If I want to be successful in the game, it is important that I know English well.
230. I can imagine myself as someone who only plays games with foreigners.
231. I can imagine talking to foreign players about the game online in the future in English.
232. I can imagine that in the future I will be able to speak English fluently with foreign players.

Appendix D - The Measurement Scale for the Model Presented in Figure 18 for Non-gamers