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Cybercrime and cyber-victimisation precipitation-control strategies in League of Legends and Overwatch

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ABSTRACT: Online video games have become increasingly popular among the youth population. This is reflected in the League of Legends and Overwatch world championships. However, online gaming as a cyberspace, has a problematic social and criminological reality itself: crime. Nowadays, together with the new criminal opportunities, the sense of impunity and anonymity provided by the Internet. This article aims to identify the predictors that lead to criminal behaviour in online video games. Thus, qualitative research methods such as the systematic observation of video analysis have been used to determine whether these new virtual spaces bring together elements that precipitate or control criminal behaviour with the aim of proposing preventive measures. Similarly, the most frequent types of victimisation and offending in both games have been identified through victimisation surveys. The results, such as women suffering greater cyber-victimisation for harassment than men, were discussed in relation to the theory of situational precipitators, and best practices for video games to control players' criminal behaviour more efficiently were proposed.

KEYWORDS: online video games, cybercrime, cybervictimization, League of legends, Overwatch.

ESTRATEGIAS DE PRECIPITACIÓN-CONTROL DEL CIBERCRIMEN Y CIBERVICTIMIZACIÓN EN LEAGUE OF LEGENDS Y OVERWATCH

RESUMEN: Los videojuegos online han cobrado cada vez mayor popularidad entre la población juvenil y ello queda reflejado en los campeonatos mundiales de League of legends y Overwatch. No obstante los videojuegos online como ciberespacio presenta una realidad problemática de carácter social y criminológico: el delito. En la actualidad, junto con las nuevas oportunidades delictivas y la sensación de impunidad y anonimato que otorga Internet.El presente artículo tiene por objetivo identificar los predictores que dan lugar a una conducta delictiva dentro de los videojuegos online. Así, se ha empleado la observación sistemática de video análisis, para determinar si estos nuevos espacios virtuales reúnen elementos que precipitan o controlan la conducta delictiva con el objetivo de proponer medidas preventivas. Del mismo modo, se han determinado los tipos de victimizaciones e infracciones más frecuentes en ambos juegos a través de métodos cuantitativos de investigación: dos encuestas de victimización. Los resultados, como que las mujeres sufren mayor cibervictimización por acoso que los hombres, fueron discutidos en relación a la teoría de los precipitadores situacionales y se propusieron mejores prácticas para que los videojuegos controlen de forma más eficiente la conducta delictiva de los jugadores.

PALABRAS CLAVE: videojuegos online, cibercrimen, cybervictimization, League of Legends, Overwatch

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1. Introduction

Thanks to the Internet, the world of entertainment and the videogame industry has undergone a substantial change to adapt to a new market required from the gaming community, as it is reflected in videogame and technology conventions such as E3[1]. Numerous companies such as Riot Games and Activision Blizzard have committed to online gaming, launching games such as League of Legends (LoL) and Overwatch, respectively. In today's interconnected and increasingly social cyberspace, where up to 8 million players converge daily in LoL (eSports Newsroom, 2019), it creates an opportunity for criminal behaviour.

Understanding the genesis and dynamics of criminal behaviour in online video games is important as the Internet is one of the most popular leisure options among young people (Jiménez et al., 2020). With an increase in the number of young people connected to the Internet, the likelihood of them becoming victims of crime in cyberspace increases (Kemp et al., 2021). We can thus understand that video games are another space for social interaction within cyberspace, in which certain elements or factors, such as the users' anonymity level, the communication channel offered by the application, or the absence of formal controls, whichmakes possiblethat criminal opportunities emerge (Miró, 2011; Miró & Moneva, 2020), which are exploited by motivated criminals to gain access to potential victims (Bowles & Keller, 2019).

Cybercrime can be found in the context of video games.An example of this type of cybercrime can be found in Miquel Amorós' (2020) denunciation of the situation of racism, homophobia and sexism that still persists in the famous LoL tournaments for amateurs (Şengün et al., 2019). Another example is that of Dumbledoge, a former professional LoL player, who announced his retirement after suffering harassment for his sexual orientation (GameLR, 2020). Perhaps the biggest problem with cybercrime is its ability to affect many victims, facilitated by its accessibility, anonymity, and sense of impunity (Clough, 2010).

Online video games are not the cause of criminal behaviour, but rather an enabling cyberspace that favours or facilitates the emergence of certain criminal behaviours (Miró & Moneva, 2020). The central element is actually given by the characteristics of a new environment that implies a set of conditions with specific opportunities for crime. In that case theories derived from Routine Activity Theory are best suitable for explaining why crime emerges in online video games. This would justify the need to analyse those precipitants that facilitate crime (Wortley, 2001) and to explain how environmental criminology can help us by focusing on the characteristics of the environment in which crime takes place (Miró, 2011; Miró & Moneva, 2020). Furthermore, online video games bring together a multitude of people among whom minors, a "vulnerable group" (Díaz Fernández, 2019), are highly represented. Therefore, it is important that we understand how to identify those criminal characteristics of online video games to prevent it.

Therefore, this investigation analyses cybercrime that arises by the interaction between players of online video games -that is, in a part of cyberspace-, using two theoretical frameworks: i) situational precipitators of crime (Wortley, 2001) and ii) situational crime prevention (Clarke 1992; 1997). It starts from environmental theories, whose application to cyberspace has been discussed by Miró (2011; 2015), Miró and Johnson (2018), Colin et al. (2019), Buil-Gil et al. (2020) and Miró and Moneva (2020), to understand why certain crimes occur in specific contexts. Two data collection techniques will be used: i) the systematic observation of LoL and Overwatch games to identify the situational characteristics that precipitate or inhibit criminal behaviour and ii) the implementation of a cyber-victimisation survey to determine the prevalence and typology of criminal behaviours that are experienced within online video games. The theoretical and empirical background, a description of the methodology to be followed, and the analysis of the

[1] The Electronic Entertainment Expo or known as E3 is the most important convention in the videogame industry. For more information you can consult the following link: <https://elpais.com/noticias/e3-electronic-entertainment-expo/>.

data, the conclusions drawn, and the limitations of the current study.

2. Theoretical framework

2.1. Concept and types of cybercrime

This research analyses crime and unsportsmanlike behaviour in multiplayer video games, which is why it is important to distinguish between what is crime and what is not, like unsportsmanlike behaviour.This differentiation addresses the need to deal separately, but interrelatedly, with crime and unsportsmanlike conduct that may arise in multiplayer video games, which is why it is important to define and differentiate both phenomena from a theoretical perspective in order to delimit the object of study.

On the one hand, Leukfeldt and Holt's (2019) highlighted that cybercrime involves technology and crime. Thus, we can distinguish two typologies of cybercrime: cyber-dependent and cyber-enabled crimes (Leukfeldt et al., 2019, p.1; Weulen Kranenbarg et al., 2019). That is, according to McGuire and Dowling (2013), cyber-dependent crimes would be 'pure' cybercrimes, as they are crimes that can only be committed using ICTs; whereas cyber-enable crimes would refer to 'traditional' crimes using cyberspace for their commission. In short, the criminal conduct that may be suffered or committed by players would include all those typical, unlawful, guilty and punishable actions or omissions punishable by law (Machicado, 2010).

On the other hand, unsportsmanlike conduct would refer to any action or omission by players that hinders, prevents or obstructs other players from having a positive experience of their playing time in the online videogames, and which is not criminalised by law, but is based on each of the codes of conduct of each particular online videogame.

2.2. Understanding cybercrime from an environmental criminological perspective

Environmental criminology involves a shift in perspective by focusing not so much on the individual, but rather on the place or space where crime occurs, as it seeks to understand why certain forms of crime arise in specific contexts, with the aim of preventing them (Brantingham & Brantingham, 1981). Thus, to achieve their goals, "environmental criminologists identify up to three theoretical frameworks for understanding crime: Routine Activity Theory (Cohen & Fleson, 1979), the geometry of crime (Brantingham & Brantingham, 1981) and rational choice (Clarke & Cornish, 1985)" (Moneva, 2020, p. 18).

First, about the theory of everyday activities (Cohen & Fleson, 1979). On the one hand, a macro level that argues the aetiology of crime responds to new criminal opportunities created by the evolution or development of society. Currently, these opportunities are created by new technologies (Miró, 2013). On the other hand, a micro level argues crime arises when a propitious offender, a suitable victim and the absence of an effective guardian converge at a given place and time (Cohen & Fleson, 1979). Furthermore, Moneva (2020, p. 18) understands that "there are two theoretical frameworks that further deepen the applicability of this theory: Clarke's (1980) situational crime prevention measures and the techniques of controlling situational precipitators of crime (Wortley, 2001)", which are particularly relevant to this dissertation.

Secondly, regarding the geometry of crime (Brantingham & Brantingham, 1981), it is based on a geographical distribution of criminal opportunity in the urban environment, in which crime follows certain patterns, not being spread randomly, being possible to prevent criminal behaviour. This could be translated in the context of online video games as cyberspace as the possibility that certain crimes are more likely to occur in some video games and not in others because of the characteristics of these video games (whether they are more frenetic, more competitive, whether they allow players to talk via voice or written chat, etc.).

Third, rational choice theory (Clarke & Cornish, 1985) is explained by a cognitive process by which the criminal chooses the feasibility and appropriateness of the criminal act based on a cost-benefit balance. This process is made up of four phases: involvement of the offender, followed by the crime itself, its development and finally the possible desistance from the criminal action.

The Crime Pattern Theory (Brantingham & Brantingham, 1993) is based on the above three theoretical frameworks. Reasoning plays an important role, as people make constant decisions that will later condition their routines. Something similar applies to perpetrators when they become accustomed to committing crimes, developing a routine criminal activity (Andresen, 2010).

About cyberspace, environmental criminology is also applicable in the context of cybercrime (Miró, 2013; Moneva, 2020). Thus, the development and application

of environmental theories to cyberspace by Miró (2011) is important since the author emphasises environmental elements or factors (of cyberspace) that can favour crime. He describes that both place and time "favour the concentration of crime" (Miró, 2011, p. 48), that is, cyberspace itself (the place) facilitates opportunities at certain times for crime to arise, by presenting factors -such as anonymity- that create a microsystem in which crime can be born. Furthermore, Miró refers to the importance of opportunity theories applied in cyberspace (Miró, 2011; 2015; Miró & Moneva, 2020), as he understands that "cyberspace is configured as a new area of criminal opportunity" (Miró, 2011, p. 3), and it is necessary to reformulate crime prevention measures. Therefore, cyberspace emerges as a new space "distinct from the traditional physical national space" and as "antithetical to real space" (Miró, 2011, pp. 4-6).

Environmental criminology analyses the environmental factors that influence the genesis of crime (Vila, 1994), an issue that is highly applicable to understanding the emergence of criminal behaviour in virtual spaces (Moneva, 2020), such as video games. This position is part of a recent approach, developed by criminologists, which claims that cybercrime and cybersecurity cannot be understood without the analysis of the human factors involved or "human factor in cybercrime", since "human decision-making plays a substantial role in the course of an offence" (Leukfeldt & Holt, 2019, p. 2).

2.3. Situational precipitators of crime

Richard Wortley (2001) proposes, based on Clarke's studies (Clarke & Harris, 1992; Clarke, 1997), four basic strategies to prevent crime: "increase perceived effort, increase perceived risk, reduce anticipated rewards and eliminate excuses" (Wortley, 2001). The author proposed a "two-stage model" to conceptualise the relationship between precipitators and opportunities for crime. This model establishes in its first stage the search for "situational forces that trigger criminal behaviour",while in the second stage it focuses more on the behaviour in terms of the costs and benefits of the propitious offender. Up to sixteen techniques of situational control of crime precipitants, set out in the form of a table, in which the four responses are listed as prevention techniques for each of Clarke's strategies: "controlling prompts, controlling pressure factors, reducing permissibility, and reducing provocations" (Wortley, 2001).

For each type of crime prevention technique, four precipitator-controls have been developed in each category, which address factors. Thus, Wortley's theories are based on situational crime prevention, for "even if opportunity reduction assumes the existence of a motivated offender, it is disputed whether that motivation can depend on the concrete situation" (Wortley, 2001).

Wortley's theory is empirically supported by the authors' research on the application of situational precipitators to sexual offences committed by adult offenders (Leclerc et al., 2016). Similarly, a study has also been conducted on the applicability of precipitator theory to examine poaching, revenge hunting and connections in hunting (Moreto, 2019). Also in Spain, we find research using situational precipitators in González and Campoy (2018) on cyberbullying to propose preventive measures.

Reference to the above articles affirms the scope of applicability of Wortley's theories of crime precipitators, and how to control crime. However, while situational prevention has been applied to the study of cybercrime more frequently (e.g., Hinduja & Kooi, 2013; Hutchings & Clayton, 2016; Hutchings & Holt, 2017; Newman & Clarke, 2012), the use of situational precipitators of crime in cyberspace is very recent. The only exception is Moneva and Caneppele's (2020) study on situational precipitators in fraudulent match-fixing betting websites.

For all the above, the use of Wortley's (2001) theoretical framework is justified to address cybercrimes committed in online video games, which forms the object of study of this dissertation. Although the study of video games and crime is a new field in criminological research, there is a wide range of previous studies on e-sports, authors such as Sengün et al. (2019) analysed hate speech towards MENA (Middle East and North African players) within LoL. There is also research on sexism in LoL (Carvalho & Cappelli, 2018) or toxic behaviour (Kordyaka, et al., 2019; Neto, et al., 2017), studies that will be discussed and analysed in more depth in the following section.

3. Previous research on crime and video games

Several studies have been conducted on cybercrime in video games. Firstly, Şengün et al. (2019a) analysed the prevalence of hate speech, with racist undertones, against the MENA population in LoL. To do so, the authors, in collaboration with Riot Games itself, analysed quantitativelythe chat history, which includes all conversations during a game, from a total of 30,000

randomly selected games and 89 forums, both belonging to EUW and EUNE servers, from 2017 to 2018. The results showed that as the more players are involved in the conversation, the greater the opportunity to engage in unsporting behaviour. They also identify that one of the biggest causes of toxic behaviour is when players start to judge and criticise each other's skills when playing LoL.

Secondly, the previous authors (Şengün, et al., 2019b), with the same sample as their previous study, examined how culturally or racist-based hate speech is related to disruptive language emerging in online video games and how they interact with elements of the design and content of the videogame itself. They found that there is also a positive relationship between the design of playable characters (and their aspects) and toxic discourse (Şengün, et al., 2019b).

Carvalho and Cappelli (2018) studies have also been conducted on the prevalence of sexism in LoL. Based on the statements of Fox and Tang (2014) "despite the female population that plays video games, these video games have traditionally been spaces created by and for men", which produces an exclusionary effect for female players. This starts from the very design of the videogame, its content, characters, and the player's interaction with them, because "women are generally underrepresented in the content of video games, which promotes normalisation and encourages sexual harassment" (Carvalho & Cappelli, 2018). Female-gender discrimination in online video games has been also issued by Fox and Tang (2014). Moreover, the female characters are hypersexualised, an issue that has been acknowledged by the head of champion production in April 2018 (Carvalho & Cappelli, 2018, p. 8).

On the other hand, not only video games have sexist elements, but also they generate sexist behaviours. To this end, Fox and Tang (2016) asked a total sample of 425 men, from over 47 countries, aged between 18 and 55 and with an average number of hours played per week of 24.88 hours, to complete a survey based on their experiences with online video games. The results confirmed the hypothesis that men engage in sexist behaviour in online video games, and that "harassment behaviour in online video games can be predicted by the same psychological factors that predict harassment in other social contexts" (Tang and Fox, 2016).

Next, regarding the toxic behaviour that can arise in the field of e-sports, authors such as Neto et al. (2017) found that disruptive and antisocial behaviour can arise during the pairing of players, creating an environment conducive to triggering criminal behaviour. The study focused on investigating the different patterns of behaviour that developed in each game, corroborating these were directly dependent on the skills of the players and the level of toxicity (Neto, et al., 2017). Other authors define online toxicity as disrespectful behaviour that makes a person want to leave the conversation (Salminen, et al., 2018). Other authors such as Kordyaka, et al. (2019) showed that toxic behaviour hate speech, which increases the likelihood of criminal behaviour (Miró, et al., 2018). So, "toxic behaviour affects a large number of players"(Kordyaka, et al., 2019), considering the rise of people playing MOBA video games, which are more competitive ones.

Similar deductions were made by Kou and Nardi (2013) after collecting chat logs from a total of 900 games on the North American server, using the technique of participant observation. They were able to corroborate that toxic behaviour is a constant reality in LoL and that it causes direct consequences for players. Furthermore, they concluded that the reporting system is inefficient and disruptive behaviour does not only exist in MOBA[2] games (such as LoL) or shooters (such as Overwatch), but also occurs in MMORPGs[3] such as World of Warcraft (Sužnjević, et al., 2012). However, Jr, et al., (2017) demonstrated the positive aspects of sporting behaviour, discouraging players from adopting an unsportsmanlike attitude through showing messages to players during they were playing online video games, which can lead to criminal situations within the game.

4. This study

The analysis of the environmental characteristics that precipitate criminal behaviour in video games has received little attention in the criminological literature. With the aim of contributing to fill this gap, this paper focuses on identifying and analysing the precipitants of criminal behaviour within two of the most popular competitive online video games, League of Legends (LoL) and Overwatch, based on the theory of Wortley (2001) and Clarke (1992; 1997), to analyse them, and thus propose prevention measures.League of Legends, is a multiplayer online battle arena video game developed and published by Riot Games, while Overwatch is a multiplayer first-person shooter video game developed by Blizzard Entertainment.

[2] "MOBA" stands for: Multiplayer Online Battle Arena.

[3] "MMORPG" stands for: Multiplayer Online Role Playing Game.

The first research question (RQ1) of this study is: are there characteristics in LoL and Overwatch that precipitate the emergence of crime and unsporting behaviour? To answer RQ1, we developed the first hypothesis:

> *H1: LoL and Overwatch present environmental characteristics conducive to the emergence of criminal behaviour and unsportsmanlike behaviour.*

Secondly, this investigation aims to test whether the different situational precipitators present in video games help to understand the cybercrime victimisation that occurs in them. Thus, the second research question (RQ2) is: is the prevalence of cybervictimization in LoL and Overwatch different in each video games and which crimes are committed the most? To answer RQ2 we formulate two hypotheses:

> *H2: There is a high prevalence of cybervictimisation and cyberoffending in both video games, with interpersonal crimes and sexual offences standing out.*

> *H3: LoL and Overwatch have different prevalence rates for cyber-victimisation..*

Finally, the final research question (RQ3): are there gender differences in victimisation in League of Legends and Overwatch? The hypothesis answering RQ3 is:

> *H4: Females report statistically significant higher levels of victimisation in LoL and Overwatch and this can be understood from the differential distinguishing characteristics conducive to criminal behaviour.*

5. Methodology

A mixed methodology (Heap & Waters, 2018) has been used for this research, using survey and systematic observation of videos as research techniques. The purpose of using a mixed methodology lies in the need to work with methods that allow investigating the problems from different perspectives, providing flexibility and credibility of the results, given the complexity of the criminal phenomenon to be investigated (Bazeley, 2018; Ghiara, 2019). Each of the techniques employed is described below.

5.1. Video gamesTechnique 1: Systematic observation

Regarding the systematic observation through "video-analysis", it has traditionally been considered that directly observing crime is a difficult task, since crime is normally an after-the-fact phenomenon, and it must be studied *a posteriori* (Lindegaard & Bernasco, 2018).

We find precedents in the use of this research technique in the criminological field in the studies by Philpot et al. (2019) when analysing the interactions between violence and nightlife (e.g., in bars, nightclubs, etc.). Furthermore, there is less exposure of the researcher to the criminal phenomenon since they are not directly in contact with it. Authors such as Nassauer and Legewie (2018) have proven the usefulness and effectiveness of the use of video analysis in research fields such as Sociology, Psychology and Criminology. Therefore, it is practical in this study to use this tool, as it allows us to observe a type of criminal behaviour that occurs in a specific environment -cyberspace-, allowing us to know the factors that precipitate criminal behaviour, and analysing criminal situations.

For all the above, information was collected from a total sample of 60 video-recorded games, 30 games for each videogame, using the Xbox Game Bar tool available for Windows 10. The games were previously played, alone and in ranked games, since they required greater concentration, teamwork, and skill to win games. In the case of LoL, ranked games were played at the Platinum-Diamond level, and in the case of Overwatch, the average skill level of the players was Diamond. Recorded games were excluded if they were not recorded correctly or if they suffered a technical failure. No criteria were used to select or exclude the item for further processing. Nor was a criterion used to select the sample size, as there is no other research using video analysis in this field of knowledge.

To avoid a possible influence of the researcher in obtaining the results, the researcher has remained neutral in the following way: firstly, by not intervening either in written chat or spoken communication, whether allied or enemy. Secondly, it has avoided rapid access communications, signals, and alerts, as it can have a qualitative influence on the results. And thirdly, the aim has been to play to the best of the investigator's skill and ability (limited to the investigator's own capacity), to avoid generating negative feedback from the players. However, the mere presence of the researcher in the games has conditioned not only the level of the average players, but also the rating level (ranking or MMR).

Subsequently, once the recordings had been made, the files were saved in two different folders for each videogame, renaming the videos numerically (from 1 to 30, respectively). Then, two files were created in Excel, transferring the precipitation-control strategies adapted

from Wortley's theory (2001), further developed and adapted in Table 1 (see Annex 1). So, coding 0 = "negative" and 1 = "positive", it is considered that a higher positive score results in a lower precipitation of criminal behaviour. In other words, a higher negative score results in a higher precipitation to crime in both video games.

The average time spent playing LoL games was 28.2 minutes, with total recorded time of 846 minutes (14.1 hours). On the other hand, the average Overwatch game time was 14.7 minutes, with total recorded game time of 441 minutes (7.35 hours). Therefore, total duration of the recorded videos is 21 hours and 30 minutes. The videos were viewed twice, first time at normal speed, and second time at an increased speed of 1.25 to ensure correct encoding of the data.

Written chat of the allied team and the enemy team was scanned for messages that could constitute a crime (e.g., hate speech). Similarly, the voice chat was searched manually for these social interactions. Once messages or speeches were detected, they were quantify and then analysed upon to qualify them as a positive confirmation of the precipitator-control when presented in the analysis or negative one. At the end, the number of precipitator-controls present in both video games was counted, concluding that a higher score means a higher presence of controls in the videogame and, therefore, that the videogame presents a lower number of situational precipitators of criminal behaviour.

5.2. Technique 2: survey

To respond to hypotheses 2-4, a survey was designed with four versions, two in Spanish and two in English for each videogame (2 for LoL and 2 for Overwatch, one in Spanish and one in English for each game, to achieve a better scope of the sample, not only Spanish one because of the type of sampling used, but also international sample), on cyber-victimisation and cybercrime in LoL and Overwatch. The Google Forms tool was used to host the survey, as it allows, on the one hand, an easy elaboration of the questions by including various editing options. On the other hand, it allows for an efficient distribution of the questionnaires among the population under study, given the speed with which they can be completed and distributed free of charge via a web link. Finally, it allows the researcher, once completed, to download the statistical data obtained for processing.

5.2.1. Questionnaire design

The questionnaire was designed from scratch in the absence of previously validated questionnaires with representative samples on cyber victimisation and cyber offending of crimes suffered and committed, respectively, through online multiplayer video games. The questionnaire is made up of four blocks. The first block asks about the frequency with which respondents play both video games. The second one is related to the victimisation of the League of Leagues and Overwatch player population. In this block, frequency and suffered crimes questions have been included. Also, whether they have received help from the videogame support teams, and a final question about their feeling of vulnerability when carrying out different activities. The Likert-5 scale (Albaum, 1997) was used for second block.

The third block asked about the offences committed in-game, including two questions: i) frequency and type of offences committed by the respondents in the video games, and ii) whether the person had been penalised by the videogame support systems for committing any of the offences included in the previous question.

The questionnaire included a fourth block where socio-demographic information was collected, with a total of four questions on age, country of residence, gender and level of education completed.

Finally, each of the questions were set up so that the respondent had to answer each one of them to move forward. However, alternative options have been added where the respondent could write as response options.

5.2.2. Data collection procedure

To collect the data, questionnaires were distributed once a week for three weeks through various channels. Firstly, via Discord[4] gaming servers, including the official Overwatch server (with a total of 229,320 players) and the Amazon University Esports server (with a total of 5,088 members). On the official LoL Discord server, the request to broadcast the survey was denied. Secondly, via Twitter, Instagram, Facebook, and Twitch.

[4] Discord is a voice and text chat application. Please check the following link: https://discord.com.

Nevertheless, it was not possible to use the official forums of the video games, as the publications did not allow links to web pages or "spam" content. Similarly, two requests were made via email to the corresponding departments of both video games to request statistical data about the player population, frequently punished behaviours, behaviours suffered by players, and received support from video games. However, both requests were denied, with the subsequent need for the development of statistical data collected through cyber-victimization surveys.

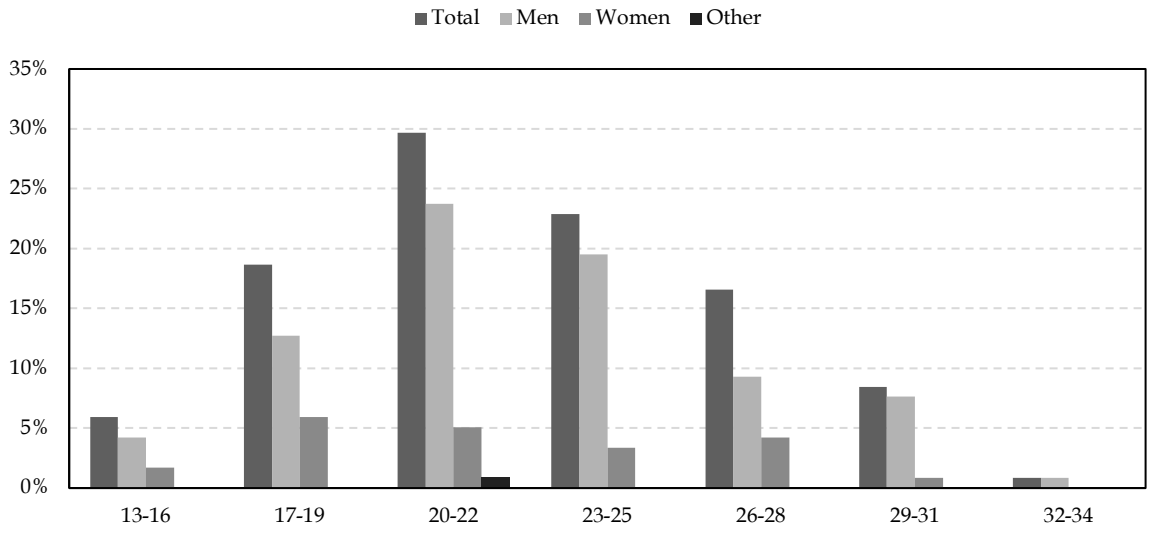
5.2.3. Sample

A non-probabilistic, snowball and convenience sampling was carried out, in which the researcher contacted subjects who play or played one of the two or of both video games. Subsequently, the people who participated obtained new participating subjects who made up the sample. This type of sampling was therefore used due to the difficulty of accessing population, as described in the data collection procedure.

The use of this type of sampling and the difficulties in accessing the target population constitute a clear limitation in terms of the representativeness of the results obtained. Therefore, they cannot be generalised to the population at large, and can only be interpreted within the scope of this study.

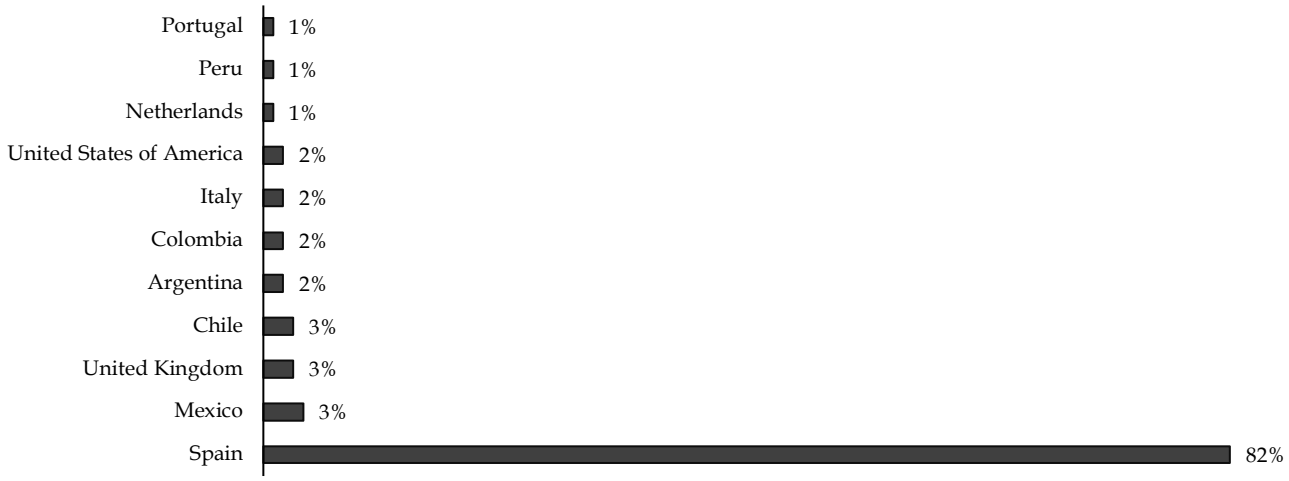
A total of 118 LoL and Overwatch players participated in this exploratory study. The sample consisted of a total of 92 people (78% of the sample) with male gender identity, 25 (21.2%) with female gender identity and one person (0.8%) with both male and female gender identity, aged between 13 and 34 years (M = 22.4 years; SD = 4.1). Figure 1 shows the distribution of participants by age and gender identity.

Figure 1. Distribution of the population by age and gender (N = 118).



Secondly, Figure 2 shows the country of residence of the respondents. The most represented country is Spain (82.3%), followed by Mexico (3.4%), the UK (2.5%), Chile (2.5%), Argentina (2.5%), Colombia (2.5%), Italy (2.5%) and the USA (2.5%). Finally, with less representation, the Netherlands (0.8%), Peru (0.8%) and Portugal (0.8%).

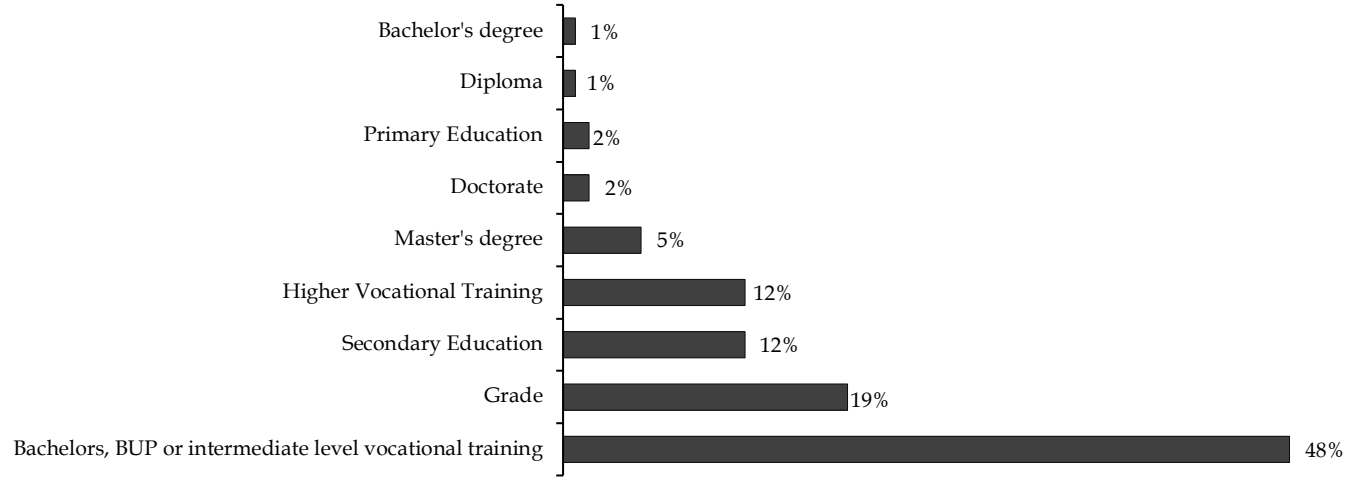
Figure 2. Respondents' country of residence.



Thirdly, Figure 3 shows the level of education completed by the respondents. The level of Bachelorette, BUP or intermediate vocational training is the most represented in the sample, with 48% (n = 56), and we can conclude that the average level of studies is consistent with the average age of the sample (22 years), since many of them have not yet completed university studies. On the other hand, 12% (n = 14) have a higher vocational education. 12% (n = 14) have completed secondary education and 2% (n = 2) have completed primary education.

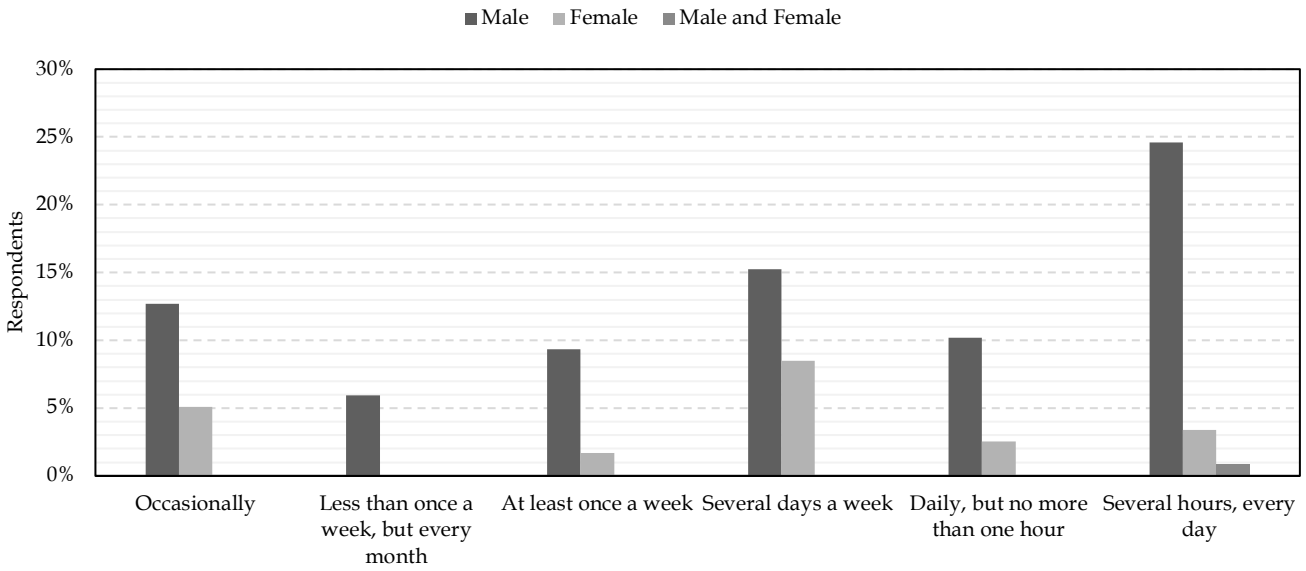
19% (n = 22) of the people are university graduates, with a representation of 5% at master's level (n = 6). Higher university studies such as PhD have a representation of 2% (n = 2). Finally, Diploma and bachelor's degrees are under-represented in sample, with only 1% representation, respectively.

Figure 3. Level of education completed by respondents.



Next, we can see in Figure 4 the frequency with which players play both video games according to their gender identity. However, after applying a t-Student analysis of means, we can conclude that on average the male population (M = 4; s = 1.84) plays more hours than the female population (M = 3.7; SD = 1.77).

Figure 4. Distribution of gaming frequency by gender (N = 118).



6. Results

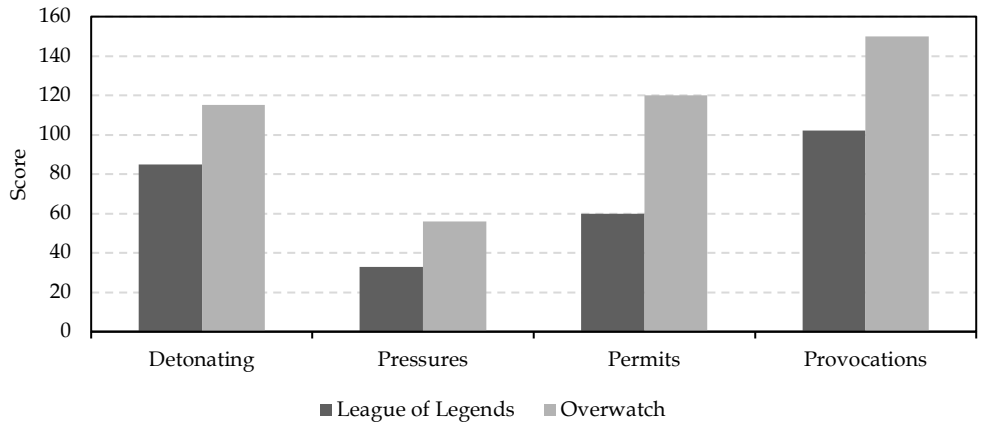
In the following section, the results obtained in the surveys and from the video analysis will be discussed and presented according to the research questions and hypotheses elaborated above.

6.1. Hypothesis 1

To answer the first research question about which environmental characteristics precipitated the emergence of criminal behaviour, H1 was formulated: "LoL and Overwatch present environmental characteristics that are conducive to the emergence of criminal behaviour".

Firstly, after applying the coding system described, which can be also consulted in Annex I, it is found that LoL has a lower score than Overwatch. Figure 5 shows the positive score for each typology of control strategies developed by Campoy and Summers (2015) from the Wortley's theory (2008).

Figure 5. Total score of control strategies in League of Legends and Overwatch.



LoL has more precipitating characteristics for criminal behaviour than Overwatch, because of the following differences. In terms of triggers, the category of 'setting positive expectations' is important. Specifically, in the precipitator of "clear reflection of a player's level of honour (sportsmanship)". While Overwatch prominently reflects the honour level of players, LoL only shows it during loading screens between games or is only accessible by searching for the player's profile.

Secondly, in terms of pressures, there is a different score in the category of "obedience". Specifically, in the precipitator that "players follow the rules of conduct set by the games". There is a tendency to act without fear of consequences in LoL because the loss or outright suspension of the account does not have a negative impact. As a free to play game, people can create as many accounts as possible. In contrast, Overwatch requires previous purchase before the player can interact with other people. In addition, there is a constant reminder not to engage in unsportsmanlike conduct.

Thirdly, in terms of permissions, there is also a mixed score in the category "minimisation of rules". Specifically, in the "limiting access to video games for minors" precipitator. LoL does not limit the creation of accounts by user. Once an account is created, the user downloads the game and starts playing. Overwatch requires a slightly more complex system, as it requires the purchase of the videogame.

Likewise, the "player depersonalisation" precipitator shows disparate scores between the two games. Overwatch is concerned of its community, with constant reminders of the importance of respecting other players. Likewise, it is a cross-cultural videogame, in which each playable character comes from different countries, and also takes care in the aesthetics, which is not the case with LoL, in which most of the female characters are represented in a hyper-sexualised way, which would have negative consequences on the players. It also does not remember between games to adopt a sporty demeanour. However, it does comply with interculturality, as the characters in its universe come from different regions. Finally, Overwatch has voice chat which helps to personify the player, whereas in LoL communication is via written chat, which is conducive to dehumanising the other players.

Fourthly, in terms of the typology of provocations, there is a different score for the category "frustration". Specifically, the precipitator relating to "troll players, griefing, inting behaviours". While Overwatch's system detects these types of behaviour quickly, LoL takes more time to resolve the reports and sanction them. Undue delay in sanctioning affects the deterrent effect of the penalty.

In terms of the "environmental stressors" category, there is a mixed score on the following three precipitators. First, in terms of "champions/characters"[5] played in traditional role, there is a higher negative score in LoL than in Overwatch, and this varies depending on the freedom of character selection. While Overwatch limits characters in ranked matches to their traditional position, LoL allows any character to be played in any role, which indirectly facilitates unsportsmanlike behaviour such as trolling, griefing or inting.

Likewise, the second precipitator within this category deals with "aesthetic elements". These include the appearance of the characters or champions that the user plays with. Throughout the video analysis, two behaviours were observed: indifference towards the player who owns limited edition skins, or rejection towards the person with poor skills who owns a skin. Overwatch has a system of free in-game content acquisition through loot, which was later implemented by LoL, but with a commercialised vision.

Finally, the third predictor that also shows different scores is the "map on which the match takes place". While LoL ranked matches take place on a single map, Overwatch has a wide variety of maps for any type of match, encouraging versatility and team cooperation to achieve common goals. Environmental elements largely determine players behaviour since a person who knows the maps is more likely to make better plays, which influences the teammates behaviour, since a player who makes good plays avoids insults and flaming to a greater extent than those players who, due to lack of experience and skill, make worse plays.

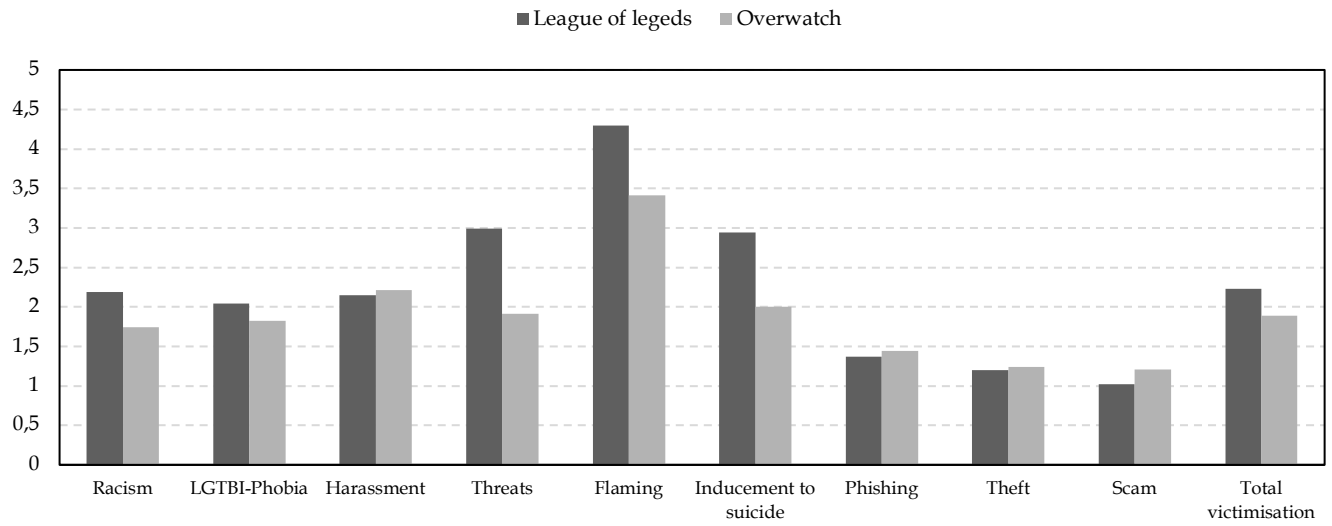
Therefore, it can be concluded that Hypothesis 1 is fulfilled, as both video games present factors that precipitate and facilitate criminal behaviour.

6.2. Hypothesis 2

Is the prevalence of cybervictimization in LoL and Overwatch different in each video games and which crimes are committed the most? In this section, we will resolve H2 = " There is a high prevalence of cybervictimisation and cyberoffending in both video games, with interpersonal crimes and sexual offences standing out". Thus, to answer Hypothesis 2, two graphs representing the average cybervictimisation and cybercrime in both video games have been developed. First, cyber-victimisation will be addressed.

[5] Each character performs a function during the game (e.g., healing, dealing damage, protecting) in their corresponding role (e.g., support, mage, and tank, respectively).

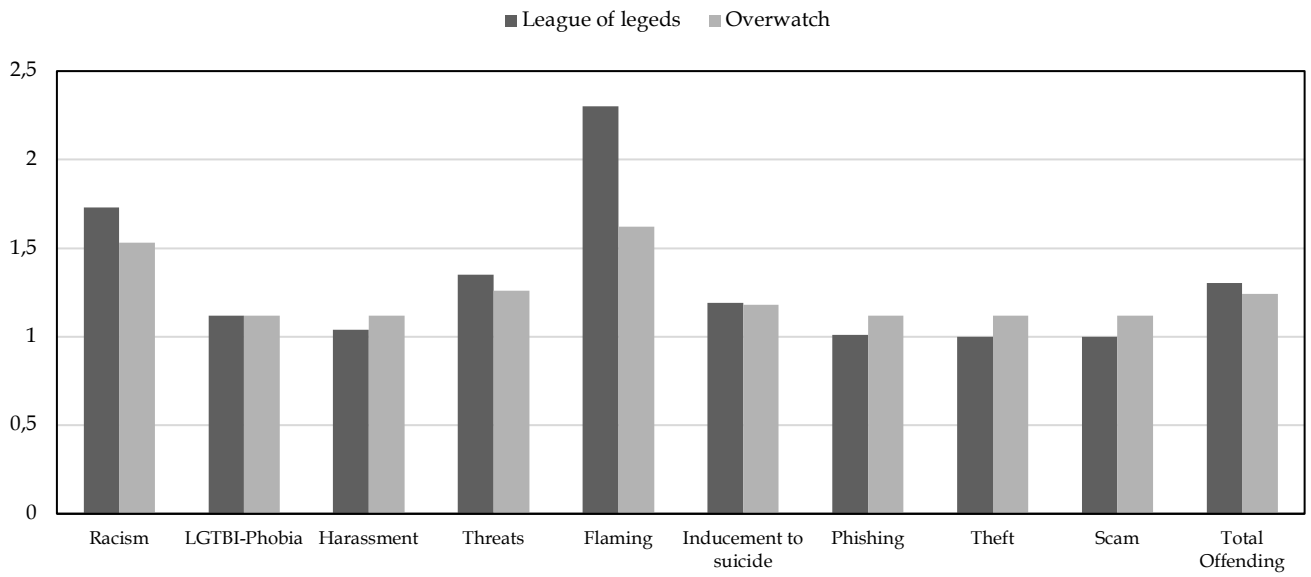
Figure 6. Cyber-victimisation's mean by behaviour and video games.



As can be seen in Figure 6, LoL has higher levels of cybervictimisation in the following behaviours: racism (M = 2.2), LGTBI-phobia (M = 2), threats (M = 3), flaming (M = 4.3) and suicide inducement (M = 2.9). Whereas Overwatch has higher levels of harassment (M = 2.2), phishing (M = 1.4) and scamming (M = 1.2), with theft being a behaviour that has the same level of prevalence in both video games (M = 1.2).

Secondly, in terms of levels of cybercrime, as can be seen in Figure 7, LoL has higher levels of cybercrime in the following behaviours: racism (M = 1.7), threats (M = 1.3), flaming (M = 2.3) and inducing suicide (M = 1.2). Whereas Overwatch has higher levels of harassment (M = 1.1), phishing (M = 1.1), theft (M = 1.1) and scamming (M = 1.1), with LGTBI-phobia being a behaviour that has the same level of prevalence in both video games (M = 1.1)

Figure 7. Cybercrime's mean by behaviour and video games



.

Therefore, we can confirm Hypothesis 2 as socio-economic crime is less prevalent in cyber-victimisation than interpersonal and sexual crime.

6.3. Hypothesis 3

To address H3 ("League of Legends and Overwatch have different prevalence of cyber-victimisation"), a statistical analysis using t-Student for independent samples was conducted to compare the means of cyber-victimisation between LoL and Overwatch.

We found statistically significant differences in cybervictimisation between the two video games in the Table 2:

Table 2. Comparison of cybervictimisation averages between LoL and Overwatch.

	t	*p-value*
Threatening	3.9	< 0.001
Flaming	4.2	< 0.001
Suicide inducement	3.6	< 0.001
Scamming offences	-2	= 0.04
Racism		> 0.05
LGTBI-phobia		> 0.05
Harassment		> 0.05
Phishing		> 0.05
Theft		> 0.05

Therefore, Hypothesis 3 is confirmed as the most committed crimes in LoL are: threats, flaming, inducing suicide. Meanwhile, for Overwatch, scam is more committed.

6.4. Hypothesis 4

Finally, about research question three (RQ3), are there gender differences in victimisation in LoL and Overwatch? Hypothesis 4 "Females report statistically significant higher levels of victimisation in LoL and Overwatch and it can be understood from the differential distinguishing characteristics that are conducive to criminal behaviour" was developed.

To this end, hypothesis tests using t-Student for independent samples were conducted to compare means in cyber-victimisation between people with male and female gender identities. The gender identity "male and female" was not used due to the low representativeness of the sample (n = 1). Thus, we found statistically significant differences in cyber-victimisation in harassment offences and as can be seen in Table 3.

Table 3. Comparison of cybervictimisation averages according to gender identity in both video games.

	Male		Female		*t*	*p-value*
	M	*SD*	M	*SD*		
Racism	2,1	1,2	1,8	1,2	1	0,306
LGTBI-Phobia	1,9	1,2	2,1	1,3	-0,8	0,428
Harassment	1,8	1,3	3,3	1,4	-5	< 0,001
Threats	2,9	1,4	2	1,3	2,8	0,006
Flaming	4	1,1	4,1	1,2	-0,4	0,7
Inducing suicide	2,9	1,3	2,1	1,3	2,4	0,018
Phishing	1,4	0,8	1,5	1	-0,9	0,385
Theft	1,2	0,5	1,2	0,8	-0,3	0,801
Scam	1	0,3	1,1	0,8	-1	0,287

Therefore, we can also partially confirm Hypothesis 4, since people with a female gender identity suffer, on average, greater cyber-victimisation for harassment. Meanwhile, people with a male gender identity have higher levels of cyber-victimisation for threats and inducement to suicide than people with a female gender identity.

6. Discussion

This articlehas addressed cybervictimisation and cybercrime in League of Legends and Overwatch through systematic observation, based on video analysis, and the results obtained through two surveys. Although the study of behaviour in video games is a relatively new field of research, previous authors such as Suznjevic and Matijasevic (2012) studied human behaviour in World of Warcraft, or Kou and Nardi (2013) who demonstrated the prevalence of criminal behaviour in LoL and how cyberspace influences the development of crime. Similarly, Fernando Jr. et al. (2017) investigated player behaviour in LoL, and Castillo (2019) with gamification in Overwatch. This study advances knowledge about people's behaviour in video games by addressing whether there are situational precipitator controls in video games and whether there is cyber-victimisation in video games. In this section, the results obtained and their relationship to literature and good practice are discussed.

First, LoL has greater features that make it possible for crime to emerge more frequently than in Overwatch. (Hypothesis 1), and this can be answered by the accessibility of the videogame. The former is a free to play game, while the latter is pay to play. However, we believe that neither system is better than the other, since a solution could be to limit the creation of account per person, as implemented by China in 2019 (Cyrill, 2019). Secondly, about the data extracted from the cybervictimisation survey, the prevalence of interpersonal crimes and crimes against sexual freedom in both video games must be addressed (Hypothesis 2). So far, studies by Carvalho and Cappelli (2018) have highlighted the influence of situational precipitants in sexism in video games. Some of the measures that have been implemented in the online gaming sector include the matching of players with similar unsportsmanlike and criminal behaviour, as proposed by Amazon in 2020 (Gilbert, 2020; Murray, 2020). However, this would imply a displacement of crime to controlled cyberspaces. The main task could be to adopt measures to proportionally sanction the criminal and unsporting behaviour through a code of conduct pre-established in the conditions and terms of use of the product.Definitively setting aside criminal ones through IP banning, or by limiting the creation of accounts by linking them to a national ID, so that a person would only have access to one account. This would prevent the mass creation of accounts by creating as many e-mail addresses as desired. And to develop mechanisms to reform the punished players' behaviour, where, in minor cases, such as a simple insult, the proportional sanction could involve the viewing of a video made by the company itself of the consequences of its actions on other players.

Thirdly, regarding the criminal typological differences that appear in both video games which depend on the strategies of precipitation and control of crime (Hypothesis 3), we can conclude that, in LoL, threats, flaming, suicide inducement and scam crimes prevail, comparing to Overwatch, explained by the theoretical background on crime precipitators, introduced in cyberspace by authors such as Leukfeldt et al. (2019), Miró (2020) and Moneva (2020), building on the theory developed by Clarke (1997) and, later, Wortley (2001). This incidence could be explained by the more leisurely nature of LoL, since the course of the game allows player to communicate with teammates, while Overwatch, being a more frenetic game, communication is transferred to voice chat, reducing communication with the enemy team.

Finally, this study has concluded that people with a male gender identity suffer more threats and inducement to suicide, while the female population suffers on average more harassment (Hypothesis 4). Thus, Kou and Nardi (2013) or Carvalho and Cappelli (2018) demonstrated the existence of sexist behaviour in LoL, with the design of female characters influencing criminal behaviour as they are depicted in a hyper-sexualised way (Riot Jag et al., 2018). Some of the measures taken by Riot Games (Codbear, 2020) have been to change the system for identifying these criminal behaviours and their punishment, as well as the possibility of silencing players in instances prior to the game. This could be effective measures to reduce unwanted behaviour in video games, as well as preventive measures by avoiding direct contact with players with whom they do not have the confidence to interact.

7. Conclusions and limitations

In recent years, the number of people playing League of Leagues and Overwatch has been increasing, as people who suffer criminal and unsportsmanlike behaviour (Kordyaka et al., 2019). Therefore, through the application of cyber-victimisation surveys and the systematic observation through video analysis, we have obtained results that will allow us to formulate more detailed preventive measures. So, thanks to the precipitation-control strategies used in direct observation, it has been possible to articulate ways of

detecting criminal behaviour: for instance, it has been identified that a hyper-sexualised design of female characters in video games could encourage sexism, so it would be advisable to design them in a non-sexualised way. Similarly, it has been found that people with a female gender identity suffer more harassment in online video games, so the phenomenon can be tackled by promoting equality among players and penalising such behaviour. All of this makes it possible to identify the space-temporal contexts of the crime with environmental criminology, making it possible to formulate proposals for prevention.

This study has limitations, so its results should be taken with caution. Firstly, an academic limitation was present when requesting information from the companies since official statistical data would have been available if this project had been a pre-doctoral study. This made it necessary to obtain statistical data at the researcher's expense. Secondly, from a methodological perspective, the sample obtained in the surveys is not representative of the gaming population, because probabilistic sampling methods were not used to collect the data, and therefore it is not possible to generalise the results. Thirdly, the analysis of only two video games represents a certain barrier in the face of a criminal phenomenon that is so dynamic and varies according to the type of videogame in which it occurs. Therefore, it would be advisable for future studies to analyse other video games of the same type to ensure greater certainty in the assertions.

Although this study presents some limitations, it also contributes to the criminological literature on criminal behaviour and victimisation in cyberspace, by using video analysis to analyse criminal behaviour, and cyber-victimisation surveys to learn more about the criminal phenomenon. Thus, this dissertation opens opportunities for new research in this area, as well as the possibility of using the methods of detection and analysis of cybercrime developed in this study by videogame companies, increasing satisfaction in the gaming experience, and reducing frustration in them.

Finally, there is also a certain bias in terms of the systematic observation and video analysis carried out by the author of the dissertation, since, for example, it could have been interesting to carry out a video analysis based on broadcasts of video games on Twitch.tv, as this would have reduced the subjectivity, increased the number of games observed, and would have provided access to a more detailed analysis.

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ANEXO

Table 4. Precipitation-control strategies in League of Legends and Overwatch [6].

Types of precipitators			*Description*
Detonators			
	Controlling triggers		
		Controlling swear words in written chat	Video games include a written chat filter option to hide swear words.
		Symbol control	Video games include options to block symbols such as emoticons or default phrases from the champions/characters themselves.
		Para-verbal communication	Characters have interactions with other characters with each other, either automatically or because they are forced by the player (e.g. saying predetermined phrases, interactions, dances or signs). They are subject to limitation or blocking by the other players.
	Setting signals		
		Encouraging sporting behaviour	Video games remind players to adopt sporting behaviours.
		Discouraging unsporting behaviour	Players are regularly informed of the consequences of unsporting behaviour.
	Reducing imitation		
		The consequences of crime are known	When a reported player is punished, the complainant is informed. The expulsion of the player from the video game builds trust in the system and inhibits the imitation of criminal behaviour.
	Setting positive expectations		
		Report on players punished by the reporting system.	A message is provided to the complainant about the receipt of the report, and subsequently whether the player has been punished (without further information).
		Clear reflection of a player's level of honour (sportsmanship).	The video game adequately reflects the honour level of the players.
Pressures			
	Conformism		
		Players are reminded and encouraged to adopt a sporting conduct.	Video games have messages reminding the community to adopt and maintain sporting behaviours, improving the quality of the honour system (sportsmanship) of players, and rewarding the most honourable players with exclusive content.
	Obedience		
		Players follow the rules of conduct established by video games.	Players tend to adopt a sporting demeanour, following the guidelines set by the video game development teams, avoiding insulting, threatening or disrespecting other players.
	Compliance/challenge		
		Sports players are rewarded.	The video games include a system that rewards (with video game content) those who maintain a sporting attitude, i.e. those who chose to behave appropriately in the face of the temptation to insult or disrespect other players.
	Anonymity		
		Player identification	Existence of a clear and concise player identification system. A player can only have a single account, and there is a limit on the number of accounts per user.
Permits			
	Minimisation of rules		
		Existence of a "code of conduct" in both video games	The video game includes the behaviours that are punished by the reporting system. However, it is not widely known.

[6] English translation from Table 3 of the situational precipitators of crime (Wortley, 2008) from Campoy and Summers (2015).

Types of precipitators			*Description*
		Payment systems	The payment systems and options are well delimited and explained in both video games.
		Terms and conditions of use.	The terms and conditions of use are accepted at the beginning of the installation of the video games.
		Limiting access to video games for minors.	Existence of a system to identify the age of the player. Restriction by age of the player.
	Minimisation of responsibility		
		Reporting notification system.	Publicising the name of the reported user, reasons or motives for the penalty or punishment imposed.
	Minimising the consequences		
		Reporting notification system.	Publicising the penalty or punishment imposed on the reported player.
	Minimisation of victims		
		Depersonalisation of players.	Video games encourage their players to keep in mind that other players are also people and that they are all of equal value.
Provocations			
	Frustration		
		AFK Players	Mechanisms to counteract the negative consequences of AFK players. For example: existence of a replacement for the player who has left the game or possibility to end the game earlier (surrender earlier than usual or remake).
		Players "trolling", "inting" or "griefing"7.	Adequate detection of these behaviours in video games (their punishment depends on the interaction of players and their willingness to report them).
	Overcrowding		
		Limitation of players per game.	Teams consist of 5 and 5 (10 total) players in LoL, and 6 and 6 (12 total) players in Overwatch. These players, once the game is over, can rarely meet again, unless they invite or add each other. These are spaces with few people.
	Territoriality		
		Control of the playing field or map	Teams have to control the map, gaining ground, conquering and securing various objectives. Achieving them brings positive results.
	Environmental stressors		
		Champions/Characters	The correlation between the champions played (based on their role in the game, e.g. protect, heal, damage) and the assigned role (e.g. tanks, mages, marksmen, support) is taken into account. Some players play characters outside their assigned role. This is not grounds for unsportsmanlike conduct.
		Aesthetic elements	Existence of aesthetic elements, such as skins for champions/characters (avatars), icons, guardians, and even skins for weapons. It is not controversial.
		Map on which the game takes place.	The games take place in specific spaces. Some are set in different themes or with different designs. It prevents unsportsmanship and crime.

[7] Trolling, inting or griefing are some of the behaviours that occur in online video games. For a more detailed definition of the concepts, please refer to the following link: <https://www.somagnews.com/griefing-understand-prohibited-practice-lol-cs-go-games/>.