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PROJECT SUMMARY

In contemporary societies, video gaming serves multiple functions, from enabling social interaction and meaningful leisure to supporting health, well-being, and creative self-expression. At the same time, esports and competitive online play expose young people to risks that include verbal aggression, harassment, racism, homophobic and transphobic slurs, and broader forms of hate speech. Within Europe—where tens of millions of people participate in online games—the social value and social risks of gaming remain unevenly mapped, particularly for younger cohorts who experience both the benefits and detriments of these spaces most acutely. The **ENHANCE** project addresses this gap by developing research-informed resources that reduce toxic behaviours and foster prosocial conduct through socially connected education and assessment for young players aged 16–26.

ENHANCE pursues three interlocking aims: (1) **Assessing** the social side of online competitive gaming by identifying prevalent toxic and prosocial behaviours among youth in Europe and by building a robust self-assessment tool; (2) **Raising awareness** among players, parents/educators, and stakeholders via open-access learning materials; and (3) **Achieving** long-term impact through an Esports Social Observatory that disseminates evidence, convenes dialogue, and supports safer, more inclusive communities. These aims translate into concrete outputs, including a psychometrically grounded Self-Assessment Tool, a multilingual MOOC for youth and caregivers, and an Esports Social Observatory that curates findings and good practice for the field.

Together, these components will support young players (16–26), decision makers, and industry actors (developers/publishers, clubs, federations) in recognising, preventing, and responding to toxic behaviours while cultivating prosocial norms and skills that contribute to sustainable value creation and healthier pathways in and beyond esports.

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1. Introduction

Toxicity in esports constitutes a significant and persistent challenge within competitive online gaming. Used as an umbrella term, "toxicity" encompasses a broad array of antisocial behaviours directed at other players or community members, including verbal hostility (flaming), harassment, racism, sexism, homophobia, trolling, griefing, and related forms of abuse (Schopke-Gonzalez et al., 2023; Huston et al., 2023; Gandolfi & Ferdig, 2021; Ruotsalainen et al., 2023). More extreme manifestations can involve encouraging self-harm, displays of physical aggression, and persistent use of profane or demeaning language (Freitas et al., 2021; Huston et al., 2023). These behaviours do not occur in a vacuum; they are shaped by the distinctive affordances and pressures of competitive multiplayer play, where high stakes, rapid decision-making, and often-anonymous interaction heighten the likelihood of incivility and escalation (Freitas et al., 2021; Kordyaka et al., 2020). Team-based formats—common in First-Person Shooter (FPS) and other esports titles—further intensify these dynamics, as strangers must coordinate under pressure and against opponents, creating fertile ground for blame, scapegoating, and norm violations when performance falters (Maharani et al., 2024; Freitas et al., 2021).

The social and psychological consequences of such environments are well documented. Exposure to toxic conduct can propagate negativity through contagion effects, whereby even typically non-toxic players respond with anger and frustration, reinforcing cycles of antagonism (Freitas et al., 2021). This dynamic degrades intra-team communication and cohesion—key predictors of performance in competitive contexts—and is associated with emotional and psychological harm at the individual level (Huston et al., 2023; Grandprey-Shores et al., 2014). The ramifications extend beyond the individual to the broader esports ecosystem: toxic climates deter newcomers, erode community trust, damage the reputations of games and organisers, and are linked with diminished player and viewer retention—ultimately becoming not only a social problem but also a business risk for publishers and platforms (Freitas et al., 2021; Grandprey-Shores et al., 2014; Kordyaka et al., 2020). Despite growing scholarly attention, the literature still exhibits definitional variability and heterogeneous operationalisations, complicating synthesis and comparison across studies (Ruotsalainen et al., 2023; Kowert, 2020). Nonetheless, large-scale empirical work—such as analyses of extensive player-report datasets—has begun to consolidate understanding of toxic behaviour's prevalence, forms, and trajectories in online play (Kwak et al., 2015).

Against this backdrop, esports has moved from peripheral pastime to mainstream cultural and economic force, prompting parallel concerns about player well-being, community integrity, and digital citizenship, particularly for young players aged 16–26. European institutions have acknowledged both the opportunities and the risks inherent in games and esports, emphasising the need for education, awareness, and appropriate safeguards (European Parliament, 2022). Industry responses—reporting tools, moderation policies, automated detection—are necessary but often reactive, fragmented, or unevenly enforced; crucially, there remains a shortage of research-informed, player-facing instruments that help young people recognise, monitor, and reflect on their own experiences and behaviours across contexts. The ENHANCE project addresses this gap through two complementary studies that form the empirical and conceptual foundation of this deliverable. **Study 1** combines a **non-traditional qualitative analysis of digital habitats** (e.g., forums, social media, livestream chats) with a **traditional systematic literature review** of validated measurement instruments and constructs relevant to toxic behaviours in digital gaming, ensuring that lived community norms inform formal evidence synthesis. **Study 2**, guided by the insights of Study 1 and established scale-development standards, **develops a multidimensional, developmentally appropriate self-assessment tool** for 16–26-year-olds

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to support early identification, self-reflection, and targeted education, following best-practice psychometric principles (DeVellis & Thorpe, 2021). By integrating ecological insights with methodological rigour, this report lays the groundwork for a tool that is conceptually comprehensive, psychometrically sound, and practically usable by youth, educators, and practitioners across Europe, aligning with ENHANCE's broader architecture of assessment, awareness, and achievement.

2. Objectives

This deliverable sets out the evidence base and methodological pathway underpinning the ENHANCE assessment strand for young players aged 16–26. It is organised into two interlinked studies. **Study 1** combines a non-traditional analysis of community evidence with a traditional scoping review to map toxic and prosocial dynamics and appraise existing measures. **Study 2** translates these insights into a psychometrically grounded self-assessment suitable for grassroots esports contexts.

2.1 Study 1 — Non-traditional analysis & traditional systematic literature review

2.1.1 Non-traditional analysis

The first component aims to capture how toxicity and prosocial behaviour are enacted, negotiated, and made salient within players' everyday digital environments. Its objectives are to delineate the spectrum of harmful behaviours and constructive practices observable across key platforms (e.g., Reddit, Discord, Twitch, forums, team sites), to identify genre- and setting-specific patterns relevant to competitive play (e.g., MOBAs, FPS, Battle Royale), and to preserve authentic community voice through curated exemplars. By foregrounding lived practice, this strand sharpens conceptual boundaries and provides context sensitivity that subsequently informs construct specification and item territory.

2.1.2 Traditional systematic literature review

The second component aims to consolidate peer-reviewed knowledge on theories, typologies, antecedents/outcomes, and measurement of toxicity in digital gaming and esports. Following PRISMA-ScR conventions, its objectives are to catalogue validated instruments and their theoretical underpinnings, to appraise development procedures and psychometric qualities (dimensionality, reliability, validity), and to compare perspectives and scope (perpetrated vs. received, behavioural vs. attitudinal, general vs. identity-based or gendered). The outcome is a structured map of robust coverage and outstanding gaps that, when integrated with the community analysis, yields a domain blueprint for subsequent scale design.

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Together, these two strands provide a coherent framework that is simultaneously grounded in real player discourse and anchored in validated scholarship, thereby specifying the construct space and evidential priorities that guide tool development.

2.2 Study 2 — Self-assessment tool development

Building directly on the Study 1 blueprint, Study 2 aims to produce a multidimensional, youth-appropriate self-assessment for use in grassroots esports. Its objectives are to formalise the construct space into clear domains; generate and adapt items from strong validated sources where appropriate; establish content validity through expert review and cognitive appraisal; verify feasibility for online administration (instructions, burden, anchors, flow); and evaluate reliability alongside planned validity evidence within a specified nomological network (e.g., associations with gamer identity and need satisfaction of relatedness). The study further aims to standardise response formats and include procedural quality controls (e.g., informed consent pathways and attention-check items) so that the final, ethically approved questionnaire is interpretable, scalable, and ready for deployment with players aged 16–26.

3. Study 1 — Non-traditional analysis & traditional systematic literature review

This section introduces Study 1, which combines a non-traditional analysis of community evidence with a traditional scoping review to establish a comprehensive picture of toxicity and prosocial dynamics in esports. The methodology outlines how each strand was designed and executed so that lived practices and peer-reviewed scholarship jointly inform the evidence base for measurement work. The results then develop a set of themes that map harmful behaviours and positive social processes observed in authentic contexts and consolidate theoretical, psychometric, and training insights from the literature. The discussion integrates these themes to clarify conceptual boundaries and practical implications, setting the stage for the specification of the self-assessment tool in Study 2.

3.1 Methodology

This section outlines a dual-method approach designed to balance ecological realism with methodological rigor. First, a non-traditional qualitative analysis of user-generated content across key digital habitats maps how toxicity and prosocial interactions are expressed and negotiated in practice, ensuring that subsequent measurement work remains grounded in authentic esports contexts and mitigates publication bias through grey-literature inclusion (Garousi et al., 2019). Second, a traditional scoping review follows PRISMA-ScR guidance to consolidate peer-reviewed evidence on constructs, instruments, and psychometric properties relevant to competitive multiplayer settings, thereby providing a transparent, reproducible evidence base for item selection and adaptation (Tricco et al., 2018; Sarkis-Onofre et al., 2021). Taken together, these complementary strands triangulate lived

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community dynamics with validated scholarship, generating a domain blueprint that directly informs the specification of the self-assessment tool developed in Study 2.

3.1.1 Non-traditional analysis

To foreground the lived realities of esports communities, the consortium undertook a qualitative analysis of user-generated content across key digital habitats (e.g., Reddit, Discord, Twitch, YouTube, community forums, team/club websites, influencer posts). The aim was twofold: (i) to surface how toxicity is expressed, negotiated, and amplified in everyday practice, and (ii) to document constructive, prosocial dynamics that co-exist with competitive play. Sampling prioritised esports-relevant genres and contexts (e.g., MOBAs, FPS, Battle Royale) to capture platform- and genre-specific patterns.

The search strategy explicitly included grey literature and community artefacts (e.g., unofficial reports, posts, media features) to avoid publication bias and to incorporate perspectives that are often absent from peer-reviewed outlets (see discussion of grey-literature inclusion in Garousi et al., 2019). Collection windows were March–April 2025 for sourcing and through May 2025 for analysis, yielding additional verbatim extracts/quotes that were incorporated into the coding corpus.

Inclusion focused on materials that (a) addressed esports or competitive online play; (b) contained concrete depictions or reflections on toxic behaviours (e.g., verbal abuse, flaming, hate speech, gender-based harassment, gatekeeping, griefing, doxxing, cheating, exclusion) and/or positive social interactions (e.g., mentorship, peer support, teamwork, mental-health advocacy); and (c) were posted in the past decade to reflect contemporary norms and affordances. Exclusions applied to content lacking clear relevance to in-game or competition-adjacent contexts.

Analytically, the team conducted a directed content analysis: first, open coding of segments that instantiated toxic or prosocial dynamics; then axial categorisation by behaviour type, trigger/context (e.g., voice chat, ranked play, streams), and platform. Illustrative excerpts were retained to preserve authentic community voice and to evidence interpretations. Where appropriate, entries also recorded game/genre and interactional setting (e.g., scrims, tournaments, public lobbies). This approach generated a structured map of both harmful and constructive patterns that informs subsequent instrument specification in Study 2 (See examples and thematic tables summarising toxic behaviours and social benefits).

3.1.2 Traditional systematic literature review

Sampling Strategy

A scoping review was conducted following PRISMA-ScR guidance (Tricco et al., 2018), with reporting standards referenced to enhance transparency and replicability (Sarkis-Onofre et al., 2021). The process comprised four stages—identification, screening, eligibility, inclusion—as depicted in the PRISMA-ScR flow diagram (Figure 1). Searches targeted four widely used databases relevant to esports, HCI, and the behavioural sciences: Web of Science Core Collection, Scopus, IEEE Xplore, and ACM Digital Library.

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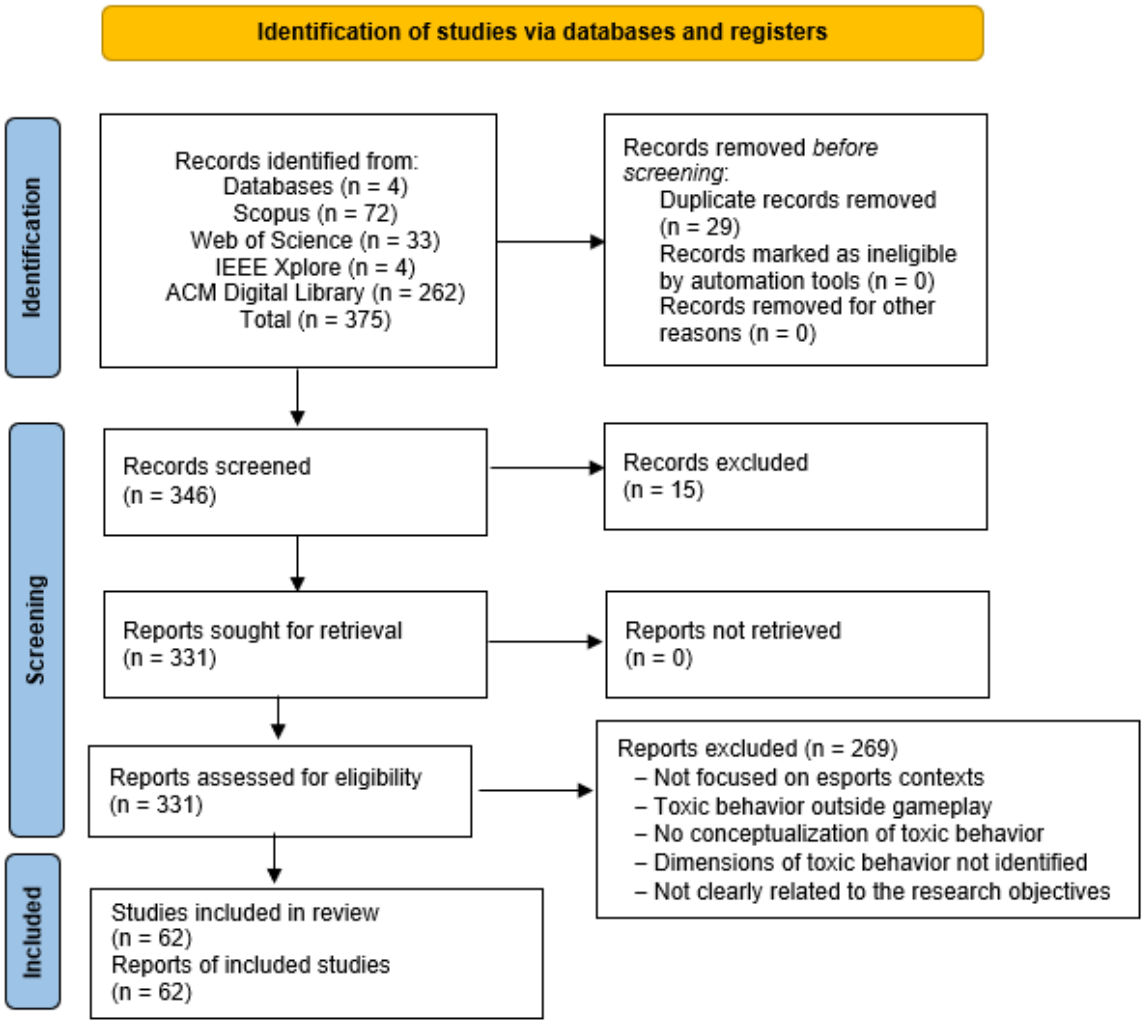
Figure 1. PRISMA-ScR flow diagram of search results and included studies



The query combined esports/online-multiplayer terms with toxicity and measurement terms, adjusted to each database's syntax:

("electronic sports" OR esports OR "e-sports" OR "competitive video game" OR "multiplayer online games" OR MOBA OR FPS OR DCCG OR RTS) AND ("toxicity" OR "toxic behaviour") AND ("measurement" OR "assessment" OR "scale" OR "questionnaire"). The initial yield was 375 records (33 Web of Science, 72 Scopus, 4 IEEE Xplore, 262 ACM). Duplicates (n = 29) were removed prior to screening.

Inclusion/exclusion criteria and screening

Inclusion criteria required: relevant title/abstract/keywords; publication window 2010–2024 (reflecting the period of intensified scholarly attention to esports); English language; peer-reviewed journal or conference paper; and full-text availability. Exclusions applied to studies outside in-game esports contexts, to works that did not conceptualise toxicity as a construct or articulate its dimensions, or to records not aligned with the objectives after title/abstract screening.

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Screening proceeded as follows: 346 unique records were screened; 15 were excluded at this stage; 331 full texts were assessed for eligibility; 269 were excluded for predefined reasons; and 62 studies were included in the final synthesis. References were stored and coded in Mendeley, with forward/backward citation chasing and targeted hand-searches to minimise omission.

Data extraction and synthesis focus

Extraction captured each study's (i) construct focus and scope (e.g., perpetration vs. victimisation; behavioural vs. attitudinal; general vs. identity-based abuse); (ii) instrument properties (item generation, dimensionality, validity, reliability); and (iii) contextual fit for competitive multiplayer settings. The synthesis consolidates where existing measures are robust and where coverage gaps remain—e.g., limited integration across perspectives or narrow dimensional focus—thereby guiding the domain blueprint for subsequent tool development in Study 2 (see Table A1 at Annex A for the document pool).

3.2 Results and discussion

This section integrates findings from two complementary strands of analysis to contextualize toxicity and prosocial dynamics in esports. The non-traditional analysis examines community evidence from live and archived digital habitats and is organised into two themes, with Theme 1 mapping toxic behaviours as they appear in practice and Theme 2 documenting social benefits and constructive behaviours that co-exist with, and sometimes counterbalance, toxicity. The traditional systematic literature review consolidates scholarly knowledge and is structured into three themes, with Theme 1 synthesising theories, typologies, and documented antecedents and outcomes, Theme 2 cataloguing validated measurement scales and their psychometric foundations, and Theme 3 surveying training topics, strategies, and educational approaches aimed at mitigating harmful conduct. Together, these strands provide an empirical and theoretical basis for the interpretations that follow and for the subsequent development of self-assessment tool.

3.2.1 Non-traditional analysis

Theme 1 – Toxic behaviours

In online gaming and esports environments, toxic behaviours have become a persistent and complex issue, often manifesting in social media platforms, chat groups, livestreams, and community forums. This theme focuses on the systematic identification and analysis of these behaviours as they occur in digital spaces, with the goal of uncovering their characteristics, triggers, and spread.

The analysis aims to identify the Multiple games forms of toxicity—such as verbal abuse, hate speech, harassment, and exclusion—through real-world examples and user-generated content. Special attention is given to how different game genres (e.g., MOBAs, FPS, Battle Royale) may influence the type, intensity, and frequency of toxic interactions.

Additionally, this theme seeks to understand the social and contextual settings in which toxicity emerges, whether during competitive matches, community discussions, or through

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content shared by influencers. It also examines the origin and dissemination of harmful behaviours across platforms such as Reddit, Twitch, Discord, and Twitter, where both players and fans contribute to shaping the tone and culture of the gaming space.

By mapping these behaviours in authentic, community-driven spaces, the project aims to provide a grounded understanding of the toxic dynamics that impact esports participants and audiences alike.

Table 1 provides an overview of the key toxic behaviours identified in esports-related social media and community platforms, including real-world examples, associated game genres, contextual settings, and the digital sources where these behaviours most commonly emerge and propagate.

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Table 1. Toxic behaviours identified from the non-traditional methods

Contextual Setting	Game Genres	Toxic behaviour	Quotes	Source
October 2022 stream sponsored by Blizzard Entertainment	League of Legends (Fantasy)	Verbal Abuse	"Paycheck-stealing LCS [player]" and "wintrading"	https://gamerant.com/tyler1-5-year-ban-overwatch-2-chat/
Swedish Super Smash Bros	Super Smash Bros	Bullying and Harassment	"He has bullied people in real life in both subtle and not-so-subtle ways. He freezes people out of conversations through ignoring them, standing in the way, talking over them and putting words in their mouth, and so forth."	https://www.reddit.com/r/smashbros/comments/18aiyh/leffen_banned_from_all_swedish_tournaments_lol/?utm_source=chatgpt.com
Reddit thread discussing toxic in-game interactions	League of Legends community	Sexism	"Can we FF? It's my third trimester." "You're pregnant?" "Yeah, I've been carrying four babies this whole time."	https://www.reddit.com/r/leagueoflegends/comments/glqsn5/what_are_the_best_toxic_lines_youve_seen/
Teen Vogue Article	Valorant	Gender-Based Harassment	“I’ve had people leave games when they hear my voice, or just be incredibly sexist whenever I attempt to communicate.”	https://www.teenvogue.com/story/meet-emsy-an-esports-competitor-hoping-to-bring-more-women-into-gaming
Teen Vogue Article	Valorant	Gender-Based Harassment	“I almost quit so many times because I felt like there was no place for me where I could be myself and play,” “The places I ended up at felt like my only option if I wanted to push higher. I stayed in a guild for almost a year where leadership and other members of the guild had a hatred for me because I spoke too ‘girly.’”	https://www.teenvogue.com/story/meet-emsy-an-esports-competitor-hoping-to-bring-more-women-into-gaming

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Contextual Setting	Game Genres	Toxic behaviour	Quotes	Source
Take the Throne" event	BDS team founder Patrice Bailo de Spoelberch	Gender-Based Harassment	"A woman who dares to use abortion should lose the right to ever have children."	https://apnews.com/article/esports-bds-bailo-de-spoelberch-geneva-abortion-b10c7d24188f27b8e39c7b7759152ed8
Abertay University Study	Valorant, Overwatch, Pokémon Unite, Counter-Strike: Global Offensive, and League of Legends	Gender-based exclusion	'I trailed for [a team] a couple years back, and everything seemed to be going fine, but at the end they were like, "Yeah we don't really want a girl to play on our team"'	https://rke.abertay.ac.uk/ws/portalfiles/portal/81907989/Cunningham_It_sJustNotSafe_Published_2024.pdf
eFuse Women of the Erena Fortnite Tournament	Fortnight	Harassment	"The number of times I've seen women getting harassed by teammates, simply because they're a girl, is horrifying."	https://www.unlv.edu/sites/default/files/media/document/2023-10/Esports-Women-Harassment-and-Paving-the-Way-for-Equity-ICGR-White-Paper.pdf
eFuse Women of the Erena Fortnite Tournament	Fortnight	Cheating	"I've been accused of cheating numerous times; pro players on the scene have even claimed I've coped with male gamers."	https://www.unlv.edu/sites/default/files/media/document/2023-10/Esports-Women-Harassment-and-Paving-the-Way-for-Equity-ICGR-White-Paper.pdf
Twitch in 2018	European Team Fortress 2 League	Offensive Remarks/Speech	"Insulting nationality, taunting terrorism victims via offensive team names and ignoring admin warnings".	https://scr1beow.medium.com/in-pursuit-of-perfection-ed882d46be6f
Healthy Inclusive Gaming, Hobby & Esports Research	Multiple games esports	Cyberbullying and Sexual Harassment	"There was a definite link between the level of professional gaming and the incidence of cyber bullying, and sexual harassment for women players," says Trudgett-Klose. "The more professional a player becomes, the more	https://unisa.edu.au/media-centre/Releases/2024/cyberbullying-and-sexual-harassment-rampant-in-esports/

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Contextual Setting	Game Genres	Toxic behaviour	Quotes	Source
			they are exposed to hostile behaviour, which affects their mental health."	
High-ranking match in Overwatch 2	MOBA (Multiplayer Online Battle Arena): Team-based strategy games (e.g., League of Legends). FPS	Sexism	"Go to the kitchen, this is not a game for women."	https://x.com/ChristalRaine/status/1782181873109925895
Community of competitive players	MOBA, FPS	Doxxing	"Doxxing is when someone shares another person's personally identifiable information without their permission and with the intent to cause harm."	https://discord.com/safety/doxxing-policy-explainer
Lobby previo a una partida competitiva	MOBA, FPS	Racism	"We don't want players from your country here."	https://steamcommunity.com/discussions/forum/7/4298194004194437199/?ctp=2
Twitch Live Stream	FPS	Stream Snipping	"Not stream sniping btw".	https://clips.twitch.tv/AltruisticHonorablePepperoniCeilingCat-tVWa-yaIhuFx3p59
Discussion on matchmaking	FPS	Gatekeeping	"Imagine gatekeeping gaming and worrying about what someone else is playing on the console they play on."	https://www.facebook.com/groups/bearsbegaming/posts/3193329944245268/
Analysis of professional LoL games.	MOBA (LoL)	Harassment	"Sending photos to minors (…)"	https://www.youtube.com/watch?v=EEotnoGXJM8

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Contextual Setting	Game Genres	Toxic behaviour	Quotes	Source
Competitive play in Valorant.	FPS	Throwing	“I'm going to stay AFK because my team is bad.”	https://www.reddit.com/r/VALORANT/comments/1ev8ubj/why_do_people_throw/
Call of Duty Warzone lobby	FPS	Cheating	“Bro kicked me from the dc 💔 💔 💔 💔”	https://www.tiktok.com/@raging.services/video/7484469409835142431
Gaming Forum	FPS, MOBA	Verbal abuse	“Verbal abuse is reason enough to be considered interference, like if someone was shouting racial slurs at Punk he shouldn't need to 'suck it up.”	https://www.resetera.com/threads/should-esports-separate-the-players-from-the-crowd-the-relationship-between-the-pro-player-and-the-spectator.121206/page-22
Twitter Discurssion	FPS, MOBA	Gatekeeping	"We can't keep normalizing hatred toward how people choose to play video games. Stop the gatekeeping, stop the toxicity."	https://x.com/aggr0nn/status/1854869470046552442
Ranked matches on the Korean League of Legends server.	MOBA	Verbal Abuse	“Road repeatedly told him 'go die'.”	https://es.wikipedia.org/wiki/Campeonato_Mundial_de_League_of_Legends_2016
Work environment within the esports organization Team SoloMid (TSM)	Multiple games	Harassment	"Esports employees and players accused Dinh of fostering a toxic work environment, with instances of yelling, insults, and public humiliation dating back to 2013."	www.wired.com/story/riot-games-investigating-esports-tsm-founder-over-bullying-allegations/

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Contextual Setting	Game Genres	Toxic behaviour	Quotes	Source
Overwatch League live streams on Twitch.	Multiple games	Harassment / Targeted Mockery	“Lengyel was suspended for 'repeatedly using an emote in a derogatory manner on league broadcasts and social media.'”	www.polygon.com/2018/3/12/17109790/overwatch-league-xqc-twitch-chat-toxicity
Twitch streaming platform	Multiple games	Harassment and Abuse	"His book exposes the darker side of professional game streaming, highlighting the abuse, toxicity, and harassment prevalent in the industry."	https://www.theguardian.com/games/2023/may/18/everyone-encounters-some-kind-of-abuse-stephen-jorbs-flavall-speaks-out-on-the-dark-side-of-twitch-streaming
Competitions organized by the Esports & Online Gaming Association (ESOGA)	Multiple games	Griefing	"Do not intentionally ruin a game or match for other players. This includes leaving early, stalling or pausing frequently, using cheats or hacks, or abusing game mechanics to gain an unfair advantage.	www.esoga.gg/code-of-conduct
Discord	Multiplayer physics-based sports game	Flaming	"Mano cala te por amor de deus, que filho da puta cringe, sempre que venho ao chat vejo o teu nome, ganha vida cabrao"	FSHL - Futsal Haxball League
Discord	Multiplayer physics-based sports game	Trash-Talking	"Eu compreendo mano, deve ser fodido, um gajo é uma merda e não lhe consegues ganhar"	FSHL - Futsal Haxball League
Discord	Multiplayer physics-based sports game	Flaming	"LMAOOOO quando apanhaste no cu forte e feio, claro que era a pior liga de sempre, não podia ser de outra maneira	FSHL - Futsal Haxball League

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Contextual Setting	Game Genres	Toxic behaviour	Quotes	Source
Discord	Multiplayer physics-based sports game	Flaming	Stfu @Muris 9 i dont troll the match fucking bitch. Skinny doesnt want to gk, i say: ok np i can try. And this bitch play like Itachi as dm, he is idiot, bad pass, bad decision , bad shoot, bad skills, bad backpass, bad brain... so i remove him because he was shit and he was afk. With me as am it was not the same things. And u fucking idiot, u are shit ST, 0 backpass, all the time u try skills but u are shit. but at least you were useful big shit. you bothered the gk a bit and you put a goal. well done. now never talk to me again about my level when dindin would have scored more goals than you. BITCH	BFF - British Futsal Federation
Discord	MOBA	Flaming	“fds, és tu? parabéns feeder de merda”	
League of Legends Voice Channel	MOBA / FPS	Flaming	‘You’re a retard.’	Twitch Clip Archive – Behavior Reports (2022)
In-game chat	MOBA (Dota 2)	Verbal Abuse	“Stupid noob, go play against bots.”	Toxic Behavior in Dota 2 - a Survey Study
Post-game chat	MOBA (Dota 2)	Flaming	“We lost because of you.”	Toxic Behavior in Dota 2 - a Survey Study
League of Legends ARAM	MOBA	Flaming	‘We lost because of you, uninstall now.’	Reddit - r/leagueoflegends
Post-kill messages or chat	FPS / MOBA	Bragging / Humiliation	Pwned!	Red Bull – 50 parole da gamer
Valigiablu	FPS, Battle Royale	Cheating	“Guardalo, sta sicuramente usando un aimbot.”	Valigia Blu

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Contextual Setting	Game Genres	Toxic behaviour	Quotes	Source
Valorant Competitive Lobby	FPS / Tactical Shooter	Cheating	'You're definitely hacking.'	Riot Support Report Logs (2023)
Chat during critical moments	MOBA, FPS	Flaming	Keep playing like this and we'll lose.	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10313333/
During a game	MOBA, FPS	Flaming	"Sei un completo idiota, impara a giocare!"	Structures that tilt: Understanding "toxic" behaviors in online gaming
Professional competition	Esports (all)	Cyberbullying	"You're trash, don't even deserve to play."	UniSA – Cyberbullying in Esports
Chat during or after matches	Multiple games	Cyberbullying	You're pathetic, you should quit gaming.	https://www.usnews.com/news/health-news/articles/2024-06-20/cyberbullying-common-in-the-world-of-online-gaming
Fortnite Duos Voice Chat	Battle Royale / FPS	Dismissive Attitudes	'It's just a game, bro.'	Reddit – r/FortniteBR (2023)
Forum, chat di gioco, social media	Multiple games	Doxxing	So dove abiti, ecco il tuo indirizzo!	https://www.valigiablu.it/dark-participation-videogiochi/
LoL Ranked Queue	MOBA	Elitism	'Only noobs play support, play a real role.'	GameFAQs Forum Discussion
Discord / private servers	Esports / MMOs	Gatekeeping	"You're not allowed here."	UniSA – Research
Discussioni in chat durante	MOBA, FPS	Flaming	"Sei inutile, stai rovinando tutto!"	Nabbi.it

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Contextual Setting	Game Genres	Toxic behaviour	Quotes	Source
momenti critici del gioco.				
Ranked Match in Dota 2	MOBA (Multiplayer Online Battle Arena)	Flaming / Verbal abuse	“You’re trash, delete the game already.”	Valve Developer Community Report, 2022
Valorant Public Match	FPS / Battle Royale	Belittling / Gatekeeping	‘Go back to Minecraft, kid.’	YouTube Voice Chat Toxicity Reel
Voice or text chat during matches	Multiple games	Flaming / Verbal Abuse	You're useless, uninstall the game.	https://www.verizon.com/about/parenting/toxicity-online-gaming
In-game during matches	MOBA (League of Legends)	Griefing / Passive Throwing	“I’m done, AFK.”	Some stats on Toxicity in League of Legends
Durante sessioni cooperative o competitive.	Giochi di ruolo, sandbox (es. Minecraft)	Griefing	“Ahah, ho distrutto tutto quello che hai costruito!”	Panda Security
In-game chat	MOBA (League of Legends)	Harassment	“Uninstall the game, you’re trash.”	Linguistic Analysis of Toxic Behavior in an Online Video Game
Chat during o dopo le partite.	Vari	Hate Speech	“Non vogliamo gente come te qui.”	Panda Security
Chat during or after matches	Multiple games	Homophobia	This game isn’t for people like you.	https://ucsdguardian.org/2022/03/06/toxic-gaming-culture-breeds-sexism-homophobia/

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Contextual Setting	Game Genres	Toxic behaviour	Quotes	Source
In-game during matches	MOBA (Dota 2)	Intentional Feeding / Griefing	"I'm going to feed and make us lose."	CONDA: a CONtextual Dual-Annotated dataset for in-game toxicity understanding and detection
Call of Duty Lobby Chat	FPS / MMO	Gatekeeping	'Speak English or get out.'	YouTube Gaming Voice Chat Compilation (2023)
In-game chat or online forums	Multiple games	Gatekeeping	You're worthless, don't deserve to play with us.	arXiv: Linguistic Analysis of Toxic Behavior in an Online Video Game (2014)
Fortnite Squad Match	Battle Royale	Mocking Accents / Gatekeeping	'Speak English or get out of the game.'	IGN Community Moderation Report
Chatrooms and memes	RTS / Meme Culture	Mocking / Gatekeeping	All your base are belong to us	Wikipedia – Zero Wing
In-game during matches	MOBA (League of Legends)	Defeatism / Tilting	"This game is over, we can't win."	Effects of individual toxic behavior on team performance in League of Legends
Overwatch Competitive Voice	FPS / MMO	Racism	'[Racial slur]s ruin every game.'	Streamer Reported to Blizzard Support (2023)
Call of Duty Voice Chat	FPS	Racism	'Typical [slur], always ruining the game.'	Twitch Streamer Incident Archive (2022)
Any online match	All Genres	Defeatism / Tilting	Player quits the game mid-match out of frustration.	Red Bull – 50 parole da gamer

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Contextual Setting	Game Genres	Toxic behaviour	Quotes	Source
Pre-game or in-game role assignment	MOBA (League of Legends)	Defeatism / Tilting	“I don’t care if I’m supposed to support; I’m going mid.”	Exploring Cyberbullying and Other Toxic Behavior in Team Competition Online Games
LoL Draft Pick	MOBA	Discrimination / Elitism	‘Only noobs play support.’	Reddit – r/leagueoflegends (2022)
Voice or text chat during matches	Multiple games	Sexism	“Women can't play at this level.”	https://ucsdguardian.org/2022/03/06/toxic-gaming-culture-breeds-sexism-homophobia/
Overwatch Competitive Ranked Match	FPS (First-Person Shooter): Competitive Team Play	Sexism	‘Go back to the kitchen, this is not a game for girls.’	Reddit - r/Overwatch, 2023
Streaming / competitive play	Esports (all)	Sexual Harassment	“Send pics” / invio di immagini esplicite non richieste	UniSA – Sexual Harassment in Esports
In-game chat	MOBA (Dota 2)	Spamming Chat / Mocking	“gg gg gg gg gg gg gg”	CONDA: a CONtextual Dual-Annotated dataset for in-game toxicity understanding and detection
CS:GO Matchmaking Chat	Competitive FPS	Harassment	‘Go kill yourself.’	IGN Esports Community Report (2022)
Al di fuori del gioco, tramite informazioni raccolte online	Multiple games	Swatting / Doxxing	“La polizia sta arrivando a casa tua adesso!”	https://www.valigiablu.it/dark-participation-videogiochi/

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Contextual Setting	Game Genres	Toxic behaviour	Quotes	Source
In-game chat	MOBA (League of Legends)	Threatening /Harassment	“I’ll find you and make you pay.”	Exploring Cyberbullying and Other Toxic Behaviour in Team Competition Online Games
CS:GO Competitive Match	FPS	Threatening /Harassment	‘I’ll find you IRL, you piece of trash.’	Steam User Report Log (2021)
Dopo una serie di sconfitte o errori personali.	eSports, giochi competitivi	Tilting	“Non ce la faccio più, questo gioco è una schifezza!”	Psicologi dello Sport
In-game reaction to mechanics	MOBA	Griefing	Keep kill-stealing and I’ll ruin the match for you.	arXiv: Como o Game Design Pode Incentivar o Comportamento Tóxico em Jogos Online (2021)
Chat vocale o testuale durante le partite.	Multiple (es. FPS, MOBA)	Trash-Talking	“Sei una schiappa, disinstalla il gioco!”	Panda Security
LoL Solo Queue	MOBA	Trolling	‘LOL I’m just feeding now, screw this match.’	League of Legends Player Behaviour Report (2022)
In-game chat	MOBA (Dota 2)	Verbal Abuse	“You’re all [expletive], learn to play!”	Toxic Behaviour in Dota 2 - a Survey Study
Voice or text chat during matches	FPS, MOBA	Verbal Abuse	“You're useless, just uninstall the game!”	State of Mind - Cyberbullying in Online Gaming (2022)
Voice chat / public lobbies	Competitive gaming	Verbal Abuse	“Ti vengo a cercare, vedrai.”	UniSA – Study 2024

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Contextual Setting	Game Genres	Toxic behaviour	Quotes	Source
After witnessing others cheat	FPS, Battle Royale	Cheating	If others cheat, I'll do it too.	arXiv: Uncovering the Viral Nature of Toxicity in Competitive Online Video Games (2024)
Valorant Public Match with Open Mic	FPS	Harassment / Insulting	'What are you, 12? Shut up and uninstall.'	Twitch Clip – Streamer Reports Harassment (2023)

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According to the data illustrated in Table 1, a variety of toxic behaviours have been identified within gaming environments, with verbal abuse, flaming and harassment, harassment, cheating, gatekeeping, griefing, and other miscellaneous actions being the most prominent.

The "***Verbal Abuse***" and "***Flaming***" stands out as the most frequent issue, recorded 21 times throughout the data. This encompasses a range of harmful verbal interactions, such as name-calling, insults, threats, and all forms of verbal aggression. The prevalence of "verbal abuse" is starkly evident in online gaming forums where players often resort to derogatory language aimed at undermining others. For instance, one might encounter comments such as "*You're useless, uninstall the game"* or hear insults during gameplay, such as "*You're a retard*", flung in the heat of competition in popular titles such as League of Legends and Dota 2. These examples illustrate how flaming operates both as an aggressive tactic, seeking to provoke mistakes and as a performative spectacle, amplifying viewer engagement at the expense of player well-being.

The "***Gender-based harassment and Sexism***" was recorded 12 times and refers to unjust treatment of players based on inherent characteristics such as race, gender, age, or sexual orientation. Instances of discrimination can be starkly observed in in-game chats, where sexist comments such as "*Go back to the kitchen, this is not a game for girls*" and blatantly racist remarks during competitive play, such as "*We don't want players from your country here*" showing the hostile environment for marginalised groups (e.g., women, LGBT, others).

The "***Cheating***", identified 6 times, relates to the use of dishonest strategies to gain an unfair advantage over opponents. Common examples include players being accused of hacking or utilizing aimbots to enhance their performance in Valorant competitive matches, while others may find themselves removed from games such as Call of Duty Warzone due to suspicions of cheating.

The "***Gatekeeping***" is presented six times in Table 1, reflecting how community members police who "belongs" in various esports spaces. This behaviour often takes the form of skill-based exclusion, as in the remark "*Only noobs play support, play a real role*" which stigmatizes certain in-game roles and deters newcomers from experimenting with different strategies. It also manifests as linguistic policing, for instance, "*Speak English or get out*", erecting language barriers that shut out non-native speakers and reinforce cultural hierarchies. In private servers and forums, gatekeepers bluntly assert authority with comments like "*You're not allowed here*" using exclusionary rhetoric to maintain perceived community purity . By dictating who may participate based on arbitrary criteria—be it role choice, language fluency, or past reputation—gatekeeping not only alienates players but also undermines the collaborative spirit that underpins healthy esports ecosystems.

The "***Griefing***" behaviour is documented 5 times and involves actions aimed at purposefully ruining the gaming experience for others. Examples include players intentionally going AFK (Away From Keyboard) or feeding the enemy team in games like League of Legends, deliberately sabotaging their own team's chance of success. In creative games such as Minecraft, players might engage in destructive behaviours, recklessly dismantling other players' hard-earned creations.

The "***Defeatism and Tilting***" appear four times in Table 1, reflecting moments when players' frustration or hopelessness spills over into toxic behaviour and derails team dynamics. First, the collapse-style remark "*This game is over, we can't win*" was logged during a high-pressure League of Legends match, encapsulating how a single utterance of hopelessness can sap team morale mid-game. Second, role abandonment driven by frustration, "*I don't care if I'm supposed to support; I'm going mid*", illustrates how players may reject strategic roles in protest, prioritizing personal venting over collective success. These dataset notes

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instances where players simply quit matches outright, exiting mid-game in a silent, demonstrating the most extreme behavioural consequence of tilt, as teams are left undermanned and demoralized.

The "***Doxxing & Threatening***" appear five times in Table 1, representing one of the most dangerous forms of toxicity where online harassment crosses into real-world peril. In several instances, personal information was maliciously shared. For instance, a Discord user was told "*So dove abiti, ecco il tuo indirizzo!*" revealing their home address to intimidate them. Elsewhere, players received explicit threats, such as "*I'll find you IRL, you piece of trash*" signalling intent to locate and potentially harm the target beyond the virtual arena . There are also documented cases of implied violence through swatting warnings ("*La polizia sta arrivando a casa tua adesso!*"), which can provoke real emergency responses and significant trauma. Together, these examples show how doxxing and threat-making not only violate privacy and safety norms but also escalate online conflict into tangible, offline risks.

The "***Racism***" appears three times in Table 1, highlighting how deeply prejudiced language permeates esports interactions. In lobby and chat contexts, players are bluntly excluded based on nationality, "*We don't want players from your country here*" was posted in a Steam discussion thread, demonstrating overt xenophobia. In voice comms during competitive Overwatch matches, commentators captured slurs such as "*[Racial slur]s ruin every game*" underscoring how racial animus can become normalized even on official broadcasts. Similarly, during a Call of Duty voice chat, a participant was derided with "*Typical [slur], always ruining the game*" equating entire communities with gameplay failures . These instances, spanning both text and voice channels, reveal that racist remarks not only attack individual players but also reinforce broader societal prejudices, creating hostile environments that alienate marginalized groups.

Several toxic behaviours, categorized separately, appear 7 times and encompass a diverse range of actions. These include "***cyberbullying***", "***mocking***", "***trash-talking***", "***throwing***", "***trolling***", "***elitism***" and "***hate speech***". For instance, sharing someone's personal information without their consent may arise, illustrated by threatening messages such as "*So dove abiti, ecco il tuo indirizzo!*" which translates to revealing their address. Some might even resort to alarming threats like promising to send police to someone's home. Table 2 highlights the widespread occurrence of multiple toxic behaviours within gaming and esports environments. Verbal abuse and flaming emerge as the most common issues, followed closely by (cyber)bullying and harassment, discrimination, and cheating (see Table 2 summarise the findings obtained).

Table 2. Summary of toxic behaviour categories, frequency, and representative sources in esports communities

Toxic Behaviour Category	Frequency	Typical Contexts	Representative Sources
Verbal Abuse & Flaming	21	Aggressive insults and hostile outbursts during play.	Blizzard stream; Futsal Haxball Discord; LoL voice chat
Gender-based Harassment & Sexism	12	Sexist comments or behaviours targeting players based on gender.	Teen Vogue Valorant interviews; Overwatch 2; Abertay University

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Toxic Behaviour Category	Frequency	Typical Contexts	Representative Sources
Gatekeeping	6	Excluding others based on language, rank, or playstyle.	ResetEra forum; Facebook groups; GameFAQs
Cheating	5	Use or suspicion of hacks or exploits to win unfairly.	TikTok Valorant; YouTube; Riot Games
Griefing	5	Intentionally ruining matches or sabotaging teammates.	Reddit VALORANT; Dota 2 feeding study; LoL
Doxxing & Threatening	3/2	Posting private info or making real-world threats.	Discord; Steam User Report Log
Defeatism & Tilting	3	Giving up mid-game or showing hopelessness under pressure.	LoL VOIP clip; sports-psychology tilt research
Racism	3	Discrimination or slurs based on race or nationality.	Steam thread; Overwatch; CoD voice-chat slurs
Cyberbullying	3	Targeted, repeated harassment toward specific individuals.	UniSA cyberbullying study; Guardian magazine
Mocking	3	Ridiculing others through sarcasm, mimicry, or exaggerated criticism.	Twitch clips; MOBA forum taunts
Trash-talking	2	Over-the-top competitive taunts that become personal.	YouTube; Reddit bragging; Twitch chat
Throwing	2	Provoking or disrupting others for amusement.	Reddit VALORANT; DOTA feeding dataset
Trolling	1	Belittling others based on perceived skill or game knowledge.	League of Legends Player Behaviour Report
Elitism	2	Hostile language aimed at marginalized identities.	GameFAQs; LoL
Hate Speech	1	Aggressive insults and hostile outbursts during play.	Panda Security

Note. Total Toxicity-Related Segments Coded: 82

Table 3 presents the wide spectrum of toxic behaviours documented in our non-traditional analysis into clear, actionable categories paired with concise definitions. By grouping related forms of abuse, such as combining rapid-fire insults under "***Verbal Abuse & Flaming***" or collapsing exclusionary actions into "***Gatekeeping***", the Table 3 provides a structured overview that highlights both the variety and the underlying mechanics of toxicity in esports environments. Each definition draws on real-world examples and

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thematic insights from our digital source analysis, offering a common vocabulary for researchers, community managers, and developers aiming to identify, monitor, and ultimately mitigate these harmful interactions. Figure 1 also provides a visual overview of the relative prominence of toxic behaviours in esports, serving as both a diagnostic tool and an awareness-raising mechanism.

Table 3. Summary of toxic behaviour categories and definitions

Toxic Behaviour	Definition
Verbal Abuse (Flaming, Mocking, Trash-talking)	Aggressive insults, name-calling, threats, jeers or sarcastic remarks often delivered in quick bursts (e.g., "gg gg gg…"), intended to humiliate, provoke, or emotionally destabilize both teammates and opponents.
Gender-based Harassment & Sexism	Discriminatory remarks or exclusion directed at individuals because of their gender (e.g., "go to the kitchen…"), reinforcing stereotypes, discrimination, biases and barriers to participation.
Cheating	Deployment or accusation of unauthorized tools or tactics (e.g., aimbots, hacks, stream sniping) to gain an unfair competitive advantage, simultaneously breaching the gaming established rules.
Gatekeeping	The enforcement of arbitrary barriers to participation, through skill-based exclusion ("only noobs play support"), language mandates ("speak English or get out"), or other criteria, to control who is deemed worthy of belonging within a community or role.
Griefing & Throwing	Deliberate in-game behaviours intended to disrupt, sabotage, or ruin the experience for others (going AFK, intentional feeding, destroying builds, exploiting mechanics) or engaging in other actions that undermine team objectives or provoke frustration among players.
Defeatism & Tilting	Expressions of hopelessness or frustration ("this game is over"), role abandonment or match-quitting that undermine team morale and performance.
Doxxing & Threatening	Sharing personal, identifiable information without consent and/or issuing real-world threats ("I'll find you IRL"), escalating online abuse into tangible danger.
Racism & Elitism	Discriminatory behaviours based on perceived superiority, whether by skill, status, race, nationality or identity, using exclusionary language or attitudes to stigmatize others and reinforce sociocultural barriers in gaming communities.
Cyberbullying	Repeated, hostile behaviours (harassment, exclusion, shaming) conducted online to intimidate or distress a specific individual over time.
Trolling	Deliberate exploitation of a game, interaction, website, or any visual representation to harm another person (targets or bystanders).

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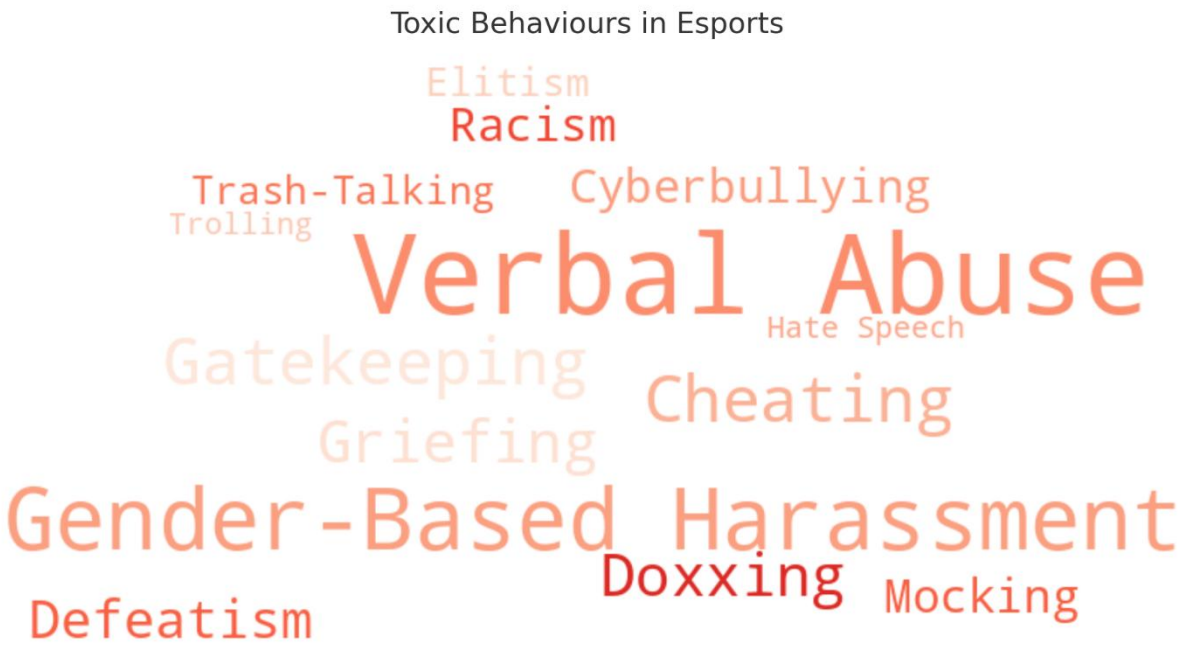
Figure 1. Prevalence of toxic behaviours in esports communities



This word cloud visually represents the most commonly identified toxic behaviours in esports, based on qualitative content analysis of user-generated content across digital platforms such as Reddit, Twitch, Discord, and gaming forums. Each term's size reflects its relative frequency and prominence in the dataset, offering a quick yet impactful snapshot of the most pervasive issues in online gaming communities. Specially, Verbal Abuse, Gender-Based Harassment, and Gatekeeping stand out as the most frequently occurring behaviours, suggesting a recurring pattern of hostility, exclusion, and discriminatory attitudes across competitive gaming spaces. These dominant themes often intersect with broader social issues, such as racism and elitism, indicating that toxicity in esports is not an isolated phenomenon but one that mirrors societal power dynamics and cultural tensions.

Theme 2 – Social benefits/behaviours

While toxicity in esports has drawn significant attention, gaming and esports communities also foster numerous positive social behaviours that contribute to individual well-being and collective growth. This theme focuses on identifying and analysing the social benefits that emerge in esports-related spaces, particularly within social media platforms, community forums, livestreams, and gaming groups.

The analysis seeks to uncover real-world examples of supportive, inclusive, and collaborative interactions, such as acts of mentorship, teamwork, peer encouragement, and mental health advocacy. By examining these behaviours across Multiple games game genres, the study aims to understand how gameplay styles and community dynamics influence the expression and frequency of positive social outcomes.

Moreover, the theme explores the contexts in which these benefits arise—from casual team play to structured tournaments and streaming communities—and identifies the platforms and digital spaces that help amplify these behaviours, including Discord, Twitch, Reddit, and official esports channels.

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Through this exploration, the ENHANCE project highlights the potential of esports communities not only as competitive spaces but also as environments that nurture connection, resilience, and mutual support.

Table 4 presents a summary of the key social benefits identified within esports-related social media and online communities, including illustrative quotes, relevant game genres, contextual settings, and the digital platforms that foster and promote these positive behaviours.

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Table 4. Social benefits/behaviours identified from the non-traditional methods

Source	Contextual Setting	Game Genres	Social benefits/ behaviours	Quotes
Discord	World of Warcraft chat among US players	FPS	Skills or personal growth	"I developed leadership skills by organizing raids in Destiny 2. Communicating with a diverse group and planning strategies taught me patience and decision-making."
North American Scholastic Esports Federation	Schools	Multiple games	Inclusion and Community Engagement	"(…) students forged strong connections with peers and their school as a whole under the guidance of coaches and mentors"
Journal of Electronic Gaming and Esports	Esport program	Sport simulation, MOBA, First Person Shooter, etc.	Social Support Networks	"We suggest that esports can act as a new mechanism to broaden the reach and impact of sport in its contemporary forms within the context of development."
Easterseals	ES Gaming's Discord	Multiple games	Empowering Disabled Gamers	"Online communities, like ES Gaming's Discord, empower disabled gamers."
Family Online Safety Institute Article	High School Esports League	Multiple games	Sense of Belonging	"Through esports, students find a sense of belonging and purpose, which translates into improved grades and social skills."
Twitch Communities; article	Twitch's platform	Multiple games	Building Relationships	"The platform's affordances encourage discussion between total strangers, and in turn, build relationships between people who would never have met otherwise."
Article	Twitch streams' chat	Multiple games	Enhancing Social Connections	"As individuals actively participate in a streamer's chat, they are likely to develop more social connections."

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Source	Contextual Setting	Game Genres	Social benefits/ behaviours	Quotes
Express news	Gaming	Multiple games	Fostering Real-Life Friendships	"Their reunion highlighted the significance of virtual friendships formed through gaming, which provided essential mental health support during isolation periods."
Iberdrola	website	Many	Improving responsiveness	"According to the University of Rochester, video games improve the ability to deal with unexpected events by posing problems and setting a timeframe for their resolution."
Iberdrola	website	Online Multiplayer	Teamwork	“According to the California-based Institute for the Future (IFTF), multiplayer games with a common goal strengthen the ability to solve problems collaboratively.”
Iberdrola	website	Many	Stimulation of creativity, attention and visual memory	"The University of California claims to stimulate these aspects by posing challenges that force you to concentrate, use your imagination, and remember details to solve them."
Iberdrola	website	Estrategy Games	Development of strategic and leadership skills	"Video games put their protagonists in leadership roles, improving their ability to resolve conflicts, direct other characters, and make decisions, according to the University of Pittsburgh."
Apdev	website	Multiple games	Promotion of cognitive and social skills	"From fostering cognitive and social skills to driving social and economic change, gaming has established itself as a positive force in modern society."
Wellpower	website	Multiple games	Creating opportunities for social interaction	"Opportunities to build community and connect with others."
Elcierredigital	website	Multiple games	Supporting social causes through video games	"Online gaming can foster genuine psychological benefits and feelings of community."

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Source	Contextual Setting	Game Genres	Social benefits/ behaviours	Quotes
Careforth	website	Multiple games	Skill development in older adults	“Most older adults say they play video games to stay mentally alert, reduce boredom, be challenged, and have fun.”
Soziable	website	Multiple games	Social inclusion of people with disabilities	"People with disabilities play video games and use social media, but they have great difficulty accessing digital communities because of resistance from their peers."
Gaming4skills	website	Multiple games	Learning and social interaction	"The gamification process can create democratic spaces for social interaction, engaging diverse actors in joyful encounters to contribute to democratic dialogue, integration, and inclusion.
Cadenaser	website	Multiple games	Reducing social isolation and promoting inclusion	"The use of video games is also promoted among older adults to reduce loneliness and encourage socialization."
Elpais	news	Multiple games	Cognitive and physical rehabilitation	"Topics such as cognitive rehabilitation and the support for inclusivity that video games can offer were addressed."
Nuestropsicologoenmadrid	website	Multiple games	Leadership and management skills	"In MMORPGs like World of Warcraft, decision-making and teamwork are very important."
Elpais	news	Multiple games	Promoting empathy and understanding of complex social realities	"The game places the player in a situation where they must guide a group of migrants through critical decisions."
Huffingtonpost	website	Multiple games	Improved mental health and psychological well-being	"Investigadores de las universidades de Osaka y Nihon identificaron un vínculo causal entre el uso de videojuegos y el bienestar mental."

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Source	Contextual Setting	Game Genres	Social benefits/ behaviours	Quotes
The Atlantic (interview) -	Clan group	Online shooter (Destiny)	Friendship and belonging (social)	"He hung out with us for three days and it was never awkward or weird. It felt like the lines didn't even exist." – Online gaming buddies became real-life friends with seamless bonds.
California Educator -	High school esports team	Competitive team games	Teamwork & communication	"Gaming teaches really important skills, such as being part of a team, being able to communicate effectively and decisively, knowing your role in a group, and being able to perform your role well."
TAMUSA News	University esports program	Valorant & Chess	Confidence & leadership	"In high school, I didn't talk to anyone, but now I'm confident when I talk to people… Being part of the [esports] program allows me to meet new people and has really deepened my coaching and leadership skills."
TAMUSA News	University esports program	Valorant	Sense of community	"Being part of esports gives me a sense of community on campus that I wouldn't have otherwise… That's really what has made this experience better for me."
Columbus State Univ.	College varsity esports team	Collegiate esports	Overcoming shyness	"College can be tough to make new friends. Esports has provided a community within a community… I've seen many of our quietest students come out of their shells and break away from the shy, loner stereotype."
Columbus State Univ.	College esports team (mixed gender)	Collegiate esports	Family-like support	"I often feel like I have a gang of big brothers looking out for me… Without esports, I would not love college as much as I do now. It has really changed my life in so many positive ways."
Columbus State Univ.	College esports alumni	Collegiate esports	Friendship	"I know many [students]…had no friends before joining the team. Esports allowed them to develop relationships outside of video games and establish a long-lasting community… I continue to call my former teammates my best friends."

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Source	Contextual Setting	Game Genres	Social benefits/ behaviours	Quotes
Frontiers Psychology	Solo play (pandemic lockdown)	Social simulation	Happiness & belonging	"They [NPC villagers] will say very nice things and bring you gifts…which is so sweet… it makes me feel really happy and… part of something." – Even friendly virtual characters can boost mood and belonging.
Frontiers Psychology	Personal goal-setting in game	Life simulation	Sense of achievement	"I feel like I get a lot of my sense of self-worth from [in-game] achievements… in the real world that is hard to control, but in the game… I know I'll be able to check that off the list… I really like that feeling."
ESA – Power of Play	Global player survey (2023)	Multiple games	Stress relief	Survey: 71% of players worldwide say gaming helps them feel less stressed, and 68% (U.S.) feel less anxious when they play. Over half play games specifically to unwind or improve their mental health .
ESA – Power of Play	Global player survey (2023)	Multiple games	Resilience in hard times	Survey: 52% of global players agreed that video games helped them get through difficult times in their lives . In the U.S., this was even higher (59%).
The Games Machine (editorial)	Online role-playing guild	MMORPG	Friendship	"Grazie a… uno shard GDR di Ultima Online, ho stretto forti amicizie che perdurano ancora oggi… faceva di tutto fuorché farmi rintanare in un mondo virtuale lontano dai miei problemi." (Italian) – An Italian gamer credits an MMO community with real, lasting friendships that kept him engaged with life.
The Games Machine	Personal life crisis (academic stress)	Multiple games	Catharsis & self-confidence	"Mi ero pericolosamente avvicinato alla depressione… ho trovato una valvola di sfogo proprio nei videogiochi… incredibile come… per ritrovare quel poco di fiducia in me stesso che avevo completamente perso." – Video games provided a much-needed outlet during a personal crisis and helped regain lost self-esteem.

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Source	Contextual Setting	Game Genres	Social benefits/ behaviours	Quotes
Edge Hill Univ. via BuiltIn	Online guild play (research study)	MMO	Social identity & self-esteem	A study of 700+ MMO players found that engagement correlated with a stronger sense of social identity, which in turn was linked to higher self-esteem and lower loneliness.
Built In (expert interview)	Player community experience	Multiplayer (general)	Bonding over shared interests	"Gamers often report that that common interest in itself can actually build friendships and relationships — so that common focus can be really important socially."
JCFS Chicago	In-game chat behaviour study	Online multiplayer	Positive social interaction	In one study, players sent 3.2× more socio-emotional messages (e.g. "Thanks for the help!") than game-related messages, and these positive messages far outnumbered negative ones. This shows that most in-game chat was used to connect and encourage others.
JCFS Chicago	Home/online (therapeutic context)	Online gaming	Safe social outlet	Online games can be a "safe place" to socialize for vulnerable people – e.g. those with autism, social anxiety or depression – letting them talk and make friends at their own pace without pressure. This helps build the skills and confidence to interact offline.
Wired (survey data)	Marriage recreation	Co-op games with partner	Relationship satisfaction	A survey of couples found 76% felt gaming was good for their marriage. Playing video games together made them more satisfied in their relationship when they were on the same team.
Time to Change (UK)	COVID-19 pandemic lockdown	Online multiplayer	Staying connected	"Whether I'm playing Fortnite or tuning into a Twitch stream, gaming has been a tremendous way for me to stay connected to the outside world." During lockdown, online games kept isolation at bay.
Time to Change (UK)	Pandemic gaming session with friends	Online co-op	Peer support & openness	"We'd been playing together for about two months, but he'd never talked before… By showing our vulnerability, I think he realized it was OK to show us his. Together, we created a safe environment to talk through our problems and support each other."

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Source	Contextual Setting	Game Genres	Social benefits/ behaviours	Quotes
Vice (interview)	Long-distance relationship, pandemic	MMORPG	Long-distance intimacy	"I feel like Final Fantasy helped our relationship a whole lot, because we were able to just be in a virtual world and feel connected… Being a long-distance couple, it's what we used to spend time together… to bond and hang out."
Global News	Online memorial service (2020)	MMORPG (FFXIV)	Collective mourning	Hundreds of Final Fantasy XIV players held an in-game funeral for a friend who died of COVID-19. "That world may be virtual but the sentiment isn't," one player wrote, moved by the community's touching tribute.
Stages Learning (blog)	Autism social-skill development	Online games	Practicing social skills	Research: Online gaming offers a fun, low-stress way for autistic teens to practice communication, build meaningful relationships, and even improve "theory of mind" (understanding others' thoughts).
Gamindo Blog	Casual play for relaxation	Artful adventure	Anxiety reduction	The meditative indie game Journey is known for its relaxing atmosphere and emotional narrative, and has been associated with reduced anxiety and depressive symptoms.
Gamindo Blog	Therapeutic gaming post-trauma	Puzzle	Trauma therapy	Puzzle games like Tetris can distract the mind and reduce intrusive thoughts. Notably, playing Tetris has been shown to reduce PTSD symptoms in soldiers by mitigating flashbacks
Gamindo Blog	COVID-19 lockdown leisure	Social sim	Reducing loneliness	Animal Crossing: New Horizons provided a relaxing and social virtual environment during the pandemic, which "helped many people overcome loneliness and stress."
Reddit	Personal mental health coping	Casual farming sim	Comfort and relaxation	"I struggle with anxiety and insecurities, and this game is so comforting to me." – A player finds solace and reduced anxiety by tending a peaceful farm in Stardew Valley.

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Source	Contextual Setting	Game Genres	Social benefits/ behaviours	Quotes
Psychology Today	Kids' multiplayer collaboration	Sandbox creative game	Social problem-solving	A group of sixth-graders in Minecraft even organized an online trial to find a mischievous "griefer." The episode impressed adults: such emergent play scenarios "have the capacity to help build social skills."
UC Santa Cruz News	Childhood learning & play	Role-playing (Pokémon)	Language and confidence	A migrant student learned English by playing Pokémon. "He had to learn to read English to progress… It wasn't long before he was not only reading and speaking English but also learning strategic decision-making" – skills that got him through school and into college.
Australas Psychiatry	Cross-sectional survey of adults (2022)	All genres (survey)	General well-being	Study: 88.4% of adult gamers reported experiencing emotional benefits from gaming. Many players perceive games to positively impact their mood and mental health.
Australas Psychiatry	Review of studies (meta-analysis)	Multiple games	Improved mood & self-esteem	Review: "Gaming can be a healthy coping mechanism." Moderate play is linked to positive mood, relaxation, reduced stress and anxiety, improved emotional regulation, reduced depression, and increased self-confidence and self-esteem
Australas Psychiatry	Literature review conclusion	Multiple games	Social connection & integration	Video games also promote healthy socializing and can assist with social integration, helping players feel less isolated. This counters the notion that gaming is antisocial.
AbleGamers (charity site)	Disability community inclusion	Multiple games	Reducing isolation	"The world of games…provides people with disabilities an opportunity to build rich social engagements, lifelong friendships, and connect with players." Video games notably reduce social isolation for disabled gamers.
Forbes	Disability community (self-care)	Multiple games	Mental wellness for disabled	People with disabilities have long used video games to enhance their mental, social, and physical wellness. Gaming can be a form of self-care that improves mood and social engagement in this community.

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Source	Contextual Setting	Game Genres	Social benefits/ behaviours	Quotes
Easterseals (press/news)	Disability advocacy context	Multiple games	Connection for vulnerable groups	"For people with disabilities — a community vulnerable to social isolation — gaming is a powerful source of connection and friendship." It creates friendships where traditional avenues might be limited.
WildBrain Research	Parents playing with kids (2022 study)	Multiple games	Family bonding	Survey: 74% of gaming parents now play video games with their children, and 69% feel games help them spend more meaningful time together. Co-gaming has become a common and valued family activity.
Deseret News	Home/family recreation	Multiple games	Family bonding	Studies show that co-gaming between parents and children fosters a stronger bond, leading to positive outcomes in the relationship. Playing together bridges generational gaps through shared fun.
Washington Post	Social play (research insight)	Multiplayer	Empathy and perspective	Playing games with others helps develop stronger "cognitive empathy," i.e. the ability to see the world from someone else's perspective. Multiplayer gaming can teach players to understand others' viewpoints.
Agenda Digitale (IT article)	General (psychology of gaming)	Multiple games	Emotional growth & identity	"I videogiochi… rappresentano… una forma di gioco… estremamente utile e valida per sperimentare le proprie emozioni, costruire la propria identità e coltivare nuove relazioni." (Italian) – Video games are seen as a training ground for the mind and soul, allowing emotional exploration, identity formation, and relationship-building.
Agenda Digitale	General (research finding)	Multiple games	Empathy & social skills	"La ricerca neuroscientifica dimostra il potenziale del gaming nel migliorare… l'empatia e le competenze relazionali." – Research shows gaming can boost human empathy and social skills.
Agenda Digitale	Research on voice-chat play	Online multiplayer	Virtual presence & connection	Even without physical presence, gamers feel deeply connected via voice chat. One study found players interacting through avatars and

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Source	Contextual Setting	Game Genres	Social benefits/ behaviours	Quotes
				voice achieved an emotional and social connection that improved their performance (measured via EEG).
Agenda Digitale	General (theoretical benefit)	Narrative-driven games	Narrative empathy & emotional IQ	Story-rich games that involve emotional choices can stimulate empathy, relational skills, and emotional intelligence in players. Immersive narratives engage players' feelings and moral decisions.
Agenda Digitale	Clinical therapy & education (implementation)	Various (commercial games)	Therapeutic use	In Italy, clinicians are embracing Video Game Therapy (VGT): commercial video games as tools for psychological and relational well-being. Gaming is finding space in mental health services and educational settings as a way to improve mood and social functioning.
Reddit (AskReddit)	Personal testimonial (Reddit)	Unspecified	Coping with change	"I used gaming as a crutch to get through most of my life… Video games helped me cope with a life of constant change." Moving frequently or facing instability was eased by the consistency of gaming.
Reddit (r/pcgaming)	Personal testimonial (Reddit)	Multiple games	Managing anxiety	"Games have definitely helped me cope with my anxiety at times." – Many players find that immersing in a game can calm their nerves and distract from anxious thoughts when needed.
JCFS Chicago	Community survey/observations	Online gaming	Online to offline friendship	"Many people who first meet while playing games online do end up spending time together in person. Gaming friendships often translate to real-life meetups and relationships"

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The non-traditional analysis of social media, online platforms, and community sources reveals a rich and diverse array of social benefits associated with esports and gaming, highlighting the positive impact these environments can have on individuals and communities. According to the Table 4, the social benefits and behaviours identified offer compelling insights into the myriads of positive impacts that gaming can have on individuals and communities. The theme of "***skills development"*** was classified eight times throughout the data. This highlights the significant role that gaming plays in the development of essential skills such as ***leadership***, ***strategic thinking***, and ***cognitive skills***. The findings have suggested that engaging in video games can serve as an effective platform for personal development and lifelong learning, allowing individuals to cultivate competencies that are invaluable both in personal and professional spheres.

The impact of gaming on "***mental health and well-being***" stand out as the most frequently mentioned aspects, appearing twenty times in total. This underscores the therapeutic potential of video games, suggesting they can offer ***stress relief***, foster ***resilience***, and provide ***emotional support***. As such, gaming emerges as a valuable tool for enhancing mental health and ***psychological well-being***, encouraging users to find solace and positivity through their virtual experiences. ***Therapeutic*** applications were also highlighted, with games such as, Tetris and Stardew Valley, used to support trauma recovery and relaxation. For some, the sense of control, achievement, and identity formation in games offered a vital counterbalance to real-world challenges.

The "***inclusion and community engagement***" is also significant, with this theme noted thirteen times within the data. This frequency underscores the vital role that gaming can play in fostering a ***sense of belonging*** and providing ***social support networks***. The data implies that gaming communities often create inclusive environments where individuals, including those with disabilities, can connect, interact, and engage in meaningful ways, promoting a culture of acceptance and camaraderie. For example, ES Gaming's Discord was praised for creating a supportive space for people with disabilities, while high school and collegiate esports teams were repeatedly cited as critical for building self-esteem, reducing social isolation, and providing family-like support structures.

The "***teamwork***" dimension, is highlighted in multiple sources, appearing at least three times in the data, and are increasingly recognized in collaborative gaming experiences. These games often require players to develop essential teamwork and communication skills, attributes that are equally vital in both virtual environments and real-world situations.

The "***cognitive benefits***" of videogames, although mentioned just twice, still emphasizes its critical importance as a valuable outcome of gameplay. These benefits encompass a range of mental functions, including enhanced ***responsiveness***, improved ***creativity***, and strengthened ***memory*** and ***attention skills***. For example, studies referenced on platforms like Iberdrola report that games improve the ability to deal with unexpected events by requiring players to make quick decisions under pressure, thus sharpening reflexes and cognitive flexibility. Other games, especially puzzle or strategy-based titles, stimulate players' creative thinking and problem-solving abilities, forcing them to analyse patterns, experiment with different solutions, and adapt dynamically to new challenges. These processes help maintain mental sharpness and can be particularly beneficial for rehabilitation, especially in older adults or individuals recovering from cognitive impairments.

Socially, the themes of "***empathy and understanding***" are emphasized seven times, illustrating that gaming can function as a powerful medium for social education. Through immersive storytelling and complex narratives, video games can promote empathy and an understanding of nuanced social realities, fostering emotional growth among players.

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"***Educational benefits***" were also noted, such as language learning, cognitive stimulation, and creative problem-solving, with examples ranging from children learning English through Pokémon to collaborative Minecraft projects promoting democratic dialogue.

The positive ***social interactions*** such as "***friendships***" arising from gaming are noted eleven times, highlighting its capacity to facilitate and strengthen new relationships with others. This reinforces the idea that gaming can be a safe space for individuals to connect and develop meaningful relationships in an increasingly digital world. Based on the non-traditional analysis, the following Table 5 summarizes the social benefits and behaviours identified across multiple digital platforms/contexts and Figure 2 provide a brief overview of the key benefits identified. The categories are grouped thematically, with the number of occurrences and representative sources/examples included for each.

Table 5. Summary of social benefits and behaviours in esports and gaming communities

Category	Frequency	Description	Representative Sources
Mental Health & Well-being ***(stress relief, resilience, emotional support, therapeutic use, self-confidence; anxiety reduction, anxiety; loneliness)***	20	Stress relief, resilience, therapeutic use, emotional support	ESA Power of Play; Reddit testimonials; Gamindo (Tetris, Stardew Valley); HuffPost; Wired; Australas Psychiatry; VGT Therapy
Inclusion & Community Engagement ***(sense of belonging, community, social support networks; isolation; connection for vulnerable groups; social identity & self-esteem)***	13	Supportive environments, marginalized group empowerment, disability inclusion	North American Scholastic Esports Federation; Easterseals; TAMUSA News; Soziable; Elcierredigital; AbleGamers; JCFS Chicago
Friendships ***(Building Relationships; Overcoming shyness; Relationship satisfaction; Long-distance intimacy; Family bonding)***	11	Building and maintaining relationships online and offline	The Atlantic (Destiny); Twitch & Reddit testimonials; Columbus State; The Games Machine; JCFS Chicago; MMORPG event
Skills Development ***(leadership, strategic thinking, cognitive skills)***	8	Leadership, strategic thinking, communication, personal growth	Destiny 2 raids (Discord); Iberdrola (strategic & leadership); UC California & Pittsburgh studies; Nuestro Psicólogo (MMORPGs)
Empathy & Understanding ***(social realities, emotional growth; identity; virtual***	7	Promoting emotional literacy, identity building, narrative immersion	Elpais (migration game); Agenda Digitale (empathy, narrative games);

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Category	Frequency	Description	Representative Sources
presence & connection; collective mourning)			Washington Post (cognitive empathy)
Educational effects ***(language learning, cognitive stimulation, problem-solving)***	4	Language learning, problem-solving, academic/social engagement	UC Santa Cruz (Minecraft); Pokémon; Gaming4Skills; Agenda Digitale (learning contexts)
Teamwork & Communication ***(shared goals or collaboration)***	3	Co-operative play, shared goals, in-game communication	California Educator; Iberdrola (collaborative play); Valorant and MMORPGs
Cognitive Benefits (responsiveness, creativity, memory, attention)	2	Memory, attention, creativity, quick decision-making	Iberdrola (visual memory, attention, responsiveness); Elpais (rehabilitation)

Note. Total Positive-Related Segments Coded: 68

Figure 2. Positive social outcomes in esports and gaming communities

This word cloud (Figure 2) highlights the most frequently identified social benefits and positive behaviours observed in esports and online gaming environments. Based on qualitative analysis of digital platforms and community interactions, the visualization reveals key themes such as *Mental Health & Well-being*, *Inclusion & Belonging*, and *Friendships* as dominant aspects of the gaming experience. These findings emphasize how esports can foster resilience, emotional support, and community engagement, particularly for marginalized or socially isolated individuals. Additionally, benefits such as Skills Development, Empathy, and *Educational Effects* show that gaming contributes to both personal growth and broader social learning. The word cloud visually reinforces the idea

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that, despite challenges, esports ecosystems can serve as powerful spaces for connection, empowerment, and positive transformation.

In sum, the non-traditional analysis has also revealed that esports and online gaming communities serve as vibrant incubators of social benefit, fostering leadership and strategic skills, promoting inclusion and a strong sense of belonging, and enabling effective teamwork across diverse contexts. These digital spaces also play a critical role in supporting mental health, offering stress relief, resilience under pressure, and therapeutic outlets, while simultaneously enhancing cognitive functions like responsiveness, creativity, and memory.

3.2.2 Traditional systematic literature review

Theme 1 – Theories, typology/dimensions, antecedents/outcomes

A. Theories

Table 6 provides a comprehensive overview of recent empirical studies (spanning from 2018 to 2024) that apply a variety of theoretical frameworks to understand the toxic behaviour in digital, gaming, and esports contexts. A close examination of the table reveals three interrelated layers of analysis: psychological theories, social and cultural influences, and structural contributors.

Table 6. Theoretical perspectives on toxicity in esports

Year	Reference	Journal/ Conference	Type	Theories	Methods
2020	Kordyaka, B. Jahn, K. & Niehaves, B.	Internet Research	Paper	Social cognitive theory, theory of planned behaviour, and online disinhibition effect	Quantitative
2021	Beres, Frommel, Reid, Mandryk., & Klarkowski	Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems	Conference paper	Theory of normalized behaviour; Moral disengagement theory	Mixed-methods analysis
2024	Sun, X., Yu, V., & Chen, V. H. H.	Chinese Journal of Communication	Paper	Social cognitive theory; Social identity model	Quantitative

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Year	Reference	Journal/ Conference	Type	Theories	Methods
2024	Kim, J., & Ortiz, N.	Simulation & Gaming	Paper	Gaming citizenship	Qualitative (in-depth interviews)
2023	Frommel, J., Johnson, D., & Mandryk, R. L.	Computers in Human Behaviour Reports	Paper	Self-determination theory	Quantitative (online surveys)
2023	Gandolfi, E., Ferdig, R. E., Krause, K., Copus, A., Ostrowski-Delahanty, S., & Alemagno, S.	Games and Culture	Paper	Social learning theory	Quantitative (online surveys)
2024	Chang, K., Lee, H.-W. and Bennett, G.	Young Consumers	Paper	Self-efficacy theory Theory of stress and coping	Quantitative (online surveys)
2023	Aeschbach, L. F., Kayser, D., De Castro Hüsler, A. B., Opwis, K., & Brühlmann, F.	Computers in Human Behaviour	Paper	Self-determination theory Folk theory; Basic psychological needs theory; Organismic integration theory	Quantitative (online surveys)
2024	Nexø, L. A.	International Journal of Esports	Paper	N/A	Systematic review
2023	Liu, Y., & Agur, C.	Games and Culture	Paper	Online disinhibition effect theory	Qualitative
2022	Kim., Huang-Isherwood, Zheng, & Williams,	Computers in Human Behaviour	Paper	Play theories; Affordance theory; Bounded generalized reciprocity theory	Quantitative (surveys)
2023	Gonçalves, D., Pais, P., Gerling, K., Guerreiro, T., & Rodrigues	Computers in Human Behaviour	Paper	N/A	Systematic review

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Year	Reference	Journal/ Conference	Type	Theories	Methods
2024	Donner, F.	New Media & Society	Paper	Social ties	Qualitative (interview)
2023	Kordyaka B, Laato S, Weber S and Niehaves	Frontiers Psychology	Paper	Online disinhibition effect, social cognitive theory, Theory of planned behaviour	Quantitative (surveys)
2021	Beres, N. A., Frommel, J., Reid, E., Mandryk, R. L., and Klarkowski,	Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems	Conference paper	Theory of normalized behaviour Moral disengagement theory	Mixed-methods analysis
2023	Kordyaka B, Laato S, Weber S and Niehaves	Frontiers Psychology	Paper	Social cognitive theory; Theory of planned behaviour; Online disinhibition effect theory	Quantitative (surveys)
2018	Adinolf, S., & Turkay, S.	Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play Companion Extended	Conference paper	Social cognitive theory; Social learning theory	Qualitative
2021	Darvin, L., Holden, J., Wells, J. and Baker, T.	Sport Management Review	Paper	Hegemonic masculinity framework	Qualitative
2021	Kordyaka, B., & Kruse, B.	Safer Communities	Paper	Online disinhibition effect theory	Mixed methods (survey and focus groups)
2022	Şengün, S., Santos, J. M., Salminen, J., Jung, S., & Jansen, B. J.	Technological Forecasting and Social Change	Paper	Proteus Effect Theory	Qualitative

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Year	Reference	Journal/ Conference	Type	Theories	Methods
2022	Rogstad, E. T.	European Journal for Sport and Society	Paper	Hegemonic masculinity framework	Qualitative
2022	Kelly, S. J., Derrington, S., & Star, S.	International Journal of Sport Policy and Politics	Paper	Governance framework	Conceptual
2020	Hilvert-Bruce, Z., & Neill, J. T	Computers in Human Behaviour	Paper	Theory of normative beliefs	Quantitative
2020	Tang, W. Y., Reer, F., & Quandt, T.	Aggressive Behaviour	Paper	Sexual harassment theoretical model; Social identity model of deindividualization effects	Quantitative
2018	de Mesquita Neto & Becker (2018)	Entertainment Computing	Paper	Toxic behaviour's framework	Quantitative
2021	Gandolfi, E., & Ferdig, R. E.	Convergence:	Paper	N/A	Qualitative
2023	Felczak, M.	Convergence:	Paper	Lefebvre's theory of space	Qualitative
2022	Zhu, Z., Zhang, R., & Qin, Y.	Journal of Computer-Mediated Communication	Paper	Self-determination theory	Quantitative
2023	Cook, C. L., Karhulahti, V.-M., Harrison, G., & Bowman, N. D.	Communication & Sport,	Paper	Social Identity theory	Conceptual
2020	Shen, C., Sun, Q., Kim, T., Wolff, G., Ratan, R., & Williams, D.	Computers in Human Behaviour	Paper	Social identity model of deindividualization effects	Quantitative

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Year	Reference	Journal/ Conference	Type	Theories	Methods
2020	Pack, S. M., & Hedlund, D. P.	International Journal of Sport Policy and Politics	Paper	Multiple Streams Framework	Conceptual
2023	Irwin, S. V., Naweed, A., & Lastella, M.	Sport in Society	Paper	AACTT Framework (Action, actor, context, target, time)	Qualitative
2023	Chang, K., Uhm, J.-P., Kim, S., & Lee, H.-W.	International Journal of Sports Marketing and Sponsorship	Paper	Theory of stress and coping	Quantitative
2023	Huston, C. Y., Cruz, A. G. B., & Zoppos, E.	Journal of Marketing Management	Paper	Practice Theory	Mixed methods (interviews; ethnography)
2023	Qian, T. Y., Sonkeng, K., & Luo, L.	Communication & Sport	Paper	Social Identity theory	Quantitative
2023	Belskie, M., Zhang, H., & Hemminger, B. M	Journal of Electronic Gaming and Esports	Paper	Social Inclusion Theory	Machine-learning analysis
2023	Poeller, S., Dechant, M. J., Klarkowski, M., & Mandryk, R. L.	Proceedings of the ACM on Human-Computer Interaction	Conference paper	Need satisfaction theory; Online disinhibition effect theory	Mixed methods
2024	Crothers, H., Scott-Brown, K. C., & Cunningham, S. J.	Games and Culture	Paper	NA	Qualitative
2020	Hayday E. J., Collison, H., & Kohe, G. Z.	Leisure Studies	Paper	Lefebvre's theory of space	Qualitative (interviews and focus groups)
2022	Marzano et al.	2022 IEEE (MetroXRAINE)	Conference paper	Activity Theory	Quantitative

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Year	Reference	Journal/ Conference	Type	Theories	Methods
2024	Bonilla I, Chamarro A, Birch P, Sharpe BT, Martín-Castellanos A, Muriarte D and Ventura C	Frontiers In Psychology	Paper	NA	Quantitative
2021	Maud Lemercier-Dugarin, Lucia Romo, Charles Tijus, and Oulmann Zerhouni	Cyberpsychology Behaviour and Social Networking	Paper	NA	Quantitative
2023	Felczak	Convergence	Paper	Spatial theory	Spatial analysis
2022	E. Reid, Regan L. Mandryk, Nicole A. Beres, Madison Klarkowski, and Julian Frommel	IEEE Transactions on Games	Paper	NA	Quantitative
2024	L Darvin, C Gray, T Baker, J Wells, J Holden	Technology in Society	Paper	Hegemonic masculinity	Quantitative
2023a	B Kordyaka, S Park, J Krath, S Laato	ACM Transactions on Social Computing	Paper	Cultural dimensions theory; Unified Theory of Toxic Behaviour	Quantitative
2024	B Kordyaka, NA Beres, R Kowert, S Laato, R Mandryk	Proceedings of the 2024 Annual Symposium on Computer-Human	Conference paper	NA	Quantitative

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Year	Reference	Journal/ Conference	Type	Theories	Methods
		Interaction in Play			
2023b	B Kordyaka, S Laato, K Jahn, J Hamari, B Niehaves	Proc. ACM Hum.-Comput. Interact.	Paper	Unified Theory of Toxic Behaviour	Exploratory-sequential mixed-methods
2021	A Canossa, D Salimov, A Azadvar, C Harteveld, G Yannakakis	Proceedings of the ACM on Human-Computer Interaction	Paper	NA	Quantitative and Machine learning
2024	B Kordyaka, S Laato, S Weber, B Niehaves	Proceedings of the ACM on Human-Computer Interaction	Paper	Transaction theory of stress	Quantitative
2015	H Kwak, J Blackburn, S Han	Proceedings of the 33rd annual ACM conference	Conference paper	Deindividuation theory; attribution theory	Quantitative
2024	S Laato, B Kordyaka, J Hamari	Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems	Conference paper	NA	Machine learning
2014	J Blackburn, H Kwak	Proceedings of the 23rd international conference on World wide web	Conference paper	Attribution theory	Machine learning
2020	Y Kou	Proceedings of the annual symposium on computer-human interaction in play	Conference paper	NA	Qualitative

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Year	Reference	Journal/ Conference	Type	Theories	Methods
2021	D Madden, Y Liu, H Yu, MF Sonbudak, GM Troiano, C Harteveld	Proceedings of the 2021 CHI conference on human factors in computing systems	Conference paper	NA	Qualitative (thematic analysis)
2022	R Ma, X Gui, Y Kou	Proceedings of the ACM on Human-Computer Interaction	Paper	Institutional analysis and development (IAD) framework	Mixed methods
2024	T Bongaards, M Adriaanse, J Frommel	Companion Proceedings of the 2024 Annual Symposium on Computer-Human	Conference paper	NA	Qualitative (thematic analysis)
2023	RL Mandryk, J Frommel, N Goyal, G Freeman, C Lampe, S Vieweg, DY Wohn	Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing	Conference paper	NA	Conceptual
2024	M Wijkstra, K Rogers, RL Mandryk, RC Veltkamp, J Frommel	Proceedings of the ACM on Human-Computer Interaction	Conference paper	NA	Qualitative (thematic analysis)
2021	NA Beres, J Frommel, E Reid, RL Mandryk, M Klarkowski	Proceedings of the 2021 CHI conference on human factors in computing systems	Paper	Theory of normalized behaviour	Mixed methods
2024	Z Zhang, S Moradzadeh, A Woan, Y Kou	Proceedings of the ACM on Human-Computer Interaction	Paper	Framework of Toxicity	Qualitative (thematic analysis)

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Year	Reference	Journal/ Conference	Type	Theories	Methods
2018	T Mattinen, J Macey	Proceedings of the 22nd International Academic	Conference paper	NA	Quantitative
2024	E Kilmer, Z Aslan, R Kowert	ACM Games: Research and Practice	Paper	Extremism and Radicalization concepts	Qualitative (thematic analysis)
2020	S Türkay, J Formosa, S Adinolf, R Cuthbert, R Altizer	Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems	Conference paper	Social Identity Theory	Qualitative (thematic analysis)
2023	M Wijkstra, K Rogers, RL Mandryk, RC Veltkamp, J Frommel	Companion Proceedings of the Annual Symposium on Computer-Human Interaction	Conference paper	NA	Conceptual (Systematic literature review)
2018	AE Depping, C Johanson, RL Mandryk	Proceedings of the 2018 Annual Symposium on computer-human interaction in play	Conference paper	Self-Determination Theory	Mixed methods
2018	R Poyane	Proceedings of the 22nd International Academic Mindtrek Conference	Conference paper		Qualitative
2023	S Poeller, A Steen, N Baumann, RL Mandryk	Proceedings of the 18th International Conference on the Foundations of	Conference paper	NA	Quantitative

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The results shown in Table 6 have revealed a rich and multifaceted landscape of research that integrates diverse theoretical frameworks to examine toxic behaviour in esports contexts. Researchers have drawn upon a variety of psychological theories to explain individual actions, with multiple studies leveraging ***social cognitive theory (n=5)*** and the ***theory of planned behaviour (n=3)*** to elucidate how personal attitudes, normative influences, and perceived control over behaviour inform decision-making processes. The ***transactional theory of stress and coping (n=4)*** has also been frequently applied, highlighting how players' appraisal of in-game stressors and their subsequent coping mechanisms contribute to toxic outbursts. In tandem, ***self-determination theory (n=4)*** is employed to underscore the role of intrinsic motivations and the fulfilment of basic psychological needs, providing a nuanced understanding of how engagement in digital environments can be both sustained and deeply personal. The ***online disinhibition effect (n=6)*** also emerges as a recurring theme, offering insights (e.g., reduced accountability, anonymity, dissociative anonymity, and minimized social consequences) into why individuals may act more aggressively or impulsively in online settings than in face-to-face interactions. These findings are further contextualized by the ***Unified Theory of Toxic Behaviour (n=2)*** (Kordyaka et al., 2020), which synthesizes individual, social, and systemic factors into a cohesive framework. Kordyaka et al.'s model posits that toxicity arises from the interplay of three dimensions: a) individual predispositions (e.g., stress sensitivity, impulsivity), b) situational triggers (e.g., competitive pressure, anonymity), and c) systemic reinforcement (e.g., game design, lack of moderation). The ***theory of normative behaviour (n=3)*** further complements these findings by emphasizing how toxic conduct can become normalized within gaming communities (e.g., esports subcultures), where repeated exposure to hostility and lack of sanctions reinforce such behaviours as socially acceptable.

Table 7 (below) summarizes the theoretical frameworks identified in the studies, the number of studies in which each framework appears, and representative sources.

Table 7. Summary of theoretical findings from the review

Theoretical Framework	Number of Studies	Source Examples
Online Disinhibition Effect (Theory)	6	Kordyaka et al. (2020); Liu & Agur (2023); Poeller et al. (2023)
Social Cognitive Theory	5	Kordyaka et al. (2020); Sun et al. (2024); Adinolf & Turkay (2018)
Self-Determination Theory	4	Frommel et al. (2023); Aeschbach et al. (2023); Zhu et al. (2022)
Theory of Stress and Coping/ Transaction theory of stress	4	Chang et al. (2024); Chang et al. (2023)
Theory of Planned Behaviour	3	Kordyaka et al. (2020); Kordyaka et al. (2023)
Theory of Normalized Behaviour	3	Beres et al. (2021)

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Theoretical Framework	Number of Studies	Source Examples
Social Identity Model of deindividualization	3	Sun et al. (2024); Tang et al. (2020); Shen et al. (2020)
Social Identity Theory	3	Cook et al. (2023); Qian et al. (2023)
Hegemonic Masculinity Framework	3	Darvin et al. (2021; 2024); Rogstad (2022)
Moral Disengagement Theory	2	Beres et al. (2021)
Social Learning Theory	2	Gandolfi et al. (2023); Adinolf & Turkay (2018)
Attribution theory	2	Blackburn & Kwak (2014), Kwak et al. (2015)
Unified Theory of Toxic Behaviour	2	Kordyaka et al. (2023b)
Lefebvre's Theory of Space	2	Felczak (2023); Hayday et al. (2020)
Gaming Citizenship	1	Kim & Ortiz (2024)
Self-Efficacy Theory	1	Chang et al. (2023)
Folk Theory	1	Aeschbach et al. (2023)
Basic Psychological Needs Theory	1	Aeschbach et al. (2023)
Organismic Integration Theory	1	Aeschbach et al. (2023)
Play Theories	1	Kim et al. (2022)
Affordance Theory	1	Kim et al. (2022)
Bounded Generalized Reciprocity	1	Kim et al. (2022)
Social Ties Framework	1	Donner (2024)
Proteus Effect Theory	1	Şengün et al. (2022)
Governance Framework	1	Kelly, Derrington & Star (2022)
Theory of Normative Beliefs	1	Hilvert-Bruce & Neill (2020)
Sexual Harassment Theoretical Model	1	Tang, Reer & Quandt (2020)
Toxic Behaviour's Framework	1	de Mesquita Neto & Becker (2018)
Multiple Streams Framework	1	Pack & Hedlund (2020)
AACTT Framework	1	Irwin, Naweed & Lastella (2023)
Practice Theory	1	Huston, Cruz & Zoppos (2023)
Social Inclusion Theory	1	Belskie, Zhang & Hemminger (2023)

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Theoretical Framework	Number of Studies	Source Examples
Need Satisfaction Theory	1	Poeller et al. (2023)
Cultural Dimensions Theory	1	Kordyaka et al. (2023a)
Activity theory	1	Marzano et al. (2022)
Deindividuation theory	1	Kwak et al., (2015)
Institutional analysis and development (IAD) framework	1	Ma et al. (2022)

The findings have indicated that toxic behaviours in esports are shaped not only by individual psychological factors but also by the structural components embedded within the gaming environment. For instance, many studies have shown the ***online disinhibition effect*** (e.g., Kordyaka et al., 2020), which helps explain why players might behave more aggressively or incivility online than they would in face-to-face situations. In the esports context, these individual tendencies are often amplified by game mechanics that emphasize fast-paced, competitive interactions. The design of several esports' games, through immediate feedback loops, win-loss conditions, and reward structures, can inadvertently incentivize aggressive or unsportsmanlike behaviour when players feel pressured to perform.

Beyond the individual level, Table 7 illustrates the significant impact of social and cultural influences. The incorporation of social identity models and frameworks such as the ***social identity model of deindividuation effects (n=3)*** highlights the importance of group membership and cultural identity in shaping behaviour. Studies applying these models (e.g., Sun et al., 2024) have revealed that the sense of belonging to a particular community or group can both mitigate and exacerbate tendencies toward conformity or deviance. Complementing these perspectives, ***social learning theory (n=2)*** elucidates how toxic behaviours are acquired and perpetuated through observational learning and reinforcement within gaming communities. For instance, players may mimic aggressive behaviours endorsed by high-status peers or streamers, particularly when such actions are rewarded with in-game success or social validation. Moreover, ***moral disengagement theory (n=2)*** provides critical insight into the cognitive mechanisms enabling toxicity, demonstrating how players rationalize harmful behaviours through strategies like diffusion of responsibility (e.g., blaming teammates) or moral justification (e.g., "trash-talking is part of the game"). These mechanisms are often amplified in esports contexts, where competitive environments and anonymized interactions reduce ethical constraints. Finally, frameworks such as the ***hegemonic masculinity paradigm (n=3)*** underscore the enduring influence of cultural norms and gender constructs on behaviour, particularly in settings where traditional power dynamics are challenged or reinforced. Together, these theories reveal a complex ecosystem where social learning, identity dynamics, and moral disengagement interact to sustain toxic norms in competitive gaming cultures.

This analysis demonstrated that individual behaviour is not solely the result of psychological or cultural factors; it is also deeply embedded within broader structural contexts. Table 7 includes studies that employ ***governance frameworks (n=1)***, ***multiple streams frameworks (n=1)***, and ***practice theory (n=1)*** to articulate how institutional structures, policies, and design elements of digital platforms play a critical role in shaping behavioural outcomes. These structural contributors not only set the stage within which individual and

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group behaviours occur but also provide a mechanism through which behaviour can be directed, encouraged, or constrained.

In summary, the results underscore the necessity of an interdisciplinary approach when exploring the toxicity behavioural phenomena. The convergence of psychological theories, social and cultural influences, and structural frameworks suggests that understanding behaviour—whether in digital, gaming, or esports contexts—requires a comprehensive perspective that accounts for the interplay between personal cognition, social identity, and the broader systemic environment. This integrated approach not only enhances our theoretical understanding but also informs practical interventions aimed at fostering positive behaviour and mitigating adverse outcomes such as online toxicity or social exclusion.

A comprehensive analysis of toxic behaviours in esports would benefit from an integrated, ***multi-level theoretical framework***. For instance, ***Kordyaka et al.'s unified theory of toxic behaviour*** offers precisely such a synthesis, bridging individual, group, and systemic dimensions into a cohesive model. At the individual level, the theory aligns with constructs from ***social cognitive theory*** and the ***online disinhibition effect***, illuminating how personal cognition (e.g., self-efficacy, perceived behavioural control) interacts with situational anonymity to foster aggression. Crucially, it expands these insights by incorporating moral disengagement mechanisms (e.g., blaming teammates or minimizing harm) that players employ to justify toxicity.

At the group level, incorporating ***social identity theory*** (including models of deindividuation) can help explain how players' sense of belonging to a competitive team or community influences conformity, intergroup dynamics, and even hostility toward out-group members. Finally, to account for the systemic environment, it is valuable to include structural frameworks such as ***unified theory of toxic behaviour*** and ***governance frameworks*** that address the impact of game mechanics, ranking systems, and moderation policies. This multi-level approach not only captures the interplay between personal, social, and institutional factors but also provides a robust basis for designing interventions aimed at mitigating toxicity in esports.

We propose an integrated theoretical approach that combines the ***theory of planned behaviour*** (or *social cognitive theory*), the ***online disinhibition effect***, and Kordyaka et al.'s ***unified theory of toxic behaviour*** to comprehensively analyse toxicity in esports. TPB provides a robust foundation for examining individual-level cognitive factors through its three core components - attitudes toward toxic behaviour, perceived social norms, and behavioural control - while the online disinhibition effect accounts for how digital environments (through anonymity and reduced accountability) amplify these predispositions. These individual and situational factors are then contextualized within Kordyaka et al.'s unified framework, which bridges to group-level processes (such social identity dynamics) and systemic influences (including game design and moderation systems). This multi-layered approach not only captures how personal beliefs and situational triggers interact to produce toxic behaviour but also situates these psychological processes within the broader social and structural ecosystems of esports, offering both explanatory power and practical insights for developing targeted interventions across individual, community, and game design levels.

In practice, moderation policies also emerge as a critical structural contributor capable of mitigating these negative behaviours. The ***toxic behaviour's framework*****,** as identified by de Mesquita Neto and Becker (2018), underscores the importance of having clear and consistently enforced rules to manage player interactions. Effective moderation policies can help balance the aggressive impulses spurred by competitive game mechanics and

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ranking pressures, thereby promoting a healthier esports community. Conversely, lax or inconsistently applied moderation can fail to curb toxic behaviour, allowing negative interactions to become normalized within the competitive landscape. Additionally, ranking systems also play a crucial role in this dynamic. By establishing a hierarchical order among players, ranking systems intensify the competitive environment, sometimes resulting in increased frustration when performance does not meet expectations. This pressure can drive toxic behaviour as players vent their dissatisfaction on teammates or opponents. The competitive nature inherent in ranking systems often magnifies the effects of psychological predispositions, such as those described by the online disinhibition effect, creating an environment where toxic interactions are more likely to occur.

B. Typology/dimensions

Toxicity in online games, particularly in competitive esports titles, is widely understood as a collective or umbrella term for various types of negative, disruptive, or anti-social behaviours (Beres et al., 2021; Reid et al., 2022; Laato et al., 2024; Zhu et al., 2022)

Although the specific definition can vary across different games and communities due to differing norms, rules, and player expectations, the core concept involves behaviours that harm individuals' well-being, enjoyment, team dynamics, and the overall gaming experience (Reid et al, 2022). There is a lack of precise definition or consensus on what constitutes toxicity among researchers and players (Laato et al, 2024).

Various forms of toxicity have been identified in the sources:

Abusive communications: Harassment, verbal abuse, flaming (aggressive or derogatory language, hostile expressions).

Disruptive gameplay: Griefing (intentionally disrupting another player's experience), spamming (repeated disruptive communication), cheating, intentionally playing badly, sabotaging teammates, hostage holding, mediocritizing.

Unsportsmanlike behaviour: Not cooperating with the team, disrupting communication, intentionally feeding (getting eliminated on purpose), abandoning the game, refusing to follow objectives, not trying your best.

Discriminatory behaviours: Sexism, racism, homophobia, harassment related to gender, race/ethnicity, religion, ability, or sexual orientation.

Other forms: Trolling (provoking and antagonizing others), trash talk, threatening complaints (using the report function to intimidate), doxing. Milder forms like banter or trash talk can exist alongside more severe forms like verbal abuse and harassment.

While toxicity often manifests in-game (via chat, voice comms, or gameplay actions), it also exists and spreads across community spaces around the game, such as social media, forums (like Reddit), and live-stream chats (like Twitch). The sources highlight discussions of toxicity on forums like r/league of legends. Esports media professionals themselves can be entangled in toxic communication patterns on digital platforms.

Existing typologies include Kou's five categories: communicative aggression, cheating, hostage holding, mediocritizing, and sabotaging. Kordyaka et al. view toxicity as a frustration-driven response encompassing actions like interrupting others, not answering teammates, assigning blame, stealing resources, and insulting others. These typologies touch on the intent or source of toxicity (e.g., frustration-driven vs. intentional sabotage), which relates to instrumental (goal-driven) versus expressive (emotion-driven) distinctions,

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although the sources don't explicitly use those terms. Players may define toxicity based on the perceived intention behind the action.

Comparing esports toxicity with traditional sports, collegiate esports players sometimes rationalize toxicity as a normal part of the competitive game culture, akin to traditional sports. Trash-talking is a form found in both contexts. However, key differences in online gaming/esports contribute to higher toxicity prevalence: anonymity or pseudonyms reduce social responsibility and accountability; the heterogeneity of online communities (age, background, social disposition) can lead to misunderstandings of norms and expectations; and the lack of face-to-face interaction minimizes social repercussions. Esports have also been described as having a "toxic gamer culture" that creates barriers, distinct from traditional sports.

Verbal toxicity in esports encompasses behaviours such as flaming, insults, offensive language, hate speech, threats, and harassment, typically communicated through text or voice chat. Researchers like Kowert (2020) and Huston et al. (2023) have emphasized that these behaviours can significantly degrade the gaming environment. On the other hand, behavioural toxicity involves actions performed within the game that can have detrimental consequences both in-game and beyond. Such behaviours include griefing, trolling, and intentionally feeding opponents, as highlighted by Kowert (2020) and Nexø (2024). These actions are often aimed at sabotaging team efforts or provoking frustration among opponents or teammates.

The severity and impact of toxic behaviours vary considerably. Disruptive behaviours tend to affect gameplay and team dynamics directly, manifesting as complaints about teammate performance or minor antagonisms, as noted by Aguerri et al. (2023). More serious actions, termed harmful behaviours, include hate speech, death wishes, and severe insults, which can cause emotional and psychological distress. Laato et al. (2024) and Aguerri et al. (2023) have highlighted the profound negative effects these behaviours can have on players' well-being.

Researchers categorize toxic behaviours into specific types. Communicative aggression involves verbal hostility, flaming, and abusive language, which has been documented by Ruotsalainen et al. (2023) and Laato et al. (2024). Identity-based toxicity encompasses racist, sexist, and homophobic remarks, with Huston et al. (2023) noting that such remarks contribute to hostile environments. Sabotage and griefing refer to intentionally hindering teammates through actions like leaking information to enemies or deliberately feeding, as described by Nexø (2024) and Laato et al. (2024). Harassment includes insulting or degrading others and stalking them across multiple games. Cheating involves gaining unfair advantages using external tools or methods, which Ruotsalainen et al. (2023) and Laato et al. (2024) recognize as a distinct form of toxicity. Hostage holding refers to actions that prevent game endings or prolong distress by extending negative experiences. Mediocritizing involves intentionally playing poorly to frustrate teammates, contributing to toxicity. Spam and noise include ping-spamming, disruptive messaging, and creating distracting sounds, with Nexø (2024) pointing out their disruptive potential. Threatening violence, including encouragement of self-harm, death threats, or threats of physical harm, has been emphasized by Aguerri et al. (2023), Huston et al. (2023), and others. Milder forms of verbal aggression such as trash talk and banter are sometimes seen as strategic rather than inherently toxic, though they can blur the boundaries, as noted by Ruotsalainen et al. (2023) and Laato et al. (2024).

Scholars recognize that these categories often overlap, with different researchers applying varying definitions and criteria to describe similar phenomena (Ruotsalainen et al., 2023; Kowert, 2020; Kwak et al., 2015). The complex and multifaceted nature of toxicity in esports

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is further illustrated by studies showing that a significant percentage—around 43.2%—of matches involve both disruptive and harmful behaviours simultaneously, highlighting how interconnected and pervasive these issues are within competitive environments.

C. Antecedents & outcomes

Psychological, social, and structural forces jointly shape toxicity in esports, yet the literature also suggests a deeper identity–needs dynamic in which gamer identity operates as an antecedent that sensitizes players to group norms, while need satisfaction of relatedness emerges as a consequential outcome that is particularly vulnerable to toxic climates. On the psychological side, the intensity of competitive play and the pressure to meet teammates' expectations frequently precipitate frustration that spills into antagonistic conduct (Kou, 2020). Anonymity and the absence of face-to-face cues lower accountability and facilitate online disinhibition, further loosening constraints on aggressive expression (Chang et al., 2023). When negative in-game events occur—missed plays, rank losses—players may "tilt," losing emotional control and escalating hostile communication (Donner, 2024). These triggers interact with individual motives (e.g., shirking responsibility, revenge, egocentrism, catharsis, maintaining friendships, pursuing rewards, griefing for disruption, seeking power/control, thrill seeking) and personality dispositions linked to toxic tendencies, although the specific mechanisms remain to be unpacked (Nexø, 2024). Crucially, these psychological dynamics are filtered through the lens of gamer identity: stronger felt belonging and self-categorisation within gaming culture heighten sensitivity to community norms and reputation, increasing norm-defensive reactions toward out-groups or norm violators when performance or status feels threatened (Kaye, Kowert, & Quinn, 2017; Kowert & Oldmeadow, 2015; Stone, 2019). In high-stakes matches, highly identified players may thus interpret errors as group-relevant affronts, making disinhibition and tilting more likely to express as toxicity (Kou, 2020; Chang et al., 2023; Donner, 2024; Kaye et al., 2017; Stone, 2019).

Social and cultural conditions consolidate these antecedents. Conflicts in ad hoc teams of strangers are common, and peer influence coupled with community norms can normalize and rationalize aggression, especially when prominent figures model, excuse, or reward it (Kaye et al., 2017; Stone, 2019). Identity-protective norm enforcement can escalate into boundary-policing that targets marginalized players, contributing to patterned harassment of women, LGBTQ+ players, and players of colour (Kowert & Oldmeadow, 2015; Stone, 2019). Structural design and governance features then modulate expression and persistence: communicative affordances, teamwork demands, interdependence, and perceived fairness all shape when tensions surface; poorly tuned matchmaking and ranking amplify perceived injustice and blame; and inconsistent, delayed moderation allows toxic scripts to become self-reinforcing—a "wicked problem" resistant to ad hoc fixes (Kou, 2020; Chang et al., 2023).

The consequences unfold across levels and converge on the social-psychological need for relatedness—the felt closeness, care, and reciprocal support within gaming networks identified by Basic Psychological Needs Theory (Ryan & Deci, 2000; Chen et al., 2015). Perceived toxicity corrodes trust, warmth, and supportive ties, and recent work in esports-adjacent samples links higher toxicity to lower relatedness, consistent with the idea that harassment and abusive communication weaken communal bonds (Frommel, Johnson, & Mandryk, 2023). Individually, toxic climates reduce enjoyment and disrupt mood; they are associated with anxiety, low self-esteem, depression, and, in gendered or racialized incidents, trauma and a sense of lost control. Performance suffers through impaired coordination and skill development; some players disengage (quitting or concealing identity to avoid harassment), while others retaliate, perpetuating cycles of harm—raising

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mental-health concerns even as connections to Internet Gaming Disorder remain under investigation (Qian et al., 2023). At the community level, attenuated relatedness accelerates mistrust, tribalism, and gatekeeping, weakening communication and engagement and risking cultural deterioration (Ryan & Deci, 2000; Chen et al., 2015; Frommel et al., 2023). For industry stakeholders, toxicity drives churn, depresses retention and purchase intent, and necessitates costly moderation and community management; in competitive scenes, toxic cultures hinder team dynamics and career trajectories, while behaviours like intentional deranking distort matchmaking and competitive integrity—even as some toxic users may paradoxically be profitable, complicating incentives to intervene (Kordyaka et al., 2024). Societally, exposure among youth can normalize harmful interaction norms and tarnish perceptions of esports and gaming culture (Qian et al., 2023).

Against this backdrop, interventions and coping strategies are most effective when they engage both the identity antecedent and the relatedness outcome. At the player level, muting/blocking, de-escalation, brief withdrawal to cool off, identity shielding, tolerance-building, and positive reappraisal can blunt immediate harms (Kou, 2020; Chang et al., 2023). Community initiatives that contest toxic norms can redirect identity expression toward prosocial in-group standards that preserve status without exclusion, thereby supporting relatedness (Kaye et al., 2017; Stone, 2019; Ryan & Deci, 2000; Chen et al., 2015). Design choices—robust communication controls, context-appropriate chat removal, features that humanize remote teammates (e.g., reminders that opponents are real people), clearer role guidance and team-balance scaffolds, and visualized selection data—can limit triggers and reduce victim vulnerability while aligning local norms with constructive coordination (Kou, 2020; Chang et al., 2023). At the organisational level, clear, unified codes of conduct and preventative training for professional players in emotion regulation, sportsmanship, and harassment education leverage role-model effects to reshape identity norms in elite contexts (Kaye et al., 2017; Stone, 2019). Finally, machine-learning systems that combine communication data, gameplay metadata, player reports, crowdsourced judgments, and behavioural signals can support early detection and scalable moderation, provided these tools are embedded in policies that protect fairness and bolster relatedness rather than entrench identity-based inequities (Canossa et al., 2021; Ryan & Deci, 2000; Chen et al., 2015; Frommel et al., 2023).

Taken together, the literature maps a coherent causal contour from identity-charged antecedents (competition-heightened norm sensitivity among strongly identified players) through social and structural amplifiers to outcomes centred on the degradation of relatedness. This contour not only integrates the full range of documented antecedents and outcomes but also clarifies why **gamer identity** is theoretically positioned upstream of toxic expression (as a norm-sensitivity amplifier that interacts with pressure, disinhibition, tilting, and motivation) and why **need satisfaction of relatedness** lies downstream as a cumulative barometer of climate health (Kaye et al., 2017; Kowert & Oldmeadow, 2015; Stone, 2019; Ryan & Deci, 2000; Chen et al., 2015; Frommel et al., 2023). As such, a self-assessment instrument aimed at evaluating and improving esports communication—such as ENHANCE—can be anchored in this pathway: measures of gamer identity provide a theoretically grounded construct-adjacent lens on predispositions that set the stage for toxicity, while indicators of relatedness offer criterion-connected evidence of the interpersonal and community consequences that such toxicity predicts, alongside the broader individual, organisational, and societal impacts documented across the literature (Kou, 2020; Chang et al., 2023; Donner, 2024; Nexø, 2024; Kordyaka et al., 2024; Qian et al., 2023; Canossa et al., 2021).

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Theme 2 – Measurement scales

To address the measurement gap identified in Study 1, ENHANCE seeks to develop a self-assessment tool that supports early identification, self-reflection, and targeted educational interventions for players aged 16–26. As a prerequisite, this report conducts a systematic, critical review of validated scales for toxic behaviour in digital gaming, thereby providing the empirical and theoretical basis for a multidimensional instrument consistent with DeVellis & Thrope's (2021) standards of psychometric rigor.

The existing literature offers a diverse set of instruments that vary in theoretical grounding, respondent perspective (perpetrated vs. received), and behavioural scope. Among the most influential are the self-report scales by Kordyaka et al. (2019, 2020), designed primarily for multiplayer online contexts—especially MOBAs such as League of Legends (Table 8). These tools target enacted (self-perpetrated) toxicity rather than victimisation and are theoretically anchored in the Online Disinhibition Effect (ODE), Social Cognitive Theory (SCT), and the Theory of Planned Behavior (TPB), linking attitudes, norms, and perceived control to toxic conduct.

Scale development progressed in stages. In 2019, two candidate instruments—one adapted from cyberbullying measures and one derived via the Act Frequency Approach—were validated with 380 gamers; the adapted version showed superior psychometrics and was retained. In 2020, items were refined and embedded within a broader model including attitudes, subjective norms, and control, with validation on a new sample (n = 320). Convergent and discriminant validity (AVE, CR) and face validity (expert/player review) were demonstrated.

The final toxic behaviour scale comprises five items capturing active, in-game negative actions (e.g., insulting others, blaming teammates). It is intentionally unidimensional, does not index victimisation or passive exposure, and meets core criteria for sound measurement: clear construct definition, expert appraisal, factor-analytic support, and reliability exceeding .80. Conceptually, grounding in Suler's (2004) ODE explains how anonymity and reduced accountability foster disinhibition online; integration with SCT and TPB strengthens the link from cognitive–motivational antecedents to behaviour.

With strong reliability (CR = .93; AVE > .50) replicated across independent samples, this scale is among the most robust options for assessing self-perpetrated toxicity. Its principal limitation is scope: it does not capture received or identity-based harms (e.g., microaggressions, gendered or racialised abuse) or forms of exclusion.

Table 8. Overview of the Toxic Behaviour Scale

Item Code	Item Text
TB_1	If I get mad during a game, I intentionally interrupt others while they are writing.
TB_2	If I get mad during a game, I hold others responsible for making their own mistakes.
TB_3	If I get mad during a game, I take away resources belonging to others.
TB_4	If I get mad during a game, I insult others.
TB_5	If I get mad during a game, I criticize others.

Source: Kordyaka et al. (2019, 2020)

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Ladanyi and Doyle-Portillo (2017) developed the Grief Play Scale (GPS) to quantitatively measure self-reported griefing behaviours in massively multiplayer online role-playing games (MMORPGs) (Table 9). This unidimensional, behaviour-specific self-report scale captures the frequency with which gamers engage in a wide array of disruptive and antisocial behaviours aimed at harming the experiences of others within virtual worlds. Unlike some scales that measure perceived or received toxicity, the GPS exclusively measures perpetrated behaviours, making it highly relevant for identifying griefers within esports and gaming communities.

The scale development followed DeVellis and Thrope's (2021) framework, progressing through item generation, exploratory factor analysis (EFA), confirmatory validation, and convergent/discriminant testing. Three independent studies (total N = 786) verified the psychometric robustness of the final 32-item GPS. The initial 42 items were derived from the taxonomy of grief play by Foo (2008), which identified four subtypes: harassment, scamming, power imposition, and greed play. However, empirical analysis showed that griefing behaviour loaded onto a single underlying factor, suggesting a cohesive disruption construct rather than distinct grief types.

Validity was thoroughly tested. The GPS showed strong convergent validity through correlations with antisocial personality traits such as sadism, subclinical psychopathy, Machiavellianism, and narcissism, all significant (r = .16 to .53). It also correlated strongly with self-identification as a griefer (r = .64) and with the percentage of time spent griefing. In contrast, it showed discriminant validity by not correlating with altruism (r = –.02), confirming conceptual separation from prosocial traits. The scale's internal consistency was excellent across studies (Cronbach's α ≈ .96), satisfying DeVellis and Thrope's reliability criterion.

The GPS is theoretically grounded in antisocial behaviour literature and models of online trolling and competitive aggression. It conceptualizes grief play as goal-independent, affectively motivated behaviour aimed at disrupting the experiences of others, distinguishing it from instrumental or strategic competition. It is one of the most comprehensive and rigorously validated tools for detecting self-perpetrated toxicity in MMORPGs and thus highly applicable in broader esports contexts, particularly grassroots settings where formal moderation may be lacking.

Table 9. Grief Play Scale (GPS) Items

Item Code	Wording
GPS_1	I disrupt in-game events just for fun.
GPS_2	When creating or renaming my characters, I give my characters names which are offensive to other players.
GPS_3	I taunt players after I kill their characters.
GPS_4	I pretend to be a new or poor player so that I can convince others into giving me items or money.
GPS_5	I use game hacks to get an advantage over others.
GPS_6	I use the flaws in a game's player-to-player trading system to my advantage.

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Item Code	Wording
GPS_7	I take mob drops from other players even though the other players are the ones who earned the drops.
GPS_8	When players who are lower level or less experienced than me are farming low level mobs, I wipe out the low-level mob spawns.
GPS_9	I annoy other players by following them around.
GPS_10	When I am in a safe-zone, or some other place where PvP is not supposed to occur, I attack other players.
GPS_11	I send tickets or petitions to GM's (game masters or other game authorities) to ask for extra items or other favours.
GPS_12	I scam other players.
GPS_13	I trick players into doing things that will harm their characters.
GPS_14	I attack players immediately after they spawn.
GPS_15	I send loud, distracting, or repetitive sounds over voice-chat or voice programs such as Teamspeak, Ventrilo, or Mumble as I play with others.
GPS_16	I mock or insult other players.
GPS_17	I display in-game gestures which upset or offend other players.
GPS_18	I exploit game mechanics to harm other players.
GPS_19	When I'm selling an item, I tell other players that the item is more valuable than it truly is so that they will pay me a greater price.
GPS_20	I use my character's body to block the movements of other players so that I can cause the other player's death.
GPS_21	When another player is fighting a mob, I steal the players kill even though I do not want the mob's drops or experience
GPS_22	I display in-game images which upset or offend other players.
GPS_23	I taunt players after I steal items from them.
GPS_24	I attack defenceless players for my own amusement.
GPS_25	I harass other players.
GPS_26	I impersonate other players or game authorities so that players will give me items or money.
GPS_27	I cause other players to experience lag.
GPS_28	I get other players to trust me so that I can take valuables from them.
GPS_29	When I am in a group, I pick up as many valuables for myself as I can regardless of what my group members want.
GPS_30	I intrude into other players' private homes or events for fun.

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Item Code	Wording
GPS_31	When another player is fighting a mob, I steal the player's kill by attacking the mob
GPS_32	I send spam in in-game text chat.
Scale: 4-point frequency scale (1 = Always, 4 = Never; reverse-coded for scoring)	
Construct Measured: Self-reported grief play (disruptive, antisocial behaviour)	
Reliability: Cronbach's α ≈ .96	

Source: Ladanyi and Doyle-Portillo (2017)

The study by Tang and Fox (2016) contributes two validated self-report scales to assess harassment behaviours in online video games, distinguishing between general harassment and sexual harassment (Table 10). These scales are designed to measure self-perpetrated harassment, focusing on male players' behaviours during gameplay. They do not assess the harassment received nor measure general exposure or attitudes toward toxicity.

The scale is theoretically grounded in the Social Identity Model of Deindividuation Effects (SIDE), which posits that anonymity and group salience in online contexts amplify stereotypical and aggressive behaviours. Additional predictors integrated into the model include social dominance orientation (SDO) and ambivalent sexism, constructs drawn from social psychology and well-established in explaining discriminatory and aggressive behaviours offline. The study thus aligns with a multidimensional theoretical approach combining SIDE, gender studies, and aggression literature.

Psychometrically, the scales exhibit high internal reliability: Cronbach's α = .87 for general harassment and α = .83 for sexual harassment. Factor structures were based on prior empirical research and survey piloting, following scale development best practices outlined in DeVellis and Thrope (2021). These include internal consistency, construct validity, theoretical coherence, and differentiation of behaviour types, consistent with DeVellis and Thrope's criteria: (1) conceptual clarity, (2) internal structure, (3) reliability, (4) validity, and (5) practicality of use.

Importantly, these scales separately capture two dimensions of toxicity: general verbal aggression (e.g., swearing, insulting skills) and gendered/sexual aggression (e.g., rape jokes, sexist insults). This dual structure enhances diagnostic specificity, offering granularity essential for both academic research and applied intervention design in esports settings.

Table 10. Overview of the Harassment Behaviour Scales

General Harassment Behaviour Scale	
Item Code	**Wording**
GH_1	Said curse or swear words toward another player.
GH_2	Made comments about intelligence.
GH_3	Said general insults.

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General Harassment Behaviour Scale	
Item Code	**Wording**
GH_4	Made comments about others' ability to play.
GH_5	Asked others to leave the game.
Reliability: α = .87	
Sexual Harassment Behaviour Scale	
Item Code	**Wording**
SH_1	Made sexist comments or insults.
SH_2	Made comments about appearance or weight.
SH_3	Doubted their motivations for playing video games because of their gender.
SH_4	Expressed unsolicited liking or affection toward someone.
SH_5	Made a rape joke or threatened to rape.
Reliability: α = .83	

Source: Tang and Fox (2016)

Wu and Chen (2013) developed a psychometrically validated scale to measure self-reported cheating behaviour in online multiplayer games, rooted in Bandura's Social Cognitive Theory (SCT) (Table 11). The scale conceptualizes cheating as a socially influenced and self-regulated behaviour, incorporating constructs such as peer influence, outcome valuation, self-efficacy, and attitude. This model-based approach distinguishes it from descriptive or taxonomic cheating measures, offering a dynamic systems view of cheating as both a personal and socially contingent behaviour.

The instrument was developed using exploratory and confirmatory factor analysis, tested across pilot and main samples (final N = 1666), and structured into five interrelated constructs. The game cheating scale itself consists of nine items capturing a broad spectrum of cheating behaviours (e.g., use of bots, duplicating virtual assets, exploiting systems), measured on a 5-point Likert frequency scale (1 = Never to 5 = Always). The internal consistency was high (α = .89), and construct validity was supported via structural equation modelling.

This scale fulfils DeVellis and Thrope's (2021) standards in multiple ways: (1) it demonstrates a clear, theoretically grounded construct definition; (2) reliability exceeds .80; (3) construct validity was confirmed through factor analysis and hypothesis testing; and (4) the items were developed based on qualitative groundwork and refined via pilot testing.

Importantly, while the scale does not address received toxicity or gendered aggression, it excels in measuring the intentional, instrumental, and reactive forms of cheating behaviour from the perpetrator's perspective, making it particularly relevant for detecting integrity-based toxicity in grassroots esports.

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Table 11. Overview of Wu and Chen's (2013) Game Cheating Scale

Items	Wording
Wu_1	On your own or by using third-party programs, modifying game program code or relevant configuration data to gain advantages (such as wallhacks).
Wu_2	Abusing game procedure (such as quitting the game when you're about to lose) or conduct timing technique (such as delaying your own moves) to gain advantages.
Wu_3	Using tricks to obtain or duplicate virtual assets (virtual gear and in-game money).
Wu_4	Paying someone else for levelling services; using real money to purchase virtual assets/accounts or selling them for real money.
Wu_5	Using computer programs to compete with human opponents or to automatically level up (bots).
Wu_6	On your own or by using third-party programs, exploiting a bug or loophole in game program (such as glitching, duping and twinking).
Wu_7	Disrupting your opponents' network connection to slow down their moving or to deny network service to them.
Wu_8	Hacking another person's account or using friend's higher-level account to help you get advanced in game.
Wu_9	Using debug codes such as 'god mode' to gain advantages.
Measurement Format: 5-point Likert frequency (1 = Never to 5 = Always)	
Reliability: α = .89	

Hong and Cheng (2018) developed two complementary scales to measure both online trolling behaviour and online trolling victimization among university students (Table 12). These scales are grounded in the differentiation of trolling as a multifaceted online phenomenon that spans deliberate provocation, disruption, identity distortion, and manipulation within both social media and gaming contexts. The tools are unique in assessing both self-reported perpetration and experienced victimization, aligned with situational behaviours and psychological traits.

Both scales draw conceptually from Buckels et al.'s (2014) Global Assessment of Internet Trolling (GAIT) and extended frameworks from Ansong et al. (2013) and Hardaker (2010). Hong and Cheng used qualitative contextualization of trolling in online text-posting and multiplayer game chat to craft behaviourally specific items. Their analysis is supported by literature positioning trolling as a form of cyberbullying and antisocial deviance and incorporates traits from the Dark Tetrad and emotional regulation theory.

A rigorous scale development procedure was employed using a Taiwanese university student sample (N = 285). Exploratory factor analysis (EFA) validated two final scales—one for trolling behaviour (25 items) and one for trolling victimization (28 items). Each scale demonstrated high internal consistency (Cronbach's α = .95) and strong construct validity through personality trait correlations and hierarchical regression analyses.

These tools uniquely cover four dimensions of behaviour/victimization:

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- Malicious – Harassment, threats, provocation.
- Obstruction – Hindrance or sabotage of online activity.
- Evocative – Psychological manipulation, incitement.
- Pathological/Dissemination/Identity – Derailing social norms, deception, misinformation.

The scales use a 6-point frequency format (0 = never, 5 = 9+ times/week), enabling the quantification of behavioural frequency.

Table 12. Online Trolling Behaviour Scale Items (25 total)

Item Code	Wording
Dimension 1: Malicious Trolling (12 items)	
TB_1	I have harassed others with lies and insults online.
TB_2	I have tricked people online to make them angry.
TB_3	I have threatened others on the Internet.
TB_4	I have maliciously sabotaged others' gameplay.
TB_5	I have bullied others online for fun.
TB_6	I have posted intentionally hurtful comments.
TB_7	I have attacked strangers online to provoke a reaction.
TB_8	I have repeatedly provoked someone online.
TB_9	I have used personal information to harass others.
TB_10	I have pretended to be someone else to start arguments.
TB_11	I have mocked others in public forums or chats.
TB_12	I have made up stories to get others into trouble online.
Dimension 2: Obstruction Trolling (5 items)	
TB_13	I have blocked players from progressing in games.
TB_14	I have interfered with others' Internet usage.
TB_15	I have repeatedly interrupted online conversations.
TB_16	I have moved virtual characters to obstruct others.
TB_17	I have intentionally sabotaged team play.
Dimension 3: Evocative Trolling (5 items)	
TB_18	I have posted online just to get others to agree with me.
TB_19	I have intentionally stirred up arguments online.

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Item Code	Wording
TB_20	I have posed as an expert to manipulate others.
TB_21	I have made shocking statements to get laughs.
TB_22	I have tried to make novice users believe misleading posts.
Dimension 4: Pathological Trolling (3 items)	
TB_23	I have taken extreme positions just to upset others.
TB_24	I have posted contrarian views on sensitive topics.
TB_25	I have ridiculed things that most people respect.

Source: Hong and Cheng (2018)

Hong and Cheng (2018) also developed an Online Trolling Victimization Scale to complement their behavioural trolling measure, offering a comprehensive tool for assessing the lived experiences of those targeted by online trolling. Table 13 introduces the second half of Hong and Cheng's (2018) dual-scale instrument, focusing on individuals' experiences of online trolling victimization. Developed alongside the behaviour scale, this 28-item tool captures how users are targeted by malicious, obstructive, evocative, and deceptive online acts across gaming and social media contexts. Like its counterpart, the victimization scale was developed through a robust psychometric process grounded in existing theoretical frameworks on cyber-aggression, emotional regulation, and antisocial deviance. Its items are behaviourally specific, situationally relevant, and aligned with DeVellis & Thrope's (2021) principles of item clarity and construct breadth. The four empirically validated dimensions—Malicious, Obstruction, Identity, and Dissemination Victimization—cover a wide spectrum of online harms from harassment and sabotage to manipulation and viral misinformation.

Table 13. Online Trolling Victimization Scale Items (28 total)

Item Code	Wording
Dimension 1: Malicious Victimization (11 items)	
TV_1	I have been harassed by strangers online.
TV_2	I have been attacked with lies or insults.
TV_3	I have been provoked by people online.
TV_4	I have received threatening messages.
TV_5	I have been bullied in online forums.
TV_6	I have been the target of repeated insults.
TV_7	I have had my game sabotaged maliciously.
TV_8	I have been impersonated by others to mock me.
TV_9	I have been deceived into arguments.

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Item Code	Wording
TV_10	I have had personal information used against me.
TV_11	I have been blamed unfairly by online users.
Dimension 2: Identity Victimization (7 items)	
TV_12	I have believed false information online that made me upset.
TV_13	I have been tricked into doubting my own beliefs.
TV_14	I have felt manipulated by online messages.
TV_15	I have been made to question my decisions due to online trolling.
TV_16	I have accepted guidance online I later regretted.
TV_17	I have followed online suggestions that turned out misleading.
TV_18	I have felt ashamed after believing trolling content.
Dimension 3: Obstruction Victimization (5 items)	
TV_19	I have been obstructed while playing games online.
TV_20	I have had conversations blocked by trolls.
TV_21	I have had trouble progressing in games due to others.
TV_22	I have been removed or blocked for no reason.
TV_23	I have had my posts or comments sabotaged.
Dimension 4: Dissemination Victimization (3 items)	
TV_24	I have received false information that wasted my time.
TV_25	I have been flooded with junk content online.
TV_26	I have seen provocative posts meant only to distract.
TV_27	I have reacted emotionally to false viral content.
TV_28	I have paid attention to things that turned out to be hoaxes.

Source: Hong and Cheng (2018)

Frommel et al. (2023) employ and extend a validated 8-item Perceived Toxicity of Gaming Communities scale originally developed by Depping et al. (2018) and refined by Beres et al. (2021) (Table 14). This scale is a self-report measure of toxicity as experienced by the respondent from other players, assessing generalized perceptions of community behaviour in multiplayer game environments. It is not behaviour-specific but instead gauges the broader social climate of toxicity as subjectively perceived by players.

The scale reflects cognitive appraisals of in-game community conduct and is grounded in frameworks such as Social Capital Theory and Self-Determination Theory (SDT). In particular, perceived toxicity is posited to reduce the satisfaction of relatedness needs and in-game social capital, thereby negatively affecting player well-being. These assumptions

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were tested via structural path modelling using two independent survey samples (n=147 and n=125), confirming consistent negative associations between perceived toxicity and bonding/bridging capital, and positive associations with loneliness.

The psychometric properties of the scale are strong, with McDonald's ω = .92, indicating excellent internal consistency. Validity was demonstrated through replicated associations with related constructs such as loneliness and relatedness, supporting construct, convergent, and predictive validity in line with DeVellis and Thrope's (2021) criteria for scale quality. Notably, this scale provides a macro-level perceptual assessment of community toxicity and complements micro-level behaviour-specific scales such as those developed by Kordyaka or Tang & Fox.

Table 14. Perceived toxicity of gaming communities' scale

Item Code	Wording (Prompt: "The people I play with are sometimes…")
PT_1	…angry
PT_2	…offensive
PT_3	…mean
PT_4	…good-natured (R)
PT_5	…sympathetic (R)
PT_6	…friendly (R)
PT_7	…hurtful
PT_8	…toxic
Scale: 7-point Likert scale (1 = Strongly Disagree; 7 = Strongly Agree)	
Measured Construct: Perceived community toxicity (received, not enacted)	
Reliability: McDonald's ω = .92	

Source: Frommel et al. (2023); Depping et al. (2018); Beres et al. (2021)

Jagayat and Choma (2021) developed a rigorous and empirically validated self-report instrument to measure the endorsement and engagement in cyber-aggression toward women (CATW) within online gaming communities (Table 15). This scale is distinctive in its attitudinal focus, capturing support for a broad range of hostile, coercive, and gendered online behaviours targeting women. Unlike traditional behavioural or victim-based measures, the CATW scale offers a theoretically grounded assessment of individuals' normative acceptance of gendered cyber-aggression, making it a significant contribution to research on toxicity in digital gaming environments.

The conceptual foundation of the scale draws on the Dual-Process Motivational Model of Ideology and Prejudice and Integrated Threat Theory, which propose that right-wing authoritarianism (RWA) and social dominance orientation (SDO) predict intergroup hostility via perceived threats (e.g., symbolic, social, or competitive threat). The CATW items were explicitly designed to reflect cyber-violence domains outlined by the United Nations Broadband Commission and The Learning Network, encompassing six core domains:

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hacking, impersonation, surveillance/tracking, harassment/spamming, recruitment, and malicious distribution.

Across two large studies (Study 1: n = 276; Study 2: n = 6,381), exploratory and confirmatory factor analyses supported a unidimensional structure for the endorsement scale. The 36 initial items were refined to a final 12-item CATW Endorsement Scale, which demonstrated excellent internal consistency (Cronbach's α ≈ .95–.96) and construct validity through robust associations with RWA, SDO, and hostile sexism.

In addition, a 6-item Engagement Subscale was developed to capture self-reported frequency of CATW behaviours, demonstrating high reliability (α = .93–.94). This dual approach—capturing both attitudinal endorsement and behavioural frequency—satisfies key scale development principles outlined by DeVellis and Thrope (2021), including conceptual clarity, strong internal consistency, multidimensional item generation, and criterion validity.

Table 15. CATW – Endorsement of Cyber-Aggression Toward Women

Domain	Sample Items
Hacking	1. Obtaining a woman's personal information online without her permission is never okay. (R)
	2. If I have figured out the password to a woman's account or profile, I can do what I want with it.
Impersonation	3. To get information about a woman, it's okay to pose as her online.
	4. It is okay to impersonate someone online to learn more about a woman.
Surveillance/Tracking	5. Continually monitoring the activities of a woman online is totally fine.
Harassment/Spamming	6. There is potential harm in repeatedly messaging, calling or texting a woman. (R)
	7. It is fine to use the Internet to contact a woman even though she does not want to be contacted.
	8. It is okay to use the Internet to tell a woman what I think about her, regardless of if she wants to know or not.
	9. There is no problem with telling a woman to kill herself on the Internet.
	10. It's okay to create new, anonymous online profiles or accounts for the sole purpose of using them to spam a woman with messages.
	11. There's nothing wrong with making unprovoked sexual remarks towards or sexual requests of a woman on the Internet.
Recruitment	12. It is okay to trick a woman into a compromising situation using the Internet.
	13. There is nothing wrong with using fake advertisements or profiles to trick a woman online.

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Domain	Sample Items
	14. It is okay to mislead a woman online.
Malicious Distribution	15. It is okay to share intimate photos or videos of a woman online without her consent.
	16. Threatening to release private information about a woman onto the internet in order to get my way is an acceptable thing to do.
Scale: 7-point Likert (1 = Strongly Disagree, 7 = Strongly Agree)	
Construct: Endorsement of cyber-aggression toward women (attitudinal)	
Reliability: α ≈ .95–.96	
Behavioural Subscale: Engagement in CATW (6 items)	
Item Code	**Wording**
ENG_1	I have accessed a woman's personal account or private information online without her permission.
ENG_2	I have impersonated someone else online to deceive or gather information about a woman.
ENG_3	I have monitored or tracked a woman's online activities without her consent.
ENG_4	I have sent a woman unwanted messages or comments online, even after she indicated she didn't want to be contacted.
ENG_5	I have tricked or manipulated a woman into a compromising situation using the Internet.
ENG_6	I have shared or threatened to share a woman's private or intimate content online without her consent.
Scale: 7-point frequency scale (1 = Never, 7 = Always)	
Reliability: α = .93–.94	
Purpose: Measures self-reported engagement in CATW behaviours	

Source: Jagayat and Choma (2021)

The Sexism Against Women Gamers Scale (SAWGS), developed by Bustos-Ortega et al. (2023) and utilized in follow-up research by Bustos-Ortega et al. (2024), is a self-report psychometric instrument designed to measure sexist attitudes specifically targeting women in online gaming environments. Unlike general sexism scales (e.g., Ambivalent Sexism Inventory), the SAWGS was explicitly constructed to reflect context-specific prejudices and ideologies that women gamers face, thus addressing a critical gap in the esports and gaming psychology literature (Table 16).

The scale development process was rigorous, aligning with DeVellis & Thrope's (2021) standards for scale construction: conceptual clarity, item derivation from multiple sources

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(semi-structured interviews, literature review, expert validation), empirical testing across five independent samples (N = 2,437), and psychometric analysis including exploratory and confirmatory factor analysis, and factorial invariance testing across gender and countries (Spain and U.S.). The final version includes eight items reflecting key dimensions of sexist ideology in gaming culture, such as male superiority, gatekeeping, and anti-feminist conspiracy narratives.

SAWGS is unidimensional, with high internal consistency (Cronbach's α ranging from .78 to .89 across samples) and strong construct validity. It correlates positively with traditional sexism, social dominance orientation, myths about gender violence, and negatively with feminist identity—demonstrating excellent convergent and discriminant validity. Importantly, SAWGS scores predicted responses to realistic sexist gaming scenarios, including victim blaming and punishment of toxic behaviours, beyond what general sexism scales could explain.

In subsequent research (Bustos-Ortega et al., 2024), the SAWGS was used to investigate how sexist attitudes influence the perception of sexist incidents in online games, particularly when the female victim is described as a feminist or engages in gender-based collective action. The SAWGS moderated how much blame participants attributed to women victims, demonstrating its utility in experimental and applied research. Its predictive power and contextual relevance make it essential for esports toxicity research, especially in grassroots environments where normalization of such attitudes remains pervasive.

Table 16. Sexism Against Women Gamers Scale (SAWGS) Items

Item Code	Wording
SAWGS_1	In general, men play video games better than women.
SAWGS_2	Many women now play video games just because they are trendy.
SAWGS_3	In the field of video games, encouraging the participation of female-only teams in competitions promotes sexism and discrimination.
SAWGS_4	In the field of video games, there is a community of women who are against male gamers.
SAWGS_5	The negative comments or threats women receive while playing video games are given much more importance than those received by men.
SAWGS_6	Female gamers often interpret kindness from male gamers as harassment.
SAWGS_7	In online video games, some women really deserve the insults they receive.
SAWGS_8	Many female gamers are famous just because they are pretty or because they use their body to make sexual advances.
Scale Type: 7-point Likert (1 = Strongly Disagree; 7 = Strongly Agree)	
Measured Construct: Sexist attitudes toward women in gaming	
Psychometrics:	
Reliability: Cronbach's α = .78–.89	

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Item Code	Wording
Validity: Demonstrated construct, convergent, discriminant, and predictive validity	
Invariance: Confirmed across gender and country (Spain and U.S.)	

Sources: Bustos-Ortega et al. (2023, 2024)

Gandolfi et al. (2023) offer one of the most recent contributions to the measurement of toxic behaviour in digital gaming through the Toxic Game Behaviour Scale (TGBS) (Table 17). Developed due to the lack of consensus on how to operationalize toxicity in gaming, the TGBS is a 4-item, 7-point Likert scale that measures both self-perceived and externally attributed toxic behaviour. The items are rooted in the Social Identity Theory and adapted from Kowert and Oldmeadow's (2015) Social Identity with the Community of Gamers Scale. The TGBS captures toxicity through two lenses:

- Internal self-attribution (e.g., "I think my game behaviours are toxic")
- External perception by others (e.g., "Other players define me as a toxic gamer")

The scale demonstrates strong internal reliability (Cronbach's α = .87) and has been validated in a sample of 567 online gamers across four popular communities (Fortnite, Apex Legends, League of Legends, DOTA2). Regression analyses found TGBS scores to be a significant positive predictor of Internet Gaming Disorder (IGD), and to correlate with increased personal distress and reduced empathic concern (as per the Interpersonal Reactivity Index).

Unlike previous scales (e.g., Kordyaka's behavioural TB scale), TGBS does not focus on specific toxic actions (e.g., insults or griefing) but instead captures identity-based toxicity—how players relate to toxicity as a social identity or label. This makes the TGBS uniquely suited to community-level and attitudinal research, expanding the field beyond episodic or behavioural toxic events.

Table 17. Toxic Game Behaviour Scale Items

Item Code	Wording
TGBS_1	I think my game behaviours are toxic.
TGBS_2	I identify with toxic gamers.
TGBS_3	Other players define me as a toxic gamer.
TGBS_4	Other players may see my game behaviours as toxic.
Scale Type: Self-report (self-perception and external perception)	
Construct Measured: Identity-based perception of toxic behaviour	
Reliability: Cronbach's α = .87	

Source: Gandolfi et al. (2023)

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Bonilla et al. (2024) present the TILT Questionnaire (TILTQ), a pioneering, psychometrically validated tool designed to measure the psychological construct of "tilt" in esports and gaming contexts (Table 18). "Tilt" refers to a state of escalating frustration, emotional lability, and performance degradation, typically triggered by failure or stress in competitive settings. This instrument is distinctive for linking tilt not only to emotional and cognitive dimensions but also to toxic behavioural outcomes, such as impulsive decision-making or rage outbursts during play.

The authors define tilt as a progressive emotional and behavioural breakdown, triggered by in-game events (e.g., repeated mistakes, unfair losses), leading to anger, reduced attention, emotional swings, and toxic reactions. The conceptual development was informed by in-depth qualitative interviews (n = 27) with esports professionals and coaches and guided by themes from psychological literature on emotion regulation, performance anxiety, and maladaptive coping in high-stakes settings.

The development and validation of the TILTQ followed DeVellis & Thrope's (2021) principles of sound scale construction. After generating 170 items from interview data and expert reviews, an iterative content validation process reduced the list to 53. Exploratory and confirmatory factor analyses led to a final 18-item scale across two robust dimensions: Tilt Causes (7 items) and Tilt Consequences (11 items).

These dimensions collectively explain 51.2% of the variance. The questionnaire uses a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree) referencing players' experiences over the last 15 days. Reliability indices were excellent: Cronbach's α = 0.921 (total scale), with subscale alphas = 0.854 (causes) and 0.890 (consequences). McDonald's ω values confirmed these findings.

Importantly, the scale shows strong construct and external validity. Correlation with the Internet Gaming Disorder Scale (IGDS9-SF) and the Satisfaction With Life Scale (SWLS) demonstrated meaningful patterns: tilt positively correlated with IGD (r = .357) and negatively with life satisfaction (r = –.318). Structural equation modelling showed tilt to be a predictor of IGD and inversely associated with well-being.

Although the scale is not a direct measure of toxic behaviour, it provides a diagnostic antecedent: tilt is shown to predispose players to toxic reactions, decision fatigue, and emotional deregulation, thereby offering early detection and intervention potential.

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Table 18. TILT Questionnaire (TILTQ) Items

Item Code	Wording
Subscale 1: Causes of Tilt	
TILT_C_1	I have lost because of things in the game I could not control.
TILT_C_2	I have failed to make important moves.
TILT_C_3	I have made mistakes in things I know I can do well.
TILT_C_4	I have made wrong decisions.
TILT_C_5	I failed even though I knew what I had to do.
TILT_C_6	I have felt that I have more ability than I have been able to demonstrate.
TILT_C_7	I have played frustrating games.
Subscale 2: Consequences of Tilt	
TILT_CON_1	I have felt that the game was not fair.
TILT_CON_2	I have exploded with rage.
TILT_CON_3	I have felt irritated.
TILT_CON_4	I have made decisions without thinking.
TILT_CON_5	I have found it hard to concentrate.
TILT_CON_6	I have had mood swings due to the outcome of my games.
TILT_CON_7	I have felt that I have no energy.
TILT_CON_8	I have felt that I have been on a losing streak that I could not get out of.
TILT_CON_9	I have played hastily.
TILT_CON_10	I have continued to play even though I did not feel like it.
TILT_CON_11	I have written off games as lost.

Scale Type: 5-point Likert (1 = Strongly Disagree, 5 = Strongly Agree)

Construct Measured: Emotional and behavioural dysregulation under stress (Tilt)

Reliability:

- Total Scale: $\alpha = 0.921$, $\omega = 0.922$
- Causes Subscale: $\alpha = 0.854$, $\omega = 0.855$
- Consequences Subscale: $\alpha = 0.890$, $\omega = 0.891$

Source: Bonilla et al. (2024)

The scale developed and applied by Frommel et al. (2023) assesses players' general perceptions of toxicity within their broader gaming environments rather than measuring individual behaviours or personal victimization. Specifically, the Perceived Toxicity of

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Gaming Communities Scale asks respondents to rate how often they perceive their co-players as exhibiting hostile, disrespectful, or aggressive behaviours—using adjectives such as “toxic,” “rude,” and “offensive.” This approach situates toxicity as a socially ambient and normatively salient phenomenon, capturing players’ impressions of the prevailing behavioural climate in multiplayer settings. Unlike victim-centred measures that document direct harms, this scale provides insight into how toxicity is culturally normalized or problematized within gaming communities, making it particularly useful for monitoring group dynamics, evaluating intervention impact, and diagnosing the ethical climate of esports teams or platforms. Its psychometric robustness (McDonald’s ω = .92) further reinforces its suitability as a climate-level diagnostic instrument, justifying its classification in this distinct cluster.

The systematic analysis of toxicity measurement scales reveals a field marked by both conceptual richness and methodological fragmentation. The reviewed instruments differ substantially in terms of the behavioural dimensions targeted, the respondent perspective (e.g., self-perpetration, victim experience, ideological endorsement), and the theoretical models underpinning their development. Despite this diversity, several critical patterns emerge, particularly regarding dimensional coverage, psychometric quality, and scope of application.

Kordyaka et al.’s (2019, 2020) TB scale, Ladanyi and Doyle-Portillo’s (2017) Grief Play Scale (GPS), Tang & Fox’s (2016) harassment items, and the newly included cheating scale by Wu and Chen (2013) measure a wide range of negative conduct, from verbal and gender-based aggression to griefing and exploitative gameplay. The Wu and Chen scale is particularly notable for its theoretically grounded structure based on social cognitive theory. It operationalizes cheating through nine detailed behaviours—such as exploiting bugs, using bots, or hacking accounts—assessed on a 5-point frequency scale (1 = Never, 5 = Always). With a high internal consistency (α = .89) and unidimensional construct validity, it represents a psychometrically sound tool for assessing deviant gameplay conduct. The Wu scale complements the GPS by focusing specifically on rule-violating behaviours that undermine fair play through technological or strategic manipulation. While the GPS emphasizes disruptive interpersonal actions (e.g., blocking player movement or taunting), the Wu scale targets system-exploitative conduct.

Scales such as Hong and Cheng (2018), and Frommel et al. (2023) focus on how toxicity is experienced by players. These include relational harms such as exclusion, manipulation, and verbal or symbolic aggression, while Hong and Cheng’s trolling victimization scale spans malicious, identity-based, and obstruction experiences. Frommel et al.’s (2023) scale, while sometimes classified under community perception, also captures victim perspectives by asking players to rate how often they perceive others as toxic. These scales are crucial for surfacing non-obvious harms and are aligned with communication theory, toxic disinhibition, and CMC literature. Their inclusion ensures that the ENHANCE tool does not privilege only the aggressor’s viewpoint but also accounts for the player on the receiving end.

The CATW scale (Jagayat & Choma, 2021), the SAWGS (Bustos-Ortega et al., 2023), and the TGBS (Gandolfi et al., 2023) are not behaviour-based but rather capture cognitive-affective alignment with toxic ideologies, especially gendered hostility. While the CATW scale includes both an endorsement and a behavioural engagement subscale, its core structure is unidimensional per the original validation. The SAWGS is tailored to anti-feminist and gatekeeping beliefs in gaming culture. The TGBS assesses how players perceive themselves in relation to a "toxic gamer" identity, offering a unique perspective on how toxicity becomes internalized and normalized. Together, these tools enable the identification of latent risk factors and justification mechanisms that precede or enable toxic conduct.

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The TILT Questionnaire (Bonilla et al., 2024) addresses emotional precursors and psychological states that often lead to toxic behaviour and is the only scale identified in this domain. Rather than measuring toxicity directly, it assesses frustration, cognitive overload, and emotional reactivity during gameplay—conditions strongly associated with toxic incidents. Its predictive association with Internet Gaming Disorder and decreased well-being reinforces its diagnostic relevance. Including such a measure in the ENHANCE tool enables anticipatory and preventive intervention, especially in high-pressure or emotionally volatile gaming contexts.

Finally, the Perceived Toxicity of Gaming Communities Scale (Frommel et al., 2023) measures the ambient social climate of toxicity—not individual actions or beliefs, but how widespread and normalized hostile behaviour feels within a community. This distinction is critical: players may not report being directly targeted or enacting toxicity themselves, yet still perceive their environment as aggressive, unfair, or hostile. This perception influences both participation and psychological safety. Its high internal reliability (ω = .92) and ecological validity make it particularly suited for team-level or platform-wide diagnostics.

The comparative summary in Table 19 illustrates the breadth of constructs, perspectives, and psychometric profiles across the reviewed instruments. While verbal aggression appears across multiple tools, its framing differs significantly suggesting the need for careful conceptual delineation when selecting or integrating items. Similarly, while CATW and SAWGS both address sexism, their theoretical scope and item structures are distinct and should not be collapsed.

Crucially, ***no existing scale alone captures the full complexity of toxicity in esports.*** The most promising approach for the ENHANCE tool is a modular, multidimensional design that integrates the strongest validated elements across clusters. This should include direct behaviour self-report (e.g., TB, GPS, or Wu items), victimization experience (e.g., Hong & Cheng), attitudinal indicators (e.g., SAWGS or CATW), emotional warning signs (e.g., TILTQ), and community climate perception (e.g., Frommel). Such an approach aligns with DeVellis & Thrope's (2021) criteria for robust scale development, including dimensional clarity, construct coherence, internal consistency, and context sensitivity.

Table 19. Summary of Reviewed Toxicity Measurement Scales

Scale	Target	Perspective	Dimensions	Reliability (α)	Key Strengths
Kordyaka TB Scale	Behaviour	Self	Verbal aggression, blaming	.93	High validity; focused perpetration measure
Grief Play Scale (GPS)	Behaviour	Self	Harassment, sabotage, scamming	.96	Comprehensive behavioural scale
Tang & Fox (2016)	Behaviour	Self	General and sexual harassment	.83–.87	Gendered focus; validated
Wu & Chen (2013)	Behaviour	Self	Cheating, hacking, exploitative play	.93	Focused on cheating; underrepresented domain

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Scale	Target	Perspective	Dimensions	Reliability (α)	Key Strengths
Hong & Cheng (2018)	Behaviour / Experience	Self/Victim	Trolling, obstruction, provocation	.95	Dual perspective; nuanced behaviours
TGBS (Gandolfi et al., 2023)	Identity	Self/Other	Self-perception of toxicity	.87	Focus on toxic identity
CATW (Jagayat & Choma)	Attitude/ Behaviour	Self	Endorsement and conduct of gendered aggression	.93–.96	Gendered ideology + action
SAWGS	Attitude	Self	Sexist beliefs in gaming	.78–.89	Context-specific sexism scale
TILTQ (Bonilla, 2024)	Affect	Self	Emotional causes and consequences	.85–.92	Predictive of toxic behaviour
Frommel et al. (2023)	Community norms	Victim/ Observer	Perceived community toxicity	ω = .92	Climate assessment scale

The validated scales reviewed in this report employ diverse response formats tailored to the constructs they measure (Table 20). These range from 4-point and 5-point Likert scales (e.g., Tang & Fox, 2016; Bonilla et al., 2024) to more nuanced 6-point and 7-point scales (e.g., Hong & Cheng, 2018; Bustos-Ortega et al., 2023). For instance, Hong and Cheng's trolling behaviour and victimization scales adopt a 6-point frequency format that captures the behavioural intensity and regularity (0 = never, 5 = 9+ times per week), allowing for finer distinctions in engagement and experience. Similarly, the CATW and SAWGS attitudinal endorsement scales use 7-point agreement Likert formats, reflecting the spectrum of ideological alignment and enabling detection of moderate versus extreme views. Meanwhile, Bonilla et al.'s TILT Questionnaire applies a 5-point agreement scale focusing on recent experiences, aligning with the emotional and psychological nuance of tilt. This variety underscores the importance of aligning scale format with construct type: behaviour frequency benefits from gradation, attitudinal endorsement from agreement continua, and emotional precursors from recency-linked reflection. Based on this review, the ENHANCE self-assessment tool should ***adopt a dual format: (1) a 5-point frequency scale (e.g., "Never" to "Very Frequently") and (2) a 5-point agreement scale (e.g., "Strongly Disagree" to "Strongly Agree")***. This structure will maintain methodological consistency with the strongest validated instruments while enhancing interpretability and scalability for youth-targeted interventions.

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Table 20. Comparative Measurement Formats Across Reviewed Toxicity Scales

Scale / Author	Construct Measured	Response Format	Justification Notes
Hong & Cheng (2018)	Trolling behaviour and victimization	6-point frequency (0 = never, 5 = 9+/week)	Captures behavioural frequency with high granularity
Wu & Chen (2013)	Online game cheating behaviour	5-point frequency (1 = Never, 5 = Always)	Captures specific forms of cheating (e.g., bots, hacks); psychometrically validated
Bonilla et al. (2024)	Emotional precursors (Tilt)	5-point agreement (1 = Strongly Disagree)	Links emotional experience to gameplay over past 15 days
Bustos-Ortega et al. (2023, 2024)	Sexist attitudes (SAWGS)	7-point agreement (1 = Strongly Disagree)	Enables spectrum-based ideological endorsement analysis
Jagayat & Choma (2021)	Endorsement of cyber-aggression (CATW)	7-point agreement (1 = Strongly Disagree)	Captures normative alignment with toxic gendered behaviours
Tang & Fox (2016)	Harassment behaviour	4-point frequency (1 = Always, 4 = Never)	Reverse-coded; focused on intensity of conduct
Frommel et al. (2023)	Perceived community toxicity	7-point agreement	Measures ambient climate of toxicity in community settings

Theme 3 – Training themes, strategies and approaches to combat the negative effects of toxicity in esports

Esports have grown at a historically unprecedented pace, but this expansion has had an unsettling side effect: the rise of toxic behaviour within online gaming communities. Today's players are subjected to constant verbal abuse, cyberbullying, sexism, gatekeeping, and emotional abuse issues that detract from engagement, harm mental health, and discourage inclusivity (Adinolf & Turkay, 2018; Zsila et al., 2022). As esports consolidates its presence in mainstream popular culture, calling to a broad and diverse following, toxicity remains a stubborn bane, jeopardizing the social and educational advantage that gaming cultures could otherwise supply (Busch et al., 2015; Görlich et al., 2025).

The numbers relate a grim narrative. Evidence shows a direct relationship between the growth in popularity of esports and an increase in toxic behaviours, especially in competitive games where there are high stakes and anonymity fuels aggression. Nexø's (2024) analysis identifies that 80% of participants are subjected to biased remarks during competition, while 52-74% are confronted with outright harassment. Morrier et al. (2024) once more

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prove that the competition of virtual gaming and the anonymity of virtual communications are a breeding ground for negative activity. Such behaviours require aggressive, well-committed remediations.

The problem runs deeper again for minority groups. Research conducted by UNISA (2024) and Crothers, Scott-Brown & Cunningham (2024) identified how gendered harassment and cyberbullying disproportionately target women and minority gamers. Major industry players like Riot Games and Valve have experienced firsthand the ways in which competitive frustration consistently erupts into toxicity, confirming the necessity of systemic change.

Training topics, educational methods and gaps

Developing effective anti-toxicity training for esports requires a clear-eyed assessment of what's currently missing from player education. The research reveals several critical areas where training programs consistently fall short, leaving players, coaches, and even parents unequipped to handle gaming's social challenges. Considering emotional intelligence training while competitive gaming demands intense emotional control, most esports programs barely address this need. Players navigate high stress matches daily yet receive little guidance on managing frustration before it erupts into verbal abuse or other toxic behaviours. This oversight seems particularly glaring when compared to traditional sports, where emotional regulation forms a core part of athlete development.

Educational methods implemented to address esports toxicity vary widely, necessitating a comprehensive comparative analysis. Research emphasizes that interactive and scenario-based training, while highly effective for practical skill development, often faces scalability challenges (Cho et al., 2024). Initiatives involving parental engagement have demonstrated significant positive impacts on fostering healthier gaming environments, yet they often encounter low adoption rates due to limited outreach efforts (Zheng et al., 2024). Certification programs on online etiquette provide clear benchmarks but are frequently voluntary and inconsistently enforced (Wu, Li, & Gui, 2022). This comparative analysis highlights the importance of addressing these limitations to optimize the efficacy of educational interventions. The following Table 21 summarizes these methods, clearly illustrating their respective strengths, weaknesses, and actionable recommendations for improvement.

Table 21. Comparative Analysis of Educational Methods for Combating Toxicity in Esports

Educational Method	Strengths	Weaknesses/Gaps	Recommended Actions	Sources
Scenario-Based Interactive Learning	Highly engaging, practical skill application	Resource-intensive; limited scalability	Develop standardized online modules to broaden accessibility	Cho et al. (2024)
Parental Engagement Initiatives	Proven efficacy in fostering healthy gaming environments	Low adoption rate; limited awareness among parents	Increase targeted outreach and resource availability	Zheng et al. (2024)

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Educational Method	Strengths	Weaknesses/Gaps	Recommended Actions	Sources
Online Etiquette Certification Programs	Provides clear behavioural expectations; measurable outcomes	Certification often voluntary; limited enforcement	Encourage industry-wide recognition and incentivization	Wu, Li, & Gui (2022).

The digital citizenship gap proves equally concerning. In an era where in-game communication happens across global, multicultural player bases, formal training in respectful online interaction remains surprisingly rare. Parents and educators often lack the gaming literacy to teach these skills, while game companies frequently assume players will simply intuit proper online conduct (Zheng et al., 2024). The result? Communities where harassment flourishes because no one established clear norms.

Gender sensitivity training highlights perhaps the most troubling deficiency. Study after study confirms that women and LGBTQ+ players face disproportionate harassment (Crothers, Scott-Brown & Cunningham, 2024; UNISA, 2024), yet few programs specifically address this issue. The oversight perpetuates exclusionary environments that drive marginalised players away from competitive gaming is a loss for both the individuals and the esports community as a whole. Similarly, while tilt management techniques could prevent countless toxic incidents, few resources exist to teach players these crucial conflict resolution skills (Cho et al., 2024). The connection between mental health and toxicity represents another missed opportunity. Toxic behaviour often signals underlying distress, yet current programs rarely help players recognize these patterns in themselves or others (Bubna et al., 2023). This oversight leaves communities unequipped to address the psychological roots of many toxic incidents.

Even basic rule enforcement suffers from inconsistent implementation. Game-specific codes of conduct frequently exist but aren't properly communicated or enforced (Riot Games, 2025; Valve Corporation, 2025). Players can't follow rules they don't understand, while inconsistent punishment erodes faith in reporting systems. The streaming community faces parallel challenges. As live streaming grows, so does targeted harassment, yet few resources exist to help streamers and viewers navigate these risks (Wu, Li, & Gui, 2022). This leaves content creators vulnerable and discourages potential new voices from entering the space.

These findings paint a concerning picture of the current state of anti-toxicity efforts. As Table 22 clearly shows, we're dealing with a patchwork of incomplete solutions when what's required is a coordinated, system-wide approach. The evidence suggests that piecemeal interventions simply won't cut it as gaming communities need properly resourced programs that tackle toxicity at its roots. This means giving every stakeholder, from rookie players to seasoned coaches, the same clear guidelines, concrete strategies, and emotional support tools to build genuinely welcoming competitive spaces.

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Table 22. Summary of training topics and identified gaps in anti-toxicity education for esports participants

Training Tool/Method	Target Audience	Application & Effectiveness	Notes & Identified Gaps	Sources
Digital Citizenship Training	Players, Parents	Provides structured education on respectful digital communication, proven to reduce incidents of cyberbullying within gaming communities.	Rarely standardized or consistently integrated in esports curricula.	Zheng et al. (2024)
Gender Sensitivity & Inclusion Training	Players, Coaches, Educators	Directly addresses gendered harassment, improving inclusivity and retention of marginalized groups in esports.	Often narrowly applied, lacking widespread esports industry adoption.	Crothers, Scott-Brown & Cunningham (2024).
Conflict Resolution & Communication Skills Training	Players	Interactive and scenario-based learning aimed at improving in-game communication and conflict resolution, reducing escalations.	Insufficient dedicated resources tailored to competitive esports scenarios.	Cho et al. (2024)
Mental Health Awareness & Support Programs	Players, Coaches, Parents	Facilitates understanding of mental health and emotional regulation, reducing stigma and promoting proactive behavioural management.	Typically reactive; proactive and preventative approaches remain scarce.	Bubna et al. (2023)

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Training Tool/Method	Target Audience	Application & Effectiveness	Notes & Identified Gaps	Sources
Stream-Safe Educational Programs	Streamers, Viewers	Teaches protective and responsive strategies against online harassment in streaming contexts, showing increased safety outcomes.	Inconsistent adoption, especially among less established streaming communities.	Wu, Li, & Gui (2022)

Fixing these gaps won't happen overnight as it demands teamwork across the entire gaming ecosystem. Game developers need to work together with teachers, mental health experts, and community leaders to create training that resonates with players. The solutions can't just look good on paper; they need to work in the messy reality of online gaming cultures, adapting to different communities while maintaining consistent standards.

Variables anti-toxicity research

Understanding toxic behaviour in competitive gaming requires examining both its causes and how researchers quantify them. Studies consistently identify several key factors that fuel hostile interactions between players. The frustration of defeat, the shield of anonymity, and the intense pressure of team competition all contribute to toxic outbursts in measurable ways. Beyond these situational factors, individual characteristics like gender identity, self-perceived ability, and time spent gaming also shape how players interact, for better or worse (Zsila et al., 2022; Lapidot-Lefler & Barak, 2012).

The data reveals predictable patterns. After crushing defeats, voice chats and text channels frequently erupt with abusive language as players vent their frustration. Streaming platforms face parallel challenges, where anonymous viewers often flood chats with slurs and harassment when accountability measures are weak (Han et al., 2023). Team dynamics introduce additional complexity, and the high stakes of competitive play can turn teammates against each other, with aggression levels rising alongside perceived performance pressure.

Gender disparities remain particularly stubborn. Multiple studies confirm female players encounter sexist remarks at rates three to four times higher than their male counterparts (Crothers, Scott-Brown & Cunningham, 2024; UNISA, 2024). This imbalance persists across most major esports' titles, suggesting systemic issues rather than isolated incidents. The gaming community's social hierarchy also plays a role. Players who perceive themselves as highly skilled often gatekeep against newcomers, while veteran players frequently normalize toxic behaviours they've encountered for years (Kordyaka et al., 2024). These patterns highlight how gaming culture itself can perpetuate problems without deliberate intervention.

Table 23 captures these relationships systematically, showing how specific triggers (like competitive losses) lead to measurable toxic outcomes (like verbal abuse frequency). The patterns hold across different gaming contexts, from ranked matches to streaming chats to community forums.

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Table 23. Independent and dependent variables in eSports toxicity studies

Study Context	Independent Variable	Dependent Variable	Sources
Streaming environments	Audience anonymity	Chat toxicity (harassment, slurs)	Han et al. (2023)
Team-based online games	Team performance pressure	Flaming & grieving behaviours	Kowert (2020)
Gender representation	Presence of female player	Sexist remarks per session	Crothers, Scott-Brown & Cunningham (2024)
Community forums	Perceived skill level	Gatekeeping responses	Kordyaka et al. (2024)
Player experience	Hours played	Tolerance of toxic behaviour	Zsila et al. (2022)

The current landscape of anti-toxicity initiatives presents a mixed picture of progress and persistent challenges. On the positive side, programs focusing on emotional regulation show real promise. TILT-based workshops, for instance, have successfully helped competitive players manage frustration, leading to measurable reductions in toxic outbursts. Similarly, digital citizenship programs in youth esports clubs have transformed online interactions, fostered accountability and reduced cyberbullying incidents (Zheng et al., 2024). These successes demonstrate that with the right interventions, behavioural change is possible.

Yet glaring gaps remain, particularly around inclusivity. Despite overwhelming evidence that female and LGBTQ+ players face disproportionate harassment (Crothers, Scott-Brown & Cunningham, 2024), most programs fail to address the systemic nature of this exclusion. The lack of comprehensive gender sensitivity training means many initiatives only treat symptoms rather than root causes (Kowert, 2020). This oversight becomes especially troubling when considering how these marginalised groups continue to leave esports at alarming rates. The parental engagement gap represents another missed opportunity. While programs like Guild Esports' "Parental Power Up" show how educating parents can create ripple effects through gaming communities (Guild Esports, 2024), such initiatives remain exceptions rather than norms. This is particularly shortsighted given research demonstrating how parental involvement correlates with healthier gaming habits (Hidaayah et al., 2025). Without equipping parents and educators with proper training, we're essentially fighting toxicity with one hand tied behind our backs.

To effectively involve parents and educators, it is important to have a solid grasp of online gaming environments and to recognise toxic behaviours (Zheng et al., 2024). Parents and educators should take an active role in educational programs specifically designed to reduce toxicity, promote digital citizenship, and bolster emotional resilience in children. The current literature highlights various educational tools and tailored programs that empower both parents and teachers, including digital citizenship training and initiatives for parental engagement. These interventions equip adults with the essential knowledge, strategies, and practical skills needed to manage online interactions proactively, ultimately helping to

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decrease the occurrence of toxic behaviours in gaming communities (Zheng et al., 2024; Bubna et al., 2023).

Specifically, parents have an immense role to play in shaping how their kids interact online, especially when it comes to understanding digital etiquette and the expected behaviours in gaming spaces (Zheng et al., 2024). Getting involved can mean attending workshops specifically designed to help parents spot signs of emotional distress and aggressive behaviour that often led to online toxicity. For instance, programs like "Digital Citizenship Training" offer valuable resources and structured sessions aimed at equipping parents with the tools they need to guide their children toward healthier online interactions and better emotional self-regulation (Zheng, et al., 2024). Moreover, initiatives like Guild Esports' "Parental Power Up" program showcase effective strategies that empower parents with direct training and resources, enabling them to positively influence their children's digital behaviours and foster safer online gaming communities (Guild Esports, 2024). These proactive educational tools and initiatives are essential in helping parents move from being passive observers to active participants in the fight against esports toxicity.

Regional success stories offer valuable blueprints. NASEF's integration of anti-toxicity training into school curricula has shown how institutional support can drive lasting change (NASEF, 2023). Similarly, Europe's ESOGA initiative proves that locally tailored codes of conduct gain better traction than generic, top-down approaches (European Esports Federation, 2023). These models highlight the importance of cultural relevance in program design.

The comparison with traditional sports is particularly illuminating. Where football or basketball have decades of institutional knowledge about managing competitive environments, esports often reinvent the wheel (British Esports Federation, 2024). The emerging framework for esports coaching certifications, incorporating conflict resolution and emotional regulation, suggests the industry is finally recognizing this gap. This "know-do" gap represents one of the field's most pressing challenges.

Looking ahead, combating toxicity effectively demands a comprehensive approach that simultaneously targets individual behaviours and systemic cultural issues. Success will depend on developing adaptable frameworks that account for regional differences while maintaining core principles of inclusivity. Significant investment in technological solutions must accompany these efforts, ensuring moderation tools keep pace with evolving gaming environments. We'll need ongoing research that tracks results over time as there's a big difference between quick fixes that fizzle out and solutions that stick. Sure, we know what needs to be done, but pulling it off means getting game companies, schools, and player communities all rowing in the same direction for once. Ultimately, if we want gaming spaces where everyone feels welcome, we've got to stop treating toxicity as just a few bad apples and start dealing with it as the complex, system-wide problem it really is.

Promoting prosocial behaviours within gaming environments yields significant psychological and social benefits, enhancing players' overall gaming experience and well-being. Studies highlight that prosocial interactions, such as cooperation, supportive communication, and team-based problem-solving, are positively correlated with increased emotional intelligence, improved mental health, and greater social integration among gamers (Greitemeyer & Osswald, 2010). Specifically, engaging in healthy gaming practices that foster teamwork, and empathy has been linked to reduced aggressive tendencies and enhanced interpersonal skills, both within virtual contexts and real-life interactions (Gentile et al., 2009). Furthermore, structured interventions and gaming environments that encourage prosocial behaviours contribute to more inclusive and respectful online communities, significantly diminishing occurrences of toxic behaviours (Kowert, 2020).

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Thus, prioritising prosocial training and fostering healthy gaming environments not only mitigates toxicity but also cultivates long-term benefits such as improved psychological resilience, social cohesion, and positive community-building within esports and beyond (Adachi & Willoughby, 2016).

4. Study 2 — Self-assessment tool development

This section details the development of a multidimensional self-assessment for toxicity in esports, outlining the methodological workflow from construct specification and item generation to piloting and refinement. Content validity is established through expert review and cognitive interviewing; feasibility is assessed via field piloting that examines instructions, burden, anchors, and flow. Planned validity evidence covers nomological expectations (associations with gamer identity and need satisfaction of relatedness) alongside scale- and domain-level "overall" items to support interpretability. Reliability will be evaluated through internal-consistency indices, and data-quality safeguards include informed consent pathways and two instruction-check items. Standardised response formats and a shared look-back window are reported for comparability. The section concludes with the ethically approved, final questionnaire—comprising domain blocks (abusive communication, disruptive gameplay, unsportsmanlike conduct, discriminatory behaviour, real-world spillover) and a general-toxicity block—ready for use with players aged 16–26.

4.1 Methodology

This section documents the completion of the Work Package 2 (WP2) tasks outlined in the proposal (pp. 46–47) and presents them in the same numbering for traceability. Specifically, T2.2 covers the creation of the Self-Assessment Tool (identifying existing measures, aligning tasks to European partner contexts, and drafting the instrument), T2.3 details the validation pathway (process design, sampling of grassroots esports players, and comprehension checks), and T2.4 reports the pre-tests (institutional distribution, data analysis, and discussion of pre-findings). The consistent labels (e.g., T2.2, T2.3, T2.4) signal direct correspondence to the proposal's WP2 structure and deliverables.

T2.2 Creation of Self-Assessment Tool

2.2.1 Identify existing questionnaires and their measurements

Study 1 showed that **no single validated instrument** spans the breadth of toxicity relevant to competitive online play among young players aged 16–26, justifying an integrated self-assessment grounded both in lived community evidence and in the strongest measures identified in the review. The development pathway therefore began with a precise conceptual specification drawn from mapped toxic and constructive interactions in esports contexts, so that items reflect what young players actually encounter rather than abstracted assumptions. This follows best-practice guidance that scale work should start from a clear construct definition with explicit inclusion boundaries, because early ambiguity propagates error into item writing, scoring, and interpretation (DeVellis & Thorpe, 2021).

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An **initial item pool** was assembled by adapting developmentally appropriate content from validated sources and by drafting new items where the Study 1 corpus revealed recurrent patterns not adequately represented in existing tools (e.g., platform-specific expressions and communication channels typical of grassroots play) (see Table B1 at Annex B). The pool was purposely conceptually tight and slightly redundant, so that coverage can be preserved when weaker items are pruned; reliability benefits from stronger average associations among well-focused items and from a pool that is broader than the eventual instrument (DeVellis & Thorpe, 2021). Redundancy was maintained when it reflected the construct rather than incidental wording, allowing superior versions to be retained at optimisation (DeVellis & Thorpe, 2021).

Response formats were matched to content to reduce interpretive ambiguity and support youth usability. Behavioural/experiential statements use five-point agreement anchors, while global "overall" prompts at the end of each domain use five-point frequency anchors and a shared look-back window, with identical on-screen anchors across sections for online administration. Aligning response options with construct demands and presenting consistent anchors across sections are consistent with best-practice guidance on determining formats early and keeping formats compatible with the constructs being measured (DeVellis & Thorpe, 2021).

2.2.2 Select tasks according to European partner countries (gaming practices, genres and contextual settings)

Before any quantitative pruning, **content and face validity** were strengthened through a two-stage qualitative appraisal that explicitly addressed cross-country applicability. A mixed panel of domain experts and practice stakeholders across partner countries reviewed the pool for representativeness, clarity, developmental appropriateness, and cultural–linguistic fit, with care taken not to eliminate all apparent redundancy because concept-level overlap underpins internal consistency when items are properly aligned (DeVellis & Thorpe, 2021). Cognitive interviewing with young players then probed interpretation, retrieval, and decision processes for selected items and anchors (including country-specific platform norms, genres, and competitive formats) to ensure respondent–investigator meaning alignment and to surface vocabulary or option confusion that could introduce construct-irrelevant variance. Using expert review and cognitive appraisal as pre-pilot safeguards maximises item appropriateness across European contextual settings and reduces avoidable error introduced by wording and administration choices (DeVellis & Thorpe, 2021).

2.2.3 Draft a valid Self-Assessment Tool according to the players' individual needs related to toxicity level in European countries

Two design decisions enhance interpretability and protect content coverage in the final tool. First, each domain concludes with a single global item that asks respondents to summarise the overall frequency/salience of behaviours in that section; second, the instrument includes a scale-level general-toxicity block that prompts a holistic judgement of the play environment. Global items are concise, face-valid anchors that reinforce domain boundaries in plain language, provide intuitive touchpoints for feedback to youth and practitioners, and help detect potential under-representation of content relative to respondent experience; they complement rather than replace multi-item coverage (DeVellis & Thorpe, 2021). Consistency of timeframe, perspective, and anchors between

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domain items and their global prompt is maintained to avoid construct-irrelevant variance (DeVellis & Thorpe, 2021).

Planned validity evidence is articulated within a clearly specified nomological network and supported by transparent documentation of the auxiliary measures that ground our claims, combining content evidence with theoretically anchored relations to antecedents and outcomes (DeVellis & Thorpe, 2021). **Construct validity** will be examined through theoretically expected associations with gamer identity, treated as an antecedent that shapes sensitivity to group norms and interactional responses in competitive play. Gamer identity refers to felt belonging and self-categorisation within the gamer community, that is, the extent to which the personal self merges with the collective self-associated with gaming culture (Kaye, Kowert, & Quinn, 2017; Stone, 2019). Prior work links stronger identification to greater psychological investment in community standing and to norm-defensive behaviours that may present as antagonistic conduct toward perceived out-groups or norm violators (Kowert & Oldmeadow, 2015; Stone, 2019). Table 24 presents the measurement scale of gamer identity. The first column reproduces the original social-identification items by Doosje, Ellemers, and Spears, and the second column shows the ENHANCE adaptations for esports (e.g., substituting "MMO gamer" with "esports player") while preserving construct meaning; all items use a five-point Likert scale from strongly disagree to strongly agree (Doosje, Ellemers, & Spears, 1995; Kowert & Oldmeadow, 2015; Kaye et al., 2017). Presenting provenance alongside adapted wording strengthens content transparency and later interpretability, in line with guidance to document adaptations when repurposing items for new populations and contexts (DeVellis & Thorpe, 2021). Additional sources that motivate the identity–toxicity linkage are listed beneath the table, including recent work on toxic attitudes and identity in gaming (Gandolfi et al., 2023; Stone, 2021).

Table 24. Scale of gamer identity

Initial wording	Adapted wording
1. I see myself as a MMO gamer	I see myself as an esports player
2. I am pleased to be a MMO gamer	I am pleased to be an esports player
3. I identify with other MMO gamers	I identify with other esports players
4. I feel strong ties with other MMO gamers	I feel strong ties with other esports players

Criterion-related validity will be addressed through associations with need satisfaction of relatedness in gaming communities, positioned as a consequential outcome for youth wellbeing and community climate. Relatedness reflects perceived closeness, care, and reciprocal support within one's gaming networks and is a core need in Basic Psychological Needs Theory (Ryan & Deci, 2000; Chen et al., 2015). Recent research in esports-adjacent samples reports lower relatedness where community toxicity is perceived as higher, aligning with the expectation that abusive communication and harassment erode trust, warmth, and supportive ties (Frommel et al., 2023). Table 25 presents the relatedness scale used here. The first column reproduces the original items from Chen et al. (2015); the second column shows the ENHANCE esports adaptations (e.g., replacing "people in my gaming communities" with "players in my esports communities"). All items use a five-point Likert scale from not true at all (1) to completely true (5), in line with the original measure and prior applications in gaming contexts (Chen et al., 2015; Frommel et al., 2023). As with gamer

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identity, side-by-side presentation of original and adapted forms, together with explicit source citations, follows best practice for documenting adaptations so as to preserve construct meaning and facilitate cumulative science (DeVellis & Thorpe, 2021).

Table 25. Scale of need satisfaction of relatedness

Initial wording	Adapted wording
1. I feel that the people I care about in my gaming communities also care about me.	I feel that the players I care about in my esports communities also care about me.
2. I feel connected with the people in my gaming communities who care for me, and for whom I care.	I feel connected with the players in my esports communities who care for me, and for whom I care.
3. I feel close and connected with other people in my gaming communities who are important to me.	I feel close and connected with other players in my esports communities who are important to me.
4. I experience a warm feeling with the people I connect with through videogames.	I experience a warm feeling with the players I connect with through esports.

Ethical and procedural features were built in to minimise bias and enhance data quality. Informed-consent pathways are tailored to age, with adult consent and parent/guardian consent plus minor assent where relevant, and with clear statements on voluntariness, duration, eligibility (16–26 years; active esports; partner countries), GDPR compliance, and study aims. Transparent, participant-centred consent reduces evaluation apprehension and clarifies expectations before the questionnaire begins, which supports thoughtful responding. Two instruction-check items are included as procedural safeguards against inattentive or patterned responding; these prompts ask respondents to select a specific answer when reading carefully. Instruction checks are widely used in online questionnaires to discourage satisficing and to protect the validity of self-reports prior to any psychometric refinement; their inclusion and exact wording are documented in the final tool materials.

The **final questionnaire materials** comprise (i) informed-consent routes, (ii) eligibility screening for the 16–26 target group, (iii) demographics and play profile, and (iv) toxicity domains with their domain-level global items followed by the general-toxicity block, with standardised instructions and identical anchors across sections. Ethical approval was granted by the Ethical Review Board of the Faculty of Human Kinetics, University of Lisbon (Protocol No. 18/2025), and GDPR-compliant data handling is specified in participant information. The item-provenance table in Table 26 records, for each retained item, the original wording, its domain assignment, and the ENHANCE adaptation as implemented, enabling transparent tracing from literature source to fielded item.

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Table 26. Final scale with its items

ID	Initial wording	Dimension	Rewording - Adaptation to the content / Experienced-based
Hong_1	I have harassed others with lies and insults online.	Abusive Communication	The players that I play with harassed others with insults online.
Hong_3	I have threatened others on the Internet.	Abusive Communication	I have witnessed threats in esports environments.
Hong_5	I have been bullied in online forums.	Abusive communication (cyberbullying)	Bullying is present in esports.
GPS_16	I mock or insult other players.	Abusive Communication	The players that I play with mock the others.
Hong_6	I have posted intentionally hurtful comments.	Abusive Communication	Hurtful comments are posted regularly.
			Overall, how often have you experienced abusive communication
Hong_4	I have maliciously sabotaged others' gameplay.	Disruptive Gameplay	Players' gameplay has been maliciously sabotaged.
Hong_17	I have intentionally sabotaged team play.	Disruptive (Griefting)	I have witnessed intentional team play sabotaging.
Hong_18	I have felt ashamed after believing trolling content.	Disruptive (Trolling)	I have seen other players being trolled
Hong_2	I have tricked people online to make them angry.	Disruptive Gameplay	Other players have been tricked by making them angry.
Hong_15	I have been made to question my decisions due to online trolling.	Disruptive (Trolling)	trolling actions have made me question my gametime
		Disruptive	Overall, how often have you experienced disruptive gameplay
GPS_5	I use game hacks to get an advantage over others.	unsportsmanlike	I have seen other players using hacks.
Wu_1	On your own or by using third-party programs, modifying game program code or relevant configuration data to gain advantages (such as wallhacks).	Unsportsmanlike (Cheating)	Players have used third-party programmes to gain unlawful advantages.

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ID	Initial wording	Dimension	Rewording - Adaptation to the content / Experienced-based
Wu_2	Abusing game procedure (such as quitting the game when you're about to lose) or conduct timing technique (such as delaying your own moves) to gain advantages.	Unsportsmanlike (Cheating)	There have been cheaters abusing game procedure (through in-game quitting when you are about to lose) to gain advantages.
Wu_6	On your own or by using third-party programs, exploiting a bug or loophole in game program (such as glitching, duping and twinking).	Unsportsmanlike (Cheating)	I have seen players exploiting in-game bugs.
Wu_3	Using tricks to obtain or duplicate virtual assets (virtual gear and in-game money).	Unsportsmanlike (Cheating)	The players that I play with use tricks to obtain or duplicate virtual assets (virtual gear and in-game money). Overall, how often have you experienced unsportsmanlike behaviour
SAWGS_3	In the field of video games, encouraging the participation of female-only teams in competitions promotes sexism and discrimination.	Discriminatory	Encouraging the participation of teams based on gender promotes sexism.
Tang_7	Made comments about appearance or weight.	Discriminatory behaviour	I have seen other players making racist comments
Tang_6	Made sexist comments or insults.	Discriminatory behaviour	The players that I play with make LGBTQ phobic remarks
CATW_11	There's nothing wrong with making unprovoked sexual remarks towards or sexual requests of a woman on the Internet.	Discriminatory (Sexism)	The players I play with make sexual remarks towards someone's gender
SAWGS_1	In general, men play video games better than women.	Discriminatory	Stronger players often refuse to play with weaker players, creating an elitist environment Overall, how often have you experienced Discriminatory behaviours
Hong_9	I have used personal information to harass others.	Disruptive \ Real-life	I have seen players using personal information to harass others.

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ID	Initial wording	Dimension	Rewording - Adaptation to the content / Experienced-based
Hong_14	I have interfered with others' Internet usage.	Real-life (DDOS)	The players that I play with have interfered with other players' internet usage.
Hong_10	I have had personal information used against me.	Disruptive \ Real-life	Players have used sensitive information against other players
Wu_8	Hacking another person's account or using friend's higher-level account to help you get advanced in game.	Real-life (Hacking)	Other players have shared personal details without consent.
GPS_31	I intrude into other players' private homes or events for fun.	Real-life	There are instances of doxing in esports environment. Overall, how often have you experienced real-life toxic behaviours.
TGBS_1	I think my game behaviours are toxic.	Overall	In my esports environments, players' behaviours are toxic.
TGBS_2	I identify with toxic gamers.	Overall	Some of the players identify themselves with toxic players.
TGBS_3	Other players define me as a toxic gamer.	Overall	I define other players as toxic gamers.
TGBS_4	Other players may see my game behaviours as toxic.	Overall	I see other players' game behaviours as toxic.

T2.3 Validation of the assessment tool

2.3.1 Develop a scale validation process and adaptation to the European contextual setting

Planned validity evidence combines content/face validity from expert and cognitive reviews with theoretically anchored relations to antecedents and outcomes within a nomological network (DeVellis & Thorpe, 2021). Construct validity focuses on expected positive associations between the tool's toxicity indicators and gamer identity (antecedent), given identity-based sensitivity to group norms and norm-defensive responding in competitive play (Kaye et al., 2017; Kowert & Oldmeadow, 2015; Stone, 2019). Criterion-related validity focuses on expected negative associations with need satisfaction of relatedness (outcome), given evidence that perceived toxicity erodes trust, warmth, and supportive ties (Ryan & Deci, 2000; Chen et al., 2015; Frommel et al., 2023). All instruments were adapted and linguistically harmonised for partner countries, preserving construct meaning while accommodating local gaming practices, genres, and platform vernaculars; provenance and

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adaptation notes (Tables 24–26) document these decisions to support cross-country interpretability.

2.3.2 Select reduced samples of grassroots esports players

For cognitive appraisal and early validation, reduced samples of grassroots esports players (16–26) were recruited across partner countries to ensure coverage of common competitive formats, genres, and communication channels typical of local scenes. This sampling frame ensured that item interpretation reflected everyday grassroots realities rather than elite or platform-atypical contexts, while also enabling checks for cultural–linguistic clarity before larger-scale fielding.

2.3.3 Evaluate the understanding of the Self-Assessment Tool by the target group (grassroots players)

Understanding and usability were evaluated through cognitive interviews and feedback probes embedded in the pilot administration. These examined interpretation of item stems and anchors, retrieval strategies, and decision processes, and flagged vocabulary/anchor ambiguities. Findings informed targeted revisions to wording, examples, and on-screen instructions, while preserving the instrument's conceptual tightness and cross-country equivalence (DeVellis & Thorpe, 2021).

T2.4 Pre-tests of the Self-Assessment Tool

2.4.1 Send connection link to participating institutions

Following ethical approval and instrument finalisation for pilot use, GDPR-compliant connection links and study information were distributed to participating institutions in partner countries, with age-appropriate consent/assent pathways integrated into the survey landing flow.

2.4.2 Analyse the pre-test data

Pre-test analyses focused on data quality (instruction-check pass rates, missingness, response-time flags), item performance (distributions, inter-item correlations, redundancy diagnostics consistent with the planned pruning strategy), and preliminary evidence for the nomological network (directionality and magnitude of associations with gamer identity and relatedness measures). Country-level inspection checked for differential item functioning candidates or translation-induced anomalies requiring refinement.

2.4.3 Discussion of the pre-findings

Pre-findings supported the conceptual pathway motivating the tool: identity-linked sensitivity in competitive, norm-charged settings co-occurred with higher toxicity signals, while higher perceived toxicity co-occurred with lower relatedness, consistent with Basic Psychological Needs Theory and emerging esports-adjacent evidence (Ryan & Deci, 2000; Chen et al., 2015; Frommel et al., 2023; Kaye et al., 2017; Kowert & Oldmeadow, 2015; Stone,

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2019). Item-level feedback from grassroots players affirmed developmental appropriateness and cross-country clarity, with minor edits improving anchor consistency and country-specific wording without altering construct meaning. These results guide the next optimisation wave (item pruning, reliability estimation, cross-country comparability checks) while preserving transparent provenance and the integrated validity programme outlined above.

4.2 Results – final self-assessment tool

Ethical approval

FACULDADE DE MOTRICIDADE HUMANA

Advice fr Ethic
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MEMBERS
Maria Helena Santa Clara Pombo Rodrigues - President
António José Marques dos Santos - Vice-President
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Maria João Fernandes do Nascimento Alves - Alternate
Silvia Arsénio Rodrigues Cabral - Alternate

Towards:

Tiago Miguel Ribeiro
Faculty of Human Motricity

Date: July 7, 2025

Project: "ENHANCE: The social side of eSports"

CEIFMH Status: Positive with Recommendations (attached)
CEIFMH Opinion: N.0.18/2025

This Council analyzed the project in epigraphy. It is confirmed that it complies with national and international guidelines for research; to the scientific one that involves human beings, including Declarac; the Helsfnquia Doctrine on Ethical Principles for Research; to Medica in Human Beings (201 3) and to Convenc; on Human Rights and Biomedicine ("Convenc; that of Oviedo", 1 997). The recommendations; otions do not involve high risk and are left to the discretion of the investigator.

The President of the Ethics Council for Inresearch<; to the FMH

Helena Santa Clara

Professor Maria Helena Santa Clara Pombo Rodrigues

Ethics Council of the Faculty of Human Kinetics, University of Lisbon Faculty of Human Kinetics
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FACULDADE DE MOTRICIDADE HUMANA

Advice fr Ethic
towa t Investiga9 0

Date: **July 7, 2025**

Project: **"ENHANCE: The social side of eSports"**

ATTACHMENT

0 Ethics Council for InResearch; to the FMH in the fulfillment of its functions; recommends the existence of civil liability insurance to protect research participants; To.

Ethics Council of the Faculty of Human Kinetics, University of Lisbon Faculty of Human Kinetics
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Main self-assessment tool – Questionnaire

Informed consent

Welcome to the Survey: Enhance the social side of sport

Thank you for participating in this survey with as topic the assessment of Toxic Behaviour in esport. The aim of this survey is to identify the level of different dimensions of Toxic Behaviour you have encountered in your esports community. As the first step, please confirm your age. This will allow us to direct you appropriately through the survey and determine the necessary informed consent.

- ○ I am under 16

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○ I am between 16 and 17 years old

○ I am between 18 and 26 years old

○ I am over 26 years old

Informed Consent for adult esports players

○ I have read this consent form, agree to participate in the study, and authorize my data to be used only for the purposes stated above.

○ I have read this consent form and refuse to participate in the proposed study.

Informed Consent for parents or legal guardians of underage esports players

☐ I declare that I have read and understood the Informed Consent. I authorize the participation of the minor/child under my responsibility in this study, and I consent to the data collected being used solely for the indicated scientific purposes.

☐ I do not authorize the participation of the minor in this study.

☐ Verbal assent was given by the minor to participate in this study.

☐ Verbal assent was not given by the minor to participate in this study.

Introduction for adult esports players

Study Title: ENHANCE: The social side of eSports

Researchers Responsible for the study: Tiago Ribeiro (Faculty of Human Kinetics, University of Lisbon, Portugal); Marc Sarens (Vrije Universiteit Brussel, Belgium); Dimitra Papadimitriou (University of Patras, Greece).

Hosting institution: Faculty of Human Kinetics University of Lisbon

This section, entitled Informed Consent, contains important information regarding the project "ENHANCE- The Social Side of eSports", co-funded by the European Commission (no. 101184295) under the ERASMUSSPORT- 2024 program. Please read all the information carefully. You should feel entirely free to ask any questions or to discuss your decision to participate in this study with others.

What is the aim of the study and who can participate? The purpose of this study is to explore eSports players' perception of toxic behaviours lived in competitive online environments. To participate, you must be between 16 and 26 years old, actively play eSports

(for more than one year), and reside in one of the following countries: Portugal, Spain, Belgium, Greece, Cyprus, or Italy.

What is the duration and location of participation? Your participation will be required only for completing the questionnaire. It will take up to 15 minutes to complete. The questionnaire will continue after answering the informed consent.

What procedures will I participate in? You will complete an online questionnaire, accessible from different devices (computer, tablet, phone). This questionnaire assesses your perception based on experiences in competitive online environments, including abusive communications, disruptive gameplay, unsportsmanlike or discriminatory behaviours, real-life spillovers, and general toxicity.

Is my participation voluntary? Participation is voluntary, and you may refuse to take part. If you choose to participate, you may withdraw at any time without any consequences. Should you choose to leave the study, your relationship with the Faculty of Human Kinetics (FMH) or any other institution will not be affected.

What are the risks and benefits of participating in the study? There are no risks anticipated for participants. However, it is possible that you may feel tired, uncomfortable, or bored while completing the online questionnaire. You may stop answering at any time.

Who is responsible if something goes wrong? No risks are foreseen with this study. In the event of proven harm or damage arising from participation, compensation will be ensured by the main investigator.

Is there insurance coverage? Not applicable, due to the study's non-invasive and minimal risk nature.

How is data confidentiality ensured? Confidentiality and anonymity of data will be assured in accordance with the General Data Protection Regulation (GDPR), with participant data being coded. The data collected will be used solely for scientific purposes (publications and presentations). Information will be stored securely, with restricted access, and destroyed after the study concludes. Only the researchers will have access to the provided information.

What happens to the data once the research ends? Data will be stored in a single dataset for up to 5 years after publication, in case any doubts arise, or results require reconfirmation.

How will the results be disseminated and for what purposes? The main goal of this study and its dissemination is to explore eSports players' perception of toxic behaviour in competitive online settings, contributing to the development of strategies and practical recommendations regarding the social role of video games within European gaming communities. Results will be shared at scientific meetings, in peer-reviewed journals, and through a social observatory based on this purpose. Participants may access their individual results at any time and clarify any questions by contacting the principal investigator. Ethical Approval The project ENHANCE: The Social Side of eSports received ethical approval from the Ethical Review Board of the Faculty of Human Kinetics, University of Lisbon (Protocol No. 18/2025), in accordance with the Declaration of Helsinki; this approval applies to all partner countries, and all data will be processed in compliance with the EU General Data Protection Regulation (GDPR; Regulation (EU) 2016/679, applicable from 25 May 2018).

Who should I contact if I have questions? Tiago Ribeiro tribeiro@fmh.ulisboa.pt (University of Lisbon); Marc Sarens - Marc.Sarens@vub.be (Vrije Universiteit Brussel); Dimitra Papadimitriou - dpapad@upatras.gr (University of Patras)

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Introduction for parents or legal guardians of underage esports players

Study Title: ENHANCE: The social side of eSports

Researchers responsible for the study: Tiago Ribeiro (Faculty of Human Kinetics, University of Lisbon, Portugal), Marc Sarens (Vrije Universiteit Brussel, Belgium), Dimitra Papadimitriou (University of Patras, Greece).

Hosting institution: Faculty of Human Kinetics University of Lisbon

Dear Sir/Madam, your child has been invited to participate in the study, co-funded by the European Commission (no. 101184295), within the ERASMUS-SPORT-2024 programme. This document contains important information about the study. Please read it carefully and do not hesitate to contact us if you have any questions.

What is the aim of the study and who can participate? The purpose of this study is to explore eSports players' perception of toxic behaviours lived in competitive online environments. Eligible participants are young people aged 16 to 26 who have been actively playing eSports (for at least one year) and who live in Portugal, Spain, Belgium, Greece, Cyprus, or Italy. For participants under the age of 18, consent from a parent or legal guardian is required.

What is the duration and location of participation? Participation involves only filling out an online questionnaire, which will take approximately 15 minutes to complete. The questionnaire will be available from September 1 to November 15, 2025.

What procedures are involved? The child will be invited to answer an online questionnaire, accessible from different devices (computer, tablet, phone). The questionnaire assesses experiences in competitive online games, including abusive communication, disruptive gameplay, unsportsmanlike and discriminatory behaviour, real-life spillover effects, and overall toxicity in interactions with other players.

Is participation voluntary? Yes. Participation is entirely voluntary. The child may refuse to participate or withdraw at any time without any consequences for them or their relationship with the higher education institutions involved.

Who is responsible in case of a problem? No risks are foreseen with this study. In the event of proven harm or damage arising from participation, compensation will be ensured by the main investigator.

Is the study covered by insurance? Not applicable, as this is a non-invasive study with minimal risk.

How is data confidentiality ensured? All collected information will be treated confidentially and anonymously, in accordance with the General Data Protection Regulation (GDPR, May 25, 2018). The data will be used solely for scientific purposes (publications and presentations) and stored in a secure, access-restricted location. It will be destroyed after the conclusion of the study. Only the researchers will have access to the data.

What happens to the data once the research ends? The data will be stored in a single dataset for up to 5 years after publication, in case of any doubts or results needing verification.

How will the results be shared? Results will be shared at scientific meetings, in peer-reviewed journals, and through a social observatory based on this purpose. The aim is to contribute to recommendations on the social role of video games in gaming communities

across Europe. Participants (and their legal guardians, in the case of minors) may request access to their individual data or seek clarification about the study by contacting the main researcher Ethical Approval The project ENHANCE: The Social Side of eSports received ethical approval from the Ethical Review Board of the Faculty of Human Kinetics, University of Lisbon (Protocol No. 18/2025), in accordance with the Declaration of Helsinki; this approval applies to all partner countries, and all data will be processed in compliance with the EU General Data Protection Regulation (GDPR; Regulation (EU) 2016/679, applicable from 25 May 2018).

Who should I contact if I have questions? Tiago Ribeiro tribeiro@fmh.ulisboa.pt (University of Lisbon); Marc Sarens - Marc.Sarens@vub.be (Vrije Universiteit Brussel); Dimitra Papadimitriou - dpapad@upatras.gr (University of Patras)

Demographics

Q1. Are you active in esports?

- ○ Yes
- ○ No

Q2. What is your email address?

_____

Q3. Which country do you live in?

_____

Q4. Choose your age

- ○ 16
- ○ 17
- ○ 18
- ○ 19
- ○ 20
- ○ 21
- ○ 22
- ○ 23

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- ○ 24
- ○ 25
- ○ 26

Q5. Choose the type of game(s) you compete in.

- ☐ RPG
- ☐ FPS
- ☐ Sports Simulation Games
- ☐ MOBA
- ☐ MMO
- ☐ Fighting Games
- ☐ Strategy board games
- ☐ TCG
- ☐ Battle Royale
- ☐ Other

Q6. Select all the roles that apply to you. Multiple answers allowed.

- ☐ Coach
- ☐ Player
- ☐ Content creator
- ☐ Influencer
- ☐ Staff
- ☐ Caster

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☐ Moderator

Q7. What type of player do you consider yourselves?

○ Amateur player	○ Semi professional	○ Professional

Q8. How often do you play on average per day?

○ 1-5 hours per day	○ 6-10 hours per day	○ 11 +hours per day

Q9. How often do you play on average per week?

○ 1-2 times per week	○ 3-5 times per week	○ 6-7 times per week

Toxic Behaviours

A. Abusive communication

Q1. Please answer according to your experience.

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
The players that I play with harassed others with insults online.	○	○	○	○	○
I have witnessed threats in esports environments.	○	○	○	○	○
Bullying is present in esports.	○	○	○	○	○
The players that I play with mock the others.	○	○	○	○	○
Hurtful comments are posted regularly.	○	○	○	○	○

Q2. Please answer according to your experience.

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	Never (1)	Sometimes (2)	About half the time (3)	Most of the time (4)	Always (5)
Overall, how often have you experienced abusive communication.	○	○	○	○	○

B. Disruptive gameplay

Q3. Please answer according to your experience.

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
Players' gameplay has been maliciously sabotaged.	○	○	○	○	○
I have witnessed intentional team play sabotaging.	○	○	○	○	○
I have seen other players being trolled.	○	○	○	○	○
Other players have been tricked by making them angry.	○	○	○	○	○
Trolling actions have made me question my gametime.	○	○	○	○	○

Q4. Please answer according to your experience.

	Never (1)	Sometimes (2)	About half the time (3)	Most of the time (4)	Always (5)
Overall, how often have you experienced disruptive gameplay.	○	○	○	○	○

C. Unsportsmanlike behaviour

Q5. Please answer according to your experience.

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	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
I have seen other players using hacks.	○	○	○	○	○
Players have used third-party programmes to gain unlawful advantages.	○	○	○	○	○
There have been cheaters abusing game procedure (through in-game quitting when you are about to lose) to gain advantages.	○	○	○	○	○
I have seen players exploiting in-game bugs.	○	○	○	○	○
The players that I play with use tricks to obtain or duplicate virtual assets (virtual gear and in-game money).	○	○	○	○	○
When you read this phrase please mark: [Somewhat disagree].	○	○	○	○	○

Q6. Please answer according to your experience.

	Never (1)	Sometimes (2)	About half the time (3)	Most of the time (4)	Always (5)
Overall, how often have you experienced unsportsmanlike behaviour.	○	○	○	○	○

D. Discriminatory behaviour

Q7. Please answer according to your experience.

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	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
Encouraging the participation of teams based on gender promotes sexism.	○	○	○	○	○
I have seen other players making racist comments.	○	○	○	○	○
The players that I play with make LGBTQ+ phobic remarks.	○	○	○	○	○
The players I play with make sexual remarks towards someone's gender.	○	○	○	○	○
Stronger players often refuse to play with weaker players, creating an elitist environment.	○	○	○	○	○

Q8. Please answer according to your experience.

	Never (1)	Sometimes (2)	About half the time (3)	Most of the time (4)	Always (5)
Overall, how often have you experienced discriminatory behaviour.	○	○	○	○	○

E. Real world invasive behaviours like Doxing, DDOS

Q9. Please answer according to your experience.

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
I have seen players using personal information to harass others.	○	○	○	○	○

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	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
The players that I play with have interfered with other players' internet usage.	○	○	○	○	○
Players have used sensitive information against other players.	○	○	○	○	○
Other players have shared personal details without consent.	○	○	○	○	○
There are instances of doxing in esports environment.	○	○	○	○	○

Q10. Please answer according to your experience.

	Never (6)	Sometimes (7)	About half the time (8)	Most of the time (9)	Always (10)
Overall, how often have you experienced Real-life toxic behaviours.	○	○	○	○	○
When you read this phrase please select [sometimes].	○	○	○	○	○

F. General toxic behaviour

Q11. Please answer according to your experience.

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
In my esports environments, players' behaviours are toxic.	○	○	○	○	○

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	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
Some of the players identify themselves with toxic players.	○	○	○	○	○
I define other players as toxic gamers.	○	○	○	○	○
I see other players' game behaviours as toxic.	○	○	○	○	○

Gamer Identity and Need satisfaction of Relatedness

Q12. Please answer according to your experience.

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
I see myself as an esports player.	○	○	○	○	○
I am pleased to be an esports player.	○	○	○	○	○
I identify with other esports players.	○	○	○	○	○
I feel strong ties with other esports players.	○	○	○	○	○

Q13. Please answer according to your experience.

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
I feel that the players I care about in my esports communities also care about me.	○	○	○	○	○
I feel connected with the players in my esports communities who care for me, and for whom I care.	○	○	○	○	○

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	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
I feel close and connected with other players in my esports communities who are important to me.	○	○	○	○	○
I experience a warm feeling with the players I connect with through esports.	○	○	○	○	○

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5. Conclusions

The deliverable meets its aims by triangulating community-grounded evidence with a transparent review of the scholarly record and translating this synthesis into a multidimensional, youth-appropriate self-assessment for esports (16–26). Study 1 established the empirical foundation through two complementary strands: a non-traditional analysis of player habitats (Reddit, Discord, Twitch, forums) and a PRISMA-ScR–guided scoping review of constructs and measures. Together, these strands specified the construct space and evidential priorities that guide tool development, ensuring ecological validity and methodological rigour.

Results from Study 1 showed that toxicity in competitive gaming is persistent, patterned, and multi-layered. The non-traditional analysis documented a broad spectrum of harmful behaviours—especially verbal abuse/flaming, gender-based harassment, gatekeeping, griefing, cheating, doxxing/threats, racism, and tilt/defeatism—while also evidencing powerful social benefits (leadership, teamwork, belonging, mental-health relief, and friendship) that co-exist in the same spaces. These findings underscore both disproportionate harms for marginalised groups and the capacity of esports communities to cultivate prosocial skills and connection when norms and structures support them.

The systematic review consolidated theories, antecedents, outcomes, and validated instruments, mapping where measures are strong and where gaps remain; critically, no single tool captured perpetration, victimisation, attitudes/ideology, emotional triggers, and climate in one instrument—pointing to the need for a modular, multidimensional approach that integrates the strongest validated elements.

Guided by this blueprint, Study 2 delivered a ready-to-deploy, ethically approved self-assessment with clear domains, standardised response formats, informed-consent pathways, and procedural quality controls suitable for online administration. The instrument operationalises multiple dimensions—including unsportsmanlike/cheating, discriminatory behaviours (e.g., sexism, LGBTQ+-phobic remarks), disruptive/real-life harms (e.g., doxxing, account hacking), and general toxic identity/climate—alongside gamer identity and relatedness items to position toxicity within a broader nomological network relevant to youth esports.

The design adheres to contemporary scale-development standards (e.g., content validity, planned factor analysis, internal consistency thresholds, and invariance testing across demographics), reflecting DeVellis & Thorpe's criteria and the comparative insights from the review.

In sum, the ENHANCE project advances assessment, awareness, and achievement by: (i) evidencing the dual reality of esports as both risk-laden and socially generative; (ii) consolidating a fragmented measurement landscape into a coherent, modular assessment architecture; and (iii) producing a psychometrically grounded, developmentally appropriate tool that can support early identification, self-reflection, and targeted education across grassroots contexts. This integrative outcome equips practitioners, educators, and industry stakeholders with a practical instrument to diagnose and address toxicity while leveraging esports' prosocial potential—thereby aligning with ENHANCE's broader programme to foster safer, more inclusive communities.

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7. Annexes

7.1 Annex A

Table A1. Pool of documents (papers and conference proceedings) of traditional systematic literature review

Source Type	Title	Year	Journal/ Conference Name	URL
Conference Proceedings	The Role of Conscientiousness and Toxic Behaviours on Skills Development in Professional E-Sports	2022	2022 IEEE International Conference on Metrology for Extended Reality, Artificial Intelligence and Neural Engineering (MetroXRAINE)	https://doi.org/10.1109/MetroXRAINE54828.2022.9967657
Journal Article	Conceptualization and validation of the TILT questionnaire: relationship with IGD and life satisfaction	2024	FRONTIERS IN PSYCHOLOGY	https://doi.org/10.3389/fpsyg.2024.1409368
Journal Article	"Who Are the Cyka Blyat?" How Empathy, Impulsivity, and Motivations to Play Predict Aggressive Behaviours in Multiplayer Online Games	2021	CYBERPSYCHOLOGY BEHAVIOR AND SOCIAL NETWORKING	https://doi.org/10.1089/cyber.2020.0041
Journal Article	Systemic issues with narratives of identity: Toxicity and esports media professionals	2023	CONVERGENCE-THE INTERNATIONAL JOURNAL OF	https://doi.org/10.1177/13548565221138761

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Source Type	Title	Year	Journal/ Conference Name	URL
			RESEARCH INTO NEW MEDIA TECHNOLOGIES	
Journal Article	Generation Z and Millennial esports gamers' perceived toxicity risk and game brand loyalty: moderated mediation effects of brand identification, self-efficacy, and support from game brand	2024	YOUNG CONSUMERS	https://doi.org/10.1108/YC-11-2022-1635
Journal Article	"Bad Vibrations": Sensing Toxicity From In-Game Audio Features	2022	IEEE TRANSACTIONS ON GAMES	https://doi.org/10.1109/TG.2022.3176849
Journal Article	Development of the hostility and inclusion in gaming scale (HIGS): A gender-based analysis	2024	TECHNOLOGY IN SOCIETY	https://doi.org/10.1016/j.techsoc.2024.102711
Journal Article	Exploring the Relationship Between Offline Cultural Environments and Toxic Behaviour Tendencies in Multiplayer Online Games	2023	Trans. Soc. Comput.	https://doi.org/10.1145/3580346
Conference Proceedings	Flame and Fortune: The Connection Between Toxic Behaviour and In-game Purchasing in Multiplayer Online Games	2024	Companion Proceedings of the 2024 Annual Symposium on Computer-Human Interaction in Play	https://doi.org/10.1145/3665463.3678806
Journal Article	The Cycle of Toxicity: Exploring Relationships between Personality and Player Roles in Toxic	2023	Proc. ACM Hum.-Comput. Interact.	https://doi.org/10.1145/3611043

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Source Type	Title	Year	Journal/ Conference Name	URL
	Behaviour in Multiplayer Online Battle Arena Games			
Journal Article	For Honor, for Toxicity: Detecting Toxic Behaviour through Gameplay	2021	Proc. ACM Hum.-Comput. Interact.	https://doi.org/10.1145/3474680
Journal Article	Are stress and engagement in toxicity associated with sleep quality? A study with League of Legends players	2024	Proc. ACM Hum.-Comput. Interact.	https://doi.org/10.1145/3677101
Conference Proceedings	Exploring Cyberbullying and Other Toxic Behaviour in Team Competition Online Games	2015	Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems	https://doi.org/10.1145/2702123.2702529
Conference Proceedings	Traumatizing or Just Annoying? Unveiling the Spectrum of Gamer Toxicity in the StarCraft II Community	2024	Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems	https://doi.org/10.1145/3613904.3642137
Conference Proceedings	STFU NOOB! predicting crowdsourced decisions on toxic behaviour in online games	2014	Proceedings of the 23rd International Conference on World Wide Web	https://doi.org/10.1145/2566486.2567987
Conference Proceedings	Toxic Behaviours in Team-Based Competitive Gaming: The Case of League of Legends	2020	Proceedings of the Annual Symposium on	https://doi.org/10.1145/3410404.3414243

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Source Type	Title	Year	Journal/ Conference Name	URL
			Computer-Human Interaction in Play	
Conference Proceedings	“Why Are You Playing Games? You Are a Girl!”: Exploring Gender Biases in Esports	2021	Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems	https://doi.org/10.1145/3411764.3445248
Journal Article	Esports Governance: An Analysis of Rule Enforcement in League of Legends	2022	Proc. ACM Hum.-Comput. Interact.	https://doi.org/10.1145/3555541
Conference Proceedings	Personalized Matchmaking Restrictions for Reduced Exposure to Toxicity: Preliminary Insights from an Interview Study	2024	Companion Proceedings of the 2024 Annual Symposium on Computer-Human Interaction in Play	https://doi.org/10.1145/3665463.3678803
Conference Proceedings	Combating Toxicity, Harassment, and Abuse in Online Social Spaces: A Workshop at CHI 2023	2023	Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems	https://doi.org/10.1145/3544549.3573793
Journal Article	How To Tame a Toxic Player? A Systematic Literature Review on Intervention Systems for Toxic Behaviours in Online Video Games	2024	Proc. ACM Hum.-Comput. Interact.	https://doi.org/10.1145/3677080

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Source Type	Title	Year	Journal/ Conference Name	URL
Conference Proceedings	Don't You Know That You're Toxic: Normalization of Toxicity in Online Gaming	2021	Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems	https://doi.org/10.1145/3411764.3445157
Journal Article	Toxicity by Game Design: How Players Perceive the Influence of Game Design on Toxicity	2024	Proc. ACM Hum.-Comput. Interact.	https://doi.org/10.1145/3677110
Conference Proceedings	Online Abuse and Age in Dota 2	2018	Proceedings of the 22nd International Academic Mindtrek Conference	https://doi.org/10.1145/3275116.3275149
Journal Article	Suspecting Sarcasm: How League of Legends Players Dismiss Positive Communication in Toxic Environments	2023	Proc. ACM Hum.-Comput. Interact.	https://doi.org/10.1145/3611020
Journal Article	From Avoidance to Action: A Call for Open Dialogue on Hate, Harassment, and Extremism in the Gaming Industry	2024	ACM Games	https://doi.org/10.1145/3656559
Conference Proceedings	See No Evil, Hear No Evil, Speak No Evil: How Collegiate Players Define, Experience and Cope with Toxicity	2020	Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems	https://doi.org/10.1145/3313831.3376191
Conference Proceedings	Help, My Game Is Toxic! First Insights from a Systematic Literature Review on Intervention	2023	Companion Proceedings of the Annual Symposium on	https://doi.org/10.1145/3573382.3616068

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Source Type	Title	Year	Journal/ Conference Name	URL
	Systems for Toxic Behaviours in Online Video Games		Computer-Human Interaction in Play	
Conference Proceedings	Designing for Friendship: Modelling Properties of Play, In-Game Social Capital, and Psychological Well-being	2018	Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play	https://doi.org/10.1145/3242671.3242702
Conference Proceedings	Toxic communication during streams on Twitch.tv. The case of Dota 2	2018	Proceedings of the 22nd International Academic Mindtrek Conference	https://doi.org/10.1145/3275116.3275152
Conference Proceedings	Not Tekken Seriously? How Observers Respond to Masculine and Feminine Voices in Videogame Streamers	2023	Proceedings of the 18th International Conference on the Foundations of Digital Games	https://doi.org/10.1145/3582437.3582444
Journal Article	Towards a unified theory of toxic behaviour in video games	2020	Internet Research	https://doi.org/10.1108/INTR-08-2019-0343
Journal Article	Toxic behaviour in multiplayer online games: the role of witnessed verbal aggression, game engagement intensity, and social self-efficacy.	2024	Chinese Journal of Communication	https://doi.org/10.1080/17544750.2024.2425662

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Source Type	Title	Year	Journal/ Conference Name	URL
Journal Article	Toxicity or Prosociality?: Civic Value and Gaming Citizenship in Competitive Video Game Communities.	2024	Simulation & Gaming	https://doi.org/10.1177/10468781241277899
Journal Article	How perceived toxicity of gaming communities is associated with social capital, satisfaction of relatedness, and loneliness.	2023	Computers in Human Behaviour Reports	https://doi.org/10.1016/j.chbr.2023.100302
Journal Article	Problematic Gaming at a Crossroad: Exploring the Interplay Between Internet Gaming Disorder, Toxic Attitudes, and Empathy in Digital Entertainment.	2023	Games and Culture	https://doi.org/10.1177/15554120231211991
Journal Article	Investigating sexual harassment in online video games: How personality and context factors are related to toxic sexual behaviours against fellow players	2020	Games and Culture	https://doi.org/10.1002/ab.21873
Journal Article	The psychology of esports players' ELO Hell: Motivated bias in League of Legends and its impact on players' overestimation of skill	2023	Computers in Human Behaviour	https://doi.org/10.1016/j.chb.2023.107828
Journal Article	Toxic Behaviours in Esport: A Review of Data-Collection Methods Applied in Studying Toxic In-Gaming Behaviours	2024	International Journal of Esports	https://www.ijesports.org/article/127/html
Journal Article	"After All, They Don't Know Me" Exploring the Psychological Mechanisms of Toxic Behaviour in Online Games	2023	Games and Culture	https://doi.org/10.1177/15554120221115397

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Source Type	Title	Year	Journal/ Conference Name	URL
Journal Article	The art of being together: How group play can increase reciprocity, social capital, and social status in a multiplayer online game	2022	Computers in Human Behaviour	https://doi.org/10.1016/j.chb.2022.107291
Journal Article	Social gaming: A systematic review	2023	Computers in Human Behaviour	https://doi.org/10.1016/j.chb.2023.107851
Journal Article	Structures that tilt: Understanding “toxic” behaviours in online gaming	2024	New Media & Society	https://doi.org/10.1177/14614448241270446
Journal Article	What constitutes victims of toxicity - identifying drivers of toxic victimhood in multiplayer online battle arena games	2023	Frontiers Psychology	https://doi.org/10.3389/fpsyg.2023.1193172
Conference Proceedings	Toxic behaviours in esports games: Player perceptions and coping strategies	2018	Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play Companion Extended	https://doi.org/10.1145/3270316.3271545
Journal Article	Breaking the glass monitor: examining the underrepresentation of women in esports environments	2021	Sport Management Review	https://doi.org/10.1080/14413523.2021.1891746
Journal Article	Curing toxicity – developing design principles to buffer toxic behaviour in massive multiplayer online games	2021	Safer Communities	https://doi.org/10.1108/SC-10-2020-0037

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Source Type	Title	Year	Journal/ Conference Name	URL
Journal Article	Do players communicate differently depending on the champion played? Exploring the Proteus effect in League of Legends	2022	Technological Forecasting and Social Change	https://doi.org/10.1016/j.techfore.2022.121556
Journal Article	Gender in eSports research: a literature review	2022	European Journal for Sport and Society	https://doi.org/10.1080/16138171.2021.1930941
Journal Article	I'm just trolling: The role of normative beliefs in aggressive behaviour in online gaming	2020	Computers in Human Behaviour	https://doi.org/10.1016/j.chb.2019.09.003
Journal Article	Investigating sexual harassment in online video games: How personality and context factors are related to toxic sexual behaviours against fellow players	2020	Aggressive Behaviour	https://doi.org/10.1002/ab.21873
Journal Article	Relating conversational topics and toxic behaviour effects in a MOBA game	2018	Entertainment Computing	https://doi.org/10.1016/j.entcom.2017.12.004
Journal Article	Toxicity and prosocial behaviours in massively multiplayer online games: The role of mutual dependence, power, and passion	2022	Journal of Computer-Mediated Communication	https://doi.org/10.1093/jcmc/zmac017
Journal Article	Trolligans: conceptual links between trolling and hooliganism in sports and esports	2023	Communication & Sport,	https://doi.org/10.1177/21674795231153005
Journal Article	Viral vitriol: Predictors and contagion of online toxicity in World of Tanks	2020	Computers in Human Behaviour	https://doi.org/10.1016/j.chb.2020.106343

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Source Type	Title	Year	Journal/ Conference Name	URL
Journal Article	Consuming esports and trash talking: How do social norms and moderating attributes influence behaviour?	2023	Sport in Society	https://doi.org/10.1080/17430437.2023.2200732
Journal Article	Paradoxical relationship between esports toxicity and toxicity tolerance: Moderated mediation by gender and positive reappraisal coping	2023	International Journal of Sports Marketing and Sponsorship	https://doi.org/10.1108/IJSMS-11-2022-0197
Journal Article	Welcome to esports, you suck: understanding new consumer socialisation within a toxic consumption collective	2023	Journal of Marketing Management	https://doi.org/10.1080/0267257X.2023.2213239
Journal Article	Exploring the Dark Side of Esports Online Spectatorship: Passion as a Mediator and Collective Narcissism as a Moderator	2023	Communication & Sport	https://doi.org/10.1177/21674795231164305
Journal Article	Measuring Toxicity Toward Women in Game-Based Communities	2023	Journal of Electronic Gaming and Esports	https://doi.org/10.1123/jege.2022-0035
Journal Article	It's Just Not Safe': Gender-Based Harassment and Toxicity Experiences of Women in Esports	2024	Games and Culture	https://doi.org/10.1177/15554120241273358
Journal Article	Landscapes of tension, tribalism and toxicity: Configuring a spatial politics of esport communities	2020	Leisure Studies	https://doi.org/10.1080/02614367.2020.1808049

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7.2 Annex B

Table B1. Pool of items

Item Code	Item Text	Categorization at Dimensions
Hong_1	I have harassed others with lies and insults online.	Abusive Communication
Hong_3	I have threatened others on the Internet.	Abusive Communication
Hong_5	I have bullied others online for fun.	Abusive Communication
Hong_5	I have been bullied in online forums.	Abusive communication (cyberbulling)
Hong_6	I have been the target of repeated insults.	Abusive communication (cyberbulling)
GPS_5	I use game hacks to get an advantage over others.	Unsportsmanlike (Cheating)
Hong_9	I have used personal information to harass others.	Disruptive \ Real-life
Hong_4	I have maliciously sabotaged others' gameplay.	Disruptive Gameplay
GPS_16	I mock or insult other players.	Mocking
Hong_14	I have interfered with others' Internet usage.	Real-life (DDOS)
Wu_7	Disrupting your opponents' network connection to slow down their moving or to deny network service to them.	Real-life (DDOS)
Wu_1	On your own or by using third-party programs, modifying game program code or relevant configuration data to gain advantages (such as wallhacks).	Unsportsmanlike (Cheating)
Wu_2	Abusing game procedure (such as quitting the game when you're about to lose) or conduct timing technique (such as delaying your own moves) to gain advantages.	Unsportsmanlike (Cheating)

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Item Code	Item Text	Categorization at Dimensions
Wu_5	Using computer programs to compete with human opponents or to automatically level up (bots).	Unsportsmanlike (Cheating)
Wu_6	On your own or by using third-party programs, exploiting a bug or loophole in game program (such as glitching, duping and twinking).	Unsportsmanlike (Cheating)
Wu_9	Using debug codes such as ‘god mode’ to gain advantages.	Unsportsmanlike (Cheating)
Wu_3	Using tricks to obtain or duplicate virtual assets (virtual gear and in-game money).	Unsportsmanlike (Cheating)
Hong_6	I have posted intentionally hurtful comments.	Abusive Communication
Tang_3	Said general insults.	Abusive Communication
Tang_5	Asked others to leave the game.	Abusive Communication
Hong_4	I have received threatening messages.	Abusive communication (Harassmeent)
Hong_8	I have been impersonated by others to mock me.	Abusive communication (Mock)
Hong_2	I have been attacked with lies or insults.	Abusive communication (Verbal abuse)
TB_4	If I get mad during a game, I insult others.	Abusive communication (Verbal abuse)
TB_5	If I get mad during a game, I criticize others.	Abusive communication (Verbal abuse)
Hong_7	I have had my game sabotaged maliciously.	Disruptive (Griefing)
Hong_17	I have intentionally sabotaged team play.	Disruptive (Griefting)
Hong_18	I have felt ashamed after believing trolling content.	Disruptive (Trolling)
Hong_10	I have had personal information used against me.	Disruptive \ Real-life
Hong_2	I have tricked people online to make them angry.	Disruptive Gameplay

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Item Code	Item Text	Categorization at Dimensions
Wu_8	Hacking another person's account, or using friend's higher-level account to help you get advanced in game.	Real-life (Haking)
GPS_24	I attack defenseless players for my own amusement.	Disruptive (Trolling)
Hong_7	I have attacked strangers online to provoke a reaction.	Abusive Communication
Tang_2	Made comments about intelligence.	Abusive Communication
Tang_4	Made comments about others' ability to play.	Abusive Communication
Hong_3	I have been provoked by people online.	Abusive communication (Flaming)
Hong_23	I have taken extreme positions just to upset others.	Abusive communication (verbal abuse)
SAWGS_3	In the field of video games, encouraging the participation of female-only teams in competitions promotes sexism and discrimination.	Discriminatory
Tang_7	Made comments about appearance or weight.	Discriminatory behaviour
GPS_31	I intrude into other players' private homes or events for fun.	(Doxing)
GPS_25	I harass other players.	Harassment
Hong_13	I have blocked players from progressing in games.	Unsportsmanlike (Gatek)
Hong_8	I have repeatedly provoked someone online.	Abusive Communication
Tang_10	Made a rape joke or threatened to rape.	Abusive Communication
Hong_22	I have tried to make novice users believe misleading posts.	Abusive communication (Indocrination)
Tang_6	Made sexist comments or insults.	Discriminatory behaviour
Hong_15	I have been made to question my decisions due to online trolling.	Disruptive (Trolling)

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Item Code	Item Text	Categorization at Dimensions
Hong_17	I have followed online suggestions that turned out misleading.	Disruptive (Trolling)
Hong_12	I have made up stories to get others into trouble online.	Disruptive(trolling)
GPS_6	I use the flaws in a game's player-to-player trading system to my advantage.	Gatekeeping
GPS_18	I exploit game mechanics to harm other players.	Griefing
GPS_15	I send loud, distracting, or repetitive sounds over voice-chat or voice programs such as Teamspeak, Ventrilo, or Mumble as I play with others.	Spamming
TB_1	If I get mad during a game, I intentionally interrupt others while they are writing.	Trolling
Hong_12	I have believed false information online that made me upset.	Unsportmanlike (gatekeeping)
Tang_1	Said curse or swear words toward another player.	Abusive Communication
Hong_11	I have mocked others in public forums or chats.	Abusive communication (Mock)
Hong_19	I have intentionally stirred up arguments online.	Abusive communication (Mock)
SAWGS_5	The negative comments or threats women receive while playing video games are given much more importance than those received by men.	Discriminatory
CATW_11	There's nothing wrong with making unprovoked sexual remarks towards or sexual requests of a woman on the Internet.	Discriminatory (Sexism)
Hong_20	I have posed as an expert to manipulate others.	Disruptive
Hong_10	I have pretended to be someone else to start arguments.	Disruptive(trolling)
GPS_1	I disrupt in-game events just for fun.	Griefing
Hong_21	I have had trouble progressing in games due to others.	Unsportmanlike (intentionaly feeding)

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Item Code	Item Text	Categorization at Dimensions
TB_3	If I get mad during a game, I take away resources belonging to others.	
Hong_26	I have seen provocative posts meant only to distract.	Abusive Communication
Hong_16	I have accepted guidance online I later regretted.	Abusive communication (Indocrination)
Hong_14	I have felt manipulated by online messages.	Abusive communication (Manipulation)
GPS_27	I cause other players to experience lag.	Cheating
GPS_22	I display in-game images which upset or offend other players.	Cyberbullying
CATW_10	It's okay to create new, anonymous online profiles or accounts for the sole purpose of using them to spam a woman with messages.	Discriminatory (Sexism)
Hong_24	I have received false information that wasted my time.	Disruptive gameplay
GPS_17	I display in-game gestures which upset or offend other players.	Flaming
GPS_13	I trick players into doing things that will harm their characters.	Griefing
GPS_14	I attack players immediately after they spawn.	Griefing
GPS_23	I taunt players after I steal items from them.	Mocking
SAWGS_1	In general, men play video games better than women.	Discriminatory (sexism)
GPS_12	I scam other players.	Spamming
TILT_18	I have written off games as lost.	Unsportmanlike behaviour
Frommel_8	The people I play with are sometimes …toxic	Abusive Communication
Hong_27	I have reacted emotionally to false viral content.	Abusive Communication

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Item Code	Item Text	Categorization at Dimensions
Hong_28	I have paid attention to things that turned out to be hoaxes.	Abusive Communication
Hong_9	I have been deceived into arguments.	Abusive communication (Manipulation)
SAWGS_4	In the field of video games, there is a community of women who are against male gamers.	Discriminatory
CATW_6	There is potential harm in repeatedly messaging, calling or texting a woman. (R)	Discriminatory (Sexism)
CATW_12	It is okay to trick a woman into a compromising situation using the Internet.	Discriminatory (Sexism)
CATW_15	It is okay to share intimate photos or videos of a woman online without her consent.	Discriminatory (Sexism)
CATW_3	To get information about a woman, it's okay to pose as her online.	Discriminatory behaviour
CATW_5	Continually monitoring the activities of a woman online is totally fine.	Discriminatory behaviour
Hong_15	I have repeatedly interrupted online conversations.	Disruptive (SPam)
TILT_11	I have made decisions without thinking.	Disruptive Gameplay
GPS_21	When another player is fighting a mob, I steal the players kill even though I do not want the mob's drops or experience	Griefing
TILT_4	I have made wrong decisions.	Unsportmanlike behaviour
Hong_25	I have been flooded with junk content online.	Abusive Communication
Hong_21	I have made shocking statements to get laughs.	Abusive communication (Mock)
Hong_25	I have ridiculed things that most people respect.	Abusive communication (Mock)
ENG_4	I have sent a woman unwanted messages or comments online, even after she indicated she didn't want to be contacted.	Abusive communition (verbal abuse)

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Item Code	Item Text	Categorization at Dimensions
ENG_2	I have impersonated someone else online to deceive or gather information about a woman.	Discriminatory (Catefishing)
CATW_7	It is fine to use the Internet to contact a woman even though she does not want to be contacted.	Discriminatory (Sexism)
CATW_13	There is nothing wrong with using fake advertisements or profiles to trick a woman online.	Discriminatory (Sexism)
CATW_14	It is okay to mislead a woman online.	Discriminatory (Sexism)
CATW_16	Threatening to release private information about a woman onto the internet in order to get my way is an acceptable thing to do.	Discriminatory (Sexism)
ENG_1	I have accessed a woman's personal account or private information online without her permission.	Discriminatory (Sexism)
Tang_8	Doubted their motivations for playing video games because of their gender.	Discriminatory behaviour
Tang_9	Expressed unsolicited liking or affection toward someone.	Discriminatory behaviour
CATW_2	If I have figured out the password to a woman's account or profile, I can do what I want with it.	Discriminatory behaviour
TILT_13	I have had mood swings due to the outcome of my games.	Disruptive Gameplay
TB_2	If I get mad during a game, I hold others responsible for making their own mistakes.	Griefing
GPS_9	I annoy other players by following them around.	Griefing
GPS_29	When I am in a group, I pick up as many valuables for myself as I can regardless of what my group members want.	Griefing

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Item Code	Item Text	Categorization at Dimensions
SAWGS_2	Many women now play video games just because they are trendy.	Discriminatory (sexism)
GPS_11	I send tickets or petitions to GM's (game masters or other game authorities) to ask for extra items or other favors.	Spamming
GPS_20	I use my character's body to block the movements of other players so that I can cause the other player's death.	Trolling
GPS_7	I take mob drops from other players even though the other players are the ones who earned the drops.	Cheating
GPS_26	I impersonate other players or game authorities so that players will give me items or money.	Cheating
GPS_28	I get other players to trust me so that I can take valuables from them.	cheating
ENG_5	I have tricked or manipulated a woman into a compromising situation using the Internet.	Abusive communication (Manipulation)
ENG_6	I have shared or threatened to share a woman's private or intimate content online without her consent.	Abusive communication (Manipulation)
SAWGS_6	Female gamers often interpret kindness from male gamers as harassment.	Discriminatory
SAWGS_7	In online video games, some women really deserve the insults they receive.	Discriminatory
SAWGS_8	Many female gamers are famous just because they are pretty or because they use their body to make sexual advances.	Discriminatory
Hong_1	I have been harassed by strangers online.	Discriminatory (Harassment)
CATW_8	It is okay to use the Internet to tell a woman what I think about her, regardless of if she wants to know or not.	Discriminatory (Sexism)

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Item Code	Item Text	Categorization at Dimensions
TILT_14	I have felt that I have no energy.	Disruptive Gameplay
TGBS_1	I think my game behaviors are toxic.	Overall
TGBS_2	I identify with toxic gamers.	Overall
TGBS_3	Other players define me as a toxic gamer.	Overall
TGBS_4	Other players may see my game behaviors as toxic.	Overall
TILT_2	I have failed to make important moves.	Unsportmanlike behaviour
TILT_3	I have made mistakes in things I know I can do well.	Unsportmanlike behaviour
TILT_5	I failed even though I knew what I had to do.	Unsportmanlike behaviour
TILT_6	I have felt that I have more ability than I have been able to demonstrate.	Unsportmanlike behaviour
TILT_16	I have played hastily.	Unsportmanlike behaviour
Frommel_1	The people I play with are sometimes …angry	Abusive Communication
Frommel_2	The people I play with are sometimes …offensive	Abusive Communication
Frommel_3	The people I play with are sometimes …mean	Abusive Communication
Frommel_4	The people I play with are sometimes …good-natured (R)	Abusive Communication
Frommel_5	The people I play with are sometimes …sympathetic (R)	Abusive Communication
CATW_4	It is okay to impersonate someone online to learn more about a woman.	Discriminatory behaviour
TILT_12	I have found it hard to concentrate.	Disruptive Gameplay

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Item Code	Item Text	Categorization at Dimensions
GPS_4	I pretend to be a new or poor player so that I can convince others into giving me items or money.	Smurfing
TILT_15	I have felt that I have been on a losing streak that I could not get out of.	Unsportmanlike behaviour
TILT_17	I have continued to play even though I did not feel like it.	Unsportmanlike behaviour
Frommel_6	The people I play with are sometimes …friendly (R)	Abusive Communication
Frommel_7	The people I play with are sometimes …hurtful	Abusive Communication
GPS_2	When creating or renaming my characters, I give my characters names which are offensive to other players.	Elimination
GPS_10	When I am in a safe-zone, or some other place where PvP is not supposed to occur, I attack other players.	Cyberbullying
GPS_19	When I'm selling an item, I tell other players that the item is more valuable than it truly is so that they will pay me a greater price.	Smurfing
Hong_16	I have moved virtual characters to obstruct others.	Elimination
Hong_18	I have posted online just to get others to agree with me.	Disruptive (Trolling)
GPS_3	I taunt players after I kill their characters.	Cyberbullying
CATW_9	There is no problem with telling a woman to kill herself on the Internet.	Discriminatory (Sexism)
GPS_8	When players who are lower level or less experienced than me are farming low level mobs, I wipe out the low level mob spawns.	Griefing
GPS_32	When another player is fighting a mob, I steal the player's kill by	Elimination
Hong_24	I have posted contrarian views on sensitive topics.	Elimination

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Item Code	Item Text	Categorization at Dimensions
TILT_1	I have lost because of things in the game I could not control.	Elimination
TILT_7	I have played frustrating games.	Elimination
TILT_8	I have felt that the game was not fair.	Elimination
TILT_9	I have exploded with rage.	Elimination
TILT_10	I have felt irritated.	Elimination
Hong_22	I have been removed or blocked for no reason.	Elimination
Hong_23	I have had my posts or comments sabotaged.	Elimination
CATW_1	Obtaining a woman's personal information online without her permission is never okay. (R)	Elimination
GPS_30	I intrude into other players' private homes or events for fun.	Elimination
Hong_11	I have been blamed unfairly by online users.	Elimination
Hong_13	I have been tricked into doubting my own beliefs.	Elimination
Hong_19	I have been obstructed while playing games online.	Elimination
Hong_20	I have had conversations blocked by trolls.	Elimination
ENG_3	I have monitored or tracked a woman's online activities without her consent.	Elimination
Wu_4	Paying someone else for leveling services; using real money to purchase virtual assets/accounts or selling them for real money.	Elimination

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