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CONCEPTUALIZACIÓN Y MEDIDA EN JUGADORES DE ESPORTS

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TILT: CONCEPTUALIZACIÓN Y MEDIDA EN JUGADORES DE ESPORTS

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“The most exciting phrase to hear in science, then one that heralds new discoveries, is not ‘Eureka!’ but ‘That’s funny...’”

-Isaac Asimov (1920-1992)

“What is not defined, can not be measured. What is not measured, can not be improved. What is not improved, will always degrade.”

-William Thomson Kelvin (1824-1907)

"Failure takes a bigger part in people’s lives than one may think. It’s important not to lose yourself in the emotions from success and failure."

-Lee “Faker” Sang-hyeok (1996-)

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Resumen

Sin duda los esports están viviendo una constante evolución y desarrollo dentro del ecosistema socioeconómico. En los últimos años se ha desarrollado toda una red de jugadores, marcas, staff técnico, directivos, etc. Que han hecho emerger un campo que se inicio en el año 1972 pero en esta última década ha vivido su estabilización y apertura al público en general, teniendo en cuenta que aproximadamente el 82% de los jóvenes y el 52% de la población general juegan a videojuegos y esports. Sin embargo, este crecimiento tan acelerado ha puesto de manifiesto que aún se trata de un ecosistema joven, con poca estructura y la necesidad de investigación académica para responder algunos de las problemáticas que se plantean. Dentro del área de la psicología, especialmente la psicología del deporte y la salud, con quien comparte mayores sinergias por su estructura y funcionamiento similar, se han ido desarrollando diferentes áreas de interés en función de las necesidades que presentan jugadores, staff y directivas, dentro de este campo sin embargo uno que destaca y se mantiene de manera repetida es el TILT, un concepto que pese a estar siempre presente pocos jugadores pueden definirlo o operativizarlo para poder trabajar con él. Además, hay un hándicap en este intento de conceptualizar muchos de los constructos y conceptos de la psicología, como pueden ser el rol del psicólogo, el modelo de habilidades psicológicas a trabajar o cómo se comportan los jugadores de esports bajo presión ya que no están investigados en profundidad. Por ese motivo esta tesis titulada TILT: Conceptualización y medida en jugadores de esports, no empieza directamente con un instrumento, ya que, el propio concepto y el ecosistema no está bien definido. En una primera fase se aborda de manera teórica a través de una revisión los aspectos psicológicos de los esports (Trabajo 1), como intento de entender mejor que constructos y conceptos se relacionan con la psicología, además del rol del psicólogo dentro del ecosistema de los deportes electrónicos. En una segunda fase, se presenta un

modelo de habilidades psicológicas (Trabajo 2) que nos permite comprender en detalle como se clasifican las distintas habilidades de los jugadores y como estas influyen en el rendimiento y bienestar, destacando el rol del TILT como un proceso cognitivo relacionado con la emoción, pero influyendo de manera significativa en otros procesos como la motivación, atención o toma de decisiones, y sin duda en el rendimiento y bienestar general de los jugadores, tanto situaciones de entrenamiento como competición. Una vez situada tanto la perspectiva general, como dónde está el TILT dentro de todo el mapa de habilidades cognitivas, se procedió a su conceptualización y definición a través de una fase cualitativa y su medición con el desarrollo de una herramienta psicométrica (Trabajo 3), además de poder ver su relación con otras variables cómo la satisfacción vital o el trastorno de juego en internet (IGD). Esta tesis ha dado como resultado poder operativizar uno de los constructos más recurrentes dentro de la literatura académica y práctica profesional, abriéndose un nuevo campo de estudio tanto en su futura prevención y tratamiento para poder reducirlo, como estudiar sus efectos con otros procesos cognitivos (e.g. memoria, atención, emoción, aprendizaje, toma de decisiones, etc.) y/o otras conductas problemáticas del ecosistema de los esports (e.g. toxicidad, trastorno de juego en internet, etc.). Finalmente, concluir que la presente tesis a partir del estudio de las diferentes habilidades psicológicas, también a ofrecido la oportunidad de diseñar una herramienta, adaptada a partir del CBAS (Trabajo 4) que permite el estudio de la comunicación y sus patrones, siendo un trabajo extra de esta investigación.

Abstract

Without a doubt, esports are experiencing constant evolution and development within the socioeconomic ecosystem. In recent years, an entire network of players, brands, technical staff, managers, etc. has developed. That they have made the emergence of a field that began in 1972 but in this last decade has experienced its stabilization and opening to the general public, taking into account that approximately 82% of young people and 52% of the general population play games. video games and esports. However, this rapid growth has shown that it is still a young ecosystem, with little structure and the need for academic research to answer some of the problems that arise. Within the area of psychology, especially sports and health psychology, with which it shares greater synergies due to its similar structure and functioning, different areas of interest have been developed depending on the needs presented by players, staff and managers, within Of this field, however, one that stands out and is maintained repeatedly is TILT, a concept that, despite being always present, few can define or operationalize it in order to work with it. Furthermore, there is a handicap in this attempt to conceptualize many of the constructs and concepts of psychology, such as the role of the psychologist, the model of psychological skills to work on or how esports players behave under pressure since they have not been investigated. in deep. For this reason, this thesis entitled TILT: Conceptualization and measurement in esports players, does not begin directly with an instrument, since the concept itself and the ecosystem are not well defined. In a first phase, the psychological aspects of esports are addressed theoretically through a review (Study 1), as an attempt to better understand which constructs and concepts are related to psychology, in addition to the role of the psychologist within the esports ecosystem. electronic sports. In a second phase, a model of psychological skills is presented (Study 2) that allows us to understand in detail how the different skills of the players are classified

and how they influence performance and well-being, highlighting the role of TILT as a cognitive process. related to emotion, but significantly influencing other processes such as motivation, attention or decision making, and undoubtedly on the performance and general well-being of the players, both in training and competition situations. Once the general perspective was located, as well as where the TILT is within the entire map of cognitive abilities, its conceptualization and definition was carried out through a qualitative phase and its measurement with the development of a psychometric tool (Study 3), in addition to being able to see its relationship with other variables such as life satisfaction or internet gaming disorder (IGD). This thesis has resulted in being able to operationalize one of the most recurrent constructs within academic literature and professional practice, opening a new field of study both in its future prevention and treatment to reduce it, and in studying its effects with other cognitive processes (e.g. memory, attention, emotion, learning, decision making, etc.) and/or other problematic behaviors of the esports ecosystem (e.g. toxicity, internet gaming disorder, etc.). Finally, conclude that this thesis, based on the study of the different psychological skills, has also offered the opportunity to design a tool, adapted from the CBAS (Study 4) that allows the study of communication and its patterns, being a work extra from this research.

Tabla de contenidos

Prefacio

La presente tesis por compendio de publicaciones titulada "TILT: Conceptualización y medida en jugadores de esports" se enmarca en el doctorado de Psicología del deporte y la salud, del departamento de Psicología Básica, Evolutiva y la Educación de la Universidad Autónoma de Barcelona (UAB). Cumple con los requisitos establecidos por la escuela de doctorado de la UAB para la obtención de la mención internacional, al haberse realizado en parte durante una estancia de investigación de 3 meses en la Universidad de Chichester, Reino Unido.

El inicio de la presente tesis comenzó con la motivación por crear una medida que permitiese realizar una medición de uno de los conceptos más disruptores en la práctica profesional de la psicología de los jugadores de esports como es el TILT. Sin embargo, nos encontramos durante el proceso de planificación que realizar una medida de un concepto no definido requería de un trabajo previo que dio lugar al presente trabajo. El contenido está organizado en tres bloques, un primer bloque introductorio, dónde se presenta una visión global del estado actual de los esports, la necesidad de realizar investigaciones de rigor, la complejidad de crear herramientas de medidas psicométricas y el planteamiento teórico-metodológico requerido para poder llegar al objetivo principal de la tesis. A continuación, un segundo bloque dónde se presentan los estudios realizados, con un primer estudio que nos permite situar a la psicología dentro del ecosistema de los esports, trabajo previo necesario para poder saber la necesidad o no de una medida, un segundo trabajo dónde se crea un modelo de habilidades psicológicas que crea un mapa general de las habilidades cognitivas que se requieren para competir en los esports y dónde hacemos unos primeros pasos para situar el tilt dentro de ellos, un tercer estudio dónde se indaga directamente en la conceptualización y definición del TILT desde una perspectiva cualitativa, y posteriormente el diseño y validación de un test psicométrico

que nos permite medirlo, además de relacionarlo con otras variables. Añadido, hay un cuarto trabajo de una herramienta de observación y medición de la comunicación fruto del trabajo realizado durante el segundo estudio, que, aunque no va estrechamente ligado, sigue la línea de definir y medir constructos clave dentro de los esports y la psicología. Seguido al segundo bloque de resultados, se desarrolla el bloque tercero de discusión, dónde se enlazan los resultados de los diferentes trabajos y proceso seguido, además de plantear las futuras direcciones que se abren a partir de los resultados obtenidos teniendo en cuenta las limitaciones de la investigación realizada. Finalmente, se realiza un apartado de conclusiones dónde se resume de manera global los conceptos claves del presente trabajo.

A continuación, se exponen los trabajos que comprendes la presente tesis por compendio de publicaciones:

Trabajo 1

García-Lanzo, S., Bonilla, I., & Chamarro, A. (2020). The psychological aspects of electronic sports: Tips for sports psychologists. *International Journal of Sport Psychology, 51*(6), 613–625. https://doi.org/10.7352/IJSP.2020.51.613

Trabjo 2

Bonilla, I., Chamarro, A., & Ventura, C. (2022). Psychological skills in esports: Qualitative study of individual and team players. *Aloma*, *40*(1), 35-41. https://doi.org/10.51698/aloma.2022.40.1.36-41

Trabajo 3

Bonilla, I., Chamarro, A., Birch, P., Sharpe, B., Martín-Castellanos, A., Muriarte, D., & Ventura., C. (2024). Conceptualization and validation of the TILT questionnaire:

Relationship with IGD and Life Satisfaction. *Frontiers in Psychology.* (Under review*)*

Trabajo 4

Bonilla, I., García-Lanzo, S., Martín-Castellanos, A., Mendoza, G., Ventura, C., & Chamarro, A. (2023). Una herramienta para el análisis de la comunicación en jugadores de esports en Counter-Strike (CS): Un estudio de caso con el CBAS. *Revista de Psicología Aplicada al Deporte y al Ejercicio Físico, 8(2),* 1-9. https://doi.org/10.5093/rpadef2023a13

Introducción

Los esports como objeto de estudio

Los esports, o deportes electrónicos sin duda han sido uno de los fenómenos más relevantes de los últimos años dentro del ámbito del entretenimiento (Newzoo, 2022; Riatti & Thiel, 2021). Sin embargo, este nuevo ecosistema, no surge fuera de contexto, los esports, al igual que otros grandes avances, como la inteligencia artificial o la biotecnología, se basan en los avances tecnológicos de los últimos años, en este caso especialmente con el desarrollo de internet y los videojuegos (Stanton, 2015; Li, 2016). Si queremos entender los esports, no cabe duda de que hay que entender el desarrollo de los videojuegos, ya que, su desarrollo y estudio llevan más de una década de ventaja sobre los esports y hay que recordar que todos los *"los esports son videojuegos, pero no todos los videojuegos son esports"* (Mendoza et al., 2023) lo que implica que ambos contextos están interrelacionados.

Como breve resumen siguiendo a los autores Stanton, 2015 y Li, 2016, los videojuegos tienen sus orígenes en los años 50, cuando surgieron los primeros experimentos en este campo. Inicialmente, estos juegos eran extremadamente sencillos y cumplían funciones poco complejas, como "Tennis for Two" (1958) y "Spacewar!" (1962). A pesar de su simplicidad, estos primeros videojuegos tuvieron una acogida entusiasta dentro de los círculos universitarios y entre los jóvenes. Además, su popularidad demostró que las ciencias y tecnologías emergentes podían tener aplicaciones recreativas y educativas, y no solo militares o políticas. El desarrollo de los videojuegos continuó a un ritmo acelerado durante las décadas siguientes. En los años 70, la creación de los primeros juegos arcade, como "Pong" (1972), marcó el inicio de la industria comercial de los videojuegos. Este período también vio la aparición de las primeras consolas domésticas, como la Magnavox Odyssey (1972), lo que permitió que los videojuegos llegaran a los hogares por primera vez. La expansión de los videojuegos se

consolidó en los años 80 con la llegada de consolas más avanzadas, como la Atari 2600 y la Nintendo Entertainment System (NES), que ofrecían una variedad de juegos más complejos y gráficos mejorados. Los videojuegos comenzaron a formar parte de la vida cotidiana de millones de personas en todo el mundo. En las décadas siguientes, la industria de los videojuegos continuó evolucionando con rapidez. Los avances en tecnología permitieron el desarrollo de gráficos en 3D, juegos en línea, y plataformas móviles, ampliando aún más el alcance y la accesibilidad de los videojuegos. Hoy en día, los videojuegos no solo son una forma de entretenimiento masivo, sino que también tienen aplicaciones en la educación, la salud, la ciencia y otras áreas (e.g., la aplicación de los serious games para el tratamiento de enfermedades de salud mental). Esta evolución ha transformado a los videojuegos en una parte integral de la cultura contemporánea, destacando su capacidad para adaptarse y crecer junto con los avances tecnológicos y las cambiantes demandas del público, además de ser unas de las principales fuentes de entretenimiento (Riatti & Thiel, 2021).

Por otro lado, los esports han experimentado un desarrollo impresionante desde sus inicios, convirtiéndose en una industria multimillonaria con una audiencia global masiva. Su evolución, paralela en algunos momentos con los videojuegos, pero siempre un paso por detrás, se remonta a la década de 1970. En 1972, la Universidad de Stanford organizó el primer torneo conocido, el "Intergalactic Spacewar Olympics", para el juego "Spacewar!". En la década de 1980, los videojuegos arcade, como "Space Invaders" y "Pac-Man", se volvieron extremadamente populares y se comenzaron a organizar competiciones a nivel local y nacional. El auge de las computadoras personales en los años 90 permitió que los videojuegos multijugador se volvieran más accesibles. Juegos como "Doom" (1993) y "Quake" (1996) se convirtieron en pilares de las competiciones

de videojuegos. En 1997, el Red Annihilation Tournament para "Quake" se considera uno de los primeros grandes torneos de esports, con un Ferrari como premio para el ganador. Este evento marcó el comienzo de los esports tal como los conocemos hoy. La década de 2000 vio un crecimiento significativo en la popularidad y profesionalización de los esports. En Corea del Sur, "StarCraft" (1998) se convirtió en un fenómeno cultural, con competiciones televisadas y jugadores profesionales ganando popularidad. La creación de la Electronic Sports World Cup (ESWC) en 2003 y la World Cyber Games (WCG) en 2000 establecieron plataformas globales para la competición en diversos títulos. La década de 2010 fue testigo de un crecimiento explosivo en la popularidad de los esports. Juegos como "League of Legends" (2009), "Dota 2" (2013) y "Counter-Strike: Global Offensive" (2012) atrajeron a millones de jugadores y espectadores. El desarrollo de plataformas de streaming como Twitch permitió a los fans seguir las competiciones en tiempo real, aumentando la visibilidad y el alcance de los esports. Los torneos comenzaron a ofrecer premios millonarios, con "The International" de Dota 2 estableciendo récords de premios.

Hoy en día, los esports son una industria global valorada en miles de millones de dólares, con ligas profesionales, equipos patrocinados y audiencias masivas, un ejemplo son Estados Unidos y China dónde se generan 871 millones y 445 millones de dólares respectivamente. Grandes marcas y empresas de tecnología invierten en patrocinios y publicidad. Los eventos de esports se celebran en estadios llenos de fans y se retransmiten a audiencias globales a través de múltiples plataformas de streaming. Los esports han trascendido el ámbito de los videojuegos para convertirse en un fenómeno cultural. Han influido en la moda, el entretenimiento y hasta en la educación, con universidades que ofrecen becas y programas de estudio centrados en los esports(e.g. UCAM y su programa

de becas con el club de esports de la universidad). El futuro de los esports promete seguir creciendo con el avance de tecnologías como la realidad virtual y aumentada, y la integración de los esports en eventos deportivos tradicionales. En resumen, los esports han evolucionado de competiciones informales en los años 70 a una industria global y profesional en la actualidad, con un impacto significativo en la cultura y la economía a nivel mundial.

Hasta ahora, hemos podido observar la evolución de los videojuegos y esports, sin embargo, no hay que olvidar que no únicamente las ciencias de la tecnología se han visto interesadas en este fenómeno socioeconómico. Otras ramas del conocimiento, como la filosofía, ciencias de la comunicación, ciencias del deporte y las ciencias del comportamiento también se han visto interesadas en el estudio e impacto de los videojuegos primero y seguidamente de los esports (Pedraza et al., 2020) Sí nos centramos en la psicología, el interés comenzó con el uso de los videojuegos y sus efectos psicológicos. En un primer momento el prisma bajo el que se estudiaron fue de los múltiples efectos adversos que provocan, desde agresividad (Kumari et al., 2022) y déficits atencionales (Hagiwara et al., 2020) pasando la adicción a los videojuegos (Maldonado-Murciano et al., 2022). Sin embargo, tras años de estudios sus efectos nocivos no fueron claramente establecidos y los datos eran confusos, dando lugar a otra perspectiva asociada a los efectos positivos que estos podían provocar en sus videojugadores o comúnmente conocidos como *gamers*. Estos estudios, han indagado en los múltiples beneficios que pueden presentar los videojuegos en sus usuarios, algunos hallazgos han sido su impacto positivo en los procesos atencionales (Jiao et al., (2024). la toma de decisiones (Valls-Serrano et al., 2022).) o el aprendizaje (Richard et al., 2019). Sin embargo, estos resultados también en muchas ocasiones resultan inconclusos,

haciendo que el debate acerca de si los videojuegos son positivos o negativos siga abierto, siendo cierto que de todos modos las aplicaciones terapéuticas o educativas de estos no dejan de aumentar a medida que se conocen mejor sus mecanismos, buenos usos y como realizar estudios de manera más rigurosa.

Junto a este desarrollo del campo de estudio de los videojuegos que con el tiempo se ha ido consolidando, estandarizando y creando centros de investigación específicos. Los esports, han surgido como un fenómeno nuevo de estudio dentro de la psicología, con similitudes a los videouegos, pero con un enfoque diferente en cuanto a los intereses de estudio. Mientras que, en los videojuegos, los intereses y temáticas de estudio han sido más propias de la psicología clínica, educativa y social, en los esports, a causa de su naturaleza competitiva y un ecosistema similar al deporte tradicional, la psicología de la salud y del deporte han sido las principales ramas en desarrollar los primeros avances y establecer los constructos de interés (Banyai et al., 2019), siendo un hibrido entre ambas ramas de las ciencias del comportamiento (ver Figura 1).

Figura 1.

Mapa conceptual de la ubicación de la Psicología en los esports.

Como hemos podido observar los esports, vienen desarrollándose desde hace varias décadas, además del interés que está despertando como campo de estudio e investigación. Sin embargo, son muchos los retos a los que nos enfrentamos dentro del contexto. Tal y como indican Pedraza et al. (2020), el estado del conocimiento acerca de los esports es inestable, con investigaciones con una calidad metodológica poco clara en muchos casos y con constructos de estudio que no tienen herramientas específicas o marcos teóricos justificados. Esto ha hecho que, aunque en los últimos cinco años el número ha ido creciendo exponencialmente, las temáticas tratadas en muchos casos sean las mismas, o poco específicas, sin dejar claro la definición del jugador de esports, como las variables e relacionan o si los instrumentos fueron revisados para garantizar su fiabilidad y validez.

Ante tal situación, el avance en el campo se hace difícil, haciendo que muchas veces como investigadores no sepamos si podemos usar los estudios como base de estudios futuros y que se repliquen ciertas temáticas de manera sobredimensionada. Por ejemplo, el número de revisiones sistemáticas en algunas temáticas superan el número de estudios empíricos realizados. Por otro lado, Pedraza et al. (2020) también indica que se investigan algunos constructos sin disponer de un marco teórico previo. Además de la inexistencia de una situación clara del ecosistema y aquellos constructos de mayor relevancia que nos permitan establecer una hoja de ruta clara y guie la práctica profesional y académica. Sin embargo, se han ido haciendo avances en esta dirección, creando focos de interés y estudio, como el estrés (Leis, & Lautenbach 2020) o los indicadores de rendimiento (Sharpe et al., 2023a), generando poco a poco la literatura necesaria que sustenta las futuras investigaciones en el campo.

TILT y los esports

Dentro de las múltiples problemáticas que más afectan a los esports hay varios temas recurrentes, por ejemplo: a) manejo del estrés en situaciones de competición, mantenimiento de la atención durante largos periodo de tiempo (Nagorsky & Wiemeyer, 2020), b) mejora de la comunicación y aumento de la cohesión (Tang, 2018), y d) reducción de la toxicidad y gestión del tilt (Adinolf & Turkay, 2018). Este último concepto, el tilt, proveniente del póker, pero ampliamente adoptado y difundido dentro de los esports, ha ganado un nivel de relevancia que hace que sean pocas las situaciones dónde no se emplee o dónde no se use como excusa para la justificación de un mal resultado, enfado o frustración con un compañero. Pese a su relevancia, no conocemos estudios específicos al respecto, aunque sí ha aparecido en diversos estudios que valoran los aspectos más problemáticos para el rendimiento (Nagorsky & Wiemeyer, 2020), la regulación emocional (Behnke et al., 2022) o cuando se han analizado los facilitadores y barreras que ven los jugadores en los esports (Poulus et al., 2022). Este concepto del tilt, normalmente es difícil de definir o trabajar al no tenerse claro dónde se encuentra, en que procesos cognitivos se basa, que habilidades psicológicas requieres, o simplemente cuales son sus causas y consecuencias, aunque cuando se da en su máximo nivel los gritos, ira y frustración son claramente percibidos. Las dificultades principales radican en su imposibilidad de acotar, conocer las conductas concretas, los antecedentes que le provocan y como se podría medir o tratar, haciendo que el problema se cronifique y pueda ser motivos de retirada, burnout o bajada de rendimiento deportivo, más allá del ambiente tóxico que genera dentro de los equipos.

Más allá de las problemáticas propias del estudio del constructo del tilt, el hecho no conocer exactamente los factores psicológicos implicados, el rol del psicólogo del deporte e incluso las claves de estudio de la psicología, imposibilitan realizar un

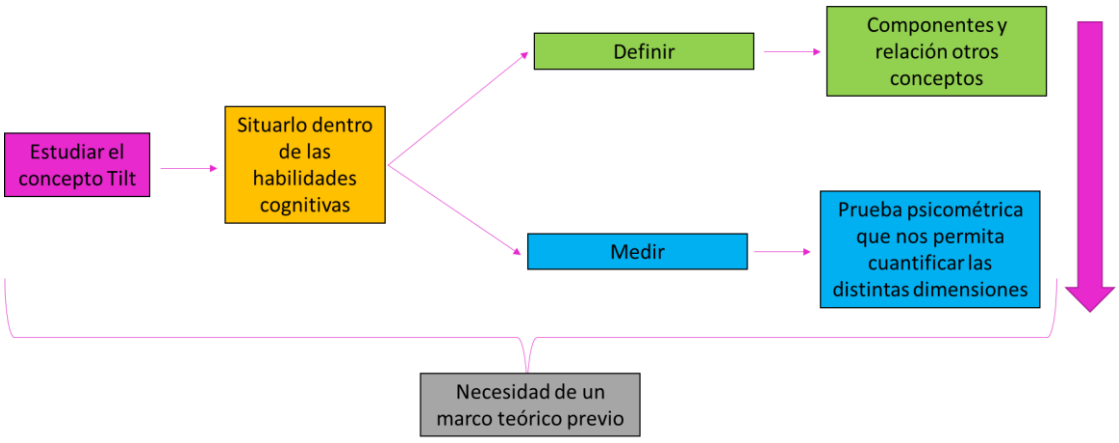
definición o medición de la variable, por lo que se necesitan de unos pasos previos de contextualización que permitan realizar una herramienta psicométrica valida y fiable (Kyriazos & Stalikas, 2018).

Objetivos

En base a los motivos expuestos anteriormente se presentan los objetivos de la presente tesis (ver Figura 2). El objetivo general de esta tesis propone realizar una conceptualización y posteriormente desarrollar una herramienta psicométrica que permita medir el tilt. Sin embargo, como hemos podido apreciar, sin un marco teórico claro es difícil poder hacer dicho desarrollo, por ese motivo se plantean objetivos diferentes.

Figura 2.

Objetivos y procedimiento para estudiar el concepto del Tilt



Objetivo 1: Revisar los aspectos psicológicos clave dentro de los esports y el rol de la psicología del deporte.

Objetivo 2: Proponer un modelo de habilidades psicológicas que permitan conocer todos los procesos cognitivos implicados y aquellos que pueden ser susceptibles a ser medidos, entre ellos el tilt.

Objetivo 3: Definir y medir el tilt, proponiendo su conceptualización como variable de estudio y una herramienta psicométrica que permita medirlo para su estudio.

Objetivo 4: Conocer como el tilt se relaciona con otras variables, como pueden ser la satisfacción con la vida y el IGD.

RESULTADOS

Trabajo 1

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The psychological aspects of electronic sports: Tips for sports psychologists

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Professional competition in the field of videogames, known as electronic sports (esports), is rapidly growing and sport psychologists are considering providing support to optimize performance. However, psychologists doubt whether esports is an activity of their competence and players (gamers) and coaches know little about how psychologists can help them optimize their performance. The aim of this article is to bring information related to esports and to how sports psychology applies to the context of competitive gaming. The paper begins with an overview of video gaming, tracing the evolution from the first recreational games to the international competitions of today. The article goes on to define esports and to discuss the extent to which they can be considered sports. Next, the article discusses the role of the sport psychologist in esports and offers an overview of the psychological issues worthy of special attention in this field. In addition, the article presents a career model applied to esports. Finally, the authors provide some reflections on the psychological factors involved in esports, highlight the possible roles of sport psychologists, and suggest possible directions for future research and interventions.

KEY WORDS: Careers In Sports, Esports, Motivation, Psychological Skills, Video Games.

Video games have quite a lengthy history as a form of entertainment. Perhaps the first video game, one in which human player competed against a machine, can be traced back as far as 1952 (Stanton, 2015). However, it was with the appearance of *Spacewar* (1962) and *Pong* (1972), collaborative games where gamers could play together, that the popularity the games spread enough for video games to reach the status of an entertainment industry in their own right (Banyai, Griffiths, Kiraly, & Demetrovics, 2018).

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Subsequent technological advances, especially in the quality of microprocessors and memory chips, made it possible to develop home video game consoles like the popular Nintendo system. Other breakthroughs came with the arrival of CD-ROM and 3D technology, which made it possible to develop video games for personal computers (PCs). Thanks to the proliferation of Internet connections and the advent of consumer IT, video games, which had started out as an experimental pursuit on university campuses, came to take a place among the most popular leisure activities worldwide. Recent years have witnessed the appearance of Massively Multiplayer Online Role-Playing Games (MMORPG). This genre allows players to move through virtual online worlds and interact with one another in real time via online representations (avatars) as they complete missions, go from one level to the next, gain experience and create and use objects within the games. The boom in these games represents a qualitative leap forward in the popularity of video games overall (Fuster, Carbonell, Chamarro, & Oberst, 2013).

Table I shows some of the key milestones in the history of video games over the last several decades.

TABLE I
Milestones in the history of video games

Decade	Milestone
1950	First video game: *Noughts and Crosses*. Player vs. machine."*Tennis for Two*", table tennis simulator, created using an oscilloscope.
1960	*Spacewar*!, spaceship simulator, Player vs. player. *Fox and Hound* video game project, start of home video gaming.
1970	First home video game system: Magnavox Odyssey. First recreational arcade game: "*Pong*", used in public places. *Space Invaders*, the cornerstone of the video game industry.
1980	Spread of technological advances: microprocessors and memory chips.Launch of home video game systems: Odyssey 2, Atari 5200, Commodore 64…The growing popularity of arcade games: *Pacman*, *Battle Zone*…Video game crisis, mainly affecting the United States and Canada.Explosion of home game consoles in Japan: Nintento Entertainment System (NES). Microcomputers dominate the European market: Commodore 64 and Spectrum. In North America, the NES becomes the most popular video game system.
1990	16 Bit generation: Mega Drive and Super Nintendo Entertainment System (SNES) Launch of the Neo Geo console, with the same features as arcade games. Spread of CD-ROM technology Start of 3D video games: *Doom* and *Wolfenstein* for PC32 Bit generation: Sony Playstation and Sega Saturn 64 Bit generation: Nintendo 64 and Atari Jaguar3D accelerators allow huge advances in video game graphics. The popularity of arcade machines declines. The appearance of portable consoles: Game Boy, Game Gear and Neo Geo Pocket The appearance of connections between computers, allowing for the first multiplayer games. Popular video game genre: First person shooters (FPS); *Quake …*Popular video game genre: Real time strategy (RTS); *Stracraft …*
2000	Launch of consoles: Playstation 2, Dreamcast, Gamecube …Microsoft enters the video game console sector: XboxLaunch of portable consoles: Nintendo DS and Playstation Portable (PSP) Launch of consoles: Xbox 360, Playstation 3 and WiiSpread of DVD and Blue-Ray (BR) technologyThe beginnings of electronic sports (esports)
2010	Launch of consoles: Playstation 4 and Xbox One Spread of Virtual Reality (VR) technology Professionalization of electronic sports (esports)

From recreational video games to organized competition

Competitive video game play is far from a new development. As far back as 1972, Stanford University hosted an event in which 20 people (playing on teams of five) competed in the game *Spacewar* (Li, 2016). Table II shows the evolution of electronic sports (esports) over the decades.

The growth of esports since then has been constant. Sponsors began to organize a wide range of events, making video games into a highly lucrative activity. Game developers also realized the potential of esports and began to pay more attention to the competitions. In 2013, the Canadian professional *League of Legends* player Danny Le became the first esports participant to be granted a P-1A visa (the visa given to internationally recognized athletes) by the US government (*Los Angeles Times*, 2013). Universities now accept gamers as student athletes, and more than 50 colleges have esports teams (Difrancisco-Donoghue, Balentine, Schmidt, & Zwibel, 2019).

The proliferation of online platforms for streaming video of competitions, most prominently Twitch.tv, has played a key role in the spread and promotion of esports competitions. Currently, the most popular games for tournaments are *League of Legends* and *Counter Strike* (Newzoo, 2019a).

Since 2017, esports have been growing at an annual rate of 40% worldwide, and the industry has surpassed $500 million in sales, a boom that has awakened the interest of a growing number of sponsors of these competitions and of the media, which have devoted more and more coverage to this sport (Newzoo, 2017). In 2019, the industry is expected to generate a total revenue of $152.1 billion (Newzoo, 2019b).

Because of the exponential growth of these competitions around the world, since 2017 the International Olympic Committee (IOC) has been engaged in a debate as to whether esports can be considered sports, and

TABLE II
Milestones in the history of esports

Decade	Milestone
1970	First video game competition: *Spacewar!*
1980	First large-scale competition: *National Space Invaders Championship* First video game team: *United States National Video Game Team* Appearance of video game tournaments on the Internet and in magazines First television broadcasts of video game tournaments
1990	First event defined as esports: *Red Annihilation*, a *Quake* competition Dennis Fong considered first esport player
2000	Rise of esports in Asia with the video game *Starcraft* Esports becomes the national pastime of South KoreaBirth of the World Cyber Games (WCG) and the Electronic Sports League (ESL) Birth of Major League Gaming (MLG)

included as medal events at the upcoming 2022 Asian Games, and as a demonstration sport in the 2024 Olympic Games in Paris (BBC, 2018). The IOC is slated to take a final decision on this matter after the 2020 Games in Tokyo.

Electronic Sports (Esports): What Are Esports?

Esports "are a form of sports where the primary aspects of the sport are facilitated by electronic systems; the input of players and teams as well as the output of the esports system are mediated by human-computer interfaces" (Hamari & Sjoblom, 2017, p. 211). Scholars in the field have come to the consensus that in order for a video game to be considered an esport, there must be an organized, competitive event involved. Esports are now an undeniable competitive, social, economic and entertainment phenomenon, as well as a viable profession for many of their participants, and they are still growing considerably worldwide (Thiel & John, 2018).

Although the video games on the market number in the thousands, only a few of them have ever taken hold among professional competitors and gained the status of esports (Antón, 2019). An esport cannot be solely founded upon the design of a video game itself. Instead, esport emerges thanks to certain game design patterns that favor the creation of both competitive structures (competitions, clubs, professional teams and players) and media structures (a community of fans, media coverage, broadcasts and sponsors). These two structures, along with the principle of competition among equals (all participants play under the same conditions) are important defining factors of esports (Garcia-Naveira, et al., 2018). Chanson (2017) suggest that it should be considered that video games allow marked differences in level between players (skill gap), as well as being spectacular.

Table III shows the various video game genres that are currently considered esports. It sometimes happens that certain games lose prominence due to declining interest on the part of the gaming community or the organizations that hold competitions. However, *League of Legends* and *Counter Strike* have been able to maintain their positions as the leading esports games in their respective genres ever since they appeared (Newzoo, 2019a).

Video of esports competitions is streamed to online audience via platforms such as *Twitch* (Gerber, 2017). Professional gamers seated, depending on the game, in front of computer screens or monitors attached to video game consoles (such as a *PlayStation* or *Xbox)* compete against one another individually or in teams. They also use handheld controllers called gamepads, as well as computer keyboards and mouse to interact with video

TABLE III
Video game genres and games currently considered esports

Genere	Video Game
Multiplayer Online Battle Arena (MOBA)	*League of Legends* (LOL) *Defense of the Ancients 2* (DOTA2) *Heroes of Storm* (HOS)
Real-Time Strategy (RTS)	*Star Craft 2* (SC2) *Age of Empires 2* (AOE2)
First Person Shooter (FPS)	Counter-Strike: *Global Offensive* (CSGO) *Call of Duty* (COD) *Overwatch* (OW)
Battle Royale (BR)	*Player Unknown's Battlegrounds* (PUBG) *Fortnite*
Collectible Card Games (CCG)	*Hearthstone* (HS) *Clash Royale* (CR) *Magic the Gathering* (MTG)
Sport Games	*FIFA 20 NBA 2 K20*
Fighting Games	*Street Fighter V Dragon Ball Fighter Z*
Racing Games	*Sim Racing Moto GP 2020*

games. They communicate with teammates using headphones, which allow them to immerse themselves in the world of the game and block out any distracting noise. It is also worth underlining here that many gamers live in so-called gaming houses, residence that also function as high-performance training centers where they can work with a range of different professionals (coaches, personal trainers, nutritionists, physiotherapists and psychologists) (Pereira, Wilwert, & Takase, 2016).

Are Esports Really Sports?

There has been a great deal of controversy about the extent to which esports can be considered sports. Scholars who have argued in favor of defining them as such have often underlined that esports do meet the general definition of sports in that they are organized, competitive games that require physical ability and have a significant number of followers (Jenny, Manning, Keiper, & Olrich, 2016). Meanwhile, Thiel and John (2019) have argued that it is not that easy to distinguish esports from established sports. These researchers point out that esports, as sports in general, take place in competitive settings in which competing teams or players fight for victory, are structured according to rules valid for all participants, and are characterized by training regimens that lead to improvements in the skills that are characteristic of the game. In addition, game-specific tactical knowledge plays a decisive role with regard to success. For Pedraza-Ramirez, Musculus, Raab and Laborde (2020) the existence of ranking systems and competition regulated by official leagues are key aspects for considering a video game as an esport.

However, Parry (2018, p.1) has maintained that "e-sports are not sports because they are inadequately 'human': they lack direct physicality, they fail

to employ decisive whole-body control and whole-body skills, and cannot contribute to the development of the whole human; and because their patterns of creation, production, ownership and promotion place serious constraints on the emergence of the kind of stable and persisting institutions characteristic of sports governance."

There is little doubt, though, that esports are part of our contemporary culture, and they have cemented themselves as a specific kind of sporting competition, one whose popularity is likely to continue to grow (e.g., Pereira, Brito, Figueiredo, & Verhagen, 2019). Despite the boom in esports, there is still a debate as to what technical criteria should be applied to determine whether these activities are indeed sports, and there are questions about the legal framework that should regulate them (for example, whether esports are in need of an official federation). A fundamental problem in this regard is that companies design the game settings and produce the games. This, in turn, means that sports federations have no freedom of choice when setting rules of the game (Thiel & John, 2019). According to Huk (2019), however, this criticism is based on an idealized notion of sports bound up with the ideals of the Olympic Games, not on an objective analysis of present reality.

Some might argue that the debate as to whether esports can be strictly defined as sports is of little interest to psychologists, but the issue is not as trivial as it might seem. Psychologists involved in esports will doubtless have to justify their professional activities. For now, in the absence of a scholarly consensus on the matter, we would rely on the account of esports provided by García-Naveira et al. (2018). These researchers argued that esports are activities that test human performance and that they are integrated with technology and the media, have a large mental component and are socially accepted. Pedraza-Ramirez et al. (2020) also suggest that the esports player has to show cognitive abilities to meet the demands of competitive gaming. Regardless of whether esports can be defined as sports, Heere (2018) maintains that their emergence has been marked by "sportification", as the activities are organized along similar lines to sporting events (for instance, by cre-

TABLE IV
Skills to be developed by sports psychologists

Skill	Tool	Use
Online communication	Team Speak3 (TS3) Discord	Contacting gamers
General knowledge	Scrims Replays	Forming relationships with gamers Understanding of gamers' language
Knowledge of platforms	You Tube Twitch	Watching training and competition Making corrections
Knowledge of competitions	Rule book (ESL)	Learning how leagues function

ating a safe and gratifying atmosphere for cooperation, competition and comparison of performance), and organizers add aspects typical of sports to increase the competitions' appeal to the audience.

The Sports Psychologist in Esports

Himmelstein, Liu, and Shapiro (2017) have detailed the similarities between the psychological demands of esports and those of traditional sports. The existence of these psychological pressures represents a professional opportunity for sports psychologists. Professionals in this field face the challenge of how to study and adapt to the phenomenon of esports, as well as to the use of online psychology, a usual practice among gamers who often are geographically dispersed, as they train and compete online. This means that sports psychologists wishing to get involved in esports need to improve their skills with regard to online work and the use of new technology, with a special focus on tools related to electronic sports (for example, by using Discord rather than Skype) (see Table V).

Despite this emerging need, esports have only recently begun to attract the interest of the sport psychology field, and there are few professionals with experience working with gamers in this context (García-Naveira et al. 2018).

Characteristics of Esports Gamers

One objective of recent psychological research in this field has been to find out what psychological variables tend to characterize esports gamers. Most of these studies have used observational techniques and qualitative interviews to come to an understanding of the cognitive demands placed upon participants in esports (Reitman, Anderson-Coto, Wu, Lee, & Steinkuehler, 2019). Researchers have identified a number of characteristics present in successful gamers, including knowledge of the video game, decision-making skills, motivation, the ability to separate one's personal life from one's sporting activities, concentration, emotional control (Tilt), a positive attitude, and a commitment to constant improvement and to mental and physical warm-ups (for example, by typing very quickly) before training sessions (Himmelstein et al., 2017). Huang, Yan, Cheung, Nagappan, and Zimmermann (2017) add that successful gamers tend to follow pre-competition routines and to be able to adapt to new game situations.

TABLE V
Glossary of words used in esports

Word	Meaning
Adderall	Psychostimulant used to enhance concentration
Aimbot	Third-party program that allows for automatic targeting
Cash Prize	Winnings at the end of a competition
Casual	Occasional amateur player
Cheat	Unauthorized program that allows players to access improvements in the game
Creep	Creature that players must defeat
Diskhack	Third-party program that allows players to disconnect opponents
Fog of War	Fog that prevents players from seeing what the opposing team is doing
Gaming House	Training facility where gamers live
Hype	Enthusiasm about a video game, team or trend
Jungler	Player who moves around the map to help his teammates
Ladder	Ranking system based on points earned while playing
Lane	Road linking the bases of the two teams
Maphack	Third-party program that allows players to see through the fog
Meta	Strategy that makes reference to a video game
Mid	Player at the center of the map
Mod	Software extension that modifies a video game
Patch	Software update or extension of a video game
Pay to Win	Financial system in which the player buys elements of the game
Playmaker	Player who can affect the results thanks to his or her mastery of a game
Replay	Game recorded for analysis, whether featuring one's own team or another team
Scrim	Training session with other professional teams
Skill Gap	Difference in skill levels between players
Skin	Appearance of a character in a game
Soloqueue	Classification system used in League of Legends
Speedrun	Achieving the objective of a video game in the shortest possible time
Streaming	Online broadcast
Sub	Substitute
Support	Player who protects his or her teammate
Tilt	State of frustration in a player
Lore	Universe in which a video game is set
Top	Gamer who plays at the top of the map
Wallhack	Third-party program that allows players to see through walls

Pérez-Rubio, González, and Garcés de los Fayos (2017) pointed to the possible emergence of burnout (emotional exhaustion, depersonalization and reduced fulfillment) because of excessive attention paid to results and hours spent on training. García-Lanzo and Chamarro (2018) have suggested that esports gamers tend to be young, passionate people with a high degree of dedication, whose game playing activity is usually in harmony with the other elements of their everyday lives. These researchers also concluded that passion is a useful variable for understanding the differences in motivational patterns with regard to video game competition. Elsewhere, Bányai, Griffiths, Demetrovics, and Király (2019) highlight esports gamers play video games in a different way those recreational gamers: they play for more time, are more competitive, and are motivated by the social and skill-development aspects of games. Social motivation could help becoming an effective teammember and interact with the esport community. Skill-development motivation may help in persevere in gaming.

Psychological Skills In Esports

There seems to be a great deal of consensus among researchers that competing in esports requires considerable skill and ability, including in psychological terms (e.g., Pereira et al., 2019). Firstly, these psychological requirements come from the fact that video gaming has a social component, as gamers often compete on teams to reach a shared objective. Because of the importance of group cohesion, psychological processes like efficiency, anxiety and stress take on importance in this context. At the same time, it is critical to maintain pleasant atmosphere for gaming despite the pressure of competition (Pérez-Rubio et al., 2017). Himmelstein, Liu, and Shapiro (2017) found that the most important variables included the ability to control *tilt* (a momentary feeling of rage and impotence caused by a player's perception of his or her inability to achieve a given objective, which can cause a loss of concentration and poor performance) and successful *comms* (the team's internal communication). These authors also stressed the importance of learning the specific language used by esports gamers to communicate, as this facilitates an understanding of the context and of the relationships among team members (see Table V).

Examining gamers' performance, a number of researchers (Hilvoorde & Pot, 2016; Kari & Karhulahti, 2016; Railsback & Caporusso, 2019) have observed that, in order to meet the demands of competition, esports participants train to enhance their cognitive capacities (such as mental agility, spatial memory and decision making), psychological skills (such as emotional self-control, concentration and self-efficacy), physical capacities (such as aerobic endurance and reaction time), technical and tactical abilities (such as knowledge of a game and its strategy), coordination (for example, hand-eye coordination) and traditional values (such as individual effort, teamwork and overcoming obstacles). Pedraza-Ramirez, Musculus, Raab, and Laborde, (2020) highlight that expert gamers were characterized by establishing consistent habits and routines. This is especially relevant because esports are in constant evolution and new rules require adaptation.

Some studies have emphasized the stressful nature of esports (e.g., Smith, Birch, & Bright, 2019). The increasing social attention received by the competitions and the pressure to perform can lead to anxiety and other mental problems (Pereira et al., 2019), and gamers need to develop strategies to deal with these consequences. Some of the stress factors identified in the research include the following: team communication, criticism from teammates and team leaders, a lack of shared team objectives, difficulties in living a balanced life and the impact of the gaming lifestyle. In the same vein, Pérez-Rubio, González, and Garcés de los Fayos (2017) found that emotional

burnout and cynicism could emerge among gamers because of the degree of importance attached to results. These researchers recommended that gamers undergo training in social abilities.

Motivation in esports

Kahn et al. (2015) examined the question of motivation among esports gamers and identified six different categories of gamers, according to the factors that most motivated them: socializers (with an interest in building and maintaining social relationships), completionists (with an interest in exploring every aspect of a game to the fullest), competitors (with an interest in winning and in ensuring that their behavior contributes to victory), escapists (with an interest in escaping from reality) story-driven gamers (with an interest in the plot of a game and in the characters' backstories) and smarty-pants gamers (with an interest in enhancing their mental capacities and intelligence).

More recently, García-Lanzo and Chamarro (2018) showed that the biggest motivating factors for esport gamers were competition, social relationships and exploration. Professional gamers stood apart from other more recreational video game players not only in terms of the number of hours a week they spent on games, but in how likely they were to be motivated to enhance their mental abilities through gaming. Both Kahn et al. (2015) and García-Lanzo and Chamarro (2018) have pointed to players motivated by escapism as being at particular risk of engaging in problematic use of esport. Elsewhere, Bányai et al. (2019) identified a number of factors that make esports gamers more likely to want to gaming: competitiveness, social interaction (belonging to a club or team) and skill-development.

The factors that most motivate esports spectators are the players' skills, the team that is playing, the commentary of the announcers (casters) and enjoyment (Lee, An, & Lee, 2014). Beyond the enjoyment of watching a match, esports spectators take the opportunity to analyze the games and learn from watching the best players.

Careers In Esports

Some researchers have also looked at the evolution of esports careers. Kim and Thomas (2016) have identified four phases that esports gamers tend to experience during their careers (see Table VI).

It is clear that the career phases of esports gamers are quite similar to those of traditional athletes (e.g., Hallmann, Breuer, Ilgner, & Rossi, 2019).

TABLE VI
Phases experienced by gamers in their careers

Phase	Description
Enjoyment	The gamer plays mainly for fun, but soon recognizes that his or her skills are better than those of other players are and begins to take competitive video gaming more seriously.
Struggle	The gamer successfully passes the tests required to become a member of a professional club. In this phase, the player's individual skills are no longer sufficient, and he or she has to start to train in basic skills and strategy. At this stage, the gamer also begins to compete.
Achievement	The gamer now has more experience and comes to play an important role on the team (such as captain). He or she begins to communicate more with coaches to develop winning strategies. In this phase, the player attains his or her greatest achievements in competition.
Decline	The player begins to pass up chances to take part in official competitions, and his or her motivation decreases. Some players retrain and resume competition, but eventually they stop competing altogether. When they are no longer active as players, they tend to move on to other professions within the world of esports (becoming coaches, announcers or streamers)

Thus, as Pedraza-Ramirez et al. (2020) suggest, one of the roles of sports psychologists in esports also have should to carry out interventions related to identification of players' career paths and the acquisition of skills that facilitate their evolution along different transition stages.

Conclusion

Esports have been growing exponentially from one year to the next, and gamers require psychological skills very similar to those demanded of traditional athletes. In light of the important psychological factors involved in video gaming, sports psychologists have an important role to play within esports clubs. For example, it would desirable for sports psychologists to train gamers in values, teamwork, communication skills and, most importantly, in how to develop their professional sporting careers. Some researchers (e.g., Difrancisco-Donoghue, 2019; Pereira et al., 2019) have also suggested that gamers undergo preventive treatments to avoid the potential negative health effects (e.g., sleep alterations, repetitive strain injuries, neck and back pain) associated with the intensive use of computers and joysticks. In short, we believe that the figure of the psychologist should be an integral part of any esports team. However, research on esports is still limited, mainly qualitative and exploratory. With a few exceptions (e.g., Pereira et al., 2016) authors present their results in journals on human-computer interactions journals, not in sport psychology journals. Therefore, this field offers great opportunities to sport psychology researchers, but according to Pedraza-Ramirez et al. (2020), both, researchers and practitioners, should consider individual esports (e.g., LoL) better than whole genres.

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Trabajo 2

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Psychological skills in esports: Qualitative study of individual and team players

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Psychological skills in esports: Qualitative study of individual and team players

Abstract. *The aim of this qualitative study was to explore in more detail the key psychological skills that affect players' performance in esports. A total of ten players from a range of different individual and team esports were interviewed. The data analysis was carried out through a CodeBook thematic analysis. The results obtained suggest that the following three main dimensions underpin the optimal performance of the players: (a) technical-tactical skills, (b) psychological skills and (c) healthy habits. Within the category of psychological skills, 8 components were found: (a) Attentional control, (b) Emotional control, (c) Activation control, (d) Communication, (e) Team cohesion, (f) Thought control, (g) Goal control and (h) Behavioral control. In addition, an emerging theme was found to be the careers they have developed within esports, with all participants following a similar pattern. The results suggest the importance of sport psychology as a performance-related activity, the similarity of the psychological skills found with those that are prevalent in traditional sport, the importance of working on sustained attention and coping with tilt, and the importance of the careers of esports players.*

Keywords: *esports; psychological skills; performance; sport psychology*

Habilidades psicológicas en los esports: estudio cualitativo de jugadores individuales y de equipo

Resumen. *El presente estudio cualitativo tenía como objetivo principal explorar las habilidades psicológicas clave que afectan al rendimiento de los jugadores en los esports. Un total de diez jugadores de diferentes esports, tanto individuales como en equipo, fueron entrevistados. El análisis de los datos se realizó a través de un análisis temático "CodeBook". Los resultados obtenidos apuntan a que hay tres dimensiones principales que vertebran el rendimiento óptimo de los jugadores que son: (a) Habilidades técnico-tácticas, (b) Habilidades psicológicas y (c) Hábitos saludables. Dentro de las habilidades psicológicas se encontraron 8 componentes: (a) Control atencional, (b) Control emocional, (c) Control de activación, (d) Comunicación, (e) Cohesión de equipo, (f) Control de pensamientos, (g) Control de objetivos y (h) Control Conductual. Además, se encontró cómo tema emergente las carreras que se han desarrollado dentro de los esports, donde todos los participantes siguen un patrón similar. Los resultados sugieren la importancia de la psicología del deporte para los esports, al tratarse de una actividad relacionada con el rendimiento, la similitud de las habilidades psicológicas encontradas con las del deporte tradicional, la importancia de trabajar la atención sostenida y afrontar el tilt y la importancia de las carreras de los jugadores de esports.*

Palabras clave: *esports; habilidades psicológicas; rendimiento; psicología del deporte*

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Introduction

Although esports might seem to be a new phenomenon, their origin goes back to the beginnigs of the recreational use of video games (Stanton, 2015), which took hold between 1962 and 1972 (Bányai et al., 2018). The first esports event was held in 1972, with players competing in the video game *Spacewar* at Stanford University (Li, 2016). Since then, esports have become increasingly established in the world entertainment, having attained popularity with the general public (Fuster et al., 2014) and developed a competitive ecosystem (García-Lanzo et al., 2020). Sponsors and online streaming platforms have invested considerable resources to position themselves within the esports ecosystem in order to reach a young audience that continues to grow in size, with an increase forecast from the current global audience of 728.8 million to 920.3 million viewers in 2024 (Newzoo, 2021). This is evidence of esports' great social impact (Riatti & Thiel, 2021), which has sparked a great deal of interest in the field of psychology. In terms of psychological research, there has been a boom in scientific literature on the topic (Pedraza-Ramirez et al., 2020), while in the professional field, recent years have witnessed the establishment and definition of the role of sports psychologist within esports teams (García-Naveira & Cantón, 2020). Within the existing literature related to sport psychology and esports, there have been multiple focuses of interest, such as motivation (Bányai et al., 2018), passion (García-Lanzo & Chamarro, 2018), performance (Pluss et al., 2019), multidisciplinary work (Reitman et al., 2020), and the state of current research and its future challenges (Pedraza-Ramirez et al., 2020; Vera et al., 2019). However, there is little research and knowledge on the psychological aspects involved in the performance of players and teams (García-Lanzo et al., 2020; Pedraza-Ramirez et al., 2020). In this line of research, the most relevant topics are: (a) the relationship between training and performance in competitions (Nagorsky & Wiemeyer, 2020; Pluss et al., 2021), (b) the role of emotions in the performance (Behnke et al., 2020; Pérez-Rubio et al., 2017), and (c) the psychological skills needed to perform (Fanfarelli, 2018; Himmelstein et al., 2017).

As in traditional sports, in esports it is necessary to identify the key psychological skills at work in order to create specific training programs that optimize and enhance player performance (Trotter et al., 2021). Himmelstein et al (2017) divide the psychological skills displayed by League of Legends players into two main blocks: psychological skills for optimal performance and obstacles. Fanfarelli (2018), in a study of Overwatch players, divided skills into two categories: mechanical skills and *game sense* skills. If we go beyond the individual games to identify more general factors, the relevant skills related to performance would seem to be: (a) Mechanics, referring to the technique that players need in order to be able to correctly execute the challenges posed by the esport (e.g., mouse movement or specific combinations of keys), (b) emotional control, (c) *tilt* control (i.e., dealing with situations of frustration, anger and impotence that distract players and decrease their overall performance), (d) team communication, and (e) lifestyle management. However, neither of the two studies goes further, in the sense of proposing a model that relates the different skills with performance. Such a model could then be compared with models proposed in traditional sports, thus allowing for the creation of specific training programs for esports.

Due to this lack of structure and the absence of a model that allows researchers and psychology professionals to know how performance is achieved and maintained in esports, it is difficult to support or develop programs that allow players to optimize their performance. For this reason, there is a need to delve in greater detail into the psychological skills that are relevant to players in different esports to find a first model that is able to connect these psychological skills with optimal performance. The development of a theoretical model would allow the results to be contrasted and make it possible to draw connections between existing concepts in psychology and esports, while differentiating these established concepts from the newly emerging concepts in psychology that are specific to esports (Creswell & Miller, 2000; Pedraza-Ramirez et al., 2020). This study is intended to address this need. Its aim is to detect the psychological skills used by players in three of the main esports: (a) *League of Legends* (LoL), (b) *Hearthstone* (HS) and (c) FIFA, representative of the three most relevant esports genres both socially and competitively, the categories of games that attract the majority of professional esports players (Newzoo, 2021). This process will make it possible to create a first model that explains the relationship between optimal performance, psychological skills and other variables of esports players (e.g., skills related to technique or healthy lifestyle), thus allowing for the creation of specific and tailored psychological training programs and exercises. In order to relate psychological skills to performance, we will use the model proposed by Palmi and Riera (2017) as a basis. This model describes the optimal state of performance (OSP) of athletes using seven competencies that allow athletes to self-regulate in competition situations: (a) Activation control, (b) Attentional control, (c) Thought control, (d) Communication, (e) Goal control, (f) Behaviour control and, (g) Emotional control.

Method

Given that this study uses a qualitative methodology, it is important that we position ourselves within the field of knowledge. The perspective of the researchers is based on a post-positivist vision, where an analysis is intended to offer explanations and predictions, in this case about the performance of esports players, all while striving to ensure that there is a minimum of

human error and interpretive biases (Levitt et al., 2017). Due to the limitations in the rigor of traditional qualitative methodologies (Smith & McGannon, 2018), it was decided to carry out a thematic "CodeBook" analysis (Braun & Clarke, 2021). Thus, we base the analysis on previous literature (Palmi & Riera, 2017) to minimize the possible biases of researchers when identifying psychological skills. Finally, a flexible vision was adopted that would allow topics to be added or adapted to reality as it was reflected in the interviews, thus generating an inductive-deductive analysis methodology.

Participants

A total of 10 esports players, all men, were contacted because of their esports experience and career. Half of the players compete in team esports, and the rest compete in individual esports. All are currently active and represent clubs in Spain. The participants had a mean age of 20.3 years (SD=2.58), Spanish nationality and resided in: Albacete (2), Barcelona (4), Granada (1), Galicia (1) and Madrid (2). They have been playing their respective esports for an average of 5.8 years (SD=1.75) and 2.9 years (SD=1.91), competing online and in person in national and international tournaments (Table 1).

Instruments

A specific semi-structured interview was designed for this study. It is aimed at exploring the experiences and strategies used by the player to achieve good performance in training and competitions. There were also questions about the causes or variables that led esports participants to fail to achieve the desired results in competitions or during training. The interview was divided into three parts. The questions in the first part gathered information on: (a) the esport each participant played; (b) how he started to play it; and (c) how he has evolved to reach his current level, with special emphasis on experiences as a player and style of play. A second part delved into: (d) the skills needed to perform in training and competitions; (e) the main difficulties encountered that have prevented the participants from performing adequately and the strategies used to deal with said difficulties; (f) skills he believed different esports had in common; and (g) skills that were unique to a specific esport.

Table 1. Sociodemographic data of the participants

Participant	Age	Esport	Type	Years playing	Years competing
Player 1	17	*League of Legends*	Team	4	1
Player 2	22	*League of Legends*	Team	9	7
Player 3	22	*League of Legends*	Team	7	4
Player 4	23	*League of Legends*	Team	8	4
Player 5	18	*League of Legends*	Team	6	1
Player 6	24	*Hearthstone*	Individual	4	3
Player 7	21	*Hearthstone*	Individual	5	4
Player 8	21	*Hearthstone*	Individual	4	2
Player 9	17	FIFA	Individual	5	1
Player 10	18	FIFA	Individual	6	2

Procedure

A list of esports clubs where there were direct contacts with players, staff (coaches or sports psychologists) or sports directors was drawn up. Once the list was made, an email was sent explaining the objectives of the study, the procedure and the benefits that said research would provide. Once the participants from these clubs had been recruited, the process was explained to each of them individually, and an informed consent document was sent to all the participants and managers of the club in order to comply with the ethical standards (voluntariness, confidentiality, benefits, etc.) established by the APA. A date was arranged to conduct the interview by the means they preferred (face-to-face or online). The interviews were conducted by an expert researcher in esports with years of experience in the applied field and in the use of semi-structured interviews. They were first audio recorded, lasting between forty and fifty minutes, and then transcribed verbatim. Once the study was finished, a session was held for the participants to explain the results and their implications for players and other agents involved in sports performance (Figure 1).

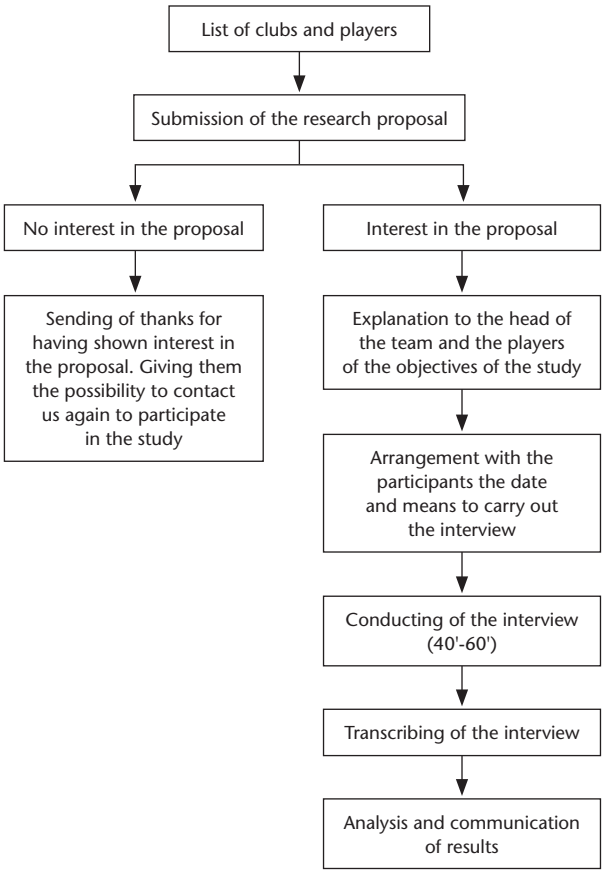

Figure 1. Study procedure.

Data analysis

Data analysis was carried out through a "CodeBook" thematic analysis, using an inductive-deductive methodology. We used the EOR model to generate some initial themes and codes, but we maintained enough flexibility to make it possible to modify these categories based on the data obtained during the analysis (Braun & Clarke, 2021). Once the different codes were established for each of the skills detected, the codes were grouped into a series of broader skills and discussed between the different researchers, one an expert on esports and two with expertise in sport and performance psychology. The researchers attempted to come to a consensus to ensure that the categories generated were logical from the start. Once the skills had been categorized, the data were reanalysed to confirm that each of the codes corresponded to its assigned category and not to another category or to a new category. Once the main components were detected, the parts into which each component could be successively subdivided were analysed in detail until no more relevant subdivisions could be obtained. Finally, each obtained skill was defined according to the existing literature and the results. To ensure the descriptive validity of the results, the interviews were audio-recorded with different devices simultaneously and the transcripts and corrections were reviewed at three different times. For theoretical validity, higher order psychological skills were reviewed and defined considering the existing scientific literature in the field of sport psychology. The goal here is to guarantee the quality and rigor of the results obtained (Creswell & Miller, 2000). For data analysis, the software ATLAS.ti 8 was used.

Results

Components of optimal performance

From the analysis, we can see that the skills associated with optimal performance for esports players have been divided into three dimensions (Figure 2). First, there are technical-tactical skills, defined here as the skills and knowledge of a particular esport that are mostly specific to that sport, meaning they are not shared with other esports. This component can be divided into technique (e.g., "The mechanics, how well you move" or "*Time finishing*, is very important, know when to press the right button"), tactics (e.g., "Rotations, knowing where to *ward* or get vision in the enemy map" or "Play the cards based on what you want your opponent to think you have, sometimes even tricking them into thinking you have something strong") and knowledge (e.g., "You have to know the *metagame*", "Being good at it is not enough, because you also have to know why things are done" or "Now, for example, I'm focusing on getting to know the players better, their *stats*"). The second dimension refers to psychological skills, defined as the resources that allow players to have a good *mental* ability to face competition and training situations. This component is divided into a total of eight skills, which will be analysed in detail in the following section, because of their relevance and the fact that they are the object of study. The last dimension refers to healthy habits and the actions players take to care for themselves and maintain their health, especially in competitive situations (e.g., "That I do not feel bad, that I do not have pain, no stomach pain, no headache, nothing abnormal, the way I am now."). This dimension is divided into nutrition (e.g., "The body has to be well fed") and rest (e.g., "The body has to be rested").

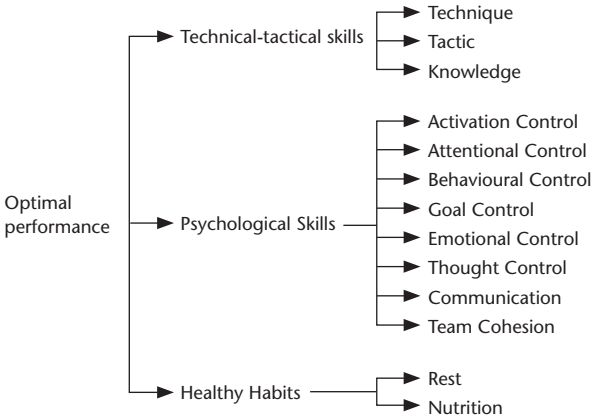

Figure 2. Components of Optimal Performance

Psychological skills

A count was made to find out the frequency of each of the skills, and an average of the frequencies was calculated to identify the skills that the participants found most relevant (Table 2). In order of importance, the psychological skills are: a) Attentional control, understood as players' ability to concentrate and direct their attentional resources to the specific action they are performing in the esport. It is especially important to

Table 2. Importance and components of psychological skills

Psychological skill	Mean	Participant description	Esport type
Attentional control	10.7	Concentration, "Play with intelligence", Actions of your teammates, "Here and now", etc.	Individual/Team
Emotional control	9.2	Tilt, Frustration, "Not wanting anything", etc.	Individual/Team
Activation control	7.9	Pressure, nerves, "trembling hands", etc.	Individual/Team
Communication	7.1	Quality, "No noise", Efficient, etc.	Team
Team cohesion	6.8	Fellowship, Support, Commitment, Coordination, etc.	Team
Thought control	5.4	Actions of the rival, own actions, "Do not overthink", etc.	Individual/Team
Goal control	2.7	Planning, "Know what we came for", etc.	Individual/Team
Behavior control	1.2	"Know how to behave", "Hold composure", Temper, etc.	Individual/Team

Table 3. Psychological skills and quotes from participants

Psychological skill	Quotes from team esport players	Quotes from individual esport players
Attentional control	"A trade that you do instinctively, not because... not because I thought he had one skill or another, you just jump in"	"I know everything that is happening around me"
Emotional control	"There are degrees of tilt, I control myself with my team... but I remember once I started yelling at my ADC for a prio. Control was lost and we lost the game..."	"I really get sad about losing a game, I get sad... but at the moment it happens... It's anger, but very, very, very big."
Activation control	"The difference between being at home and in person is nerves."	"On the other hand, maybe in a competition, if I have [my opponent] in front of me, the nerves appear. I realize that I am playing against him, and he is a meter away from me. He's there and the tension is there."
Communication	"Communication is the most important thing if you play as a team" or "Communication has to be fluid so that each one contributes their own"	–
Team cohesion	"I would say that having confidence in the teammates you have is very good. At least when I was in... I had confidence in the four players, and it showed."	–
Thought control	"Well, just like in those games you drop 200 points, and you can't stop thinking... Shit, shit, shit"	"When things go wrong, or at least in my situation, there are many bad things and it's like everything good is covered up and everything bad flows into my head and vice versa"
Goal control	"There are people who can help you motivate yourself, as is my case... This month I have to be at this level, try to win the tournament... "realistic", because in the end, being a professional or not is going to be decided a bit by the contacts I have as well as luck and if you are in the right place at the right time, so my goals are short-term goals."	"When I do something, I set a goal. I try to reach that goal. I don't usually try to overdo it or stay below what I can do, but to feel satisfied and perfect."
Behavior control	"Don't show your anger when you're in an official competition... you have to give an image as the club and as a player, not to be toxic"	"Keep your composure despite adversity"

Note: *Trade* = Trade damage with the opponent without the intention of eliminating him/her, which aims to inflict more damage on the opponent than he/she inflicts on you. *ADC*= Position of *Attack Damage Carry*, the one in charge of doing massive damage to rivals. *Prio* = Ability of the player to put pressure on the opponent and transfer him or her to other positions.

sustain this ability during substantial stretches of time, because during competition players must consistently maintain this focus for approximately forty-five minutes at a time. (b) Emotional control, which is defined as the ability to manage adverse situations in esports, especially control of *tilt*, in order to ensure that these situations do not affect performance while training or competing. Here, *tilt* is defined as a set of negative emotions (frustration, anger, fear, despair, etc.) that have an intense impact on all other areas of performance. (c) Activation control is the ability to face situations of great psychological stress (e.g., tournaments and competitions) such that they do not affect performance, especially mechanical performance. (d) Communication is the ability to establish effective communication channels and patterns in order to keep the team informed of both individual and group situations. This, in turn, makes possible effective and economical decision making by the *In-Game leaders* or *Shotcallers* (i.e., captains within the game). (e) Team cohesion, understood as a player's ability to handle internal team situations and establish cooperative ties between the different teammates. (f) Thought control, which is the player's ability to deal with negative internal comments about his or her level of play or those of teammates. These thoughts can affect players' self-esteem when it comes to their views of their technical skills and tactics, and they can sometimes undermine their emotional stability. Normally, the thoughts arise from players' own actions or from mistakes by teammates that upset the player. (g) Goal control, which consists of knowing how to detect and plan the steps to follow to achieve personal goals (e.g., reach a high *Elo*, manage to dominate a *matchup*, change from an offensive style to a defensive one) and organizational goals (e.g., ranking top 8 nationally or internationally, achieving a minimum impact on the networks), and (h) Behavioural control, defined as the player's ability in competitive situations not to show any type of reaction that could give information to the opponent about their current game situation or that could harm their *performance* during the course of the competition. We can see some examples of each psychological skill mentioned above in Table 3.

It is important to mention that communication and team cohesion skills are exclusive to team esports and were never mentioned by individual players. It should also be noted that all psychological skills, although they share the same root, must be always adapted to the specific esport, since each player describes and identifies the key situations and moments according to their experiences. For example, when it comes to attention, you must train according to the duration of the competition. A *League of Legends* game lasts around forty-five minutes, while *Hearthstone* takes around fifteen minutes. Therefore, psychological training must be adapted to the characteristics of each sport to optimize its effectiveness.

Esports careers

An emerging theme detected in the analysis was the paths that the participants have followed to reach their current level. Most of the players began to participate in their respective esports due to contact with someone close to them (e.g., family or friends) during adolescence. At first it was difficult for them to understand the complexity of the esport (e.g., "I didn't know anything"), but little by little they acquired the necessary knowledge, until they realized that they had a certain talent and were good at it, especially mechanically (e.g., "I entered... competitive because I was good at this"). At that moment, they began to compete and gained experience, until they noticed that they were no

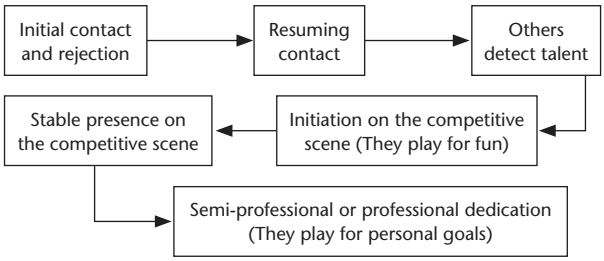

Figure 3. Career development of an esports player

longer playing for fun but because they wanted to or dedicate themselves professionally to the activity (e.g., "There comes a time when you no longer *pick* a champion because you like it, but because it is useful to the team"). In Figure 3, we can see a summary of the career paths followed by the participants.

Discussion

The aim of this study was to detect the psychological skills relied upon by players and to examine the relationship between these skills and performance. We have identified three essential blocks. A first block is made up of technical-tactical skills, an area where the different coaches (e.g., *Head Coach*, *Strategic Coach*, *and Analyst*) have a fundamental role in training players to improve technique, assisting in their acquisition of tactics and expanding their specific knowledge of the esport in competitive situations. In all these learning processes, sport psychologists can take on an advisory role. The second large block is psychological skills. It should be highlighted that it is very similar to the structure of psychological skills proposed by Palmi and Riera (2017). It is worth noting that certain skills such as visualization were not mentioned by any of the participants. Therefore, it would be interesting conduct a more detailed investigation of the applicability or lack of these skills within esports. In addition, it emerged that the participants placed importance on the communication skills. This responsibility is usually attributed to coaches, but in an environment where non-verbal communication can hardly be used, everything is mediated through language. This area has potential for sports psychologists, who could work to shape communication strategies and improve group dynamics by training both players and coaches, thus helping them to achieve effective and economical communication (Vives-Ribó & Rabassa, 2020). The other psychological skills are similar to those described in previous studies (Fanfarelli, 2018; Himmelstein et al., 2017), and the importance of attention control and emotional control should be highlighted, since both have received significant attention and were prominent in the results. Specifically, importance was attached to maintaining attention for periods of time around forty minutes and to knowing how to deal with situations that cause *tilt*. All this justifies the figure of the sports psychologist to work within an esports team, as these activities are aimed at high performance and have great similarities to traditional sport (García-Lanzo et al., 2020; Pedraza- Ramirez et al., 2020). It should also be taken into account that, at a technical-tactical and psychological level, the three esports studied belong to very different game genres and therefore, although they share some similarities (e.g., both in *League of Legends* and in FIFA, training of attention is considered important), strategies and training must be adapted to the needs of each esport (e.g., The *League of Legends* are games of forty minutes of constant action with multiple stimuli, while *Hearthstone* are quick games of fifteen minutes, with few stimuli).

Finally, we have seen that the careers of the participants in esports are very similar to each other and tend to follow patterns along the lines of the phases proposed by Kim and Thomas (2015), and of career models in traditional sport (Hallmann et al., 2019). These findings are relevant, since they open up a possible area of intervention to sports psychologists who study the sports careers of players and advise them (García-Naveira & Cantón, 2020; Pedraza-Ramirez et al., 2020).

Limitations and proposals for the future

The study has some limitations. First, there was a narrow variety of genres, which limits the generalizability of the results to emerging genres, such as *Battle Royale*, especially in relation to psychological skills with less relevance. Secondly, the study is still qualitative, pointing to a need for quantitative research as proposed by Pedraza-Ramirez et al. (2020). Third, the sample is made up only of men, reducing the representativeness of the sample.

Finally, as future lines of research, it would be interesting to delve into technical-tactical skills in greater detail, to discover in detail the technical, tactical skills and knowledge required for each esport so as to be able to work with coaches to design specific training plans for each component. It is also necessary to investigate the internal communication of the teams, both to examine how it works and to identify the keys to achieving good in-game communication. Finally, it is necessary to design and evaluate specific psychological training programs for esports that address the needs of each esport.

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Trabajo 3

Bonilla, I., Chamarro, A., Birch, P., Sharpe, B., Martín-Castellanos, A., Muriarte, D., & Ventura., C. (2024). Conceptualization and validation of the TILT questionnaire: Relationship with IGD and Life Satisfaction. *Frontiers in Psychology.* (Under review*)*

Conceptualization and validation of the TILT questionnaire: Relationship with IGD and Life Satisfaction

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Scope Statement

Currently, the study of esports is growing within the field of psychology. Among the different variables attracting interest — including stress or psychological factors associated with performance — an emerging concept known as tilt is gaining prominence in the literature. However, this construct has yet to be operationalized or defined. Thus, the present study aims to address this gap by defining and conceptualizing TILT while devising and validating a questionnaire to measure the construct in esports players. With that research we contribute to the field of sports psychology, esports and videogames research opening a new scenario for upcoming interventions. Also, empirical evidence for the validity and internal consistency of the Tilt Scale is robust, indicating its potential utility in future research on the psychological experiences of esports players.

Conflict of interest statement

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest

CRediT Author Statement

Adrián Martín-Castellanos: Formal Analysis, Funding acquisition, Supervision, Validation, Writing – original draft, Writing – review & editing. Andrés Chamarro: Conceptualization, Formal Analysis, Investigation, Methodology, Supervision, Validation, Writing – original draft, Writing – review & editing. Benjamin T. Sharpe: Methodology, Supervision, Validation, Writing – original draft, Writing – review & editing. Carles Ventura: Conceptualization, Formal Analysis, Investigation, Methodology, Supervision, Validation, Writing – original draft, Writing – review & editing. Diego Muriarte: Funding acquisition, Methodology, Supervision, Validation, Writing – original draft, Writing – review & editing. Iván Bonilla: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Software, Supervision, Validation, Writing – original draft, Writing – review & editing. Phil Birch: Methodology, Supervision, Validation, Writing – original draft, Writing – review & editing.

Keywords

eSports, Psychometrics, emotion, performance, Health, Internet gaming disorder

Abstract

Word count: 307

Currently, the study of esports is growing within the field of psychology. Among the different variables attracting interestincluding stress or psychological factors associated with performancean emerging concept known as tilt is gaining prominence in the literature.However, this construct has yet to be operationalized or defined. Thus, the present study aims to address this gap by defining and conceptualizing TILT while devising and validating a questionnaire to measure the construct in esports players.The initial phase of the study comprised 27 interviews conducted with professional players (n = 6), semi-professionals (n = 8), amateurs (n = 8), and coaches (n = 5) to characterize the concept of tilt.Following these interviews, a definition of tilt was formulated, and a panel of five experts in sports psychology and esports proposed a comprehensive set of 53 items. A total of 488 participants (278 males, 210 females), aged 18-50 (mean age = 26.9 years, SD = 7.57), completed the survey, including the 53 tilt items, a questionnaire measuring toxic behavior, and the Internet Gaming Disorder Scale-Short Form (IGDS9-SF).The tilt construct is primarily characterized as a state of frustration escalating into anger, resulting in diminished performance, attention, and recurring negative thoughts about errors.Its onset typically coincides with stressful situations, persisting for approximately 30 minutes.Through an Exploratory Factor Analysis (EFA), 18 items were retained and categorized into two factors: Causes (7 Items) and Consequences (11 Items) of tilt. The entire questionnaire yielded a Cronbach's α of 0.922, with the first and second factors showing values of 0.854 and 0.890, respectively. Confirmatory factor analysis (CFA) revealed an acceptable fit for the 2factor solution. Correlations with related constructs, such as Toxic Behavior and IGD, provided preliminary evidence of external validity.Empirical evidence for the validity and internal consistency of the Tilt Scale is robust, indicating its potential utility in future research on the psychological experiences of esports players.

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Studies involving animal subjects
Generated Statement: No animal studies are presented in this manuscript.

Studies involving human subjects
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Inclusion of identifiable human data
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Data availability statement

Generated Statement: The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Conceptualization and validation of the TILT questionnaire: Relationship with IGD and Life Satisfaction

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Currently, the study of esports is growing within the field of psychology. Among the different variables attracting interest — including stress or psychological factors associated with performance — an emerging concept known as *tilt* is gaining prominence in the literature. However, this construct has yet to be operationalized or defined. Thus, the present study aims to address this gap by defining and conceptualizing TILT while devising and validating a questionnaire to measure the construct in esports players.

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Following these interviews, a definition of tilt was formulated, and a panel of five experts in sports psychology and esports proposed a comprehensive set of 53 items. A total of 488 participants (278 males, 210 females), aged 18-50 (mean age = 26.9 years, SD = 7.57), completed the survey, including the 53 tilt items, a questionnaire measuring toxic behavior, and the Internet Gaming Disorder Scale-Short Form (IGDS9-SF).

The tilt construct is primarily characterized as a state of frustration escalating into anger, resulting in diminished performance, attention, and recurring negative thoughts about errors. Its onset typically coincides with stressful situations, persisting for approximately 30 minutes.

Through an Exploratory Factor Analysis (EFA), 18 items were retained and categorized into two factors: Causes (7 Items) and Consequences (11 Items) of tilt. The entire questionnaire yielded a Cronbach's α of 0.922, with the first and second factors showing values of 0.854 and 0.890, respectively. Confirmatory factor analysis (CFA) revealed an acceptable fit for the 2-factor solution. Correlations with related constructs, such as Toxic Behavior and IGD, provided preliminary evidence of external validity.

Empirical evidence for the validity and internal consistency of the Tilt Scale is robust, indicating its potential utility in future research on the psychological experiences of esports players.

Keywords: esports, psychometrics, emotion, performance, health, internet gaming disorder

Introduction

The realm of esports is experiencing rapid expansion, as projected figures for 2025 anticipate a significant upswing in both regular subscribers (318 million) and casual viewers (322.7 million). This reflects a notable 19.12% increase from the preceding year (Gough, 2023). Concurrently, research in this domain has witnessed consistent growth over the past decade (Reitman et al., 2020), with scholarly investigations spanning diverse areas such as economics (e.g., Cranmer et al., 2021) and sports science (e.g., Sharpe et al., 2023a; 2023b). This burgeoning body of research has engendered discussions regarding the multifaceted fields of expertise implicated in esports, marking the initial strides towards formalizing its ontology within the realm of scientific inquiry (Brock, 2023).

In the domain of psychology, particularly within the field of sports psychology, esports and its psychological components have garnered significant attention within the scientific community. Numerous investigations have delved into various facets, encompassing the identification of noteworthy stressors (Leis et al., 2020; Poulus et al., 2022a; Smith et al., 2019) and their correlation with mental toughness (Poulus et al., 2020). Additionally, research has explored coping strategies (Leis et al., 2022; Poulus et al., 2022b), sleep quality and habits (Klier et al., 2022), the repercussions of winning or losing streaks in competitive scenarios (Machado et al., 2022), as well as their impact on psychophysiological responses (Mendoza et al., 2021) and self-regulation (Trotter et al., 2023). Furthermore, investigations have delved into the psychological factors underpinning sporting performance (Parshakov & Zavertiaeva, 2018; Nagorsky & Wiemeyer, 2020; Sharpe et al., 2023a). This includes examining the influence of emotions (Behnke et al., 2022), the requisite psychological skills (Bonilla et al., 2022; Trotter et al., 2021), the role of personality traits (Birch et al., 2023), the impact of high-pressure situations (Sharpe et al., 2023b), and the effects of streaming while gaming on players' efficiency and in-game behavior over time (Matsui et al., 2020).

The themes currently under investigation in esports exhibit a parallel with subjects extensively studied in sports psychology. Noteworthy examples include the correlation between mental health and performance (Gorczynski et al., 2021), the perspectives of health (Pereira et al., 2023), the delineation of crucial psychological skills and their training (Stamatis et al., 2020), skill transfer between esports and traditional sports (Murphy et al. 2020), the use of heart rate variability to index self-regulation (Welsh et al. 2023), and the examination of

factors like fundamental needs, attentional control, group cohesion, and decision-making within conventional sporting contexts (Coimbra et al., 2022). However, as the exploration of esports deepens, there is potential for a burgeoning interest in psychological dimensions that either remain understudied or are exclusive to the realm of esports. One such concept, particularly prominent at the professional level, is the phenomenon known as "tilt." This term is familiar to gamers and esports professionals alike, encapsulating moments of anger and frustration experienced during gameplay and competition. This unique psychological aspect adds a distinctive layer to the understanding of performance dynamics in esports.

The concept of *tilt* is not entirely novel, with its origins tracing back to the era of pinball machines, which featured *tilting* mechanisms designed to detect player movements or attempts to manipulate the game. When such actions were detected, the system would either block the movement of the flippers or penalize the player by reducing scores and bonuses. Additionally, a sign with the word "tilt" is illuminated, signaling to the player to cease such behavior to avoid further consequences (Castle, 2020). While tilt found its initial roots in pinball, it gained widespread usage in poker, particularly with the rise of online poker and its expanding player base and audience. Browne (1986) characterized tilt as a mental state marked by a loss of control, directly influencing a player's gameplay style, including strategic decisions, gambling, risk-taking, and endurance through prolonged losing streaks. This “tilted” state was associated with significant monetary losses and correlated with various psychological disorders such as depression, anxiety, and sleep disturbances (Palomäki et al., 2013), even potentially exacerbating gambling disorders (Moreau et al., 2020). Moreover, the duration of this mental state could range from minutes to days and, in exceptional cases, persist for months (Browne, 1986). Tilt in poker often elicits negative emotions such as anger or frustration, which are typically inadequately managed, underscoring the pivotal role of emotional regulation in mitigating tilt (Palomäki et al., 2012). This behavior is often associated with other factors such as substance abuse (e.g., alcohol), extended gambling sessions in attempts to recoup losses, or experiencing prolonged losing streaks (Browne, 1986; Palomäki, 2013). Certain individual characteristics, such as high emotional sensitivity or diminished perception of defeat, may exacerbate or reduce the intensity of tilt (Palomäki, 2013). To further understand and assess the extent of tilt experienced by poker players, Moreau et al. (2017) devised a questionnaire with 21 items, designed to measure the degree of tilt experienced during poker gameplay, dividing the experience of tilt in two main factors: (a) emotional and behavioral tilt, focusing

on irritability, anger and sadness and (b) cognitive tilt, focusing on self-control and bet risk-taking.

Despite the notable impact of "tilt" on the performance and psychological well-being of esports players, its exploration from a psychological perspective has been relatively limited. Emerging evidence suggests that esports athletes perceive the avoidance of negative emotions as crucial to their successful performance, a sentiment that aligns with the characteristics of the tilt phenomenon (Poulus et al., 2022c). In a systematic review centered on emotions and emotional regulation within esports, Beres et al. (2023) underscore the significance of acquiring skills to regulate frustration, anger, and tilt. Similarly, Bonilla et al. (2022) emphasize the imperative nature of learning to manage tilt by cultivating emotional control, given its substantial impact on both performance and psychological well-being. The primary triggers for tilt in esports appear to revolve around consecutive losses or errors made by teammates, inducing emotional states characterized by anger, anxiety, and stress. These emotional responses may escalate to a point where players contemplate abandoning the game (Sharma et al., 2022; Wu et al., 2021) or engage in toxic behaviors such as trash-talking, intentional abandonment, or cheating (Türkay et al., 2020). As we have seen, tilt is a construct that generates a great impact on the performance and well-being of players, its central axis being emotions related to anger and frustration. In any case, the behaviors are not clear, giving rise to other behaviors such as toxicity, decision making or stress, as possible related behaviors.

Study Aims

The study aims to establish a comprehensive definition of tilt, elucidating its key characteristics and underlying structure to provide a unified framework guiding future research. Secondly, the study endeavors to develop a psychometric instrument capable of effectively measuring tilt. Lastly, the investigation seeks to explore the relationship between tilt and other pertinent constructs, as illustrated in Figure 1, including internet gaming disorder (IGD; Pontes & Griffiths, 2014) and satisfaction with life (SWLS; Diener et al., 1985).

The study posits several hypotheses. Firstly, it hypothesizes a positive relationship between TILT and IGD (H_1). Additionally, the study suggests a negative relationship between Life Satisfaction and IGD (H_2), and finally, it posits a negative relationship between TILT and Life Satisfaction (H_3).

[Figure 1 near here]

Materials and methods

Participants

All participants in the study were individuals proficient in the Spanish language, encompassing both video game enthusiasts and esports players, as well as coaches within the esports domain. In the first phase, 32 interviews were conducted. The participants were selected through convenience sampling, and the data collection process stopped when information saturation was detected, because enough data was collected for the conclusions and interviews doesn't give us new information. Five of the initial interviews were excluded after transcription because they did not provide sufficient information, leaving 27 participants (Men = 18, Women = 9) with a mean age of 21.7 years (SD =7.91). The sample consisted of professional (N=6), semi-professional (N=8), amateur (N=8), and coach (N=5) players. All data were collected in the third trimester of 2022. In the second phase, snowball sampling was employed, yielding 528 responses. After debugging the data (i.e., anomalous responses, extreme cases, blank responses, and repeated responses), 488 participants were included in the psychometric study (56.97% men and 43.03% women) with a mean age of 26.9 years (SD=7.57), dedicating a mean of 3.91 hours (SD= 6.82) per day to playing videogames. Participants disclosed their primary gaming preferences, with 62% engaging in esports and 38% playing video games. Data was collected during the second trimester of 2023. In both phases, inclusion and exclusion criteria for participant selection and classification into esports or videogames were based on guidelines proposed by Mendoza et al. (2023). These criteria were utilized to ascertain participants' status as gamers or esports players and determine their proficiency levels (i.e., professional, semi-professional, or amateur).

[Figure 2 near here]

Instrument

A semi-structured interview was conducted in the first phase, lasting approximately 45 minutes. The interview covered the following topics: (a) participants' experiences in esports, (b) common experiences related to tilt, (c) key characteristics of tilt, (d) defining the tilt construct, (e) identifying facilitating and protective factors, and (f) exploring the consequences of episodes characterized by high levels of tilt.

In the second phase, participants completed a questionnaire comprising sociodemographic indicators (e.g., gender, age, experience, hours of play per day) along with the following scales.

Tilt Questionnaire (TILTQ). As can be seen in Figure 2, different versions of the questionnaire were constructed during the process of creating the measurement scale. The final version utilized in the study consisted of 18 items (see Table 3), categorized into two dimensions: causes of tilt (comprising 7 items) and consequences of tilt (comprising 11 items; see Table 6 for items), and asked to indicate the extent to which you have experienced the following situations during a game in the last 15 days. Respondents rated each item on a five-point Likert-type scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Total scores ranged from 18 to 90 points, with higher scores indicating greater tilt. In the current investigation, Cronbach's Alpha coefficients were .89 for the causes dimension, .89 for the consequences dimension, and .92 for the overall tilt scale.

Internet Gaming Disorder (IGD). IGD was evaluated using the Spanish version of the Internet Gaming Disorder Scale-Short Form (IGDS9-SF; Beranuy et al., 2020). This scale comprises nine items designed to assess the severity of IGD and its impact on online and offline gaming activities over a 12-month period. Each item is rated on a 5-point Likert scale, ranging from 1 (Never) to 5 (Very often). Total scores on the scale can range from 9 to 45, with higher scores indicating a greater risk of IGD. In the present study, the Cronbach's Alpha coefficient for the IGDS9-SF was .83.

Satisfaction with Life Scale (SWLS). This self-report questionnaire (Diener et al., 1985) is used to measure overall life satisfaction. Each item is scored on a five-point Likert scale, ranging from 1 (Strongly disagree) to 7 (Strongly agree). Total scores can range from 5 to 35, with higher scores indicating greater life satisfaction. The Cronbach's Alpha obtained in the present study was .81.

Study Design and Procedure

A two-phase study was conducted using a mixed-methods design, since, as mentioned above, the variables and factors underpinning tilt have not yet been adequately defined and studied within the field of esports. A qualitative methodology was used (Phase 1), conducting individual interviews with players and coaches — professional, semi-professional, and amateur — in order to establish a definition of the construct and develop a scale to measure tilt. A quantitative methodology was adopted (Phase 2) to carry out the relevant psychometric

analysis, providing external validation of the scale with IGD and SWLS to test the various hypotheses (see Figure 2).

The study employed a mixed-methods research design comprising two distinct phases, as delineated in Figure 2. During the first phase, interviews were conducted in the third trimester of 2022. Participants were selected through convenience sampling and were provided with a comprehensive briefing on the study's aims and procedures, subsequently giving informed consent by signing a consent form. Interviews were administered through both face-to-face interactions and online sessions utilizing platforms such as Discord or Teams. All interview sessions were recorded and subsequently transcribed for the purpose of thematic analysis. Following the interview phase, a precise definition of "Tilt" was formulated, and items for the initial questionnaire were generated. This questionnaire, along with the definition, underwent rigorous evaluation by a panel consisting of six experts (Mage = 42,1; SD = 12.5) in sports psychology, sports science, or esports, with more than 5 years of experience in the field as researchers and practitioners. From an initial pool of 170 items, the expert panel selected 53 items for further consideration.

Moving on to the second phase, an online survey was disseminated via Kobotoolbox during the second trimester of 2023, reaching participants through various channels and social media platforms such as Twitter and Reddit. The survey encompassed gamers of diverse proficiency levels and nationalities, all of whom were Spanish-speaking and capable of responding through mobile devices, tablets, or computers. Prior to initiating the questionnaire, participants were required to review and confirm their agreement with the informed consent statement. In cases of non-consent, participants were courteously directed to the survey closure page and thanked for their time. All data collected were securely stored in an anonymous and encrypted format within the university database of the principal investigator (PI). Access to any identifying information was strictly restricted to the PI alone, ensuring confidentiality and data security in strict adherence to the guidelines set forth by the American Psychological Association (2020). Moreover, ethical approval for the study was obtained from the Research Ethics Committee and awarded by the lead institution (CEEAH 5525).

Data Analysis

In the first phase, a thematic analysis was conducted to categorize the various responses obtained, utilizing the ATLAS.ti software. Following the classification of themes, a series of definitions and key concepts were formulated, serving as the basis for creating the

questionnaire items. Subsequently, the same panel of experts described before individually assessed the definitions and items pertaining to the tilt concept. During the item selection process following the guidelines proposed by Lynn (1986), items receiving unanimous agreement from all six experts proceeded directly to the next phase. In contrast, those with between 3 and 5 agreements underwent further review, incorporating suggestions provided by the experts, and making a second round where if 5 experts agreed the item has been included. Finally, items receiving fewer than three affirmative responses were eliminated. Additionally, suggestions for new items were allowed to enhance the item pool. This iterative procedure continued until the final version comprising 53 items was obtained and subjected to psychometric analysis.

In the second phase, the psychometric properties of the TILTQ instrument were assessed. Item-total analysis was carried out, while skewness and kurtosis were calculated to check the normality of the data. Subsequently, an exploratory factor analysis (EFA) with Oblimin rotation was conducted, as suggested by Lloret-Segura et al. (2014), to determine the factor structure. Items with factor loadings below 0.4 or loading on another dimension were eliminated. Additionally, a scree plot was utilized to determine the number of dimensions.

Once the factors and their component items had been selected, confirmatory factor analysis (CFA) was conducted using conventional fit indices, including Comparative Fit Index (CFI) > .9, Tucker-Lewis Index (TLI) > .9, Root mean square error of approximation (RMESEA) < .08, and Goodness of Fit Index (GFI) > .9 (Brown & Cudeck, 1993; Marsh et al., 2005). A correlation matrix between IGD, tilt, and SWLS was generated to assess external validity. Finally, structural equation modeling was employed to test the proposed hypotheses, adhering to the same fit criteria as those adopted for the CFA.

All analyses were conducted using JASP 0.18.1.0 statistical software (JASP TEAM, 2023).

Results

The results of the exploratory thematic analysis, summarizing the concepts and themes associated with tilt, are presented in Table 1. Two primary dimensions emerged: the causes that trigger tilt and the subsequent consequences experienced once in a tilted state. Participants highlighted that these dimensions fed into each other during the different level states of tilt.

[Table 1 near here]

Based on these themes and their components, a definition was formulated and approved by the expert judges. This definition offers a conceptualization of tilt as follows: "Behavior that increases gradually with repeated errors, by oneself or others in a context where performance is required, which generates frustration. This causes anger, emotional lability, decreased performance, attention, and recurrent negative thoughts about the error or defeat. Tilt is closely related to stressful situations, varying from seconds to hours, with an average duration of 30 minutes".

An item analysis was conducted before carrying out the exploratory factor analysis of the tilt scale. All items followed a normal distribution, with no outlier responses and no floor or ceiling effects detected. Consequently, all 53 items were retained for further analysis. A comparison of item scores between the upper and lower 25% of the sample revealed significant differences for all items, indicating that the items effectively discriminated between individuals with varying levels of tilt. Before conducting the exploratory factor analysis, the Kaiser-Meyer-Olkin (KMO) index was calculated, yielding a value exceeding .9 according to Hutcheson & Sofroniou (1999), this value can be classified as superb. Additionally, Bartlett's test of sphericity was significant (X^2 =3706.65; df =118; p<.001), confirming the suitability of the data and items for factor analysis.

An Oblimin rotation was employed for the exploratory factor analysis, anticipating relationships between the potential factors. The scree plot suggested the presence of three factors (see Figure 3).

[Figure 3 near here]

Upon observing that 10 items had factor loadings below .4, they were excluded from the analysis. When evaluating the nine items grouped in the third factor, it was noted that they represented an amalgamation of poorly related concepts and were eliminated. Following these modifications, 34 items were retained for a two-factor solution (eigenvalue >1). However, this solution revealed that 2 items loaded inversely, 8 items loaded on both factors and 6 items loaded below .4, resulting in their elimination. Consequently, 18 items remained, with 7 items in the causes factor and 11 in the consequences factor, explaining 51.2% of the variance.

Once the factor structure was determined, reliability was assessed using Cronbach's Alpha (α) and McDonald's Omega (ω) coefficients. For the total tilt scale, McDonald's Omega was calculated as ω = .922 (.912-.932), while Cronbach's Alpha was α = .921 (.910-.931). Similarly, for the subscale measuring causes, McDonald's Omega was ω = .855 (.836-.875),

and Cronbach's Alpha was α = .854 (.834-.873). For the subscale measuring consequences, McDonald's Omega was ω = .891 (.877-.906), and Cronbach's Alpha was α = .890 (.875-.904). Based on these results, we can conclude that the total scale and its subscales show adequate reliability indices with scores above .70 and less than 0.95, with both subscales scoring less than .90 showing not redundancy with a good consistence (Tavakol & Dennick, 2011; Viladrich et al., 2017). The correlation matrix between the total scale and its subscales (see Table 2) shows a high positive correlation.

[Table 2 near here]

To assess construct validity, a confirmatory factor analysis (CFA) was conducted using both factors (see Table 3) covariance between factor was 0.81, showing the existence of a general factor called tilt. The model demonstrated acceptable fit indices (X^2 =484.794; p<.001), as shown in Table 4, and all factor loadings exceed 0.55 which can be considered good or above (Comrey & Lee, 1992). Given that Byrne (2010) states that the use of both fit indices and factor loadings should be used when assessing factorial validity our results suggest that the proposed model adequately explains the underlying structure of the tilt construct.

[Table 3 near here]

[Table 4 near here]

To evaluate convergent validity (see Table 5), it can be observed that the correlations between the tilt scale and its subscales are considerably higher than those observed with other constructs. This indicates that the tilt scale effectively discriminates from related constructs, particularly Internet Gaming Disorder (IGD), which could be a regarded as a similar construct since it addresses negative states and consequences related to video gaming. Second, all correlations are statistically significant. Specifically, there is a positive correlation between tilt and IGD and a negative correlation between tilt and life satisfaction. These findings are consistent with theoretical predictions, indicating that the tilt construct behaves as expected in relation to previously established constructs.

[Table 5 near here]

Finally, we tested the hypothesized structural equation model for the relationships between tilt, Internet Gaming Disorder (IGD), and life satisfaction (see Figure 1). The results indicate an acceptable fit for the model (X^2 =39.456; p<.001), providing further evidence of external validity. The model reveals a positive relationship between tilt and IGD, as well as a negative relationship between life satisfaction and IGD. Additionally, a negative covariance between tilt and life satisfaction is evident. The model explains 21% of the variance in IGD (see Figure 4).

[Figure 4 near here]

Discussion

The primary aim of this study was to elucidate the concept of tilt, introduce a measurement instrument for the construct, and investigate its association with Internet Gaming Disorder (IGD) and Life Satisfaction. The initial findings of this research pertain to the proposed definition and components of tilt, as detailed in Table 1. These results suggest that tilt is not an impulsive behavior with an undetermined origin; rather, it exhibits identifiable causes intricately connected to the act of playing video games or participating in esports, particularly within performance-driven scenarios that necessitate the execution of skills to surmount challenges presented by the game. The study revealed that individuals, when faced with the inability to achieve performance goals, undergo a growing sense of frustration that intensifies with prolonged play and repeated attempts to meet their objectives, ultimately triggering the onset of tilt. It is crucial to recognize that the phenomenon of tilt unfolds gradually, "snowballing" over time, often culminating in either explosive manifestations, such as outbursts of anger, or passive expressions, such as a loss of energy and motivation. Adding to the intricacy of tilt is the inclination for individuals experiencing it to persist in gameplay, driven by the hope that achieving victory may alleviate their tilt. Conversely, there is a proclivity for tilted individuals to resort to toxic behaviors, such as quitting the game or engaging in verbal abuse, thereby posing risks to both themselves and others. This complexity in the progression of tilt aligns with prior research in domains like poker (Browne, 1986; Moreau et al., 2017), which shares certain similarities with tilt observed in video games and esports due to the shared underlying logic of gameplay. The study's findings also resonate with existing research in esports; for instance, Sharma et al. (2022) and Wu et al. (2021) have previously reported tilt-related consequences similar to those identified in the present study,

including the inclination to quit games prompted by anger and frustration. Moreover, the research by Türkay et al. (2020) implies that individuals experiencing tilt-like situations are more predisposed to engaging in toxic behaviors or repeated mistakes in performance situations.

Regarding the second aim, the results generated a final 18-item questionnaire, divided into two scales, 7 items for causes and 11 items for consequences (see Table 3).

The questionnaire demonstrates adequate reliability, strong factorial validity with acceptable fit indices, and an explained variance of 51.7%. Additionally, when evaluating external validity, the construct satisfactorily discriminates from other constructs and shows expected relationships IGD and life satisfaction. Consequently, this questionnaire serves as an initially reliable and valid measure for assessing tilt among video game and esports players.

Finally, three hypotheses were formulated to evaluate whether the observed relationships aligned with our expectations, that is, with IGD and life satisfaction to clarify whether tilt and satisfaction are potential predictors of IGD. As depicted in Figure 4, these hypotheses were confirmed, yielding a model that explains 21.7% of the variance. Upon closer examination, it is evident that IGD shows a negative association with life satisfaction, in line with previous research (e.g., Bargeron et al., 2017), and a positive correlation with tilt. Thus, based on the preliminary results, those players prone to high levels of tilt could present a greater risk of developing problematic relationships with video games, which could lead to IGD. Additionally, tilt is found to co-vary with life satisfaction, indicating that esports players experiencing tilt tend to report lower levels of life satisfaction and vice versa.

These findings pave the way for a new field of study in esports research. First, our measurement instrument offers the opportunity to explore the concept of tilt and analyze its relationship with other psychological variables in the context of esports, such as emotional regulation, particularly given that tilt and emotional lability are closely related (Poulus et al., 2022c; Beres et al., 2023). Second, it would be interesting to investigate the relationship between tilt and potentially related variables such as toxicity (Türkay et al., 2020) or the structural characteristics of video games (Wood et al., 2004; Feliu et al., 2023). Moreover, it would be useful to develop psychological techniques to mitigate tilt. Such interventions are particularly important if we consider the substantial impact of tilt on players and the esports ecosystem; therefore, implementing strategies to reduce individual discomfort, enhance

performance, and diminish toxicity could prove highly beneficial to support the overall sustainability of video gaming and esports.

The present study has several limitations that warrant consideration. First, the study sample is limited to a Spanish-speaking culture, which restricts the generalizability of the findings to other cultural contexts. Second, while the tilt instrument effectively measures individual player dimensions, it does not fully capture how teammate behaviors may contribute to tilt. Future versions of the TILTQ could address this limitation by incorporating items specifically designed to assess teammate-induced tilt, thus creating separate versions for individual and team games/esports.

Conclusion

The present study aimed to bridge the existing gap in research by providing a comprehensive definition and conceptual framework for TILT. In doing so, the study developed and validated a questionnaire designed to effectively measure the construct specifically in esports players. The obtained findings facilitated the conceptualization and quantification of the tilt phenomenon, laying the foundation for exploring its intricate relationships with other variables of interest. With the established validity and internal consistency of the Tilt Scale, this study introduces a valuable tool that holds promise for future research endeavors on the psychological experiences of esports players, transcending diverse cultural contexts. Furthermore, the study paves the way for a novel avenue of research, contributing to an enhanced understanding of this specific behavior within the realms of video gaming and esports.

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Statement

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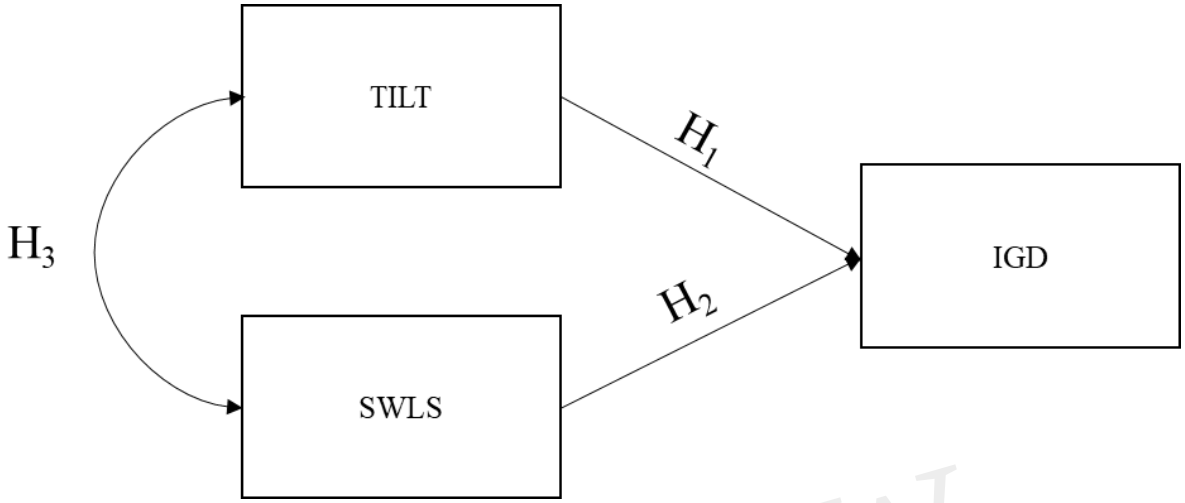
TABLES AND FIGURES

Figure 1.

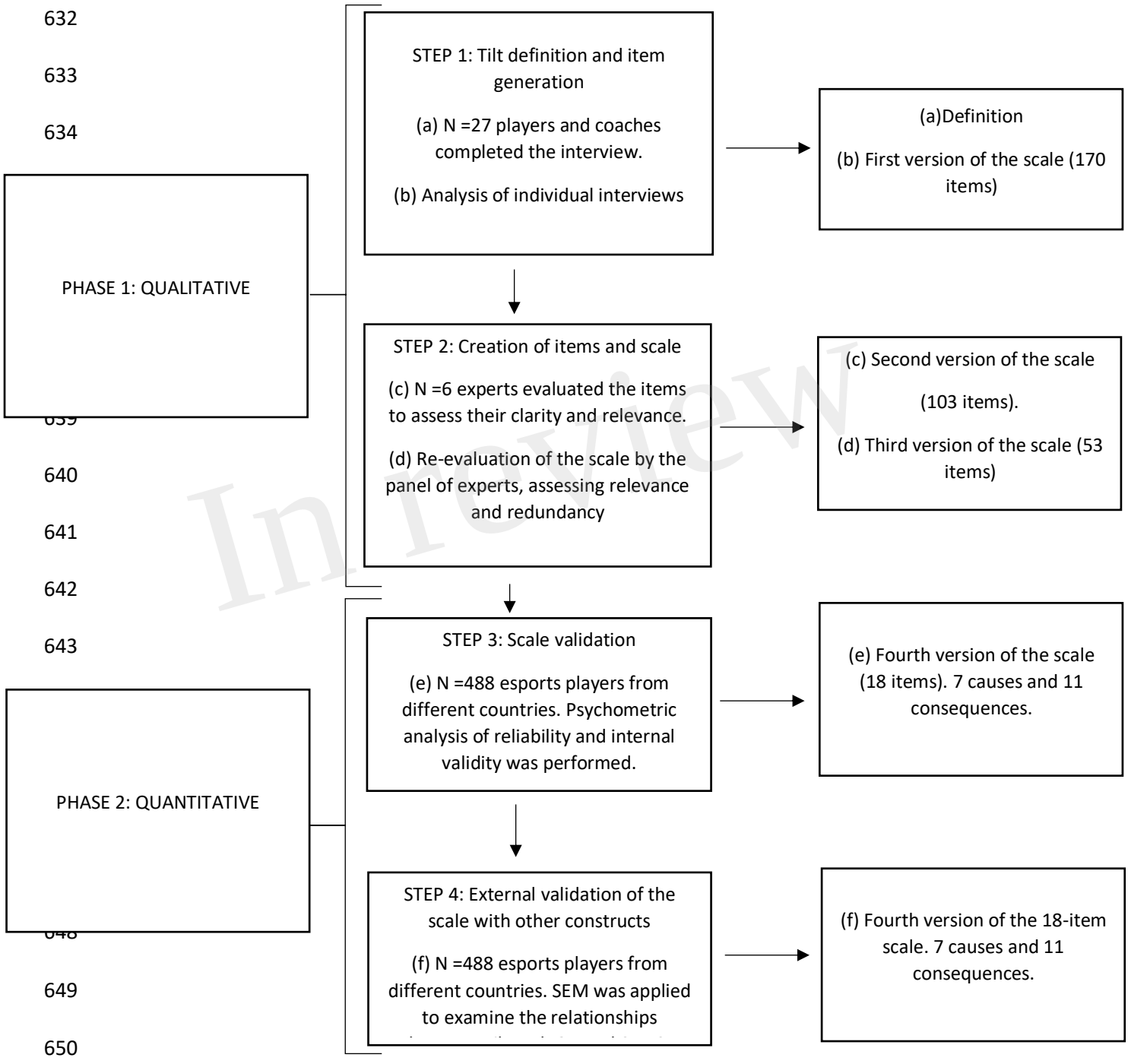
Model proposed for this study.



Note: SWLS = Life Satisfaction; IGD = Internet Gaming Disorder.

Figure 2.

Process of creating the definition of tilt and the measurement scale.



654 **Table 1.**

655 *Main tilt-related themes.*

Concept/theme	When it occurs	Quotations
Frustration	When failing, feeling defeated, or when goals are not achieved	"When you are tilted, you feel like nothing is worthwhile, and no matter how much you do, you are not going to achieve your goals."
Anger	When making mistakes, when teammates do not respond well, and when losing regardless of the amount of time spent playing.	"It is like a snowball that keeps getting bigger and bigger until you finally explode."
Loss of control	When it is not known why a player wins or loses; it feels like the game is rigged; or experiencing the feeling of playing well but losing anyway.	"The game is often unfair, there are champions who are overpowered, or it is simply impossible to win."
Decision-making	Situations with multiple failures, tunnel vision, high pressure, and intense competition.	"I have been “tilted” many times when competing, and all of a sudden, I make a move or play in a way that does not make sense."
Mood swings	In prolonged situations of frustration, anger, and defeats.	"When I start to play, I always feel motivated, but as you tilt, you gradually lose that motivation and end up losing the enthusiasm you had when you began."
In-game behavior	When faced with repeated failures, the bad behavior of other colleagues or toxic situations.	"When you get tilted, you start doing things you shouldn't, even to the point of being toxic, changing your strategies, or playing just for the sake of it" or "If you are tilted, often you don't stop playing matches because you know that if you win one, the tilt will disappear, but of course

when you play tilted you play worse, and you have more chances to keep losing and losing."

Figure 3.

Scree plot showing the initial solution

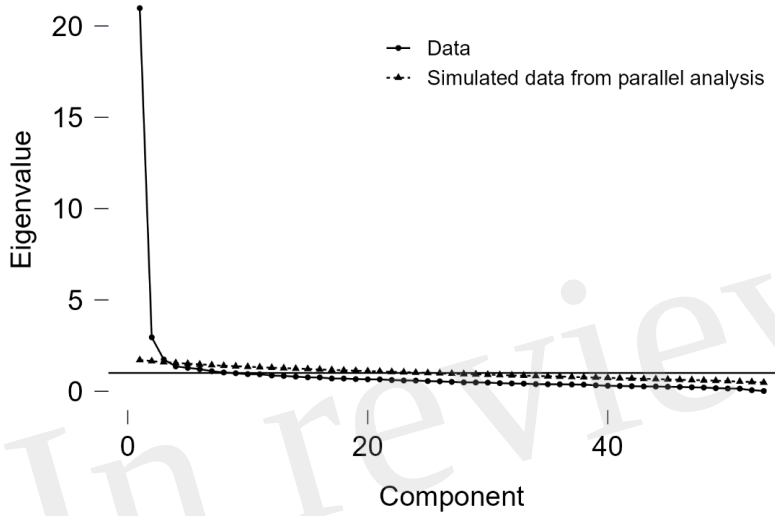


Table 2.

Correlation between factors and scale

Variable	1		2		3
1. TILT CAUSES	-				
2. TILT CONSEQUENCES	0.688	***	-		
3. TOTAL TILT	0.884	***	0.948	***	-

* p < .05, ** p < .01, *** p < .001

Table 3.

Items and structure of the TILTQ

Structure	Factor Loadings
TILTQ Please indicate the extent to which you have experienced the following situations during a game in the last 15 days.	
Causes	
1. I have lost because of things in the game I could not control. 2. I have failed to make important moves. 3. I have made mistakes in things I know I can do well. 4. I have made wrong decisions. 5. I failed even though I knew what I had to do. 6. I have felt that I have more ability than I have been able to demonstrate. 7. I have played frustrating games.	.667 .671 .695 .793 .713 .799 .728
Consequences	
8. I have felt that the game was not fair. 9. I have exploded with rage. 10. I have felt irritated. 11. I have made decisions without thinking. 12. I have found it hard to concentrate. 13. I have had mood swings due to the outcome of my games. 14. I have felt that I have no energy. 15. I have felt that I have been on a losing streak that I could not get out of. 16. I have played hastily. 17. I have continued to play even though I did not feel like it. 18. I have written off games as lost.	.585 .620 .758 .785 .714 .764 .567 .751 .731 .618 .668

Table 4.

Fit indices of the confirmatory factor analysis

Index	**Value**
Comparative Fit Index (CFI)	0.952
Tucker-Lewis Index (TLI)	0.945
Root mean square error of approximation (RMSEA)	0.073

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676

677 **Table 5.**

678 *Correlation matrix for the scale and related variables*

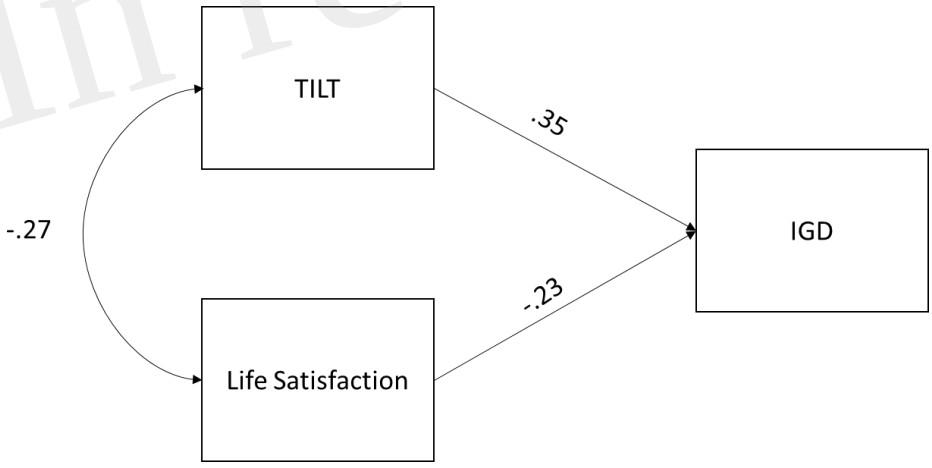
Variable	1		2		3		4		5
Causes	-								
2. Consequences	0.688	***	-						
3. TILT	0.884	***	0.948	***	-				
4. IGD	0.213	***	0.409	***	0.357	***	-		
5. Satisfaction	-0.339	***	-0.261	***	-0.318	***	-0.315	***	-

* p < .05, ** p < .01, *** p < .001

679

680 **Figure 4.**

681 *Structural equation model of the variables studied.*



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Trabajo 4

Bonilla, I., García-Lanzo, S., Martín-Castellanos, A., Mendoza, G., Ventura, C., & Chamarro, A. (2023). Una herramienta para el análisis de la comunicación en jugadores de esports en Counter-Strike (CS): Un estudio de caso con el CBAS. *Revista de Psicología Aplicada al Deporte y al Ejercicio Físico, 8(2),* 1-9. https://doi.org/10.5093/rpadef2023a13

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Investigación aplicada en Psicología del Deporte

Una herramienta para el análisis de la comunicación en jugadores de esports en Counter-Strike (CS): Un estudio de caso con el CBAS

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RESUMEN: Actualmente los esports están viviendo un auge tanto a nivel aplicado como académico. Sin embargo, hay algunos conceptos tradicionales en psicología del deporte, como la comunicación que aún no han sido estudiados en profundidad. Aunque

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hay algunos estudios específicos en esports que han tratado esta temática, ninguno utilizaba una herramienta que permitiese estandarizar su análisis, por ese motivo el presente estudio pretende proponer una herramienta de análisis de la comunicación que permita estudiar las conductas de comunicación de los jugadores a partir del CBAS. Se realizó una primera valoración del CBAS con tres jueces expertos en psicología del deporte y esports, aplicándolo en la observación de partidas competitivas de Counter-Strike (CS), a partir de los resultados y su ajuste se realizaron algunos cambios en la estructura y categorías. Posteriormente, estos tres jueces expertos observaron a un equipo de CS durante un mes de competición, clasificando las diferentes conductas comunicativas en las diferentes categorías. Para observar aquellas conductas que más frecuentemente ocurren en CS y el grado de acuerdo entre los jueces para analizar la eficacia de la herramienta, se realizó un análisis de la frecuencia y un índice de correlación intraclase (ICC). Los resultados muestran que las conductas más frecuentes son: (a) Organización, (b) Instrucción técnica e (c) Instrucción técnica general, teniendo también relevancia el (d) Refuerzo positivo y (e) Refuerzo negativo. El índice de acuerdo entre los jueces oscilaba entre .70 y .90 indicando un grado de acuerdo bueno. A partir de los resultados podemos deducir que la herramienta propuesta cumple con los criterios para el análisis de la comunicación de jugadores de esports, especialmente para jugadores de CS, abriendo futuras líneas de investigación como los patrones de comunicación entre diferentes esports. Por lo tanto, además de ser una herramienta de especial utilidad para los psicólogos del deporte que trabajan en el campo aplicado, pudiendo utilizarse para intervenciones especificas en la comunicación de los equipos.

PALABRAS CLAVES: *esports*, comunicación, CBAS, Counter-Strike, CS

A tool for the analysis of communication in esports players in Counter-Strike (CS): A case study with the CBAS

ABSTRACT: Esports are currently experiencing a huge increase at both an applied and academic level. However, there are some traditional concepts in sports psychology, such as communication, that have not yet been studied in depth. Although there are some specific studies in esports that have addressed this topic, none used a tool that allowed them to standardise their analysis. For this reason the present study aims to propose a communication analysis tool that allows the communication behaviours of players based on the CBAS to be studied. A first evaluation of the CBAS was carried out with three expert judges in sports psychology and esports, applying it to the observation of competitive Counter-Strike (CS) games. Based on the results and their adjustment, some changes were made to the structure and categories. Subsequently, these three expert judges observed a CS team during a month of competition, classifying the different communicative behaviours in the different categories. A frequency analysis and an intraclass correlation index (ICC) were carried out to observe those behaviours that most frequently occur in CS and the degree of agreement between the judges to analyse the effectiveness of the tool. The results show that the most frequent behaviours are: (a) organisation, (b) technical instruction and (c) general technical instruction, with (d) positive reinforcement and (e) negative reinforcement also being relevant. The agreement index between the judges ranged between .70 and .90, indicating a good degree of agreement. From the results we can deduce that the proposed tool meets the criteria for the analysis of the communication of esports players, especially for CS players, opening future lines of research such as communication patterns between different esports. Therefore, in addition to being a particularly useful tool for sports psychologists who work in the applied field, it can be used for specific interventions in team communication.

KEYWORDS: esports, communication, CBAS, Counter-Strike, CS

Uma ferramenta para análise da comunicação entre jogadores de eSports em Counter-Strike (CS): Um estudo de caso com o CBAS

RESUMO: Atualmente, os eSports estão passando por um boom tanto em nível aplicado quanto acadêmico. No entanto, existem alguns conceitos tradicionais da psicologia do esporte, como a comunicação, que ainda não foram estudados em profundidade. Embora existam alguns estudos específicos sobre eSports que abordaram este tema, nenhum deles utilizou uma ferramenta que permitisse padronizar sua análise. Por esse motivo, o presente estudo tem como objetivo propor uma ferramenta de análise de comunicação que permita estudar os comportamentos de comunicação dos jogadores com base em CBAS. Foi realizada uma avaliação inicial do CBAS com três juízes especialistas em psicologia do esporte e eSports, aplicando-o à observação de jogos competitivos de Counter-Strike (CS). Com base nos resultados e em seu ajuste, foram feitas algumas alterações na estrutura e nas categorias. Posteriormente, esses três juízes especialistas observaram uma equipe de CS durante um mês de competição, classificando os diferentes comportamentos comunicativos nas diferentes categorias. Para observar os comportamentos que ocorrem com maior frequência no CS e o grau de concordância entre os juízes para analisar a eficácia da ferramenta, foram realizadas uma análise de frequência e um índice de correlação intraclasse (ICC). Os resultados mostram que os comportamentos mais frequentes são: (a) Organização, (b) Instrução técnica e (c) Instrução técnica geral, sendo que (d) Reforço positivo e (e) Reforço negativo também são relevantes. O índice de concordância entre os juízes variou entre 0,70 e 0,90, indicando um bom grau de concordância. A partir dos resultados, podemos deduzir que a ferramenta proposta atende aos critérios para análise da comunicação dos jogadores de eSports, especialmente para jogadores de CS, abrindo futuras linhas de pesquisa, como padrões de comunicação entre diferentes

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eSports. Portanto, além de ser uma ferramenta particularmente útil para psicólogos do esporte que atuam na área aplicada, ela pode ser utilizada para intervenções específicas na comunicação da equipe.

PALAVRAS-CHAVE: eSports, comunicação, CBAS, Counter-Strike, CS

Artículo recibido: 08/11/2023 | **Artículo aceptado:** 06/12/2023

Introducción

Los deportes electrónicos (*esports*) están creciendo de manera exponencial cada año. Las audiencias de retransmisión en videojuegos de 2021 superaron los 800 millones (en Twitch y YouTube Gaming), y se espera de cara a 2023 que este número pase los 1.000 millones de espectadores y en 2025 los 1.410 millones (Newzoo, 2022). Además, gracias a los grandes eventos competitivos y su profesionalización, los *esports* se están convirtiendo en una actividad deportiva, y ya se argumenta que los jugadores de videojuegos (*gamers*) tienen las mismas exigencias psicológicas que los deportistas tradicionales (Pérez-Rubio et al., 2017; García-Naveira, 2019). Por ello, en los últimos años la psicología se ha interesado en los *esports*, incrementando su literatura sobre este ámbito (Pedraza-Ramírez et al., 2020).

Uno de los videojuegos más representativo del panorama de los *esports* es Counter-Strike, del género *First Person Shooter* (FPS). Si bien existe desde hace dos décadas, hoy en día es el título más jugado de la historia, y el que ha predominado, dentro de su género, en las competiciones de videojuegos (García-Lanzo, 2021). El modo competitivo de Counter-Strike se juega entre dos equipos enfrentados que están compuestos por cinco personas: bando antiterrorista (CT) y bando terrorista (T). El juego se desarrolla al mejor de 30 rondas: 15 rondas se juegan en el bando CT y 15 rondas en el bando T. El equipo que consiga ganar 16 rondas ganará la partida. Cada ronda tiene una duración predeterminada compuesta por tres fases: pre-ronda (20 segundos), ronda (máximo 5 minutos) y post-ronda (5 segundos), y termina cuando se cumple uno de los siguientes objetivos: los T completan con éxito su objetivo (colocar o hacer explotar la bomba) o eliminan al equipo rival; o los CT evitan que los T completen su objetivo (al eliminar a todos los terroristas o desactivar la bomba).

Debido a que Counter-Strike es un videojuego por equipos, los jugadores deben coordinarse para planificar estrategias, compartir información y realizar acciones tácticas conjuntas (Freeman et al., 2018). Además, el juego requiere de habilidades individuales como puntería precisa (*aim*), rapidez en los movimientos, conocimiento del mapa, y capacidad para tomar decisiones rápidas bajo presión (Pereira et al., 2016). Desde el punto de vista psicológico, Himmelstein et al. (2017) y Bonilla et al. (2022) destacan que las variables más importantes a considerar durante el juego son la capacidad de controlar el *tilt* (i.e., un sentimiento momentáneo de rabia e impotencia causado por la percepción de un jugador de su incapacidad para lograr un objetivo determinado), lo que puede causar una pérdida de concentración y bajo rendimiento, y la comunicación eficaz entre el equipo, puesto que disponer de un lenguaje específico, común y conocido entre los jugadores facilita, entre otros elementos, la comprensión del contexto y la toma de decisiones.

Uno de los aspectos que la literatura científica ha analizado son los diferentes aspectos de la comunicación en el juego y su impacto en la jugabilidad y el rendimiento. Nonose et al. (2015) han estudiado los patrones de comunicación durante las partidas, teniendo en cuenta la frecuencia y la calidad de las interacciones verbales, la coordinación de estrategias y la transferencia de información táctica entre los miembros del equipo. Se concluye, que todas estas variables tienen un efecto directo en el rendimiento del equipo y en la satisfacción de los jugadores. Alvino y Becker (2018) han estudiado la comunicación tóxica y sus efectos negativos en la experiencia del juego, sus hallazgos muestran que los aliados de un jugador tóxico se ven más afectados por el comportamiento tóxico que los oponentes y, en algunos casos, actúan juntos como fuente de comportamiento tóxico. En cambio, los oponentes se ven más afectados cuando el comportamiento tóxico está dirigido directamente a ellos (ejemplo: insultos racistas). Finalmente, los jugadores que no tienen contacto significativo con jugadores tóxicos tienden a ser más positivos y se concentran en las tácticas del juego y la socialización. Mesmer et al. (2009) han estudiado la relación entre la comunicación afectiva, la coordinación táctica y el éxito en las partidas competitivas, y concluyen que una comunicación clara y cooperativa mejora el rendimiento del equipo. Además, encontraron que tres factores que afectan el procesamiento de la información del equipo mejoran el intercambio de información en el equipo: la demostrabilidad de la tarea, la estructura de la discusión y la cooperación. Por otro lado, Se encontró que tres factores que representan grados decrecientes de redundancia de miembros restan valor al intercambio de información en el equipo: distribución de

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información, interdependencia informativa y heterogeneidad de los miembros. Lipovaya et al. (2017) han estudiado como las señales no verbales pueden facilitar la colaboración y mejorar la comprensión entre jugadores. Además, indican que se debe dar a los jugadores más opciones para utilizar la comunicación no verbal, teniendo en cuenta la distracción que este método puede causar, y observar cómo se lleva a cabo la coordinación en equipos de acción del mundo real para utilizar este conocimiento en la mecánica del juego.

Pese al interés suscitado, cabe destacar que no se ha encontrado un protocolo o herramienta adecuada para evaluar la comunicación *ingame*. Mendoza (2019) propuso un modelo que incluye: a) preguntar (solicitar información para sí mismo o el equipo), b) responder (responder una pregunta u orden del compañero), c) corregir (plantear la solución a un error cometido), d) informar (dar una información u orden relevante para ese momento) y, e) reforzar (apoyar verbalmente una buena jugada). Cualquier mensaje que no entre en ninguna de esas categorías es considerado como ruido y se considera que obstaculiza el entendimiento mientras se juega. Estas categorías propuestas por el autor se fundamentan en los patrones de comunicación de Nonose et al. (2015). Por otro lado, en el ámbito de la psicología del deporte existe el *Coaching Behavior Assessment System* (CBAS) (Smith et al., 1977), instrumento (ver Tabla 1) que permite la observación y análisis del comportamiento y conductas del entrenador en el entrenamiento y en la competición. Ha sido utilizado en España en numerosos estudios con una alta fiabilidad y validez de constructo (Conde, 2010; Cruz, et al. 2011; Mora, et al, 2013; Sousa, et al. 2006; Torres et al. 2008).

Así pues, en función a todo lo explicado anteriormente, el objetivo de nuestro estudio es adaptar y proponer una herramienta para el análisis de la comunicación adaptada a los *esports*, se fundamenta en un diseño tomado del modelo de CBAS (Smith et al., 1977) y enriquecido con el modelo de Mendoza (2019). Aunque tradicionalmente se ha utilizado para la evaluación de entrenadores, el CBAS tiene el potencial para ser una buena medida para analizar la comunicación en jugadores de esports. Así pues, este estudio se propone adaptarlo, concretamente para Counter-Strike, a partir del análisis de la comunicación de un equipo de jugadores profesionales.

Tabla 1. Categorías del Cuestionario CBAS (Smith et al. 1977).

Conductas reactivas	
Respuestas al rendimiento deseables	
1. Refuerzo (R)	Reacción positiva, recompensa por el buen juego o por acción deseable
2. No refuerzo (NR)	Ausencia de respuesta ante una buena acción
Respuestas ante errores	
3. Ánimo al error (AE)	Ánimo dado a un jugador tras el error
4. Instrucción técnica al error (TE)	Instrucción o demostración a un jugador sobre cómo corregir ese error
5. Castigo (P)	Reacción negativa cuando se produce el error
6. Instrucción técnica punitiva (ITP)	Instrucción técnica ante un error dada de forma punitiva u hostil
7. Ignorar el error (IE)	Ausencia de respuesta ante el error de un jugador
8. Mantener el control (MC)	Acciones que pretenden restablecer o mantener el orden en el equipo
Conductas espontaneas	
Relativas al juego	
9. Instrucción técnica general (ITG)	Instrucción espontánea sobre técnica y estrategias del deporte (no corresponde a acciones con error)
10. Ánimo general (AG)	Ánimos espontáneos (no corresponde a ningún error)
11. Organización (OG)	Conducta para establecer el marco de juego mediante la asignación de deberes y responsabilidades
Irrelevantes en el juego	
12. Comunicación general (CG)	Interacciones con los jugadores no relacionadas con el juego

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Método

Participantes

El muestreo realizado por conveniencia se realizó con un equipo al completo de 5 jugadores hispanohablantes de entre 19 y 26 años, todos ellos hombres, participaron en el estudio, con una edad de 22.7 años (DT = 2.82), y una experiencia de 5,28 años (SD = 3.24). Todos entrenaban seis días por semana una media de 6,23 (DT=1.29) horas al día y vivían en una gaming house juntos. Competían cada fin de semana en competiciones a nivel nacional e internacional de CS, tanto online como de manera presencial. En el momento de la toma de los datos durante el primer trimestre del año 2023 (Enero-Marzo) el equipo estaba en plena fase competitiva, estaba asistido por dos entrenadores y un mánager, y competían desde la *Gaming House*, destinada exclusivamente al equipo.

Instrumentos

Se utilizo la versión del CBAS clásico propuesto por Smith et al. (1977) (ver tabla 1). Esta herramienta se divide principalmente en dos dimensiones: (a) conductas reactivas y (b) conductas espontaneas. La primera de ellas se refiere a aquellas conductas de comunicación que son consecuentes de una acción específica, en este caso dentro de la partida (e.g., después de hacer un *headshot* a un rival, se le felicita al jugador). La segunda se refiere a aquellas conductas que no tienen que ver con una acción directamente relacionada con una acción del juego, pero que son relevantes para la partida (e.g., establecer los roles y lugares importantes en los que situarse dentro del mapa). Dentro de cada una de las dimensiones, existen subdimensiones de análisis. Las principales son, respecto a las conductas reactivas: (a) respuestas deseables al rendimiento (i.e., refiriéndonos a las conductas positivas para el rendimiento del equipo) y, (b) respuestas

Tabla 2. Propuesta de categorías y protocolo de registro del Análisis de la Comunicación en jugadores de CS, adaptación del CBAS.

	Pre-Ronda	Durante Ronda	Post-Ronda
Respuestas a conductas deseables			
Refuerzo (R)			
No Refuerzo (NR)			
Respuesta a los errores			
Ánimo al error (AE)			
Instrucción Técnica al Error (ITE)			
Punición/ Castigo (P)			
Instrucción Técnica Punitiva (ITP=ITE+P)			
Ignorar el Error (IE)			
Respuesta a comportamientos disruptivos			
Mantener el control (MC)			
Conductas Espontáneas Relacionadas con el partido/entrenamiento			
Organización (O)			
Instrucción Táctica (IT)			
Instrucción Técnica General (ITG)			
Ánimo General (AG)			
Conductas Irrelevantes para el partido/entrenamiento			
Comunicación General (CG)			
TOTAL			

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ante errores (i.e., refiriéndonos a las conductas negativas para el rendimiento del equipo). En la segunda dimensión de conductas espontaneas tenemos: (a) relativas al juego (i.e., aquellas conductas comunicativas que son útiles para los jugadores y su desempeño) y, (b) irrelevantes en el juego (i.e., aquellas conductas que solo generan ruido y desinformación sin ninguna utilidad para el equipo).

Se reunió a un total de tres expertos en psicología del deporte y *esports*, con una edad media de 30 años (DT=1.63) y una experiencia de al menos 5 años en el campo de los esports. A dichos jueces, se les presentó la herramienta propuesta anteriormente y se realizó un ensayo de observación de práctica, para discutir la idoneidad de las categorías de análisis. Después de dicha observación se decidió que era relevante poder analizar la comunicación de manera subdividida en función de las fases del juego de CS, por ese motivo se realizó una adaptación de dicha escala añadiendo diferentes categorías y organizando diferentes subapartados (ver Tabla 2), teniendo en cuenta algunas de las categorías propuestas por Mendoza (2019).

En dicha modificación se propone: (a) separar los momentos temporales a observar en Pre-ronda, refiriéndonos a los veinte segundos previos al inicio de la ronda, Durante ronda, siendo los cinco minutos cómo máximo que duran y, Post-ronda, siendo los últimos cinco segundos una vez se decide qué equipo ha ganado la ronda jugada; (b) crear la categoría de respuesta a comportamientos disruptivos, ya que, la subcategoría de mantener el control (MC) solo ocurría cuando se realizaban comportamientos disruptivos; (c) añadir las subcategorías de instrucción táctica (IT) y *Trash-talking* (TS, comentarios mal hablados), ya que son conductas que se han detectado que ocurren con frecuencia dentro

Tabla 3. Definición de las categorías propuestas

Categoría	Definición
Refuerzo (R)	Comunicación positiva después de una buena jugada (e.g. "Buena ronda" "Buena")
No refuerzo (NR)	No existe ningún tipo de refuerzo, ni ánimo al error ni ánimo general.
Ánimo al error (AE)	Se da cuando existe un refuerzo inmediato ante una situación de error (e.g. "Nice try (NT)" "buena, no pasa nada").
Instrucción Técnica al Error (ITE)	Descripción de una metodología que hay que utilizar para corregir el error (e.g. "La próxima lleva la pistola y no el cuchillo te agilizará el proceso de matar" "Si saltas aquí obtienes una mejor visión").
Punición/Castigo (P)	Utilización de vocabulario ofensivo/agresivo ante un miembro del equipo que no ha realizado la jugada como se esperaba (e.g. "Te están matando todo el rato y encima no escuchas").
Instrucción Técnica Punitiva (ITP=ITE+P)	Descripción de una metodología que hay que utilizar para corregir el error utilizando un vocabulario ofensivo/agresivo (e.g. "Tira la granada en esa pared que estamos perdiendo por tu culpa").
Ignorar el Error (IE)	Cuando no existe ningún tipo de comunicación ante el error que se ha cometido.
Mantener el control (MC)	Comunicaciones que se dan ante situaciones disruptivas (e.g. "Calma" "Focus en la siguiente ronda".).
Organización (O)	Instrucciones que se dan para las estrategias que se van a dar dentro del mapa (e.g. "Vosotros 3 vais a A y nosotros dos a B".).
Instrucción Táctica (IT)	Cuando se habla tanto de la posición del equipo enemigo como la manera en la que están jugando (e.g. "Están yendo todos a B" "Uno en A").
Instrucción Técnica General (ITG)	Descripción de la metodología adecuada para la/las partida/partidas (e.g. "Todos con la pistola" "Usamos todos las granadas en B").
Ánimo General (AG)	Comunicación positiva hacia todo el equipo ante cualquier situación de la partida excepto el error (e.g. "Vamos equipo" "La siguiente la ganamos" "Bien jugado equipo" "Buena team").
Comunicación General (CG)	Engloba interacciones que no tienen que ver con el juego o que dificultan el entendimiento (e.g. Cuando hablan todos a la vez y no se entiende. "Vamos al concierto de Bad Bunny")
Trashtalking (T)	Comunicaciones ofensivas/agresivas hacia el otro equipo tanto habladas como escritas por el chat (e.g."Que malos son", "No dan ni una", "No sé ni para que venimos a entrenar con ellos").

ISSN: 2530-3910 https://doi.org/10.5093/rpadef2023a13

de las partidas y no se podían categorizar con facilidad en ninguna otra categoría. Además, se realizó un glosario con las diferentes categorías, sus definiciones y ejemplos (ver Tabla 3).

Procedimiento

Una vez llegado a este acuerdo de contenido por juicio de expertos (Alarcón et al., 2017), se realizó un análisis de la comunicación de los jugadores en situaciones de competición de la liga y clasificatorio que se jugaron durante el mes de observación. Para realizar dicha observación, se contactó previamente con un club de esports que mostró interés en colaborar en proyectos de investigación, dándonos acceso al equipo de CS previo acuerdo de los objetivos y procedimiento de la investigación. Todos los jugadores y staff del club firmaron un consentimiento informado, dónde aceptaban participar de manera voluntaria en el estudio, sin remuneración y pudiendo retirarse en cualquier momento. Fueron analizados un total de cuatro torneos, en dos mapas: Mirage e Inferno. Para la realización de la observación los tres expertos realizaron dicho análisis de manera individual, teniendo a su disposición la grabación del torneo con imagen y comunicación al completo, pudiendo pausar y repetir las grabaciones tantas veces como fueran necesarias, pudiéndose ayudar del glosario creado. Una vez realizados los análisis, se volvió hacer una reunión comentando los resultados obtenidos con la herramienta, y se obtuvieron los índices del grado de acuerdo obtenido entre los observadores.

Análisis de datos

Una vez realizada las observaciones de frecuencia con el instrumento, se calculó el coeficiente de correlación, así como el índice de correlación intraclase, para ver el grado de acuerdo entre los diferentes observadores expertos. Para dicho análisis se utilizó el software estadístico JASP V.0.16.

Resultados

En la Tabla 4, podemos apreciar las frecuencias de las diferentes conductas analizadas, cabe destacar que no se distribuyen de manera homogénea teniendo algunas conductas como O (20.64%), IT (28.93%) y ITG (24.11%), un peso elevado en la comunicación del equipo (73.68%).

Además, podemos observar que el índice de correlación intraclase (ICC) en las 4 situaciones comentadas anteriormente (ver Tabla 5), siguiendo la clasificación propuesta por Koo y Li, (2016), oscila entre .70 y .90. Si tenemos en cuenta el sumatorio de todas las observaciones en las diferentes situaciones obtenemos un índice de acuerdo de .779, mostrando un grado de acuerdo bueno.

Tabla 4: Frecuencia de las conductas observadas

Categoría	Frecuencia	Porcentaje
R+	0.074	7.4%
No R	0.087	8.7%
AE	0.038	3.8%
ITE	0.019	1.9%
P	0.0008	0.08%
ITP	0.0028	0.28%
IE	0.0022	0.22%
MC	0.012	1.12%
O	0.2064	20.64%
IT	0.2893	28.93%
ITG	0.2411	24.11%
AG	0.0067	0.67%
CG	0.018	1.8%
T	0.0035	0.35%

*NOTA: **R+** = Refuerzo Positivo, **No R** = No refuerzo, **AE** = Ánimo al error, **ITE** = Instrucción Técnica al Error, **P** = Punición,* ITP *= Instrucción Técnica Punitiva, **IE**= Ignorar Error, **MC**= Mantener Control, **O**= organización, **IT** =Instrucción Táctica, **ITG** = Instrucción Técnica general, **AG** = Ánimo General, **CG** = Comunicación general, **T**= Trashtalking.*

Tabla 5. Media de los índices de correlación intraclase (ICC) e intervalos de confianza de los observadores para cada una de las 4 situaciones observadas

Situación/Mapa	ICC	ICC 95% inferior	ICC 95% superior
1	0.860	0.762	0.922
2	0.764	0.637	0.859
3	0.762	0.634	0.858
4	0.731	0.581	0.840
TOTAL	**0.779**	**0.654**	**0.870**

Discusión

El objetivo del presente estudio era proponer un protocolo de observación y análisis específico para estudiar la comunicación de jugadores de CS, generando un instrumento de registro basada en la herramienta clásica del

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CBAS de Smith et al. (1977). Se ha realizado una modificación de dicha herramienta para adaptarla a la realidad de los jugadores de *esports* de CS, añadiendo algunos elementos del modelo de Mendoza (2019), además de proponer un glosario, a modo de guía para futuros observadores. Los resultados sugieren que la herramienta es una buena guía para los observadores, ya que alcanzaron un índice de acuerdo bueno, indicando que es un método fiable de análisis de la comunicación de un equipo de *esports*. Además, estos resultados nos han permitido observar que los jugadores de CS no tienen una distribución homogénea en su comunicación como equipo, se puede apreciar con claridad que aquellas conductas comunicativas relacionadas con la organización y la técnica del equipo priman por encima de las demás conductas. Esto contrasta con el estudio previo de Alvino y Becker (2018), dónde se destaca la importancia de la comunicación toxica, que en este caso ocupa el 0,35%, entendiéndolo como el *trashtalking*. Mostrando la importancia de profundizar en aquellas conductas que se dan en menor medida, ya que, pueden tener un papel clave en la comunicación del equipo, por encima de las que son más comunes. Algunas de estas conductas clave para futuros estudios son el R+ (7,4%) y el No R (8,7%), ya que, en estudios en psicología del deporte tradicional (Cruz et al., 2011), se observa que juegan un papel clave en variables como el clima motivacional y/o los estilos comunicativos.

Esta herramienta, nos permite potencialmente estudiar de manera precisa y fiable los diferentes fenómenos estudiados hasta el momento en los *esports,* siendo los más relevantes: (a) el estudio de los patrones comunicativos dentro los equipos (Nonose et al., 2015) y cuáles tienen que ver con los resultados positivos (Mesmer et al., 2009) y negativos (García-Naviera y León, 2022), (b) la comunicación tóxica y sus efectos (Alvino y Becker, 2018), o (c) la relación entre la comunicación verbal y no verbal (Lipovaya et al., 2017).

Además, nos puede servir para poder analizar y entrenar una de las habilidades más relevantes para los jugadores dentro de los equipos de *esports* grupales, como es la comunicación efectiva entre los distintos roles y componentes del equipo (Himmelstein et al., 2017; Bonilla et al., 2022), contribuyendo así a reforzar el papel clave de la psicología del deporte en el funcionamiento óptimo de los equipos (García-Naviera y Cantón, 2020).

De todos modos, debemos tener en cuenta algunas limitaciones. Hay que destacar que dicha herramienta es específica para CS y, aunque probablemente sirva para otros FPS o *esports* que sigan la misma lógica que dicho *esport*, es necesario que se realicen futuras investigaciones con cada esport para verificar su correcto funcionamiento y fiabilidad. Esto se debe a que, aunque algunos *esports* tengan las mismas categorías y conductas, es posible que no tengan tres momentos temporales tan claros, entre rondas. También es recomendable que se realicen futuras investigaciones en los patrones comunicativos que existen entre *esports* y ver si existen similitudes o grandes diferencias, ya que permitirá guiar las futuras intervenciones que se realicen en comunicación. Este último aspecto es de especial relevancia, debido a que, si podemos demostrar que los juegos que pertenecen a un mismo género (e.g. FPS, MOBA, Battle Royal, etc.), comparten o no patrones de comunicación, justificará la necesidad de diseñar y realizar intervenciones específicas o generales en función de género al que pertenezca el *esport*. Finalmente, se requiere realizar también estudios con perspectiva de género en equipos de esports (García-Naveira et al., 2022), donde se estudie esta herramienta en equipos femeninos o mixtos.

A modo de conclusión, hay que destacar que la herramienta propuesta ha demostrado tener una fiabilidad buena, siendo inicialmente una herramienta sólida tanto para futuras investigaciones como para profesionales de la psicología del deporte, especialmente para intentar unificar bajo algunos criterios que nos permitan comparar y contrastar los estudios que se realicen en este constructo.

Aplicaciones prácticas

Esta investigación ofrece un protocolo de análisis de comunicación, con una herramienta y glosario, que se puede utilizar tanto en el ámbito académico como profesional, permitiendo una visualización clara de las conductas relacionadas con la comunicación que se dan dentro de los *esports*, específicamente en CS. Esto da a los distintos profesionales de la psicología o ciencias del deporte relacionados con los *esports*, la primera herramienta específica para analizar la comunicación de los jugadores de *esports*. Además, por cómo está estructurada la herramienta, esta permite cuantificar, comparar y analizar cada una de las conductas de manera individual y/o grupal, haciendo que la transmisión de la información sea lo más sencilla y esquemática posible. Finalmente, hay que destacar que dicha herramienta en el ámbito de la investigación sirve como precedente para estandarizar el estudio de la comunicación y las posibles conductas relacionadas, aportando un análisis estandarizado de dicha conducta y permitiendo comparar los resultados de futuras investigaciones de manera objetiva y fiable.

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DISCUSIÓN

Los objetivos de la presente tesis eran crear una medida psicométrica que nos permitiera medir el concepto del tilt, sin embargo, previamente a esta medida psicométrica se requerían de unos pasos previos que establecieron los objetivos de la tesis. Hemos podido completarlos todos, hemos situado primeramente el marco teórico de la psicología del deporte donde hemos podido debatir temas epistemológicos, como si los esports son deporte o no, los temas principales estudiados por la psicología deporte, como son las habilidades psicológicas (Himmeslstein et al., 2017) o las características de los jugadores (García-Lanzo & Chamarro, 2018), este primer estudio sirve a modo de guía para conocer cómo está el estado actual de la cuestión y los temas que aún no se han investigado. Además, con la revisión de la literatura pudimos constatar que el tilt es una de las habilidades que más problemáticas causaba, sin embargo, no había apenas investigación al respecto haciendo difícil su definición y medida, pero clarificando que estaba dentro de las habilidades cognitivas de los jugadores de esports. Posteriormente, el segundo estudio tuvo como objetivo detectar las habilidades psicológicas en las que se apoyan los jugadores y examinar la relación entre estas habilidades y el rendimiento, así como la localización del tilt. Se identificaron tres grandes bloques. El primer bloque consistió en habilidades técnico-tácticas, un área en la que diferentes entrenadores (e.g. Head Coach, Strategic Coach y Analyst) juegan un papel fundamental en el entrenamiento de los jugadores para mejorar la técnica, ayudar en la adquisición de táctica y ampliar sus conocimientos específicos de esport en situaciones competitivas. El segundo gran bloque son las habilidades psicológicas. Las habilidades psicológicas encontradas son similares a las descritas en estudios previos (Fanfarelli, 2018; Himmelstein et al., 2017), y cabe destacar la importancia del control de la atención y el control emocional, ya que ambos han recibido una atención significativa y fueron resaltados en los resultados. En concreto, se hizo hincapié en mantener la atención durante largos periodos de tiempo (es decir,

periodos de unos 40 minutos) y en saber afrontar las situaciones que provocan tilt, ya que estos son los principales problemas a los que se enfrentan en entornos de entrenamiento y competición. Si profundizamos en el tilt, observamos que es una de las mayores causas de disconford, que genera ira, rabia y frustración, además de afectar negativamente a rendimiento y salud, obteniendo resultados similares a Himmelstein et al., 2017. El tercer estudio se abordó para responder al objetivo principal de conceptualizar y medir el tilt, una vez teníamos claro el marco teórico y dónde se situaba dentro de las habilidades cognitivas de los jugadores. Los resultados iniciales de este estudio hacen referencia a la definición propuesta y a los componentes del tilt. Estos hallazgos sugieren que el tilt no es un comportamiento impulsivo con un origen desconocido; más bien, tiene causas identificables intrínsecamente relacionadas con la práctica de videojuegos o esports, especialmente en contextos basados en el rendimiento que requieren habilidades para superar los desafíos del juego. El estudio reveló que las personas, al no lograr sus metas de rendimiento, experimentan una creciente sensación de frustración que se intensifica con el tiempo de juego y los intentos repetidos de alcanzar sus objetivos, lo que finalmente desencadena la aparición de la inclinación. Es esencial tener en cuenta que el fenómeno del tilt se desarrolla gradualmente, "creciendo como una bola de nieve" con el paso del tiempo, y a menudo culmina en manifestaciones explosivas, como arrebatos de ira, o expresiones pasivas, como una pérdida de energía y motivación. A la complejidad del tilt se suma la tendencia de las personas que lo experimentan a persistir en el juego, motivadas por la esperanza de que alcanzar la victoria pueda aliviar su inclinación. Por otro lado, existe una inclinación en las personas con tilt a recurrir a comportamientos tóxicos, como abandonar el juego o participar en abusos verbales, lo que plantea riesgos tanto para ellos mismos como para los demás. La complejidad en la progresión del tilt se relaciona con investigaciones anteriores en áreas como el póquer (Browne, 1986; Moreau

et al., 2017), que comparten similitudes con el tilt observado en los videojuegos y los deportes electrónicos debido a la lógica subyacente compartida del juego. Los resultados del estudio también coinciden con la investigación existente en los deportes electrónicos; por ejemplo, Sharma et al. (2022) y Wu et al. (2021) han informado previamente sobre consecuencias relacionadas con el tilt similares a las identificadas en este estudio, incluida la tendencia a abandonar los juegos debido a la ira y la frustración. Además, la investigación de Türkay et al. (2020) sugiere que las personas que experimentan situaciones similares al tilt están más inclinadas a participar en comportamientos tóxicos o cometer errores repetidos en situaciones de rendimiento. En relación con el segundo objetivo principal de la medida, los resultados dieron lugar a un cuestionario final de 18 ítems, dividido en dos escalas, 7 ítems para causas y 11 ítems para consecuencias. El cuestionario muestra una fiabilidad adecuada, una fuerte validez factorial con índices de ajuste aceptables y una varianza explicada del 51,7%. Además, al evaluar la validez externa, el constructo se distingue satisfactoriamente de otros constructos y muestra relaciones esperadas con el IGD y la satisfacción con la vida, generando un modelo que explica el 21,7% de la varianza.

Finalmente, fruto del segundo estudio, al observarse las dificultades con la comunicación se realizó Se ha llevado a cabo una adaptación de la herramienta CBAS de Smith et al. (1977) para adecuarla a los jugadores de esports usando como base los jugadores de CS e incorporando elementos del modelo de Mendoza (2019). Las conductas comunicativas relacionadas con la organización y la técnica del equipo obtuvieron una mayor relevancia. También se observó que el R+ (7,4%) y el No R (8,7%), acorde con estudios de psicología del deporte tradicional (Cruz et al., 2011) desempeñan un papel fundamental en variables como el clima motivacional y los estilos comunicativos. Esta herramienta posibilita el estudio preciso y confiable de diversos fenómenos en los esports,

entre los cuales destacan: (a) el análisis de los patrones comunicativos dentro de los equipos (Nonose et al., 2015) y su relación con los resultados positivos (Mesmer et al., 2009) y negativos (García-Naviera y León, 2022), (b) el estudio de la comunicación tóxica y sus efectos (Alvino y Becker, 2018), y (c) la interacción entre la comunicación verbal y no verbal (Lipovaya et al., 2017).

A partir de todos los resultados obtenidos de los cuatro estudios se abre un nuevo camino en el campo de la investigación en los esports. Por un lado, establecemos una hoja de ruta de aquellos factores claves como son las características de los jugadores, las habilidades psicológicas o las carreras deportivas. Por otro lado, se establece un modelo que permite conocer aquellas habilidades clave a estudiar y conocer su funcionamiento dentro de los esports, además de destacar la importancia de ayudar a las ciencias del deporte en conocer los mecanismos de adquisición las habilidades técnico-tacticas que permiten desarrollar el talento de los jugadores y la importancia de factores como la nutrición y descanso para la salud y el rendimiento. También se propone y abre el estudio de la comunicación en los jugadores de esports, siendo una de las principales habilidades de entrenamiento por parte de los psicólogos del deporte dentro de los entrenamientos. Finalmente, se abre el estudio del tilt en profundidad, su relación con las habilidades anteriormente relacionadas u otros procesos cognitivos o problemáticas. Sin embargo, el presente trabajo presenta un seguido de limitaciones, por un lado, las muestras tienen un sesgo de género, ya que están compuestas principalmente por hombres, por lo que sería necesario de seguir trabajando en buscar un mayor equilibrio en el número de participantes. Además, los estudios, salvo el estudio de comunicación, no separa por esports, por lo que las conclusiones son generales para el ecosistema y no específicas para ciertas situaciones que presentan los esports, por lo que futuros estudios deberían estudiar, por ejemplo, el tilt como se desarrolla en diferentes esports (e.g. equipo, individuales,

MOBA, shooter, etc.). Finalmente, no hay que olvidar que en el caso del tilt es la primera conceptualización y medición, por lo que se deberá de seguir estudiando su comportamiento y estar atentos a posibles adaptaciones (e.g. culturales) o cambios a lo largo del tiempo.

CONCLUSIONES

El presente trabajo tenia como objetivo principal el estudio del constructo tilt, sin embargo, en su proceso se ha ido elaborando un marco teórico, un modelo de habilidades psicológicas y una herramienta para medir la comunicación. A partir de los distintos trabajos que recopila la presente tesis las conclusiones a destacar son:

- Los psicólogos deportivos tienen un papel importante que desempeñar dentro de los clubes de deportes electrónicos, especialmente dada la relevancia de las habilidades psicológicas en el rendimiento y bienestar.

- La investigación sobre los deportes electrónicos aún es limitada, principalmente cualitativa, exploratoria y transversal requiriéndose un avance hacía estudios cuantitativos y longitudinales.

- Dentro de las habilidades psicológicas, la atención y regulación emocional juegan un papel clave. Siendo de especial relevancia los patrones atencionales y el tilt.

- La comunicación se considera una habilidad clave a trabajar por parte de la psicología del deporte.

- La comunicación tiene un papel relevante en el rendimiento de los jugadores de esports, siendo el refuerzo positivo y el refuerzo negativo claves para explicar los resultados aunque poco frecuentes, dada la desorganización del proceso comunicativo.

- La medida del tilt y su conceptualización son posibles, además de ser una medida fiable y valida que permite relacionarla con otras variables de interés, como son la satisfacción con la vida y el desorden por uso de los videojuegos.

- El tilt tiene como núcleo la frustración y la ira, aunque hay otras variables como el efecto acumulativo, los pensamientos negativos y la toma de decisiones que juegan un papel y se ven afectadas por este.

Conclusions

The main objective of this work was to study the tilt construct, however, in the process a theoretical framework, a model of psychological skills and a tool to measure communication have been developed. From the different works compiled in this thesis, the conclusions to highlight are:

- Sports psychologists have an important role to play within e-sports clubs, especially given the relevance of psychological skills in performance and well-being.

- Research on e-sports is still limited, mainly qualitative, exploratory and transversal, requiring progress in quantitative and longitudinal studies.

- Within psychological skills, attention and emotional regulation play a key role. Attentional patterns and tilt are of special relevance.

- Communication is considered a key skill to work on by sports psychology.

- Communication plays a relevant role in the performance of esports players, with positive reinforcement and negative reinforcement being key to explaining the results although infrequent, given the disorganization of the communication process.

- Tilt measurement and conceptualization are possible, as well as being a reliable and valid measure that allows it to be related to other variables of interest, such as life satisfaction and video game disorder.

- Tilt is based on frustration and anger, although there are other variables such as the cumulative effect, negative thoughts and decision making that play a role and are affected by this.

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