

Why are Online Games Addictive? A Study on The Relationship Between Game Features and Social Perspectives

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ABSTRACT : The rapid development of online games makes online games very popular. This study aims to analyze the factors that make a person addicted to playing online games. This research analyses game features and social perspectives that influence online game addiction. Respondents in this study are online game players in Indonesia with 340 respondents. The analysis technique used is PLS-SEM. The results showed that game features had a significant effect on game addiction. Social factors such as social presence and social capital contributed to game addiction. This research can be information on the factors that influence game addiction from game features and social perspectives.

Keywords: *Game Features, Social Presence, Social Capital, Game Addictive*

ABSTRAK : Pesatnya perkembangan game online membuat game online menjadi sangat populer. Penelitian ini bertujuan untuk menganalisis faktor-faktor yang membuat seseorang kecanduan bermain game online. Penelitian ini menganalisis fitur game dan perspektif sosial yang mempengaruhi kecanduan game online. Responden dalam penelitian ini adalah pemain game online di Indonesia dengan 340 responden. Teknik analisis yang digunakan adalah PLS-SEM. Hasil penelitian menunjukkan bahwa fitur game berpengaruh signifikan terhadap kecanduan game. Faktor sosial seperti kehadiran sosial dan modal sosial berkontribusi terhadap kecanduan game. Penelitian ini dapat menjadi informasi mengenai faktor-faktor yang mempengaruhi kecanduan game dari segi fitur game dan perspektif sosial.

Keywords: *Fitur Game, Kehadiran Sosial, Modal Sosial, Kecanduan Game*

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INTRODUCTION

Online games have been already a popular activity in most countries in this world. More empirical studies analyze factors that explain the effect of playing excessive online games. Online social game addiction is a maladaptive psychological dependency on online social games

(Gong et al., 2019). Assessment of video game addiction often involves measurement of peripheral criteria that indicate high engagement with games, and core criteria that indicate problematic use of games (Brunborg et al., 2015). Internet and computer game addiction represents a growing mental health Concern, acknowledged by the World Health Organization (Wölfling et al., 2019). Game addiction is used as the preferred term and will be used to refer to problematic or pathological use of video games, where gaming leads to functional impairment in daily life (Wittek et al., 2016). Risk of developing gaming-related addiction symptoms not only if they spend many hours on online games, but also if they are involved in a broad series of online game genres.

One supporting factor for gamers to play online games is the ability to interact with other players. Social presence theory and social capital theory are used in this research to measure the effect of a social element on game addiction. Social presence is the term commonly used to understand social connections through media such as digital games and virtual environments (Hudson & Cairns, 2016). Social presence theory represents how a gamer communicates with others through communication media not only through communication features in the game but also communication media outside of the game such as social media, group forums, or face-to-face communication. In the context of game addiction, gamers feel their presence in a community in a game which makes them a part of the game. It can generate enjoyment and a pleasing to keep playing. Without any resistance, it can direct to addiction to playing online games.

The scope of this research is limited to game addiction in Indonesia. Indonesia was chosen because Indonesia is one of the countries with the most online game players. Indonesia is one of the countries with a growing number of gamers every year (Riauan & Aziz, 2019) with a total of 9,756,690 people playing online games (APJII, 2019). Therefore, it is important to analyze game addiction in this country, as a country where the number of gamers continues to increase every year. Then this study analyses the effect of game features and social influence on online game addiction. This research also revealed game features as the main factor that makes a person addicted to playing the online game and measure social effect as the effect that can encourage a gamer to keep playing utilize social presence theory and social capital theory. In the end, this research also analyzes those factors' impact on game addiction.

THEORETICAL REVIEW

Game Addiction

Online game addiction is defined as a maladaptive psychological dependency on online games (Lee et al., 2019). There are many types of addiction, including primary addiction and secondary addiction. In primary addictions, the person is addicted to the activity itself and loves engaging in the activity. In secondary addiction, the individual engages in the behavior as a way of dealing with other underlying problems (Griffiths, 2008). Game addiction will be different from one to another based on gender (Wittek et al., 2016). The game addiction concept is different for each researcher. Previous research analyzes factors that influence game addiction such as depression, social anxiety, and loneliness (Maroney et al., 2018). There are similarities in symptoms between addictive behaviors and problematic gaming (Yılmaz et al., 2017). Online gaming addiction refers to a psychological, emotional, and social state where one, due to increased tolerance and dependence on games and other reasons, loses control over and plays internet games excessively and compulsively, and any efforts to reduce or stop playing will be

ensued by withdrawal symptoms (J. Y. Kim & Bae, 2018). The number of online game genres engaged in can be considered as one of the behavioral risk factors related to gaming addiction.

Social Influence

A person is interested to play online games because of the social presence and the supporting environment. Social presence is the feeling of being there, particularly between two communicating parties through communication media. Social presence is defined as a sense of being there with another (McCreery et al., 2015). The prevalence of the high-speed Internet and the advancement of multimedia technologies make online games vivid communication media through which gamers can experience a strong social presence (Tseng et al., 2015). Social presence is divided into a virtual environment (affective association), community perceptions (community cohesion), level of interaction among participants (interaction intensity), and knowledge and experience sharing (knowledge and experiences) (McCreery et al., 2015). Supporting the social presence factor can make a gamer enjoy playing the online game and make a gamer addicted to playing the online game.

Social capital is about connections among people (Bian & Leung, 2015). Social capital is a construct that describes the resources owned by social organizations. Like economic capital, it is also understood that an investment in social capital produces more capital; if social connections are nurtured, they will provide value in return in the form of support and the sharing of information (Perry et al., 2018). As a gamer accumulates more social capital with more network convergence, the gamer may incur more relational relationship losses when switching to another game, because the social networks in one game may not be easily carried over to another (Tseng et al., 2015). Social capital indicating many players had built valuable social relationships (Reer & Krämer, 2019).

Game features

Game features take an important role which affecting someone's decision in playing an online game. There are several features in online games that make a person attached to playing online games such as multimedia elements (attractive gaming features for attention to gameplay and learning), fun elements (playful gaming features for enjoyable gameplay and learning), interactive elements (gaming features for participation and involvement in gameplay and learning), and motivational element (supportive gaming features for meaningful gameplay and learning) (Abdul Jabbar & Felicia, 2015). Online game features can be divided into several types such as social features, manipulation and control features, narrative and identity features, reward and punishment features, and presentation features (King et al., 2010). Games that have good quality can be determined by three things such as services (solve gamer problems quickly, know gamers' needs, give friendly answers to gamers' questions), product (game character design, vivid game character, and game story), and gratification (customize character and play various roles in-game) (S. J. Kim et al., 2015). Features like network convergence and interdependence are positively related to a sense of community and relational switching costs contribute to gamer continuance intention (Tseng et al., 2015).

METHOD

Game Addiction Scale (GAS) is composed of six core dimensions: salience (gaming is the main preoccupation); tolerance (need for incremental amounts of gaming); mood modification (the use of gaming to cope with emotional distress); relapse (difficult to reduce gaming); withdrawal (distress when gaming is stopped); and conflict (gaming cause conflicts with other

life activities) (Griffiths, 2010). Three items for every seven subscales: salience, tolerance, mood modification, relapse, withdrawal, conflict, and problem measured using a five-point frequency scale starting from 1 (never) to 5 (very often). In measuring social factors, this research based on social presence theory (Teng, 2017) and social capital theory (Molyneux et al., 2015). In measuring game features, this research based on social features, control features, narrative features, reward and punishment features, and presentation features (King et al., 2010).

Some criteria were used in choosing respondents such as online game players, playing the online game every day, and playing more than one game in the last month. Questionnaires were distributed to online gamers. They are well invited to participate in research online or offline. Participants received an explanation of the study. Based on the results of the distribution of questionnaires to respondents, a total of 340 questionnaires can be used for data analysis. 68% of respondents (n = 232) were male gamers, 32% of respondents were female gamers (n = 108). Then, based on income, there are 61% of respondents (n = 208) have an income of <Rp. 3,000,000. 12% of respondents (n = 40) have an income of Rp. 3,000,000 - Rp. 5,000,000 and 27% percent of respondents (n = 92) have income> Rp. 5,000,000. Based on the platform, 18% of respondents (n = 60) use console games more often, while 82% of respondents (n = 280) use mobile games more often.

RESULTS AND DISCUSSION

The partial least square (PLS) method is used to analyze data in the structural equation model (SEM). PLS model analyzes two-step: first, measure the model's reliability and validity, and second, measure the structural model (Hair et al., 2019). The average variance extracted (AVE) was used to evaluate convergent validity (Fornell, 1981). AVE enables the estimation of the quantity variance a construct obtains from its indicators with the quantity variance due to measurement error. Recommended minimum AVE value exceeds 0,5 for all constructs (Table 1).

Table 1. Construct Validity and Reliability.

Item	Loading Factor	Cronbach Alpha	CR	AVE
Social Presence	0.663-0.866*	0.870	0.899	0.562
Social Capital	0.638-0.805*	0.853	0.899	0.534
Social features	0.774-0.876*	0.828	0.885	0.660
Control features	0.653-0.834*	0.834	0.855	0.545
Narrative features	0.632-0.832*	0.854	0.867	0.572
Reward and Punishment features	0.723-0.834*	0.856	0.812	0.665
Presentation features	0.634-0.876*	0.878	0.858	0.568
Online game addiction	0.632-0.887*	0.834	0.877	0.554

Note. *p<0.001

All of the loading factors are above 0.5. No indicator must be deleted from the research model. Discriminant validity through PLS that is measure cross-loading from the indicator, and presupposes the loading value from each construct indicator is above from cross-loading of another construct. Then, using the Fornell-Larcker criterion, which analyzes the correlation between dimensions below from the root square of AVE (Fornell, 1981). Using Heterotrait-Monotrait ratio (HTMT) between two construction must be below 0.9 (Henseler et al., 2015). All of those values are determined based on specified criteria. Structural model measurement was done by put in all items which determined pass validity and reliability test.

Table 2. Direct and Indirect Effect.

Variable	Path Coefficient	T Statistic	P Value
Social Presence → Online game addiction	0.369	2.799	0.005
Social Capital → Online game addiction	0.223	2.887	0.004
Social features → Online game addiction	0.227	5.361	0.000
Control features → Online game addiction	0.232	2.997	0.002
Narrative features → Online game addiction	0.399	2.899	0.003
Reward and Punishment features → Online game addiction	0.203	2.687	0.008
Presentation features → Online game addiction	0.325	4.862	0.000

Based on the hypothesis test result, it shows that social presence has a significant effect on game addiction with a significant degree of 0.005 and a path coefficient in the amount of 0.369. Social capital has a significant effect on game addiction with a significant degree of 0.004 and a path coefficient in the amount of 0.223. Game features have a significant effect on game addiction with a significant degree of 0.000 and a path coefficient of 0.227. Control features have a significant effect on game addiction with a significant degree of 0.002 and a path coefficient of 0.232. Narrative features have a significant effect on game addiction with a significant degree of 0.003 and a path coefficient of 0.399. Reward and punishment features have a significant effect on game addiction with a significant degree of 0.008 and a path coefficient of 0.203. Presentation features have a significant effect on game addiction with a significant degree of 0.000 and a path coefficient of 0,325. Therefore, all hypotheses are supported.

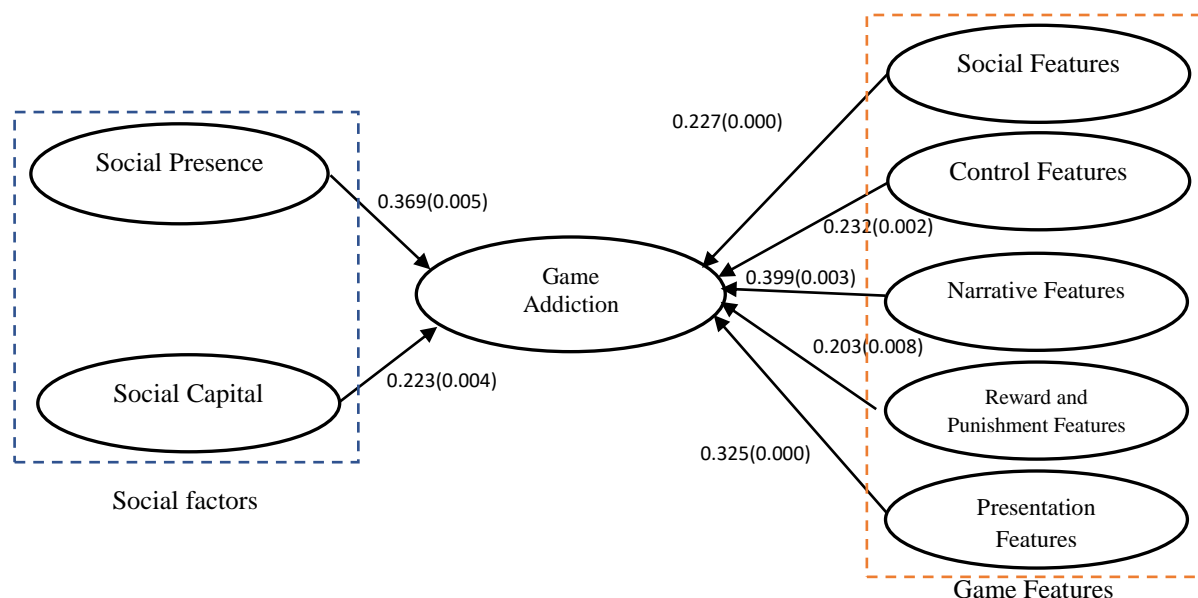


Figure 2. Model Results

Game features play an important role in affecting game addiction. The better the game features, the higher possibility to be addicted to playing a game. Some features in a gameplay an important role in affecting game addiction. First, social features are social interaction features that support communication and interaction in the game. Second, the manipulation and control feature consists of user input features, save features, player management features, and non-controllable features. Third, narrative and identity features such as game avatar features,

storytelling in the game, theme, and type of game. Fourth, reward and punishment features such as the benefits gained in the game (points, bonus, character experience, and level). The fifth is presentation features such as graphics and sound features, specific content features, and in-game advertising features. A variety of features in the game contribute to game addiction.

There is the relationship between cooperative game features and intention is fully mediated by group norms, social identity, joint commitment, attitudes toward cooperation, and anticipated positive emotions (Morschheuser et al., 2017). Most popular online video games focus on competition wherein individual gamers face opposing players, collaboration wherein multiple players face a typical opponent, or a combination of the two in which teams of players compete against each other to achieve a goal (Fox et al., 2018). It means game features that have attractive social support, goof control, attractive narrative and identity, the existence of reward in-game, and attractive visuals and sound give a big effect on game addiction.

Social capital affects a person to be addicted to playing online games. The higher the social capital factor the higher the possibility of a person being addicted to playing the online game. Games create a social environment which often based on interaction with other players (Hudson & Cairns, 2016). Communication between a player mainly based on voice chat and or text-based interaction can be found in a game. Social motivation will be associated with higher levels of trust. As players are motivated to use games to meet others, build and maintain relationships, and collaborate with others in teamwork, these activities have the potential to increase one's general trust of others (Dalisay et al., 2015). Emotional attachment brings up long-term relationships (Suhartanto et al., 2019). Factors from social capital show bounding to a person to keep playing a game because there is the existence of other support. Bounding due to this social factor will tend to make a person hard to shift to the other game even will direct to addiction to playing the online game.

Social presence affects a person to be addicted to playing online games. Social presence is important for every gamer moreover they feel that they used to play with other gamers (McCreery et al., 2015). The presence of a person in a game makes an abounding feeling in playing the online game. Interactivity is considered to be one of the key determinants of presence and enjoyment (Jang & Park, 2019). A person who feels like a part of a group in a game even physically in a different location, the creation of a sense of community, and collaborating in completing a mission in a game are some factors that cause the existence of a strong social presence feeling in a game. This thing later directs to addictive game behavior.

CONCLUSION

Social factor gives a big contribution to game addiction. Social factor supports a person to keep playing the game online. Gamers enjoy social activities with real people in online environments to experience a sense of community and build social capital. The relationships with others in such environments are useful and valuable, implying the loss a gamer would incur when switching to another game. A sense of community becomes a bounding factor of a person is playing a game. A person who enjoys a community at a specific game will be hard to leave that game and feel the existence of emotional bonding with each gamer. If gamers switched to other games, they would lose contact with the members they are strongly affiliated with, resulting in a high relational switching cost. Online gamers often form teams or guilds to solve missions or achieve common goals or rely on other members' feelings and opinions to shape their avatar outlooks or social interactions with others. Mutual interdependence among members

is one of the essential elements of the community. Practically, this study can provide information for game developers in developing games that make players have a social relationship with other players. This social relationship is by creating a community on the Discord application which is commonly used by gamers to share information related to the game. This social relationship will make players to continue playing and addicted to the game.

This study provides evidence that game features can make players addicted to playing the game. Practically, game developers are advised to prioritize presentation features and narrative features. This is related to the appearance of the game and the storyline of the game. If the game has a good graphic display and has a storyline in it, then it will make players to continue playing the game. In addition, social features also need to be made well because this will also affect addiction in the game. Game developers can create chat rooms, commentary features, and streams so players can feel socially connected. Two other important features are control features and reward and punishment features. Game developers are expected to be able to make game controls that are easy to use and provide an extraordinary experience. In addition, rewards and punishments also need to be made as attractive as possible which makes players more motivated to get rewards and avoid punishment.

LIMITATIONS AND FUTURE RESEARCH

There are several limitations to this research. First, in this research, there is no classification of game type. A lot of game types which played and available in the online store. Future research is expected can classify respondents based on the game type which is played. Second, this research is limited to gamers in Indonesia. The result may be different from gamers in other countries. Future research is expected can be done with respondents from different countries. Third, the game world is developing rapidly. This means that the gaming market can change very quickly, and the expectations of gamers can change quickly. Future research is expected to adapt to the development of the game. Fourth, respondents are currently limited to background players in several popular games. Further research is expected to differentiate respondents according to the type of game. Each game has different characteristics of players who will have different behavior.

REFERENCES

- Abdul Jabbar, A. I., & Felicia, P. (2015). Gameplay engagement and learning in game-based learning: A systematic review. *Review of Educational Research*, 85(4), 740–779. <https://doi.org/10.3102/0034654315577210>
- Bian, M., & Leung, L. (2015). Linking Loneliness, Shyness, Smartphone Addiction Symptoms, and Patterns of Smartphone Use to Social Capital. *Social Science Computer Review*, 33(1), 61–79. <https://doi.org/10.1177/0894439314528779>
- Brunborg, G. S., Hanss, D., Mentzoni, R. A., & Pallesen, S. (2015). Core and Peripheral Criteria of Video Game Addiction in the Game Addiction Scale for Adolescents. *Cyberpsychology, Behavior, and Social Networking*, 18(5), 280–285. <https://doi.org/10.1089/cyber.2014.0509>
- Dalisay, F., Kushin, M. J., Yamamoto, M., Liu, Y. I., & Skalski, P. (2015). Motivations for game play and the social capital and civic potential of video games. *New Media and Society*, 17(9), 1399–1417. <https://doi.org/10.1177/1461444814525753>
- Fornell, C. (1981). Evaluating Structural Equation Models with Unobservable Variables and

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- Measurement Error. *Journal of Marketing Research*, 18(1), 39–50.
- Fox, J., Gilbert, M., & Tang, W. Y. (2018). Player experiences in a massively multiplayer online game: A diary study of performance, motivation, and social interaction. *New Media and Society*, 2018, 1–18. <https://doi.org/10.1177/1461444818767102>
- Gong, X., Zhang, K. Z. K., Cheung, C. M. K., Chen, C., & Lee, M. K. O. (2019). Alone or together? Exploring the role of desire for online group gaming in players' social game addiction. *Information and Management*, 0–1. <https://doi.org/10.1016/j.im.2019.01.001>
- Griffiths, M. D. (2008). Videogame addiction: Further thoughts and observations. *International Journal of Mental Health and Addiction*, 6(2), 182–185. <https://doi.org/10.1007/s11469-007-9128-y>
- Griffiths, M. D. (2010). The role of context in online gaming excess and addiction: Some case study evidence. *International Journal of Mental Health and Addiction*, 8(1), 119–125. <https://doi.org/10.1007/s11469-009-9229-x>
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2–24. <https://doi.org/10.1108/EBR-11-2018-0203>
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Hudson, M., & Cairns, P. (2016). The effects of winning and losing on social presence in team-based digital games. *Computers in Human Behavior*, 60, 1–12. <https://doi.org/10.1016/j.chb.2016.02.001>
- Jang, Y., & Park, E. (2019). Telematics and Informatics An adoption model for virtual reality games: The roles of presence and enjoyment. *Telematics and Informatics*, 42, 101239. <https://doi.org/10.1016/j.tele.2019.101239>
- Kim, J. Y., & Bae, J. H. (2018). Analysis of serious games for preventing internet gaming addiction. *International Journal of Information Technology and Management*, 17(1–2), 62–70. <https://doi.org/10.1504/IJITM.2018.089457>
- Kim, S. J., Choi, Y. K., Kim, K. H., & Liu, H. (2015). Country of origin and brand image influences on perceptions of online game quality. *Journal of Consumer Behaviour*, 14, 389–398. <https://doi.org/10.1002/cb>
- King, D., Delfabbro, P., & Griffiths, M. (2010). Video game structural characteristics: A new psychological taxonomy. *International Journal of Mental Health and Addiction*, 8, 90–106. <https://doi.org/10.1007/s11469-009-9206-4>
- Lee, J., Ko, D. W., & Lee, H. (2019). Loneliness, regulatory focus, inter-personal competence, and online game addiction: A moderated mediation model. *Internet Research*, 1066–2243. <https://doi.org/10.1108/IntR-01-2018-0020>
- Maroney, N., Williams, B. J., Thomas, A., Skues, J., & Moulding, R. (2018). A Stress-Coping Model of Problem Online Video Game Use. *International Journal of Mental Health and Addiction*, 1–14. <https://doi.org/10.1007/s11469-018-9887-7>
- McCreery, M. P., Vallett, D. B., & Clark, C. (2015). Social interaction in a virtual environment: Examining socio-spatial interactivity and social presence using behavioral analytics. *Computers in Human Behavior*, 51, 203–206. <https://doi.org/10.1016/j.chb.2015.04.044>
- Molyneux, L., Vasudevan, K., & Gil de Zúñiga, H. (2015). Gaming Social Capital: Exploring Civic Value in Multiplayer Video Games. *Journal of Computer-Mediated Communication*, 20(4), 381–399. <https://doi.org/10.1111/jcc4.12123>

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- Morschheuser, B., Riar, M., Hamari, J., & Maedche, A. (2017). How games induce cooperation? A study on the relationship between game features and we-intentions in an augmented reality game. *Computers in Human Behavior*, 77, 169–183. <https://doi.org/10.1016/j.chb.2017.08.026>
- Perry, R., Drachen, A., Kearney, A., Kriglstein, S., Nacke, L. E., Sifa, R., Wallner, G., & Johnson, D. (2018). Online-only friends, real-life friends or strangers? Differential associations with passion and social capital in video game play. *Computers in Human Behavior*, 79, 202–210. <https://doi.org/10.1016/j.chb.2017.10.032>
- Reer, F., & Krämer, N. C. (2019). Are online role-playing games more social than multiplayer first-person shooters? Investigating how online gamers' motivations and playing habits are related to social capital acquisition and social support. *Entertainment Computing*, 29, 1–9. <https://doi.org/10.1016/j.entcom.2018.10.002>
- Suhartanto, D., Gan, C., Sarah, I. S., & Setiawan, S. (2019). Loyalty towards Islamic banking: service quality, emotional or religious driven? *Journal of Islamic Marketing*, 1759–0833. <https://doi.org/10.1108/JIMA-01-2018-0007>
- Teng, C. I. (2017). Impact of avatar identification on online gamer loyalty: Perspectives of social identity and social capital theories. *International Journal of Information Management*, 37(6), 601–610. <https://doi.org/10.1016/j.ijinfomgt.2017.06.006>
- Tseng, F. C., Huang, H. C., & Teng, C. I. (2015). How do online game communities retain gamers? Social presence and social capital perspectives. *Journal of Computer-Mediated Communication*, 20, 601–614. <https://doi.org/10.1111/jcc4.12141>
- Witteck, C. T., Finserås, T. R., Pallesen, S., Mentzoni, R. A., Hanss, D., Griffiths, M. D., & Molde, H. (2016). Prevalence and Predictors of Video Game Addiction: A Study Based on a National Representative Sample of Gamers. *International Journal of Mental Health and Addiction*, 14(5), 672–686. <https://doi.org/10.1007/s11469-015-9592-8>
- Wölfling, K., Müller, K. W., Dreier, M., Ruckes, C., Deuster, O., Batra, A., Mann, K., Musalek, M., Schuster, A., Lemenager, T., Hanke, S., & Beutel, M. E. (2019). Efficacy of Short-term Treatment of Internet and Computer Game Addiction: A Randomized Clinical Trial. *JAMA Psychiatry*, 1–8. <https://doi.org/10.1001/jamapsychiatry.2019.1676>
- Yılmaz, E., Griffiths, M. D., & Kan, A. (2017). Development and Validation of Videogame Addiction Scale for Children (VASC). *International Journal of Mental Health and Addiction*, 15(4), 869–882. <https://doi.org/10.1007/s11469-017-9766-7>

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