

Appendix

A. Used software:

R, v.4.0.0; dplyr, v.1.0.0; ggplot2, v.3.3.1; ggraph, v.2.0.3; igraph, v.1.2.5; jsonlite, v.1.6.1; magrittr, v.1.5; readr, v.1.3.1; sentimentr, v.2.8.0; scales, v.1.1.1; stringi, v.1.4.6; stringr, v.1.4.0; stm, v.1.3.5; tidyr, v.1.1.0; tidytext, v.0.2.4; widyr, v.0.1.3; lsr, v.0.5

- Bache, S. M., & Wickham, H. (2014). *magrittr: A forward-pipe operator for r* [Manual]. <https://CRAN.R-project.org/package=magrittr>
- Csardi, G., & Nepusz, T. (2006). The igraph software package for complex network research. *InterJournal, Complex Systems*, 1695.
- Gagolewski, M. (2020). *R package stringi: Character string processing facilities* [Manual]. <http://www.gagolewski.com/software/stringi/>
- Kearney, M. W. (2019). rtweet: Collecting and analyzing Twitter data. *Journal of Open Source Software*, 4(42), 1829. <https://doi.org/10/gg2bn7>
- Ooms, J. (2014). The jsonlite package: A practical and consistent mapping between JSON data and r objects. *ArXiv:1403.2805 [Stat.CO]*. <https://arxiv.org/abs/1403.2805>
- Pedersen, T. L. (2020). *ggraph: An implementation of grammar of graphics for graphs and networks* [Manual]. <https://CRAN.R-project.org/package=ggraph>
- R Core Team. (2020). *R: A language and environment for statistical computing* [Manual]. <https://www.R-project.org/>
- Rinker, T. W. (2019). sentimentr: Calculate text polarity sentiment [Manual]. <http://github.com/trinker/sentimentr>
- Roberts, M. E., Stewart, B. M., & Tingley, D. (2019). stm: An R package for structural topic models. *Journal of Statistical Software*, 91(2), 1–40. <https://doi.org/10/ggc8cz>
- Robinson, D. (2020). *widyr: Widen, process, then re-tidy data* [Manual]. <https://CRAN.R-project.org/package=widyr>
- Silge, J., & Robinson, D. (2016). tidytext: Text mining and analysis using tidy data principles in r. *JOSS*, 1(3). <https://doi.org/10/gfwcjt>
- Wickham, H. (2016). *ggplot2: Elegant graphics for data analysis*. Springer-Verlag New York. <https://ggplot2.tidyverse.org>
- Wickham, H. (2019). *stringr: Simple, consistent wrappers for common string operations* [Manual]. <https://CRAN.R-project.org/package=stringr>
- Wickham, H., François, R., Henry, L., & Müller, K. (2020). *dplyr: A grammar of data manipulation* [Manual]. <https://CRAN.R-project.org/package=dplyr>
- Wickham, H., & Henry, L. (2020). *tidyr: Tidy messy data* [Manual]. <https://CRAN.R-project.org/package=tidyr>
- Wickham, H., Hester, J., & François, R. (2018). *readr: Read rectangular text data* [Manual]. <https://CRAN.R-project.org/package=readr>
- Wickham, H., & Seidel, D. (2020). *scales: Scale functions for visualization* [Manual]. <https://CRAN.R-project.org/package=scales>

B. List of URLs shared by the users, excluding URLs shared less than 10 times

URL	Number of shares
https://twitter.com/i/moments/1008685298904195072	197
https://futurism.com/world-health-organization-identifies-gaming-disorder-mental-health-condition	151
https://twitter.com/i/events/1008685299801604096	97
http://cnn.it/2zEQXue	80
https://saljackenterprises.net/2017/10/17/lilos-lair-55-video-games-relieve-stress-addiction-and-protect-mental-health/	66
http://youtu.be/OYxYB1j2GyM?a	59
https://saljackenterprises.net/2018/01/10/the-lilo-log-36-gaming-disorders-are-official/	59
https://cnn.it/2LY5N5E	58
http://nichegamer.com/2018/06/28/psychologists-and-scholars-condemn-who-classifying-gaming-disorder-as-an-addiction/	52
http://www.thetechedvocate.org/internet-addiction-online-gaming-disorder-rise/?utm_source=ReviveOldPost&utm_medium=social&utm_campaign=ReviveOldPost	47
http://cnn.it/2z18di4	45
http://cnn.it/2z18di4	44
http://psy.pub/1J14pb7	38
https://www.cnn.com/2018/06/18/health/video-game-disorder-who/index.html	36
http://abc7.ws/2l2joxU	34

http://www.bbc.co.uk/news/technology-42541404	33
http://cnn.it/2C9d7ee	32
http://www.businessinsider.com/who-considers-adding-gaming-disorder-to-icd-11-2017-12	28
http://www.cnn.com/2017/12/27/health/video-game-disorder-who/index.html	28
http://bit.ly/2pzLghy	24
http://cnn.it/2zHJmM	24
http://cnn.it/2EtygNC	23
http://www.independent.co.uk/life-style/health-and-families/gaming-disorder-mental-health-condition-video-games-addiction-a8121876.html	22
http://cnn.it/2EnGmrj	21
https://tcrn.ch/2ymODwr	21
http://cnn.it/2DLiVV	20
http://www.bbc.com/news/technology-42541404	20
https://cnn.it/2lkn3qB	20
http://cnn.it/2zEeVFS	19
http://www.who.int/features/qa/gaming-disorder/en/	19
https://www.fiverr.com/s2/b87df2843e	19
https://techcrunch.com/2018/06/18/gaming-disorder-is-officially-recognized-by-the-world-health-organization/	18
https://ti.me/2t4VUvU	18
http://twitch.tv/spacelyon	17
http://cnn.it/2E9f5ZA	16
http://psy.pub/292LpiR	16
http://cnn.it/2qdgZoWV	15
https://nyti.ms/2t6zY3s	15
https://tcrn.ch/2ymOMjt	15
https://wef.ch/2l7iZxr	15
http://cnn.it/2F0RpHb	14
http://www.bbc.co.uk/news/health-44560338	13
http://www.newsweek.com/world-health-organization-thinks-video-games-are-causing-mental-health-758555	13
https://nyti.ms/2ylSxpk	13
https://twitter.com/cgtnofficial/status/1008681985689055237	13
http://cbc.ca/1.4478971	12
http://cnn.it/2Cg4Jte	12
http://cnn.it/2DnE9uy	12
https://ti.me/2yn7lil	12
https://www.digitaltrends.com/gaming/who-gaming-disorder/	12
http://fox59.com/2018/01/06/gaming-disorder-recognized-as-mental-health-condition-in-2018/	11
http://ift.tt/2CqvXh0	11
http://wantedvideos.com/on-the-edge-gaming-addiction/	11
http://youtu.be/JRM5YvRW7k?a	11
http://youtu.be/rAD6A9bQY8Y?a	11
http://bit.ly/2oloIAO	10
http://bit.ly/2yhkhLQ	10
http://cnn.it/2CyOV1V	10
https://apple.news/ABVyTaVEnQYqodMMXFecuyQ	10

C. Search and filter patterns used to select relevant tweets

To identify tweets belonging to the debate on gaming disorder, we conducted an exploratory search using the Twitter search function. The terms “gaming addiction” and “gaming disorder,” and the corresponding hashtags “#gamingdisorder” and “#gamingaddiction” were found to encompass all relevant tweets, while filtering out irrelevant content.

The generation of the dataset was conducted in two phases. First, the complete Decahose dataset containing over 21,455,000,000 tweets was filtered by a broad search of tweets mentioning a combination of the terms “gaming*,” “game*,” and “videogame*” on the one hand and the terms “addict*” and “disorder*” on the other. This first step aimed to reduce the dataset to a more manageable size while trying to produce the least number of Type II errors, that is, not filtering out relevant tweets. The resulting dataset contained about 6,008,000 tweets. This dataset was then filtered to reduce Type I errors, that is, to exclude all irrelevant tweets, such as tweets mentioning how addictively good a videogame is. The following regular expressions were found to optimally reduce both Type I and Type II errors and were ultimately used to generate the final dataset containing N = 16,831 tweets:

- `games\s.*\sdisorder`
- `games\s.*\saddiction`
- `gaming[-]disorder`
- `gaming[-]addiction`
- `#gamingdisorder`

- #gamingaddiction

The filtered dataset contained 97.0% tweets written in English. The second most popular language in the dataset was Japanese with a total of 162 tweets.

D. Preprocessing steps

Removing non-word characters and tokenizing is the process of extracting the words (or tokens) a document is comprised of. For both the topic modeling and the sentiment analysis, only tweets written in English were considered. For the topic modeling, we removed hashtags, @ mentions, URLs, emojis, and other punctuation using custom functions; then, we tokenized the documents using the textProcessor function of the stm R package. Hashtags and URLs were later analyzed separately. We also used the stm package as an out-stemming framework. Stemming is a preprocessing technique that reduces inflected or derived words to their base form (e.g., reducing “addicting,” “addiction,” and “addictively” to the base form “addict”). Stopword removal and pruning (also called relative pruning) are methods that aim to remove words that appear equally frequent in every document of a corpus, that is, words that have no document-specific meaning (Wilbur & Sirotkin, 2016). Stopword removal is a dictionary-based approach, while pruning does not use dictionaries, but relative frequency measures. In the current study, we used the stopwords-iso list from the stopwords R package and removed words that occurred in less than 5% of all documents and words that occurred in more than 50% of all documents (removing 47,309 of 60,150 tokens) via functions provided by the stm R package. The resulting corpus contained 5,378 documents and 12,841 tokens.