Are Gamers Sad and Isolated? A database about the Anxiety, Life Satisfaction and Social

Phobia of over 13000 participants

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Introduction

Time spent online and/or playing video games has increased in the daily lives of a large number of people around the world (e.g. Mentzoni et al., 2011; Rehbein et al., 2010; Wang et al., 2014). Consequently, concerns have been voiced in regard to addictive behavior such as, excessive and compulsive online gaming behavior (Mentzoni et al., 2011). Excessive video gaming has been linked to an increase in mental health disorders such as anxiety, social phobia (Wei et al., 2015), and a significant decrease in satisfaction of life (Ferguson et al., 2011). Among video game users, mental health disorders such as depression and anxiety, have been found to increase with an increase in the amount of time spent playing (Lo et al., 2005; Wenzel et al., 2009). People who spend large portions of their time playing video games are more likely to display higher avoidance behaviors related to negative, real-life situations (Gaetan, Bonnet, & Pedinielli, 2012).

Clinical levels of anxiety often lead to a myriad of other negative effects. Mentzoni et al. (2011) found that excessive use of video games was not only associated with higher scores in anxiety and depression, but also that these scores were related to lower scores for overall life satisfaction compared to healthy adults. This negative correlation between life satisfaction and 'problematic' video gaming has been demonstrated in a number of studies (Festl et al., 2013). However, there was no direct correlation between life satisfaction and hours of play, but rather a correlation with 'problematic usage' - which was defined in relation to addictive behavior criteria. Thus, it may not be the number of hours spent playing that leads to a loss of life satisfaction, but instead, one's personal control over this number.

Social anxiety in video game players can also lead to social withdrawal. Students addicted to video games demonstrate significantly lower levels of social skills, such as assertiveness, cooperation, and accountability, compared to their counterparts (Zamani et al., 2010). A lack of social skills can become paralyzing when, for example, a person develops a

fear of social situations. Indeed, it has been shown that the majority of individuals who meet the criteria for internet gaming disorder also meet criteria for social phobia (Subramaniam et al., 2016). Thus, not only does problematic usage of video games lower an individual's ability to interact in the real world, this inability may lead to a compulsive fear of social interactions, thus prolonging social withdrawal and increasing seriousness to a clinical level.

At present studies rely on relatively small sample sizes. In the studies with adult participants cited above, sample sizes ranged from 174 (Lo et al, 2005) participants to 3405 participants (Wenzel et al, 2009) and are mostly focused on narrow cultural backgrounds or only young adults.

In order to allow for a more powerful investigation of the relationship between excessive video game usage, well-being, and psychological disorders, we are making available data from over 13.000 participants of an international online survey with participants from over 100 countries. The survey comprised of questionnaires assessing general anxiety disorders, social phobia, as well as overall life satisfaction.

Methods

Participants and Procedure

13464 users (12699 male, 713 female, 52 other) between 18 and 63 years ($M = 20.93$) completed the survey. Participants resided in 109 different countries (see Figure 1 for a visualization) with most of the participants coming from the USA (4569), Germany (1413), the UK (1032) and Canada (994). The participants responded to a call placed on www.reddit.com, specifically the community [/r/leagueoflegends](https://www.reddit.com/r/leagueoflegends). The survey was implemented in Google Forms. It began with a consent form, informing respondents that participation takes about 10 minutes, is voluntary and that their data will be evaluated

anonymously. The participants gave informed consent and were not compensated for their participation.

Figure 1. Current residence of the survey participants as a heat map based on countries with at least 100 participants.

Country of Residence	Sample size	Game title	Sample size
USA	4569	League of Legends	11314
Germany	1413	Other	1021
UK	1032	StarCraft 2	345
Canada	994	Counter Strike	318
Netherlands	506	World of Warcraft	152
France	391	Hearthstone	101
Sweden	379	Diablo 3	89
Denmark	254	Heroes of the Storm	41
Brazil	253	Guild Wars 2	37
Australia	245	Skyrim	28

Table 1. The top 10 most represented countries and games in the data base.

Measures and questionnaire design.

The survey consisted of six parts: (1) the Generalized Anxiety Disorder 7 (GAD-7; Spitzer et al, 2006); (2) the Satisfaction with Life Scale (SWLS; Diener et al, 1985); (3) the Social Phobia Inventory (SPIN; Antony et al, 2006); (4) The Single Item Narcissism Scale (SINS;

Konrath et al, 2014); (5) gaming habits including average playtime per week, preferred mode of playing (single player, multiplayer), and preferred platform; as well as (6) several demographics including age, gender, country of residence/birth and employment status.

Anxiety. The Generalized Anxiety Disorder 7 (GAD-7; Spitzer et al, 2006) was used to measure generalized anxiety. The scale is comprised of seven items which are designed to assess a patient's health status during the preceding two weeks on a 5-point-likert scale. The individual item scores are summed up to a score of 0 (no anxiety) to 21 (severe anxiety). The overall scores of 5, 10 and 15 represent cut-off scores for mild, moderate and severe anxiety disorder. At a cut-off score of 10, the GAD-7 has a sensitivity of 89% and specificity of 82% for generalized anxiety disorder. It is also moderately good at screening for social anxiety disorder (sensitivity 72%, specificity 80%) (Kroenke et al, 2007). The scale has been validated as a screening tool in the general population (Löwe et al, 2008) with high internal consistency (Cronbach's alpha 0.79–0.91; Dear et al, 2011).

Life satisfaction. The Satisfaction with Life Scale (SWLS; Diener et al, 1985) was used to measure life satisfaction (Cronbach's alpha of .87). Participants responded on the 7-point likert scale to 5 items indicating their degree of agreement from "strongly disagree" to "strongly agree". The scale was designed to investigate subjective experience of well-being without respect to specific life domains such as health or employment status.

Social anxiety. In addition to the GAD-7, the 17-item Social Phobia Inventory (SPIN; Antony et al, 2006) was employed as a more sensitive measure for social anxiety. The scale assesses each of the symptom domains of social anxiety disorder (fear, avoidance, and physiologic arousal) for the week preceding the test. Respondents answer on a 5-point scale indicating how much they were bothered by specific problems choosing 0 ("Not at all"), 1 ("A little bit"), 2 ("Somewhat"), 3 ("Very much") or 4 ("Extremely"). The individual item scores are summed up to a total ranging from 0 to 68. The scores are then interpreted as

degree of social anxiety as follows: none (less than 20 points), mild (21-30 points), moderate (31-40 points), severe (41-50 points) and very severe (51 or more points).

Narcissism. To capture narcissistic tendencies, the Single Item Narcissism Scale (SINS; Konrath et al, 2014) was used. The scale has reasonable reliability, is significantly correlated with longer narcissism scales and uncorrelated with self-esteem. It is especially encouraged to be used in studies with multiple questionnaires and under time constraints, such as online studies.

Gaming habits. Gaming habits were assessed in several domains. Respondents were asked to indicate which game they currently played the most (free-text) and on which platform (PC, Console, or Mobile/Tablet) (forced-choice). They also indicated how many hours per week they play on average (free-text) and whether they played mostly alone (“Singleplayer”), with others (“Multiplayer with people in the same room”, “Multiplayer with strangers online”, “Multiplayer with online acquaintances” or “Multiplayer online with friends”) or a different (“Other”) option. Lastly, their commitment to the game beyond playing was queried: “In addition to playing, how many hours a week do you spend on watching online player/tournament streams / replays² / demos, giving or receiving coaching?” (free-text).¹

Demographics. To conclude the survey, participants gave information about their gender, age, employment status, highest degree earned, country of birth and country of residence.

Dataset availability

The full survey, dataset, preprocessing, as well as example analysis scripts are openly available under: https://osf.io/vnbxk/?view_only=4c54da075e164ea2a5329f5669d03c41

¹ “Replays” or “Demos” are in-game recordings of a specific match. In distinction to a video, you have control over the game-interface and can check the status-quo of the match more in-depth.

Analysis and possible research paths

First, the data was cleaned. As “game title”, “residence” and “country of birth” were free-text fields, spellings differed (e.g. “United States of America” could be noted as “USA”, “US”, “United States”, etc). These different spellings were merged. Additionally, the ten most frequently mentioned games were separated, the rest was grouped as “Other” (frequencies of those games did not exceed 20).

To motivate future research we conducted an example linear regression predicting satisfaction of life (see Figure 2 and scripts in OSF). We used the score of the Generalized Anxiety Disorder Screener and hours played as interacting predictors. It seems the amount of time played has an effect on life satisfaction but having a “probable anxiety disorder” does not have an effect as the slopes are almost parallel.

To the best of our knowledge our data set with over 13.000 participants is the largest openly accessible corpus measuring multidimensional characteristics of well-being in video game players. The included scripts aim at lowering the barrier for handling and analyzing the data. The dataset captures over 100 countries, with over 20 countries being represented with three digit sample sizes. The high number of participants allow for parameter estimation of correlation values between gaming habits and a multitude of socially relevant measures, such as social anxiety and satisfaction with life. We hope the data set can be used to challenge or validate ongoing research, as well as to open new venues of investigation.

Author Contributions

MS conducted the data collection and analysis. MS and DD wrote and revised the manuscript.

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.

References

- Antony, M. M., Coons, M. J., McCabe, R. E., Ashbaugh, A., & Swinson, R. P. (2006). Psychometric properties of the social phobia inventory: Further evaluation. *Behaviour research and therapy*, 44(8), 1177-1185.
- Cole, S. H., & Hooley, J. M. (2013). Clinical and personality correlates of MMO gaming: Anxiety and absorption in problematic internet use. *Social science computer review*, 31(4), 424-436.
- Craig, A. & Catherine, M. (1986). Affect of the Game Player: Short-Term Effects of Highly and Mildly Aggressive Video Games. *Pers Soc Psychol Bull*, 12(4), 390-402.
- Dear, B. F., Titov, N., Sunderland, M., McMillan, D., Anderson, T., Lorian, C., & Robinson, E. (2011). Psychometric comparison of the generalized anxiety disorder scale-7 and the Penn State Worry Questionnaire for measuring response during treatment of generalised anxiety disorder. *Cognitive behaviour therapy*, 40(3), 216-227.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 49, 71-75.
- Eshrat, Z., Ali, K., Maliheh, C., Ahmad, A., and Nasim, H. (2010). Comparing the Social Skills of Students Addicted to Computer Games with Normal Students. *Addict Health*, 2(3-4), 59-65.

Ferguson, C. J., Coulson, M., & Barnett, J. (2011). A meta-analysis of pathological gaming prevalence and comorbidity with mental health, academic and social problems. *Journal of psychiatric research*, 45(12), 1573-1578.

Festl, R., Scharnow, M., & Quandt, T. (2013). Problematic computer game use among adolescents, younger and older adults. *Addiction*, 108(3), 592-599.

Gaetan, S., Bonnet, A. & Pedinielli, J.L. (2012). Self-perception and life satisfaction in video game addiction in young adolescents (11-14 years old). *Encephale*, 38(6), 512-518.

Konrath, S., Meier, B. P., & Bushman, B. J. (2014). Development and validation of the single item narcissism scale (SINS).

Kroenke, K., Spitzer, R. L., Williams, J. B., Monahan, P. O., & Löwe, B. (2007). Anxiety disorders in primary care: prevalence, impairment, comorbidity, and detection. *Annals of internal medicine*, 146(5), 317-325.

Löwe, B., Decker, O., Müller, S., Brähler, E., Schellberg, D., Herzog, W., & Herzberg, P. Y. (2008). Validation and standardization of the Generalized Anxiety Disorder Screener (GAD-7) in the general population. *Medical care*, 46(3), 266-274.

Lo, S. K., Wang, C. C., & Fang, W. (2005). Physical interpersonal relationships and social anxiety among online game players. *Cyberpsychology & behavior*, 8(1), 15-20.

Mentzoni, R. A., Brunborg, G. S., Molde, H., Myrseth, H., Skouverøe, K. J. M., Hetland, J., & Pallesen, S. (2011). Problematic video game use: estimated prevalence and associations with mental and physical health. *Cyberpsychology, behavior, and social networking*, 14(10), 591-596.

Rehbein, F., Psych, G., Kleimann, M., Mediasci, G., & Möble, T. (2010). Prevalence and risk factors of video game dependency in adolescence: results of a German nationwide survey. *Cyberpsychology, Behavior, and Social Networking*, 13(3), 269-277.

Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: the GAD-7. *Archives of internal medicine*, 166(10), 1092-1097.

Subramaniam, M., Chua, B. Y., Abdin, E., Pang, S., Satghare, P., Vaingankar, J. A., ... & Chong, S. A. (2016). Prevalence and Correlates of Internet Gaming Problem among Internet Users: Results from an Internet Survey. *Ann Acad Med Singapore*, 45, 174-83.

Wang, C. W., Chan, C. L., Mak, K. K., Ho, S. Y., Wong, P. W., & Ho, R. T. (2014). Prevalence and correlates of video and internet gaming addiction among Hong Kong adolescents: a pilot study. *The Scientific World Journal*, 2014.

Wei, H., Mu-Hong, C., Po-Cheng, H. & Ya-Mei, B. (2012). The association between online gaming, social phobia, and depression: an internet survey. *BMC Psychiatry*, 12:92.

Zamani, E., Kheradmand, A., Cheshmi, M., Abedi, A., & Hedayati, N. (2010). Comparing the social skills of students addicted to computer games with normal students. *Addiction & health*, 2(3-4), 59.