Does playing apart really bring us together? Investigating the link between perceived loneliness and the use of video games during the COVID-19 pandemic

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During the COVID-19 pandemic, several countries implemented social distancing measures to contain virus transmission. However, these vital safety measures have the potential to impair mental health or well-being, for instance, from increased perceived loneliness. Playing social video games may offer a way to continue to socialize while adhering to social distancing measures. To examine this issue further, the present online survey investigated social gaming during the pandemic and its association to perceived loneliness within a German-speaking sample. Results indicated a small positive correlation between general gaming frequency and perceived loneliness. Detailed analysis revealed a negative association between perceived loneliness and increased social forms of video gaming. Specifically, gamers with more social motive for gaming perceived less loneliness, but gamers with a dominant escape motive demonstrated a positive link to perceived loneliness. The use of social gaming in times of social distancing seems to play a small but significant factor in perceived loneliness compared to other demographical data. The findings are discussed with respect to methodological limitations, effect sizes, and sample characteristics. The results enrich the current knowledge on video gaming and its link to social well-being and provide a more nuanced picture than simplistic investigations of screen time.

Keywords: gaming frequency; loneliness; gaming motives; social gaming; COVID-19; mental health

Introduction

In 2020 the world was hit by the coronavirus (COVID-19) pandemic, which disrupted our everyday lives. To reduce the transmission of COVID-19, numerous countries imposed severe measures, such as “lockdowns” that closed commercial, cultural, and social venues and stay-at-home mandates, to facilitate social distancing (e.g., Bundesministerium für Gesundheit, 2020). Video game industry partners launched the initiative #PlayApartTogether (e.g., Johnston et al., 2020), which encouraged the use of video games for socializing to promote social distancing initiatives and to help counteract the potential negative side effects of social distancing, such as anxiety, depression, and loneliness, that people may experience during the current pandemic from the decrease in socialization (APA, 2020; WHO, 2020). Indeed, research has suggested that playing video games is significantly associated with mental health and well-being (e.g., Johannes et al., 2020; Jones et al., 2014). Further studies indicated that playing video games causally improves players’ moods and promotes relaxation (e.g., Bowman & Tamborini, 2015; Greitemeyer et al., 2019; Pine et al., 2020; Russoniello et al., 2009) and may reduce loneliness (Carras et al., 2017).

The investigation of social gaming based on individual social factors is not a new area of scholarly interest (e.g., Kowert et al., 2014; Kowert & Oldmeadow, 2015), but the subject has gained considerable importance during the COVID-19 pandemic, as social distancing measures may exacerbate loneliness and social isolation. Both loneliness and social isolation have been linked to poor health outcomes and may increase the risk of depression and anxiety (Santini et al., 2020). The use of video games may be one way to foster social connectedness in times of global quarantines (Marston & Kowert, 2020). Video games played online can facilitate social interactions that are crucial for our social well-being (e.g., Depping et al., 2017, 2018), and if

players engage in gaming freely, authentically, and in balance with other activities or goals in their lives, it may be capable of reducing loneliness (Mandryk et al., 2020). In this vein, other researchers have suggested that social games may enable players to feel more connected during times of isolation and during difficult life experiences in general (Iacovides & Mekler, 2019). Accordingly, behavioral science advisors of the British government have recommended, among other suggestions, that free access to gaming be provided to ease the negative impacts of self-isolation (Independent Scientific Pandemic Insights Group on Behaviours, 2020a, 2020b). However, researchers acknowledge that problems can arise if games are used only as a tactic to avoid critical problems or as an escape mechanism (e.g., Király et al., 2017); nevertheless, they may help players cope with challenging situations (Iacovides & Mekler, 2019). Therefore, the way individuals use games and their dominant motives for gaming may be determining factors that can be used to identify beneficial or adverse effects of gaming (e.g., Király et al., 2017).

Method

The present study belongs to a larger project investigating the effects of social distancing on gamers during the COVID-19 pandemic. The survey was designed to gather a convenience sample including as many active video gamers as possible. Such a sample, however, may not make it possible to reach valid conclusions, as regional and chronological differences in the governmental handling of the pandemic have been quite substantial. To avoid this issue, a more homogenous sample relative to the social distancing measures imposed was aimed for, and both the data collection period and target sample population were narrowed. More specifically, data collection was limited to German-speaking participants and to an 18-day period starting in mid-April 2020 and continuing to the beginning of May 2020. This data acquisition period was selected because it allowed for the collection of data from a period when comparable COVID-19

pandemic measures were taken across the targeted German-speaking countries. At that time, Germany and Austria were undergoing a complete lockdown (e.g., Bundesministerium für Gesundheit, 2020), while Switzerland was still under a lighter lockdown. That is, data were acquired during a time when most participants were not allowed to physically meet other people outside of their household or could only do so under very strict conditions.

Participants and procedure

Adult participants were recruited from various social networks (e.g., Twitter) and diverse gaming forums (e.g., 4players.de) and as a result of general media coverage (e.g., Bathge, 2020) bringing attention to the survey of the current study. Upon clicking the survey link, participants received information on the goals, content, potential risks, and privacy regulations of the survey and were asked for consent regarding data collection and publication, anonymization, study cancelation, and voluntariness. In addition, they had to confirm that they were at least 18 years old. At the end of the survey, participants were thanked and provided with weblinks to contact points and offers of help with mental problems that can arise from the lack of social interaction (e.g., dgppn.de/schwerpunkte/corona-psyche.html or infektionsschutz.de/coronavirus/psychische-gesundheit.html). Out of 1,150 participants who started the survey, 783 participants completed it in full (68% response rate), but 41 participants were excluded from further analyses, as they failed to respond correctly to our three instructed response items (e.g., “Please respond with a three for this item”; cf. Meade & Craig, 2012). One additional participant had to be excluded because he/she had never played a video game, and having played video games at least once in the prior month was a requirement for participating. The final sample analyzed comprised $N = 741$ respondents. The study was approved by the ethics commission at the Leibniz-

Institut für Wissensmedien, Tübingen, Germany (LEK 2020/017).

Measures

Sociodemographic and pandemic-related variables

In addition to the collection of basic sociodemographic data, including age, gender, marital status, and current employment status, we assessed several variables to better understand the current situation of the participants during the COVID-19 pandemic. To allow for future sample comparisons across different COVID-19 related studies, we aligned our assessed variables with the COVIDiSTRESS global survey (Lieberoth et al., 2020). In particular, we collected data on (i) whether participants currently live in the country they consider their home country, (ii) the country they currently live in, (iii) whether they had close relatives or friends within a high-risk group regarding COVID-19, (iv) whether their current lifestyle was the same as the lifestyle they followed prior to the COVID-19 pandemic, (v) whether they live alone or with other adults and/or children, and (vi) how much time they currently have for leisure activities. This alignment should support future comparisons. However, due to the alignment, some special regional characteristics could not be included in the questionnaire, such as the German government supported Kurzarbeit, which is time-limited part-time employment. This classification refers to employees who are technically full-time employees but are temporarily working part-time during the pandemic. Since such peculiarities were not included in the COVIDiSTRESS (Lieberoth et al., 2020) questionnaire, they were not included in this survey, either.

Gaming frequency

Participants' gaming frequency at the time they completed the survey was assessed on a

7-point Likert scale (1 = never; 2 = several times a month; 3 = several times a week; 4 = daily; 5 = more than one hour daily; 6 = more than three hours daily; and 7 = more than six hours daily).

Change in game behavior

Participants were asked to respond to the following question regarding changes in gaming behavior due to the COVID-19 pandemic: “Compared to the time before the COVID-19 pandemic, how much time do you currently spend on ...” (1) video games in general, (2) single-player video games, (3) cooperative video games, (4) competitive video games, and (5) online games to stay in contact with friends. Participants responded to these questions on a 5-point Likert scale (ranging from “1 = much less than before” to “5 = much more than before”).

Motives for gaming

Motives for gaming were measured using subscales from the motives for online gaming questionnaire (MOGQ; Demetrovics et al., 2011), which were translated to German. For the current study, we used the following subscales: *social* (e.g., “... because I can meet many different people,” Cronbach’s $\alpha = .77$), *escape* (e.g., “... because gaming helps me to forget about daily hassles,” $\alpha = .85$), *competition* (e.g., “... because I enjoy competing with others,” $\alpha = .83$), *coping* (e.g., “... because it helps me get rid of stress,” $\alpha = .74$), *skill development* (e.g., “... because it improves my skills,” $\alpha = .91$), and *fantasy* (e.g., “... because I can be in another world,” $\alpha = .81$). Each subscale was assessed using four items, which were rated on a 5-point Likert scale (ranging from “1 = almost never/never” to “5 = almost always/always”). Higher average scores indicated a higher frequency of the respective motivational dimension.

Loneliness

To assess participants' experienced loneliness we used the UCLA Loneliness Scale (Russell, 1996), which includes 20 items, to which participants respond using a 4-point Likert scale (ranging from "1 = never" to "4 = always"; $\alpha = .91$). Examples of questions from the survey include "How often do you feel that you lack companionship?" and "How often do you feel that there are people you can talk to?" (reverse coded). Higher sum scores indicated greater levels of loneliness.

Analysis

The analysis was conducted using SPSS Statistics (IBM, 2020), R (R Core Team, 2020), and the R packages psych (Revelle, 2020), ggplot2 (Wickham, 2016), and GGally (Schloerke et al., 2020). The dataset is publicly available (Nebel & Ninaus, 2020).

Results

Sample description

To provide a sufficient understanding of the sample and to enable the results to be put into the proper perspective, the sample is described in detail (see Table 1). The mean age was 31.75 ($SD = 9.04$), with ages ranging from 18 to 75. The majority of the sample (95.7%) had kept their employment status during the pandemic until the time of the survey. Likewise, most of the sample (95.4%) lived within their home country. Over half of the participants (52.1%) reported that at least one of their close relatives or friends could be considered in the high-risk group regarding COVID-19, while 38.2% reported that this was not the case, and the remaining 9.7% indicated they were unsure. Only 9.9% of the sample reported that they were living their usual lifestyles, while

68.3% reported that they had had to make small changes in their lifestyles, 21.7% reported a status of isolation, and one participant reported that he/she was living in isolation in a medical or similar institution. After aggregating the loneliness scales, the participants showed a low to medium sum score of 40.18 ($SD = 10.49$). This corresponds to the reported values of students ($M = 40.08$, $SD = 9.50$) and nurses ($M = 40.14$, $SD = 9.52$) in the original publication of the UCLA Loneliness Scale (cf. Russell, 1996).

Table 1. Sample Characteristics

Employment Status	Pupil	Student	Full-time	Half-time	Self-employed	Un-employed	Retiree
	3.0%	18.5%	61.3%	6.2%	4.3%	4.9%	1.9%
Playing Video Games...	few times a month	few times a week	daily	more than one hour daily	more than three hours daily	more than six hours daily	
	4.0%	21.6%	12.3%	23.9%	29.7%	8.5%	
Available Time for Leisure Activities	None	Few minutes per day	One hour per day	Several hours per day	The whole day		
	0.2%	0.5%	8.4%	78.1%	12.7%		
Location	Germany	Austria	Switzerland	Luxembourg	Other		
	87.7%	7.2%	2.0%	1.1%	2%		
Living with...	no adults	one adult	two adults	three adults	more than three adults		
	34.5%	36.4%	14.6%	8.9%	5.6%		
	no children	one child	two children	three children			
	87.9%	7.6%	3.8%	0.8%			
Social Status	Single	Married/Relationship	Divorced/Widowed	NA			
	51.1%	45.2%	1.9%	1.8%			
Gender	Male	Female	Non-binary	NA			
	86.6%	11.9%	0.5%	0.9%			

Gaming frequency

A correlation analysis was used to evaluate the association between general gaming frequency and perceived loneliness. We identified a very small but significant positive correlation between gaming frequency and loneliness ($r_s = .08$, 95% CI [.01, .15], $p = .025$). To gain more detailed insights into this small relationship, we calculated a

univariate analysis of variance (ANOVA) with game frequency as the independent and loneliness as the dependent variable. The results supported the previously discovered small difference between the individual gaming frequency groups ($F[5, 735] = 3.50, p = .004, \eta_p^2 = .02$). (See Figure 1.) Bonferroni-corrected pairwise comparisons revealed only one significant ($p = .005$) difference between the most extreme category *playing more than six hours per day* and one medium group *playing more than one hour daily*.

Figure 1. Loneliness in relation to gaming frequency. Error bars indicate 95% CIs.

Purpose of the game

To better understand the association between gaming frequency and loneliness, we ran a correlation analysis between the individual gaming behavior changes and loneliness.

The results demonstrated a small negative link between increased social forms of gaming and loneliness, ranging from ($r_s = -.09$) to ($r_s = -.12$). (See Figure 2.) In contrast, no significant correlations were observed between increased general play frequency or single player games and loneliness.

Figure 2. Correlation between loneliness and change in game type due to the COVID-19 pandemic. Upper triangle: Correlation coefficients. Significant correlations are marked with asterisks (* = $p < .05$; ** = $p < .01$; *** = $p < .001$). Diagonal: Density plot of individual variables. Lower triangle: Scatterplots for each correlation; grey shaded area indicates 95% confidence region for the correlation.

Player motive

As a first step in evaluating how general motives for gaming are related to loneliness, correlation analyses were run. These analyses shed further light on the associations between different frequencies of and motives for gaming (see Figure 3). As a second step, a forced-entry multiple regression analysis was run to predict participants' loneliness based on their general motives for gaming. Standardized parameters were obtained by fitting the model on a z -standardized version of the dataset. Effect sizes were labelled following Cohen's (1988) recommendations. The model explained a significant and moderate proportion of variance ($R^2 = 0.20$, $F(6, 734) = 31.32$, $p < .001$,

$adj. R^2 = 0.20$). Results of the regression analysis (see Figure 4) indicated that the effect of the *social* motive was negative and could be considered very small and significant ($std. \beta = -0.11$, $SE = 0.04$, 95% CI [-0.18, -0.04], $p = .002$). The effect of the motive *escape* was positive and can be considered small and significant ($std. \beta = 0.46$, $SE = 0.04$, 95% CI [0.38, 0.55], $p < .001$). The effect of the *coping* motive was negative and can be considered very small and significant ($std. \beta = -0.11$, $SE = 0.04$, 95% CI [-0.20, -0.03], $p = .01$). The very small and not significant effects of the motives *competition* ($std. \beta = -0.04$, $SE = 0.04$, 95% CI [-0.11, 0.03], $p = 0.276$), *skill development* ($std. \beta = 0.00$, $SE = 0.04$, 95% CI [-0.08, 0.08], $p = 0.973$), and *fantasy* ($std. \beta = 0.05$, $SE = 0.04$, 95% CI [-0.03, 0.13], $p = 0.190$) did not account for a unique part of the variance of the loneliness that participants experienced.

Figure 3. Correlation plot between loneliness and motives for gaming. Upper triangle: Correlation coefficients. Significant correlations are marked with asterisks (* = $p < .05$; ** = $p < .01$; *** = $p < .001$). Diagonal: Density plot of individual variables. Lower triangle:

Scatterplots for each correlation; grey shaded area indicates 95% confidence region for the correlation.

Figure 4. Standardized beta coefficients from the multiple linear regression model predicting loneliness. Error bars indicate 95% CIs.

Putting effect sizes into perspective

To put previous results into perspective, we present exemplary effects of the previously introduced descriptive data of the sample on loneliness. For instance, a similar effect in comparison to the small effect characterizing the positive correlation between game frequency and loneliness was also identified between time for leisure activities and loneliness ($r_s = .10$, 95% BCa CI [.03, .18], $p = .006$). Negative effects on the amount of perceived loneliness, such as the negative connection between the increased social game use and loneliness, were also identified between the number of children below the age of 12 in the household and loneliness ($r_s = -.08$, 95% BCa CI [-.16, -.01], $p = .03$). The largest observed connection between the *escape* motive and loneliness was close to a medium effect size. However, even this effect appeared smaller, compared to some effect sizes within the descriptive data of the sample. More specifically, the difference of being single or in a relationship on loneliness ($U = 41684.00$, $Z = -7.91$, $p < .001$, $d = 0.62$, 95% BCa CI [0.47, 0.77]) even exceeds such medium-sized effects.

Discussion

The survey data uncovered details on the link between reported loneliness and gaming behavior during the COVID-19 pandemic. Positive connections between loneliness and gaming frequency only appeared to be unambiguous on a superficial level. Upon closer investigation, only heavy users seemed to report increased loneliness compared to one specific group of medium game frequency levels. More interestingly, however, both the specific type of game and the motive behind why the game is played revealed a much more nuanced picture. In contrast to overall gaming frequency or increased gaming behavior during the pandemic (which revealed no significant connection to loneliness), increased social forms of gaming (e.g., collaborative games) were linked to lowered perceptions of loneliness. Similarly, different motives for gaming seem to be correlated with increased (e.g., *escape*) or decreased (e.g., *social*) loneliness. These findings are in line with previous studies that indicated a positive association between escape motives and the problematic use of gaming (e.g., Király et al., 2017). The factor *coping* represents an especially interesting case, both from a theoretical standpoint (as the measured items are very similar to the topic of mood management within problematic media use research) as well as from a statistical perspective. If addressed individually, *coping* seems to be positively related to loneliness; if investigated in a model including all gaming related motives, it demonstrates a negative relationship. This indicates potential sub-facets or complex connections to other motives not yet mirrored within the literature or measures. Overall, this analysis indicated beneficial game motives with respect to loneliness (e.g., *social*). Also, it revealed a more nuanced perspective on motives that are considered potentially harmful (e.g., *coping*) within research on problematic media usage (e.g., Lemmens et al., 2009). However, the methods used for this investigation were based on linear connections, although non-linear links cannot be

ruled out. Thus, broad-brushed conclusions should be avoided. The observed effects were rather small but in line with similar studies. For instance, an effect of $\beta = 0.1$ has been observed between game time and well-being (Johannes et al., 2020). As demonstrated within the “Putting Effect Sizes into Perspective” chapter, similar links can be identified with other descriptive variables as well. This indicates a relevant but not dominant connection of video gaming and perceived loneliness, especially compared to more important links, such as loneliness and relationship status. This should be kept in mind when deriving real-world implications. For instance, social games could be one element of a useful support strategy during such a crisis, whereas relying on them alone may be insufficient.

The detailed description of the sample within this research report should be kept in mind when discussing the observed effects. The majority of the participants could spend at least a few hours a day on leisure activities, which is not the case for everybody, during a pandemic or in general. It seems reasonable to assume that the effects may be different in a sample including such subjects. Even if identical, the practical application might be a difficult endeavor. For instance, parents occupied with childcare suffered extra workload due to closed schools during the pandemic. As a result, they may not be able to support their mental health with time-consuming video games and might not have had the time to partake in the current study. Also, this survey cannot provide long-term insights. It is not clear how the observed connections evolve or can be evaluated against other effects. For instance, it may be advisable to accept minor negative effects in order to prevent stronger long-term impairments.

Naturally, the convenience sample is not representative of the population within the targeted countries. This gains importance during a pandemic. Although it was essential to collect data during the potentially isolating lockdown period to gather

information on loneliness specifically under these circumstances, it is natural that a large part of the population did not have the capacity to participate in this research and is, therefore, not reflected within the data. Additionally, some measures are traditionally problematic. For instance, in a recent study, participants overestimated their game time by two hours (Johannes et al., 2020). Finally and most importantly, however, it should be clearly stated that most analyses are based on correlations and cross-sectional data. Thus, we cannot infer cause and effect but only report similarities or differences appearing to be significant from a statistical perspective. The underlying mechanisms are most certainly much more complex, and caused, mediated, or moderated by variables not reflected in our survey. It remains to be seen, if results can be replicated or expanded in different (technological) cultures, under different social restrictions, or using samples with different demographic characteristics. However, the size of the collected sample, the clear pattern within the observed effects, and the similarity to other research should be sufficient to be optimistic about the use of social gaming during challenging periods and to motivate further desperately needed experimental investigations. At the very least, this survey provides more nuanced insights that may be useful as an additional argument against one-sided fearmongering pertaining to the potentially harmful effects of videogames. Additionally, observed results emphasize the need for a more careful analysis and understanding of video gaming behavior in contrast to potentially superficial screen time or frequency investigations.

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Disclosure statement

No potential conflict of interest was reported by the authors.

Data availability statement

The data that support the findings of this study are openly available at

<https://osf.io/jdxyr> (Nebel & Ninaus, 2020).

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