

# The Potential Stickiness of Pandemic-Induced Behavior Changes among Adolescents: The Case of Video Game

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## Abstract:

The outbreak of the COVID- 19 in early 2020 generated perhaps the largest disruption in changing human behavior and choices. Going forward, A critical question is how these experiences have changed preferences and habits in ways that might persist after the pandemic ends. This paper explores the time commitment change adolescents put on video games after experiencing the pandemic to provide concrete evidence of behavioral stickiness. Using the online survey of 412 adolescents, the paper confirms the stickiness in video game time among adolescents. Interestingly, adolescents who experienced the quarantine caused by the COVID- 19 has less game time increases than those who did not. The paper also addresses that game-playing history, age, and parenting time are good predictors for such stickiness.

**Keywords:** Stickiness, video game, adolescents, substitution effect.

## 1. Introduction

Economists have devoted an enormous amount of time and effort to seeking answers to the stickiness phenomenon, especially the sticky wages, and prices in macroeconomic discipline, which are the essential element of Keynesian economics (Hall 2005; Galí 2015; Shimer 2005; Bils and Klenow 2004). Incorporating price or wage stickiness vastly increases the sensitivity and performance of macroeconomic models to driving forces. In contrast, the stickiness phenomenon at the micro level received much less attention in either theory development or real explanation. Human behavior and choices at the micro level also move much more slowly than one can imagine. For example, Beshears and Choi (2012) showed that low-income individuals present the default stickiness in 401(k) selection. Sakaguchi et al. (2020) identified the stickiness in payment amounts because of the round number preferences. In the studies of shopping behaviors, stickiness phenomenon widely exists, such as “channel stickiness,” which refers to the tendency among shoppers to stay in one channel throughout a shopping journey (Kim et al. 2021) and the online consumers' stickiness in repurchase (Khalifa et al. 2002). Thus, studying stickiness at the micro level critically impacts public policy and economic development.

Behaviorists believe that human preference and behavior are notoriously difficult to change unless some fundamental disruptions exist (Mohd Dali et al. 2020;

Salon et al. 2021). The stability of human preferences creates challenges in observing and learning people's new ways of doing things and reevaluating old habits and choices. However, the outbreak of the COVID- 19 in early 2020 provides a unique opportunity for such a study. The COVID-19 pandemic has probably been the largest disruption of public events in decades that modify people's preferences and habits in almost every aspect. For example, people increased their time at home and preferred less public activities with dese populations; employees were forced to work online instead of in office rooms, etc. (Okada et al. 2022). A critical question moving forward is whether the pandemic-induced changes modify people's stickiness in preferences and habits, which may persist in the long run.

Although the outbreak of the COVID-19 pandemic affects individuals of all ages, it is particularly detrimental to youth, disabilities, and indigenous people who are in the most vulnerable situations. The pandemic has generated unique challenges for adolescents, such as education, social life, and mental and physical health. Whether the impact is positive or negative, its significance on the overall shaping of adolescents' lives cannot be overlooked. Particularly, more attention is needed on how the pandemic-induced changes create stickiness in their preferences and choices, which may last for a long period. For example, with communities' shutdowns and school closures, adolescents are isolated from their in-personal social life. Instead, they may

look for connections through internet social applications or online video games. Key questions to answer are whether this shift to a virtual network is a long-term transformative change and how this affects adolescents' quality of life, mental health, and personal development. If the pandemic induces more video game addiction, adolescents may remain to stay away from social contact or crucial life events even when the pandemic is over. For those who care about adolescents' development, changes in the pandemic can predispose adolescents to adverse impacts.

Among the emerging literature on the pandemic, Salon et al. (2021)'s paper is the first to comprehensively evaluate the potential stickiness of pandemic-induced behavior changes in the U.S.

Specifically, this paper used a national survey from July to October 2020 to show that the post-pandemic lifestyle is characterized by a “doubling of telecommuting, reduced air travel, and improved life for some” (Salon et al. 2020). However, the paper admitted the limitations in terms of the data quality and methodology. For example, the paper used the stated intentions to measure the potential stickiness of pandemic-induced behavior changes. The stated intentions, however, do not always accurately predict future choices (we use the revealed preference method). Besides, there is no statistical modeling to ascertain these changes' socioeconomic and geographical correlates.

To provide more concrete evidence to Salon's study, this paper sheds light on adolescents' stickiness behavior changed by the pandemic. More specifically, this paper uses an online survey of adolescents to assess the time stickiness in video games in pre- and post-pandemic. To capture the dynamic changes from different periods of the pandemic: before, during, and after the COVID-19 pandemic, this survey includes questions to collect the time information in different periods. This method measures the “real” stickiness rather than their stated intentions. Furthermore, this paper builds an economic model to show that the stickiness of video games comes from the substitution effect between video games and other activities. The experience of the pandemic shifts adolescents' preference toward video games, and this stickiness will be a persistent event when the pandemic ends. Finally, this paper uses econometric modeling to estimate the impacts of individual characteristics, video game features, and mental health status on the time increases in video games during the pandemic.

The paper first builds an economic model to explain that the stickiness of video games comes from the substitution effect between video games and other activities. The

pandemic “selectively” induces more game time and limits other outdoor or in-person activities. Empirically, this confirms the stickiness in video game time among adolescents. Because of more time with parents, adolescents who experienced the quarantine caused by the COVID-19 has less game time increases than those who did not. Adolescents who are not in school, have less experience in the game, and have less parenting time are likelier to increase their game time during the pandemic. This paper uses the music video game, characterized by less social and additive functions. Even for this video game, this paper confirms the stickiness of in-game time. Thus, it is very likely that stickiness may exist for many games broadly, and some of them may easily cause addiction than others because of the stickiness.

To our best knowledge, this paper is the first one to study the stickiness of pandemic-induced behavior changes for adolescents. This paper expands the research scope on the COVID-19 pandemic from the health and medical areas for adolescents to the economic perspective. We believe the increase in video games is a rational decision for adolescents because of the substitution effect. This stickiness can easily be overlooked if parents, health workers, or policymakers do not pay specific attention, as they treat the increase in video games as a temporary result of the school closure or community lockdown. More efforts are needed for adolescents' development.

## 2. Literature Review

The stickiness phenomenon in economics mainly comes from the price-wage stickiness to address the real effects of monetary policy (Sim 1998). Instead, this paper sheds light on micro-level decisions, e.g., the time allocation for adolescents into video games. This part summarizes the current papers on measuring stickiness in video games and the factors that drive stickiness.

Behaviors or choices with stickiness have been widely discussed in the Internet context, either from the game developers' or users' perspectives. The standard way to measure stickiness on a website or a video game is to use the total number of visits or the cumulative amount of time spent on a given website/game over a certain period for example (Rong 2019; Chiang 2015; Lee et al. 2018; Lu and Lee 2010). Studying stickiness can generate marketing strategies to increase a service company's revenue and enhance online transactions (Elliot et al., 2013; Kim et al., 2016). The current stickiness measurement, however, cannot measure adolescents' needs and preferences correctly. For example, adolescents may increase their video game

time because they have more time to dispose of, such as during the summer and winter when the school closes. Similarly, the outbreak of the pandemic may not only increase adolescents' time in video games and their leisure time in total due to school closure and community shut down. Thus, to accurately measure stickiness, this paper also collects data on total leisure time and uses the ratio of video game time over leisure time as the index of stickiness.

Another mainstream in studying stickiness is identifying the factors that affect the level of stickiness. Scholars explore this area from different aspects. For example, Lee et al. (2018) listed the control variables such as gender, age, platform, game experience, and in-app expense. Other variables are real-life inadequacy (Aviv Malkiel Weinstein, 2010), time users spent previously (You Li, Xiaolin Li, and Jiali Ca, 2021), attachment to the platform (You Li, Xiaolin Li, and Jiali Ca, 2021), unique content (Teece, 1986), enjoyment (Merikivi et al., 2017) and purchase Intention (Lin et al., 2010). To align with the literature, this paper selects variables from the following three categories: household and individual characteristics, video game variables, and enjoyment/attachment variables. The discussion of variables is listed in the data section.

### 3. Economic Model

The shift in time allocation for video game time induced by the pandemic among adolescents can be analyzed in a standard utility maximization framework. Instead of using the mathematical expression, this paper uses a graph to show how adolescents change their time allocation between video games and other activities during the pandemic and how this change generates stickiness.

Adolescents allocate time to various activities to maximize their utility. To be simplified, this paper class all adolescents' activities in leisure time into two categories: video games and other activities. The time allocations for the two categories of activities are  $T$  and  $t$ , respectively. In most cases, adolescents' total leisure time in a given period is fixed. However, the outbreak of the COVID- 19 results in school closures, lockdowns in neighborhoods and cities, and even quarantine if they are exposed to the virus, which in turn gives adolescents more time to dispose of.<sup>1</sup> Assume that adolescents' utility is a monotonic function of their total disposable time. Therefore, the adolescents' post-pandemic utility level is higher than the pre-pandemic level, e.g.,  $U_{post\_COVID} > U_{pre\_COVID}$ .

Unlike the standard budget constraint where the expenditure from the two goods is less or equal to total

income, adolescents do not have income constraints, and the prices for the video game time and

One leisure time and disposable time are interchangeable terms in this paper, the same as the pandemic and covid.

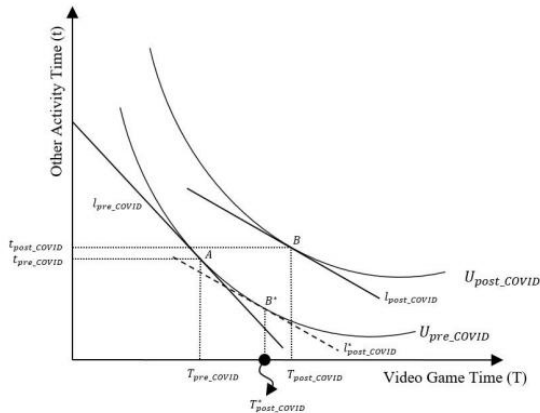
other activities are either missing or impossible to measure. Instead, this framework only considers the time constraint where the sum of video games and other activities is less or equal to the total leisure time, fixed in pre- or post-pandemic. The time constraint ( $I_{pre\_COVID}$ ) and utility curve in pre-COVID define the optimal time allocation point  $A$ , where the time for video games and other activities are  $T_{pre\_COVID}$  and  $t_{pre\_COVID}$ , respectively. The outbreak of the COVID- 19 allows adolescents to have more leisure time to dispose of, which induces the utility curve for the adolescents to move up and right to a new status,  $U_{post\_COVID}$ . The optimal point  $B$  defines the new time allocation between video game time and other activities:  $T_{post\_COVID}$  and  $t_{post\_COVID}$ . Compared to the pre-pandemic time allocation, adolescents allocates more time to video game and other activities. Note that the increase in video game time is larger than in other activities during the pandemic. This happens because adolescents can still and even spend more time playing video games at home using computers, tablets, and smartphones during the pandemic, whereas they are forced to reduce other activities like outdoor activities or in-person social activities when they or their communities are exposed to the virus. Thus, we have the following expression:

$$T_{post\_COVID} - T_{pre\_COVID} > t_{post\_COVID} - t_{pre\_COVID} .$$

The more interesting question is whether or not adolescents will continue their pandemic lifestyle, specifically, their time allocation strategy, when the pandemic becomes a “new normal” life. In other words, how the pandemic experience changed adolescents' habits in allocating their video game time and other activities time after the pandemic ends. Here, we define “the pandemic ends” as the case of adolescents' initial utility curve:  $U_{pre\_COVID}$ . That is, the move of the utility curve from  $U_{pre\_COVID}$  to  $U_{post\_COVID}$  represents the impact of the pandemic. In contrast, when the pandemic ends or becomes a “new normal” status, the utility curve will move back from  $U_{post\_COVID}$  to  $U_{pre\_COVID}$ . However, adolescents' preferences and habits in allocating time to video games and other activities would not change. This is the stickiness we explore in this paper. The stickiness of preferences of time allocation is represented by the parallel change from  $I_{post\_COVID}$  to  $I_{pre\_COVID}$  in Figure 1. The new optimal point  $B^*$  defines the eventual time allocation in a video game that persists even after the pandemic ends:  $T_{post\_COVID}$ . Note that the final optimal

video game time ( $T_{post\_COVID}$ ) locates between the optimal time before the pandemic ( $T_{pre\_COVID}$ ) and the one when the pandemic just hit ( $T_{post\_COVID}$ ), and the difference between  $T_{post\_COVID}$  and  $T_{pre\_COVID}$  indicates the stickiness in this paper. That is:

$$\text{stickiness} \sim (T_{post\_COVID}^* - T_{pre\_COVID}).$$



**Figure 1. The time allocation for adolescents during the pandemic.**

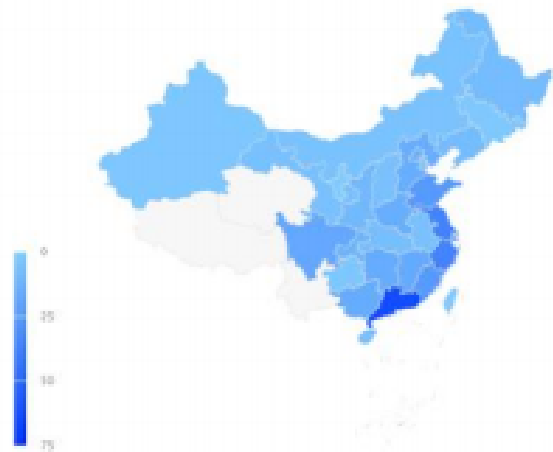
#### 4. Data

This paper uses a music video game as the target to measure the impact of the pandemic-induced changes among adolescents. The primal intention of playing the game is to simulate the sense of playing the instrument and performing songs by the player's movements. Even now, most music games contain a little or small portion of collaboration or competition between players, and minor social features, such as public chat rooms. Thus excluding factors like people's need for socializing and gaining attention that might influence users' stickiness with this behavior.

This paper uses first-hand survey data to measure stickiness. The survey includes the following parts: ( 1) individual and household characteristics, (2) game time and leisure time before, during, and after the pandemic, (3) health indicators such as sleeping time, the feeling of loneliness and connection, etc. After the survey, we conducted the pilot test with five participants to test the survey. Feedback and comments were incorporated into the survey revision. For example, the wordings were altered as less descriptive and substituted with jargon that was well-accepted by the player community in the first revision. And the definition of “experiencing COVID-19” was completed to contain the meaning of “influences on personal freedom such as voluntarily

reducing the frequency of going outdoors,” as the former description may imply only “being in the state of quarantine forcefully.” The survey was designed and revised on an online survey tool called WenJuanXing. The questionnaire was distributed to the game players' community through social media accounts (QQ and WeChat chat groups) and a video streaming website (Bilibili). The questionnaire is attached in the appendix.

In total, we collected 412 observations within a week. The distribution of the samples is displayed in Figure 2. The samples covered almost all the provinces and concentrated on the east coastal provinces such as Zhejiang, Guangdong, and Jiangsu. Table 1 shows the details about the characteristics of the samples. Specifically, 89% of the respondents are male, and only 10.9% are female. The average age is 16, with the range from 11 to 24. 54% of the respondents are in high school, then followed by middle school (22.8%) and college ( 16.7%). The respondents are relatively new to the music game. The data show that 39% of the respondents use the music video game for 1 to 2 years, then followed by 2 to 3 years ( 19%). Only 14% of the respondents played this music video game for more than 5 years. Note that not all participants started to play the video game before the pandemic. In fact, 38.3% of respondents got to know this game after the outbreak of the pandemic. The purpose of consuming music video games varies among the respondents, but the top three reasons are ( 1) the proud feeling of making progress in the game; (2) enjoying the music in the game, and (3) Enjoying the game design and play rules.



**Figure 2. The distribution of the samples in China**

Table 1. Summary table for individual characteristics

Variable	Label	N	Mean	Std Dev	Min	Max
Gender	Male= 1; female=0	412	0.89	0.31	0	1
Age	Categorical	399	16.34	2.32	11	24
Edu	Categorical	412	3.06	0.92	1	6
Gamehistory	Categorical	412	3.82	1.65	1	7

Note: The education category include: 1-elementary school; 2-middle school; 3-high school; 4-college; 5-graduates; 6-others;

The category for game history is: 1-within 6 months; 2-6 to 12 months; 3- 1 to 2 years; 4-2 to 3 years; 5-3 to 4

drive the stickiness. Regarding the pandemic experience, about half the represents (48.9%) of the respondents experienced quarantine since the pandemic outbreak. For those who experienced the quarantine, 59.4% of the respondents indicated that they increased the time on the video game, and only 7% said that they decreased the video game time. Furthermore, 50% of the respondents who increased game time during the pandemic indicated that they increased the game time for about 1-2 hours per day. The percentage for the increase of 3 hours and above is about 13%. This indicates a certain level of addiction to video games during the pandemic. During the quarantine, 68% of the respondents said they also had more time to dispose, and only 6% had less leisure time during the quarantine. Over half of the participants increased their leisure time to 1-3 hours per day. During the survey distribution, only 4.8% of the participants were experiencing quarantine.

The survey also collected data on adolescents' health habits and mental health. Specifically, most respondents (over 67%) went to bed between 22:00 and 1:00 am. 32% of the respondents

went to bed after 1 am, and only 2.66% went to bed before 22:00. Over 60% of the respondents had sleeping time over 7 hours, and 16 % had sleeping hours less than 6 hours. The survey also shows that the pandemic increases social contact from 43% (quite often or frequent contact) to 55%. Even though contact increases, the pandemic increases adolescents' loneliness. The survey shows that the percentage of feeling lonely (often or frequently) increases from 13% to 21%. Thus, more contacts are probably related to status checks about the pandemic rather than emotional care and support.

## 5. Results

The section explicitly discusses the results from two aspects: the measurement of stickiness and the factors that

### 5.1 Whether the stickiness of pandemic-induced behavior exists?

The data section shows that the adolescents' video game time increased after the outbreak of the pandemic, and so did their leisure time. This may come from the neighborhood lockdown and school closure. To accurately measure the stickiness in video games, this paper uses the ratio of video games over total leisure time. Furthermore, this paper only focuses on the subsample who started to play the music video game before the pandemic. Those subsamples, therefore, have game time data in pre- and post-pandemic.

Table 2 shows the ratio before and after the pandemic. The last row shows the overall average ratios with 214 observations. Overall, the outbreak of the pandemic changes adolescents' stickiness with music and video game. Specifically, before the pandemic, adolescents spent 50% of their leisure time in the video game, which increased to 57% in the post-pandemic period. We believe that this increase is permanent and forms a new level of stickiness. We also look further at whether the quarantine experience contributes to the increase. The results are interesting because respondents who did not experience quarantine experienced a larger increase than those who did not experience quarantine. Specifically, respondents who experienced quarantine increased their ratio from 51% to 54%. In contrast, respondents who did not experience quarantine increased their ratio from 50% to 59%, with a net increase of 9%. Table 3 provides the impact of the pandemic on parents' working status. We want to use this table to explain why adolescents increase their game time less if they experience quarantine. Table 3 shows that quarantine during the pandemic also increases the parents' time at home from 29% to 35%. Thus, with more supervision from parents at home, adolescents are less likely to spend too much time on video games.



**Table 2. The ratio of game time over leisure time before and after the pandemic**

quarantine_ever	N Obs	Variable	N	Mean	Std Dev	Mini	Max
No	112	Ratio of Gametime before_COVID-19	112	0.50	0.24	0.11	1
		Ratio of Gametime_now	112	0.59	0.27	0.11	1
Yes	102	Ratio of Gametime before COVID-19	102	0.51	0.24	0.13	1
		Ratio of Gametime_now	102	0.54	0.27	0.11	1
Overall	214	Ratio of Gametime before COVID-19	214	0.50	0.24	0.11	1
		Ratio of Gametime_now	214	0.57	0.27	0.11	1

Note: N=214. The sample for this table only includes adolescents who started to play music video games before the pandemic.

**Table 2. Parents' working status during the pandemic**

Impact on Parents' work status	No quarantine	Quarantine	Overall
Impacted; less time at home	15(7.11)	19(9.45)	34
Impacted; more time at home	62(29.38)	72(35.82)	134
No impact	122(57.82)	102(50.75)	224
Others	12(5.69)	8(3.98)	20
Overall	211	201	412

Table 3 shows the game time distribution before and after the pandemic, which provides information about the game time change over time. This table is based on the participants who started to play music video games before the pandemic. Table 3 shows that about 69% of participants spent 2 hours or less before the pandemic. However, this percentage decreases to 57% in the post-pandemic. As we discussed earlier, adolescents

increased their game time after experiencing the pandemic, and this change forms a new stickiness. Table 3 shows that the increases in-game time locate at 2-4 hours. Specifically, the percentage of adolescents who spent 2-4 hours in the music video game increased from 24% to 35%. A slight increase in the game time range from 4 to 5 hours (2.36% increase).

**Table 3. The game time distribution before and after the pandemic.**

Time for music video game	Pre-pandemic		Post-pandemic		Difference in
	Frequency	Percentages	Frequency	Percentages	Percentage
Below 1 hour	89	35.04	55	21.65	-13.39
1-2 hours	86	33.86	88	34.65	0.79
2-3 hours	45	17.72	57	22.44	4.72
3-4 hours	18	7.09	33	12.99	5.90
4-5 hours	5	1.97	11	4.33	2.36
Above 5 hours	11	4.33	10	3.94	-0.39

Note: The samples are adolescents who started to play music video games before the pandemic.

## 5.2 What drives stickiness?

This section uses regression to explore the drivers that impact the pandemic-induced change. The dependent variable is the difference in game time ratio

before and after the pandemic. Table 4 presents the explanatory variables from various aspects. The results show that gender does not significantly increase stickiness, although most players are male, holding other factors constant. Age decreases adolescents'

preference for increasing game time. Older adolescents usually face a heavy study load from school and will limit their time on video games. Regarding the school, compared to high school (the most popular for video games), adolescents in elementary school are less likely to increase game time. However, adolescents who are not in school are more likely to increase their game time during the pandemic.

We use 1 to 2 years as the reference for the game-playing history. The results show that compares to this category, adolescents who just know the game (less than six months) are less likely to increase their game time during the pandemic. In contrast, experienced adolescents (4 to 5 years) will likely significantly increase their game time. Meanwhile, compared to the less parenting

During the pandemic, adolescents who experience increased or even no change in parenting time are less likely to increase game time. Adolescents who connect with their relatives and friends before the pandemic frequently are more likely to increase their game time during the pandemic. This change may come from the need for connection, and communication with other game players can be a substitute when the community is on lockdown. Lastly, adolescents experiencing quarantine are less like to increase their game time. This is already explained by the more home time for their parents. Typically, adolescents experience quarantine together with their parents. More time with parents means more supervision.

**Table 4. Estimation of the drivers of pandemic-induced change.**

Variables	Estimate	Standard error	p
Intercept	1.002	1.244	0.422
Gender	0.248	0.358	0.488
Age	-0.148	0.065	0.024
Elementary school	-0.997	0.512	0.053
Middle school	0.250	0.213	0.243
College	0.255	0.465	0.584
Out of school	0.838	0.356	0.020
Game_history_6mon	-0.844	0.521	0.107
Game_history_6_12mon	0.004	0.188	0.984
Game_history_2_3year	0.085	0.231	0.714
Game_history_4_5year	0.997	0.340	0.004
Parenting_time_increase	-0.09521	0.349073	0.7854
Parenting_time_no_change	-0.15511	0.338688	0.6476
Loneliness_before_COVID	-0.004	0.090	0.961
Social_connect_before_COVID	0.092	0.085	0.282
Connect_change_increase	0.325	0.326	0.321
Connect_change_no_change	0.667	0.315	0.036
Quarantine_now	-0.461	0.247	0.064
R_square		0.206	
Root MSE		1.031	

Note: N= 153.

## 6. Conclusion

The COVID-19 pandemic has modified people's preferences and habits in almost every aspect, and it is particularly important to discuss how it changes adolescents' behavior. While some education workers or parents believe the adverse impact on adolescents will disappear automatically when the pandemic ends, this paper uses adolescents' game time to show their stickiness. This pandemic-induced change will persist

for a long period. Economically speaking, the stickiness comes from the substitution effect between video games and other activities. The pandemic “selectively” induces more game time and limits other outdoor or in-person activities. This paper uses the music video game, characterized by less social and additive functions. Even for this video game, this paper confirms the stickiness of in-game time. Thus, it is very likely that stickiness may exist for many games, and some of them may easily cause addiction than others because of the stickiness.

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## Appendix

### 1. Questionnaire

Used to measure stickiness. This questionnaire includes the following parts: ( 1) individual and household characteristics, (2) game time and leisure time before, during, and after the pandemic, (3) health indicators such as sleeping time, the feeling of loneliness and connection, etc.



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1. 你的性别[单选题] \*

- 男
- 女

2. 你的年龄 [填空题] \*

\_\_\_\_\_

3. 你现在正在读[单选题] \*

- 小学
- 初中
- 高中
- 大学
- 研究生及以上
- 离开学校

4. 新冠疫情前，请问你的家长的工作状态是[单选题] \*

- 父亲在工作，母亲没有工作
- 父亲没有工作，母亲工作
- 父亲和母亲都工作
- 父亲和母亲都没工作
- 独立生活

5. 请问新冠疫情是否改变了你父母的工作状态[单选题] \*

- 是的，他们更少时间在家
- 是的，他们更多时间在家
- 没有改变
- 其他 \_\_\_\_\_
- 独立生活

6. 请问你接触音乐游戏多长时间了？ [单选题] \*

- 6个月以内
- 6-12月
- 1-2年
- 2-3年
- 3-4年
- 4-5年
- 5年以上

7. 请问你玩音乐游戏的主要目的是 [多选题] \*

- 打发时间
- 缓解孤独
- 放松压力
- 可以欣赏音乐
- 可以交很多朋友
- 享受取得进步的成就感
- 享受别人的尊敬或赞美
- 我欣赏游戏玩法本身
- 其他 \_\_\_\_\_

接下来，我们会想了解你在疫情前后投入音乐游戏的时间。需要特别解释的是：

(1)本问卷提到的“新冠疫情发生”是以**2020年1月份**为界限。2020年1月之前定义为“新冠疫情之前”；此时间之后进入疫情阶段。

(2)本问卷问及的“投入音乐游戏的时间”是指所有与音乐游戏投入时间的总和，包括：游戏本身投入时间、投入到视频网站、玩家社区、收集游戏相关信息等时间、出勤过程中的交通和排队的时间等。

8. 新冠疫情之前(2020年1月之前，下同)，你每天平均投入音乐游戏的时间是多少？ [单选题] \*

- 1小时以下
- 1-2小时
- 2-3小时
- 3-4小时
- 4-5小时
- 5小时以上
- 我在疫情前尚未入坑

9. 新冠疫情之前，你每天平均空闲的时间是多少？空闲时间是指除睡觉和学习\工作以外的时间。 [单选题] \*

- 1小时以下
- 1-2小时
- 2-3小时
- 3-4小时
- 4-5小时
- 5-6小时
- 6-7小时
- 7-8小时
- 8小时以上

10. 从新冠疫情爆发至今，你经历过因新冠疫情而导致的隔离吗？包括居家隔离以及集中隔离。 [单选题] \*

“导致的隔离”指由于疫情的限制，带来的主动减少外出或居家次数增加，或是被动的封控措施或居家隔离等

- 经历过 (请跳至第11题)
- 没经历 (请跳至第17题)

11. 隔离过程中，你每天平均投入音乐游戏的时间有变化吗？ [单选题] \*

- 增加了 (请跳至第12题)
- 没有变化 (请跳至第14题)
- 减少了 (请跳至第13题)

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12. 如果选“增加了”，请问：你每天平均投入音乐游戏的时间增加了多少？ [单选题] \*  
这里是填写你增加的时间数量，而不是你增加后每天投入的时间数量。

- 1小时以下
- 1-2小时
- 2-3小时
- 3-4小时
- 4-5小时
- 6小时以上

\*填写完该题，请跳至第14题。

13. 如果选“减少了”，请问：你每天平均投入音乐游戏的时间减少了多少？ [单选题] \*  
这里是填写你减少的时间数量，而不是你减少后每天投入的时间数量。

- 1小时以下
- 1-2小时
- 2-3小时
- 3-4小时
- 4-5小时
- 5-6小时
- 6小时及以上

14. 隔离过程中，你每天平均的空闲时间有变化吗？空闲时间是指除睡觉和学习\工作以外的时间。 [单选题] \*

- 增加了 (请跳至第15题)
- 没有变化 (请跳至第17题)
- 减少了 (请跳至第16题)

15. 如果选“增加了”，请问：你每天平均空闲时间增加了多少？ [单选题] \*  
这里是填写你增加的时间数量，而不是你增加后每天投入的时间数量。

- 1小时以下
- 1-2小时
- 2-3小时
- 3-4小时
- 4-5小时
- 5小时及以上

\*填写完该题，请跳至第17题。

16. 如果选“减少了”，请问：你每天平均空闲时间减少了多少？ [单选题] \*  
这里是填写你减少的时间数量，而不是你减少后每天投入的时间数量。

- 1小时以下
- 1-2小时
- 2-3小时
- 3-4小时
- 4-5小时
- 5小时及以上

\*填写完该题，请跳至第17题。

17. 请问你**现在正经历**因新冠疫情而导致的隔离吗？ [单选题] \*

- 是的
- 不是

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打印问卷

18. 请问你**现在**每天平均投入音乐游戏的时间是多少？ [单选题] \*

- 1小时以下
- 1-2小时
- 2-3小时
- 3-4小时
- 4-5小时
- 5-6小时
- 6小时及以上

19. 请问你**现在**每天平均空闲时间是多少？空闲时间是指除睡觉和学习\工作以外的时间。 [单选题] \*

- 1小时以下
- 1-2小时
- 2-3小时
- 3-4小时
- 4-5小时
- 5-6小时
- 6-7小时
- 7-8小时
- 8小时及以上

20. 您在音乐游戏上的平均每月花费是多少？ [单选题] \*

这里的费用包括游戏本身、游戏衍生品/周边产品以及出勤的交通费用等。

- 无
- 100元以内/月
- 100~200元/月
- 200~300元/月
- 300~400元/月
- 400~500元/月
- 500元/月以上

21. 您音乐游戏的主要消费来源[单选题] \*

- 家长供给
- 个人收入
- 游戏交易所得
- 朋友资助
- 其他 \_\_\_\_\_
- 无

22. 您晚间睡觉时间大概是[单选题] \*

- 22:00之前
- 22:00-23:00
- 23:00-24:00
- 24:00- 1:00 (次日)
- 1:00-2:00
- 2:00之后

23. 每天平均晚间睡眠时间是[单选题] \*

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- 8个小时以上
- 7-8个小时
- 6-7个小时
- 5-6个小时
- 5个小时以下

接下来，我们想了解你在新冠疫情前后的心理状态。如上所说，“新冠疫情前”在此问卷中指2020年1月份之前，“疫情期间”指2020年1月份一直到现在

24. 新冠疫情前(指的是2020年1月之前，下同)，我会感到孤独。 [单选题] \*

没有  1  2  3  4  5 经常

25. 新冠疫情前，我与他人之间的联系[单选题] \*

“他人”指的是家人，亲戚，朋友等长期且稳定的社会关系，包括认识一段时间并且互相认识的网友，不包括临时及短暂的社会关系如聊天次数很少并且互相不认识的网友，或拼机的人；“联系”指生活中的社交，包括见面和社交工具(如微信，QQ等)的联系。

少  1  2  3  4  5 多

26. 新冠疫情期间(指的是2020年1月以后，下同)，我会感到孤独[单选题] \*

没有  1  2  3  4  5 经常

27. 新冠疫情期间，我与他人之间的联系[单选题] \*

“他人”指的是家人，亲戚，朋友等长期且稳定的社会关系，包括认识一段时间并且互相认识的网友，不包括临时及短暂的社会关系如聊天次数很少并且互相不认识的网友，或拼机的人；“联系”指生活中的社交，包括见面和社交工具(如微信，QQ等)的联系。

少  1  2  3  4  5 多

28. 现在你与他人之前的联系跟疫情前比较是[单选题] \*

“他人”指的是家人，亲戚，朋友等长期且稳定的社会关系，包括认识一段时间并且互相认识的网友，不包括临时及短暂的社会关系如聊天次数很少并且互相不认识的网友，或拼机的人；“联系”指生活中的社交，包括见面和社交工具(如微信，QQ等)的联系。

- 增加了
- 没有变化
- 减少了