



Social Class and Well-being Trajectories during COVID-19: A 4-year Longitudinal Study Revealed a Steeper Decline among Higher-class Individuals in South Korea

Yuri Kwon^{1,2} · Sooyoun Kristina Zong³ · Namhee Kim¹ · Yuhyun Choi¹ · Incheol Choi^{1,4}

Accepted: 4 December 2024 / Published online: 20 December 2024
© The Author(s) 2024

Abstract

Little research has examined the role of social class in the long-term impact of the COVID-19 pandemic on mental well-being. This 4-year longitudinal study in South Korea ($N=86,872$; 875,967 responses) assessed well-being before (January 2019 to January 2020) and during (January 2020 to January 2023) the COVID-19 pandemic to determine whether *change* in well-being during this period differed by social class. We expanded the investigation to consider transitions in social class, social distancing measures, and the mechanisms underlying well-being changes according to social class during the pandemic. In particular, we assessed the moderating effects of social class on within-person changes in well-being using conducting multilevel modeling-based analyses in four approaches. First, we found that, while higher-class individuals maintained an average well-being that was higher than that of lower-class individuals, they also experienced a steeper decline in well-being over the course of the pandemic. Relative to their pre-COVID-19 levels, they experienced a significant decrease in well-being in the first, second, and third years of COVID-19, showing no sign of recovery until the pandemic neared its end. Second, this pattern persisted without regard for critical social class transitions following the pandemic: individuals remaining in the higher class during both the pre-COVID-19 and COVID-19 periods experienced significant declines in well-being relative to baseline. Third, higher-class individuals faced larger difficulties in maintaining their well-being, particularly with respect to social distancing measures, while the well-being of lower-class individuals was less affected. Fourth, perceived changes in daily life mediated observed class difference in well-being declines, showing that higher-class individuals experienced greater changes in their daily lives due to COVID-19 than lower-class individuals did, resulting in greater declines in well-being. Taken together, these findings indicate that COVID-19 transformed components of life that are essential for the psychological health of the well-off, providing novel insights into the significant power of social class in the experiences of changes in well-being, going beyond the absolute gap that has been well-established by cross-sectional studies. This indicates the need for class-targeted interventions and policies to support well-being across all socioeconomic strata in future crises.

Keywords COVID-19 · Well-being · Social Class · Social Distancing · Changes in Daily life

1 Introduction

The COVID-19 pandemic produced different consequences for different individuals (Van Bavel et al., 2020). Individual differences owing to COVID-19 go beyond the occurrence and progression of the disease, extending to the ability to maintain mental well-being in the unusual and restrictive circumstances of the crisis (Aknin et al., 2022; Sachs et al., 2022). For instance, being female, having children younger than five, and being younger were associated with worse well-being, depression, and anxiety during COVID-19 (Aknin et al., 2022; Choi et al., 2021; Sachs et al., 2022). Individuals from lower social classes were also frequently identified as vulnerable (Job et al., 2020; Pierce et al., 2020; Xiong et al., 2020).

However, it is not certain whether lower-class individuals suffered more during the pandemic than before it or vice versa, relative to higher-class individuals, as cross-sectional findings cannot assess *the degree of change* in well-being in the pandemic (e.g., Robinson, 1950). The inequality in mental well-being between higher and lower classes is well established in the literature (Anderson et al., 2012; Tan et al., 2020). Hence, the observation that mental well-being was higher for higher than lower classes during the pandemic does not indicate whether this disparity reflects a pre-existing gap or whether lower-class people in fact suffered more during the pandemic (e.g., Reme et al., 2022; Wanberg et al., 2020). To resolve this ambiguity, it is necessary to examine intra-individual changes in well-being, independent of baseline differences, requiring a longitudinal study. We thus investigated changes in well-being as an effect of the pandemic and their variation relative to social class.

2 State of the Art

2.1 Social Class Disparities in Well-being

Higher social class is closely linked to enhanced subjective well-being (Anderson et al., 2012; Kahneman & Deaton, 2010; see Tan et al., 2020 for a meta-analytic review). This is a key point in social psychological research, highlighting the dynamic ways that socioeconomic disparities impact mental health. Social class influences well-being through multiple avenues, most notably by increased access to resources, better health, and readier access to social and psychological capital (Helliwell et al., 2020). These factors elevate perceived status and social power, positively contributing to subjective well-being (Yu & Blader, 2020). By contrast, conditions of unemployment and precarious employment exacerbate mental health issues in the lower social classes (Richards & Paskov, 2016). Similarly, during the COVID-19 pandemic, individuals from lower socioeconomic backgrounds reported more symptoms of mental disorders and worse subjective well-being than those from higher social classes (Job et al., 2020; Pierce et al., 2020; Xiong et al., 2020).

However, given the well-established, positive link between social class and well-being, it is plausible that cross-sectional data collected during the pandemic would reflect pre-existing social disparities in mental well-being, not capturing pandemic-triggered changes alone.

Hence, it remains an open question whether the pandemic has actually exacerbated well-being gaps across social classes, as lower well-being among the disadvantaged may simply be indicative of a persistent inequality. Moreover, the strength of the association between class and subjective well-being appears to be contingent upon context (e.g., Biswas-Diener & Diener, 2001; Diener et al., 2003; Fuentes & Rojas, 2001). A meta-analysis across 54 developing countries has found that the degree of the relationship between social class and mental health is not fixed, varying with national wealth and the level of education (Howell & Howell, 2008). Stronger correlations were observed between socioeconomic position and subjective well-being in poorer, less educated countries, and weaker correlations were found in wealthier, more educated ones. This suggests that the strength of this relationship interacts with higher-level contextual factors in complex ways, prompting questions concerning how socioeconomic influences on well-being have been shaped by the disruptive circumstances of the COVID-19 pandemic.

2.2 Social Class and Well-being Changes from before to during the Pandemic

Using longitudinal data, several studies have addressed this issue but have produced inconsistent results. For instance, a large panel study that was conducted in the United Kingdom ($N=38,217$ in the UCL COVID-19 Social Study) investigated the growth trajectory for loneliness during the COVID-19 lockdown, indicating that loneliness increased among individuals who had low household incomes (Bu et al., 2020). An additional analysis performed by Job et al. (2020), using an extracted sample of UK adults ($N=51,417$), found that depressive symptoms intensified among those in a low socioeconomic position. By contrast, other studies have identified a steeper decrease in well-being during COVID-19 among higher-class individuals than among lower-class ones. Wanberg et al. (2020) assessed within-person changes in life satisfaction from before to during the pandemic in the United States among 1,143 adults, drawing on a nationally representative panel. They found a curvilinear relationship between income and changes in life satisfaction from before to during the pandemic for individuals in the United States, such that individuals having higher incomes eventually experienced larger decreases in well-being. Furthermore, employed respondents ($N=53,351$ in the UK Household Longitudinal Study) showed greater psychological distress following the onset of the pandemic than unemployed ones (Pierce et al., 2020). Reme et al. (2022) found that the negative impact of COVID-19 on well-being was similar across socioeconomic strata ($N=202,024$ from the Norwegian Mother, Father, and Child Cohort Study). Hence, the question whether the psychological impact of the pandemic was more pronounced for a particular class remains unresolved and requires further exploration. We suggest that the mixed results in previous studies may stem from the following four factors, and we propose research questions aimed to address these issues to fill the gap in the literature.

3 Research Questions and the Present Study

First, we pose the question whether there were differences in patterns between short-term and long-term trends. Longitudinal studies examining the effects of the pandemic have largely focused on its *early stages* (Müller et al., 2023; Tran et al., 2023). The relative

scarcity of examinations of *long-term effects* hampers our understanding of how individuals have adapted and recovered as the novelty and restrictions of the pandemic have fallen away. We used a 4-year longitudinal dataset (1 year of baseline data and 3 years of pandemic data) to capture variations in the effects of social class over time, allowing us to examine how trends in intrapersonal well-being have varied by social class as the pandemic progressed during through its first, second, and third years. To the best of our knowledge, this is one of the longest longitudinal studies on the pandemic and mental well-being, especially among those focused on social class.

Second, we explored whether shifts in social class influenced variations in the degree of well-being changes across different social class groups, taking *changes in social class per se* into consideration. The pandemic brought about significant changes in individuals' socioeconomic status in terms of income loss, job layoffs, furloughs, and widespread business closures, particularly in the service industry (Witteveen & Velthorst, 2020). These transitions themselves may have had profound effects on individuals' well-being during the crisis. Accordingly, we investigated changes in well-being across social classes in terms of whether the individual's class also shifted or was maintained from before to during the pandemic.

Third, differences in well-being across social classes may have emerged from the disruptions caused by lockdowns and social distancing orders. While these measures effectively curbed the spread of the virus, they also exacted a potential mental health toll (Brooks et al., 2020). Policies of social distancing eroded social interaction and the sense of connectedness (Cavicchioli et al., 2021; Geirdal et al., 2021), which are vital pillars of happiness. Quarantine is also linked to adverse psychological effects (Brooks et al., 2020; Cavicchioli et al., 2021). Finally, labor markets experienced disruption due to lockdowns, self-quarantine, and mobility restrictions (Witteveen & Velthorst, 2020). Thus, it seems plausible that declines in well-being would reflect the consequences of the limitations and loss of autonomy resulting from disruptions to daily life (Arthi & Parman, 2021; Baker et al., 2020). Therefore, we investigated whether social class differences in well-being changes were more evident in the period of the social distancing orders relative to the period when they were not implemented.

Fourth, we investigated a possible mechanism regarding the differential decline of well-being across classes, namely, perceived changes in daily life, which has not been sufficiently explored in prior studies. Previously, Wanberg et al. (2020) speculated that differential resources might be a mechanism for explaining why higher social class is associated with greater declines in well-being during the pandemic, although their data did not empirically support this hypothesis. Alternatively, we explored the ways that disparities in perceived disruptions of daily lives might account for variations in well-being changes across social classes.

South Korea was one of the first countries outside China to experience a major COVID-19 outbreak, with the first case detected in January 2020. The government adopted an aggressive "trace, test, and treat" strategy, combined with social distancing measures, to control the spread of the virus (World Health Organization, 2020). Schools shifted to remote learning, businesses implemented work-from-home where possible, and strict mask mandates were imposed. While there was never a full nationwide lockdown, periodic restrictions were placed on gatherings, business operations, and travel based on the levels of the virus detected. By late 2021, South Korea had sufficient doses of a vaccine to rapidly roll out a mass vaccination campaign. While the most stringent forms of lockdown were evaded,

the pandemic significantly disrupted economic activity, education, and work-life balance, as families juggled jobs, childcare, and remote schooling. As of January 2023, South Korea had reported over 30 million total cases of COVID-19 and around 30,000 deaths from it in its population of 51 million (Kim, 2023). The country's experience highlights the widespread societal impacts of the pandemic and mitigation policies across sectors.

Using longitudinal data from South Korea, this study examines within-person changes in well-being by social class over an extended period during the COVID-19 pandemic. While previous research has largely focused on cross-sectional disparities in well-being across social classes, our study takes a comprehensive approach, tracking individual well-being trajectories over time and across pandemic phases. This design allows us to distinguish between baseline social class disparities and class-specific responses to the pandemic, shedding light on how well-being dynamics have evolved amid shifting public health measures and socio-economic disruptions.

Specifically, using 4 years of longitudinal data from one of the largest and longest longitudinal studies on COVID-19 and mental well-being, we conducted four analyses with elaborated research questions. Each analysis utilized the same dataset or subsamples to explore different facets of the ways that well-being has shifted across social classes during the pandemic. The findings of previous longitudinal studies have been mixed, so we adopted an exploratory stance and did not set hypotheses.

- **Analysis 1: Changes in well-being from the pre-COVID-19 to COVID-19 periods and their differences by social class.** We examined how overall well-being changed from before to after the onset of COVID-19 and how this change varied across social classes. To capture time specific trends, we compared well-being changes during the first, second, and third years of COVID-19 to pre-pandemic levels. We used multilevel modeling to distinguish time-variant within-person changes from between-person differences, exploring the moderating effects of social class on within-person changes.
- **Analysis 2: Well-being changes depending on social class changes from pre-COVID-19 to during COVID-19.** Examining transitions in social class over the pandemic, we observed the ways in which pre-pandemic and during-pandemic social class impacted well-being.
- **Analysis 3: Changes in well-being due to social-distancing mandates.** We examined whether individuals of different classes experienced different well-being changes during enforced social distancing relative to other times.
- **Analysis 4: Mediations of perceived changes in daily life.** We delved into the mechanisms contributing to patterns of well-being changes across social classes. We anticipated that the variations observed in perceived life changes due to COVID-19-related restrictions could serve as a possible mechanism.

4 Participants and Procedure

Data were collected in an online survey conducted through the social network platform KakaoTalk, which has 45 million users in South Korea. The survey conducted by the Center for Happiness Studies at Seoul National University in collaboration with Kakao Corporation has been collecting daily well-being and other psychological data from South Koreans

since 2018, including the entire pandemic thus far. This nationwide dataset features a large number of participants, many of whom have voluntarily completed the survey multiple times (making it a panel study), allowing for longitudinal examination (e.g., Suk et al., 2021). To ensure confidentiality, all responses were saved using an encrypted identification number assigned to each participant.

As shown in Fig. 1, well-being assessment was conducted before and during the progression of the COVID-19 pandemic. Here, the term “pre-COVID” refers to the period before COVID-19 appeared in South Korea. Then, “COVID” refers to the three years following January 20, 2020, marking the first confirmation of COVID-19 in South Korea, through January 19, 2023. During this time, South Korea experienced several outbreaks of varying severity, as shown in Fig. S1 in the Supplementary Information (SI). The three years of COVID are three one-year spans from January 20 to the following January 19. The pre-COVID data were from January 20, 2019 to January 19, 2020 and were taken as the baseline.

Longitudinal analysis requires repeated measurements of the same individuals, so the analysis was conducted for those who had completed the survey at least once in both the pre-COVID and the COVID periods, such that each had two or more well-being scores. The sample included 86,872 participants (with 875,967 responses), ranging from 14 to 71 years old ($M=29.75$, $SD=11.14$). Under the Kakao policy, 17.7% of participants ($n=15,334$), either under 20 or over 70, had age groups recorded (10–70 s) instead of birth years. We assigned their birth years using the average birth year of the same age group. Descriptive statistics on these participants are presented in Table 1. There were three sub-samples: Subsample 1 included participants who responded to well-being questions at least once per year for four consecutive years, yielding 14,047 participants with 285,249 observations. Subsample 2 was 7,196 participants who reported their social class in both the pre-COVID and COVID periods, ensuring at least two class observations per participant. Subsample 2 was used to examine the effect of social class changes on the relationship between social class and mental well-being. Subsample 3 encompassed 12,121 participants who responded to COVID-19-related questions, including exposure to confirmed cases and changes in daily life. Subsample 3 was used to examine the role of perceived changes in daily life.

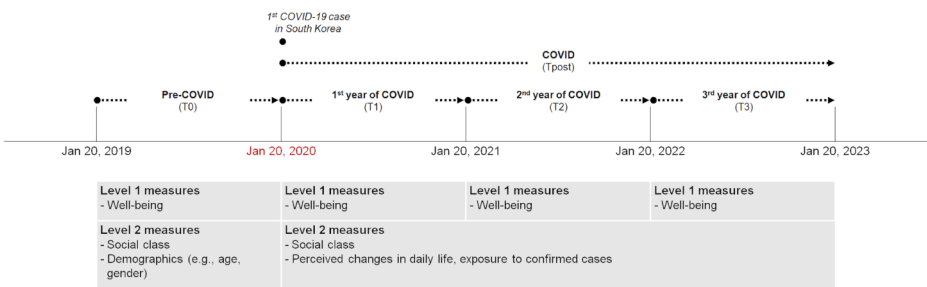


Fig. 1 Study timeline

Note. Pre-COVID (or T0) represents the period before the spread of COVID; COVID (Tpost) refers to a three-year timeframe starting from the first COVID-19 case report, and this period includes three distinct one-year spans such as 1st year of COVID (T1), 2nd year of COVID (T2), 3rd year of COVID (T3). COVID-related questions (i.e., perceived changes in daily life, exposure to confirmed cases) were assessed starting from March 30, 2020. All other measures were responded to according to the timeline illustrated above

Table 1 Participant demographic information

	Full sample		Subsample 1		Subsample 2		Subsample 3	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Age								
10s	16455	18.9	1644	11.7	1833	25.5	2967	24.5
20s	33503	38.6	3389	24.1	1561	21.7	3559	29.4
30s	19918	22.9	4497	32.0	1675	23.3	2761	22.8
40s	11282	13.0	2514	17.9	1034	14.4	1521	12.5
50s	4792	5.5	1601	11.4	834	11.6	997	8.2
Over 60s	922	1.1	402	2.9	259	3.6	316	2.6
Gender								
Female	71070	81.8	12239	87.1	6180	85.9	10641	87.8
Male	15802	18.2	1808	12.9	1016	14.1	1480	12.2
Region								
Noncapital	34385	39.6	5335	38.0	2872	39.9	4865	40.1
Capital	52487	60.4	8712	62.0	4324	60.1	7256	59.9
Social class								
1	5005	5.8	877	6.2	442	6.1	811	6.7
2	6036	6.9	1047	7.5	496	6.9	893	7.4
3	13847	15.9	2257	16.1	1061	14.7	1956	16.1
4	13639	15.7	2246	16.0	1118	15.5	1885	15.6
5	19772	22.8	3107	22.1	1617	22.5	2635	21.7
6	11277	13.0	1847	13.1	977	13.6	1570	13.0
7	9686	11.1	1582	11.3	826	11.5	1328	11.0
8	5032	5.8	735	5.2	406	5.6	670	5.5
9	1336	1.5	208	1.5	124	1.7	194	1.6
10	1242	1.4	141	1.0	129	1.8	179	1.5
Exposure to confirmed cases								
No	NA		NA		NA		11710	96.6
Yes	NA		NA		NA		411	3.4
# of well-being responses per person								
2	4035	4.6	0	0.0	52	0.7	71	0.6
3	8826	10.2	0	0.0	129	1.8	226	1.9
4 or more	74011	85.2	14047	100.0	7015	97.5	11824	97.5

Note. *N* for the Full sample=86,872; *N* for the Subsample 1=14,047; *N* for the Subsample 2=7,196; *N* for the Subsample 3=12,121. NA=not applicable

No minimal sample size was predetermined to utilize all available data. Post hoc power analyses were conducted on the multilevel dataset using Optimal Design software (Raudenbush et al., 2011). These analyses indicated that our sample size was sufficiently powered to detect effects of the main variables of interest (i.e., Time, Social class, and the interaction between Time and Social class). Specifically, the power ranged between 0.97 and 1.00, enabling the detection of effect sizes (*ds*) as small as those ranging between 0.023 and 0.139.

All data, codes, and materials are publicly accessible at https://osf.io/pmu92/?view_only=None. This study was carried out with IRB approval (KWNUIRB-2019-10-009-002; SNUIRB 2302/004-004) and was not preregistered.

5 Measures and Analytic Strategies

5.1 Well-being

For our investigation, we conceptualized well-being as a multiple construct, including well-established measures of subjective well-being, such as life satisfaction (LS), positive affect (PA), and negative affect (NA) (Diener et al., 1999), along with eudaimonic aspects, specifically meaning in life (MIL) (Ryan & Deci, 2001). As a result of the mental health challenges associated with the pandemic (Aknin et al., 2022), we have also included stress as an indicator of mental well-being in our well-being construct. Previous literature has addressed that the selected items validly represent various aspects of well-being (Diener et al., 1984; Ryff & Singer, 1998). This multifaceted approach has been validated in the Korean populations (Suk et al., 2021).

LS was measured using a single item: “How satisfied are you with your life right now?” PA and NA were measured using seven items: three for positive emotions (happy, pleasant, and relaxed; Cronbach’s $\alpha=0.89$) and four for negative emotions (bored, annoyed, depressed, and anxious; Cronbach’s $\alpha=0.89$). The participants were asked to rate how much they felt each emotion at the moment of their responses. MIL and stress were evaluated using a single item each: “How meaningful do you feel your life is right now?” and “How stressed are you right now?” All items were rated on an 11-point scale, ranging from 0 (not at all) to 10 (very). The well-being index was computed by averaging all items, with the negative items being reverse scored.

5.2 Social Class

We used the MacArthur scale for subjective socioeconomic status (Adler et al., 2000) to assess social class. This scale involves indicating respondents’ position on a visual social ladder and capturing their subjective perception of class, consistently and strongly predicting psychological and physiological functioning relative to objective measures (Adler et al., 2000; see Tan et al., 2020 for a meta-analytic review). Ratings were provided on a 10-point scale (1 to 10). During the pre-COVID period, participants reported their social class scores, averaged within participants to create a baseline social class index ($M=4.78$, $SD=2.00$). Some participants also provided social class scores during the COVID period (as indicated in subsample 2), enabling us to track transitions in social class. Similarly, social class scores reported during the COVID period were averaged within participants, creating a social class index for it ($M=4.87$, $SD=2.05$).

5.3 Changes in Daily life

To measure perceived changes in daily life, we asked participants to rate how far their daily lives had changed after the onset of COVID-19, using a 5-point Likert-type scale of 1 (not at all) to 5 (extremely). The responses were averaged within participants ($M=3.11$, $SD=1.35$).

5.4 Exposure to Confirmed Cases

We controlled for exposure to infection using a one-item question. Participants reported whether they were or had been closely associated with any confirmed cases (0=no, 1=yes).

5.5 Analytic Strategies

To determine how individuals of different social classes experienced changes in well-being during COVID-19, we employed four independent analytic approaches, utilizing multilevel modeling to disentangle within-participant changes in well-being from between-participant differences in well-being (Preacher et al., 2010), given the hierarchical structure of the data, with responses nested within participants.

Each model incorporated the covariates of age, gender, and region, except for the fourth analysis, which also included the covariate of exposure to confirmed cases. Before the analyses, the continuous variables (i.e., social class and age) were mean-centered, and the categorical variables (i.e., time, gender, and region) were dummy-coded. We primarily estimated all parameters using the lme4 package in R (Bates et al., 2015), using full-information maximum likelihood, except the fourth analysis, which employed multilevel mediation. A more detailed description of the analysis is provided alongside the results.

6 Results

6.1 Analysis 1: Changes in Well-being from the Pre-COVID to COVID Periods and their Differences by Social Class

We primarily examined the experienced changes in well-being across social class groups over four years before and after the onset of COVID. For this, we fitted a multilevel model including the effects of time (Level 1), social class (Level 2), and their cross-level interaction terms for well-being, examining whether the relationship between well-being and time differed depending on social class. We included three dummy-coded time variables and their corresponding cross-level interaction terms. These time variables represented the comparison of well-being at different time points relative to the pre-pandemic T0, which served as the reference time. The first dummy variable represented differences in well-being between T0 and T1 (pre-COVID vs. during the first year of COVID). The second captured differences in well-being between T0 and T2 (pre-COVID vs. during the second year of COVID). Finally, the third indicated the differences in well-being between T0 and T3 (pre-COVID vs. during the third year of COVID). For more details and model comparisons, please refer to Table S2 in the SI.

The results presented in Table 2; Fig. 2 show that, relative to baseline, participants' overall well-being significantly decreased during first year of COVID ($b = -0.083, p < .001, 95\%$ confidence interval (CI) $[-0.092, -0.073]$), second year of COVID ($b = -0.070, p < .001, 95\%$ CI $[-0.082, -0.057]$), and the third year of COVID ($b = -0.065, p < .001, 95\%$ CI $[-0.082, -0.047]$), which aligns with previous findings (Choi et al., 2021; Zacher & Rudolph, 2021). Additionally, social class positively predicted differences in baseline well-being ($b = 0.370, p < .001, 95\%$ CI $[0.364, 0.375]$), confirming the well-established finding that individuals

Table 2 Results of multilevel modeling analysis for well-being index

Predictors	<i>b</i>	<i>p</i>	95% CI
(Intercept)	5.306	<0.001	5.288 – 5.323
Age	0.001	0.007	0.000 – 0.002
Gender	0.158	<0.001	0.131 – 0.184
Region	-0.039	<0.001	-0.059 – -0.018
Social class	0.370	<0.001	0.364 – 0.375
T_Dummy 1	-0.083	<0.001	-0.092 – -0.073
T_Dummy 2	-0.070	<0.001	-0.082 – -0.057
T_Dummy 3	-0.065	<0.001	-0.082 – -0.047
Social class × T_Dummy 1	-0.062	<0.001	-0.066 – -0.057
Social class × T_Dummy 2	-0.095	<0.001	-0.101 – -0.089
Social class × T_Dummy 3	-0.099	<0.001	-0.107 – -0.090
Random Effects			
σ^2	1.41		
τ_{00}	2.39	ID	
τ_{11}	0.79	ID.T_Dummy1	
	1.18	ID.T_Dummy 2	
	1.33	ID.T_Dummy3	
ρ_{01}	-0.28		
	-0.38		
	-0.42		
ICC	0.63		
<i>N</i>	86872		
Observations	875967		

Note. The time variables are represented by dummy codes, where T_Dummy 1 denotes the first dummy-coded time variable (0=T0, T2, or T3, 1=T1), T_Dummy 2 represents the second dummy-coded time variable (0=T0, T1, or T3, 1=T2), T_Dummy 3 represents the third dummy-coded time variable (0=T0, T1, or T2, 1=T3). The other categorical variables were dummy-coded, such as gender (0=female, 1=male) and region (0=noncapital, 1=capital). The social class variable was mean-centered. Statistically significant *p*-values are bolded

with higher social class had higher well-being before the pandemic (Kahneman & Deaton, 2010; Tan et al., 2020). Importantly, social class explained individual differences in the decline of well-being during the first year of COVID ($b = -0.062, p < .001, 95\% \text{ CI} [-0.066, -0.057]$), the second year of COVID ($b = -0.095, p < .001, 95\% \text{ CI} [-0.101, -0.089]$), and the third year of COVID ($b = -0.099, p < .001, 95\% \text{ CI} [-0.107, -0.090]$).

Further analyses using simple slope tests showed that higher-class individuals (1 *SD* above the mean = 6.86) experienced a significant decrease in well-being during the first year of COVID ($b = -0.207, p < .001, 95\% \text{ CI} [-0.221, -0.194]$), the second year of COVID ($b = -0.262, p < .001, 95\% \text{ CI} [-0.280, -0.244]$), and the third year as well ($b = -0.264, p < .001, 95\% \text{ CI} [-0.290, -0.238]$). In contrast, however, lower-class individuals (1 *SD* below the mean = 2.81) did not experience a significant decline in well-being during any of the three years of COVID (first year: $b = 0.042, p < .001, 95\% \text{ CI} [0.029, 0.055]$; second year: $b = 0.122, p < .001, 95\% \text{ CI} [0.105, 0.140]$; third year: $b = 0.135, p < .001, 95\% \text{ CI} [0.012, 0.111]$). Nonetheless, the average well-being of higher-class individuals remained significantly higher than that of lower-class individuals (first year: $b = 0.301, p < .001, 95\% \text{ CI} [0.302, 0.314]$; second year: $b = 0.275, p < .001, 95\% \text{ CI} [0.268, 0.282]$; third year: $b = 0.271,$

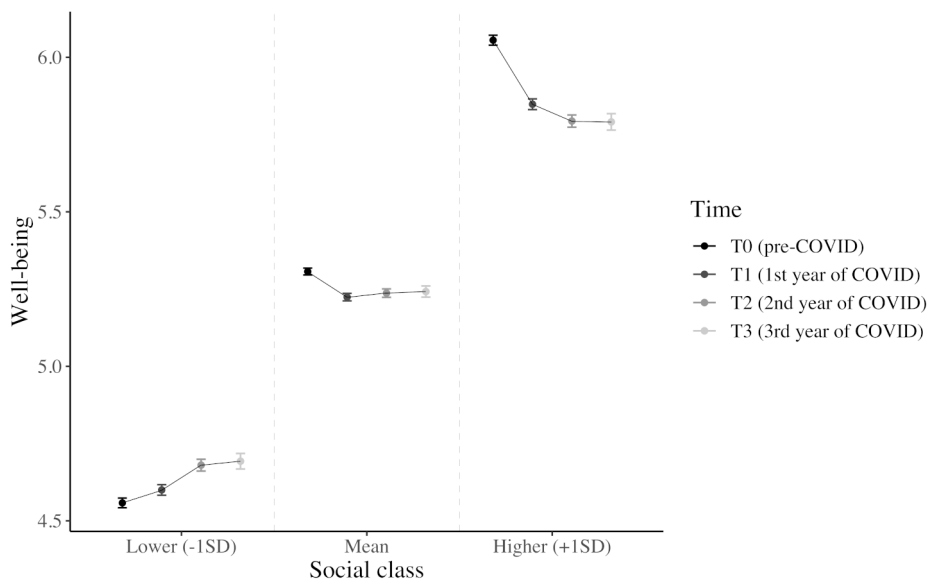


Fig. 2 Changes in well-being over 4 years depending on social class

$p < .001$, 95% CI [0.262, 0.280]), while the former experienced a greater degree of decline in well-being compared.

Consistent patterns emerged across the sub-indices from well-being (Table S3 and Fig. S2 in the SI). Higher-class individuals experienced significant declines in LS, PA, and MIL, as well as increases in NA and stress. However, lower-class individuals did not show declines but increases in LS, PA, and MIL, as well as partial alleviation of NA and stress. Again, despite these significant increases in well-being, the well-being of lower-class individuals remained lower than that of their higher-class counterparts.

To establish the robustness of our findings, we conducted additional analyses using subsample 1, including participants who responded to well-being questions at least once per year for four years. The results consistently demonstrated that while lower-class individuals still had lower levels of well-being, higher-class individuals exhibited steeper declines in well-being over the three years of the pandemic. Detailed results can be found in Table S4 and Fig. S3 in the SI.

6.2 Analysis 2: Well-being Changes Depending on Social Class Changes from pre-COVID to during COVID

The second analysis utilized transitions in social class following the COVID-19 outbreak. Here, we primarily tracked the well-being changes within each of the four groups: (1) Lower-to-lower social class (remained as lower-class during pre-COVID and COVID) (2) Lower-to-higher social class (transitioned from pre-COVID lower-class to COVID higher-class), (3) Higher-to-lower social class (shifted from pre-COVID higher-class to COVID lower-class), and (4) Higher-to-higher social class (remained as higher-class during pre-COVID and COVID). To this end, we used subsample 2, which included individuals' social

class data during both the pre-COVID and COVID periods, and conducted a three-way cross-level interaction analysis involving time (Level 1; pre-COVID and COVID), pre-COVID social class (Level 2), and COVID social class (Level 2) to examine their effect on well-being.

Consistent with Analysis 1, an interaction effect between social class in the pre-COVID period and time was observed ($b = -0.114, p < .001, 95\% \text{ CI } [-0.130, -0.098]$), indicating that the decline in well-being during COVID was more pronounced among higher-class than lower-class individuals. Notably, the interaction between pre-COVID social class and time was further moderated by the COVID social class, revealing significant three-way interaction (Table 3; $b = 0.007, p = .009, 95\% \text{ CI } [0.002, 0.013]$).

As displayed in Fig. 3, additional simple slope tests revealed that individuals with higher-to-higher social class (1 *SD* above the mean for both the pre-COVID and COVID periods) experienced a significant decline in well-being during COVID relative to baseline ($b = -0.141, p < .001, 95\% \text{ CI } [-0.181, -0.100]$). In contrast, those with lower-to-lower social class (1 *SD* below the mean for both pre-COVID and COVID periods) did not exhibit a significant decline in well-being following the COVID onset ($b = 0.016, p = .449, 95\% \text{ CI } [-0.025, 0.056]$). This further supports that the adverse effects on well-being during COVID were more pronounced among higher-class than lower-class individuals. Meanwhile, among individuals who experienced social class transitions after the COVID outbreak, those with higher-to-lower social class (1 *SD* above the mean for pre-COVID and 1 *SD* below COVID period) exhibited a decrease in well-being ($b = -0.507, p < .001, 95\% \text{ CI } [-0.580, -0.434]$), while those with lower-to-higher social class (1 *SD* below the mean for pre-COVID and 1

Table 3 Results of multilevel modeling analysis for well-being index

Predictors	<i>b</i>	<i>p</i>	95% CI
(Intercept)	5.595	<0.001	5.533 – 5.656
Age	0.002	0.050	0.000 – 0.005
Gender	0.136	0.006	0.039 – 0.234
Region	-0.041	0.238	-0.110 – 0.027
Social class_T0	0.268	<0.001	0.245 – 0.292
Social class_Tpost	0.183	<0.001	0.160 – 0.207
Time	-0.093	<0.001	-0.122 – -0.063
Social class_T0 × Social class_Tpost	-0.029	<0.001	-0.037 – -0.022
Social class_T0 × Time	-0.114	<0.001	-0.130 – -0.098
Social class_Tpost × Time	0.074	<0.001	0.058 – 0.090
(Social class_T0 × Time) × Social class_Tpost	0.007	0.009	0.002 – 0.013
Random Effects			
σ^2	1.46		
τ_{00}	2.50 _{ID, Time}		
τ_{11}	0.84 _{ID}		
ρ_{01}	-0.34 _{ID}		
ICC	0.62		
<i>N</i>	7196		
Observations	168877		

Note. The dummy variables were time (0=pre-COVID, 1=COVID), gender (0=female, 1=male), and region (0=noncapital, 1=capital). The social class variable was mean-centered. Social class_T0=social class during pre-COVID; Social class_Tpost=social class after the onset of COVID. Statistically significant *p*-values are bolded

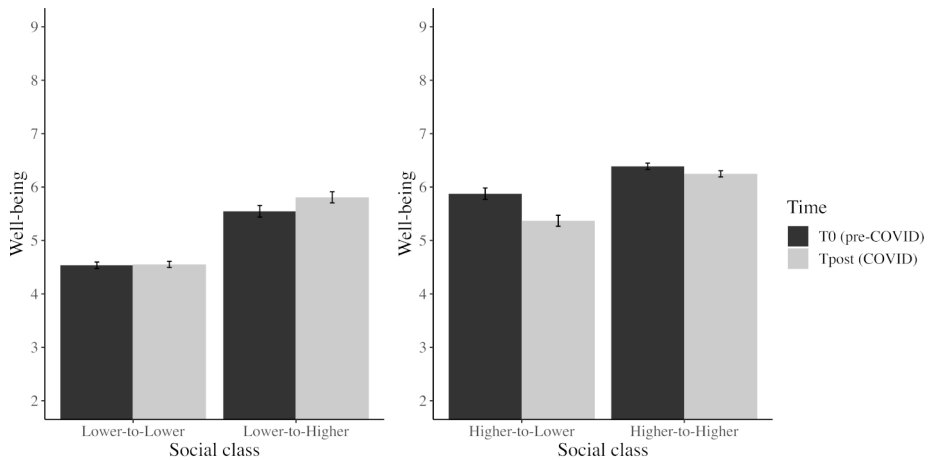


Fig. 3 Prediction of changes in well-being depending on social class pre- and COVID

Note. Lower-to-lower social class: Individuals who remained in the lower-class both before and during the COVID period ($n=465$, 6.5% of total N); Lower-to-higher social class: Individuals who experienced upward mobility, transitioning from the lower-class during the pre-COVID period to the higher-class during the COVID period ($n=38$, 0.5% of total N); Higher-to-lower social class: Individuals who experienced downward mobility, transitioning from the higher-class during the pre-COVID period to the lower-class during the COVID period ($n=48$, 0.7% of total N); Higher-to-higher social class: Individuals who remained in the higher-class both before and during the COVID period ($n=826$, 11.5% of total N)

SD above COVID period) showed an increase in well-being ($b=0.261$, $p<.001$, 95% CI [0.187, 0.335]). Overall, both social class and social class changes were significant in shaping individuals' well-being.

6.3 Analysis 3: Changes in Well-being due to Social-distancing Mandates

This analysis investigated which social class group experienced more detrimental effects under the implementation of social distancing measures. To this end, we divided the COVID-19 period into two segments: the period with social distancing and that without. To compare well-being across these periods, we created a dummy variable, such that where the period during the implementation of social distancing was coded 1, the remaining time was coded as 0. The multilevel model included the effects of time (Level 1; social distancing order vs. non-order period), social class, and one cross-level interaction term on well-being.

The consistent findings showed significant differences in well-being relative to social distancing based on social class. A significant decrease in well-being was observed during social distancing orders relative to other periods ($b = -0.011$, $p = .028$, 95% CI [-0.021, -0.001]), indicating that people experienced lower levels of well-being during social distancing. This decrease was found to be moderated by social class ($b = -0.018$, $p < .001$, 95% CI [-0.023, -0.013]). During the social distancing order period, the decline in well-being among higher-class individuals was even steeper than that manifested in the non-order period ($b = -0.047$, $p < .001$, 95% CI [-0.061, -0.033]). This aggravation was not evident among lower-class individuals ($b = 0.025$, $p < .001$, 95% CI [0.011, 0.038]). Please see Table S5 in the SI for detailed results. This analysis suggests that class differences in well-being

changes during the pandemic are in part determined by whether and how much the data collection period included social distancing.

6.4 Analysis 4: Mediations of Perceived Changes in Daily life

Analysis 1, 2, and 3 have demonstrated that the well-being decline occurred more severely among higher-class than lower-class individuals throughout the COVID-19 pandemic. Notably, this class difference manifested to a greater extent under social distancing orders. We moved on to validate a mechanism behind these phenomena: class-specific perceptions of daily changes caused by the pandemic.

We adopted multilevel structural equation modeling (MSEM) approaches to test multi-level mediation examining whether the changes in daily life mediated individual differences in the well-being slope, as predicted by the interaction between time and social class (see Fig. S4 in SI for model details). MSEM approaches are preferable for this study, as they produce more thorough and less misleading results on indirect effects in hierarchical data, mitigating bias by treating the Level 2 components of Level 1 variables as latent (Preacher et al., 2010). We assumed a random intercept and random slope for well-being. All models included the covariates such as age, gender, region, and exposure to confirmed cases at Level 2. The parameters were estimated using MSEM in Mplus Version 8.5 (Muthén & Muthén, 1998–2017). The indirect effects in the MSEM were tested via Monte Carlo bootstrapping simulation procedures (Preacher & Selig, 2012) with 20,000 replications at the 95% confidence level.

The estimates of direct and indirect effects (via changes in daily life) of social class on changes in well-being and its sub-indices are shown in Table S6 in the SI. First, the estimates of social class that predict changes in daily life (*a* path in Table S6; social class → changes in daily life) indicate that individuals of higher social class experienced greater changes in daily life ($b=0.052$, $p<.001$, 95% CI [0.040, 0.065]). Second, estimates of changes in daily life predicting a decline in well-being (*b* path in 6; changes in daily life → slope of well-being) show that increased changes in daily life were associated with steeper declines in well-being ($b = -0.081$, $p<.001$, 95% CI [-0.097, -0.064]), such that perceived changes for usual life negatively contribute to well-being. Third and most importantly, social class had a significant indirect effect on the decline in well-being via changes in daily life ($b = -0.004$, $p<.001$, 95% CI [-0.006, -0.003], Monte Carlo 95% CI [-0.006, -0.003]). Separate analyses across well-being sub-indices produced similar findings (see indirect estimates in Table S6 for LS, PA, NA, MIL, and stress). Thus, people of higher social class experienced more changes in daily life due to COVID-19 than those of lower-class, resulting in a greater decrease in well-being during the COVID-19 pandemic.

7 Discussion

This study provides valuable insights on the relationship between social class and mental health. First, while higher-class individuals maintained an average well-being that was greater than that of lower-class individuals, they had more vulnerability to within-person decline. The decline among higher- vs. lower-class individuals aligns with the findings of several previous reports (e.g., Benke et al., 2023; Jaschke et al., 2023; Wanberg et al., 2020).

The World Happiness Report for 2020 also noted that, in a global sample, COVID-19 diminished the impact of income on life satisfaction. Although this greater decline among higher-class individuals may sound counterintuitive, it may occur due to the unique challenges faced by the well-off during this unprecedented crisis. More importantly, our evidence does not suggest a general vulnerability in this group; rather, it elaborates on what is uncovered when within-person changes are distinguished from between-person differences. As Robinson (1950) states, inferring associations between variables at different levels of analysis from their association at one level entails an ecological fallacy. Our findings highlight the importance of distinguishing within-person changes from mean-level individual differences when examining the psychological effects of social class. Furthermore, by incorporating analyses of social class transitions and the effects of social distancing, this study provides converging evidence on well-being changes that varied across social classes, facilitating a nuanced understanding of the dynamics behind well-being fluctuations across different social strata.

Importantly, we exposed a possible mechanism underlying the complex impacts of social class on well-being during the crisis. Although the link between well-being decline and socioeconomic background has previously been studied (e.g., in terms of education; Wanberg et al., 2020), its mechanism remained a missing gap. Our study empirically establishes that everyday constraints and changes made by anti-COVID measures disrupted the well-being of higher-class groups. Recent studies have found that social isolation, not the pandemic itself, brought about deterioration in mental health (Benke et al., 2023). Indeed, increased mental health problems, such as symptoms of depression and anxiety, were consistently observed during the pandemic when social restriction measures were enforced following the COVID-19 outbreak, and these symptoms diminished during periods when restrictions were eased (Fancourt et al., 2021; van den Boom et al., 2023). The lives of higher-class individuals may have been altered by the imposed social restrictions, thereby harming their sense of well-being. Generally, social rank positively correlates to the sense of independence and agency, contributing to well-being (Kraus et al., 2012; Lachman & Weaver, 1998). Higher-class individuals release themselves from ordinary duties through costly leisure activity and travel (Lewis, 2016; Simon & Ainsworth, 2012), pursuing social recognition and by means of exclusive networking (Choi et al., 2017; Smeets et al., 2020). Our findings suggest that the pandemic may hinder these routine elements, which had been integral to the well-being of higher-class individuals.

8 Conclusion, Implications, and Limitations

8.1 Main Findings

According to our analyses, social class played a significant role in both baseline well-being and change in well-being. Higher-class individuals faced a steeper decline in well-being over the 3 years of the pandemic from their pre-pandemic level (Analysis 1). Higher-class individuals who maintained their social class during the pandemic experienced an even more significant decline, relative to lower-class individuals who remained in the lower-class (Analysis 2). However, we should note that pre-existing gaps in overall well-being across social classes persisted through the pandemic.

We postulated that the social distancing measures imposed to contain the spread of COVID-19 had broader impacts on the lives of higher-class than lower-class individuals and spurred the decline in their well-being; indeed, the well-being of higher-class individuals decreased to a greater degree during periods of social distancing orders, while that of lower-class individuals did not (Analysis 3). In addition, higher-class individuals perceived greater changes in their daily lives than lower-class individuals; this perception mediated differential declines in well-being (Analysis 4). Impediments in social interaction and daily lives accompanied by the pandemic may have threatened the routinary mental health resources of the well-off.

8.2 Implications

This study extends the understanding of social class dynamics in terms of mental well-being, particularly within the context of a prolonged crisis such as the COVID-19 pandemic. By examining within-person variations in well-being alongside between-group disparities, we highlight the importance of analyzing psychological resilience and vulnerability beyond static social class comparisons. Our findings show that higher-class individuals, often presumed to have greater psychological resources (Helliwell et al., 2020), displayed more pronounced declines in well-being, challenging assumptions that privilege generally correlates with mental well-being (e.g., Anderson et al., 2012; Kahneman & Deaton, 2010; Tan et al., 2020). This distinction emphasizes the need for further theoretical exploration into how social disruptions affect different class groups' psychological resources and coping mechanisms, particularly as they relate to well-being fluctuations.

This study has documented the trajectories of well-being throughout the prolonged COVID-19 pandemic, which addresses certain questions remaining from previous longitudinal research. For instance, Benke et al. (2023) evaluated mental health challenges of depression, anxiety, and loneliness in the German population, comparing initial assessments to follow-up assessments at 6 and 12 months. They noted increased depression and loneliness at the 12-month mark, underscoring the need to monitor long-term impacts on mental well-being. Delhey et al. (2023) examined the distribution of life satisfaction in the German and UK populations over the course of the first 2 years of the pandemic. However, as these studies began with the onset of the pandemic, their findings cannot directly capture the impact of the pandemic itself unless compared to pre-pandemic levels. Addressing this gap, other studies that have used the data of the German Socio-Economic Panel (Hettich et al., 2022; Jaschke et al., 2023) demonstrated a significant decline in life satisfaction following the beginning of the pandemic, with a more pronounced downturn during the second year than the first. Similarly, Guan et al. (2024), utilizing Australia's Household, Income and Labour Dynamics Survey, observed a notable deterioration in mental health over the course of the pandemic relative to the preceding years (2017–2019). Building on these findings, our study documented well-being trajectories on a daily basis for 4 years, including 3 pandemic years and the year preceding the start of the pandemic. It is also noteworthy for having drawn its data from the South Korean population, which is less commonly studied than samples from typical Western, educated, industrial, rich, and democratic countries. This study not only provided a comprehensive overview over time as the crisis evolved but also identified vulnerable individuals during the crisis, with a focus on social class differences. The decline in well-being in the higher class remained severe, with no signs of recovery

until the pandemic neared its end. This trend was further evident taking into account the role of social class transitions and social distancing measures as well as the mediating effects of perceived changes in life relevant to social restrictions. Our 4 years of data provide a holistic picture of the aftermath of the pandemic across social classes.

Our findings have significant implications for public health policies and mental health interventions, particularly in addressing well-being disparities across social classes during crises. The pronounced decline in well-being among higher-class individuals suggests that social restrictions, which disrupt activities associated with autonomy and social status, may require targeted mental health support for those in higher socioeconomic groups. Policymakers should consider tailored mental health strategies accounting for class-specific needs during future crises, preventing declines in well-being for higher-class individuals while improving the average level of well-being for lower-class individuals. These tailored approaches could help mitigate mental health impacts across the social spectrum in times of large-scale social disruption.

8.3 Limitations and Future Directions

While this study provides theoretical and policy implications, some limitations should be acknowledged. First, we exclusively used South Korean samples. Despite an early surge in cases (Dighe et al., 2020), South Korea successfully prepared for and fought against COVID-19. Clear guidelines, testing, and contact tracing rapidly flattened the infection curve without the need for stringent lockdown measures (Kim et al., 2022), which may help explain our results in the context of South Korea's successful policy response. In addition, many policies were focused on minimizing socioeconomic damages to underprivileged populations (Budget Office of the Ministry of Economy and Finance, October 29, 2021). Hence, future research should consider the characteristics and effectiveness of government actions undertaken in South Korea relative to other countries. Nonetheless, it should be emphasized that this present study relied on one of the largest and longest longitudinal studies of COVID-19 and mental well-being, which happens to use a Korean sample.

Next, our analyses were conducted on a non-random sample. The use of a social network platform for recruitment produced an oversampling of females and young adults. This raises questions about the generalizability of our findings to a broader population, including males and older people. A more comprehensive understanding of well-being experiences across social classes could be achieved through examining both subjective and objective measures of social class. In spite of these issues, a previous meta-analytic review confirmed that the association between ladder social class (our measure of social class) and well-being is similar to that between income and well-being (Tan et al., 2020), supporting the robustness of our findings, both theoretically and empirically.

Questions also remain regarding how and to what extent changes in well-being are affected in relation to other demographic factors, such as household composition, the presence of children, marital status, and labor market participation, all of which warrant further investigation. However, the unpredictability of the pandemic makes it nearly impossible for anyone to design a longitudinal study with a randomized representative sample in advance that would include all relevant variables.

Finally, one could argue that the decline in well-being among the higher social class could be explained as a statistical artifact of regression to the mean. If so, the lower class,

initially experiencing higher negative affect, should show further decline. However, the data show that lower-class individuals did not consistently exhibit a significant decline in negative affect but rather generally remained unchanged (e.g., Fig. S2 in the SI), countering regression to the mean as the primary explanation for our results.

8.4 Conclusions

This study provides comprehensive insights into the power of social class over well-being changes, extending beyond the absolute gap that has been well-established by cross-sectional studies (Gallo & Matthews, 2003; Kraus et al., 2012). Although COVID-19 significantly impacted the well-being of higher-class individuals, it did not close the existing class disparity. The persistence of well-being deprivation among lower-class individuals underscores the need for ongoing study of this question. Furthermore, the psychological endurance that lower-class individuals displayed during the pandemic deserves to be noted. According to Guan et al. (2024), although there was a marked decline in mental health during the pandemic, this period also produced an increase in communal satisfaction with family, community, and neighborhood ties. Lower-class individuals are often more interdependent and relationship-oriented (Kraus et al., 2012), so it may be that maintaining close relationships helped them safeguard their mental well-being during the crisis. Alternatively, the results may simply reflect the gloomy fact that external constraints and less concern for networking and travel restrictions were common among lower-class individuals even before the pandemic. By uncovering these dynamics within a South Korean context, this study contributes to a more nuanced understanding of how socioeconomic status shapes mental health under crisis conditions and underscores the importance of addressing both crisis-specific and enduring determinants of well-being across social classes. Future research should continue to explore these mechanisms in diverse settings to perform targeted interventions that can better support well-being across all socioeconomic strata.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s11205-024-03496-4>.

Author Contributions Y. Kwon, N. Kim, and Y. Choi collected data and analyzed data under the supervision of I. Choi. All authors contributed to interpreting the results. Y. Kwon and S. K. Zong wrote the manuscript and I. Choi provided critical revisions. All authors approved the final version of the manuscript for submission.

Funding Open Access funding enabled and organized by Seoul National University.

This research was funded by Grant 0404-20200007 from Kakao Corporation. This work was also supported by the Ministry of Education of the Republic of Korea and the National Research Foundation of Korea (NRF-2020S1A3A2A02097375).

Declarations

Conflict of Interest The authors have no conflicts of interest to declare.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted

by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

References

- Adler, N. E., Epel, E. S., Castellazzo, G., & Ickovics, J. R. (2000). Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy, white women. *Health Psychology, 19*(6), 586–592. <https://doi.org/10.1037/0278-6133.19.6.586>
- Aknin, L. B., De Neve, J. E., Dunn, E. W., Fancourt, D. E., Goldberg, E., Helliwell, J. F., Jones, S. P., Karam, E., Layard, R., Lyubomirsky, S., Rzepa, A., Saxena, S., Thornton, E. M., VanderWeele, T. J., Whillans, A. V., Zaki, J., Karadag, O., & Amor, B., Y (2022). Mental Health during the First Year of the COVID-19 pandemic: A review and recommendations for moving Forward. *Perspectives on Psychological Science, 17*(4), 915–936. <https://doi.org/10.1177/17456916211029964>
- Anderson, C., Kraus, M. W., Galinsky, A. D., & Keltner, D. (2012). The local-ladder effect: Social status and subjective well-being. *Psychological Science, 23*(7), 764–771. <https://doi.org/10.1177/0956797611434537>
- Arthi, V., & Parman, J. (2021). Disease, downturns, and wellbeing: Economic history and the long-run impacts of COVID-19. *Explorations in Economic History, 79*, 101381. <https://doi.org/10.1016/j.eeh.2020.101381>
- Baker, S. R., Bloom, N., Davis, S. J., & Terry, S. J. (2020). COVID-Induced Economic uncertainty. *National Bureau of Economic Research Working Paper Series, 26983*. <https://doi.org/10.3386/w26983>
- Bates, D., Mächler, M., Bolker, B., & Walker, S. (2015). Fitting Linear mixed-effects models using lme4. *Journal of Statistical Software, 67*(1), 1–48. <https://doi.org/10.18637/jss.v067.i01>
- Benke, C., Autenrieth, L. K., Asselmann, E., & Pané-Farré, C. A. (2023). One year after the COVID-19 outbreak in Germany: long-term changes in depression, anxiety, loneliness, distress and life satisfaction. *European Archives of Psychiatry and Clinical Neuroscience, 273*(2), 289–299. <https://doi.org/10.1007/s00406-022-01400-0>
- Biswas-Diener, R., & Diener, E. (2001). Making the best of a bad situation: Satisfaction in the slums of Calcutta. *Social Indicators Research, 55*(3), 329–352. <https://doi.org/10.1023/A:1010905029386>
- Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: Rapid review of the evidence. *The Lancet, 395*(10227), 912–920. [https://doi.org/10.1016/S0140-6736\(20\)30460-8](https://doi.org/10.1016/S0140-6736(20)30460-8)
- Bu, F., Steptoe, A., & Fancourt, D. (2020). Loneliness during a strict lockdown: Trajectories and predictors during the COVID-19 pandemic in 38,217 United Kingdom adults. *Social Science & Medicine, 265*, 113521. <https://doi.org/10.1016/j.socscimed.2020.113521>
- Budget Office of the Ministry of Economy and Finance (October 29, 2021). *Recovery for All: Korea's Fiscal Response to COVID-19*. Republic of Korea; Ministry of Economy and Finance. Retrieved from https://overseas.mofa.go.kr/fr-ko/brd/m_9457/down.do?brd_id=8886&seq=1332262&data_tp=A&file_seq=1
- Cavicchioli, M., Ferrucci, R., Guidetti, M., Canevini, M. P., Pravettoni, G., & Galli, F. (2021). What will be the impact of the COVID-19 Quarantine on Psychological Distress? Considerations based on a systematic review of pandemic outbreaks. *Healthcare, 9*(1), 101. <https://doi.org/10.3390/healthcare9010101>
- Choi, J., Lee, M., Lee, J., Kang, D., & Choi, J. Y. (2017). Correlates associated with participation in physical activity among adults: A systematic review of reviews and update. *Bmc Public Health, 17*(1), 356. <https://doi.org/10.1186/s12889-017-4255-2>
- Choi, I., Kim, J. H., Kim, N., Choi, E., Choi, J., Suk, H. W., & Na, J. (2021). How COVID-19 affected mental well-being: An 11-week trajectories of daily well-being of Koreans amidst COVID-19 by age, gender and region. *PLOS ONE, 16*(4), e0250252. <https://doi.org/10.1371/journal.pone.0250252>
- Delhey, J., Hess, S., Boehnke, K., Deutsch, F., Eichhorn, J., Kühnen, U., & Welzel, C. (2023). Life satisfaction during the COVID-19 Pandemic: The role of human, economic, social, and psychological capital. *Journal of Happiness Studies, 24*(7), 2201–2222. <https://doi.org/10.1007/s10902-023-00676-w>
- Diener, E. (1984). Subjective well-being. *Psychological Bulletin, 95*(3), 542–575. <https://doi.org/10.1037/0033-2909.95.3.542>
- Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin, 125*(2), 276–302. <https://doi.org/10.1037/0033-2909.125.2.276>
- Diener, E., Oishi, S., & Lucas, R. E. (2003). Personality, culture, and subjective well-being: Emotional and cognitive evaluations of life. *Annual Review of Psychology, 54*, 403–425. <https://doi.org/10.1146/annurev.psych.54.101601.145056>



- Dighe, A., Cattarino, L., Cuomo-Dannenburg, G., Skarp, J., Imai, N., Bhatia, S., Gaythorpe, K. A. M., Ainslie, K. E. C., Baguelin, M., Bhatt, S., Boonyasiri, A., Brazeau, N. F., Cooper, L. V., Coupland, H., Cucunuba, Z., Dorigatti, I., Eales, O. D., van Elsland, S. L., FitzJohn, R. G., & Riley, S. (2020). Response to COVID-19 in South Korea and implications for lifting stringent interventions. *BMC Medicine*, *18*(1), 321. <https://doi.org/10.1186/s12916-020-01791-8>
- Fancourt, D., Steptoe, A., & Bu, F. (2021). Trajectories of anxiety and depressive symptoms during enforced isolation due to COVID-19 in England: A longitudinal observational study. *The Lancet Psychiatry*, *8*(2), 141–149. <https://doi.org/10.1016/S2215->
- Fuentes, N., & Rojas, M. (2001). Economic theory and subjective well-being: Mexico. *Social Indicators Research*, *53*(3), 289–314. <https://doi.org/10.1023/A:1007189429153>
- Gallo, L. C., & Matthews, K. A. (2003). Understanding the association between socioeconomic status and physical health: Do negative emotions play a role? *Psychological Bulletin*, *129*(1), 10–51. <https://doi.org/10.1037/0033-2909.129.1.10>
- Geirdal, A. Ø., Ruffolo, M., Leung, J., Thygesen, H., Price, D., Bonsaksen, T., & Schoultz, M. (2021). Mental health, quality of life, wellbeing, loneliness and use of social media in a time of social distancing during the COVID-19 outbreak. A cross-country comparative study. *Journal of Mental Health*, *30*(2), 148–155. <https://doi.org/10.1080/09638237.2021.1875413>
- Guan, Y., Jiang, D., Wu, C., Deng, H., Su, S., Buchtel, E. E., & Chen, S. X. (2024). Distressed yet bonded: A longitudinal investigation of the COVID-19 pandemic's silver lining effects on life satisfaction. *American Psychologist*, *79*(2), 268–284. <https://doi.org/10.1037/amp0001188>
- Helliwell, J. F., Layard, R., & Sachs, J. (2020). *World Happiness Report 2020*. Sustainable Development Solutions Network.
- Hettich, N., Entringer, T. M., Kroeger, H., Schmidt, P., Tibubos, A. N., Braehler, E., & Beutel, M. E. (2022). Impact of the COVID-19 pandemic on depression, anxiety, loneliness, and satisfaction in the German general population: A longitudinal analysis. *Social Psychiatry and Psychiatric Epidemiology*, *57*(12), 2481–2490. <https://doi.org/10.1007/s00127-022-02311-0>
- Howell, R. T., & Howell, C. J. (2008). The relation of economic status to subjective well-being in developing countries: A meta-analysis. *Psychological Bulletin*, *134*(4), 536–560. <https://doi.org/10.1037/0033-2909.134.4.536>
- Job, E., Frank, P., Steptoe, A., & Fancourt, D. (2020). Levels of severity of depressive symptoms among At-Risk groups in the UK during the COVID-19 pandemic. *JAMA Network Open*, *3*(10), e2026064–e2026064. <https://doi.org/10.1001/jamanetworkopen.2020.26064>
- Jaschke, P., Kosyakova, Y., Kuche, C., Walther, L., Gofner, L., Jacobsen, J., & Bajbouj, M. (2023). Mental health and well-being in the first year of the COVID-19 pandemic among different population subgroups: Evidence from representative longitudinal data in Germany. *BMJ open*, *13*(6), e071331. <https://doi.org/10.1136/bmjopen-2022-071331>
- Kahneman, D., & Deaton, A. (2010). High income improves evaluation of life but not emotional well-being. *Proceedings of the National Academy of Sciences*, *107*(38), 16489–16493. <https://doi.org/10.1073/pnas.1011492107>
- Kim, B. (2023, January 23). S. Korea's new COVID-19 cases drop to 9,227, cumulative cases top 30 mln. Yonhap News Agency. <https://en.yna.co.kr/view/AEN20230123000700320>
- Kim, J. H., Shim, Y., Choi, I., & Choi, E. (2022). The role of coping strategies in maintaining well-being during the COVID-19 outbreak in South Korea. *Social Psychological and Personality Science*, *13*(1), 320–332. <https://doi.org/10.1177/1948550621990595>
- Kraus, M. W., Piff, P. K., Mendoza-Denton, R., Rheinschmidt, M. L., & Keltner, D. (2012). Social class, solipsism, and contextualism: How the rich are different from the poor. *Psychological Review*, *119*(3), 546–572. <https://doi.org/10.1037/a0028756>
- Lachman, M. E., & Weaver, S. L. (1998). The sense of control as a moderator of social class differences in health and well-being. *Journal of Personality and Social Psychology*, *74*(3), 763–773. <https://doi.org/10.1037/0022-3514.74.3.763>
- Lewis, W. (2016). Study abroad influencing factors: An investigation of socio-economic status, social, cultural, and personal factors. *Ursidae: The Undergraduate Research Journal at the University of Northern Colorado*, *5*(3), 6.
- Müller, S. R., Delahunty, F., & Matz, S. C. (2023). The impact of the early stages of COVID-19 on mental health in the United States, Germany, and the United Kingdom. *Journal of Personality and Social Psychology*, *124*(3), 620–639. <https://doi.org/10.1037/pspp0000459>
- Muthén, L. K., & Muthén, B. (1998–2017). *Mplus user's guide: Statistical analysis with latent variables, user's guide* (8th ed.). Los Angeles, CA: Muthén & Muthén.

- Pierce, M., Hope, H., Ford, T., Hatch, S., Hotopf, M., John, A., Kontopantelis, E., Webb, R., Wessely, S., McManus, S., & Abel, K. M. (2020). Mental health before and during the COVID-19 pandemic: A longitudinal probability sample survey of the UK population. *The Lancet Psychiatry*, 7(10), 883–892. [https://doi.org/10.1016/S2215-0366\(20\)30308-4](https://doi.org/10.1016/S2215-0366(20)30308-4)
- Preacher, K. J., & Selig, J. P. (2012). Advantages of Monte Carlo Confidence Intervals for Indirect effects. *Communication Methods and Measures*, 6(2), 77–98. <https://doi.org/10.1080/19312458.2012.679848>
- Preacher, K. J., Zyphur, M. J., & Zhang, Z. (2010). A general multilevel SEM framework for assessing multi-level mediation. *Psychological Methods*, 15(3), 209–233. <https://doi.org/10.1037/a0020141>
- Raudenbush, S. W., Spybrook, J., Congdon, R., Liu, X., Martinez, A., Bloom, H., & Hill, C. (2011). *Optimal design software for multi-level and longitudinal research (Version 3.01)[Software]*. In www.wtgrant-foundation.org.
- Reme, B. A., Wörn, J., & Skirbekk, V. (2022). Longitudinal evidence on the development of socioeconomic inequalities in mental health due to the COVID-19 pandemic in Norway. *Scientific Reports*, 12(1), 3837. <https://doi.org/10.1038/s41598-022-06616-7>
- Richards, L., & Paskov, M. (2016). Social class, employment status and inequality in psychological well-being in the UK: Cross-sectional and fixed effects analyses over two decades. *Social Science & Medicine*, 167, 45–53. <https://doi.org/10.1016/j.socscimed.2016.08.042>
- Robinson, W. S. (1950). Ecological correlations and the behavior of individuals. *American Sociological Review*, 15(3), 351–357. <https://doi.org/10.2307/2087176>
- Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of Research on Hedonic and Eudaimonic Well-Being. *Annual Review of Psychology*, 52(1), 141–166. <https://doi.org/10.1146/annurev.psych.52.1.141>
- Ryff, C. D., & Singer, B. (1998). The contours of positive human health. *Psychological Inquiry*, 9(1), 1–28. https://doi.org/10.1207/s15327965pli0901_1
- Sachs, J. D., Karim, S. S. A., Akin, L., Allen, J., Brosbøl, K., Colombo, F., Barron, G. C., Espinosa, M. F., Gaspar, V., Gaviria, A., Haines, A., Hotez, P. J., Koundouri, P., Bascuñán, F. L., Lee, J. K., Pate, M. A., Ramos, G., Reddy, K. S., Serageldin, I., & Michie, S. (2022). Commission on lessons for the future from the COVID-19 pandemic. *The Lancet*, 400(10359), 1224–1280. [https://doi.org/10.1016/S0140-6736\(22\)01585-9](https://doi.org/10.1016/S0140-6736(22)01585-9)
- Simon, J., & Ainsworth, J. W. (2012). Race and socioeconomic status differences in study abroad participation: The role of Habitus, Social Networks, and Cultural Capital. *ISRN Education*, 2012, 413896. <https://doi.org/10.5402/2012/413896>
- Smeets, P., Whillans, A., Bekkers, R., & Norton, M. I. (2020). Time Use and Happiness of millionaires: Evidence from the Netherlands. *Social Psychological and Personality Science*, 11(3), 295–307. <https://doi.org/10.1177/1948550619854751>
- Suk, H. W., Choi, E., Na, J., Choi, J., & Choi, I. (2021). Within-person day-of-week effects on affective and evaluative/cognitive well-being among Koreans. *Emotion*, 21(5), 1114–1118. <https://doi.org/10.1037/e00000930>
- Tan, J. J. X., Kraus, M. W., Carpenter, N. C., & Adler, N. E. (2020). The association between objective and subjective socioeconomic status and subjective well-being: A meta-analytic review. *Psychological Bulletin*, 146(11), 970–1020. <https://doi.org/10.1037/bul0000258>
- Tran, A., Bianchi, V., Moeck, E. K., Clarke, B., Moore, I., Burney, S. J. H., Koval, P., Kalokerinos, E. K., & Greenaway, K. H. (2023). Dynamics of Social experiences in the Context of Extended Lockdown. *Social Psychological and Personality Science*, 0(0). <https://doi.org/10.1177/19485506231176603>
- Van Bavel, J. J., Baicker, K., Boggio, P. S., Capraro, V., Cichocka, A., Cikara, M., Crockett, M. J., Crum, A. J., Douglas, K. M., Druckman, J. N., Drury, J., Dube, O., Ellemers, N., Finkel, E. J., Fowler, J. H., Gelfand, M., Han, S., Haslam, S. A., Jetten, J., & Willer, R. (2020). Using social and behavioural science to support COVID-19 pandemic response. *Nature Human Behaviour*, 4(5), 460–471. <https://doi.org/10.1038/s41562-020-0884-z>
- van den Boom, W., Marra, E., van der Vliet, N., Elberse, J., van Dijken, S., van Dijk, M., & de Bruin, M. (2023). General Mental Health, loneliness, and life satisfaction in the context of COVID-19 policies: A 2-Year Cohort Study in the Netherlands, April 2020–January 2022. *Public Health Reports*, 138(5), 812–821. <https://doi.org/10.1177/00333549231176000>
- Wanberg, C. R., Csillag, B., Douglass, R. P., Zhou, L., & Pollard, M. S. (2020). Socioeconomic status and well-being during COVID-19: A resource-based examination. *Journal of Applied Psychology*, 105(12), 1382–1396. <https://doi.org/10.1037/apl0000831>
- Witteveen, D., & Velthorst, E. (2020). Economic hardship and mental health complaints during COVID-19. *Proceedings of the National Academy of Sciences*, 117(44), 27277–27284. <https://doi.org/10.1073/pnas.2009609117>

- World Health Organization (2020, December 2). Sharing COVID-19 experiences: The Republic of Korea response. <https://www.who.int/westernpacific/news-room/feature-stories/item/sharing-covid-19-experiences-the-republic-of-korea-response>
- Xiong, J., Lipsitz, O., Nasri, F., Lui, L. M. W., Gill, H., Phan, L., Chen-Li, D., Iacobucci, M., Ho, R., Majeed, A., & McIntyre, R. S. (2020). Impact of COVID-19 pandemic on mental health in the general population: A systematic review. *Journal of Affective Disorders*, 277, 55–64. <https://doi.org/10.1016/j.jad.2020.08.001>
- Yu, S., & Blader, S. L. (2020). Why does social class affect subjective well-being? The role of status and power. *Personality and Social Psychology Bulletin*, 46(3), 331–348. <https://doi.org/10.1177/0146167219853841>
- Zacher, H., & Rudolph, C. W. (2021). Individual differences and changes in subjective wellbeing during the early stages of the COVID-19 pandemic. *American Psychologist*, 76(1), 50–62. <https://doi.org/10.1037/amp0000702>

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Authors and Affiliations

Yuri Kwon^{1,2}  · Sooyoun Kristina Zong³ · Namhee Kim¹ · Yuhyun Choi¹ · Incheol Choi^{1,4} 

✉ Incheol Choi
ichoic@snu.ac.kr

¹ Center for Happiness Studies, Seoul National University, Seoul, South Korea

² Department of Biomedical Engineering, Ulsan National Institute of Science and Technology, Ulsan, South Korea

³ Division of the Social Sciences, University of Chicago, Chicago, IL, USA

⁴ Department of Psychology, Seoul National University, 1 Gwanak-ro, Gwanak-gu, Seoul, South Korea