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Changes of well-being over the pandemic: a survey across generational cohorts

Chen Wang[1,2], Yizi Nie[2,3], Xiaoyu Lan[4], Qianqian Huang[2], Qunsen Dai[2] and Chao Zhou[5,6*]

Abstract

Psychological problems (e.g., depression and anxiety) have been widely studied as an important public health issue in the background of the pandemic, whereas the positive aspects (e.g., well-being) have been paid little attention. The present study aimed to investigate the effects of the COVID-19 pandemic and generations on well-being by adopting 5 groups (Post-00s, Post-90s, Post-80s, Post-70s, and Post-60s) × 2 time points (before and during the COVID-19 pandemic) mixed factorial design. A total of 1579 Chinese adults completed the self-report survey, and a valid sample of 1529 adults from five generational cohorts was included in the data analysis. Results of the mixed factorial ANOVAs and simple effects analyses showed significant interaction effects on some dimensions of well-being. Specifically, the Post-80s exhibited a significant increase in both Engagement and Accomplishment of well-being during the pandemic, and the Post-60s generation demonstrated a significant improvement in Engagement of well-being. However, the other generations did not show significant changes. It could be concluded that the effects of the pandemic on well-being are complicated across generations.

Keywords Well-being, Pandemic, Generations, Chinese adults

Introduction

Well-being has been recognized as the ultimate goal of human life [26]. Major external public social events, such as natural disasters, pandemics, and wars, can affect well-being [16, 50]. Additionally, generational backgrounds with different values, characteristics, beliefs, attitudes, and behaviors are likely to affect how people assess well-being [36, 42]. This study aims to explore how the pandemic and generations influence well-being and its five dimensions (i.e., positive emotions, engagement, relationships, meaning, and accomplishments).

Well-being and psychological effects of pandemics

Well-being reflects how a person physically and psychologically flourishes [36]. Substantial research has found an association between well-being and better physical and psychological status e.g. [3, 11, 29]. Previous theories of well-being were mainly constructed based on the hedonic or eudaimonic perspectives [14, 27]. Seligman developed the PERMA theory by correlating the two perspectives, which provides a more inclusive and comprehensive view of well-being [31, 38]. As stated by Seligman [38], PERMA well-being includes five dimensions: Positive emotion (P) relates to any feeling of pleasure, excitement, or other similar positive emotions; Engagement (E) concerns an intention/behavior of submission or inner absorption resulting in one's loss of time and themselves; Relationship (R) refers to belonging sense to society and

*Correspondence:
Chao Zhou
chaozhou@zjut.edu.cn
[1] Center for Brain, Mind and Education, Shaoxing University, Shaoxing 312000, China
[2] Department of Psychology, Shaoxing University, Shaoxing 312000, China
[3] College of Psychology, Shanghai Normal University, Shanghai 200030, China
[4] Department of Psychology, University of Oslo, Oslo, Norway
[5] College of Computer Science and Technology, Zhejiang University of Technology, Hangzhou 310000, China
[6] College of Continuing Education, Zhejiang University of Technology, Hangzhou 310000, China

enjoyment on one's social network; Meaning (M) indicates the status of having an orientation in life and the perception of worthwhile; Accomplishment (A) reflects one's motivation of pursuing personal goals and enjoyment with previously accomplished goals.

Few studies have investigated well-being during the pandemic directly, and it is unknown whether people have increased or decreased their flouring during this process [50, 52]. From the outbreak to the effective control of the COVID-19 pandemic, people's regular lives were full of uncertainty and disruption [19, 44]. Previous research mainly found negative psychological impacts, like increased depression, anxiety, pressure, fear, loneliness, and other psychological problems [7, 21, 33]. However, one study found that during the pandemic, university students struggled to create and maintain a new normal, and their mental toughness, realistic, pragmatic, and creative abilities had been improved [8, 22]. Another study also found that during the pandemic, people's sense of accomplishment has increased under the mediating of creativity [41]. Further research on how well-being and its specific dimensions change along with the pandemic is needed.

Generational cohort theory and generations in China

As Fisher and Crabtree [13] cited, the generational cohort and its theory date back to Ryder's work in 1965, and Strauss and Howe further popularized the Generational Cohort Theory in the 1990s. This theory suggests that people in a generation have similar pre-adulthood formative experiences, and these experiences determine their essential perspectives and core values, which will remain consistent throughout their lifetime [28]. As witnesses to the same major socio-political events in a period, a generation may hold similar attitudes and frameworks throughout life. Researchers in diverse areas have used the Generational Cohort Theory to understand people's attitudes and values, political activity, information-seeking behavior, students' learning styles and attitudes, and consumer preferences [13].

Not surprisingly, the criteria for dividing generations varied in different cultures because of the differences in socio-political development [12]. In Western countries, there are typically the Silent Generation, Baby Boomers, Generation X, Generation Y, and Generation Z [17, 34]. Considering the realities in Chinese political, social, and economic backgrounds, the popular cohort-based categories in China are the Post-60s (born 1961–1970), the Post-70s (born 1971–1980), the Post-80s (born 1981–1990), the Post-90s (born 1991–2000), and the Post-00s (born 2001–2010) [20, 24, 37].

The Chinese generational cohorts have grown up in different socio-political backgrounds. The Post-60s are a painful generation as they were born and raised during the Great Cultural Revolution when they experienced significant political instability and inadequate materials to meet the necessary needs of life [12]. The Post-70s were born amid the Cultural Revolution and grew up during China's economic reform years when more opportunities became available and education was emphasized [24]. Post-80s are a distinct generation born and grew up during a rapid political, social, and economic change under China's Reform and Open policy and the one-child policy [9]. Their well-being is more under control by individuals than ever before, compared with the preceding generations [51]. The Post-90s are the generation born in an environment where traditional and modern cultures intertwine. They have grown up along China's economic rise and experienced less government control over daily life, a proliferation of communication and information technology, and greater access to local and foreign goods and services [24]. The Post-00s were born to directly enjoy the fruits of the rapid development of China's economy, and they are the Indigenous people of the digital era, with the internet, smartphones, social media, and online shopping as their necessities of life [48].

Effects of generations on well-being

In addition to the pandemic, generations may also affect well-being. Generational cohorts are defined as groups of individuals who were born during the same period and experienced the same social, economic, political, and cultural events during early adulthood and would share similar values, characteristics, beliefs, attitudes, and behaviors throughout their lives [5, 20].

Generation is regarded as one special type of national subculture, and the generation subculture can indicate the value priorities during the country's particular period in its socio-political development [12]. To some extent, generation differences can reflect the evolutionary process of culture. China has long been known as a country with a collectivist culture. However, in recent years, due to globalization and socio-economic development, young Chinese people have demonstrated a more individualist culture e.g., [6]. Previous research has found that the perceptions of well-being are different between collectivist and individualist cultures [40]. Therefore, the old and young generations of Chinese may perceive well-being differently.

Empirical research has suggested that the older people are, the happier they are in China [23]. Although almost all previous research on well-being has reported sample age, age analysis is usually part of demographic information. The effects of age are fragmented and partially

different from those of generational cohorts. A generational cohort is not just people of the same age but is supposed to have some characteristics that differentiate it from another cohort. Such similarities within and differences across generations may contribute to diversity in well-being among different generational cohorts.

Moreover, the effects of the pandemic on mental health can be further affected by generations. According to the Generational Cohort Theory, people of different generations have grown up in different socio-political backgrounds, and collective experiences and memory determine a cohort's essential perspectives and core values [28]. Therefore, the responses to and perceptions of the life changes caused by the pandemic may be different across generations. In addition to the theoretical rationale, empirical evidence supports the different effects of pandemics among generations. For example, some studies have found that psychological problems, such as loneliness, anxiety, and depression caused by the pandemic, were more common among young people [18, 43]. Additionally, research in the field of culture can provide some indirect evidence. For example, the pandemic control policies in China, such as the strict isolation and quarantine measures, are not acceptable in more individualistic cultures [4]. Collectivistic cultures also suggest a high level of trust in governmental authorities, which is related to the effects of the pandemic [32]. Therefore, the Chinese old generations, who hold strong collectivistic cultures, may not be affected by the pandemic like the younger generations. In conclusion, it can be assumed that the perception of well-being changes during the pandemic differs across generational cohorts.

The present study

In conclusion, the present study examined the effects of generations and the pandemic on the well-being of Chinese adults. Specifically, this study aimed to answer the research question of whether the effects of the pandemic on the well-being of Chinese people were different across generational cohorts. According to the Generational cohort theory and previous literature [12, 20, 37], the present study used the generational cohorts of the Post-60s, the Post-70s, the Post-80s, the Post-90s, and the Post-00s.

Methods

Participants

A convenient sample of 1579 adults, mainly from East China, completed the online survey. After the data screening, 50 participants (3.17%) with invalid age information were excluded. The study involved a valid sample of 1529 Chinese adults aged 18 to 62 (M_{age}=29.27, SD = 9.60; 956 female). The sample fell into five generational cohorts (Post-00s, Post-90s, Post-80s, Post-70s, and Post-60s). Table 1 presents the specific demographic information.

Given the special research aim of the present study, all the data must be collected online within a short period. Consequently, the Post-60s, with the lowest internet access rate among the generations, contributed to the fewest respondents. Considering the small number of Post-60s participants, a bootstrap analysis was conducted to minimize the adverse effects. In the bootstrap plan, a simple random sampling was generated with replacement, stratified by the generational cohort. The size value of 1000 is applied to each stratum. Statistics of the bootstrap analysis are presented in Table 1.

Setting

The study was conducted in May 2022, and data collection was completed in twelve days. At that time, the COVID-19 pandemic was generally controlled in China, but regular pandemic prevention and control were still ongoing. According to the report by the National Medical Products Administration [30], Chinese people who had been fully vaccinated against COVID-19 had achieved 88.74% by the end of May 5, 2022, and those partially vaccinated were more than 90%. The Chinese government undertook strict pandemic policies, such as regular nucleic acid testing and social distancing restrictions.

The present study used an online survey that was proposed and spread on the researchers' social networks to collect data. Due to the limited time of data collection, the participants were netizens in close positions on the researchers' social networks. According to the IP information, the participants were mainly from urban areas in East China, which belong to China's best-developed regions with high GDP. People in these areas enjoyed the fast development since the policy of reform and opening up. Even though the COVID-19 pandemic was regarded as breaking up and quickly developing in Wuhan, East China was far from a dangerous region with the severe COVID-19 pandemic. Corresponding to the setting, the proportions of participants who had experienced social distancing (14.6%) and high-risk areas (15.3%) were minor.

Research design

To investigate the effects of the pandemic and generations on the well-being of Chinese people, a mixed factorial design with 5 groups (Post-00s, Post-90s, Post-80s, Post-70s, and Post-60s) × 2 time points (before and during the COVID-19 pandemic) was adopted.

Table 1 Characteristics of the sample ($N=1529$) and bootstrap analysis ($N=1000$ for each generational cohort)

	Post-00s ($n=429$)		Post-90s ($n=600$)		Post-80s ($n=329$)		Post-70s ($n=134$)		Post-60s ($n=37$)	
	N	%	*N*	%	*N*	%	*N*	%	*N*	%
Gender										
Male	231 (529)	53.8 (52.9)	237 (398)	39.5 (39.8)	60 (177)	18.2 (17.7)	35 (275)	26.1 (27.5)	10 (250)	27.0 (25.0)
Female	198 (471)	46.2 (47.1)	363 (602)	60.5 (60.2)	269 (823)	81.8 (82.3)	99 (725)	73.9 (72.5)	27 (750)	73.0 (75.0)
Education										
<=High school	21 (57)	4.9 (5.7)	79 (139)	13.2 (13.9)	202 (618)	61.4 (61.8)	64 (487)	47.8 (48.7)	11 (310)	29.7 (31.0)
Associate	32 (67)	7.5 (6.7)	143 (257)	23.8 (25.7)	75 (216)	22.8 (21.6)	40 (308)	29.9 (30.8)	16 (426)	43.2 (42.6)
Bachelor	353 (813)	82.3 (81.3)	159 (247)	26.5 (24.7)	46 (149)	14.0 (14.9)	27 (185)	20.1 (18.5)	8 (205)	21.6 (20.5)
>=Master	23 (63)	5.4 (6.3)	219 (357)	36.5 (35.7)	6 (17)	1.8 (1.7)	3 (20)	2.2 (2.0)	2 (59)	5.4 (5.9)
Employment Status										
Student	377 (868)	87.9 (86.8)	224 (359)	37.3 (35.9)	1 (3)	0.3 (0.3)	0 (0)	0.0 (0.0)	0 (0)	0.0 (0.0)
Employee	33 (85)	7.7 (85.0)	268 (452)	44.7 (45.2)	211 (643)	64.1 (64.3)	92 (680)	68.7 (68.0)	16 (416)	43.2 (41.6)
Retiree	0 (0)	0.0 (0.0)	0 (0)	0.0 (0.0)	1 (0)	0.3 (0.0)	5 (33)	3.7 (3.3)	15 (396)	40.5 (39.6)
Unemployed	19 (47)	4.4 (4.7)	108 (189)	18.0 (18.9)	116 (354)	35.3 (35.4)	37 (287)	27.6 (28.7)	6 (188)	16.2 (18.8)
Family income per month (RMB)										
<=3000	107 (269)	24.9 (26.9)	178 (294)	29.7 (29.4)	128 (383)	38.9 (38.3)	59 (437)	44.0 (43.7)	10 (287)	27.0 (28.7)
3001–5000	123 (276)	28.7 (27.6)	188 (320)	31.3 (32.0)	116 (348)	35.3 (34.8)	31 (250)	23.1 (25.0)	11 (296)	29.7 (29.6)
5001–10,000	111 (255)	25.9 (25.5)	157 (275)	26.2 (27.5)	66 (210)	20.1 (21.0)	34 (233)	25.4 (23.3)	12 (306)	32.4 (30.6)
10,001–50,000	68 (160)	15.9 (16.0)	67 (99)	11.2 (9.9)	17 (53)	5.2 (53.0)	6 (51)	4.5 (5.1)	2 (54)	5.4 (54.0)
> 50,000	20 (40)	4.7 (4.0)	10 (12)	1.7 (1.2)	2 (6)	0.6 (0.6)	4 (29)	3.0 (2.9)	2 (57)	5.4 (5.7)
Experience of social distancing										
Yes	98 (239)	22.8 (23.9)	92 (161)	15.3 (16.1)	23 (67)	7.0 (6.7)	8 (54)	6.0 (5.4)	2 (61)	5.4 (6.1)
No	331 (761)	77.2 (76.1)	508 (839)	84.7 (83.9)	306 (933)	93.0 (93.3)	126 (946)	94.0 (94.6)	35 (939)	94.6 (93.9)
Living in high-risk areas										
Yes	116 (254)	27.0 (25.4)	100 (148)	16.7 (14.8)	11 (45)	3.34 (4.5)	5 (41)	3.73 (4.1)	2 (53)	5.41 (5.3)
No	313 (746)	73.0 (74.6)	500 (852)	83.3 (85.2)	318 (955)	96.66 (95.5)	129 (959)	96.27 (95.9)	35 (947)	94.59 (94.7)

Note. Statistics of the bootstrap analysis are presented in brackets

Instruments

The Chinese version of PERMA-Profiler

This study utilized a modified Chinese version of Butler and Kern's original PERMA-Profiler (2016) to measure well-being [31]. The scale consists of 23 questions assessing five dimensions of well-being identified by Seligman [38], including positive emotions, engagement, relationships, meaning in life, and accomplishments. A higher score on the scale indicates a stronger sense of the well-being dimensions being investigated. The Cronbach's alpha in the current study ranged from 0.79 to 0.88 for all dimensions.

Procedure

The study was approved by the Ethics Committee at Shaoxing University. To gather information for the study, participants were recruited through social networks to complete an online survey during the COVID-19 pandemic. An informed consent form was presented to participants, and submitting the survey was taken as consent after it had been read and understood. The survey collected demographic information and well-being. Participants were asked to report their current well-being (during the COVID-19 pandemic) and retrospectively report their well-being before the pandemic.

Data analysis

Statistical analysis was conducted using SPSS (version 22). Descriptive analysis, mixed-model measures ANOVA, and simple effects analysis were completed.

Results

Descriptive

Participants from different generations were asked to report their well-being before and during the pandemic. The means and standard deviations are presented in Table 2. The comparisons of the well-being scores before and during pandemics showed complex changing tendencies. In terms of the well-being dimensions, all the generations reported a decreasing tendency of Positive Emotions, but most of the generations reported an

Table 2 Descriptive analysis on the five dimensions of well-being, *Mean* (*SD*)

Generational Cohorts		P	E	R	M	A
Post-00s	Before	7.85 (1.93)	7.87 (1.80)	7.86 (1.97)	7.78 (2.00)	7.73 (1.88)
	During	7.54 (2.13)	7.75 (1.88)	7.67 (1.97)	7.55 (2.20)	7.65 (1.96)
Post-90s	Before	8.29 (1.88)	8.13 (1.77)	8.36 (1.83)	8.25 (1.94)	8.23 (1.80)
	During	8.04 (1.93)	8.02 (1.75)	8.26 (1.88)	8.10 (2.03)	8.29 (1.78)
Post-80s	Before	8.76 (1.98)	8.21 (1.94)	8.69 (1.91)	8.71 (2.02)	8.68 (1.85)
	During	8.46 (1.98)	8.45 (1.77)	8.67 (1.85)	8.70 (2.06)	8.92 (1.67)
Post-70s	Before	8.83 (2.01)	8.36 (1.92)	8.84 (2.06)	9.02 (1.90)	9.12 (1.79)
	During	8.64 (2.00)	8.37 (1.76)	8.54 (2.09)	8.99 (1.98)	9.23 (1.57)
Post-60s	Before	9.13 (1.93)	7.80 (1.65)	8.75 (1.88)	9.20 (1.71)	9.10 (1.60)
	During	9.04 (1.93)	8.63 (1.70)	8.87 (1.66)	9.21 (1.83)	9.32 (1.61)

Notes. P positive emotions, *E* engagement, *R* relationships, *M* meaning, *A* accomplishment

Table 3 Results of the mixed factorial ANOVAs

	Main Effect (Generations)		Main Effect (Pandemic)		Interactive Effect (Generations × Pandemic)	
	F	η^2	*F*	η^2	*F*	η^2
P	18.25***	0.047	11.74**	0.008	0.30	0.001
E	6.04***	0.016	6.84**	0.004	5.64***	0.015
R	15.96***	0.041	2.93	0.002	1.30	0.003
M	23.36***	0.058	1.80	0.001	1.12	0.003
A	33.37***	0.081	3.76	0.002	2.74*	0.007

Notes. P positive emotions, *E* engagement, *R* relationships, *M* meaning, *A* accomplishment. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

increasing tendency of Accomplishment. Regarding the generations, the Post-00s and Post-90s showed decreased scores in all or almost all dimensions of well-being. In contrast, the Post-60s demonstrated increased scores in most dimensions.

The mixed factorial ANOVAs

The mixed factorial ANOVAs showed statistically significant main effects of generations for all measures of well-being ($p < 0.001$). In addition, a significant main effect of the pandemic was observed on positive emotions ($p = 0.001$), and engagement ($p = 0.009$). Significant interaction effects of generations and the pandemic on engagement ($p < 0.001$) and accomplishment ($p = 0.028$) were found. There was no significant interaction effect on positive emotions, relationships, and meaning ($p > 0.05$) (see Table 3).

Simple effect tests for engagement and accomplishment

Simple effect tests were conducted to analyze further the significant interaction effects on the two well-being dimensions (see Figs. 1 and 2). The analysis of the simple effects on Engagement revealed that the statistically significant rise existed in the Post-80s ($p = 0.07$) and the Post-60s ($p = 0.02$) but not in other generations ($p > 0.05$). The analysis of the simple effects on Accomplishment demonstrated that only the Post-80s significantly increased during the pandemic ($p = 0.02$).

Discussion

The current study explored the effects of pandemics and generations on the well-being of Chinese adults. Results indicated that pandemics and generations can influence well-being. Most importantly, the effects of the pandemic on engagement and accomplishment differed across generations.

The impact of the pandemic on well-being

The impact of the pandemic on well-being is complex, which is consist with some literature [35, 49]. Significant main effects of the pandemic have been found in Positive emotions and Engagement but not in the other three dimensions of well-being. Considering the significant interaction effects on Engagement and Accomplishment, their findings need further discussion with the generation (see the other subsection in Discussion). For the dimension of Positive emotions, the significant main effect indicated that the pandemic damaged Chinese positive

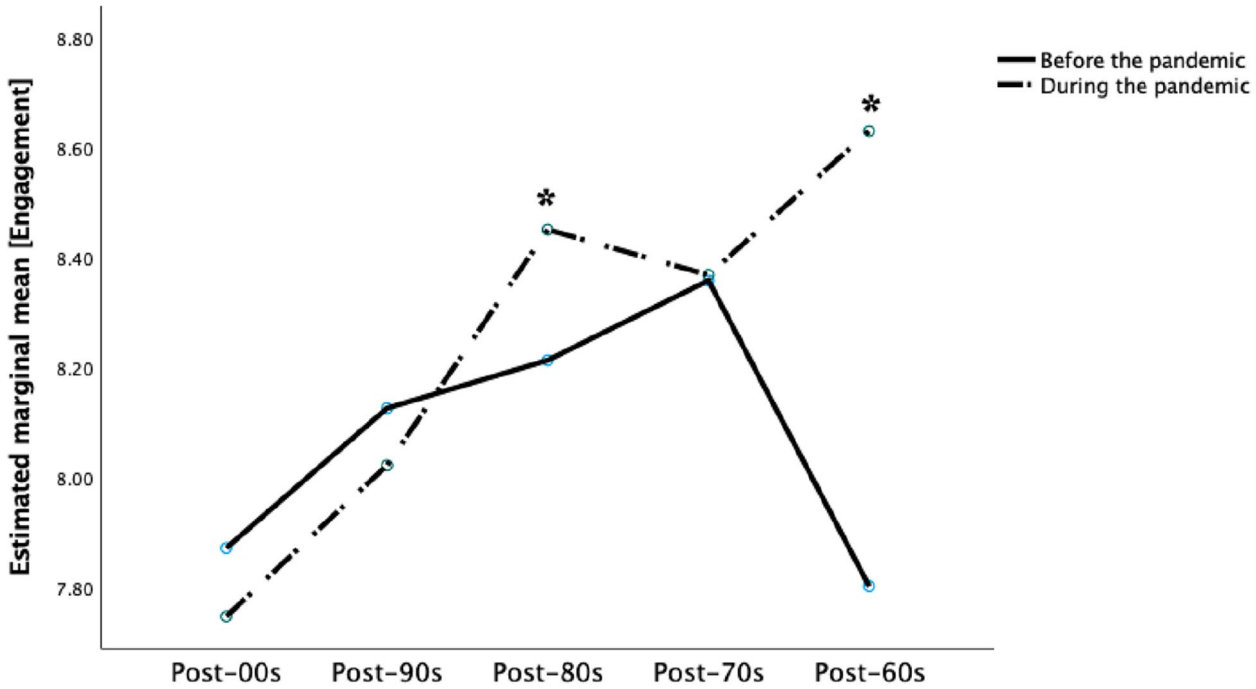

Fig. 1 Comparison across generations on Engagement before and during the pandemic. *Notes.* * $p < 0.05$

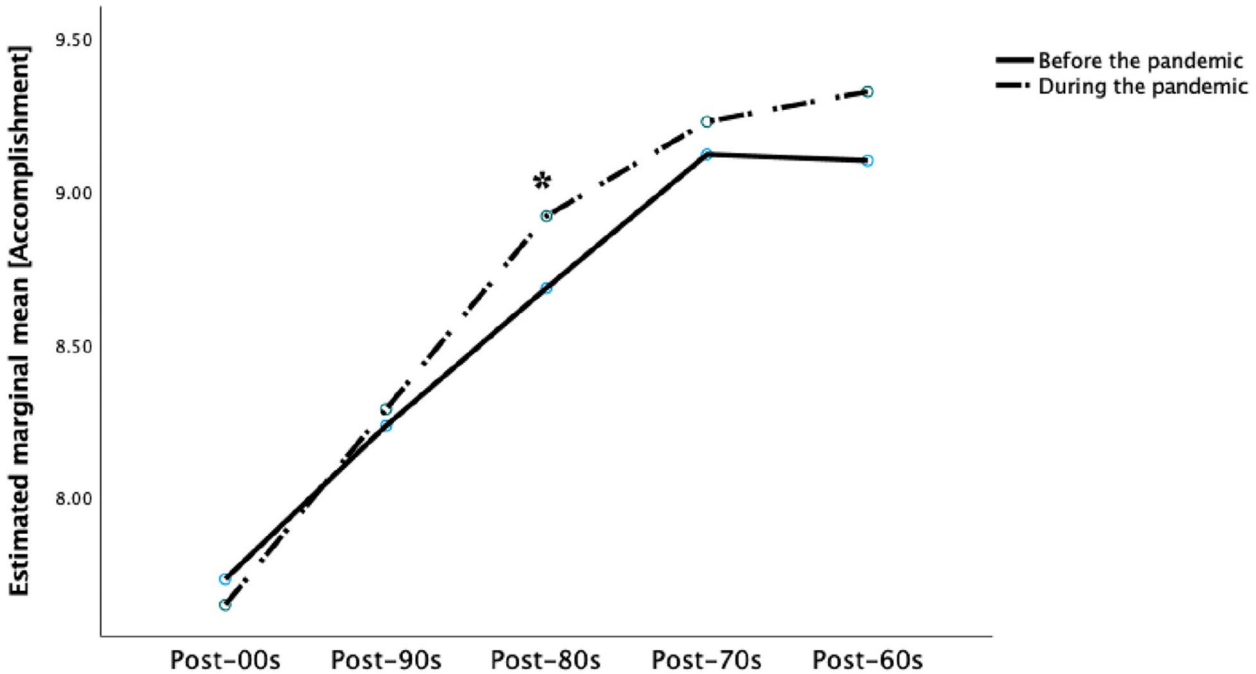

Fig. 2 Comparison across generations on Accomplishment before and during the pandemic. *Notes.* * $p < 0.05$

emotions. All the generations showed decreased Positive emotions during the pandemic, which might contribute to this significant effect. This finding aligns with previous research that positive emotions, such as pleasure and comfort, are vulnerable during pandemics [38]. Emotions are particularly susceptible to negative impacts [2, 45, 46]

and, therefore can be quickly and negatively affected by the pandemic.

As to Relationships and Meaning, people in almost all generations (except for the Post-60s) demonstrated a slightly decreasing tendency but did not achieve statistical significance. The reasons for the unchanged Relationships and Meaning may be complicated and related to the specific Chinese context, including the severity of pandemics, strict control policies, and the Chinese culture. As stated in the setting of the present study, the study was conducted during the period when the pandemic was generally controlled, but the strict policies of isolation and quarantine measures were still executed in China. Considering that China is a country with a collectivist culture, most people have a high level of trust in the government authorities [32]. Although life was seriously affected by the pandemic, most Chinese people still have a sense of integration within society or their communities and contribute to society in different ways. The perception of the link between a person and society/communities might lead to a stable sense of relationships. The feeling of one's own contribution to the collective group might lead to a sense of Meaning.

The impact of generations on well-being

Our findings indicated that the older Chinese people are, the happier they are. This aligns with some prior research [23]. The old cohorts, who have experienced serious public health events like SARS, usually demonstrate notable resilience, tolerance, independent thinking, and adept problem-solving skills in coping with challenges [39]. It is worth mentioning that the oldest group of Post-60s, particularly those who are retired or approaching retirement, emerged as the happiest demographic. In contrast, young people have to confront more challenges from working [2]. More importantly, according to the Generational Cohorts Theory, the background of the growing-ups' formative experiences may determine one's perception of well-being. It is reasonable that the Chinese Post-60s grew up with a scarcity of living materials, and they may be more easily satisfied with their current lives than younger generations. From the perspective of culture, the older Chinese generations tend to hold a stronger collectivist culture than the younger generations. Therefore, the young generations turn out to be the cohorts with the least well-being due to the negative emotions led by pandemics. Research in Western countries also found consistent results showing that younger generations are more vulnerable. For example, Generations Z and Y reported worse mental health than the older generations during the initial period of the COVID-19 pandemic [15]. In the working setting, Generation Y and Z perceived higher anxiety and job insecurity due to the COVID-19 thread compared with Generation X [25].

The interactive impact of generations and pandemics on well-being

As expected, the generations and pandemics did demonstrate an interactive impact on well-being. Specifically, the effects of the pandemic on Engagement and Accomplishment were different across generations. According to the definition, Engagement means encompassing concentration, vigor, involvement, and passion, which is motivated by the alignment between challenges and competence [38]. Because of the different responses to and effects of the COVID-19 pandemic between collectivist and individualist cultures [4, 32], Chinese generations may perceive the challenging experiences during the pandemic and the policies of strict social strict isolation and quarantine measures differently. The Post-60s grew up in the era when the Chinese government had strict control of people's daily lives, and they might get used to the decreased living standard and strict social control policy quickly. The Post-80s, the single-child generation, has become the backbone of the family entering their 30s, and they tend to take on more social responsibilities. In difficult situations, they may strive to keep in good status. Additionally, different generations of Chinese people had different experiences during the pandemic, leading to different feelings of engagement [33]. For example, Post-00s and Post-90s were still at school or had just begun their career. In China, these cohorts seldom undertook pandemic prevention work. Many of the Post-70s were in the leadership or second-line staff. In China, they usually lead or indirectly participate in pandemic prevention work. On the contrary, Post-80s, who were generally the leading workers in society, dominated the pandemic prevention work. Additionally, most of the Post-60s who had retired in China were willing to dedicate themselves to and usually actively served as community volunteers in pandemic prevention [1, 52]. Therefore, it was Post-80s and Post-60s that were likely to be most engaged. Although both the Post-80s and Post-60s had a strong Engagement during COVID-19, the Post-80s were the main executant of the actual pandemic prevention [47]. Correspondingly, the Post-80s were most likely to gain a sense of accomplishment during the pandemic.

Implications

The current study explored the changes in the well-being of five generational groups during the pandemic, which may provide new perspectives for understanding well-being in the Chinese context. Additionally, the findings could be valuable in conducting mental health interventions, especially for those whose mental health is affected

during pandemics. It provides valuable guidance for social policy and services. For instance, young people need more psychological support or opportunities during pandemics.

Limitations

The current study has several limitations. Firstly, the present study used a convenient sampling method, which may reduce the representativeness of the sample. Because the data were collected during the pandemic, participants were not easily accessed, and the study information had to be spread via social networks. The majority of the participants were from urban areas in East China. Hence, it is a better representation of the people in well-developed areas than the whole of China. Secondly, the online survey may introduce bias, limiting the participation of those with online access. Therefore, many younger generational cohorts (i.e., the Post-00s and 90s) and a small number in the old generational cohort (i.e., the Post-60s) were included. However, this is roughly consistent with the distribution of generations among Chinese netizens who can use online survey platforms [10]. Thirdly, some personal information was not collected, such as health status, vaccination status, comorbidity, living arrangement, etc. Such sensitive information was not included in the survey to increase the number of respondents. Lastly, due to the sudden onset of the pandemic, the pre-pandemic data were collected using retrospective measures, which may not be accurate. Overall, it should be taken with caution to generalize the results of the present study.

Conclusions

In conclusion, the pandemic and generations have complicated effects on the well-being of Chinese adults. Generally, a pandemic can decrease some dimensions of well-being, and young Chinese people tend to be more vulnerable to negative influences by pandemics. Notably, a comprehensive analysis reveals a significant increase in engagement and accomplishment among the Post-80s people during the pandemic, and the Post-60s cohort exhibited a noteworthy increase in engagement.

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Authors' contributions

All authors have read and agreed to the published version of the manuscript. Methodology and formal analysis: CW and YN; conceptualization: CW and YN; writing-original draft: CW, NY, QH, and QD; funding acquisition: CW and CZ; resources and data collection: YN, HQ, and CZ; writing-review and editing: CW and XL.

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Data availability

The datasets generated and/or analyzed during the current study are not publicly available due to privacy and ethical concerns, but are available from the corresponding authors on reasonable request.

Declarations

Ethics approval and consent to participate

The study obtained approval from the Human Research Ethics Committee of Shaoxing University. An informed consent form was presented, and submitting the survey was taken as consent after it had been read and understood. All methods were performed following the relevant guidelines and regulations.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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