

# Chinese Residents' Cultural Value and Health Lifestyle and General Trust As Mediators

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## Research

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# Abstract

## Background

China is currently in a period of transition, traditional Chinese culture and modern culture gives rise to different interpretations with regard to health. In order to analyze the relationship between cultural values and residents' health, we examined the current situation of cultural values in China and identified the mediators of Chinese culture value and health.

## Methods

Using Chinese data from the 2007 and 2012 World Values Surveys (WVS), we measured the self-rate healthy and culture value, analyzed the relationship between cultural values and health by binary logistic regression, and the regression coefficient is tested to determine whether there is a mediating effect of active lifestyle and general trust. To measure culture value, we use Schwartz's scale. In addition, in order to facilitate the comparison of coefficients between Logit models, the "Y \* normalization" method is adopted in this paper.

## Results

It was found that, first, the traditional components of Chinese residents' cultural values remained more prominent than modern ones, although the transformational trend from traditional to modern was obvious. Second, different cultural values had different effects on residents' health. Specifically, "openness to change" and "collectivism" positively contributed to health, "conservation" was harmful, and "individualism" had no statistically significant effect. To better understand the relationship between cultural values and residents' health, the specific connotations of each value were examined. Further, the mechanism of cultural values' effect on health was analyzed. "Lifestyle" was found to play a physiological role in influencing health while "general trust" played a psychological role.

## Conclusion

The present study identify lifestyle and general trust are the mediators of Chinese culture value and health. Finding indicate that modern culture and transitional culture both have positive influence to health. To improve Chinese residents' health in the context of cultural transformation, healthier lifestyles should be promoted, greater openness to modern culture should be adopted, essential traditional culture should be maintained, and social trust should be promoted. Further study should consider the two-way causal relationship of cultural values and self-reported health and find more influence trace of the two mentioned former.

## Background

China is currently in a period of transition, and cultural transformation is an important aspect of it. Cultural transformation in China mainly manifests as the coexistence of two heterogeneous cultures:

modern Western and traditional Chinese culture. Compared to economic and political transformation, cultural transformation is relatively lagging in China, but its effects are wide-ranging, including effects on residents' health.

The distinction between traditional Chinese culture and modern culture gives rise to different interpretations with regard to health. Notions about health in traditional Chinese culture mainly derive from traditional Chinese medicine (Lu et al., 2017). For example, it is traditionally believed that disease is caused by an imbalance of energy in the body or between the body and the environment. Therefore, curing a disease requires regulating the balance of energy (Liang et al., 2004; Satia et al., 2000). Meanwhile, in modern culture, ideas about health come from Western medicine, which views disease as a deterioration of physical function; thus, disease is treated through direct intervention, such as surgery (Daniel et al., 2007). These different understandings of the causes of disease between traditional and modern cultures lead to differences in disease prevention, which in turn give rise to different lifestyles, which further affect residents' health (Zou, 2019). In addition, the promotion of collectivism in traditional culture and the emphasis on individualism in modern culture cause differences in social trust (Zhao et al., 2019; Schwartz, 2006; Schwartz, 1999; Fukuyama, 1995), which also plays an important role in health (Zhang & Jiang, 2019; Meng & Chen, 2014; Snelgrove et al., 2009). The most direct effect of cultural transformation is the change in cultural values (Mackenbach, 2014).

In light of the above, this study aimed to describe cultural value changes among Chinese people, examine the effects of different cultural values and their changes on residents' health, and explore the possible mechanisms. First, based on 4,219 Chinese data from the 2007 and 2012 World Values Surveys (WVS), we analyzed the constituent dimensions and changing trends of Chinese residents' cultural values. Second, we examined the effect of different cultural values on Chinese residents' self-rated health (SRH). After that, we analyzed the mediating variables of cultural values that affect health, such as lifestyle and social trust. Finally, the paper concludes by proposing measures to improve health based on the findings.

## Literature Review and Theoretical Hypotheses

### Cultural Values and Health

Cultural values refer to beliefs that are generally accepted by most members of a society, and they influence attitudes and behaviors by forming codes of conduct. In tandem with socioeconomic development, the values of members of the society change as well. In this regard, Inglehart (1990) found that the cultural values of people in developed Western countries have undergone intergenerational shifts: from a religious orientation toward secularization, or rationalism, and from a survival orientation toward one of self-expression and the pursuit of happiness. Similarly, as a result of socioeconomic development, the cultural values of Chinese people are also undergoing major changes (Cao & Fang, 2001; Zeng & Greenfield, 2015; Zhang et al., 2021).

While many researchers have noted that residents' values change, they have differing views on the specific connotations of cultural values. For example, Inglehart proposed that cultural values should

include four dimensions in binary pairs: “tradition—secularization (reason)” and “survival—pursuit of happiness and self-expression” (Inglehart & Baker, 2000; Inglehart & Welzel, 2005). Hofstede (1980), meanwhile, suggested that cultural values should be composed of six dimensions: power distance, individualism, uncertainty avoidance, masculinity, long-term orientation, and indulgence. Schwartz (1999, 2006) argued that cultural values should include the four dimensions of self-transcendence, self-enhancement, conservation, and openness to change. Despite these differing views on the dimensions of cultural values, a basic binary distinction can be made between tradition and modernity with regard to cultural transformation. Traditional values refer to religious orientation, survival orientation, power distance, masculinity, conservation, and collectivism while modern values refer to rational orientation, self-expression, pursuit of happiness, individualism, and openness to change. For quantitative analysis, cultural values can be operationalized by two dimensions: traditional/rational—secular and survival/self-expression (Roudijk et al., 2017).

In most countries covered by the WVS, the traditional/rational—secular dimension was negatively associated with self-reported health (Roudijk et al., 2017). Some studies have found that in developing countries, the degree of Western-oriented cultural values is negatively correlated with depression because Western values are seen as advanced, which can enhance individual self-satisfaction (Furr, 2005).

Cultural value dimensions such as self-expression, individualism, and hedonism, have been found to have significant positive effects on self-rated health, life expectancy, subjective well-being, and lower death rates (Mackenbach & McKee, 2013; Hofstede et al., 2010; Hofstede & McCrae, 2004). The values of secular reason and autonomy are also related to positive health behaviors and conditions because modern medicine relies on scientific evidence rather than traditional conservative beliefs (Mackenbach, 2014).

Thus, it can be seen that modern cultural values characterized by liberalism and individualism can have positive effects on health (Cornejo et al., 2020). On the contrary, values such as uncertainty avoidance, power distance, and hierarchy have been associated with less favorable health conditions, such as poor self-rated health, higher suicide rates, overuse of antibiotics, and a lower willingness to donate blood (De Kort et al., 2010; Hofstede et al., 2010). Studying the mental health of Korean college students in the U.S., Hovey et al. (2006) found that the students’ problems with self-esteem, anxiety, and depression were related to their traditional Asian cultural values.

In the context of ongoing development in China, modern and traditional cultural values are intertwined. Therefore, our first hypothesis can be formulated thus: different cultural values affect residents’ health in different ways. As mentioned above, with regard to cultural transformation, cultural values can be roughly divided into traditional and modern ones. Hence, the specific operations of the first hypothesis are (1-1) traditional cultural values are harmful to residents’ health, and (1-2) modern cultural values can promote residents’ health.

Moreover, against the background of cultural transformation, the inevitable trend is that traditional culture will transform into modern culture. Accordingly, traditional cultural values among Chinese residents will

decrease while modern ones will increase, which may further regulate the relationship between cultural values and health. Thus, a second hypothesis can be proposed: there will be some differences over time in the effect of cultural values on health. The specific operations are (2-1) in the process of cultural transformation, the negative effects of traditional cultural values on health will become weaker, and (2-2) in the process of cultural transformation, the positive effects of modern cultural values on health will become stronger.

### **Mechanism of Cultural Values' Effect on Chinese Residents' Health**

There are different explanations for the influence path between values and health. Some have suggested that cultural values' effects on health may be reflected in citizens' investment in health, such as healthcare spending (Hofstede et al., 2010; Inglehart & Welzel, 2005). People more oriented toward modern values tend to be more willing to spend money on healthcare. It has also been suggested that the role of cultural values in health has a mediating effect by way of various healthy behaviors, such as fertility-related behaviors, the use of preventive services. (Mackenbach, 2014). Some studies have concluded that traditional cultural values are not conducive to health, with effects such as higher levels of anxiety (in the case of uncertainty avoidance), inefficient healthcare operations, and inefficient public institutions (in the case of power distance) (Hofstede et al., 2010). We propose, however, that the influence of cultural values on health may have two mechanisms: a physiological mechanism and a psychological mechanism. The physiological mechanism acts as a mediator through lifestyle, which in turn affects health. The psychological mechanism plays an intermediary role through general trust, which in turn affects health.

#### **(1) Physiological mechanism: lifestyle**

Cultural values play an important role in lifestyle. People from different regions can differ in the causes of health problems because of differences in cultural values. While modern medicine regards bacterial or viral infections as leading causes of disease (Hirsch, 2004), in some minority areas of China (e.g., the Miao in Southern China), a damaged soul is considered the main cause of disease (Helsel & Mochel, 2002; Johnson, 2002). Thus, for the Miao, who lead materially simple lives, the treatment of disease tends to focus on repairing the soul and worshipping spirits. Other studies have found that traditional Chinese medicine deeply influences the understanding of health and disease among more traditional Chinese people. Specifically, they believe disease as an imbalance of energy between the body and the external environment (Liang et al., 2004; Satia et al., 2000). Hence, they would not, for example, attach great importance to exercising for the sake of health. Similar phenomena have been observed with regard to children's health in parts of Pakistan, where maternal behaviors (e.g., feeding and rearing practices) are highly influenced by cultural practices (Asim et al., 2017). Studies in Uganda and rural Bolivia have also identified the influence of traditional indigenous culture on health and disease treatment (Margarita and James, 2019). Meanwhile, the modern view of health comes from Western medicine, which understands disease as the deterioration of body functioning; thus, there is considerable emphasis on using physical exercise to strengthen the body and promote health. Kandula and Lauderdale (2005) found that Asians

living in the U.S. who came from a traditional background spent less of their leisure time on physical exercise. Meanwhile, Joseph et al. (2020) found that lifestyle behaviors played a mediating role between acculturation and health-risk factors.

Furthermore, some studies have found that people with traditional cultural values tend to prefer passive, conservative lifestyles while those with modern values prefer more active and open lifestyles (Roose et al., 2012). People with modern cultural values tend to be more hedonistic and pay more attention to leisure time. For example, leisure time is much more important to Europeans than Chinese (Roose et al., 2012). There are also differences between people with different values in terms of the arrangement of leisure activities. People with traditional cultural values tend to rest at home and do fewer outdoor activities. Meanwhile, people with modern cultural values are more likely to participate in activities outside the home (e.g., going to the gym, to concerts, or to movie theaters). Finally, some studies have found that people with individualist versus collectivist values live very differently in terms of diet, housework, travel, reading, consumption, sports, and computer use (Dutta-Bergman & Wells, 2002; Cheng et al., 2016). It can be seen that compared to people with traditional cultural values, those with modern values tend to be more active and diverse in their behavior (e.g., more athletic activity, more entertainment), which has been found to significantly promote health (Tran et al., 2013). Moreover, health behaviors tend to be facilitated when they are viewed as consistent with cultural values (Christopher et al., 2020).

In light of the above, we propose our third hypothesis: lifestyle plays a mediating role between cultural values and health. The specific operations are (3-1) traditional cultural values have a negative effect on having an active lifestyle, which is not good for health, and (3-2) modern cultural values have a positive effect on having an active lifestyle, which has health benefits.

## (2) Psychological mechanism: general trust

There may be multiple mechanisms for the effect of cultural values on social trust. Among cultural values, individualism and collectivism are undoubtedly the most important cultural dimensions (Oyserman & Lee, 2008). Individualist values focus on individuals, emphasizing individual freedom, competition, and autonomy, while collectivist values focus on social relevance, emphasizing the importance of social relations and interdependence. In terms of the relationship between cultural values and social trust, individualist values favor individual autonomy and egalitarianism, emphasizing values such as being responsible and equal and helping others, which encourage members of society to take responsibility, treat others equally, and try to help others, thus promoting general trust (Schwartz, 1999, 2006; Thanetsunthorn & Wuthisatian, 2019). Meanwhile, Triandis (1988) and Smith and Bond (1993) found that those with more collectivist values treat in-group and out-group members differently; they distrust out-group members who are not very close to them, which reduces the level of general trust. Fukuyama (1995) also suggested that people with individualist values tend to pay more attention to generalized trust in nonfamily relationships while collectivist values emphasize trust among family members and blood relatives. Another pair of cultural value dimensions is openness to change and conservation. The former is inclusive and tends toward a higher level of general trust while the latter is

more closed, trusting in-group members but not out-group members. Thus, we can infer that the level of general trust in traditional cultural values is quite low while that in modern cultural values is much higher.

Some studies have empirically demonstrated positive associations between SRH and generalized trust (Gilbert et al., 2013; Jan & Giuseppe, 2017). It is generally believed that social trust can improve people's health, especially their mental health. Snelgrove et al. (2009) found that people living in areas with high levels of social trust scored higher for self-rated health. Hu (2014) suggested that institutional trust; trust in classmates, colleagues, and fellow villagers; and general trust could significantly improve mental health. In the WVS data, generalized trust was associated with physical health, and such associations varied according to development levels across different societies (Hamamura et al., 2017). In light of the above, we propose our fourth hypothesis: general trust plays a mediating role between cultural values and health. The specific operations are (4-1) traditional cultural values have a negative effect on general trust, which is bad for people's health, and (4-2) modern cultural values have a positive effect on general trust, which can promote residents' health.

## Methods

### Data and Model

The data came from the Chinese part of the fifth and sixth WVSs (2007 and 2012, respectively). After excluding invalid questionnaires, there were 1,991 and 2,300 samples, respectively. For this study, the two were combined, resulting in 4,291 effective samples. In addition, the dependent variable "self-rated health" was the ordinal variable in this study, which usually establishes a sequential logistic regression. However, its premise is that the test of parallel lines is not obvious, which is a requirement that this study's data do not meet. Therefore, we reclassified the ordinal variables and merged them into dichotomous variables for binary logistic regression.

### Variables and Measurements

#### (1) Health

This study's dependent variable was the health condition of residents. Health condition was measured by people's subjective assessments. In the survey, respondents were asked, "Generally speaking, what is your current health condition?" After removing those who answered "I don't know,"<sup>[1]</sup> the results were merged into two categorical variables. Answers of "very good" and "good" were recoded as "healthy" (coded as 1). Answers of "fair" and "poor" were merged into "unhealthy" (coded as 0). "Fair" was classified as "unhealthy" mainly because it is a recall measurement, where respondents may tend to overestimate their health condition (Huang et al., 2020). Finally, answers of "healthy" accounted for 64.6% while "unhealthy" accounted for 35.4%.

#### (2) Cultural values

Cultural values were the independent variables. We measured them using the cultural values scale developed by Schwartz (1999, 2006). The questionnaire asks respondents whether their situations are similar to the following statements: (1) being creative with new ideas and acting in your own way; (2) pursuing wealth and wanting to own many luxury items; (3) focusing on the safety of the environment and avoiding danger; (4) enjoying life and indulging yourself; (5) caring for and helping people; (6) pursuing success and recognition for your achievements; (7) pursuing an adventurous, fresh, exciting life; (8) following routines to avoid criticism from others; (9) protecting the environment and caring about nature; and (10) paying attention to tradition and following family and religious customs. The answers were divided into six levels and assigned values of 1–6 points: “not at all,” “not similar,” “only a little,” “some,” “similar,” and “extremely similar.” The Cronbach’s alpha coefficient of reliability for these 10 questions was 0.737, indicating high reliability.

According to the dimensions of Schwartz’s Theory of Basic Human Values, (1), (4), and (7) belong to the dimension of openness to change; (3), (8), and (10) belong to conservation; (2) and (6) belong to self-enhancement; and (5) and (9) belong to self-transcendence. We added them together and took the average to get the variables of “value of openness to change,” “value of conservation,” “value of self-enhancement,” and “value of self-transcendence.” [2]The four dimensions also comprise contradictory pairs: “openness to change–conservation” and “self-enhancement–self-transcendence.” We considered that “self-enhancement–self-transcendence” can be regarded as “individualism–collectivism” to a certain extent because self-enhancement emphasizes the pursuit of one’s own interest, which is typical of Western individualism. Meanwhile, self-transcendence emphasizes the welfare and interests of others, focusing more on collective interests and welfare instead of individual interests, which is collectivism. Other studies have likewise suggested that Schwartz’s cultural values can be coalesced into the higher factors of collectivism and individualism (Liu et al., 2010). Therefore, for the convenience of analysis, conservation and self-transcendence (collective-oriented) are regarded as traditional cultural values and openness to change and self-enhancement (individual-oriented) as modern cultural values.[3] Section 4 provides a detailed description and analysis of cultural values.

### (3) Active lifestyle

“Active lifestyle” refers to behavioral patterns that maintain and promote one’s health based on certain motivations and abilities (Cockerham et al., 1993). In previous studies, lifestyle measurements have focused on diet, smoking, alcohol, exercise, recreation, safe driving, routine physical examinations, and so on (Tran et al., 2013). However, in terms of subdivisions, smoking, drinking, and unreasonable diet are health-risk behaviors while exercise, recreation, routine physical examinations, and so on are health-promoting behaviors (Abel et al., 2000); in this study, the latter refer to “active lifestyle.” Furthermore, exercise and recreation are taken as important signs of active lifestyles; many previous studies have used them as mediating variables of socioeconomic status and health (Wang, 2012; Wang & Geng, 2019; Balasooriya et al., 2021). Therefore, limited by the questionnaires, the measurement of lifestyle in this study focused on two variables: “sports participation” and “cultural participation.” In the questionnaires, respondents were asked, “Do you participate in physical exercise, such as running, playing, and

climbing?” and “Do you participate in some recreational activities, such as going out to watch movies, going to concerts, watching performances, and exhibitions?” The answers were “never,” “sometimes,” and “usually.” We reclassified the variables. “Sometimes” and “usually” were combined into “yes” and assigned a value of “1”; “never” was classified as “no” and labeled “0.” Table 1 shows the percentages of the two variables.

#### (4). General trust

Chinese people usually allocate different degrees of trust based on “hierarchical order.” Generally speaking, the level of trust in family members, friends, and neighbors is relatively high while the level of trust in strangers and most other people in society is quite low. In this study, general trust, as opposed to particular trust, refers trust in the majority of society. In the questionnaires, respondents were asked, for example, “Generally speaking, do you think most people can be trusted, or should you be more careful with others?” The answer “most people can be trusted” was assigned a value of “1,” which can be seen as “trust.” The answer “should be careful as much as possible” was treated as “distrust” and assigned “0.” The number of people who chose “trust” was 2,384 (58.9%) while 1,661 chose “distrust” (41.1%).

#### (5). Control variables

In previous correlational studies, gender, age, age-squared (to examine whether a curvilinear relation exists), religious beliefs, marital status, educational level, work, and family income, among others, have been taken as control variables. Since we wanted to examine whether the effect of cultural values on health changed according to time period, the year of the survey was also set as a variable, where 2012 was assigned “1” and 2007 “0.” Table 2 shows the descriptive statistics for each control variable.

## Research Strategy

This study aimed to examine the two influence paths of cultural values and health—that is, examine the mediating effects of active lifestyles and general trust between cultural values and health. Therefore, whether a mediating effect existed was judged by successively testing regression coefficients. The test strategies are as follows:

$$Y=cX+e1; \quad \boxtimes$$

$$M=aX+e2; \quad \boxtimes$$

$$Y=c^{\wedge}X+bM+e3. \quad \boxtimes$$

X is the independent variable, Y is the dependent variable, and M is the mediator. If “c,” “a,” and “b” are significant, and “c<sup>^</sup>” is smaller than “c,” we can judge that there is a partial mediating effect. If “c<sup>^</sup>” is not significant, we can conclude that there is a complete mediating effect in the influence of X on Y. If “c” is

significant in  $\beta$ , but “a” in  $\beta$  or “b” in  $\beta$  is not significant, then effect discrimination needs to be performed using the Sobel test or the Goodman test (Wen et al., 2012: 71–81).

Moreover, when examining the mediating effects, this study compared the coefficients in different logit models for the same sample. In logit models, however, the residuals of the dependent variables estimated by different combinations of independent variables are constantly changing; so, unlike the linear regression, it is impossible to determine the changes in the effect of the variable by directly comparing the changes in certain coefficients of variables in a nested model (Winship & Mare, 1984; Hong, 2015). To facilitate comparing the coefficients among the logit models, this study adopted the “y\*standardization” method. Specifically, after the coefficients are divided by the estimated standard deviation (y\*) of the potential dependent variables in each model, the comparison can be made.

## Results

### Chinese Residents’ Cultural Values and Changes

While many have pointed out that China is currently undergoing cultural transformation, few have provided specific evidence regarding the state it has reached. We attempted to describe Chinese people’s cultural values and the changes they have undergone, as presented in Figure 1. In terms of the static layer, the overall scores for the four dimensions of Chinese residents’ cultural values were as follows: openness to change: 3.1; conservation: 4.2; self-enhancement: 3.6; and self-transcendence: 4.5. It can be seen that during the period of cultural transformation, the process whereby traditional values transform into modern ones has been relatively slow. During the study period, the scores for traditional values were higher than those for modern values. China is one of the four ancient civilizations, and the influence of traditional culture is deeply rooted. Although cultural transformation quietly began after the “reform and opening up,” traditional values have remained predominant.

The changes in the cultural values of Chinese residents can be seen from a dynamic perspective. Comparing the data from 2007 and 2012, we can see that traditional values are weakening while modern values are strengthening. Specifically, the scores for conservation and self-transcendence dropped from 4.3 and 4.7 to 4.1 and 4.3, respectively, while scores for openness to change and self-enhancement increased from 3.1 and 3.5 to 3.2 and 3.7, respectively. This indicates an obvious trend toward transforming traditional cultural values into modern ones. This confirms that, as some studies have noted, the transformation from traditional to modern culture is inevitable in the context of globalization, though cultural transformation is lagging relatively behind in China (Ren, 2001; Zhao, 2013).

### Influence of Cultural Values on Chinese Residents’ Health

Table 3 shows the binary logistic regression model of cultural values and Chinese residents’ health. Model 1 is the benchmark model, Model 2 is the cultural values model, Model 3 is the lifestyle model, Model 4 is

the general trust model, and Model 5 is the interaction model of cultural values and survey year. First, it can be seen in Model 1 that gender played a very significant role in residents' health. The nonstandardized regression coefficient is 0.203, which means the health odds for men are 1.23 ( $e^{0.203}$ ) times that of women, reflecting gender-based health inequality. Second, from the perspective of age, it had notably negative effects on health. Third, in terms of religious beliefs, those with religious beliefs had worse self-rated health than those without. With regard to marital status, the health condition of the divorced group was worse than that of the married group. In terms of educational level, compared to those with an educational level of "primary school or below," the health odds of residents with an educational level of "high school" was incredibly high. Careful observation of each regression coefficient of educational level reveals that the largest regression coefficient belonged to "high school," followed by "college and above," "junior middle school," and "primary school or below." In other words, educational level showed an inverted U-shaped curvilinear relationship, rather than linear relationship, with residents' health. Why would there be an inverted U-shaped relationship between educational level and health? We suggest that it may be related to work pressure in modern society. Highly educated groups tend to be more engaged in mental work and bear more mental pressure. Therefore, the effect of educational level on residents' health has a dual nature. On the one hand, education can enable people to obtain more social, economic, and psychological resources to maintain better health; on the other, this can also entail more work pressure, which can weaken the health advantage to some extent. Further, working/not working and family income are strongly related to health, further illustrating the important role of socioeconomic status. Lastly, with regard to the survey year, compared to 2007, the 2012 respondents had higher health levels. This reflects the fact that Chinese people's health is improving in tandem with socioeconomic development.

Regarding the relationship between cultural values and health in Model 2, the value of openness to change played a significant role in promoting health. For every one-point increase, health odds will increase by 12.2% ( $e^{0.115}-1$ ). Meanwhile, the conservation value had a significantly negative effect on health, with the health odds dropping by 14.2% ( $1 - e^{-0.153}$ ) for every one-point increase. Thus, we can say that to a certain extent, traditional cultural values will lower people's health while modern values will promote health. As such, assumptions 1-1 and 1-2 are partially verified. However, in the relationship between the values of "self-enhancement–self-transcendence" and residents' health, self-enhancement's effect on health was not statistically significant while self-transcendence had a strong, positive effect, with health odds increasing by 19.9% ( $e^{0.182}-1$ ) for every one-point increase. Therefore, if self-enhancement (individual-oriented) represents modern cultural values and self-transcendence (collective-oriented) represents traditional cultural values, then modern cultural values do not necessarily promote health, and traditional values are not necessarily harmful. Consequently, to further explore the relationship between cultural values and health, the specific meanings of each value should be examined, as opposed to making simple binary distinctions between tradition and modernity.

We also considered whether there were any differences in the effect of cultural values on health according to survey period (i.e., did the effect change over time?). The interaction terms between cultural values and survey time were added to the model, as shown in Model 5. The effect of the different survey periods was

not significant; that is, we could not identify how the effect of cultural values on health might change over time. Therefore, assumptions 2-1 and 2-2 are not verified.

Model 3 shows the effect of lifestyle on residents' health. The effect of cultural participation on health was not statistically significant while sports participation was found to significantly promote residents' health. The self-rated health odds of residents with sports participation was 1.23 (e0.207) times higher than that of those without any sports participation. Hence, physical exercise is of great importance for health, which is consistent with previous studies (Wang, 2012). Furthermore, comparing Model 2 and Model 3, the significance of the value of openness to change becomes less distinct after adding lifestyle variables. Meanwhile, the significance of other cultural values remains unchanged, whose  $y^*$  standardized coefficients are not altered too much. This suggests that the role of openness to change in health is likely to be interpreted by lifestyle variables; that is, lifestyle plays a full mediating role between the value of openness to change and health. As mentioned above, only the dimension of sports participation among the lifestyle variables played a significant role in promoting health. Therefore, to be precise, sports participation may be the dimension that plays a full mediating role between the value of openness to change and health. Certainly, this needs to be further examined.

Model 4 shows that general trust could significantly promote health. The health odds of residents who indicated trust in the majority of the society was 31.7% (e0.275-1) higher than that of those who indicated distrust. This is similar to previous studies that have indicated that social trust can improve health (Snelgrove et al., 2009; Hu, 2014). Moreover, comparing Model 2 and Model 4, we can see that after adding the general trust variables, the significance and the direction of the  $y^*$  standardized coefficients of the other dimensions of cultural values remain unchanged, except for the value of self-transcendence. The significance of self-transcendence was weakened (from  $p < 0.001$  to  $p < 0.05$ ), and the  $y^*$  standardized coefficient also dropped by 3% (from 0.091 to 0.061). This indicates that self-transcendence may affect health via general trust to some extent; that is, general trust is a partial mediator between self-transcendence and health. This, too, requires further examination.

### ***Mediators of Cultural Values to Health***

To further verify the mediating effects of sports participation and general trust on the relationship between cultural values and health, we constructed a binary logistic regression model of cultural values for sports participation and general trust (Table 4). Since mediation analysis relies on the coefficients and standard errors of multiple models, the same control variable was used to achieve comparability.

Model 6 shows that gender, age, and survey year were not statistically significant. Yet, religious beliefs, unmarried status, educational level, and family income played a significant role in promoting sports participation while working/not working had a negative effect. We previously found that sports participation might play a full mediating role between the value of openness to change and health. Therefore, we are interested in the effect of cultural values on sports participation, especially the effect of the value of openness to change on sports participation. As shown in Model 6, the value of openness to change had a remarkably positive effect on sports participation. For every one-point increase in the value

of openness to change, the odds of sports participation will be 75.1% higher ( $e^{0.560-1}$ ). Therefore, the assumption that sports participation is the medium between the value of openness to change and health is verified, which means assumption 3-2 is partially validated. In addition, in the interactive effect of cultural values and survey year, the interaction between openness to change and survey year had a notably positive effect. As shown earlier, for every one-point increase in the value of openness to change, the odds of sports participation will be 75.1% higher. In the 2012 survey, however, for every one-point increase in the value of openness to change, the odds of sports participation were 1.54 times higher. We can infer that with ongoing development, the role of openness to change in promoting sports participation will continue to increase. This interactive effect is depicted more intuitively in Figure 2. Compared to 2007, the linear gradients of cultural values and sports participation are even larger in 2012. As China's globalization process accelerates, it becomes more integrated into the world system, and it may move closer to other developed countries in terms of cultural values, among which the value of openness to change is developing rapidly.

Model 7 indicates that only those with an educational level of "college or above," which is the control variable, had a higher general trust level. Nevertheless, "divorce" lowered the general trust level while other variables had no statistical effect. We previously showed that general trust might play a partially mediating role between the value of self-transcendence and health. Model 7 shows that the value of self-transcendence could significantly improve the level of general trust while the other three dimensions of cultural values had no statistical significance with regard to general trust. Specifically, for every one-point increase in the value of self-transcendence, the odds of trusting the majority of society will be 17.1% ( $e^{0.158-1}$ ) higher. Thus, the partial mediating effect of general trust between self-transcendence and health is verified. Lastly, regarding the interactive effect between cultural values and survey year, it was not statistically significant for general trust, indicating that survey year did not play an obvious regulatory role in the relationship between cultural values and general trust.

Note: The table presents nonstandardized regression coefficients. Standard errors are in parentheses. The reference categories are as follows: "a" is "female," "b" is "no religious belief," "c" is "married," "d" is "primary school or below," "e" is "no job," and "f" is "the year 2007." \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

## Discussions

Many factors affect health, among which cultural values are an important aspect. Cultural values are affected by many factors, including not only the traditional culture but also the current social system. China is currently in a period of social transformation, which undoubtedly has a huge effect on traditional institutions and policies in the political, economic, and cultural fields. Major changes in cultural values will inevitably come about as a result.

Why was the effect of individualism on health not statistically significant? As a fundamental modern Western value, individualism has been found to have positive effects on health in a number of studies (Hajek et al., 2020; Mackenbach, 2014; Hofstede et al., 2010). Yet, some studies have suggested that

Westernization is not beneficial for people's mental health in developing countries. For example, some studies have shown that mental illness, especially depression, is not common in non-Western precapitalist societies (Lee, 2002). Yet, in Westernized societies, such problems have dramatically increased (Simpson et al., 1996; Hughes, 1990; Murphy, 1982). The effects of cultural conflict are often considered to have large negative effects on mental health (Tikhonov et al., 2019). Chinese people are deeply influenced by traditional Confucian culture. Thus, in the process of cultural transformation, they face the problem of integrating traditional culture and modern culture. On the one hand, they want to maintain traditional cultural values; on the other, they must change their values to adapt to a more pluralistic and modern society. Such pressures create conflicts that may be detrimental to physical and mental health. Therefore, Westernization can be said to have both positive and negative effects on Chinese residents' health. The two counterbalance each other, which may eventually lead to an insignificant effect of individualism on people's health.

Why, then, was collectivism found to promote health? Collectivism is considered an important dimension of traditional Eastern values. Focusing on social relevance, collectivism values families and communities, emphasizing the importance of social relationships and interdependencies. Although many studies have found that traditional values are harmful to people's health, some have reached different conclusions. For example, Triandis (1995) suggested that social support plays an important role in good health; a higher level of social support will bestow a greater sense of meaning in life, and people will, in turn, be more inclined to take care of themselves. Emotional support behaviors and instrumental aid can also alleviate the effects of stressors, both physically and emotionally (Thoits, 2011). Those with collectivist values appear to have better experiences of health than those with individualist values. Greater social support is significantly associated with improved mental health and self-reported physical health (Casale, 2021). Furthermore, it should be noted that while Schwartz's value of self-transcendence is similar to collectivism, there are also differences. Collectivism emphasizes the difference between collective and noncollective, between the in-group and out-group, and it has a strict group boundaries. However, the value of self-transcendence has more to do with charity and generality, emphasizing the social group as a unity, with no obvious group differences and group boundaries. Hence, to be more precise, this study found that the value of self-transcendence could promote health. Thus, the relationship between cultural values and health cannot be depicted as a simple binary distinction between tradition and modernity; the specific meanings of each aspect requires further examination. Previous studies have found that women, married people, people with a low educational level, and people with poor cultural adaptability play less sports and exercise less (Hofstetter et al., 2008; Parikh et al., 2009; Mao, 2020). By studying the influence of cultural values on sports participation, this study provides a new interpretive framework for group differences in sports participation.

Moreover, we found that, to some extent, the value of self-transcendence could promote health through general trust. There is little research on the relationship between self-transcendence and general trust, but there are studies on collectivism and general trust. For example, Delhey (2011) investigated the trust radius of the residents of different countries and found that people in more collectivist-oriented countries where Confucian culture prevails (e.g., China, South Korea, Thailand, and Vietnam) had a smaller trust

radius. Though Confucian culture, which emphasizes collectivism, is usually associated with a smaller trust radius than is found in individualist cultures (van Hoorn, 2015), when people regard Confucianism as an identity, they become unified because they share the same values. Then, those who recognize Confucian culture show a high degree of trust in others (Hu and Zhou, 2013). Therefore, certain dimensions of traditional culture can also promote general trust.

This study has some limitations. First, the lifestyle dimension focused on active lifestyles, such as sports, recreation, and entertainment, but health-risk behaviors, such as smoking, drinking, and unhealthy eating habits, may also play a mediating role between cultural values and health (Noor et al., 2020). Second, as a cross-sectional study, endogeneity should be considered. Although we controlled for factors associated with both cultural values and health as much as possible, there may be some other important uncontrolled variables that could lead to biased results. Third, cultural values and self-reported health may exist in a two-way causal relationship, which cannot be clarified using cross-sectional data. We can only reason that cultural values are typically formed in the early socialization process, that they are relatively stable for adults, and that self-reported health is often formed within a relatively short period based on health-status evaluation. It is logical, therefore, to assume that the early formation of cultural values affects current self-reported health. We cannot, of course, rule out the possibility that long-term poor health experiences may have strong effects on individual values or even change the direction of individual values (e.g., from open to conservative or vice versa). Such questions will require further empirical investigation and testing.

## Conclusion

This study examined the current situation of cultural values in China, explored the influence of different cultural values on health, and identified the possible influence mechanisms. The specific findings are described below.

First, the traditional component of cultural values remained stronger than the modern component among Chinese people, but the transition trend from tradition to modernity was obvious. Accordingly, the scores for conservatism and self-transcendence were higher than those for openness and individualism. However, with cultural transformation gradually proceeding, traditional cultural values will steadily weaken while modern values will become stronger.

Second, there were some important differential effects of different cultural values on the health of Chinese people. The values of openness to change and collectivism could promote their health. Conversely, conservatism is bad for residents' health. However, there was no statistically significant relationship between the value of individualism and residents' health. The effects of openness to change and conservatism on health were consistent with the theoretical assumptions. However, the effect of individualism and collectivism on health appeared to be inconsistent with, and even contrary to, the assumptions.

Third, in the mechanism of cultural values' effect on health, lifestyle (e.g., sports participation) played a physiological role while general trust played a psychological role. Specifically, the value of openness to change played a positive role in health through sports participation, and the influence of openness to change on sports participation grew over time. This also verifies the importance of sports participation or physical exercise for physical health.

## Abbreviations

WVS World Values Surveys

## Declarations

### Author contributions:

C. design the study and analyzed data, both the authors performed the research and wrote the paper.

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### Availability of data

The data was open in the internet, WVS Data source: <https://www.worldvaluessurvey.org/wvs.jsp>

### Declarations

### Ethics approval and consent to participate

Not Applicable

### Consent for publication

The manuscript has been read and approved by authors, all the authors agree with the content of the manuscript and are aware of this submission.

### Competing interests

The authors declare that they have no competing interests.

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## Tables

**Table 1.** Active lifestyles among Chinese residents

Variables	Option	Sample size	Valid percentage (%)
Sports participation	Yes	1564	36.6
	No	2711	63.4
	N	4275	100.0
Cultural participation	Yes	1466	34.3
	No	2802	65.7
	N	4268	100.0

**Table 2.** Descriptive statistics of each control variable

Categorical variables			Categorical variables			
	Sample size	Valid percentage(%)		Sample size	Valid percentage (%)	
Gender			Marital status			
Male	2034	47.4	Unmarried	446	10.4	
Female	2257	52.6	Married	3591	84.0	
Educational level			Divorce	62	1.5	
Primary school or below	1756	40.9	Widowhood	175	4.1	
Junior middle school	951	22.2	Year of survey			
High school	1070	24.9	2007	1991	46.4	
College or above	514	12.0	2012	2300	53.6	
Religious belief			Continuous variables			
Yes	681	15.9		Sample size	Average	Standard deviation
No	3610	84.1	Age	4291	44.3	14.2
Work			Age-squared/100	4291	21.6	12.9
Yes	3016	70.3	Level of family income	3632	4.2	0.03
No	1275	29.7	(1-10)			

**Table 3.** Binary logistic regression of cultural values and Chinese residents' self-rated health

	Model1	Model2	Model3	Model4	Model5
	Benchmark model	Cultural values	Lifestyles	General trust	Interaction terms
Gender <sup>a</sup>	0.203** (0.103)	0.129(0.065)	0.122(0.061)	0.111(0.056)	0.130(0.065)
Age	-0.073*** (-0.037)	-0.062** (-0.031)	-0.062** (0.031)	-0.062** (-0.031)	-0.061** (-0.031)
Age-squared/100	0.040(0.020)	0.031(0.016)	0.031(0.016)	0.029(0.015)	0.029(0.015)
Religious beliefs <sup>b</sup>	-0.229* (-0.116)	-0.263* (-0.132)	-0.265* (-0.133)	-0.275* (-0.138)	-0.251* (-0.126)
Marital status <sup>c</sup>					
Unmarried	-0.247(-0.126)	-0.194(-0.097)	-0.188(-0.094)	-0.242(-0.121)	-0.179(-0.090)
Divorce	-0.645* (-0.328)	-0.617* (-0.310)	-0.611* (-0.307)	-0.540(-0.271)	-0.597* (-0.300)
Widowhood	-0.078(-0.040)	-0.170(-0.086)	-0.176(-0.088)	-0.229(-0.115)	-0.170(-0.085)
Educational level <sup>d</sup>					
Junior middle school	0.052(0.027)	-0.009(-0.004)	-0.017(-0.009)	-0.021(-0.010)	-0.002(-0.001)
High school	0.361*** (0.184)	0.369*** (0.186)	0.368*** (0.185)	0.339** (0.170)	0.370*** (0.186)
College or above	0.144(0.073)	0.038(0.019)	0.083(0.042)	-0.019(-0.010)	0.040(0.020)
work <sup>e</sup>	0.238** (0.121)	0.326*** (0.164)	0.320*** (0.161)	0.354*** (0.177)	0.336*** (0.169)
Level of family income	0.190*** (0.096)	0.179*** (0.090)	0.180*** (0.090)	0.177*** (0.089)	0.180*** (0.090)
Year of survey <sup>f</sup>	0.202** (0.103)	0.301*** (0.152)	0.287*** (0.144)	0.265** (0.133)	0.370(0.185)
Cultural values					
Openness to change		0.115*(0.058)	0.123(0.052)	0.102*(0.051)	0.070(0.035)
Conservation		-0.153** (-0.077)	-0.152** (-0.076)	-0.169** (-0.085)	-0.101(-0.051)

Self-enhancement		0.021(0.011)	0.026(0.013)	0.039(0.020)	0.103(0.052)
Self-transcendence		0.182*** (0.091)	0.178*** (0.089)	0.112*(0.061)	0.103(0.052)
Lifestyles					
Sports participation <sup>g</sup>			0.207*(0.104)		
Cultural participation <sup>h</sup>			-0.391(-0.196)		
General trust <sup>i</sup>				0.275*** (0.138)	
Interaction terms					
Openness to change <sup>^</sup> Year of survey					0.080(0.040)
Conservation <sup>^</sup> Year of survey					-0.120(-0.060)
Self-enhancement <sup>^</sup> Year of survey					-0.167(-0.084)
Self-transcendence <sup>^</sup> Year of survey					0.176(0.088)
Constants	1.817*** (0.499)	0.957(0.571)	0.946(0.572)	0.930(0.595)	0.912(0.620)
Sample size	3,355	3,355	3,355	3,355	3,355
chi <sup>2</sup>	410.4***	423.3***	427.4***	420.5***	429.8***
Pseudo R <sup>2</sup>	0.087	0.098	0.099	0.102	0.101

Note: The table shows the nonstandardized regression coefficients. Numbers in parentheses are  $y^*$  standardized coefficients. Reference category "a" is "female," "b" is "no religious belief," "c" is "married," "d" is "primary school or below," "e" is "no job," "f" is "the year 2007," "g" is "no sports participation," "h" is "no cultural participation," and "i" is "distrust." \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

**Table 4.** Cultural values, sports participation, and general trust

	Model 6	Model 7
	Sports participation	General trust
gender <sup>a</sup>	0.019(0.111)	0.029(0.076)
Age	-0.024(0.029)	-0.026(0.020)
Age-squared/100	0.022(0.032)	0.036(0.022)
Religious beliefs <sup>b</sup>	0.723***(0.137)	0.148(0.103)
Marital status <sup>c</sup>		
Unmarried	0.521**(0.201)	-0.010(0.159)
Divorce	0.333(0.391)	-0.765**(0.297)
Widowhood	0.013(0.332)	0.523(0.308)
Educational level <sup>d</sup>		
Junior middle school	0.895***(0.167)	0.154(0.104)
High school	0.767***(0.159)	0.116(0.101)
College or above	1.214***(0.190)	0.602***(0.141)
Working or not <sup>e</sup>	-0.352**(0.126)	0.073(0.090)
Level of family income	0.172***(0.030)	0.029(0.021)
Year of survey <sup>f</sup>	0.601(0.719)	0.881(0.457)
Cultural values		
Openness to change	0.560***(0.093)	-0.044(0.069)
Conservation	-0.138(0.087)	-0.010(0.063)
Self-enhancement	-0.135(0.086)	-0.101(0.062)
Self-transcendence	0.236*(0.098)	0.158*(0.069)
Interaction terms		
Value of openness to change ´ Year of survey	0.371**(0.133)	-0.034(0.091)
Conservation ´ Year of survey	-0.075(0.131)	-0.078(0.090)
Self-enhancement ´ Year of survey	0.147(0.127)	-0.023(0.085)
Self-transcendence ´ Year of survey	-0.137(0.149)	0.011(0.099)
Constants	-4.050***(0.820)	0.018(0.568)

Sample size	3,355	3,355
chi <sup>2</sup>	370.4***	109.6***
Pseudo R <sup>2</sup>	0.138	0.025

Note: The table presents nonstandardized regression coefficients. Standard errors are in parentheses. The reference categories are as follows: "a" is "female," "b" is "no religious belief," "c" is "married," "d" is "primary school or below," "e" is "no job," and "f" is "the year 2007." \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

## Figures

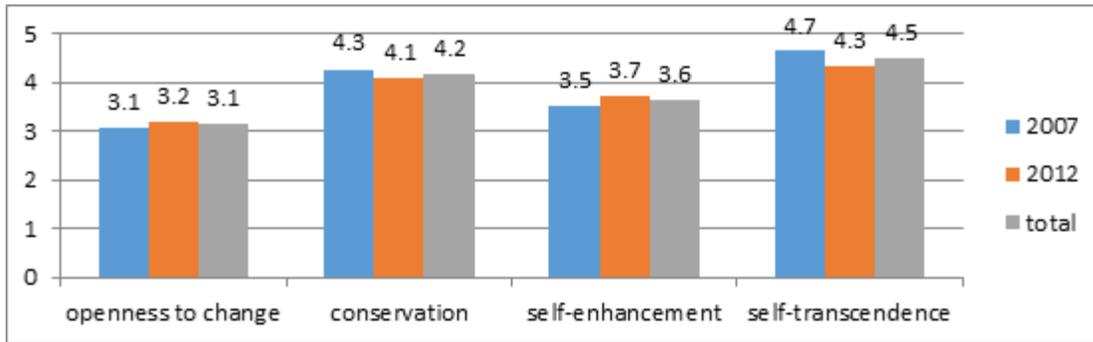


Figure 1

Chinese residents' cultural values and their changes

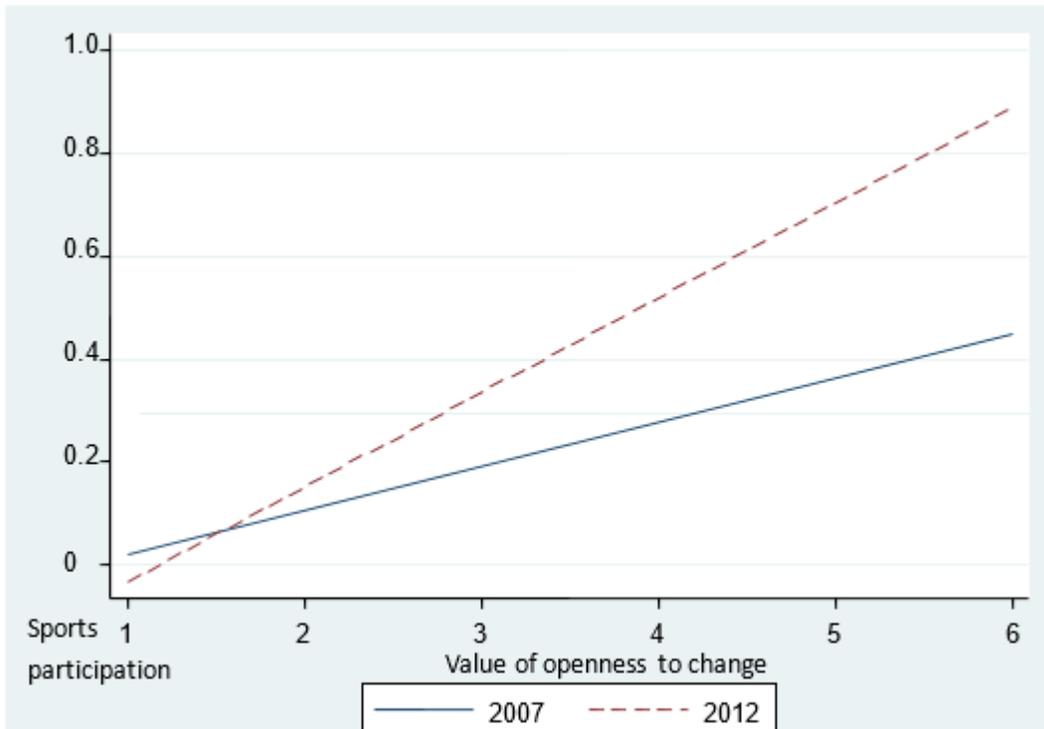


Figure 2

Value of openness to change and sports participation