

Fear of COVID-19 and Anxiety: Serial Mediation by Trust in the Government and Hope

Yong Yang , Huili Wang

School of Educational Science, Xinyang Normal University, Xinyang, Henan, People's Republic of China

Correspondence: Yong Yang, School of Educational Science, Xinyang Normal University, Room 517, Xinyang, Henan, 464000, People's Republic of China, Email yangyongseeklight@m.scnu.edu.cn

Purpose: How to reduce the damage of COVID-19 pandemic to people's mental health is a current research hotspot. The present study examined the mediating role of trust in the government and hope in the relationship between fear of COVID-19 and anxiety.

Participants and Methods: In this cross-sectional study, a total of 1053 Chinese subjects (20.24±3.97 years old, 85.3% female) were investigated by using the *Fear of COVID-19 Scale*, *Anxiety Scale*, *Trust in the Government Measure Scale* and *Herth Hope Scale*, which was conducted by an online survey using snowball sampling technique. Hayes PROCESS macro for SPSS was used to test the hypothesized mediating effects of trust in the government and hope in the relationship between fear of COVID-19 and anxiety.

Results: The fear of COVID-19 could positively predict anxiety level ($\beta=0.36$, $p<0.001$). Results of the mediation analyses demonstrated that trust in the government ($\beta=-0.16$, $p<0.001$) and hope ($\beta=-0.28$, $p<0.001$) mediated the relationship between fear of COVID-19 and anxiety level respectively. Moreover, fear of COVID-19 could also indirectly predict anxiety level through the chain-mediated role of the trust in the government and the hope ($\beta=0.28$, $p<0.001$).

Conclusion: Our findings shed light on a correlation between fear of COVID-19 and anxiety. This study emphasizes the value of trust in the government and hope in maintaining mental health when individuals face public stress events from both external and internal perspectives.

Keywords: COVID-19 pandemic, trust in government, hope, anxiety, serial mediation

Introduction

The novel coronavirus-2019 (COVID-19) pandemic not only attacked our bodies, but also seriously affected the society's quality of life.¹ Many studies have confirmed that COVID-19 pandemic has significantly increased anxiety level.²⁻⁶ Recent studies have demonstrated that the lockdown due to COVID-19 would reduce sleep quality and physical activity levels,⁷⁻¹¹ which in turn could increase the anxiety level.¹² So far, COVID-19 continues to spread in many countries. It is generally believed that persistent anxiety could increase the risk of depression, sleep disorders, and even suicidal behavior.^{13,14} Therefore, we should pay more attention to how to reduce people's anxiety during the COVID-19 pandemic.

As the number of reported COVID-19 infections and deaths increases, there is growing fear of the coronavirus. The theory of terror management holds that receiving information related to death will induce anxiety and subconsciously use psychological defense mechanism to alleviate it.¹⁵ Considering the fact that there is no specific drug for the novel coronavirus, the COVID-19 pandemic would coexist with humans for a long time. This adds a lot of uncertainty to people's lives, and these uncertainties undoubtedly increase the risk of people being in a state of anxiety. According to this, the fear of COVID-19 is an important cause of anxiety.¹⁶ Therefore, to lower the fear of COVID-19 is a prerequisite for reducing the level of public anxiety.

There is no doubt that the government plays a key role in controlling the ferment of public fear when dealing with major public health incidents. Positive and appropriate measures taken by the government can reduce the threat perception level of the public, and then reduce their fear. For example, governments can reduce infection rates by

limiting social distancing, wearing masks, and quarantining, and so on. However, although these measures do have a significant effect in stopping the transmission of the COVID-19, people are not necessarily willing to comply with them. People comply with government measures only if they trust the government. The people's trust in the government is based on the past experience that the government could take timely and effective measures to ensure public safety and prevent the spread of the epidemic. If people lose trust in the government based on its past performance, they are likely to be unsupportive even if the government tries to take proactive measures during the pandemic. Therefore, trust in the government is not only an effective indicator of social capital,¹⁷ but also a result and prerequisite of effective government management.¹⁸

According to the emotion-as-information hypothesis,¹⁹ the level of fear of the COVID-19 could reflect the level of people's trust in their government during the COVID-19 pandemic. Specifically, they do not think the government is doing enough to protect them if they have a strong sense of fear. When the fear of COVID-19 can not be effectively alleviated, it may lead people to question the ability of the government to manage and reduce their trust in the government. Conversely, if people do not feel fear, that means they trust the government to deal with COVID-19 and keep them safe.

The present study aimed to explore the mechanism of the effect of fear of COVID-19 on anxiety during the COVID-19 pandemic. We proposed the research hypotheses based on the literature review:

Hypothesis I: Fear of COVID-19 is able to positively predict anxiety levels.

Hypothesis II: Fear of COVID-19 could predict anxiety levels through the mediating effect of the trust the government.

Hypothesis III: Fear of COVID-19 could predict anxiety levels through the mediating effect of the hope.

Hypothesis IV: Trust the government and hope play a serial mediation effect between the fear of COVID-19 and the anxiety level during the COVID-19 pandemic.

Methods

Participants

This cross-sectional study was conducted at Xinyang Normal University, Xinyang, China, from 19rd January to 26rd February 2021. The data and the informed consent were obtained via a web-based questionnaire. These questionnaires were published on the WJX web, a free online platform for collecting data (<https://www.wjx.cn/>). The researchers sent the questionnaire link to the subjects through email or WeChat and other chat tools, and encouraged the subjects to forward the link to other people. The person who received the questionnaire link can voluntarily choose whether to participate in this study. After completing the survey, each subject can participate in the lottery and get a reward of 2–10 RMB. The study complies with the Declaration of Helsinki. The research was approved by the human research ethics committee for non-clinical faculties of School of Educational Science, Xinyang Normal University (Approval Number: XYEC-2021-002). A total of 1053 subjects (150 males) were recruited to participate the present study. Their ages ranged from 18 to 65 years, with a mean of 20.24 years ($SD = 3.97$), which indicated that this study is representative of young adults only. The sample size was chosen based on the experience of previous similar studies.^{20,21} Inclusion criteria were the Chinese national who can read, understand and fill the questionnaire,²² whereas the subjects who failed the polygraph test were excluded from the study. The polygraph test is set up as a common sense test with a standard answer, i.e the sun rises in the east and sets in the west, which can identify subjects who choose an answer without understanding the question. All subjects passed the polygraph test, so no subjects were excluded from the study.

Measures

Fear of COVID-19 Scale

The fear of COVID-19 scale included seven items to assess the fear level of COVID-19, such as “I am most afraid of COVID-19”, “My heart races or palpitates when I think about getting COVID-19”. It was initially developed by Ahorsu et al,²³ and has been translated into many versions and widely used in the researches on mental health in the context of COVID-19.^{23–26} Chi et al have confirmed that the Chinese version of FCV-19 has good

psychometric properties in the Chinese communities.²⁷ Participants were asked to rate the items on a 5-point likert scale (1 = *strongly disagree*, 5 = *strongly agree*). The total score was calculated and the higher score represent the higher fear level to COVID-19. The Cronbach's α was 0.82 in present study.

Trust in the Government Scale

The Government Trust Scale used in this study comes from the Self-Efficacy and Trust in the Government Measure Scale, which was initially developed by Johnson et al.²⁸ We adopted the Trust in the Government Measure subscale to measure the people's trust level in the government, including three items, such as "Most of our leaders are committed to serving the country", "Politicians never tell us what they really think (reverse coded)", "I don't think public officials care much about what people like me think (reverse coded)". We firstly translated the scale into Chinese version and then ask participant to rate the items on a 5-point likert scale (1 = *strongly disagree*, 5 = *strongly agree*). The total score was calculated and the higher score represent the higher trust level in the government. The Cronbach's α was 0.72 in present study.

Herth Hope Scale

The Herth hope scale included twelve items to assess the hope level during the COVID-19 pandemic, such as "I have a positive attitude towards life", "I have short, medium or long term goals in life". It was initially developed by Herth et al.²⁹ Chan et al have confirmed that the Chinese version of FCV-19 has good psychometric properties in the Chinese communities.³⁰ Participants were asked to rate the items on a 5-point likert scale (1 = *strongly disagree*, 5 = *strongly agree*). The total score was calculated and the higher score represent the higher hope level. The Cronbach's α was 0.77 in present study.

Anxiety Scale

We adopted the anxiety subscale of Depression-Anxiety-Stress Scale to assess the individual's anxiety level during the COVID-19 pandemic. The anxiety scale was translated into Chinese version by Wang et al and have been confirmed it's good psychometric properties in the Chinese communities,³¹ which include seven items, such as "I worry about situations where I might be panic or make a fool of myself", "I think I might get crazy". Participants were asked to rate the items on a 4-point Likert scale (0 = *strongly disagree*, 3 = *strongly agree*). The total score was calculated and the higher score represent the higher anxiety level. The Cronbach's α was 0.86 in present study.

Statistical Analysis

Harman univariate test was conducted and showed that there was no serious common method bias in this study.³² Descriptive statistics and the correlation analysis were first conducted. PROCESS Models 6 macros for SPSS was used to test the serial mediation models with 5000 random sample bootstrapping confidence intervals (CIs).³³ Fear of COVID-19, trust in the government, hope and anxiety were study variables, and the gender, age, education background and economic situation were used as the control variables. All variables were standardized prior to being analyzed.

Results

Descriptive Statistics and the Correlation Analysis

Table 1 shows that the fear of COVID-19 was negatively associated with trust in the government ($r = -0.18$, $p < 0.001$, 95% CI [-0.24, -0.12]) and hope ($r = -0.20$, $p < 0.001$, 95% CI [-0.27, -0.14]), and was positively associated with anxiety ($r = 0.36$, $p < 0.001$, 95% CI [0.30, 0.42]). Trust in the government was positively associated with hope ($r = 0.29$, $p < 0.001$, 95% CI [0.23, 0.35]) and was negatively associated with anxiety ($r = -0.30$, $p < 0.001$, 95% CI [-0.36, -0.24]). Hope was negatively associated with anxiety ($r = -0.38$, $p < 0.001$, 95% CI [-0.43, -0.33]).

Testing for Mediation Effect

The model 6 of the PROCESS macro was used to examine the serial mediating role of trust in the government and hope in the relationship between fear of COVID-19 and anxiety, with gender and age as covariates. As Table 2 and Table 3

Table 1 Descriptive Statistics and Correlations Among Study Variables (n = 1053)

| | M±SE | 1 | 2 | 3 | 4 | 5 |
|---------------------------|------------|---------|---------|----------|----------|----------|
| 1.Age | 20.26±3.95 | 1 | | | | |
| 2.Sex | 1.86±0.35 | −0.10** | 1 | | | |
| 3.Fear of COVID-19 | 17.17±5.14 | −0.07* | 0.07* | 1 | | |
| 4.Trust in the Government | 10.46±1.84 | 0.10** | −0.09** | −0.18*** | 1 | |
| 5.Hope | 34.91±3.22 | 0.03 | −0.06 | −0.20*** | 0.29*** | 1 |
| 6.Anxiety | 13.02±3.86 | −0.06 | 0.06 | 0.36*** | −0.30*** | −0.38*** |

Notes: Gender was dummy coded as 1 = male, 2 = female; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 2 Testing for Serial Mediation

| Regression Equation | | Overall Fitting Indicators | | | Regression Coefficient Significance | |
|-------------------------|-------------------------|----------------------------|----------------|----------|-------------------------------------|----------|
| Outcome Variable | Predictor Variable | R | R ² | F | β | t |
| Trust in the government | Gender | 0.23 | 0.05 | 20.04*** | −0.09 | −3.00** |
| | Age | | | | 0.10 | 3.38*** |
| | Fear of COVID-19 | | | | −0.20 | −6.55*** |
| Hope | Gender | 0.34 | 0.11 | 33.61*** | −0.06 | −2.17* |
| | Age | | | | 0.04 | 1.43 |
| | Fear of COVID-19 | | | | −0.15 | −4.87*** |
| Anxiety | Trust in the government | 0.51 | 0.26 | 74.42*** | 0.27 | 9.14*** |
| | Gender | | | | 0.09 | 3.16** |
| | Age | | | | −0.05 | −1.97* |
| | Fear of COVID-19 | | | | 0.28 | 10.06*** |
| | Trust in the government | | | | −0.16 | −5.70*** |
| | Hope | | | | −0.28 | −9.93*** |

Notes: Gender was dummy coded as 1 = male, 2 = female; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 3 Analysis of Mediation Effect

| | Coefficient | SE | 95% Confidence Interval | | Relative Mediation Effect |
|-----------------------|-------------|-------|-------------------------|-------------|---------------------------|
| | | | Lower Bound | Upper Bound | |
| Indirect effect 1 | 0.03 | 0.01 | 0.02 | 0.05 | 8.33% |
| Indirect effect 2 | 0.04 | 0.01 | 0.02 | 0.06 | 11.11% |
| Indirect effect 3 | 0.02 | 0 | 0.01 | 0.02 | 5.56% |
| Total effect | 0.36 | 0.034 | 0.23 | 0.32 | 100.00% |
| Direct effect | 0.28 | 0.033 | 0.17 | 0.25 | 77.78% |
| Total indirect effect | 0.09 | 0.01 | 0.06 | 0.12 | 25.00% |

Notes: Indirect effect 1 indicate the path that fear of COVID-19→trust in the government→anxiety; Indirect effect 2 indicate the path that fear of COVID-19→hope→anxiety; Indirect effect 3 indicate the path that fear of COVID-19→trust in the government→hope→anxiety.

shows, fear of COVID-19 significantly negatively predicted trust in the government (total effect: $\beta=0.36$, $p<0.001$, 95% CI[0.23, 0.32]). Fear of COVID-19 could predict the anxiety level through the mediating effect of trust in the government (indirect effect 1: $\beta=0.03$, $p<0.001$, 95% CI[0.02, 0.05]) and hope (indirect effect 2: $\beta=0.04$, $p<0.001$, 95% CI[0.02, 0.06]). Moreover, fear of COVID-19 also could predict the anxiety level through the serial mediating effect of trust in the government and hope (indirect effect 3: $\beta=0.02$, $p<0.001$, 95% CI [0.01, 0.02]). When the mediators were included in the analysis, this coefficient was reduced but it was still of significance (direct effect: $\beta=0.28$, $p<0.001$, 95% CI [0.17, 0.25]). The indirect effect on anxiety through trust in the government and hope contributed to 25.00% of the total effect. These

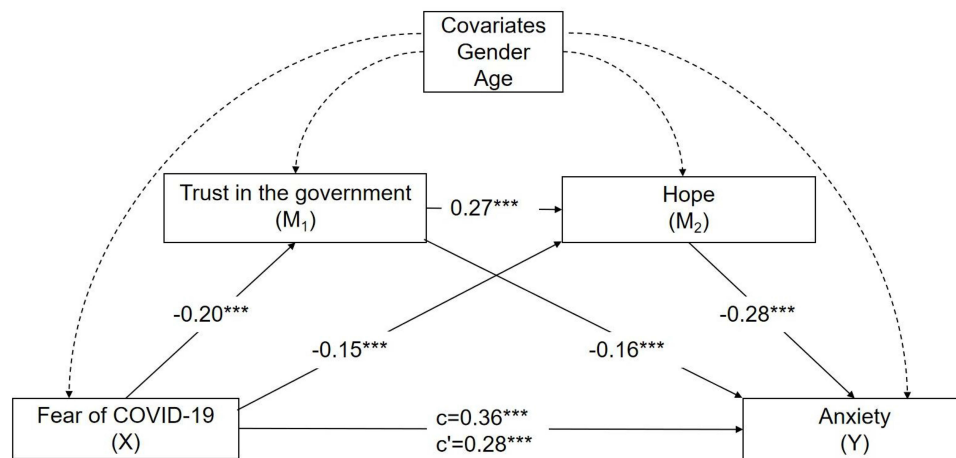


Figure 1 The serial mediation model.

Notes: Gender was dummy coded as 1 = male, 2 = female; *** $p < 0.001$. The model showed standardized coefficients.

results suggest that trust in the government and hope partially mediated the relationship between fear of COVID-19 and anxiety (see Figure 1).

In addition, we found that females tended to show lower level of trust in the government ($\beta = -0.09$, $t = -3.00$, $p < 0.01$) and hope ($\beta = -0.06$, $t = -2.17$, $p < 0.05$) and higher level of anxiety ($\beta = 0.09$, $t = 3.16$, $p < 0.01$) compared to males. Moreover, older age predicted higher levels of trust in the government ($\beta = 0.10$, $t = 3.38$, $p < 0.001$) and lower levels of anxiety ($\beta = -0.05$, $t = -1.97$, $p < 0.05$).

Discussion

The COVID-19 pandemic continues to pose a severe threat to global public health. Facing this uncontrollable, unpredictable, and stressful situation, it is of great significance to find protective factors for mental health. Therefore, in the present study, the relationships between fear of COVID-19, trust in the government, hope, and anxiety were investigated. Results showed that fear of COVID-19 could significantly predict the people's anxiety level during the COVID-19 pandemic. Importantly, the effect of fear of COVID-19 on anxiety could be reduced by the serial mediation of trust in the government and hope.

Acute threat could cause fear, while sustained threat could produce anxiety.³⁴ The outbreak of COVID-19 is an acute threat to many people and thus lead to the fear of COVID-19. Fear of COVID-19 would generate defensive or avoidance behaviors, such as avoiding close contact with others, while anxiety during the COVID-19 pandemic could lead to lower sleep quality, more negative emotions and thus decrease the quality of life.^{35–37} Therefore, it may be the anxiety, but not the fear of COVID-19, that poses a greater threat to people's mental health. Consistent with previous studies, we found that the fear of COVID-19 is an important source of anxiety during the COVID-19 pandemic.^{38,39} This may be because the persistence of the COVID-19 pandemic and lack of understanding about it leads to a lack of control over the future, such as loss of jobs,⁴⁰ which would undoubtedly increase the level of anxiety.

Interestingly, this study found that trust in the government also played a mediating role between fear of COVID-19 and anxiety. When an acute threat arises, such as the COVID-19 pandemic, government intervention is a critical factor in preventing the widespread spread of the epidemic. During the early months of the pandemic, governments must work to achieve a balance between protecting citizens from further harm and allowing economic activities to resume. If the government takes prompt measures to effectively control the spread of the epidemic, so that people feel the situation can be controlled, then people will not be too fear of the COVID-19 and thus trust and abide by the government's measures.^{41–43} However, if the epidemic continues to develop and increase the fear of the COVID-19, many citizens feel uncertain about the ability of their government to protect them from harm,⁴⁴ resulting in a weakening of government trust.^{45,46}

The COVID-19 pandemic has led to an influx of fear and anxiety, as people struggle not only with the virus, but also with the unknown. The pandemic can cause immense physical and psychological pain for people, ranging from loss of smell to memory decline to increased negative emotions such as anxiety.^{47–49} In addition, governmental control measures of the virus can affect individuals' economic income, leading to more pressure such as job loss. According to hope theory, hope can provide a lot of mental energy when dealing with these kinds of situations.⁵⁰ However, this research has shown that a high infection rate, death rate and lack of a specific effective cure put people in a fearful atmosphere created by the novel coronavirus, reducing the individual's sense of hope and thus increasing anxiety. Nonetheless, we also discovered that individual's hope in the future during the pandemic can be provided by promoting governmental trust.

In addition, we found that females tended to show lower trust in the government and higher anxiety compared to males, which may be related to women having a higher susceptibility to anxiety.^{51,52} Meanwhile, we found that older age tend to have higher level of trust in the government and lower level of anxiety. This may be because an older age means they may have more experience, making their thinking more mature and rational, thus showing more confidence and courage when facing public stress events.

Limitations and Future Directions

There are several limitations that should be addressed in future studies. First, the study was cross-sectional and used the self-reported measure to collect data. Cross-sectional research can obtain a large amount of data in a short period of time, but the research time span is so short that researcher cannot in-depth analyses other factors, which would increase the chance for error in measured data. In the future research, the longitudinal approach should be a better way to understand the protective and buffering effects of trust in the government and hope. Secondly, the sample size of this study may not be comprehensive and only represent the youth group, thus limiting the stability of the research results. Future research needs to expand the scope and number of samples.

Conclusion

This study investigated the serial mediating role of trust in the government and hope in the relationship between fear of COVID-19 and anxiety. Study results showed that, fear of COVID-19 could significantly and positively predict the anxiety level during COVID-19 pandemic. Moreover, the the effect of fear of COVID-19 on anxiety could be reduced by the serial mediation of trust in the government and hope. The study shed light on a correlation between fear of COVID-19 and anxiety and emphasizes the value of trust in the government and hope in maintaining mental health when individuals face public stress events from both external and internal perspectives.

Ethical Considerations

The study has received ethics approval from the Ethics Committee of Xinyang Normal University (Project no: Xyec-2021-002).

Funding

This work was supported by a grant from the National Natural Science Foundation of China (32200902), funding scheme for young core teachers of Xinyang Normal University (XYNU), Nanhu Scholars Program for Young Scholars of XYNU.

Disclosure

The authors declare that they have no conflicts of interest.

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