



香港城市大學  
City University of Hong Kong

專業 創新 胸懷全球  
Professional · Creative  
For The World

## CityU Scholars

### Intolerance of uncertainty and future career anxiety among Chinese undergraduate students during COVID-19 period

#### Fear of COVID-19 and depression as mediators

Zhou, Tianshu; Bao, Yuchang; Guo, Danfeng; Bai, Yunpeng; Wang, Ruizhe; Cao, Xinyue; LI, Hebin; Hua, Yidi

#### Published in:

Frontiers in Public Health

Published: 01/01/2022

#### Document Version:

Final Published version, also known as Publisher's PDF, Publisher's Final version or Version of Record

#### License:

CC BY

#### Publication record in CityU Scholars:

[Go to record](#)

#### Published version (DOI):

[10.3389/fpubh.2022.1015446](https://doi.org/10.3389/fpubh.2022.1015446)

#### Publication details:

Zhou, T., Bao, Y., Guo, D., Bai, Y., Wang, R., Cao, X., LI, H., & Hua, Y. (2022). Intolerance of uncertainty and future career anxiety among Chinese undergraduate students during COVID-19 period: Fear of COVID-19 and depression as mediators. *Frontiers in Public Health*, 10, Article 1015446. <https://doi.org/10.3389/fpubh.2022.1015446>

#### Citing this paper

Please note that where the full-text provided on CityU Scholars is the Post-print version (also known as Accepted Author Manuscript, Peer-reviewed or Author Final version), it may differ from the Final Published version. When citing, ensure that you check and use the publisher's definitive version for pagination and other details.

#### General rights

Copyright for the publications made accessible via the CityU Scholars portal is retained by the author(s) and/or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights. Users may not further distribute the material or use it for any profit-making activity or commercial gain.

#### Publisher permission

Permission for previously published items are in accordance with publisher's copyright policies sourced from the SHERPA RoMEO database. Links to full text versions (either Published or Post-print) are only available if corresponding publishers allow open access.

#### Take down policy

Contact [lbscholars@cityu.edu.hk](mailto:lbscholars@cityu.edu.hk) if you believe that this document breaches copyright and provide us with details. We will remove access to the work immediately and investigate your claim.



## OPEN ACCESS

EDITED BY  
Guohua Zhang,  
Wenzhou Medical University, China

REVIEWED BY  
Wei Wang,  
Shanxi Datong University, China  
David Conversi,  
Sapienza University of Rome, Italy

\*CORRESPONDENCE  
Danfeng Guo  
guodanfeng@uusts.edu.cn

SPECIALTY SECTION  
This article was submitted to  
Public Mental Health,  
a section of the journal  
Frontiers in Public Health

RECEIVED 09 August 2022  
ACCEPTED 14 October 2022  
PUBLISHED 29 November 2022

CITATION  
Zhou T, Bao Y, Guo D, Bai Y, Wang R,  
Cao X, Li H and Hua Y (2022)  
Intolerance of uncertainty and future  
career anxiety among Chinese  
undergraduate students during  
COVID-19 period: Fear of COVID-19  
and depression as mediators.  
*Front. Public Health* 10:1015446.  
doi: 10.3389/fpubh.2022.1015446

COPYRIGHT  
© 2022 Zhou, Bao, Guo, Bai, Wang,  
Cao, Li and Hua. This is an  
open-access article distributed under  
the terms of the [Creative Commons  
Attribution License \(CC BY\)](https://creativecommons.org/licenses/by/4.0/). The use,  
distribution or reproduction in other  
forums is permitted, provided the  
original author(s) and the copyright  
owner(s) are credited and that the  
original publication in this journal is  
cited, in accordance with accepted  
academic practice. No use, distribution  
or reproduction is permitted which  
does not comply with these terms.

# Intolerance of uncertainty and future career anxiety among Chinese undergraduate students during COVID-19 period: Fear of COVID-19 and depression as mediators

Tianshu Zhou<sup>1,2</sup>, Yuchang Bao<sup>3</sup>, Danfeng Guo<sup>4\*</sup>, Yunpeng Bai<sup>5</sup>, Ruizhe Wang<sup>6</sup>, Xinyue Cao<sup>1</sup>, Hebin Li<sup>1</sup> and Yidi Hua<sup>7</sup>

<sup>1</sup>Department of Social and Behavioural Sciences, City University of Hong Kong, Hong Kong, China, <sup>2</sup>Department of Political Science, Suzhou University of Science and Technology, Suzhou, China, <sup>3</sup>Faculty of Education, University of Macau, Taipa, China, <sup>4</sup>Department of Political Science, Suzhou University of Science and Technology, Suzhou, China, <sup>5</sup>Department of Applied Social Science, The Hong Kong Polytechnic University, Kowloon, Hong Kong SAR, China, <sup>6</sup>Department of Media and Communication, Xi'an Jiaotong-Liverpool University, Suzhou, China, <sup>7</sup>Faculty of Arts, Saint Mary's University, Halifax, NS, Canada

Uncertainty is mushrooming throughout COVID-19, and intolerance of uncertainty (IoU) nudges people into mental health difficulties involving fear, depression, and anxiety. The objective of this study was to investigate the role of depression and fear of COVID-19 (FoC) in the association between IoU and future career anxiety (FCA) among Chinese university students during the COVID-19 pandemic. This study involved 1,919 Chinese undergraduate students from 11 universities in eight Chinese cities with an online self-administered survey that included demographic information, IoU, FoC, depression, and FCA completed by all participants. Our study demonstrated a positive relationship between IoU and FCA and the chain mediation effect of FoC and depression. Thus, understanding how FoC affects FCA not only informs university career professionals and assists students in preparing for employment, but also motivates schools to offer career opportunities workshops and, most importantly, provides mental health support to help students effectively cope with uncertainty and overcome COVID-19-related stress.

## KEYWORDS

intolerance of uncertainty, future career anxiety, fear of COVID-19, depression, Chinese undergraduate students

## Introduction

The worldwide spectrum of the COVID-19 pandemic that erupted in 2019 is still propagating, which poses an unprecedented public health challenge, with at least 500 million infections and 6 million fatalities projected by May 2022; meanwhile, the world faces economic collapse, with GDP hovering around 3.3% in 2020 (1, 2).

The economic spillover effects of unemployment put college students in white-hot competition (3, 4). The equilibrium between supply and demand in China's labor market has been unbalanced, as positions have declined while applicants have surged (5, 6). Chinese students fear for their future job opportunities when COVID-19 dulls the economy's glitter and jacks up the unemployment rate (7). Meanwhile, industrial contraction led to job losses, and rapidly changing hiring requirements fueled career uncertainty.

Although the government's COVID-19 restrictions strategy effectively prevented the spread of the virus, it had a detrimental impact on the mental health of the population, particularly the long-term quarantine. Studies of health workers who were quarantined during the SARS pandemic demonstrated a high level of psychological distress, post-traumatic symptoms, anxiety, and depressive symptoms (8, 9). In addition, studies from the current COVID-19 pandemic support the harmful effects of government restrictions, particularly for college students. In addition to a significant increase in psychological distress, college students also faced financial difficulties, limited supplies, and fears of infection (10, 11). A meta-analysis revealed that approximately 28.4% of college students in China might exhibit depressive symptoms, indicating that depression is prevalent among Chinese college students (12). The pandemic unquestionably worsens the psychological health of students and leads many university students to exhibit depression (11).

Intolerance of uncertainty (IoU) is a personality characteristic in which people perceive unpredictable situations as time bombs threatening their lives (13, 14). When people are aware of uncertainty in their external environment, their anxiety may merge (15–17). Return to life, recurring breakouts and lockdowns, and waves of bankruptcy not only plunge current life into uncertainty but also leave individuals worried about the future (18–20). Lockdown regulation helps predict people's negative emotions because it can happen at any time, making them feel that the world is unpredictable and difficult to control (21). In terms of work, individuals report anxiety and depression when they perceive COVID-19 as a threat to job stability, which is closely connected to survival and social needs (6, 22). When the global economy stays sluggish, Chinese undergraduates were also trapped in an unsteady labor market (23, 24). Whereas, according to Hofstede's dimension theory (25), Chinese culture values certainty, job insecurity is more threatening to those who care about stability (26, 27). Not surprisingly, Chinese students' anxiety about their future careers spikes when they perceive through first-hand experience or social media that COVID-19 disrupts their work plans (5, 28). Moreover, early adulthood is a launching phase for developing job blueprints (29). According to Erikson's developmental theory (30), successful self-exploration of a career path contributes to healthy personal development. However, COVID-19 outbreak,

occupational safety, and decreased job expectations for students may challenge students' personal development (31).

## Intolerance of uncertainty and future career anxiety

Uncertainty rains down throughout COVID-19, and IoU nudges people into mental health difficulties involving fear, depression, and anxiety (32). During COVID-19, uncertainty unsettles the general population, but also hurts potential college graduates who are looking for jobs. In their early 20s, they are transitioning from students to workers, making career decisions, and establishing job market commitments (33). However, COVID-19 may undermine the economy and restrict employment, making it difficult for those preparing to graduate from college to determine their job prospects and career opportunities. Thus, students may feel anxious and worried as they explore career options. FCA is the mental stress that people feel when they worry about their future career paths (34). When COVID-19 spreads and labor markets shrink, FCA among college students becomes a critical concern for educators and researchers (23, 35). Grupe and Nitschke (36) pointed out that a steady environment creates a sense of security, whereas volatile circumstances incubate anxiety. Past studies have also emphasized the strong link between anxiety and the need for control (37–40). People have cognitive control when they can predict the presence of a threat and assess their ability to respond (41). However, when people perceive uncertainty and unpredictability in the present, it would make them feel anxious about the future (39, 42). With a similar logic, IoU is tightly wired to FCA as students with higher IoU doubt their ability to eliminate threats in their job search (43). Students with a higher IoU have a more difficult time transitioning from student to work than students with a lower IoU because they are less likely to act in the job market, thereby worsening their FCA (44, 45). Unstable labor markets and fragile economies erode occupational uncertainty and security during COVID-19 (46, 47). Cross-cultural evidence suggested that IoU leads to FCA during COVID-19. In the United States, college students with intense IoU during COVID-19 report less job readiness, which results in FCA (48). Back to China, Chen and Zeng (43) proposed that IoU might lay the groundwork for FCA during COVID-19, not least for university students who anchor their career objectives. Li et al. (7) demonstrated that IoU and FCA are moving in a positive direction among the Chinese. On the contrary, employment is particularly meaningful in Confucian culture for bringing honor to the family, and students are worried about whether their future jobs will meet family needs (49, 50). Aside from social pressure, previous studies have also shown that students who carry higher IoU are more vulnerable

to FCA because IoU has a detrimental impact on cognitive resources and distracts them from coping with FCA (43).

## Intolerance of uncertainty, fear of COVID-19, depression, and future career anxiety

Emotions are complex sensory states that affect psychological states and primarily influence thinking and action (51). The cognitive–motivational–relational theory of emotion demonstrates that individuals first label the external stimulus and both personal experiences and social culture influence labeling (52). Feelings are the result of labeling and have an impact on changes in mental states (53, 54). So far, dense IoU impedes normal emotional functioning (55). Individuals with dense IoU may perceive warning signals as overly sensitive and generalized (56). Thus, dealing with an unpredictable infection may induce fear; individuals commonly sound alarms and overuse cognitive resources to cope with all perceived threats (57). COVID-19 is an unpredictable health crisis that harms not only an individual's mental or physical health but also their career development, spreading fear among forthcoming university graduate students (1, 58). FoC is an alerted oriented emotional response to COVID-19 that threatens an individual's life, net health, social connections, and economic activities (59). COVID-19 fluctuates, and people are unsure when the virus will vanish; they yearn for pre-pandemic life, which fuels the FoC (60, 61). For instance, Millroth and Frey (2020) found a positive correlation between IoU and FoC, with deeper IoU predicting stronger FoC within a Swedish sample. Similarly, Satici et al. (21) also discovered that IoU remained positively affiliated with FoC in Turkey.

Furthermore, FoC predicted FCA in a positive way. During a pandemic, people first worry about their health, but they gradually fear a pandemic-induced economic slump, making individuals feel insecure about their current jobs and future career paths (22). The International Monetary Fund (IMF) reported during COVID-19 that the impending recession would lead to a multi-layered financial collapse caused by declining export growth and lower product market prices in countless countries (62–66). Alici and Copur (67) also demonstrated that Turkish nursing students suffer from FCA because they fear that pandemic will affect employment rates. Thus, FoC is mounting with FCA positively in a few developing countries (32, 68). However, future exploration in a Confucian developing state such as China is worthwhile. Given that Confucian culture emphasizes personal behaviors that affect family reputation and that students' careers are linked to family achievement, the pandemic may pose a formidable threat to the careers of Chinese

students (69). Asian values include high regard for family honor and a desire for careers to match family expectations (70).

In addition to anxiety, individuals are susceptible to depression when the external environment is varying (71). IoU contributes to depressive feelings, while intense FCA is positive relative to severe worry and rumination, but the underlying mechanisms remain puzzling (54, 61, 72). Depression is defined as intense negative feelings that let people's cognition, emotions, and behaviors to become dysfunctional, manifesting as persistent sadness, helplessness, and diminished desire (28, 73). According to the helplessness–hopelessness model, IoU and hopelessness are owing to future depression (74, 75). The model adds this approach to the cognitive process, explaining that IoU leads to a sense of instability in allergy and eventually to a chain of depression (76). Dupuy and Ladouceur (76) revealed that IoU triggers otiose concerns and people who have depression; they prefer to experience a disaster rather than uncertainty. Whenever fear is condensed enough to dig people into dysfunction, they might feel depressed (77).

Previous studies have noted that FoC impairs mental health and is related to depressive symptoms (78, 79). Erbiçer et al. (77) outlined a positive association between FoC and depression. Ashraf et al. (80) suggested that FoC connects positively with situational depression when an epidemic hinders social activities and reduces wellbeing in Pakistan. In China, Huang and Zhao (81) discovered that FoC is positively linked with depressive mood as people were concerned about the controllability of the epidemic. Furthermore, previous research has found that depression frequently coexists with anxiety (82). In various countries, depression is confluent with anxiety risk, including FCA (76, 83). People with more severe depressive symptoms exert indecision about their future occupations and foster FCA (61, 83). In the outbreak, Chowdhury et al. (84) concluded that depression and FCA are related in a positive way among Bangladeshi students. Thus, students who are distressed about employment opportunities are upset about economic stagnation and potential career advancement (84).

Whenever fear is condensed enough to dig people into dysfunction, they might feel depressed (77). Previous research has suggested that FoC is blamed for mental health issues such as depression and that people with higher FoC levels are more prone to suffer from depression (85). Sakib et al. (86) concluded that FoC was positively associated with depression in the general population and among health professionals, especially women and singles in Bangladesh. Yalçın et al. (79) also demonstrated that FoC correlates with depression positively among Turkish students. Most of the past research on IoU and FCA has focused on areas with a strong influence of Abrahamic religions, and relatively little research has been done on Confucian collectivist culture. In the United States, where

Christianity is the dominant religion, and in Turkey, where Islam is the dominant religion, the focus of Abraham's religion aligns with the aspirations of high power (87, 88). Thus, future research into Confucian culture, which values family obligations, is warranted.

## The present study

The current study aims to explore the role of depression and FoC in the association between IoU and FCA among Chinese undergraduate students during the COVID-19 pandemic. Few studies have elucidated the relationship between IoU and future career concerns. However, most past studies have obtained strong evidence from South Asia, the Middle East, or Western countries. Considering Confucianism and the one-child policy, Chinese millennials may face more career-related pressure than their elders, as high-flying jobs serve not only as anchors in their lives but also polish family honor (89, 90). The enormous difficulty, however, is that the tumultuous work environment is changing with each passing day, yet the pandemic has not removed social expectations. Besides, even though several studies have been conducted with Chinese university students, they have focused on the buffering effects of FCA, such as resilience, rather than providing insight into the knock-on effects of negative emotions.

Thus, it is critical to comprehend FCA within the context of Confucian cultural heritage and unique population policy during the pandemic. Besides, FCA is a complex process threatened by a variety of negative resources, including anxiety, fear, and external stress reactions such as FoC. This study examines negative affective chains, depression, and FoC from a cultural and age perspective, aiming to analyze how these variables influence the relationship between IoU and FCA among Chinese college students.

To evaluate the relationships among the above variables, the following hypotheses were proposed:

Hypothesis 1 (H1): IoU will be positively correlated with FCA;

Hypothesis 2 (H2): FoC will mediate the association between IoU and FCA;

Hypothesis 3 (H3): Depression will mediate the association between IoU and FCA;

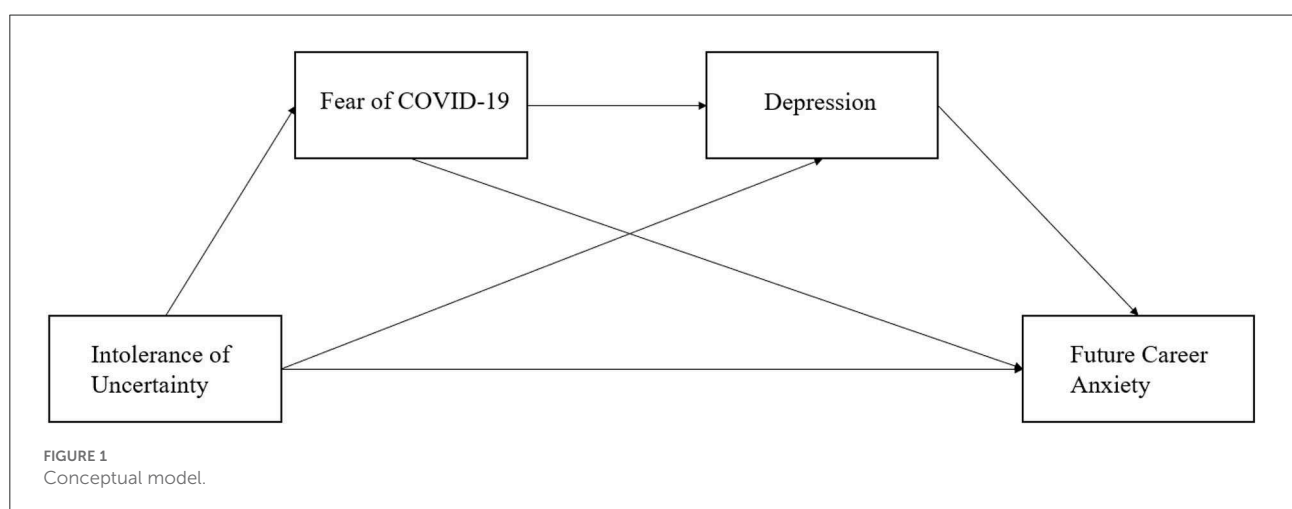
Hypothesis 4 (H4): The association between IoU and FCA will be mediated through the chain mediating effects of FoC and depression.

The conceptual model of hypotheses is shown in Figure 1.

## Methods

### Participants and procedures

Regarding the quarantine policies and social distance needs during the COVID-19 pandemic period, an online self-administered survey was applied to collect data for this study. Online posters were used to distribute invitations to participate in the study, along with details about the survey link, the objectives of this study, confidentiality policies, and contact information for the researchers. All participation in this study was anonymous and voluntary. This study involved 1,947 participants, with 1,919 valid response (98.6%; mean age =  $19.34 \pm 1.55$  years), including 802 males (41.5%), 1,111 females (51.3%), and 6 unwilling to report or other genders (0.3%) from 11 universities in eight Chinese cities. The data collection procedure was conducted from October 2021 to November 2021, and all valid participants were undergraduate students currently studying at Chinese universities, and all



ineligible participants (non-undergraduate participants) or subjects in completed responses were excluded from the data analysis.

## Measures

### Demographic information

Participants were required to provide their age, gender (1 = males, 2 = females, and 3 = unwilling to report or other genders), and current institutions.

### Intolerance of Uncertainty (IoU)

Intolerance of uncertainty was assessed by using the 12-item Intolerance of Uncertainty Scale (IUS-12) developed by Carleton et al. (91). This scale is a shortened version of the 27-item Intolerance of Uncertainty Scale (IUS-21) (92) used to describe negative attitudes and reactions to uncertainty, with each item rated on a five-point Likert scale (from 1 = not at all characteristic of me to 5 = entirely characteristic of me) with a higher mean score indicating a stronger reaction to uncertainty (e.g., “When I am uncertain I can’t function well”). Wu et al. (93) validated IUS-12 in Chinese content of the IUS-12 with a Cronbach’s alpha of 0.93 for the IUS-12.

### Fear of COVID-19 (FoC)

This study measured FoC using the Fear of the COVID-19 Scale (FCV-19S) (94). The FCV-19S contains seven items that measured the level of FoC in two factors, namely, physical response of fear and fear thinking; each item was scored on a five-point scale (1 = disagree; 5 = completely agree), with a higher mean score reflecting a higher level of FoC (e.g., “I am most afraid of the COVID-19). The FCV-19S was validated in well-used Chinese content by Chi et al. (95), with a Cronbach’s alpha of 0.89 for the FCV-19.

### Depression

Depression was assessed using the Patient Health Questionnaire (PHQ-9) (96), which contains nine items that measure the presence and status of depression; each item was rated on a four-point scale (from 0 = not at all to 3 = nearly every day), with a higher score reflecting a higher level of depressive symptoms (e.g., “Little interest or pleasure in doing things). The previous study has validated PHQ-9 in different contents, including Chinese content (97). The Cronbach’s alpha of the PHQ-9 was 0.94.

### Future career anxiety (FCA)

Future career anxiety was assessed using the five-item Future Career-related Anxiety Scale developed by Mahmud et al. (22), an adapted version of the Career Anxiety Scale (33) to measure anxiety toward future careers. Each item was rated on a four-point scale (from 1 = strongly disagree to 4 = strongly agree), with a higher mean score indicating a stronger future career-related anxiety (e.g., “I worry about future employment because of a potential economic recession due to the outbreak of COVID-19). The Cronbach’s alpha of the Future Career-related Anxiety Scale was 0.96.

## Statistical analysis

Statistical Package of Social Science software version 26 (SPSS 26.0) was used for data analysis. Descriptive analyses were used to analyze demographic variables. To explore the bivariate correlations among IoU, FoC, depression, and FCA, Pearson’s correlation was calculated. The mediating roles of FoC and depression were tested using Model 6 in SPSS PROCESS macro version 3.5.3 (98); 95% confidence intervals of the indirect effects were calculated on resampling of 5,000 bootstrap estimates, and the mediating effect was significant at  $p < 0.05$  when the confidence interval did not include zero.

## Results

### Bivariate correlations between study variables

Descriptive statistics and correlations for all variables are given in Table 1. IoU was positively correlated with FoC ( $r = 0.61$ ,  $p < 0.001$ ), depression ( $r = 0.52$ ,  $p < 0.001$ ), and FCA ( $r = 0.51$ ,  $p < 0.001$ ). Besides, both FoC ( $r = 0.46$ ,  $p < 0.001$ ) and depression ( $r = 0.62$ ,  $p < 0.001$ ) were positively correlated with FCA. Meanwhile, FoC also showed a significant positive correlation with depression ( $r = 0.48$ ,  $p < 0.001$ ).

TABLE 1 Correlations between variables ( $N = 1,919$ ).

|                               | M    | SD   | 1       | 2       | 3       | 4 |
|-------------------------------|------|------|---------|---------|---------|---|
| 1. Intolerance of Uncertainty | 2.69 | 0.79 | 1       |         |         |   |
| 2. Fear of COVID-19           | 2.37 | 0.84 | 0.51*** | 1       |         |   |
| 3. Depression                 | 4.55 | 4.30 | 0.46*** | 0.61*** | 1       |   |
| 4. Future Career Anxiety      | 2.58 | 1.02 | 0.62*** | 0.52*** | 0.48*** | 1 |

\*\*\* $p < 0.001$ .

TABLE 2 Regression analysis of relationship between Fear of COVID-19 and Depression with mediation analyses (N = 1,919).

| Regression equation   |                            | Fitting index |                |            | Significance |                     |           |
|-----------------------|----------------------------|---------------|----------------|------------|--------------|---------------------|-----------|
| Result variable       | Predictor variable         | R             | R <sup>2</sup> | F          | Coeff        | Standardized Coeff. | t         |
| Fear of COVID-19      |                            | 0.525         | 0.275          | 242.349*** | 0.509        |                     | 2.321*    |
|                       | Gender                     |               |                |            | 0.209        | 0.125               | 6.402***  |
|                       | Age                        |               |                |            | 0.002        | 0.004               | 0.228     |
| Depression            | Intolerance of Uncertainty |               |                |            | 0.548        | 0.515               | 26.386*** |
|                       |                            | 0.639         | 0.408          | 330.020*** | -1.051       |                     | -6.177*** |
|                       | Gender                     |               |                |            | -0.041       | -0.028              | -1.588    |
|                       | Age                        |               |                |            | 0.0182       | 0.039               | 2.228*    |
| Future Career Anxiety | Intolerance of Uncertainty |               |                |            | 0.177        | 0.194               | 9.442***  |
|                       | Fear of COVID-19           |               |                |            | 0.442        | 0.516               | 24.989*** |
|                       |                            | 0.626         | 0.391          | 410.172*** | -0.679       |                     | -2.758**  |
|                       | Gender                     |               |                |            | 0.073        | 0.035               | 1.979*    |
| Future Career Anxiety | Age                        |               |                |            | 0.051        | 0.077               | 4.281**   |
|                       | Intolerance of Uncertainty |               |                |            | 0.805        | 0.617               | 34.54***  |
|                       |                            | 0.677         | 0.458          | 323.513*** | -0.616       |                     | -2.623*** |
|                       | Gender                     |               |                |            | 0.012        | 0.006               | 0.035     |
|                       | Age                        |               |                |            | 0.045        | 0.069               | 0.011***  |
| Future Career Anxiety | Intolerance of Uncertainty |               |                |            | 0.584        | 0.448               | 22.246*** |
|                       | Fear of COVID-19           |               |                |            | 0.234        | 0.191               | 8.385***  |
|                       |                            |               |                |            | 0.219        | 0.154               | 7.032***  |
|                       | Depression                 |               |                |            |              |                     |           |

\*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001.

TABLE 3 Fear of COVID-19 and depression in the mediation effect analysis (N = 1,919).

|                       | Indirect effects | Boot SE | Boot LLCI | Boot LLCI |
|-----------------------|------------------|---------|-----------|-----------|
| Total indirect effect | 0.220            | 0.016   | 0.189     | 0.252     |
| Indirect effect 1     | 0.128            | 0.017   | 0.095     | 0.162     |
| Indirect effect 2     | 0.039            | 0.007   | 0.027     | 0.052     |
| Indirect effect 3     | 0.053            | 0.008   | 0.038     | 0.069     |

Indirect effect 1 (H2): intolerance of uncertainty → fear of COVID-19 → future career anxiety;  
 Indirect effect 2 (H3): intolerance of uncertainty → depression → future career anxiety; and  
 Indirect effect 3 (H4): intolerance of uncertainty → fear of COVID-19 → depression → future career anxiety.

### Chain mediation model analysis

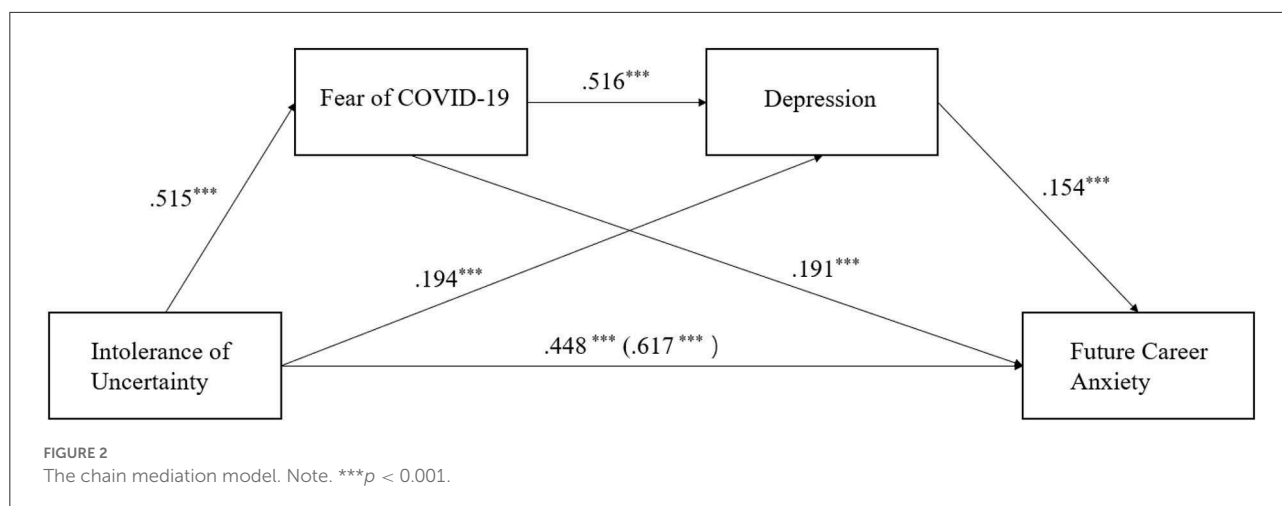
After controlling for gender and age, the mediating effect of FoC and depression in the relationship between IoU and FCA was analyzed, as given in Table 2.

When gender and age were included in the regression model as four control variables, the results showed that IoU was a significant positive predictor of FCA (B = 0.617, p < 0.001), and H1 was supported.

Moreover, both FoC (B = 0.191, p < 0.001) and depression (B = 0.154, p < 0.001) were significant positive predictors of FCA, and the direct path from IoU to FCA (B = 0.516, p < 0.001) was significant. Meanwhile, the direct effect of IoU on

FoC (B = 0.515, p < 0.001) and depression (B = 0.194, p < 0.001) was significant.

The mediating effects of FoC and depression between IoU and FCA are given in Table 2, and Figure 2 shows a model of the cascading mediating effects between IoU and FCA. FoC and depression were significant mediators between IoU and FCA (β = 0.220, SE = 0.016, 95% CI = 0.189 to.252). All three indirect paths in the mediation model were significant (Table 3): path 1(H2) - IoU → FoC → FCA (β = 0.128, SE = 0.017, 95% CI = 0.095 to.162), path 2 (H3) - IoU → depression → FCA (β = 0.039, SE = 0.007, 95% CI = 0.027 to.052), path 3 (H4) - IoU → FoC → depression → FCA (β = 0.053, SE = 0.008, 95% CI = 0.038 to.069). As the 95% CI in all those paths did not



contain a value of 0, the results confirmed that H2, H3, and H4 were all supported.

## Discussion and conclusion

### Discussion

This study aimed to investigate whether a sequential mediation forecasts stress-induced factors and to estimate the contribution of these factors to the COVID-19 pandemic and FCA. Specifically, this study explored the fear and depression experienced by individuals during the COVID-19 pandemic and allows us to reveal potential mechanisms between their IoU and FCA levels. The results from a sequential mediation model indicated that IoU led to higher FoC, which increased levels of depressive symptoms and increased FCA. Explicitly, the results implied a significant positive relationship between IoU and FCA among Chinese students. Furthermore, FoC, depression, and the chain mediating effect of FoC and depression may act as mediating factors, indirectly affecting the relationships between IoU and FCA.

The findings of the bivariate correlations indicated that the direct effects of IoU on FCA were significant and positive, implying that IoU gives rise to FCA among undergraduate students during the COVID-19 epidemic in China, and that IoU is a breeding ground for adolescent anxiety symptoms associated with future career development, which brings them into correspondence with previous findings (23, 35). Drawing on He and Yu (23), which examined the career adjustment characteristics of 1,160 recent Chinese college graduates during COVID-19 in 2021, career adaptability was found to be affiliated with less IoU and anxiety sensitivity. Hite and McDonald (35) outlined how uncertainty shakes up job opportunities, reflected in how it shapes contracted careers, but in the end, students have no choice but to deal with these challenges.

According to the career construction theory, Brown and Lent (99) assume that youth's internal characteristics and external environmental factors would contribute to career development together. However, uncertainties make it hard for young people to decide what kind of person they want to be and what kind of work they want to do (like self-employment), which makes them worry even more about their future careers (22). Anxiety, on the contrary, is fired by the potential danger of spiraling, out of control (36). Those who fear the uncertainty of being drawn to negative cues, whether about life or work, trigger increasing symptoms of anxiety. In addition, young individuals with greater IoU have negative filters toward the world and they perceive themselves as having fewer resources to deal with unstable environments, which can diminish their self-efficacy to combat FCA (92, 100, 101).

Moreover, the results displayed that FoC significantly mediated the association between IoU and FCA. This result was a mirror of that of previous studies that found IoU in youth can increase their risk of FoC and potential occupational anxiety [e.g., 15, 72]. Pak et al. (102) conducted an online cross-sectional survey of 362 participants in Turkey and discovered that FoC has developed as a result of IoU. Satici et al. (21) investigated 1,772 Turkish individuals and suggested that FoC serially mediated the association between IoU and mental wellbeing. This may be explained by the fear generalization mode (103). Considering the above models, they suggested that people feel fear in the face of uncertainty, which depletes their decision-making capacity and drives them to feel more negative emotions, such as anxiety. Besides, high levels of uncertainty may discount individuals' cognitive functioning and exacerbate FoC as they become emotionally depressed while coping (103). Moreover, this study's result also confirmed that IoU exerted a significant indirect effect on depression *via* FoC, confirming previous findings (102, 104). Individuals with a high IoU were more likely to perceive the pandemic as a threat, and their anxiety levels skyrocketed, partly due to insufficient governmental support (102). Employees have



been floundering in an uncertain work environment and have been enduring job insecurity since the COVID-19 outbreak (35, 46). Living in a perilous environment, Chinese college students have become befuddled and doubted their employment opportunities (23).

Consistent with past research, the findings also suggested that depression mediated the association between IoU and FCA and IoU was related to depression and that young adults with depressive symptoms have higher chances of developing FCA (22, 102). The helplessness–hopelessness model suggests that depression is a psychological reaction driven by IoU characteristics and the hopelessness of future expectations (74). Besides, IoU triggers unnecessary individual concern and rumination, which can lead to depression (76). Depressive symptoms may affect individuals' cognitive functioning, with individuals with higher levels of depressive symptoms having low cognitive functioning and worrying about future careers, which can propagate worse FCA (83).

Moreover, this sequential mediation model led to a positive association between FoC and depression, with a chain mediating effect between FoC and depression mediating the relationship between IoU and FCA. These results were in line with former findings that individuals with higher FoC also exhibit severe depressive symptoms (11, 78). Bakioglu et al. (32) indicated that high levels of FoC incline to worsen depressive symptoms as they are fenced in by high infectivity, dangerous outcomes, social distance, and confinement together. In addition, as is the nature of all pandemics, the COVID-19 pandemic brings uncertainty drifting around every corner, neither finances, health, nor daily social activities. Such a dystopian environment steals positive emotions from the population (102).

## Implications

The findings of this study have vital implications for the mental health of college students. First, past research has focused on how COVID-19-related stress predicts their current academic anxiety. However, this study concentrated on pandemic-induced unpleasant feelings that might influence future occupational anxiety (105, 106). Second, rather than concentrating on regions affected by Abraham's religion, such as the United States and the Middle East (48, 102, 107), this study examined the relationship between pandemic-induced negative emotions and FCA among Chinese college students raised in a Confucian culture whose personal careers were highly bonded to their family reputation (49, 50). This study showed these mental difficulties impact their lives: The higher the IoU among college graduates, the more FCA climbed. Students with stronger IoU have limited cognitive resources to overcome the FCA. An unstable environment prevents people

from effectively seeking jobs. This study identifies the former theory in the context of the pandemic and contributes to understanding these complex factors by training college students to have a healthy attitude toward future employment, which is indispensable for their current developmental stage. Uncovering how FoC impacts FCA can provide information to college occupational professionals to assist students' employment preparation. The adverse effects of FoC are comparable to the symptoms of general anxiety (21, 102). Students may be unaware that their nervousness or concerns about their future careers result from their dread of the epidemic. Therefore, understating how FoC affects FCA has practical implications. Professionals in school mental health may provide social or psychological assistance to students with depressive symptoms and pandemic anxiety. The college occupational counselor should advise students that the pandemic is not as fateful as it may seem and that it will not hinder the labor market in the long run.

## Limitations

This study has some limitations that need to be declared. First, this study used a cross-sectional design and was unable to reveal the long-term stress caused by the pandemic and its effects on FCA. Second, this study did not categorize the participants' grade levels and majors, but students in upper grades or humanities may face greater job search stress. Third, self-reported questionnaires may include autobiographical memory bias, which tends to downplay their difficult experiences (108). Finally, geographic differences were evident. Participants from developed areas such as Suzhou may have different FCA levels than participants from developing regions such as Mudanjiang due to heterogeneous industrial structures and labor demand. Thus, how geographic and economic factors moderate the association between IoU and FCA is an exploratory option for the future.

## Conclusion

In conclusion, this study demonstrated the mediating effect of FoC and depression on the relationship between IoU and FCA among Chinese undergraduate students during the COVID-19 pandemic; thereby, the finding provided empirical evidence to confirm not only a positive relationship between IoU and FCA but also the chain mediation effect of FoC and depression. Therefore, it is important to provide information to motivate schools to offer career opportunity workshops and, most importantly, mental health support to guide students to effectively cope with uncertainty and overcome the stress associated with COVID-19.

## Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## Ethics statement

The studies involving human participants were reviewed and approved by Suzhou University of Science and Technology. The patients/participants provided their written informed consent to participate in this study.

## Author contributions

TZ and DG designed the research. TZ, DG, YBai, HL, and YH completed the manuscript writing. XC collected and analyzed the data. RW, YBao, and XC reviewed and edited the manuscript. All authors contributed to the article and approved the submitted version.

## References

- Hayakawa K, Kuwamori H. Introduction to the special issue on "How does COVID-19 change the world economy?". *Develop Econ.* (2021) 59:121–125. doi: 10.1111/deve.12283
- World Health Organization. *WHO Coronavirus (COVID-19) Dashboard*. World Health Organization (2022). Available online at: <https://covid19.who.int>
- Coibion O, Gorodnichenko Y, Weber M. *Labor markets during the COVID-19 crisis: a preliminary view*. *SSRN Electron J.* (2020). doi: 10.2139/ssrn.3584089
- Blustein DL, Guarino PA. Work and unemployment in the time of COVID-19: the existential experience of loss and fear. *J Human Psychol.* (2020) 60:702–9. doi: 10.1177/0022167820934229
- Li, C. L. (2020). College graduate employment under the impact of COVID-19: Employment pressure, psychological stress and employment choices. *Educational Researcher*, 41, 4–16.
- Chen T, Rong J, Peng L, Yang J, Cong G, Fang J. Analysis of social effects on employment promotion policies for college graduates based on data mining for online use review in China during the COVID-19 pandemic. *Healthcare.* (2021) 9:846. doi: 10.3390/healthcare9070846
- Li Z, Wu M, Tao L, He X. Relationships between self-esteem, intolerance of uncertainty, career decision-making difficulties and job anxieties. *Chin J Clin Psychol.* (2012) 20:564–6. doi: 10.16128/j.cnki.1005-3611.2012.04.018
- Bai Y, Lin CC, Lin CY, Chen JY, Chue CM, Chou P, et al. Survey of stress reactions among health care workers involved with the SARS outbreak. *Psychiatric Serv.* (2004) 55:1055–1057. doi: 10.1176/appi.ps.55.9.1055
- Hawryluck L, Gold WL, Robinson S, Pogorski S, Galea S, Styrar R. SARS control and psychological effects of quarantine, Toronto, Canada. *Emerg Infect Dis.* (2004) 10:1206. doi: 10.3201/eid1007.030703
- Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet.* (2020) 395:912–20. doi: 10.1016/S0140-6736(20)30460-8
- Cao W, Fang Z, Hou G, Han M, Xu X, Dong J, et al. The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Res.* (2020) 287:112934. doi: 10.1016/j.psychres.2020.112934

## Funding

The present study was funded by National Social Science Foundation of China: Youth Project (Grant No. 19CGJ005). This study was also supported by Suzhou University of Science and Technology.

## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

- Gao L, Xie Y, Jia C, Wang W. Prevalence of depression among Chinese university students: a systematic review and meta-analysis. *Sci Rep.* (2020) 10:15897–15897. doi: 10.1038/s41598-020-72998-1
- Carleton RN, Mulvogue MK, Thibodeau MA, McCabe RE, Antony MM, Asmundson GJG, et al. Increasingly certain about uncertainty: Intolerance of uncertainty across anxiety and depression. Increasingly Certain about Uncertainty: Intolerance of Uncertainty across. *Anxiety Depress.* (2012) 26:468–79. doi: 10.1016/j.janxdis.2012.01.011
- Grote G, Pfrombeck J. Uncertainty in aging and lifespan research: COVID-19 as catalyst for addressing the elephant in the room. *Work Aging Retirement.* (2020) 6:246–50. doi: 10.1093/workar/waaa020
- Rothbaum F, Weisz JR, Snyder SS. Changing the world and changing the self: a two-process model of perceived control. *J Pers Soc Psychol.* (1982) 42:5–37. doi: 10.1037/0022-3514.42.1.5
- Tobin SJ, Raymundo MM. Causal uncertainty and psychological well-being: the moderating role of accommodation (Secondary control). *Pers Soc Psychol Bull.* (2010) 36:371–83. doi: 10.1177/0146167209359701
- Chipperfield JG, Newall NE, Perry RP, Stewart TL, Bailis DS, Ruthig JC, et al. Sense of control in late life: Health and survival implications. *Pers Soc Psychol Bull.* (2012) 38:1081–92. doi: 10.1177/0146167212444758
- Ke X, Hsiao C. Economic impact of the most drastic lockdown during COVID-19 pandemic-The experience of Hubei, China. *J Appl Econom.* (2022) 37:187–209. doi: 10.1002/jae.2871
- Pei J, de Vries G, Zhang M. International trade and Covid-19: City-level evidence from China's lockdown policy. *J Reg Sci.* (2022) 62:670–95. doi: 10.1111/jors.12559
- George G, Thomas MR. (2020). Quarantined effects and strategies of college students-COVID-19. *Asian Educ Develop Stud.* (2020) 10:565–73. doi: 10.1108/AEDS-04-2020-0054
- Satici B, Saricali M, Satici SA, Griffiths MD. Intolerance of uncertainty and mental wellbeing: serial mediation by rumination and fear of COVID-19. *Int J Ment Health Addict.* (2020) 1–12. doi: 10.1007/s11469-020-00305-0

22. Mahmud MS, Talukder MU, Rahman SM. Does “Fear of COVID-19” trigger future career anxiety? An empirical investigation considering depression from COVID-19 as a mediator. *Int J Soc Psychiatr.* (2021) 67:35–45. doi: 10.1177/0020764020935488
23. He M, Yu Y. Individual risky and protective factors influencing university new graduates’ career adaptability during COVID-19: a moderated mediation model. *J Health Psychol.* (2021) 135910532110649. doi: 10.1177/13591053211064980
24. Huang R. Influence of epidemic situation on employment of college graduates and informatization countermeasures. *E3S Web of Conferences.* (2021) 235:03069. doi: 10.1051/e3sconf/202123503069
25. Hofstede G. *Culture’s consequences: International differences in work-related values* (Vol. 5). (1984). Thousand Oaks, CA: Sage.
26. Hofstede G, Hofstede GJ, Minkov M, Vinken H. *Values Survey Module 2008*. (2008). Retrieved from: <http://www.geerthofstede.nl>
27. Roll LC, Siu OL, Li SY. The job insecurity-performance relationship in Germany and China: the buffering effect of uncertainty avoidance. *Psihologia Resurselor Umane.* (2015) 13:165–78. Retrieved from: <https://www.hrp-journal.com/index.php/pru/article/view/104>
28. Ye B, Zhou X, Im H, Liu M, Wang XQ, Yang Q, et al. Epidemic rumination and resilience on college students’ depressive symptoms during the COVID-19 pandemic: the mediating role of fatigue. *Front Public Health.* (2020) 8:560983. doi: 10.3389/fpubh.2020.560983
29. Rosemond MM, Owens D. Exploring career development in emerging adult collegians. *Education.* (2018) 138:337–52.
30. Erikson E. *Youth: Identity and Crisis*. New York, NY: W. W. Norton Company (1968).
31. Boo S, Wang C, Kim M. Career adaptability, future time perspective, and career anxiety among undergraduate students: A cross-national comparison. *J Hosp Leis Sport Tourism Educ.* (2021) 29:100328. doi: 10.1016/j.jhlste.2021.100328
32. Bakioglu F, Korkmaz O, Ercan H. Fear of COVID-19 and positivity: mediating role of intolerance of uncertainty, depression, anxiety, and stress. *Int J Ment Health Addict.* (2021) 19:2369–82. doi: 10.1007/s11469-020-00331-y
33. Tsai CT, Hsu H, Hsu YC. Tourism and hospitality college students’ career anxiety: scale development and validation. *J Hosp Tour Educ.* (2017) 29:158–165. doi: 10.1080/10963758.2017.1382365
34. Creed PA, Hood M, Praskova A, Makransky G. The career distress scale : using rasch measurement theory to evaluate a brief measure of career distress. *J Career Assessment.* (2016) 24:732–46. doi: 10.1177/1069072715616126
35. Hite LM, McDonald KS. Careers after COVID-19: challenges and changes. *Human Resour Dev Int.* (2020) 23:427–37. doi: 10.1080/13678868.2020.1779576
36. Grupe DW, Nitschke JB. Uncertainty and anticipation in anxiety: An integrated neurobiological and psychological perspective. *Nat Rev Neurosci.* (2013) 14:488–501. doi: 10.1038/nrn3524
37. Barlow DH. *Anxiety and its Disorders: The Nature and Treatment of Anxiety and Panic (second edition)*. (2002). New York: Guilford.
38. Basoglu M, Mineka S. The role of uncontrollable and unpredictable stress in post-traumatic stress responses in torture survivors. In: M. Basoglu (Ed.), *Torture and its [Consequences: Current Treatment Approaches*. (1992) (pp.182\_/225). Cambridge: Cambridge University Press.
39. Foa EB, Zinbarg R, Olasov-Rothbaum B. Uncontrollability and unpredictability in post-traumatic stress disorder: An animal model. *Psychol Bull.* (1992) 112:218–38. doi: 10.1037/0033-2909.112.2.218
40. Rapee RM, Craske ME, Brown TA, Barlow DH. Measurement of perceived control over anxiety related events. *Behav Ther.* (1996) 27:279–293. doi: 10.1016/S0005-7894(96)80018-9
41. Miceli M, Castelfranchi C. Anxiety as an “epistemic” emotion: An uncertainty theory of anxiety. *Anxiety Stress Coping.* (2005) 18:291–319. doi: 10.1080/10615800500209324
42. Mineka S, Kihlstrom JF. Unpredictable and uncontrollable events: a new perspective on experimental neurosis. *J Abnorm Psychol.* (1978) 2:256.
43. Chen L, Zeng S. The relationship between intolerance of uncertainty and employment anxiety of graduates during COVID-19: the moderating role of career planning. *Front Psychol.* (2021) 12. doi: 10.3389/fpsyg.2021.694785
44. Cao SC. Novel coronavirus pneumonia impact on college graduates’ employment and countermeasures. *J Chifeng Univ Chin Philos Soc Sci Ed.* (2020) 41.
45. Carleton RN. Into the unknown: a review and synthesis of contemporary models involving uncertainty. *J Anxiety Disord.* (2016) 39:30–43. doi: 10.1016/j.janxdis.2016.02.007
46. Blanuša J, Barzut V, Knežević J. Intolerance of uncertainty and fear of COVID-19 moderating role in relationship between job insecurity and work-related distress in the Republic of Serbia. *Front Psychol.* (2021) 12:2170. doi: 10.3389/fpsyg.2021.647972
47. Li L, Mo Y, and Zhou G. (2022). Platform economy and China’s labor market: structural transformation and policy challenges. *China Econom. J.* 15:139–152. doi: 10.1080/17538963.2022.2067685
48. Arbona C, Fan W, Phang A, Olvera N, Dios M. Intolerance of uncertainty, anxiety, and career indecision: a mediation model. *J Career Assessment.* (2021) 29:699–716. doi: 10.1177/10690727211002564
49. Gao N, Eissenstat SJ, Oh TL. Social media use and academic, social, and career development among college students with disabilities. *J Am Coll Health.* (2021) 1–7. doi: 10.1080/07448481.2021.1947831
50. Mau WC, Kopischke A. Job search methods, job search outcomes, and job satisfaction of college graduates: a comparison of race and sex. *J Employ Counsel.* (2001) 38:141–9. doi: 10.1002/j.2161-1920.2001.tb00496.x
51. Cherry K. *Overview of the 6 Major Theories of Emotion*. (2019). Available online at: <https://www.verywellmind.com/theories-of-emotion-2795717>
52. Lazarus RS. Progress on a cognitive-motivational-relational theory of emotion. *Am Psychol.* (1991) 46:819–34. doi: 10.1037/0003-066X.46.8.819
53. Walsh J. *Theories of Emotion. Processing the Environment*. (2013). Available online at: <https://www.youtube.com/watch?v=FkDVucEoJpUandfeature=youtu.be>
54. Jin J, Fung SF. Social physique anxiety scale: psychometric evaluation and development of a Chinese adaptation. *Int J Environ Res Public Health.* (2021) 18:10921. doi: 10.3390/ijerph182010921
55. Osmanagaoglu N, Creswell C, Dodd HF. Intolerance of Uncertainty, anxiety, and worry in children and adolescents: a meta-analysis. *J Affect Disord.* (2018) 225:80–90. doi: 10.1016/j.jad.2017.07.035
56. Morriss J, Christakou A, van Reekum CM. Intolerance of uncertainty predicts fear extinction in amygdala-ventromedial prefrontal cortical circuitry. *Biol Mood Anxiety Disord.* (2015) 5. doi: 10.1186/s13587-015-0019-8
57. Gu Y, Gu S, Lei Y, Li H. From uncertainty to anxiety: how uncertainty fuels anxiety in a process mediated by intolerance of uncertainty. *Neural Plast.* (2020) 2020:1–8. doi: 10.1155/2020/8861994
58. Di Blasi M, Gullo S, Mancinelli E, Freda MF, Esposito G, Gelo OCG, et al. Psychological distress associated with the COVID-19 lockdown: A two-wave network analysis. *J Affect Disord.* (2021) 284:18–26. doi: 10.1016/j.jad.2021.02.016
59. Tsang S, Avery AR, Duncan GE. Fear and depression linked to COVID-19 exposure A study of adult twins during the COVID-19 pandemic. *Psychiatry Res.* (2021) 296:113699. doi: 10.1016/j.psychres.2020.113699
60. Karataş Z, Tagay Ö. The relationships between resilience of the adults affected by the covid pandemic in Turkey and Covid-19 fear, meaning in life, life satisfaction, intolerance of uncertainty and hope. *Pers Individ Diff.* (2021) 172:110592. doi: 10.1016/j.paid.2020.110592
61. Voitsidis P, Nikopoulou VA, Holeva V, Parlapani E, Sereslis K, Tsiropoulou V, et al. The mediating role of fear of COVID-19 in the relationship between intolerance of uncertainty and depression. *Psychol Psychother Theory Res Pract.* (2021) 94:884–93. doi: 10.1111/papt.12315
62. BBC (2020). *Coronavirus: Worst Economic Crisis Since 1930s Depression, IMF says*. Coronavirus Pandemic. Available online at: <https://www.bbc.com/news/business-52236936>
63. Martin E. This crisis is like no other’: Coronavirus recession will likely be worst since the Great Depression, predicts IMF. *Fortune* (2020).
64. Perez M. *The Economic Hit From Coronavirus will be Worst Since the Great Depression, IMF Warns*. *Forbes News* (2020).
65. Wiseman P, Crutsinger M. The coronavirus recession could be the worst downturn since the great depression. *Time.* (2020). Available online at: <https://time.com/5820472/coronavirus-downturn-great-depression/>
66. *Coronavirus: Worst Economic Crisis Since 1930s Depression, IMF says Coronavirus Pandemic.* (2020).
67. Alici NK, Copur EO. Anxiety and fear of COVID-19 among nursing students during the COVID-19 pandemic: A descriptive correlation study. *Perspect Psychiatr Care.* (2022) 58:141–8. doi: 10.1111/ppc.12851
68. Mahmud MS, Rahman, MM, Masud-Ul-Hasan M, and Islam MA. (2021). Does ‘COVID-19 phobia’ stimulate career anxiety?: Experience from a developing country. *Heliyon.* 7:e06346. doi: 10.1016/j.heliyon.2021.e06346
69. Kim BSK, Atkinson BR, Yang PH. The Asian values scale: development, factor analyses, validation, and reliability. *J Couns Psychol.* (1999) 46:342–52. doi: 10.1037/0022-0167.46.3.342

70. Kim BS, Yang PH, Atkinson DR, Wolfe MM, Hong S. Cultural value similarities and differences among Asian American ethnic groups. *Cult Div Ethnic Minor Psychol.* (2001) 7:343. doi: 10.1037/1099-9809.7.4.343
71. Lee AM, Lam SK, Lau SMSM, Chong CSY, Chui HW, Fong DYT, et al. Prevalence, course, and risk factors for antenatal anxiety and depression. *Obstet Gynecol.* (2007) 110:1102–12. doi: 10.1097/01.AOG.0000287065.59491.70
72. Carleton RN. Fear of the unknown: One fear to rule them all?. *J Anxiety Disord.* (2016) 41:5–21. doi: 10.1016/j.janxdis.2016.03.011
73. Malhi G, Mann J. A dynamic approach to depression treatment prediction. *Lancet.* (2018) 392:2299–312. doi: 10.1016/j.biopsych.2022.06.028
74. Alloy LB, Kelly KA, Mineka S, Clements CM. Comorbidity in anxiety and depressive disorders: a helplessness/hopelessness perspective. *Comorb Anx Mood Disord.* (1990). Available online at: <https://www.scholars.northwestern.edu/en/publications/comorbidity-in-anxiety-and-depressive-disorders-a-helplessnesshop>
75. Boysan M. An integration of quadripartite and helplessness-hopelessness models of depression using the Turkish version of the learned helplessness scale (LHS). *Br J Guid Counsell.* (2020) 48:650–69. doi: 10.1080/03069885.2019.1612033
76. Dupuy JB, Ladouceur R. Cognitive processes of generalized anxiety disorder in comorbid generalized anxiety disorder and major depressive disorder. *J Anx Disord.* (2008) 22:505–14. doi: 10.1016/j.janxdis.2007.05.010
77. Erbiçer ES, Metin A, Çetinkaya A, Sen S. The relationship between fear of COVID-19 and depression, anxiety, and stress. *Eur Psychol.* (2021) 26:323–33. doi: 10.1027/1016-9040/a000464
78. Chen Y, Liu Y, Zhang Y, Li Z, Zhou T. The effect of fear of the COVID-19 on depression among chinese outbound students studying online in China Amid the COVID-19 pandemic period: the role of resilience and social support. *Front Psychol.* (2021) 12. doi: 10.3389/fpsyg.2021.750011
79. Yalçın I, Can N, Mançe Çalişır Ö, Yalçın S, Çolak B. Latent profile analysis of COVID-19 fear, depression, anxiety, stress, mindfulness, and resilience. *Curr Psychol.* (2021) 41:459–69. doi: 10.1007/s12144-021-01667-x
80. Ashraf MU, Raza S, Ashraf A, Mehmood W, Patwary AK. Silent cries behind closed doors: An online empirical assessment of fear of COVID-19, situational depression, and quality of life among Pakistani citizens. *J Public Aff.* (2021) 21:e2716. doi: 10.1002/pa.2716
81. Huang Y, Zhao N. Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: a web-based cross-sectional survey. *Psychiatr Res.* (2020) 288:112954. doi: 10.1016/j.psychres.2020.112954
82. Muris P, Roelofs J, Rassin E, Franken I, Mayer B. Mediating effects of rumination and worry on the links between neuroticism, anxiety and depression. *Pers Individ Diff.* (2005) 39:1105–111. doi: 10.1016/j.paid.2005.04.005
83. Vignoli E. Career indecision and career exploration among older French adolescents: the specific role of general trait anxiety and future school and career anxiety. *J Vocat Behav.* (2015) 89:182–91. doi: 10.1016/j.jvb.2015.06.005
84. Chowdhury U, Suvro MAH, Farhan SM, Uddin MJ. Depression and stress regarding future career among university students during COVID-19 pandemic. *PLoS ONE.* (2022) 17:e0266686. doi: 10.1371/journal.pone.0266686
85. Mertens G, Duijndam S, Smeets T, Lodder P. The latent and item structure of COVID-19 fear: a comparison of four COVID-19 fear questionnaires using SEM and network analyses. *J Anxiety Disord.* (2021) 81:102415. doi: 10.1016/j.janxdis.2021.102415
86. Sakib N, Akter T, Zohra F, Bhuiyan AK, Mamun MA, Griffiths MD, et al. Fear of COVID-19 and depression: a comparative study among the general population and healthcare professionals during COVID-19 pandemic crisis in Bangladesh. *Int J Ment Health Addict.* (2021) 1–17. doi: 10.1007/s11469-020-00477-9
87. Edwards M. Religions Series: “Christian Nationalism in the United States”—Ebook Introduction. *Religions (Basel, Switzerland).* (2017) 8:93. doi: 10.3390/rel8050093
88. Findley CV. Turkey, Islam, nationalism, and modernity: a history, 1789–2007. In: *Turkey, Islam, nationalism, and modernity: a history, 1789–2007.* (2010) (pp. xiv–xiv). New Haven, CT: Yale University Press.
89. Settles BH, Sheng X, Zang Y, Zhao J. The one-child policy and its impact on Chinese families. In: *International Handbook of Chinese Families.* (2013) (pp. 627–46). Springer, New York, NY.
90. Lee MH. The one-child policy and gender equality in education in China: evidence from household data. *J Fam Econ Issues.* (2012) 33:41–52. doi: 10.1007/s10834-011-9277-9
91. Carleton RN, Norton MAPJ, Asmundson GJG. Fearing the unknown: a short version of the Intolerance of Uncertainty Scale. *J Anxiety Disord.* (2007) 21:105–17. doi: 10.1016/j.janxdis.2006.03.014
92. Buhr K, Dugas MJ. The intolerance of uncertainty scale: psychometric properties of the English version. *Behav Res Ther.* (2002) 40:931–45. doi: 10.1016/S0005-7967(01)00092-4
93. Wu L, Wang J, Qi X. Validity and reliability of the intolerance of uncertainty scale-12 in middle school students. *Chin Ment Health J.* (2016) 30:700–5.
94. Ahorsu DK, Lin CY, Imani V, Saffari M, Griffiths MD, Pakpour AH, et al. The Fear of COVID-19 scale: development and initial validation. *Int J Mental Health Addict.* (2020) 1–9. doi: 10.1037/t78404-000
95. Chi X, Chen S, Chen Y, Chen D, Yu Q, Guo T, et al. Psychometric evaluation of the fear of COVID-19 scale among Chinese population. *Int J Ment Health Addict.* (2022) 20:1273–88. doi: 10.1007/s11469-020-00441-7
96. Kroenke K, Spitzer RL. The PHQ-9: a new depression diagnostic and severity measure. *Psychiatr Ann.* (2002) 32:509–15. doi: 10.3928/0048-5713-20020901-06
97. Wang W, Bian Q, Zhao Y, Li X, Wang W, Du J, et al. Reliability and validity of the Chinese version of the Patient Health Questionnaire (PHQ-9) in the general population. *Gen Hosp Psychiatry.* (2014) 36:539–44. doi: 10.1016/j.genhosppsych.2014.05.021
98. Hayes AF. Introduction to mediation, moderation, and conditional process analysis, second edition: a regression-based approach. In: *Google Books.* (2017). New York, NY: Guilford Publications. Available online at: <https://books.google.com/books?hl=zh-CN&nlr=andid=6uk7DwAAQBAJ&oi=fnd&pdg=PP1anddq=Mediation>
99. Brown SD, Lent RW. Career development and counseling: putting theory and research to work. In: *Google Books.* (2013). [www.google.com/search?client=firefox-b-d&biw=1280&bih=558&q=New+York&stick=H4sIAAAAAAAAAOPgE-LUz9U3MMotLypTgiDijSzMtFSzk63084vSE\\_MyqxJLMvPzUDhWafmleSmpKYiYOfxSxUi84uyd7Ay7mjn4mAAAMH9ahSAAAA&ss=X&ved=2ahUKEwjslr6LzID7AhVIFfkFHUHXATkQmxMoAXoECGwQAwNewYork, NY: John Wiley and Sons. Available online at: https://books.google.com/books?hl=zh-CN&nlr=andid=6mOX6XBxrv0C&oi=fnd&pdg=PA147anddq=Career+\\$&construction+\\$&theory+\\$&and+\\$&practice.\\$&+Career+\\$&development+\\$&and+\\$&ounseling:\\$&+Putting+\\$&theory+\\$&and+\\$&research+\\$&to+\\$&work](http://www.google.com/search?client=firefox-b-d&biw=1280&bih=558&q=New+York&stick=H4sIAAAAAAAAAOPgE-LUz9U3MMotLypTgiDijSzMtFSzk63084vSE_MyqxJLMvPzUDhWafmleSmpKYiYOfxSxUi84uyd7Ay7mjn4mAAAMH9ahSAAAA&ss=X&ved=2ahUKEwjslr6LzID7AhVIFfkFHUHXATkQmxMoAXoECGwQAwNewYork, NY: John Wiley and Sons. Available online at: https://books.google.com/books?hl=zh-CN&nlr=andid=6mOX6XBxrv0C&oi=fnd&pdg=PA147anddq=Career+$&construction+$&theory+$&and+$&practice.$&+Career+$&development+$&and+$&ounseling:$&+Putting+$&theory+$&and+$&research+$&to+$&work)
100. Davey RP, Bright JEH, Pryor RGL, Levin K. Of what I could become but might not be: Using chaos counselling with university students. *Aust J Career Dev.* (2005) 14:53–62. doi: 10.1177/103841620501400209
101. McKay H, Bright JEH, Pryor RGL. Finding order and direction from chaos: a comparison of chaos career counseling and trait matching counseling. *J Employ Counsel.* (2005) 42:98–112. doi: 10.1002/j.2161-1920.2005.tb00904.x
102. Pak H, Süsen Y, Denizci Nazlilil M, Griffiths M. The mediating effects of fear of COVID-19 and depression on the association between intolerance of uncertainty and emotional eating during the COVID-19 pandemic in Turkey. *Int J Ment Health Addict.* (2021) 1–15. doi: 10.1007/s11469-021-00489-z
103. Zweifel LS. Dopamine, uncertainty, and fear generalization. *Curr Opin Behav Sci.* (2019) 26:157–64. doi: 10.1016/j.cobeha.2019.01.003
104. Taha S, Matheson K, Cronin T, Anisman H. Intolerance of uncertainty, appraisals, coping, and anxiety: The case of the 2009 H1N1 pandemic. *Br J Health Psychol.* (2014) 19:592–605. doi: 10.1111/bjhp.12058
105. Al-Nasa'h M, Awwad FMA, Ahmad I. Estimating students' online learning satisfaction during COVID-19: a discriminant analysis. *Heliyon.* (2021) 7:e08544. doi: 10.1016/j.heliyon.2021.e08544
106. El-Khodary B, Veronese G, Diab M. Fear of COVID-19 and academic stress among Palestinian university students during the pandemic: the mediating role of mental health. *Br J Guidance Counsell.* (2022) 1–12. doi: 10.1080/03069885.2022.2080805
107. Hawting G. The religion of Abraham and Islam. In *Abraham, the Nations, and the Hagarites.* (2011). Leiden: Brill. p. 475–501.
108. Schartau PE, Dalgleish T, Dunn BD. Seeing the bigger picture: training in perspective broadening reduces self-reported affect and psychophysiological response to distressing films and autobiographical memories. *J Abnorm Psychol.* (2009) 118:15. doi: 10.1037/a0012906