

# The influence of COVID on Chinese younger and older adults' attitudes toward the US and the factors that can affect their attitudes and negative emotions

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**Abstract.** This study aims to analyze the influence of COVID on Chinese adults' attitudes toward the US and examine factors that can affect their attitudes. A total number of 288 Chinese adults were selected as the investigation objects, and 282 effective questionnaires were collected with a recovery rate of 97.81% (134 effective questionnaires of younger adults) and 98.01% (148 effective questionnaires of older adults). The general demographic of the adults were collected, including 130 men and 158 women, with an age range of 19-50 years (younger adults: 19-30, mean age 24.69, standard deviation 3.34; older adults: 31-50, mean age: 39.09, standard deviation: 5.21). Questions included in the questionnaire were introduced explicitly in the material section. The study found that responsibility, attitudes toward the US after COVID, and negative emotion they have experienced during COVID is closely correlated with each other and other parts of this study, which can indicate that for younger and older adults, COVID had greatly influenced their perspective on the US. Regression analysis revealed that (1) for both younger and older adults, factors like general bias, browsing or searching for keywords related to COVID and its origin, and unintentionally spreading rumors about the US can be the significant factors that affect their attitudes; (2) for older adults, factors like searching or browsing for keywords related to COVID and attitude toward the US after COVID affect negative emotions they have experienced during COVID.

**Keywords:** COVID, attitudes, negative emotions, younger adults, older adults, bias.

## 1. Introduction

As the world faces a global pandemic, the rise in hate crimes targeting Asian communities is global. U.K. police data suggests an increase of 300% in hate crimes toward Chinese, East, and Southeast Asians in the first quarter of 2020 compared to the same period in 2018 and 2019 (Haynes, 2021). Asian Americans are experiencing the same thing. The hate towards Asian Americans peaked when the US media press published the "origin" of COVID-19 from China. 32% of Asian American adults reported they have feared someone might threaten or physically harm them during the corona-virus outbreak (Ruiz, Edwards, & Lopez, 2021). The fear in the Asian American community is accumulating with what they have observed and experienced. However, how Asian and Asian Americans' attitudes toward Americans remain unclear. There is a limited study specifically focused on Chinese perspective on Americans. Before the pandemic, many Chinese decided to immigrate to the US, and in the older generation, there is always hearsay "if you want a better life or you want to make money, you should go to the US" Meanwhile, there are also many rumors that the Chinese believe about Americans. Therefore, this study is interested in learning more about whether COVID has impacted their attitude toward the U.S., factors that can affect their attitudes, and negative emotions that they have experienced during COVID.

As we have mentioned above, the hate crimes toward Asian Americans are increasing globally, mainly due to the misinformation released during COVID (Croucher et al., 2020). With the development of technology, the use of social media has become more common and convenient. All age levels can get in touch with all kinds of information. However, different ages can be one of the factors in how they will perceive information. Therefore, we recruited younger and older adults and suspected excessive information and unintentionally spreading rumors can influence one's attitudes and whether people think the US should take on the responsibility for this pandemic with

such information. In the meantime, examine how different ages can bring out different feelings about such information. Furthermore, whether their emotions have been experienced during COVID can cause an effect in their attitudes toward the US.

## 2. Research Methods

### 2.1 Material

The questionnaire has been separated into seven parts: **general bias against the US, information overload about COVID** (adapted by Karr-Wisniewski, 2010), **unintentionally spread rumors, unintentionally spread rumors about the US, responsibility** (adapted by Gardner et al., 2021), **negative emotions** (Watson et al., 1988), **and others** (adapted by Yu et al., 2020). Following example questions are used in the questionnaires for general bias against the US and information overload about COVID: *Americans admire and love freedom, Americans prioritize their interests, and since the pandemic, I found that I was drowned by excess information about COVID. Since the pandemic, I unintentionally spread rumors to my relatives and friends. Since the pandemic, I have shared or commented on the news titled "the corona-virus originated in the US laboratory."* The above example questions are mentioned in the unintentionally spread rumors and the unintentionally spread rumors about the US. Questions like *whether America/China/other countries are responsible for the pandemic* are included in the responsibility section. Negative emotions such as *upset and guilt* are being evaluated. The last part is included seven questions, for example, *1. How often have you used social media since the pandemic, 2. have social media affected your relationship with your foreign friends since the pandemic, 3. since the pandemic, you have browsed or searched for keywords related to COVID.*

### 2.2 Subject

A total of 137 adults were investigated in this study, and the general demographic information was collected, including 65 men and 72 women, with an age range of 19-30 (mean age 24.69 years, standard deviation 3.34 years). 134 effective questionnaires were collected with a recovery rate of 97.81%. T-tests were performed on 134 independent samples, found that there was no significant difference in scores of general biases, information overload, unintentionally spread rumors, unintentionally spread rumors about the US, responsibility, and negative emotion between men and women (Table 1).

Table 1 The Difference of Scores between Male and Female Students on Scale (Younger Adult)

	male		female		t	p
	M	SD	M	SD		
General Bias against the US	25.21	4.64	23.62	4.29	1.81	0.07
Information Overload	11.24	2.61	10.06	3.05	2.00	0.06
Unintentionally Spread Rumors	5.67	2.75	5.59	2.33	0.15	0.88
Unintentionally Spread Rumors about the US	5.91	3.40	5.31	2.83	1.01	0.32
Responsibility	14.24	3.60	13.15	4.17	1.35	0.18
Negative Emotion	23.33	7.34	23.03	8.07	0.19	0.85

A total of 151 adults were investigated in this study, and the general demographic information was collected, including 65 men and 86 women, with an age range of 31-50 (mean age 39.09 years, standard deviation 5.21 years). 148 effective questionnaires were collected with a recovery rate of 98.01%. T-tests were performed on 148 independent samples, found that there was no significant difference in scores of general biases, information overload, unintentionally spread rumors,

responsibility, and negative emotion between men and women, except for unintentionally spread rumors about the US (Table 2).

Table 2 The Difference of Scores between Male and Female Students on Scale (Older Adult)

	male		female		t	p
	M	SD	M	SD		
General Bias against the US	23.78	4.61	24.07	4.69	0.36	0.72
Information Overload	9.53	2.94	9.53	2.58	0.01	0.99
Unintentionally Spread Rumors	5.29	2.06	4.97	2.10	0.90	0.37
Unintentionally Spread Rumors about the US	6.39	2.71	5.34	2.88	2.16	0.03
Responsibility	15.10	3.60	13.98	3.40	1.87	0.06
Negative Emotion	21.35	8.32	19.38	7.81	1.42	0.16

### 3. Results

#### 3.1 Correlation Analysis

##### 3.1.1 Responsibility

For younger adults, correlation analysis shows that responsibility is significantly positively correlated with negative emotion, and significantly negatively correlated with attitudes (Table 3).

Table 3 Correlation between Responsibility, Attitudes, and Negative Emotion (Younger Adults).

	Attitude toward the US before COVID	Attitude toward the US after COVID	Attitude on How Americans will view Asian Americans in the future	Negative Emotion
Responsibility	-0.290**	-0.527**	-0.361**	0.213*

\*,  $p < 0.05$ ; \*\*,  $p < 0.01$

For older adults, correlation analysis shows that responsibility significantly positively correlates with general bias, information overload, unintentionally spread rumors about the US (Table 4).

Table 4 Correlation between General Bias, Information Overload, and Unintentionally Spread Rumors about the US (Older Adults).

	General Bias	Information Overload	Unintentionally Spread Rumors about the US
Responsibility	0.331**	0.200*	0.405**

\*,  $p < 0.05$ ; \*\*,  $p < 0.01$

##### 3.1.2 Attitudes toward the US after COVID

For younger adults, correlation analysis shows that attitudes toward the US after COVID are significantly positively correlated with attitudes on how Americans will view Asian Americans in the future and significantly negatively correlated with negative emotion (Table 5).

Table 5. Correlation between Attitudes toward the US after COVID, How Americans will View Asian Americans in the Future, and Negative Emotion (Younger Adults).

	How Americans will view Asian Americans in the future	Negative Emotion
Attitudes toward the US after COVID	0.415**	-0.230**

\*, p < 0.05; \*\*, p < 0.01

For older adults, correlation analysis shows that attitudes toward the US after COVID are positively correlated with attitudes toward the US before COVID and negatively correlated with general bias and responsibility (Table 6).

Table 6. Correlation between Attitudes toward the US after COVID, Attitudes toward the US before COVID, General Bias, and Responsibility (Older Adults).

	Attitudes toward the US before COVID	General Bias	Responsibility
Attitudes toward the US after COVID	0.415**	-0.330**	-0.472**

\*, p < 0.05; \*\*, p < 0.01

### 3.1.3 Negative Emotion

For younger adults, correlation analysis shows that negative emotion is significantly positively correlated with information overload, unintentionally spread rumors, unintentionally spread rumors about the US, social media has affected relationships with foreign friends, searching or browsing for keywords related to COVID, and its origin (Table 7).

Table 7 Correlation between Information Overload, Unintentionally Spread Rumors, Unintentionally Spread Rumors about the US, Responsibility, Social Media has Affected Relationships with Foreign Friends, Searching or Browsing for Keywords related to COVID and its Origin, and Attitudes toward the US after COVID (Younger Adults).

	Information Overload	Unintentionally Spread Rumors	Unintentionally Spread Rumors about the US	Social Media has Affected Relationships with Foreign Friends	Searching or Browsing for Keywords related to COVID	Browsed or searched for keywords that related to the Origin of COVID
Negative Emotion	0.255**	0.215*	0.299**	0.232*	0.317**	0.213*

\*, p < 0.05; \*\*, p < 0.01

For older adults, correlation analysis shows that negative emotions during COVID is significantly positively correlated with information overload, browsed or searched for keywords that related to the origin of COVID, and attitudes toward the US after COVID (Table 8).

Table 8. Correlation between Negative Emotion, Information Overload, Browsed or searched for keywords that related to the Origin of COVID, and Attitudes toward the US after COVID (Older Adults).

	Information Overload	Browsed or searched for keywords that related to the Origin of COVID	Attitudes toward the US after COVID
Negative Emotion	0.164*	0.305**	0.187*

\*,  $p < 0.05$ ; \*\*,  $p < 0.01$

### 3.2 Regression Analysis

#### 3.2.2 Responsibility

**Younger Adults-** The regression analysis results showed that general bias, unintentionally spread rumors about the US, and search or browse for keywords related to COVID positively predict responsibility (Table 9).

Table 9 Regression Analysis of General Bias, Information Overload, Unintentionally Spread Rumors, Unintentionally Spread Rumors about the US, and Searching or Browsing for Keywords related to COVID and its Origin on Responsibility (Younger Adults)

		Responsibility		
		$\beta$	t	sig
First Layer	Age	-0.056	-0.640	0.523
	Gender	-0.107	-1.222	0.224
Second Layer	General Bias	0.254	3.228	0.002
	Information Overload	0.125	1.497	0.137
	Unintentionally Spread Rumors	0.040	0.402	0.688
	Unintentionally Spread Rumors about the US	0.263	2.531	0.013
	Searching or Browsing for Keywords related to COVID	0.190	2.109	0.037
	Browsed or searched for keywords that related to the Origin of COVID	0.046	0.504	0.615
R2		0.016	0.346	
$\Delta R2$		0.001	0.303	

Table 5.1 shows that general bias, unintentionally spread rumors about the US, and search or browse for keywords can positively predict responsibility. However, the results of information overload, unintentionally spreading rumors, and browsing or searching for keywords related to the Origin of COVID are not significant.

1. The more bias the younger adults have toward Americans, the younger adults think the US is more responsible for the pandemic.
2. The more likely younger adults will unintentionally spread rumors about the US, the younger adults think the US is more responsible for the pandemic.
3. The more the younger adults have searched or browsed for keywords related to COVID, the younger adults think the US is more responsible for the pandemic.

**Older Adults-** The regression analysis results showed that general bias and unintentionally spread rumors about the US can positively predict responsibility (Table 10).

Table 10 Regression analysis of General Bias, Information Overload, Unintentionally Spread Rumors about the US on Responsibility

		Responsibility		
		$\beta$	t	Sig
First Layer	Age	0.171	2.099	0.038
	Gender	-0.132	-1.618	0.108
Second Layer	General Bias	0.303	3.886	0.000
	Information Overload	0.055	0.714	0.477
	unintentionally spread rumors about the US	0.375	5.068	0.000
R2		0.052	0.284	
$\Delta R2$		0.039	0.259	

Table 5.2 shows that general bias and unintentionally spread rumors about the US can positively predict responsibility. However, the results of information overload are not significant.

1. The more bias the older adults have toward Americans, the older adults think the US is more responsible for the pandemic.

2. The more likely the older adults will unintentionally spread rumors about the US, the older adults think the US is more responsible for the pandemic.

### 3.2.3 Attitudes toward the US after COVID

**Younger Adults-** The results of regression analysis showed that attitudes toward the US before COVID can positively predict attitudes toward the US after COVID and responsibility can negatively predict attitudes toward the US after COVID (Table 11).

Table 11 Regression Analysis of General Bias, Unintentionally Spread Rumors, Unintentionally Spread Rumors about the US, Searching or Browsing for Keywords related to COVID and its Origin, Responsibility, and Attitudes toward the US before the US on Attitudes toward the US after COVID (Younger Adult)

		Attitudes toward the US after COVID		
		$\beta$	t	sig
First Layer	Age	-0.005	-0.052	0.959
	Gender	-0.039	-0.439	0.662
Second Layer	General Bias	-0.099	-1.497	0.137
	Unintentionally Spread Rumors	0.020	0.242	0.809
	Unintentionally Spread Rumors about the US	-0.075	-0.856	0.394
	Searching or Browsing for Keywords related to COVID	-0.083	-1.104	0.272
	Browsed or searched for keywords that related to the Origin of COVID	-0.054	-0.708	0.480
	Responsibility	-0.289	-3.815	0.000
	Attitudes toward the US before COVID	0.497	7.707	0.000
R2		0.002	0.551	
$\Delta R2$		-0.014	0.518	

Table 6.1 shows that attitudes toward the US before COVID can positively predict attitudes toward the US after COVID and responsibility can negatively predict attitudes toward the US after COVID. However, the results of general bias, unintentionally spread rumors, unintentionally spread rumors about the US, searching or browsing for keywords related to COVID and its origin are not significant.

1. The worse the attitude toward the US before COVID, the worse the attitude toward the US after COVID.

2. The more the younger adults think the US is responsible for the pandemic, the worse the attitude toward the US after COVID.

**Older Adults-** The results of regression analysis showed that attitudes toward the US before COVID can positively predict attitudes toward the US after COVID and responsibility can negatively predict attitudes toward the US after COVID. (Table 12).

Table 12 Regression Analysis of General Bias, Responsibility, Attitudes toward the US before COVID on Attitudes toward the US after COVID (Older Adult)

		Attitudes toward the US after COVID		
		$\beta$	t	Sig
First Layer	Age	-0.210	-2.573	0.011
	Gender	-0.087	-1.059	0.291
Second Layer	General Bias	-0.153	-2.106	0.037
	Responsibility	-0.344	-4.515	0.000
	Attitudes toward the US before COVID	0.268	3.672	0.000
	R2	0.047	0.346	
$\Delta R2$		0.034	0.322	

Table 6.2 shows that attitudes toward the US before COVID can positively predict attitudes toward the US after COVID and responsibility can negatively predict attitudes toward the US after COVID. However, the results of general bias are not significant enough.

1. The worse the attitude toward the US before COVID, the worse the attitude toward the US after COVID.
2. The more the US is responsible for the pandemic, the worse the attitude toward the US after COVID.

### 3.2.4 Negative Emotion

**Younger Adults-** The results of regression analysis are not significant.

**Older Adults-** The regression analysis results showed that searching or Browsing for keywords related to COVID and attitude toward the US after COVID can positively predict negative emotion (Table 13).

Table 13 Regression Analysis of Information Overload, Searching or Browsing for Keywords related to COVID and Attitude toward the US after COVID on Negative Emotion (Older Adult)

		Negative Emotion		
		$\beta$	t	sig
First Layer	Age	-0.002	-0.026	0.979
	Gender	-0.117	-1.408	0.161
Second Layer	Information Overload	0.131	1.679	0.095
	Searching or Browsing for Keywords related to COVID	0.295	3.805	0.000
	Attitude toward the US after COVID	0.194	2.461	0.015
R2		0.014	0.159	
$\Delta R2$		0.000	0.129	

Table 7.1 shows that searching or Browsing for Keywords related to COVID and attitude toward the US after COVID can positively predict negative emotion. However, the result of information overload is not significant.

1. The more likely to search or browse for keywords related to COVID, the more negative emotion the older adults have experienced during COVID.
2. The better attitudes toward the US after COVID, the more negative emotion the older adults have experienced during COVID.

## 4. Suggestions and Conclusions

This study examined whether COVID had influenced Chinese adults' perspective on the US and whether their emotions have been experienced during COVID caused an effect in their attitudes toward the US. Our study found that firstly, for all adults, general biases and unintentionally spreading rumors about the US significantly affected whom they think is more responsible for the pandemic. The more general biases they have on the US and the more likely they unintentionally spread rumors about the US affected their attitudes which they think the US is more responsible for the pandemic. The only difference between younger and older adults was that the more younger adults searched or browsed keywords related to COVID also affected their attitudes toward the US. The younger adults will be more likely to think the US is responsible for this pandemic due to constantly searching. The reason that caused this difference might be that the younger adults are more likely to use social media and are constantly exposed to different internet sources. Secondly, for all adults, attitudes toward the US before COVID and thinking the US is more responsible for the pandemic affected their attitudes toward the US after COVID. In other words, their worsened attitudes toward the US before COVID and the more they thought the US was responsible for the pandemic caused their worsened attitudes toward the US after COVID.

In addition, for older adults, factors like searching or browsing for keywords related to COVID and attitude toward the US after COVID affect negative emotions they have experienced during COVID. One result in the older adults was unique: the better their attitudes toward the U.S. after COVID, the more negative emotion they have experienced during COVID. Older adults might have such feelings because they already have a preexisting bias toward China or other countries, and their negative emotions toward China or other countries increase significantly during COVID. Another reason is that they think the US policy for COVID is excellent, making them think China or other countries should establish similar policies. However, when China or other countries could not establish such policies, their negative emotion would increase simultaneously.

However, the regression analysis results of negative emotions for the younger adults are insignificant. Reasons can be that younger adults are more likely to seek mental health services or join activities that can help them release negative emotions. In order to find the real reason, further research is needed. This study fostered the need to reduce prior bias towards each country, have more reliable resources on COVID information, and society should pay more attention to people's emotions during COVID.

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