What motivates individual public service motivation and cooperation at the initial stage of the COVID-19 outbreak: A cross-sectional survey

Shu'e Zhang¹ | Xiaohe Wang² | Yu Shi¹,³ | Bei Liu⁴ | XianHong Huang² | Hongni Wang² | Xin Zhao² | Depin Cao¹ | Tao Sun²

¹Department of Health Management, School of Health Management, Harbin Medical University, Harbin, China
²Department of Health Management, School of Medicine, Hangzhou Normal University, Hangzhou, China
³Vanke school of public health, Tsinghua university, Beijing, China
⁴Department of Inspection, School of Public Health, Peking University, Beijing, China

Abstract

Objectives: This study assesses the status of public service motivation and explains its positive association with public cooperation during the initial stage of the COVID-19 crisis. Moreover, potential causes of Chinese citizens' public service motivation have been explored.

Methods: A cross-sectional survey of 30 provinces in China was conducted using an online questionnaire. The study was conducted in February 2020 during the initial stage of the COVID-19 pandemic. Socio-demographic factors, public service motivation, public satisfaction, public confidence, and public cooperation were assessed using questionnaires. Hierarchical multiple regression was used to identify clusters of interrelationships among public service motivation, public satisfaction, public confidence, and public cooperation among Chinese citizens.

Results: We found that participants' public satisfaction with COVID-19-related public services had a positive association with public confidence ($B = 0.456, p < 0.001$) and public service motivation ($B = 0.177, p < 0.001$). Moreover, public confidence regarding anti-COVID-19 measures had a positive influence on public service motivation ($B = 0.308, p < 0.001$).
1 | INTRODUCTION

The coronavirus 2019 (COVID-19) outbreak has attracted intense attention globally. The World Health Organization (WHO) declared that the COVID-19 outbreak was a public health emergency of international concern (PHEIC) on 30 January 2020. Since then China’s government had implemented a series of containment strategies in response to the COVID-19 outbreak and immediately initiated a nationwide mechanism to mobilize resources around the country, attempting to solicit the confidence and cooperation of the public and to avoid infodemic and psycho-social crises, such as public anxiety and psychological stress. To fight the outbreak in a short period, China launched non-drug intervention to prevent the spread of infection and encouraged all citizens to adopt preventive measures as a form of public cooperation by, for instance, staying at home, avoiding mass gatherings, and cancelling or postponing large public events, while implementing other measures, such as closing schools, universities, government offices, libraries, museums, and factories. In fact, the implementation of all anti-COVID-19 preventive measures require active public participation. One cross-sectional survey reported that the majority (84.7%) of citizens spent 20–24 h per day at home during the uncontrolled phase of severe COVID-19 outbreaks. Another recent study showed that returning to work did not cause higher psychiatric and psychological symptoms in the Chinese workplace during the controlled phase of the COVID-19 outbreaks. To our knowledge, most publications on COVID-19 focus on the preparedness and capacity of the government against the spreading of Coronavirus Disease COVID-19. It is insufficient that residents’ attitude and participation toward the epidemic prevention policies, and even some anti-COVID-19 national policies have been resisted from their citizens. Unlike some western countries, China’s citizens exhibited a high level of policy cooperation and consistency in anti-epidemic action. In general, China’s citizens initiate to sacrifice own ‘rights’ to support the collective interests of the country and abide by governmental orders without external compulsion, intervention, or coercion those that were regarded as citizens’ self-responsibility. However, no studies have paid attention to what motivates proactive cooperation behaviour during the COVID-19 outbreaks in China, and why the residents cooperate so well with government. Public service motivation seems provide a new approach to understand Chinese citizens’ performance during the COVID-19 outbreaks.
1.1 | What is public service motivation?

Public service motivation (PSM) involves serving ‘the interests of a community of people, a state, a nation or humankind,’ despite having to sacrifice one’s freedom or best interests when observing social rules and procedures. Relevant studies have revealed that public service-motivated individuals engage in societal altruism that depends strongly on the political context. Therefore, a reasonable assumption can be made that an individual with a high level of PSM may value the ‘community’ more after being inspired by increasing political support in response to an outbreak or crisis. Thus, citizens’ participation in anti-pandemic measures tends to be preceded by a high level of PSM. Obviously, the containment strategies undertaken in response to the COVID-19 outbreak have effectively disturbed every aspect of citizens' daily lives, but it is unclear whether PSM was encouraged by the special crisis, whether Chinese citizens were satisfied with various departments’ anti-pandemic measures, whether public confidence in the national fight against the pandemic was strengthened, whether the public positively evaluated the measures taken, and whether there was participation in pandemic-prevention policies. Thus, the current study aimed to address the issues mentioned above.

As a mixture of attitudes toward public service, PSM has been conceptualized as an individual predisposition to respond to motives grounded primarily or uniquely in public interest. Individuals with high levels of PSM are more likely to place a greater value on intrinsically rewarding actions, such as service to society, the nation, and public interests; their volunteering behaviours are also likely to benefit others. In the previous literature, generally, PSM motives are divided into three categories: (a) rational, (b) norm-based, and (c) affective. Rational motives emphasize individual maximization of utility. Norm-based motives focus on a desire to prioritize the common good and public interests, but affective motives are concerned with human emotions. Ultimately, PSM consists of an overlap of both intrinsic and extrinsic motivations. More specially, intrinsic motivations refer to motivation driven by duty, citizenship, or loyalty; extrinsic motivations are a result of seeking conditions that allow individuals to survive.

A public service-motivated individual’s intention is to contribute to society at large by serving the public welfare and the abstract idea of the public’s interests. PSM, as a general motivation linked to societal altruism, explains the reason individuals engage in helping behaviours to benefit society at large. A previous study clarified that PSM may be formed during the process of human socialization and may also be influenced by an individual’s national culture and social system. Additionally, a public service-motivated individual who is focused on the public’s interests may choose to volunteer, depending on opportunities and social demands, which may both be influenced by temporal situations. As a topic of study in public administration, PSM is already revealing more extensive implications. Several studies have shown that PSM directed at unidentified individuals or society at large has been linked to various positive outcome variables. Moreover, Brewer points out that PSM is directed to provide ‘meaningful public, community, and social service’ to serve ‘the public interest’ or ‘the interests of a community of people, a state, a nation or humankind or larger political entity,’ rather than ‘self-interest and organizational interest.’ PSM is one of the few theoretical concepts that originates from the field of public administration in Western countries. Today, the concept has also been adopted by sociologists and economists. Growing attention has been steadily paid to how public service motivation transforms and promotes citizen participation among general populations. However, there are at least three salient research limitations in the past literature on PSM. First, previous research has neglected the specific realistic, practical, and social factors likely to create potential disturbances. Second, past studies have neglected the influence of institutional and cultural characteristics. Third, they have paid much more attention to the PSM of public-sector employees than to that of the general population. Therefore, the present study’s aim is to explore citizens’ level of PSM, and an effort is made to broaden the research scope of PSM during the initial stage of the COVID-19 pandemic.
1.2 | What motivates public service motivation during the initial stage of the COVID-19 pandemic?

Relevant research showed that the adherence to normal values and high-degree confidence toward government increased the likelihood of citizens’ public service motivation or behaviour in public crisis. Besides the PSM, timely communication, a sense of trust, and enthusiastic coordination between local authority and stakeholders contribute to the success of such activities and effective crisis management.\(^7\) Citizens' attitude can determine participation behaviour via motivation and moral emotions, which means that citizen attitudes, moral emotions and beliefs towards local authority are particularly important to own responses, such as public satisfaction and public confidence. In detail, public satisfaction is an indicator of the effectiveness and efficiency of social policies, and it influences citizens’ confidence and participation in pandemic prevention and control measures during public health emergencies.\(^8\),\(^9\) Certainly, public confidence in public administration has become a synonym for trust, legitimacy, and security, demonstrating that political authorities and institutions are performing in accordance with the normative expectations held by the public.\(^10\) Moreover, public confidence in government contributes to prevent citizen riots, further enhancing the legitimacy and stability of a political system, which leads to the improvement of the efficiency of public crisis management. A series of containment strategies has strengthened public confidence in anti-pandemic measures in addition to increasing public satisfaction with the anti-pandemic actors in China. The high frequency of cooperation between the public and anti-pandemic agencies is a performance indicator that demonstrates that the government is considered trustworthy, that the public has confidence in the government’s capacity to cope with a crisis, and that the implementation of public policies has been approved by the public. Additionally, China’s experiences with anti-COVID-19 measures have demonstrated that its reliable enactment of pandemic prevention measures has likely driven individuals to devote their efforts to public service, thus increasing the likelihood of effective cooperation between government agencies and stakeholders. Unfortunately, little is known about the public’s satisfaction with, confidence in, or cooperation with anti-pandemic actions since public health crises such as SARS in 2003 and H1N1 in 2009, leading to a lack of attention to these topics in the field of public management. Unsurprisingly, it is still unclear whether certain social situations, such as the coronavirus public health emergency, increase citizens’ PSM or encourage public participation and cooperative behaviour regarding unified anti-pandemic policies while providing a valued social service. Meanwhile, there are a lack of detailed studies focused on the cluster of relationships and potentially functional mechanisms among public satisfaction, public confidence, PSM, and public cooperation during the initial stage of the COVID-19 pandemic.

1.2.1 | Objectives of the study

The preceding discussion highlights four significant goals in our study: (a) To explore the current situation of individual public satisfaction, public confidence, PSM, and public cooperation regarding the containment of the COVID-19 pandemic; (b) to assess the associations among public satisfaction, public confidence, PSM, and public cooperation in the early phase of the implementation of anti-COVID-19 measures; (c) to examine the mediating role of public confidence in the relationship between public satisfaction and PSM; and (d) to provide a snapshot of public satisfaction, public confidence, PSM, and public cooperation in the initial stage of the implementation of anti-COVID-19 measures.

2 | MEASURES

2.1 | Subjects and procedures

We carried out a cross-sectional internet survey with a large, demographically representative sample of the general population of China. Snowball sampling and convenience sampling methodology were used to invite
individuals from across China to complete an anonymous online questionnaire in February 2020. In the context of the early phase of the outbreak, this method was a convenient and effective way to gather data. A total of 1,317 participants from 30 cities participated in the survey, and 1,242 valid questionnaires were used as the final samples (an effective response rate of 94.31%). First, a sampling framework was constructed. Approximately 30 cooperative partners for various regions were recruited as the original deliverers of the survey. Second, they were fully informed about the purpose and significance of this study, through which their cooperation was obtained. Then, the social contacts of ‘the original deliverers’ were invited to participate in our online survey. We signed an electronic non-disclosure and confidentiality agreement with the respondents on the first page of the questionnaire, promising that all the answers would not have any impact on the respondents and would not be analysed in a separate way.

Our sample was selected with strict adherence to exclusion criteria for data management and quality control. The inclusion criteria were as follows. Participants must be Chinese citizens, have the ability to answer questions independently via a mobile phone or computer, and have agreed to participate voluntarily. The exclusion criteria included failure to answer, voluntary withdrawal from the study by failing to answer all the questions, the presence of too many missing items or obvious response errors, and response time that was too short.

### 2.2 | Instruments

The questionnaire consisted of five sections, including demographic variables, PSM, public satisfaction, public confidence, and public cooperation. The demographic variables were gathered using a self-designed questionnaire that included questions regarding age, gender, education level, marital status, profession, household income, and so on.

#### 2.2.1 | Measurement of public service motivation

PSM was measured using eight items based on the Chinese version of the Public Service Motivation Scale proposed by Bao Yuanjie and Li Chaoping and was adapted from Kim's cross-cultural Public Service Motivation Scale. This tool has demonstrated adequate reliability and validity. Considering the need to accommodate the Chinese setting, especially within the context of a public health emergency, we further modified the items’ phraseology. The items were scored on a 5-point Likert scale ranging from 1 (‘totally disagree’) to 5 (‘totally agree’), in which higher scores represented a higher degree of PSM. The Cronbach's alpha coefficient of the scale was 0.836.

#### 2.2.2 | Measurement of public confidence in China's anti-COVID-19 measures

When a pandemic occurs, a series of decisions must be made by a diverse range of actors from different perspectives and at varying points in the policy-making process. The ‘confidence’ of the general population probed by this study refers to overall confidence after estimating all kinds of performance by all actors, including those in national and local governments, medical institutions, medical settings, scientific research departments, and transportation departments. Thus, the ‘Public Confidence Questionnaire’ with six revised items was used to measure Chinese citizens' public confidence in containing the COVID-19 pandemic. A sample item was ‘To what extent do you have confidence in [institution]?’; confidence was measured on a 5-point scale with answers ranging from ‘very little’ to ‘very much’ and relatively neutral middle categories. The Cronbach's alpha coefficient of the scale was 0.920.
2.2.3 | Measurement of public satisfaction with COVID-19-related public services

A ‘Public Satisfaction Questionnaire’ was administered using a revised six-item version,\textsuperscript{30} which included items such as ‘To what extent are you satisfied with the service delivery of [institution]?’ and ‘To what extent are you satisfied with public service delivery in general?’ The answers were scored on a 5-point Likert scale ranging from 1 (‘very dissatisfied’) to 5 (‘very satisfied’), in which higher scores represented a higher degree of public satisfaction with COVID-19-related public services. In the present study, the Cronbach’s alpha coefficient of the scale was 0.840.

2.2.4 | Measurement of public cooperation during the implementation of China’s anti-COVID-19 measures

A ‘Public Cooperation Questionnaire’ with four revised items was used to measure Chinese citizens’ public cooperation with COVID-19-prevention (policies) (e.g., ‘To what extent are you cooperating with pandemic prevention [policies]?’). Cooperation with prevention measures (policies) included practicing good personal hygiene, travelling with a mask, and practicing self-isolation when experiencing a fever. The items were scored on a 5-point Likert scale ranging from 1 (‘very uncooperative’) to 5 (‘very cooperative’), in which higher scores represented a higher degree of public cooperation with China’s anti-COVID-19 measures. The Cronbach’s alpha coefficient of the scale was 0.821.

2.3 | Statistical analysis

2.3.1 | Preliminary analyses

All analyses were performed using the SPSS 22.0 program (SPSS, Inc.). A descriptive statistical analysis was conducted with Mean ± SD used to describe the continuous variables. An internal consistency reliability test was adopted to check inventory reliability. Sociodemographic differences in the variables were examined using the independent sample t-test and one-way ANOVA. Pearson’s correlation coefficients were calculated to estimate the correlations among public satisfaction, public confidence, PSM, and public cooperation.

2.3.2 | Hierarchical regression analysis

A series of hierarchical linear regression analyses was performed to examine our hypotheses. The mediators were tested by calculating bias-corrected 95% confidence intervals using bootstrapping with \( n = 5,000 \) resamples via the PROCESS procedure for SPSS\textsuperscript{22},\textsuperscript{31} and Model 4 was constructed. The procedures and recommendations outlined by Hayes (2013)\textsuperscript{31} to test conditional indirect effects were used to examine the mediation models after eliminating the effects of the demographic variables. Public satisfaction was regarded as the predictor variable in the present study, with public confidence as a mediator variable and PSM as a result variable. We provided values including \( F \), \( R^2 \), and \( R^2 \) changes, and the fit of the model was assessed using \( R^2 \). Regression coefficients (\( B \)), standard errors (SEs), and \( p \)-values are reported for each step in the regression model. ‘Statistical significance’ was defined as \( p < 0.05 \) (two-tailed).
3 | RESULTS

Table 1 shows the demographic characteristics of the participants. It can be seen that the proportions of male and female participants were 28.7% and 71.3%, respectively. Most respondents were unmarried (n = 626; 50.4%), had a bachelor’s degree (n = 705; 56.8%), and were from urban areas (n = 1,023; 82.4%). A total of 35.6% (n = 442) of the participants were aged between 18 and 24 years. The participants were primarily employed in 12 industries, including retirees. There were (n = 400; 32.2%) participants with an annual household income between 5,000 and 10,000.

A summary of the demographic variables can be seen in Table 1. Differences in PSM scores across education level (F = 4.623, p < 0.01), residency (F = 6.978, p < 0.01), and annual household income (F = 4.105, p < 0.01) were statistically significant. Differences in public cooperation scores across gender (t = 10.732, p < 0.01), residency (F = 4.045, p < 0.01), and annual household income (F = 3.400, p < 0.01) were statistically significant. However, there were no significant differences in public satisfaction and public confidence scores across demographic characteristics.

Approximately 94.9% of participants were satisfied with the anti-pandemic departments. Most of the participants (98.2%) showed adequate confidence in them as well. Approximately 98.6% of participants reported high-level PSM during the pandemic. Moreover, most of the participants (99.2%) admitted to engaging in active cooperation with the anti-pandemic policies. The overall means (and SDs) of public satisfaction, public confidence, PSM, and public cooperation were 4.11 (0.461) points, 4.44 (0.565) points, 4.59 (0.469) points, and 4.65 (0.450) points, respectively. All the variables were significantly correlated with each other. The absolute value of the correlation coefficient was between 0.2 and 0.6, which indicated that each variable could be used in the subsequent regression analyses, as presented in Tables 2 and 3.

We found that public satisfaction with public services to contain COVID-19 had a significantly positive influence on public confidence (B = 0.456, p < 0.001) and PSM (B = 0.177, p < 0.001). Moreover, public confidence had a significantly positive influence on PSM (B = 0.308, p < 0.001) during the initial stage of the COVID-19 pandemic. Moreover, public confidence mediated the relationship between public satisfaction and PSM. The direct effect of public satisfaction on PSM was found to be 0.036 without statistical significance (p > 0.05), and the indirect effect of public satisfaction on PSM through public confidence was found to be 0.141. The total effect of public satisfaction on PSM was 0.177 among Chinese citizens, as shown in Table 4 and Figure 1. PSM had a significantly positive influence on public cooperation during the initial stage of the COVID-19 pandemic (B = 0.298, p < 0.001).

4 | DISCUSSION

4.1 Status of Chinese citizens’ public service motivation, public satisfaction, public confidence, and public cooperation in response to the COVID-19 outbreak

The participants in our survey reported high-level PSM and public cooperation during the COVID-19 pandemic, which is consistent with the real-life situation. An interesting finding verified that the level of PSM (4.65 ± 0.45, Mean ± SD) reported in the current survey was much higher than that of employees of non-profit organizations and public administrators (3.50 ± 0.66, Mean ± SD). Moreover, the current study revealed that the citizens’ PSM and public cooperation differed according to sociodemographic factors such as gender, education level, residency, and annual household income. Similar studies confirmed that there were differences in public cooperation during pandemic prevention and control measures among different sociodemographic characteristics, such as urban and rural. The current study presents a suggestion for the government that sociodemographic differences in citizens’ PSM and public cooperation should be considered in pandemic prevention and control measures during public health emergencies. Our survey indicates that Chinese citizens’ PSM is not only driven by an altruistic desire to serve others but also likely by specific situations and consciousness of social responsibilities in the face of an unexpected crisis. Nevertheless, the results also show that Chinese citizens’ level of PSM has been dynamic, changing according to the demands of various factors.
TABLE 1  Socio-demographic characteristics of the respondents (n = 1,242)

| Characteristics                              | N(%) | F(t) | PSM | Cooperation |
|----------------------------------------------|------|------|-----|-------------|
| Gender                                       |      |      |     |             |
| Male                                         | 356  | 28.7 | p > 0.05 | t = 10.732  |
| Female                                       | 886  | 71.3 | p < 0.01 |             |
| Marital status                               |      |      |     |             |
| Unmarried                                    | 626  | 50.4 |     |             |
| Married                                      | 585  | 47.1 |     |             |
| Divorce or loss of spouse                    | 31   | 2.5  |     |             |
| Age                                          |      |      |     |             |
| <18                                          | 20   | 1.6  | p > 0.05 | p > 0.05    |
| 18–24                                        | 442  | 35.6 |     |             |
| 25–30                                        | 232  | 18.7 |     |             |
| 31–40                                        | 304  | 24.5 |     |             |
| 41–50                                        | 174  | 14   |     |             |
| 51–60                                        | 48   | 3.9  |     |             |
| >60                                          | 21   | 1.7  |     |             |
| Education level                              |      |      |     |             |
| Primary or below                             | 7    | 0.6  | F = 4.623 | p > 0.05    |
| Junior high school                           | 55   | 4.4  | p < 0.01 |             |
| Senior high school                           | 107  | 8.6  |     |             |
| College degree                               | 125  | 10.1 |     |             |
| Bachelor                                     | 705  | 56.8 |     |             |
| Master                                       | 242  | 19.5 |     |             |
| Professional categories                      |      |      |     |             |
| Medical student in school                    | 183  | 14.7 | p > 0.05 | p > 0.05    |
| Non-medical student in school                | 258  | 20.8 |     |             |
| Enterprise manager (include basic level manager/Middle and senior manager) | 43 | 3.5 | | |
| Ordinary employee (office/office building staff) | 168 | 13.5 | | |
| Professional staff (such doctor/lawyer/stylist/reporter/teacher etc.) | 273 | 22 | | |
| General work (such factory worker/ Manual worker etc.) | 31 | 2.5 | | |
| Commercial service worker (such Salesman/Store clerk/Waiter etc.) | 41 | 3.3 | | |
| Individual businesses/Contractor             | 36   | 2.9  |     |             |
| Freelancer                                   | 78   | 6.3  |     |             |
| Worker of agriculture, forestry, animal husbandry and fishery | 7 | 0.6 | | |
| Retiree                                      | 26   | 2.1  |     |             |
| Government/Government functionary/Civil servant | 63 | 5.1 | | |
| Other                                        | 36   | 2.9  |     |             |
| Residency                                    |      |      |     |             |
| Urban                                        | 1023 | 82.4 | F = 6.978 | F = 4.045   |
| Town                                         | 147  | 11.8 | p < 0.01 | p < 0.01    |
| Rural                                        | 73   | 5.9  |     |             |
(e.g., policy environment, social atmosphere, and emerging events), which tend to be precipitated by special events, for instance, the pandemic crisis. Thus, the reason for the current finding may be explained by the Chinese collectivist culture, which is related to ‘social conformity and collective order.’ The latest evidence has indicated that both the Polish government and the Chinese government made it mandatory for people to wear face masks outdoors nationwide, but Chinese citizens showed greater public cooperation than Polish citizens toward precautionary measures. Just as a well-known saying goes, ‘all for one and one for all,’ in China, most Chinese appear to support the idea that national and collective interests are more important than individual ones when faced with a public or national crisis. Unsurprisingly, the general Chinese population has maintained a high level of PSM, despite living with the various risks and uncertainties caused by the COVID-19 outbreak.

In addition, the strength of public confidence among the Chinese in anti-COVID-19 measures was 98.2%. Believing that the anti-pandemic policies addressed public interests and expectations as quickly as possible, the respondents were very confident in the actions of the anti-pandemic departments and the government. Most of the participants (94.9%) were satisfied with the anti-pandemic departments, and most (99.2%) actively cooperated with the anti-pandemic policies, indicating that Chinese citizens almost unanimously approved of the public health procedures and their effectiveness in containing the outbreak and showing trust in the central government’s performance of its duties, which is consistent with the real-life situation. Similarly, previous research has suggested that governmental performance that reflects convenience, responsiveness, effectiveness, and competence when delivering public services positively affects public satisfaction. Similar to latest evidence indicates that public confidence has been rising steadily over the past decade in China, even in the initial stage of the COVID-19 outbreak and the control phase of the COVID-19 outbreak, further boosting public support and cooperative behaviour among the public. Our study demonstrates that the delivery of high-quality public services, as perceived by the public, had a positive impact on public satisfaction, the government’s reputation, and public trust at the initial stage of the COVID-19 pandemic.

### 4.2 Associations among public confidence, public satisfaction, public service motivation, and public cooperation in China's anti-COVID-19 measures

The unprecedented global public health crisis caused by COVID-19 compelled the Chinese government to respond rapidly to unprecedented conditions. During the initial stage of the COVID-19 pandemic, a series of targeted measures has been utilized by China’s government to contain the virus’s spread, including surveillance strategies, non-pharmaceutical interventions, and broad-scale prevention campaigns. Therefore, it appears that citizens’ attitudes and behavioural tendencies may have been influenced by the government’s handling of the COVID-19 emergency. Meanwhile, prior public-sector research has alluded to the importance of the government’s actions in promoting PSM and public cooperation. Our study empirically confirms that citizens’ public satisfaction and confidence in the government affected their PSM and their willingness to engage in public cooperation under the circumstances of

### TABLE 1 (Continued)

| Characteristics | N(%) | F(t) |
|-----------------|------|------|
| Annual household income (RMB) | | |
| <5000 | 265 | 21.3 |
| 5001–10,000 | 400 | 32.2 |
| 10,001–20,000 | 335 | 27 |
| 20,001–50,000 | 210 | 16.9 |
| >500,000 | 34 | 2.7 |

Note: PSM = public service motivation; cooperation = public cooperation.
the initial stage of the COVID-19 pandemic. Notably, public confidence mediated the association between public satisfaction and PSM among Chinese citizens within anti-COVID-19 settings. Similarly, the degree of public cooperation with anti-pandemic measures was also influenced by the public’s level of satisfaction with the government and PSM. Notably, citizens’ level of satisfaction with the government’s responses tended to encourage PSM and willingness to engage in cooperative behaviour by indirectly enhancing confidence in anti-pandemic departments and actors instead of by directly inspiring PSM. Similar research has shown that public trust is strongly correlated with a government’s actions after controlling for individual characteristics. During the efforts to contain the COVID-19 pandemic, China, as a service-oriented country, adopted an all-out approach to social mobilization and launched strict measures with draconian rules. Naturally, in light of the overwhelmingly positive assessment of China’s efforts to control the spread of the virus, the public’s high level of satisfaction with the government appears to have been motivated by its decisive actions during the pandemic. Consequently, a social licence appears to have been granted by the general population due to the government’s excellent performance regarding anti-pandemic policies. This, in turn, has continually enhanced the positive beliefs, perceptions, and opinions of the public, especially among stakeholders. Our findings indicate that citizens developed PSM by indirectly increasing their trust in the government, reflecting a high degree of positive beliefs, security, and psychological support, rather than in a direct way. The idea of social trust provides another perspective that may offer some useful insights into this study’s results. In the face of an abrupt crisis, the public’s trust, as a key mediating mechanism, may spontaneously appear due to crisis-related circumstances requiring collective action and arousing a genuine desire to safeguard others’ welfare. Our study notes that individuals with high PSM resulting from a high level of confidence or trust in the government were more willing to cooperate with the anti-pandemic measures. Indeed, a cluster of positive attitudes toward the central government, such as public satisfaction, public trust, and cooperative intentions, are necessary preconditions to maintain policy enforcement and implementation. As individuals have placed increasing trust in the government, institutions, and hospitals during the outbreak, they have begun to exhibit higher personal satisfaction and lower perceived vulnerability to the pandemic. Additionally, because of the increasing public trust in the central government, citizens sincerely supported the gov-

| Variable | N (%) |
|----------|-------|
|          | 0 ≤ M ≤ 1 | 1 ≤ M ≤ 2 | 2 ≤ M ≤ 3 | 3 ≤ M ≤ 4 | 4 ≤ M ≤ 5 | Unsure |
| Satisfaction | 0 (0.0%) | 2 (0.2%) | 62 (5.0%) | 577 (46.5%) | 601 (48.4%) | 0 (0.0%) |
| Confidence | 3 (0.2%) | 2 (0.2%) | 17 (1.4%) | 94 (31.7%) | 826 (66.5%) | 0 (0.0%) |
| PSM | 2 (0.2%) | 1 (0.1%) | 6 (0.5%) | 262 (21.1%) | 962 (77.5%) | 9 (0.7%) |
| Cooperation | 0 (0.0%) | 1 (0.1%) | 9 (0.7%) | 233 (18.8%) | 999 (80.4%) | 0 (0.0%) |

Note: Satisfaction = public satisfaction; confidence = public confidence; PSM = public service motivation; cooperation = public cooperation.

| Variable | Range | M   | SD   | Satisfaction | Confidence | PSM   | Cooperation |
|----------|-------|-----|------|--------------|------------|-------|-------------|
| Satisfaction | 1–5 | 4.11 | 0.631 | 1 | | | |
| Confidence | 1–5 | 4.44 | 0.565 | 0.506** | 1 | | | |
| PSM | 1–5 | 4.59 | 0.469 | 0.219** | 0.389** | 1 | | |
| Cooperation | 1–5 | 4.65 | 0.450 | 0.239** | 0.369** | 0.424** | 1 | | |
From previous reviews, it can be seen that the public used to be viewed as stakeholders to be serviced and protected or as panicked and anxiety-ridden victims during public health emergencies. However, in the current study, the novel idea of the citizen as an active participant and collaborator has emerged, and it can be inferred that high-level PSM resulting from increased confidence may predict cooperation with anti-pandemic measures, such as engaging in volunteerism, providing medical assistance, and staying at home, which are crucial for preventing and controlling the pandemic. Moving forward, considering the various situations arising from cultural traditions, institutional conditions, resources, and the societal context, encouraging and utilizing the public’s desire to prioritize the welfare of others appears to be a low-cost tactic for contributing to crisis interventions. Thus, the government should broaden the channels and opportunities for maintaining citizens’ orderly participation in fighting the spread of the pandemic, which can be accomplished by taking advantage of citizens’ high level of PSM. Moreover, to ensure the effectiveness

### TABLE 4 Hierarchical linear regression models of mediation (n = 1,242)

| Model | B       | Se    | Test statistic | p-value | Indirect effect | Direct effect | Total effect |
|-------|---------|-------|----------------|---------|-----------------|---------------|--------------|
| M1    | 0.456   | 0.022 | 20.599         | <0.001  |                 |               | R = 0.516    |
|       |         |       |                |         | B = 0.141       |               | R-sq = 0.266 |
|       |         |       |                |         | p < 0.05        |               | F = 55.570   |
|       |         |       |                |         |                 |               | P = 0.001    |
| M2    | 0.308   | 0.025 | 12.308         | <0.001  |                 |               | R = 0.426    |
|       |         |       |                |         |                 |               | R-sq = 0.182 |
|       |         |       |                |         |                 |               | F = 30.170   |
|       |         |       |                |         |                 |               | P = 0.001    |
| M3    | 0.036   | 0.023 | 12.308         | 0.107   |                 |               | R = 0.502    |
|       |         |       |                |         |                 |               | R-sq = 0.252 |
|       |         |       |                |         |                 |               | F = 33.910   |
|       |         |       |                |         |                 |               | P = 0.001    |
| M4    | 0.177   | 0.021 | 8.608          | <0.001  |                 |               | R = 0.283    |
|       |         |       |                |         |                 |               | R-sq = 0.080 |
|       |         |       |                |         |                 |               | F = 13.363   |
|       |         |       |                |         |                 |               | P = 0.0001   |
| M5    | 0.298   | 0.026 | 11.412         | <0.001  |                 |               | R = 0.507    |
|       |         |       |                |         |                 |               | R-sq = 0.257 |
|       |         |       |                |         |                 |               | F = 53.014   |
|       |         |       |                |         |                 |               | P = 0.001    |

Note: Unstandardized regression coefficients (B).

### FIGURE 1 Hierarchical linear regression models of mediation (n = 1,242)

[Diagram showing the mediation model with regression coefficients]

Note: Unstandardized regression coefficients (B).
and efficiency of the implementation of policies related to the crisis, government authorities should gradually and continuously strengthen citizens’ public confidence and increase satisfaction with government agencies in daily public service contexts outside of the crisis situation.

4.3 | Limitations

Although the present study yielded valuable results, several limitations should be addressed prior to conducting larger future studies. First, a specific critique could be made of the overuse of cross-sectional surveys because they offer ‘easy data.’ This weakness in the research has begun to be remedied through a greater awareness regarding the limitations of cross-sectional survey research. Second, the research methods and scope are limited by the special context of the pandemic, so we adopted a non-random sampling network survey method, which might have caused a sample bias, affecting the results of this study. However, during a pandemic, collecting data online is a feasible and efficient research method. Last, further studies must be conducted to examine whether the results of the present study are transferable to various cultural contexts. To date, it has been confirmed that different responses from people have existed regarding precautionary measures such as wearing face masks due to different cultural contexts between the Chinese and the Polish. After all, there might have been a high level of social desirability or negative affection affecting the public’s behaviours, attached to the Chinese culture of ‘honor and disgrace’ and ‘social conformity and collective order.’ These inadequacies should be addressed in future research.

5 | CONCLUSIONS

Anti-pandemic measures were instituted nationwide during China’s COVID-19 outbreak. Overall, the current study provides important corroborating evidence on the unique effects of public satisfaction, PSM, public confidence, and public cooperation on the outbreak situation. We acknowledge that Chinese citizens show relatively high levels of public satisfaction, public confidence, and PSM, which were fostered or strengthened during the emergency resulting from the COVID-19 outbreak and, in turn, were potentially translated into greater public cooperation. Our study demonstrates that the PSM of Chinese citizens was positively affected by increasing public confidence and public satisfaction and that it was significantly and strongly associated with positive public cooperation when fighting various pandemics in the past. Moreover, public satisfaction promoted PSM by indirectly improving citizens’ public confidence. To that end, the current findings can potentially contribute to the development of guidelines for practical programs related to anti-pandemic measures in the field of public health. This study shows that all levels of government should focus on initiatives for developing specific public attitudes and behavioural factors, such as public satisfaction, public confidence, PSM, and participatory intentions, to enhance public cooperation with anti-pandemic policies.

ACKNOWLEDGEMENT

The authors thank all the citizens for their generous contributions to this research. We would like to thank Editage (www.editage.cn) for English language editing. The special project of ‘Pandemic and Education’ planned by Education Science Research Institute in Zhejiang Province (2020YQJY88).

ETHICS STATEMENT

All procedures in this survey were in accordance with the ethical standards of the institutional and committee as well as human participants. The Institutional Review Board (IRB) of Harbin Medical University approved this research. The research conformed to the principles embodied in the Declaration of Helsinki.
CONFLICT OF INTEREST
All authors declare that they have no competing interests.

AUTHOR CONTRIBUTIONS
Conception and design: Depin Cao, Tao Sun. Acquisition of data: Bei Liu, XianHong Huang, Hongni Wang, Xin Zhao. Analysis and interpretation of data: Shu’e Zhang, Yu Shi. Drafting of the manuscript: Shu’e Zhang, Tao Sun. Critical revision of the manuscript for important intellectual content: Shu’e Zhang, Tao Sun. Statistical analysis: Shu’e Zhang, Tao Sun. Obtaining funding: Tao Sun. Administrative, technical, or material support: Xiaohe Wang. Supervision: Depin Cao.

DATA AVAILABILITY STATEMENT
The data sets used and/or analysed during this study are available from the corresponding author on reasonable request.

ORCID
Xiaohe Wang https://orcid.org/0000-0001-9650-5721
Depin Cao https://orcid.org/0000-0001-9079-4358

REFERENCES
1. Wildersmith A, Freedman DO. Isolation, quarantine, social distancing and community containment: pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. J Travel Med. 2020;27(2). doi:10.1093/jtm/taaa020
2. Wang C, Pan R, Wan X, et al. A longitudinal study on the mental health of general population during the COVID-19 epidemic in China. Brain Behav Immun. 2020;87:40-48. doi:10.1016/j.bbi.2020.04.028
3. Tran BX, Phan HT, Nguyen TPT, et al. Reaching further by village health collaborators: the informal health taskforce of Vietnam for COVID-19 responses. J Glob Health. 2020;10(1):010354. doi:10.7189/jogh.10.010354
4. Wang C, Pan R, Wan X, et al. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. Int J Environ Res Public Health. 2020;17(5):1729. doi:10.3389/fpsyg.2020.569981
5. Pan A, Liu L, Wang C, et al. Association of public health interventions with the epidemiology of the COVID-19 outbreak in Wuhan, China. J Am Med Assoc. 2020;323:1915. doi:10.1001/jama.2020.6130
6. Tan W, Hao F, McIntyre RS, et al. Is returning to work during the COVID-19 pandemic stressful? A study on immediate mental health status and psychoneuroimmunity prevention measures of Chinese workforce. Brain Behav Immun. 2020;87:84-92. doi:10.1016/j.bbi.2020.04.055
7. Elbanna A, Bunker D, Levine L, Sleigh A. Emergency management in the changing world of social media: framing the research agenda with the stakeholders through engaged scholarship. Int J Inf Manag. 2019;47:112-120. doi:10.1016/j.ijinfomgt.2019.01.011
8. Munro N, Duckett J. Explaining public satisfaction with health-care systems: findings from a nationwide survey in China. Health Expect. 2015;19(3):654-666. doi:10.1111/hex.12429
9. Jackson J, Sunshine J. Public confidence in policing: a neo-Durkheimian perspective. Br J Criminol. 2006;47(2):214-233. doi:10.1093/bjc/azl031
10. Levi M, Stoker L. Political trust and trustworthiness. Annu Rev Political Sci. 2000;3(1):475-507. doi:10.1146/annurev.polisci.3.1.475
11. Li L. The magnitude and resilience of trust in the center: evidence from interviews with petitioners in Beijing and a local survey in rural China. Mod China. 2013;39(1):3-36. doi:10.1177/0097770412450661
12. Schott C, Neumann O, Baertschi M, Ritz A. Public service motivation, prosocial motivation and altruism: towards disentanglement and conceptual clarity. Int J Public Adm. 2019;42:1-1211. doi:10.1080/01900692.2019.1588302
13. Perry JL, Recascino LW. The motivational bases of public service. Publ Adm Rev. 1990;50(3):367-373. doi:10.2307/976618
14. Rainey HG, Steinbauer P. Galloping elephants: developing elements of a theory of effective government organizations. J Public Adm Res Theory. 1999;9(1):1-32. doi:10.2307/1181850
15. Homberg F, McCarthy D, Tabvuma V. A meta-analysis of the relationship between public service motivation and job satisfaction. Publ Adm Rev. 2015;75(5):711-722. doi:10.1111/puar.12423
SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher’s website.

How to cite this article: Zhang S, Wang X, Shi Y, et al. What motivates individual public service motivation and cooperation at the initial stage of the COVID-19 outbreak: a cross-sectional survey. Int J Health Plann Manage. 2022;37(1):513-527. https://doi.org/10.1002/hpm.3343