



# A comparative study of Chinese and American preservice teachers' intention to teach online based on the Theory of Planned Behavior

Yang Wang<sup>1</sup> 

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## Abstract

Online learning emerged as a solution to continue with teaching and learning during the Coronavirus (COVID-19) pandemic. Nonetheless, teaching online consumes considerable time and put pressure on teachers' daily lives. Thus, the internal mechanism of preservice teachers' intention to teach online is analyzed in this study. Specifically, this study analyzed preservice teachers' intention to teach online in China and America to illuminate the internal mechanism of teachers' intention to teach online in different cultural backgrounds. One hundred seventy-six Chinese preservice teachers and two hundred forty-one American preservice teachers participated in this study. The confirmatory factor analysis supported that the Intention to Teach Online Scale was reliable in three constructs: online teaching attitude, perceived control, and subjective norm. The result demonstrates that there is a significant difference between Chinese and American preservice teachers' intention to teach online in the online teaching attitude and perceived control. In addition, it is supported that there is a significant difference between the effects of Chinese and American preservice teachers' teaching attitude, perceived control, and subjective norm on their intention to teach online. Moreover, there is a difference in the relationships among Chinese and American teachers' online teaching attitudes, perceived control, and subjective norm. The preservice teachers' demographic features can be factors that caused this difference. Research and practice implications of this study are proposed.

**Keywords** Intention to teach online · Comparative study · Theory of Planned Behavior · Preservice teachers · China and America

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✉ Yang Wang

<sup>1</sup> School of Education Science, Nanjing Normal University, #1 Wenyuan Road, Nanjing, Jiangsu 210046, China

## 1 Introduction

Students around the world increasingly attend online learning during COVID-2019 (McMurtrie, 2020). Online education has become an essential part of student's daily life. It is a promising method for both formal and informal education (Brennan et al., 2022; Scherer et al., 2021). Online education makes it possible for learners to balance the demands of work, school, and life (Wang & Liu., 2020). Although online teaching has become popular all over the world, teachers still doubt the effectiveness of online teaching (Wang et al., 2019b). It will be helpful to understand the essential factors that predict preservice teachers' intention to teach online. It can also demonstrate whether preservice teachers are ready to teach online. That is, the internal mechanism of preservice teachers' intention to teach online is analyzed in this study.

Bajaj et al. (2021) supported that the use of online teaching is determined by the teacher's intention to teach online rather than online teaching skills. Some cross-cultural studies on technology-supported education proposed that culture is an essential factor to technology acceptance (Abbasi et al., 2015; Tarhini et al., 2015). Among these studies, Tarhini et al. (2015) focused on students' intention to e-learning and found that there is a difference between British and Lebanese students' perceived ease of use and social norms. Abbasi et al. (2015) found that the effect of management support was stronger for the participants in a collectivist society. In these cases, the Technology Acceptance Model (TAM) was used to explain students' intention to technology-supported learning. TAM is more focused on the attitude toward technology, it is not enough to explain teachers' intention to teach online. Theory of Planned Behavior (TpB) is used to explain the internal indicators that influence individuals' intention to behavior including the attitude, subjective norm, and perceived control. It is more comprehensive to understand teachers' intention to teach online compared with the TAM. However, few studies compared teachers' online teaching intentions based on the TpB. Understanding preservice teachers' intention to teach online in different cultural backgrounds can be helpful for practitioners. It can inform managers and online teachers about the key factors contributing to teachers' intention to teach online. If there is a difference in different cultural backgrounds, the managers in the specific background could concentrate on the most essential factor in his background to maximize his practice. Thus, the purpose of this study is to explore differences between Chinese and American preservice teachers' intention to teach online in online teaching attitude, perceived control, and subjective norm. The reason why Chinese and American teachers are considered in the current study is that Alshare et al. (2006) reported that there are differences in teachers' acceptance of online teaching in collectivist and individualistic countries. The comparison of the United States, which represents an individualistic country, and China, which represents a collectivist country, can help provide insight into the specific differences between collectivist and individualistic countries and provide valuable references for countries in similar situations.

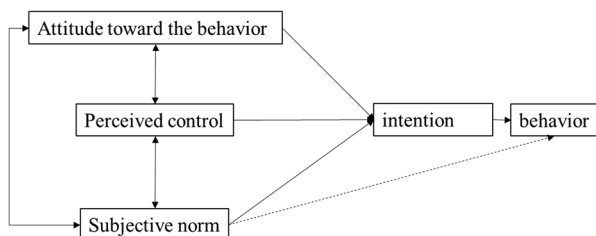
## 2 Literature review

### 2.1 Theory of Planned Behavior

Ajzen (1991) proposed that the Theory of Planned Behavior (TpB) is a model of the psychological process that regulates the relationship between observed acceptance and behaviors. The theory supports that behavioral intention depends on individual attitudes, subjective norms, and perceived behavioral control toward the behavior. If a person has a strong intention to act (for example, teaching online), he is likely to act and become a self-regulating practitioner. Behavioral intention can predict an individual's beliefs and motivations. It is an essential factor in determining whether an actor can succeed. As shown in Fig. 1, whether a teacher would use online teaching mainly depends on three factors, attitude toward the online teaching, subjective norm, and perceived control. Attitude toward online teaching is an individual's internal assessment of online teaching. Subjective norms can be evaluated by the perceived necessity of an individual's behavior. The more an individual perceives the significance of his engagement in the behavior, the greater the individual's motivation to carry it out (Ajzen, 1991). The subjective norm is the pressure from the context. For example, it can be determined by the regulations of the school. Nie et al. (2020) supported that subjective norm can influence an individual's behavior intention. If the attitude is the internal driving force and the subjective norm is the external force, the perceived control is the perceptions from both inside and outside support to fulfilling a task successfully. Teachers' intention to teach online is the teacher's beliefs and opinions about online teaching and learning (Valtonen et al., 2015).

There are many studies on the use of the Theory of Planned Behavior (TpB). For example, Teo et al. (2016) supported that the constructs in the TpB were helpful in explaining teachers' intention to use technology in their work. Nie et al. (2020) established a hypothetical model based on the TpB, explaining the relationships between individuals' attitudes, subjective norms, perceived behavioral control, social image, and the intention to use mobile English learning check-in services. Lung-Guang (2020) investigates the relationship between self-regulated learning and planned behavior of students' participating in massive open online courses (MOOCs) at universities based on an extended TpB. Hamiza et al. (2020) surveyed students' adoption of e-learning platforms based on Theory of Planned Behavior (TpB). Songkram & Chootongchai (2022) explored the relationships among the

**Fig. 1** Theory of Planned Behavior (Ajzen, 2002)



personal characteristic (perceived usefulness and perceived ease of use) and quality characteristics (service quality, system quality, and information quality) on the continuous intention to use Education as a Service from instructors and learners based on the TpB. These studies supported that TpB can be used to scale teachers' intention to teach online.

The Theory of Planned Behavior (TpB) supports that the individual's intention to a behavior is mainly influenced by the attitude, subjective norm, and perceived control. An Intention to teach online Scale (ITOS) based on the TpB was constructed to find out the preservice teachers' intention to teach online from online teaching attitude, perceived control, and subjective norm (Stein & Wanstreet, 2017).

## 2.2 Effects of culture on attitude towards technology

Among the limited cross-cultural literature on technology-supported education, Straub et al. (1997) supported that teaching attitude had significant effects on the use of e-mail for Americans and that the same effect was not significant for Japanese. Van Slyke et al. (2010) also found culture-based differences on the perceived advantage of e-commerce between Americans and Indians. In both cases, the perceived attitude was a significant predictor of technology used for the individualistic country (America), but not for the collectivist country (Japan and India). Hung and Jeng (2013) investigated 119 American educational technology graduate students' intentions to participate in online teaching with a 5-point Likert scale and found that their score on perceived control is a little higher than the neutral level (Five-point, Mean = 3.24). Wolusky (2016) surveyed Metropolitan State University and found that most faculties reported a positive attitude towards the perceived usefulness and perceived ease of use on asynchronous virtual teamwork. Huang et al. (2019) surveyed how cultural values influenced Chinese and Spanish university teachers' intentions to use technology and found that the relationships between these variables (subjective norms, culture, and behavioural intention) were different in the Spanish and Chinese samples. Pratama (2021) found that the cultural differences between the West and the East might play an important role in the effect of social influence in students' mobile learning acceptance. Khan et al. (2022) also found that culture influenced acceptability and accessibility of distance education through qualitative research in Dubai. Although these studies supported that there may be some differences between teachers' intention to teach online in individualistic countries (i.e., America) and collectivist countries (i.e., China), the specific differences in online teaching attitude, perceived control, and subjective norm need further exploration.

## 2.3 Intention to teach online

The intention is the motivational factor that influences behavior. It is an indicator of how hard an individual is willing to try and how much effort he is planning to exert, to perform the behavior (Ajzen, 1991). That is, the intention to teach online is the start of online teaching. Online teaching is different from traditional face-to-face teaching. In an online platform, teachers become the organizer, facilitators, and

evaluators of learning activities. Therefore, many teachers refuse the online teaching method and maintain the traditional way to reduce unnecessary work. More importantly, online teaching has not reduced the amount of work for teachers. On the contrary, a successful online learning community requires more time than in traditional classrooms (Wang et al., 2021).

There are many studies on the intention to learn online. Maheshwari (2021) found that institutional support and perceived enjoyment (satisfaction) affects the students' intentions to study the course online through surveying students in Vietnam. Punjani and Mahadevan (2022) supported that COVID-19 positively influenced students perceived Net Benefits and intention toward online learning through surveying Indian college students. Chou and Chou (2021) explored the factors underlying teachers' continuance intention toward online teaching beyond the COVID-19 pandemic and found that teachers' preference for online instruction lies in resources, flexibility, and teaching effectiveness. Existing studies mainly focused on students' intention to teach online or the teachers' general understanding of online teaching. Few studies focused on teachers' specific understanding of online teaching attitude, perceived control, and subjective norms in different cultural backgrounds.

As for the influential factors of teachers' intention to teach online, Martin et al. (2019) show that teachers' lack of confidence in online teaching skills can affect their intention to teach online. Alshare et al. (2006) found that subjective norms, communication efficiency, and flexibility have an impact on teachers' acceptance to teach online. They found that subjective norm has a positive effect on teachers' intention to teach online, and communication efficiency has a positive effect on American online teachers' acceptance, and flexibility has a positive impact on intention to teach online for Korean teachers. As for factors including the attitude, subjective norm, and perceived control on teachers' intention to teach online in China and America need further exploring.

Understanding the role of culture in preservice teachers' intention to teach online can be helpful to enhance preservice teachers' intention to teach online in different backgrounds. Wang and Reeves (2007) proposed that culture is an important issue in online education. Findyartini et al. (2016) proposed that cultural background has influences on instructors' teaching. Constructivism supported that social culture is essential to teaching and learning perception which determined how the teacher "see" themselves and students, and how they are positioned by the social roles available in a learning context. As for the specific effects of culture on preservice teachers' online teaching attitude, subjective norm, and perceived control still need to be explored.

### 3 Research hypotheses

The difference between Chinese and American cultural backgrounds may cause preservice teachers' different perceived intentions to teach online. Though existing studies laid a foundation to teachers' intention to teach online, it is still unknown on Chinese and American preservice teachers' online teaching attitude, subjective norm, and perceived control, and the effects of the three factors on their intention to teach online, as

well as the relationships among the three factors. Thus, this study is to further explore the following hypotheses.

H1: American preservice teachers' scores on the items about the intention to teach online, online teaching attitude, subjective norm, and perceived control are significantly higher than those Chinese preservice teachers.

H2: American preservice teachers' attitude, perceived control, and subjective norm are more related to their intention to teach online than Chinese preservice teachers.

H3: Relationships among attitude, subjective norm, and perceived control are higher for American preservice teachers than for Chinese preservice teachers.

## 4 Method

### 4.1 Instrument

In this study, three factors of TpB framework proposed by Cooke and Sheeran (2004) were used to construct the 12-item measurement of teachers' intention to teach online. The confirmatory factor analysis was used to determine the number of factors in both the Chinese and American datasets. Ajzen (2002) supported that behavioral attitude is not only related to an individual's will, but also to an individual's perceived opportunities, abilities, resource availability, and self-efficacy. Perceived control is supported to have an indirect effect on the behavior. Each variable contains two elements: belief and corresponding judgment. Thus, the Intention to Teach Online Scale (ITOS) was constructed based on the TpB (Chu & Chen, 2016). In addition to measuring with items, online teaching intentions can also be predicted by the three aspects: the online Teaching Attitude (TA), Subjective Norm (SN), and Perceived Control (PC). The ITOS used by Chinese and American participants is the same. Chinese participants used the Chinese version and American participants used the English one. Given that there may be a chance for participants to misinterpret the meaning of the translated questionnaire, the back-translation method was used to identify if there was any significant discrepancy between the Chinese and English questionnaires (Brislin, 1970). It was examined to be reliable for items are almost the same when they are translated from Chinese to English. The scale was examined through a pretest with 59 Chinese preservice teachers and 61 American preservice teachers. Cronbach's alphas of the Chinese and American pretests are 0.75 and 0.79 which indicate that the scale was reliable (Cronbach, 1951). The Kaiser-Meyer-Olkin (KMO) and Bartlett test of the Chinese and American pretest results are 0.83 ( $p < .001$ ) and 0.77 ( $p < .001$ ) which indicate that the data were adequate to apply factor analysis. Items were improved according to participants' suggestions.

### 4.2 Participants and data Collection

Chinese participants are preservice teachers at a university in central China. American participants are preservice teachers at a university in eastern America. All participants are in online courses to improve their online teaching skills. The

intention to teach online questionnaire was administrated to the participants in their online courses through a link. They participated in this survey anonymously. It took participants 8 to 10 min to complete this questionnaire. The questionnaire can be submitted only if all the items were answered. One hundred seventy-six Chinese preservice teachers completed the questionnaire. Two hundred forty-one American preservice teachers participated in this study (as shown in Table 1). Most of them have no online teaching experience, but they had some online learning experience. Most of them are younger than 30 years old. The participants had bachelor's or higher educational backgrounds.

### 4.3 Data analysis

The internal consistency reliability was measured to examine the reliability of the Intention to Teach Online Scale (ITOS). Confirming Factor Analysis (CFA) is more appropriate than exploratory factor analysis (EFA) in studies with a priori theory and pre-validated measurement scales (Schaap, 2019), as in this study. Thus, the CFA was used to examine the 12-item scale. The CFA was estimated with robust maximum likelihood estimator with lavaan package in R (Rossel, 2012). The model fit is evaluated by chi-square ( $\chi^2$ ), Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), Comparative Fit Index (CFI), Goodness of Fit Index (GFI), Tucker Lewis Index (TLI), Normed Fit Index (NFI). Factor loadings and R-squares are also double-checked in considering the item-model fit. Generally, items with factor loadings higher than 0.4 can be defined as valid items and kept in further data analysis processes (Tehranneshat et al., 2021).

**Table 1** Demographic information of Chinese and American participants

	Demographics	China		US	
		N= 176	Proportion	N= 241	Proportion
Gender	Male	42	23.86%	57	23.65%
	Female	134	76.14%	184	76.35%
Age	< 30 years old	144	81.82%	171	70.95%
	≥ 30 years old	32	18.18%	70	29.05%
Educational level	Bachelor degree	97	55.11%	28	11.62%
	Graduate	79	44.89%	213	88.38%
Online teaching experience	< 1 year	171	97.16%	236	97.93%
	≥ 1 year	5	2.84%	5	2.07%
Online learning experience	< 3 year	143	81.25%	183	75.93%
	≥ 3 years	33	18.75%	58	24.07%

## 5 Results

### 5.1 Scale validation

Although the theory of planned behavior (TpB) is supported to be reliable (Ajzen, 2002), it is used in the Chinese preservice teachers' intention to teach online for the first time. The CFA model with Chinese data reported a good model fit with  $\chi^2(41)=69.083$ ,  $p=.004$ , RMSEA=0.062, SRMR=0.048, CFI=0.854, GFI=0.907, TLI=0.954, NFI=0.903. When checking the factor loadings for each item, all items report reasonable factor loadings when the latent variable is standardized. Hence, the CFA result supported that the three factors measurement model fit the Chinese data well. The results of CFA in American participants data also reported an acceptable model fit with  $\chi^2(38)=98.197$ ,  $p=.000$ , RMSEA=0.078, SRMR=0.040, CFI=0.950, GFI=0.951, TLI=0.928, NFI=0.914 (Schaap, 2019). When checking the factor loadings for each item, items report reasonable factor loadings. The CFA result supported that the three factors measurement model fit the American data well. Results indicated generally the original model with three factors fit the data. The CFA of the intention to teach online measurement model rested on the assumption that intention to teach online relies on the online teaching attitude, perceived control, and subjective norm.

### 5.2 Differences between chinese and american teachers' intention to teach online

To test the H1, the 2-tailed t-test was conducted. The result supported that there are significant differences between Chinese and American preservice teachers' intention to teach online, online teaching attitude, and perceived control (as shown in Table 2). To make the three aspects comparable between China and America, the Chinese and American preservice teachers' teaching attitude, perceived control, and subjective norm were scaled with the same items. The teaching attitude was scaled with Q1, Q2, and Q7. The perceived control was scaled with Q5, Q6, and Q10. The subjective norm was scaled with Q8, Q9, and Q11. The instructors' intention to teach online was measured with Q3, Q4, and Q12. *The American preservice teachers' average score on the online teaching attitude were statistically significantly higher*

**Table 2** Results of group comparison

Variable	China (n = 176)		America (n = 241)		t
	M	SD	M	SD	
Online Teaching Attitude(TA)	12.08	0.123	12.73	0.146	3.358**
Perceived Control(PC)	9.87	0.145	11.64	0.169	7.692***
Subjective Norm(SN)	10.79	0.136	10.87	0.129	0.443
Intention to teach online	9.61	0.138	12.05	0.131	12.715***

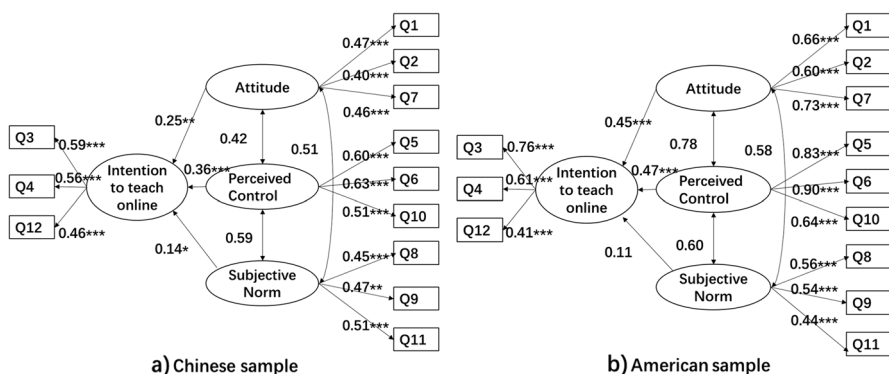
Note. \*\* $p < .01$ , \*\*\* $p < .001$  statistically significant at a 95% confidence level (2-tailed)



than those of the Chinese preservice teachers ( $p = .001$ ,  $M_{\text{China}} = 12.08$ ,  $SD_{\text{China}} = 0.123$ ;  $M_{\text{America}} = 12.73$ ,  $SD_{\text{America}} = 0.146$ ). In addition, the American preservice teachers perceived control of online teaching is statistically significantly higher than those of the Chinese preservice teachers ( $p < .001$ ,  $M_{\text{China}} = 9.87$ ,  $SD_{\text{China}} = 0.145$ ;  $M_{\text{America}} = 11.64$ ,  $SD_{\text{America}} = 0.169$ ). However, the American preservice teachers' subjective norm of online teaching demonstrated no significant difference with those Chinese preservice teachers ( $p = .658$ ,  $M_{\text{China}} = 10.79$ ,  $SD_{\text{China}} = 0.136$ ;  $M_{\text{America}} = 10.87$ ,  $SD_{\text{America}} = 0.129$ ). Overall, the American preservice teachers showed statistically significant higher intention to teach online than the Chinese preservice teachers ( $p < .001$ ,  $M_{\text{China}} = 9.61$ ,  $SD_{\text{China}} = 0.138$ ;  $M_{\text{America}} = 12.05$ ,  $SD_{\text{America}} = 0.131$ ). The result partly supported the H1. American preservice teachers scored higher than Chinese preservice teachers in the online teaching attitude, perceived control, and intention to teach online, especially in the online teaching effectiveness, online teaching communication, and relationship building.

### 5.3 Effects of online teaching attitude, subjective norm, and perceived control on intention to teach online

To test the H2, the structural model with the two samples was examined. As shown in Fig. 2, all the factor loadings are statistically significant and larger than 0.4 when the latent variable is standardized. The factor loading result supported that the measurement model is reliable (Tan & Ong, 2019). The Chinese preservice teachers' online teaching attitude ( $b = 0.25$ ,  $p = .001$ ), perceived control ( $b = 0.36$ ,  $p < .001$ ) and subjective norm ( $b = 0.14$ ,  $p = .02$ ) demonstrated significant effects on their intention to teach online. The American preservice teachers' online teaching attitude ( $b = 0.45$ ,  $p < .001$ ), perceived control ( $b = 0.47$ ,  $p < .001$ ) demonstrated higher significant effects on their intention to teach online. Their subjective norm demonstrated no significant effects on their intention to teach online ( $b = 0.11$ ,  $p = .16$ ). The



**Fig. 2** Results of the CFA: A three-factor model with factor loadings for Intention to Teach Online -Two samples. Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ . The number on the one-direction arrow between the observed variables and latent variables are the standardized factor loadings for latent variables. The number on the one-direction arrow among the latent variables are the standardized coefficients of the regression. The number on the double direction arrows among the latent variables are the covariances

H2 was partly supported. That is, the effects of the preservice teachers' online teaching attitude and perceived control on their intention to teach online are higher for Americans than for Chinese. The effect of teachers' subjective norm on their intention to teach online is higher for Chinese than Americans.

#### 5.4 Relationships among preservice teachers' online teaching attitude, perceived control, and subjective norm in China and America

To test the H3, the structural model with the two samples was examined. As shown in Fig. 2, the confirmatory factor analysis (CFA) result supported that the relationship between preservice teachers' attitude and perceived control is higher for Americans than Chinese ( $r_{\text{American}} = 0.78$ ;  $r_{\text{Chinese}} = 0.42$ ). Furthermore, the results demonstrated that the relationship between preservice teachers' attitude and subjective norm is higher for Americans than for Chinese ( $r_{\text{American}} = 0.58$ ;  $r_{\text{Chinese}} = 0.51$ ). Results supported that the relationship between the preservice teachers' perceived control and the subjective norm is higher for Americans than for Chinese ( $r_{\text{American}} = 0.60$ ;  $r_{\text{Chinese}} = 0.59$ ). Results support the H3. That is, *relationships among preservice teachers' online teaching attitude, subjective norm, and perceived control are higher for Americans than for Chinese.*

## 6 Discussion

### 6.1 Differences between chinese and american preservice teachers' scores on intention to teach online

The t-test result supported that there are significant differences between Chinese and American preservice teachers' online teaching attitude, perceived control, and intention to teach online. One explanation for this difference is that the number of preservice teachers with a graduate degree in American participants is more than that in Chinese participants. The educational background is essential to online teaching competencies which can influence their intention to teach online (Sogillo et al., 2016). Another factor that causes this difference is the difference between Chinese and American preservice teachers' online learning experience. Shea (2007) supported that the more a teacher knows about online teaching, the higher intention to teach online he or she would have. Most Chinese participants did not experience completely online courses in school education. They do not believe that the teacher can build a trust relationship with students. It is also supported by Li et al. (2010) who supported that the Chinese are more focused on the social presence and the sense of being involved in activity than Americans. Online teaching is limited by the teacher presence which is difficult to be accepted by the Chinese participants who are used to the high-context nature of communications which rely more on social cues (Wang et al., 2019a). But the low presence of online teaching may be sufficient for low-context communications

among Americans. This may be one of the reasons why Chinese participants scored higher on the working load of online teaching than Americans.

## **6.2 Effects of online teaching attitude, subjective norm, and perceived control on intention to teach online**

The CFA result supported that preservice teachers' attitude, perceived control, and subjective norm are significant indicators of Chinese preservice teachers' intention to teach online. As for American preservice teachers, only the attitude and perceived control are significant indicators of their intention to teach online. Their subjective norm is not a significant indicator of their intention to teach online. This result is different from Knabe (2012) who found that the subjective norm is the strongest predictor of American public relations teachers' intention to teach online. This result can be caused by participants' different demographic backgrounds in this study. It is supported by Ajzen (1991) who proposed that one limitation of the TpB is not taking the personality factors into account. The different items of the subjective norm may be another factor that caused this difference. Moreover, American preservice teachers' teaching attitude and perceived control demonstrated higher effects on their intention to teach online than Chinese, while Chinese preservice teachers' subjective norm demonstrated higher effects on their intention to teach online than Americans. Therefore, it indicated that individualism emphasizes their perceived control more than collectivism, while collectivism emphasizes the subjective norm more than individualism which is consistent with Bandyopadhyay and Fraccastoro (2007). Rubin et al. (2016) also supported those individualists are driven by self-oriented factors. As for the outside force such as subjective norm, Chinese preservice teachers are higher than the American preservice teachers which is supported by Cohen et al. (2016) who found that collectivism emphasizes context than individualism.

## **6.3 Relationships among teachers' online teaching attitude, perceived control, and subjective norm in China and America**

Relationships among preservice teachers' online teaching attitude, subjective norm, and perceived control are higher for Americans than for Chinese. Besides, American preservice teachers' online teaching attitudes were more strongly related to their perceived control than Chinese, while Chinese preservice teachers' teaching attitudes were more related to their subjective norm. It may indicate that individualism emphasizes their perceived control more than collectivism, while collectivism emphasizes the subjective norm which is supported by Bandyopadhyay and Fraccastoro (2007). Besides, American preservice teachers' perceived control has a stronger relationship with their subjective norm than Chinese teachers. It indicates that teachers' perceived control is more essential in America than in China.

## 7 Conclusion

This study provides implications for both research and practice. In research, this study provides empirical evidence for the validity of applying the TpB to understand preservice teachers' online teaching intention in different cultures. This model could be applied to empirical studies of other technologies, such as virtual reality technologies and social interaction technologies. The CFA offers a robust approach for comparing model paths across groups. In practice, the empirical findings from the two countries provide convincing evidence for the reliability of the model. It can be used both in western and eastern backgrounds. Namely, teachers' intention to teach online can be scaled through their online teaching attitude and subjective norm.

There are some limitations in this study. First, the small sample size may influence the generalizability of the current results. Second, the self-report results may affect the objectivity of the findings. Third, the different educational levels of Chinese and American participants may be a confounding factor in the differences in their attitudes toward online teaching. Furthermore, in addition to attitudes, perceived control, and subjective norm, other factors, such as the teachers' social presence, are also key factors influencing students' intention toward online teaching. Therefore, more factors could be considered into the model in future studies to enhance the interpretability of the model. Additionally, more sample size and data collection methods could be used in future studies.

Although there are some limitations in the current study, the findings could give researchers and practitioners suggestions to enhance teachers' intention to teach online. Specifically, this study demonstrates that there is still a gap between Chinese and American preservice teachers' intention to teach online both in the online teaching attitude, perceived control, and intention to teach online. For both Chinese and American preservice teachers, the perceived control demonstrated the highest effects on their intention to teach online which indicates that we need to improve preservice teachers perceived control to improve their intention to teach online. The attitude towards teaching online is another essential factor to teachers' intention to teach online for both Chinese and American preservice teachers. It indicates that more work should be done on preservice teachers' perceived control and teaching attitude. Given the relatively low scores in path coefficients between some of the variables, more work can be done to identify the possible structure of TpB in intention to teach online.

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**Data availability** The data that support the findings of this study are available from the author upon reasonable request.

## Declarations

**Conflict of interest** The author(s) declare(s) that there is no conflict of interest regarding the publication of this article.

**Ethical approval** The submitted work is original and have not been published elsewhere or submitted to more than one journal for simultaneous consideration.

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