

# Effects of Profession-Related Support from Different Sources on Subjective Well-Being Among Chinese Tuition-Free Normal University Students: The Mediation of Intrinsic Motivation for Teaching and Moderation of Dispositional Gratitude

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**Background:** Tuition-free normal university students (TFNUS) have become an important group in Chinese normal university. The subjective well-being of TFNUS not only affects their own mental health, and decisions to stay in the teaching profession, but also can significantly influence their future student's perception of stress, learning motivation and academic achievement. However, little attention has been paid to the relationship between positive factors and TFNUS's subjective well-being and the underlying mechanism and boundary condition. The purpose of this study is to examine whether, how and when profession-related support from different sources influences TFNUS's subjective well-being.

**Methods:** Based on the Conservation of Resource Theory and Self-Determination Theory, a time-lagged design was used to collect two wave data (N=526), and we use dominance analysis to examine the relative importance of profession-related support from significant others (eg, government, teachers, and parents) in relation to subjective well-being among Chinese tuition-free normal university students, and propose a moderated mediation model to reveal the mediating (intrinsic motivation for teaching) and moderating (dispositional gratitude) effects of this relation.

**Results:** Profession-related government, teacher, and parent support were all positively related to subjective well-being, in a descending order of relative importance were as follows: teacher, parent and government. Furthermore, intrinsic motivation for teaching mediated the relationship between profession-related support and subjective well-being. In addition, dispositional gratitude only moderated the relationship between two sources (teacher and parent, respectively) of profession-related support and intrinsic motivation for teaching. Moreover, dispositional gratitude moderated the strength of the indirect effect of profession-related teacher support and parent support on subjective well-being (through intrinsic motivation for teaching), and the mediated relationship was stronger for those with high (vs low) dispositional gratitude.

**Conclusion:** The profession-related support had positive direct effect on tuition-free normal university students' subjective well-being, as well as indirect effect through intrinsic motivation for teaching. Dispositional gratitude moderated the relationship between of profession-related teacher, parent support and intrinsic motivation for teaching, and the strength of the indirect effect of this support on subjective well-being.

**Keywords:** profession-related support, subjective well-being, Chinese tuition-free normal university students, intrinsic motivation for teaching, dispositional gratitude

## Introduction

Subjective well-being refers to a person's perception and experience of positive and negative emotional responses and global and specific cognitive evaluations of satisfaction with life.<sup>1</sup> From 2007, the Ministry of Education of China has been

implementing a policy which is called “Free Normal Education” for college students majoring in education in six main normal universities affiliated to the Ministry of Education. Subsequently, the Chinese government begin to encourage more normal universities to carry out free teacher education in order to train a large number of primary, secondary, and kindergarten teachers, consequently the tuition-free normal university students (also known as tuition-free pre-service teacher) have become an important group in Chinese normal university, and they also have become target populations for researchers. In recent years, the subjective well-being of TFNUS may prove to be an area of increasing concern, because it may not only affect their own mental health,<sup>2</sup> and decisions to stay in the teaching profession,<sup>3</sup> but also can significantly influence their future student’s perception of stress,<sup>4</sup> learning motivation and academic achievement.<sup>5</sup> However, little attention has been paid to the positive factors (eg, profession-related support) that may influence TFNUS’ subjective well-being. Furthermore, there is no study to investigate the specific-domain support which centers on TFNUS’s profession, and comparing the relative prediction of profession-related support from different sources, such as government, teacher and parent, on subjective well-being. Therefore, the first aim of our study is to explore the relationship between profession-related support and TFNUS’s subjective well-being and identify the relative importance of each source, in order to provide new knowledge for the previous research.

Furthermore, scholars have identified the cognitive and emotional mechanism underlying the association between the relationship between social support and college students’ subjective well-being.<sup>6,7</sup> In view of the specificity of sample and domain-based support, probably there exists different mechanism to link the profession-related support with TFNUS’s subjective well-being. On the basis of past studies on pre-service teacher,<sup>8,9</sup> we speculate that the intrinsic motivation for teaching may be a potential mediator of forementioned relationship. Additionally, in Chinese culture, it has always had the tradition of gratitude.<sup>10</sup> After receiving the profession-related support from significant others, TFNUS with different dispositional gratitude may differ in levels of intrinsic motivation for teaching and subjective well-being. We predicted that the dispositional gratitude may be the boundary condition of profession-related support’s effect on intrinsic motivation for teaching and subjective well-being. Thus, examining the mediating effect of intrinsic motivation for teaching and the moderating effect of dispositional gratitude is another aim of our study.

To sum up, the purpose of this study is to examine whether, how and when profession-related support from different sources (eg, government, teacher, parent) influences TFNUS’s subjective well-being. The present study contributes to the existing knowledge in four important ways. First, we initiated a less studied relationship between profession-related support and subjective well-being. If past studies demonstrated the relationship between social support and subjective well-being, little is known about the effect of profession-related support from different sources on subjective well-being, including relative effect sizes. Second, we revealed the underlying mechanism linking profession-related support and subjective well-being. By now, the mechanism relating profession-related support to subjective well-being has not been explored. Third, we introduced trait gratitude as the moderating variable and examined the interaction between profession-related support, trait gratitude on intrinsic motivation for teaching, which can extend the literature about the boundary conditions of the relationship between profession-related support, intrinsic motivation and subjective well-being. Last, by developing and testing a moderated mediation model, the present study can not only enrich previous research on the studying variables but also can have some implications for enhancing TFNUS’s subjective well-being.

## Literature and Hypothesis

### Profession-Related Support and Subjective Well-Being

There was widespread evidence establishing a positive association between social support and subjective well-being among college students. However, very little is known whether profession-related support can predict subjective well-being among TFNUS, let alone the differential predictions of profession-related support from different sources. Significant others, such as government, teachers and parents, represent the people who most frequently interaction with them during TFNUS’s teacher education, and they are the main sources of students’ profession-related social support. According to the Conservation of Resource (COR) Theory,<sup>11</sup> TFNUS are motivated to acquire, maintain, and invest in appropriate resources to complete tasks and accumulate resources to avoid possible professional stress in the future. Considering the profession-related support is an important positive resource, which can not only help TFNUS to obtain the resource gain spirals but also can protect against their resource loss spirals, so we develop the following hypothesis mainly based on COR.

First, Chinese government plays an important role in professional education of TFNUS. Government determines the origins, formulation and implementation of policies concerning teaching profession for TFNUS. For instance, they can gain support from the government, such as they do not have to pay for the tuition or the accommodation, even can receive living allowances. However, TFNUS are required to go back to where they come to teach in primary and secondary schools, and so on. When facing these policies enacted from government, whether and to what extent TFNUS perceive the support? Does the perception affect TFNUS' subjective well-being? Overall, we argue that TFNUS can perceived the profession-related support from government. As an external resource, government support may make TFNUS experience a positive affective state, and make more positive evaluation on their teaching profession, subsequently improve their subjective well-being. Up to date, there is no research to address forementioned questions. However, there were some empirical findings that indirectly support our arguments. Scholars found that government policy satisfaction positively predicted TFNUS's professional identity,<sup>12,13</sup> and professional identity was positively correlated with subjective well-being.<sup>13,14</sup> Similar to government support, administrative support and its positive effects have been proved by several studies. Specifically, administrative support was consistently identified to be the most important factor influencing teacher retention.<sup>15,16</sup> Moreover, researchers also found that administrative support had strong, significant direct and indirect effects on special education teachers' intentions to leave.<sup>17,18</sup> Additionally, a study with US public school teachers showed that administrative support was the most significant predictor of teachers' job satisfaction,<sup>19</sup> and the administrative support from teacher leaders can help teachers to do their work.<sup>20</sup> Meanwhile, the teachers' perceptions of the support they received from administrators were positively associated with teacher self-efficacy.<sup>21</sup> A recent study on the relative importance of different administrative supports for teacher retention in different types of schools and showed that respect was the most important type of administrative support for the full teacher sample, and subgroups (school type, retention status, locale).<sup>15</sup> Based on the theoretical analysis and empirical evidence, we predict that profession-related support from government may have positive effect on TFNUS's subjective well-being.

Second, as teacher candidates, teachers play a key and special role in the process of TFNUS's professional growth and development. As an important resource, when TFNUS perceived the profession-related teacher support, they will have more opportunity to gain more new resources, and are empowered energy and ability to love the teaching profession, are more likely to experience positive affect, ultimately result into higher subjective well-being, which can be shown as obtaining the resource gain spirals. Some studies also provide indirect evidence for our views. Researcher consistently found that perceived emotional support and instrumental support enacted by teachers uniquely predicted adolescents' subjective well-being (Suldo et al, 2009),<sup>22</sup> and proved that school-related support from teacher had positive effect on adolescents' optimal subjective well-being in school,<sup>23-25</sup> and showed that perceived social support from teachers was positively correlated with adolescents' subjective well-being.<sup>26</sup> In addition, researchers also found that perceived teacher support was significantly and positively associated with life satisfaction and positive affect among college students learning online during the COVID-19 pandemic.<sup>27</sup> Another study found that social support had positive effect on subjective well-being among Chinese university students.<sup>6</sup> On the basis of forementioned empirical findings, we argue that profession-related support from teacher may have positive effect on TFNUS's subjective well-being.

Last, in Chinese culture, parents tend to be highly involved with children's academic activities and professional success.<sup>28,29</sup> From teaching career choice to career development, parents also exert fundamental influence on TFNUS. Similar to teacher support, when TFNUS perceived the parent support about the teaching profession, they were more likely to have positive cognition and emotional experience on their profession; finally, these positive resources should enhance TFNUS's subjective well-being. Our arguments can be supported by previous research. A large body of studies found that there was positive correlation between parental support and subjective well-being in adolescents,<sup>26,30,31</sup> and university students.<sup>7,32-34</sup> Similarly, some scholars investigated the positive effects of parent autonomy support and found that parent autonomy support positively predicted subjective well-being of Chinese adolescents<sup>35</sup> and positively predicted university students' higher levels of subjective well-being,<sup>36</sup> and autonomy support from parents also had positive effect on emerging adulthood's subjective well-being.<sup>37</sup> Another study using 87 students registered for primary classroom teacher training indicated that perceived family rather than towards a special person or friend support positively associated with subjective well-being.<sup>38</sup> Notably, another study using the sample of pre-service teacher also found that the degree of parental support perceived by the less optimistic group showed an impact on pre-service early childhood teachers' levels of satisfaction with

life.<sup>39</sup> According to theoretical assumption and empirical results, we speculate that profession-related support from parents may have a positive effect on TFNUS's subjective well-being.

Moreover, in the actual education of China, teachers seem to mainly pay attention to instrumental support that is more tangible and useful by solving the profession-related problems, and parents mostly focused on emotional support that satisfies emotional needs. Considering teacher education as professional training activity, TFNUS are more concerned with profession-related instrumental support; thus, teacher support may exert stronger than parent support. Unlike these two sources, government provided both support and constraints, so we argue that the effect of profession-related from different sources may be different. We hypothesize that:

Hypothesis 1a-c Profession-related support from a) government, b) teacher, and c) parent has significantly positive effect on TFNUS's subjective well-being. Moreover, their relative importance may be different.

## The Mediating Role of Intrinsic Motivation for Teaching

Why the main profession-related sources of support influences TFNUS's subjective well-being? As a macro-theory of human motivation, we address that Self-Determination Theory (SDT)<sup>40,41</sup> is a promising theoretical framework for explaining profession-related support and TFNUS's intrinsic motivation for teaching. Intrinsic motivation for teaching is an internal desire to perform and pursue the teaching for itself, in order to experience the pleasure and satisfaction inherent in itself.<sup>42,43</sup> According to SDT, just like others, TFNUS also have inherent growth tendencies and innate psychological needs (competence, autonomy, and relatedness), perceived supported by government, teachers and parents obviously may satisfy these basic psychological needs. For example, the support obtained from government, teachers, parents can meet the relatedness needs (feel connected to, and cared for by government), competence needs (capable of performing academic task) and autonomy needs (self-determine own behavior and resulting outcome) respectively, and they make TFNUS experience more pleasant, feel confident that the academic activities will get done, which may lead to increased level of intrinsic motivation for teaching. Our views can be supported with indirect evidence from previous studies, which supported the positive association between social support and intrinsic motivation. A study using the sample of nurses found that high levels of instrumental support produced elevated levels of intrinsic motivation.<sup>44</sup> Moreover, the intrinsic motivation was significantly related to social support through empathy and in turn prosocial behavior.<sup>45</sup> Another study with Chinese university athletes showed that coaching behaviors (including social support) and need satisfaction (perceived autonomy, competence, and relatedness) explained 44% of the variance in intrinsic motivation.<sup>46</sup> Hence, profession-related support may positively predict intrinsic motivation for teaching, the more support received, the stronger intrinsic motivation for teaching became.

Furthermore, although there was no study to explore the relationship between intrinsic motivation for teaching and subjective well-being, many scholars have found that intrinsic motivation was positively associated with subjective well-being in different populations. For instance, scholars found that intrinsic motivation of religious positively predicted the college students' subjective well-being.<sup>47</sup> Similarly, study using the sample of first-year university students showed that intrinsic motivation was associated with greater subjective well-being.<sup>48</sup> Moreover, based on cross-lagged, structural equation modelling analyses, the study revealed that relative intrinsic aspirations at baseline predicted experiencing greater need satisfaction, increased autonomous goal motivation, and improved university students' well-being over time.<sup>49</sup> In addition, a study with the sample of overnight visitors showed that overnight visitors who are more intrinsically motivated had higher life satisfaction levels, higher positive feelings and lower negative feelings.<sup>50</sup> Another study with the sample of volunteers also found that volunteer intrinsic motivation had positive effect on volunteer's subjective well-being.<sup>51</sup> Based on these findings, we predict that TFNUS's subjective well-being is mainly associated with their teaching profession, those who have a high level of intrinsic motivation for teaching will enjoy the profession itself and experience more positive affect, less negative affect, and report higher life satisfaction, thus result into greater subjective well-being. It seems that intrinsic motivation for teaching may be a potential mediator linking profession-related support to subjective well-being. We predict that profession-related support can affect subjective well-being by increasing intrinsic motivation for teaching. Therefore, we expect that:

Hypothesis 2a-c Intrinsic motivation for teaching mediates the relationship between profession-related support from a) government, b) teacher, c) parent, and TFNUS's subjective well-being.

## The Moderating Role of Dispositional Gratitude

Dispositional gratitude refers to a generalized tendency to experience feelings of appreciation and thankfulness for the benefits received from others.<sup>52</sup> According to COR, profession-related support has positive effect on TFNUS's intrinsic motivation for teaching. However, we propose that this effect may vary depending upon TFNUS's dispositional gratitude. Reasons are as follows. Firstly, on the basis of SDT, profession-related support can fulfill TFNUS' psychological needs, and enhance their intrinsic motivation for teaching. However, people with different dispositional gratitude may experience different degrees of intrinsic motivation for teaching. A growing body of studies has recently revealed that gratitude could contribute to higher levels of basic psychological needs met, specifically, compared with less grateful, more grateful people will have a greater fulfillment of relatedness, competence and autonomy.<sup>23,53</sup> For instance, a study showed that gratitude led to a stronger preference for interest (intrinsic motivator) relative to salary (extrinsic motivator) in terms of influencing career decisions.<sup>54</sup> Another study demonstrated that daily gratitude was positively associated with daily hedonic and eudaimonic well-being of Vietnam war veterans.<sup>55</sup> Similarly, scholars also found that experimentally induced gratitude resulted in higher satisfaction with life in a high gratitude compared to a low gratitude condition.<sup>56</sup> Thus, we posit that after receiving profession-related support, more grateful TFNUS will have stronger intrinsic motivation for teaching.

Secondly, according to the Broaden-and-Build Theory (BBT),<sup>57</sup> like other positive emotions, gratitude can broaden the scope of one's cognition and behaviors, and discern the meaning of things, while TFNUS with different dispositional gratitude may have different responses during this process. Compared with low dispositional gratitude, individuals with high dispositional gratitude are more likely to think broadly and deeply, recognize the connection between their obtained profession-related support and the stronger intrinsic motivation for teaching, and are inclined to appreciate the values and have positive perceptions on their profession. Additionally, more grateful people have a more broadened other-focused thought-action repertoire, they can find more ways to develop their professional skills, and enjoy the process of pursuing the professional goals. Previous findings on the moderating effect of dispositional gratitude provided indirect evidence for our arguments. For instance, scholars found that trait gratitude moderated the relation between daily hassles and satisfaction with life in university students.<sup>58</sup> A study also revealed the moderating effect of dispositional gratitude on the relationship between social comparison and envy on Instagram.<sup>59</sup> Another study proved the that moderating role of dispositional gratitude played between the association between socioeconomic status and interleukin-6.<sup>60</sup> According to forementioned evidence, we argue that profession-related support will have greater impact on intrinsic motivation for teaching for TFNUS with high dispositional gratitude. In consideration of the above, we propose that:

Hypothesis 3a-c Dispositional gratitude moderates the relationship between profession-related support from a) government, b) teachers, c) parents, and TFNUS's intrinsic motivation for teaching, such that the relationship is stronger for high dispositional gratitude than for low dispositional gratitude.

Further, although different levels of dispositional gratitude are associated with the strength of effect of profession-related support on intrinsic motivation for teaching, we argue that indirect effect of profession-related support on subjective well-being through intrinsic motivation for teaching is much stronger for TFNUS with high dispositional gratitude. Previous research on dispositional gratitude offered our conjecture with indirect evidence to some extent. Scholars found that compared with less grateful, more grateful individuals showed more sensitivity and concern toward others and tended to express reciprocity toward the benefactor, and perceived more support from others.<sup>61-63</sup> Besides, past studies have shown that dispositional gratitude had important implications for intrinsic motivation and subjective well-being, individuals with high dispositional gratitude were more likely to be more intrinsically motivated and experience more positive affect, less negative affect, and more life satisfaction.<sup>62,64,65</sup> Several studies examined the moderating role of trait gratitude played in the moderated mediating model, and found that gratitude moderated the mediating effect of deliberate rumination on the relationship between intrusive rumination and post-traumatic growth,<sup>66</sup> and dispositional gratitude moderated the indirect effect of brooding on suicidal ideation via hopelessness,<sup>67</sup> and the effect of the fear of COVID-19 infection on loneliness through anxiety was also moderated by dispositional gratitude.<sup>68</sup> Therefore, we speculate that profession-related support coupled with high dispositional gratitude may further activate TFNUS's stronger intrinsic motivation for teaching, and the indirect effect of profession-related support on subjective well-being through intrinsic motivation for teaching will be stronger. On the contrary, profession-related support, combined with low dispositional gratitude, may lead to a weaker indirect effect of profession-related support on subjective well-being. Accordingly, we argue that



dispositional gratitude moderates the mediated relationship between profession-related support and subjective well-being via intrinsic motivation for teaching. Thus, we hypothesize:

Hypothesis 4a-c Dispositional gratitude moderates the strength of the indirect effect of profession-related support from a) government, b) teachers and c) parents on subjective well-being (through intrinsic motivation for teaching), such that the mediated relationship is stronger for high dispositional gratitude than for low dispositional gratitude.

## Materials and Methods

### Research Design and Method

The overall aim of our study is to examine whether, how and when profession-related support from different sources (eg, government, teacher, parent) influences subjective well-being among Chinese tuition-free normal university students. In order to achieve the aim, we chose the correlational research design and survey method for our study. Specifically, a two-wave, time-lagged design was chosen to collect data of TFNUS from two normal universities. We used SPSS 23.0 and Hayes' PROCESS Macro to analyze the data. For details, see the following section of Participants and Data Analysis. The research model is shown in Figure 1.

### Participants

To lessen the potential common method bias, we adopted a time-lagged design to collect data in two waves from TFNUS of two normal universities. Participants were informed that their participation was voluntary and could withdraw from the study at any time. All procedures conducted in the current study involving human participants were in accordance with the ethical standards of the institutional research committee and the 1964 Helsinki declaration. To ensure confidentiality, participants were not required to provide their names on the questionnaires, only supplying code names instead that allowed for our team to match individual's responses at two different time points while maintaining anonymity. In the first wave, the survey contains measures of profession-related support, dispositional gratitude and demographical variables. A total of 638 questionnaires were distributed, and 549 responses were returned (response rate=86.05%). In the second wave, approximately 3 months later, the participants were asked to complete measure of intrinsic motivation for teaching and subjective well-being. A total of 627 questionnaires were distributed, and 532 responses were returned (response rate=84.84%). According to the code names, we matched the data across the two waves, and obtained a final sample of 526 tuition-free normal university students. The sample had an average age of 20.20 years ( $SD=2.08$ ). Among them, 50.80% were female; 24.70% were freshman, 25.30% were sophomore, 27.20% were junior and 22.80% were senior. Of the participants, 51.90% majored in social sciences, and 48.10% majored in natural science. Regarding the residence, 29.30% were from countryside, 29.30% were from downtown and 41.40% were from city.

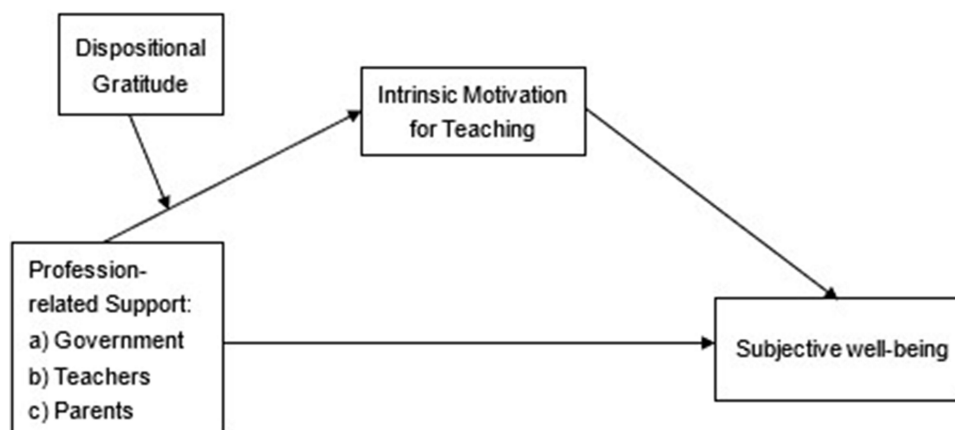


Figure 1 Research model.

## Measures

### Profession-Related Support

We adapted 10 items to measure the profession-related government support based on Zhao and Zhang's Government Tuition-free Policy Satisfaction of TFNUS,<sup>69</sup> which was developed in the context of Chinese culture. Sample item is: "I can perceive the government support of policy about receiving living allowances". Participants responded to items using a 5-point scale (1=*strongly disagree*, 5=*strongly agree*). We measured profession-related teacher support with the adapted 10 items developed by Zhang and colleagues' Career-related Teachers Support Scale (Chinese Version).<sup>70</sup> Sample item is: "My teachers introduce the development path of teaching profession to me". Similarly, we measured profession-related parent support with the adapted 8 items developed by Zhang and colleagues' Career-related Parents Support Scale (Chinese Version).<sup>70</sup> Sample item is: "My parents encourage me to participate in the practical activities that can improve my teaching skills". Participants responded to items using a 5-point scale (1=*never*, 5=*always*). Coefficient alpha of profession-related government, teacher, and parent support scale was 0.83, 0.92, 0.81, respectively. Confirmatory factor analysis showed that the three-factor model of profession-related support fit well,  $\chi^2(347) = 762.41$ , CFI=0.93, TLI=0.92, RMSEA=0.04, SRMR=0.03, and the questionnaire's structural validity was good.<sup>71</sup>

### Intrinsic Motivation for Teaching

We measured the intrinsic motivation for teaching using the 4 items Chinese revised version<sup>69</sup> of Motivation on Choosing Teacher Education Scale.<sup>72</sup> Sample item is: "I choose the teaching profession because of wishing to become a teacher". Participants responded to items using a 6-point scale (1=*strongly disagree*, 6=*strongly agree*). Coefficient alpha of this scale was 0.85.

### Dispositional Gratitude

Dispositional gratitude was measured with the 13-item scale of Zhang et al,<sup>73</sup> which was developed based on Chinese participants. Sample item is: "I am grateful to see all the beauty in life". Participants responded to items using a 5-point scale (1=*strongly disagree*, 5=*strongly agree*). Coefficient alpha of this scale was 0.86.

### Subjective Well-Being

We measured subjective well-being using the 18 items Chinese revised version<sup>74</sup> of the General Subjective Well-being Scale.<sup>75</sup> This version included grouped in three dimensions: positive emotions, negative emotions, and health experience. A 6-point scale was used for the first 14 items, and a 10-point scale was used for items 15–18. Sample item is "Has your daily life been full of things that were interesting to you (during the past three months)? Coefficient alpha of this scale was 0.91.

### Control Variables

There was no evidence to demonstrate that the demographical variables were associated with intrinsic motivation for teaching and subjective well-being among TFNUS. Moreover, in this study, we only found that the major and residence of TFNUS were correlated with some studying variables. Consequently, we controlled them to enhance the internal validity of this study. Major was coded (1=social science, 2=natural science), residence was coded (1=countryside, 2=town, 3=city).

### Data Analysis

We used SPSS 23.0 and Hayes' PROCESS Macro to analyze the data. First, the demographic characteristic, means and standard deviations were analyzed by the descriptive statistics, and the correlations among the studying variables were got through Pearson correlation analysis. After controlling the relevant demographic variables, we utilized hierarchical regression to test whether profession-related support can predict TFNUS's subjective well-being, then in order to identify clearly the relative importance of profession-related government, teacher and parent support in predicting, dominance analysis rather than traditional multiple regression analyses was chosen to evaluate the importance of each predictor. Second, considering Hayes' PROCESS Macro was more appropriate for testing the complex models, we used PROCESS Model 4 to analyze the mediating effect of intrinsic motivation for teaching, and Model 1 to analyze the moderating

effect of dispositional gratitude. Meanwhile, we used PROCESS Model 1 to test the moderating effect of dispositional gratitude, and Model 7 to test the moderated mediation. The bootstrap analysis utilized in the present study was used to obtain 95% bias-corrected confidence intervals by simulating 5000 repeated samplings. If the upper and lower bounds of the confidence interval (CI) about the effects did not include zero, which indicated that they were significant.

## Results

### Common Method Bias Test

Although we used a time-lagged design to collect two waves of data, the collected data were from the self-report of a single source (only TFNUS), there might be the possibility of common method bias (CMB). Conceptually, CMB manifests the calculated difference between the observed relationship and the actual correlation produced by the common method of variance, which has the potential to increase the apparent correlation compared to the actual correlation.<sup>76</sup> To reduce CMB, many scholars suggested a statistical approach.<sup>77</sup> Accordingly, we used statistical approaches, namely the correlation test<sup>78</sup> and Harman's single-factor test,<sup>79</sup> which have been commonly used in previous research,<sup>80,81</sup> to detect the occurrence of CMB. The correlation test results showed that all correlation coefficients between variables were less than 0.90.<sup>78</sup> Moreover, Harman's single-factor test obtained a total variance extracted score of 28.15%, which was well below the cut-off value of 50% (Kock, 2020). Thus, these results indicated that the CMB was not a problem in this study.

### Descriptive Statistics

The means, standard deviations, and intercorrelations and reliabilities of the scales were reported in Table 1. As predicted, profession-related government support, teacher support and parent support were positively related to subjective well-being, and profession-related government support, teacher support and parent support was also positively related to intrinsic motivation for teaching, intrinsic motivation for teaching was positively related to subjective well-being, providing preliminary support for H1.

### Hierarchical Regression of Profession-Related Support on Subjective Well-Being

We used hierarchical regression to test whether profession-related support can predict TFNUS' subjective well-being in Table 2, after controlling the demographic variables those that affected intrinsic motivation for teaching and subjective well-being. We enter the demographic variables into regression equation in step 1, then enter the profession-related support (government, teacher, parent) into regression equation in step 2, and calculate the  $\Delta R^2$  and  $F$  value, in order to analyze the incremental increase of  $R^2$ . The results showed that profession-related government, teacher and parent support made new significant contribution and resulted in a significant increase in explaining variance ( $\Delta R^2=22\%$ ) and further supported H1a-c.

### Dominance Analyses of Profession-Related Support on Subjective Well-Being

In order to clearly identify the relative importance of profession-related government, teacher and parent support in predicting the TFNUS's subjective well-being, we used dominance analysis to evaluate the importance of each predictor. To overcome the limitations of traditional multiple regression analyses, dominance analysis considers both the unique contribution of a predictor variable and the variable's contribution when combined with other predictor variables in all possible regression subsets.<sup>81</sup> Dominance analysis focuses on the relative weight of each predictor variable to the overall model rather than the statistical significance of the  $B$  coefficients in traditional multiple regression analyses. The proportion variance in TFNUS's subjective well-being explained by the profession-related support from each source was presented in Table 3. The results showed that profession-related teacher support contributed 70.45% unique variance, parent support contributed 17.28% unique variance, government support contributed 12.27% unique variance, and teacher support was the largest contributor; then, the second one was parent support, the last one was government support and further supported H1a-c.



**Table 1** Means, Standard Deviations, and Correlations of the Main Studying Variables

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. Gender	0.49	0.50											
2. Age	20.20	2.08	-0.03										
3. Grade	2.48	1.10	-0.09*	0.87**									
4. Major	1.48	0.50	0.10*	-0.20**	-0.21**								
5. Residence	2.12	0.83	-0.11*	0.08	0.10*	-0.14**							
6. PRGS	3.38	0.53	0.00	-0.01	0.01	0.08	-0.01	(0.83)					
7. PRTS	4.04	0.71	0.02	0.06	0.07	-0.19**	-0.14**	0.05	(0.93)				
8. PRPS	3.80	0.75	-0.03	0.02	-0.00	-0.09*	0.10*	0.14**	0.31**	(0.81)			
9. IMFT	4.93	0.91	-0.01	-0.01	0.01	-0.05	0.03	0.17**	0.33**	0.27**	(0.85)		
10. Dispositional gratitude	3.96	0.44	-0.04	0.08	0.09	-0.11*	0.05	0.06	0.28**	0.06	0.20**	(0.82)	
11. Subjective well-being	4.41	0.68	-0.01	0.07	0.08	-0.03	0.07	0.20**	0.43**	0.21**	0.26**	0.22**	(0.78)

**Notes:** Reliabilities (coefficient alpha) are in parentheses on the diagonal. Gender (1=male, 0=female), grade (1=freshman, 2=sophomore, 3=junior, 4=senior). \*p <0.05; \*\*p <0.01 (two tailed).

**Abbreviations:** PRGS, profession-related government support; PRTS, profession-related teacher support; PRPS, profession-related parent support; IMFT, intrinsic motivation for teaching.

**Table 2** Hierarchical Regression of Profession-Related Support on Subjective Well-Being

Variables		Subjective Well-Being	
		Step 1	Step 2
Step 1	Control variables		
	Major	-0.02	0.04
Step 2	Residence	0.07	0.02
	Profession-related support		
	PRGS		0.11**
	PRTS		0.39***
	PRPS		0.16***
	F	1.47	29.81***
	R <sup>2</sup>	0.01	0.23
ΔR <sup>2</sup>	0.01	0.22***	

Notes: \*\*p <0.01; \*\*\*p <0.001.

**Table 3** The Relative Importance of Profession-Related Support in Predicting Subjective Well-Being

Variables	R <sup>2</sup>	X1	X2	X3
–	0	0.038	0.181	0.065
X1 (PRGS)	0.038		0.131	0.051
X2 (PRTS)	0.181	0.015		0.030
X3 (PRPS)	0.065	0.023	0.174	
X1X2	0.197			0.009
X1X3	0.089		0.132	
X2X3	0.212	0.024		
X1X2X3	0.220			
Decomposition of R <sup>2</sup>		0.027	0.155	0.038
Proportion of variance		12.27%	70.45%	17.28%

### Mediating Effects of Intrinsic Motivation for Teaching

To test the mediation model of hypothesis 2, we specified the indirect effects of profession-related support on subjective well-being via intrinsic motivation for teaching. Result showed that profession-related government support ( $B=0.173$ ,  $SE=0.042$ ,  $p<0.05$ ), teacher support ( $B=0.419$ ,  $SE=0.065$ ,  $p<0.001$ ), and parent support ( $B=0.267$ ,  $SE=0.043$ ,  $p<0.05$ ) positively predicted intrinsic motivation for teaching. Intrinsic motivation for teaching positively predicted subjective well-being ( $B=0.321$ ,  $SE=0.057$ ,  $p<0.01$ ). Results of indirect effect indicated that intrinsic motivation for teaching, respectively, mediated the positive effect of profession-related teacher support (*indirect effect*=0.058,  $SE=0.015$ ,  $p<0.01$ , 95% CI [0.028, 0.086]), parent support (*indirect effect*=0.043,  $SE=0.017$ ,  $p<0.05$ , 95% CI [0.013, 0.080]) and government support (*indirect effect*=0.040,  $SE=0.013$ ,  $p<0.05$ , 95% CI [0.019, 0.072]) on subjective well-being. Thus, H2a-c was supported.

### Moderating Effects of Dispositional Gratitude

Hypothesis 3 proposes that dispositional gratitude moderates the relationship between profession-related support (government, teacher, and parent) and intrinsic motivation for teaching, such that there is a stronger positive relationship when dispositional gratitude is relatively high rather than low. As shown in Table 4, we, respectively, found a significant interactive effect of profession-related teacher support ( $B=0.248$ ,  $SE=0.088$ ,  $p<0.01$ ), profession-related parent support ( $B=0.213$ ,  $SE=0.050$ ,  $p<0.01$ ) and dispositional gratitude in predicting intrinsic motivation for teaching. However, the

**Table 4** Moderated Regression Analysis on Predicting Intrinsic Motivation for Teaching

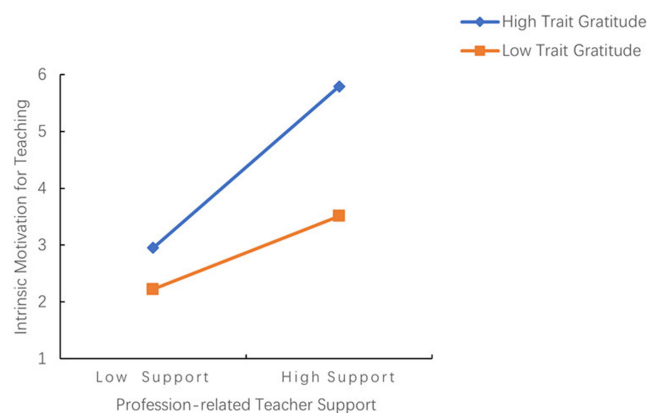
Variable	B	SE	t	95% CI
Major Residence	0.022	0.075	0.299	[-0.124, 0.169]
PRTS	-0.022	0.044	-0.497	[-0.109, 0.065]
PRPS	0.344	0.055	6.255***	[0.236, 0.452]
PRGS	0.258	0.069	3.864***	[0.098, 0.301]
Dispositional gratitude	0.186	0.051	3.617***	[0.085, 0.287]
PRTS×Dispositional gratitude	0.221	0.070	3.144**	[0.083, 0.359]
PRPS×Dispositional gratitude	0.248	0.088	2.828**	[0.076, 0.421]
PRGS×Dispositional gratitude	0.213	0.050	2.025**	[0.069, 0.114]
PRGS×Dispositional gratitude	0.087	0.089	0.975	[-0.088, 0.261]
R <sup>2</sup>	0.475			

Notes: \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

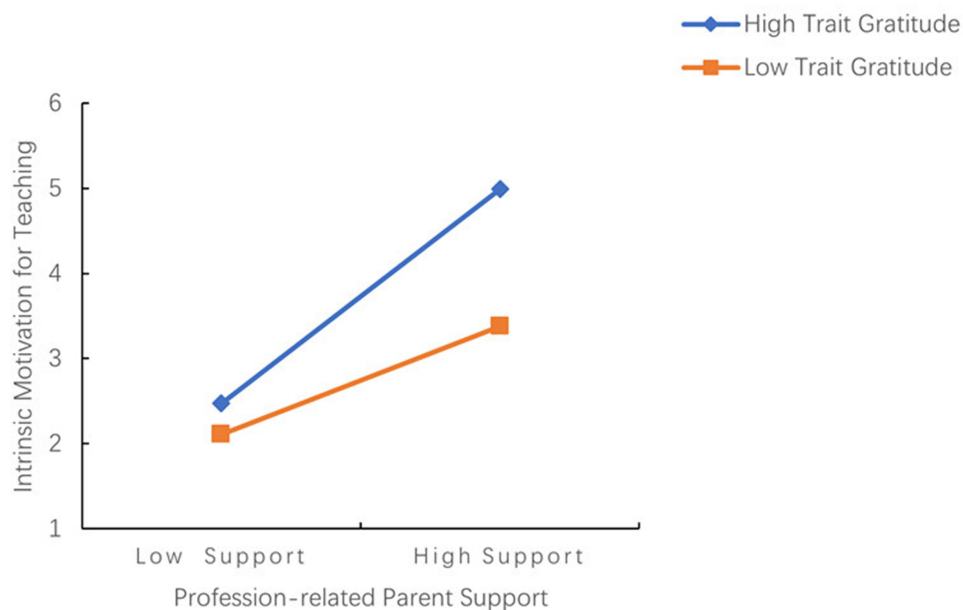
interaction between profession-related government support and dispositional gratitude was not significant in predicting intrinsic motivation for teaching ( $B=0.087$ ,  $SE=0.089$ ,  $p>0.05$ ).

A simple slope test as reported in Figure 2 indicated that in groups with relatively high dispositional gratitude (+1SD), profession-related teacher support (*simple slope*=0.596,  $SE=0.094$ ,  $p<0.001$ ) has stronger positive effect on intrinsic motivation for teaching than low dispositional gratitude (-1SD) (*simple slope*=0.260,  $SE=0.076$ ,  $p<0.001$ ), these effects were significantly different from one another (*difference*=0.336,  $SE=0.045$ ,  $p<0.01$ ). Similarly, as shown in Figure 3, for groups with relatively high dispositional gratitude, profession-related parent support (*simple slope*=0.541,  $SE=0.088$ ,  $p<0.001$ ) has stronger positive effect on intrinsic motivation for teaching than low dispositional gratitude (*simple slope*=0.459,  $SE=0.057$ ,  $p<0.001$ ), these effects were significantly different from one another (*difference*=0.123,  $SE=0.038$ ,  $p<0.05$ ). The results only supported H3b-c, H3a was not supported.

Moreover, Hypothesis 4a-c moderates the indirect effects of profession-related support on subjective well-being via intrinsic motivation for teaching. The results showed that, when dispositional gratitude was high, the positive indirect effect of profession-related teacher support (*indirect effect*=0.057,  $SE=0.016$ ,  $p<0.001$ , 95% CI [0.031, 0.093]) on subjective well-being via intrinsic motivation for teaching was stronger than when it was low (*indirect effect*=0.034,  $SE=0.014$ ,  $p<0.05$ , 95% CI [0.012, 0.015]), these effects were significantly different from one another (*difference*=0.023,  $SE=0.010$ ,  $p<0.05$ , 95% CI [0.006, 0.048]). Similarly, when dispositional gratitude was high, the positive indirect effect of profession-related parent support (*indirect effect*=0.060,  $SE=0.019$ ,  $p<0.001$ , 95% CI [0.030, 0.108]) on subjective well-being via intrinsic motivation for teaching was stronger than when it was low (*indirect effect*=0.039,  $SE=0.017$ ,  $p<0.05$ , 95% CI [0.013, 0.081]), these



**Figure 2** The moderating effect of dispositional gratitude on the relationship between profession-related teacher support and intrinsic motivation for teaching.



**Figure 3** The moderating effect of dispositional gratitude on the relationship between profession-related parent support and intrinsic motivation for teaching.

effects were significantly different from one another ( $difference=0.021$ ,  $SE=0.010$ ,  $p<0.05$ , 95% CI [0.004, 0.046]). However, the indirect effect of profession-related government support between high and low dispositional gratitude was not significant ( $difference=0.004$ ,  $SE=0.006$ ,  $p>0.05$ , 95% CI [-0.006, 0.019]). The results only supported H4b-c, H4a was not supported.

## Discussion

Our results indicate a direct, positive effect of profession-related support on the TFNUS's subjective well-being. These results confirm the hypothesis and support previous studies showing that social support was significantly related to subjective well-being,<sup>82,83</sup> and the results also imply that TFNUS's subjective well-being may be enhanced through increasing the profession-related support from government, teacher and parent. Further, the descending order of relative importance of each source was as follows: teacher, parent and government. It indicated that teacher support made the most contribution in the explained variance, this may be explained by TFNUS's intrinsic motivation for teaching, because they will become a teacher after graduating, and teachers are often regarded as their role model who affects greatly TFNUS's formation of teaching motivation, identity and value.<sup>43,84</sup> Meanwhile, this finding was consistent with previous studies on adolescents, which found that teacher support was the strongest source of support related to subjective well-being.<sup>85,86</sup> However, government support made the least contribution in the explained variance, it is possibly due to the fact that some TFNUS perceived less support, even several restrictions from policies enacted by Chinese government. This notion was also supported by two empirical studies conducted in China, which found that TFNUS were not satisfied with some of tuition-free policies.<sup>12,69</sup>

As expected, the results also proved the mediating effect of intrinsic motivation for teaching in the relationship between profession-related support and TFNUS's subjective well-being. This finding supported self-determined theory, that is, perceived profession-related support from government, teacher and parent was significantly associated with intrinsic motivation for teaching, which in turn, was significantly correlated with the subjective well-being among TFNUS. This result not only proved the positive association between social support and intrinsic motivation,<sup>86,87</sup> but also supported the relationship between intrinsic motivation and subjective well-being.<sup>47,86</sup> Moreover, we broadened the domains of social support out with the field of teaching profession, and extended the sample to Chinese tuition-free normal university students.

As for the moderating effect of dispositional gratitude, we only found that dispositional gratitude moderated the direct effect of profession-related teacher and parent support on intrinsic motivation for teaching, and the indirect effect on TFNUS's subjective well-being through intrinsic motivation for teaching, rather than profession-related support from government. Our

results concerning the significant moderation supported the COR and BBT. One reason for the non-significant moderating effects of dispositional gratitude in the direct and indirect of profession-related government support may be that TFNUS with low dispositional gratitude, like high dispositional gratitude, seems to have high intrinsic motivation for teaching after receiving the support from government. All the education and development of TFNUS was planned and supervised by the government in China,<sup>88,89</sup> such as formulating and enforcing lots of policies. Due to the authority role played by Chinese government, while choosing the teaching profession, not only for those with high dispositional gratitude but also for TFNUS with low dispositional gratitude perceive that they should like to be a teacher or show interest in teaching and education, consequently, there was no significant difference of intrinsic motivation for teaching and subjective well-being between individuals with high and low dispositional gratitude after receiving the profession-related support from government.

## Theoretical Implications

The present study has several theoretical implications. First, past studies have examined the impact of general social support on subjective well-being, but little research to explore the relative importance of profession-related support from significant sources in relation to subjective well-being among target populations. Under this background, this study targets the sample of Chinese tuition-free normal university students, and found that there were different effects of profession-related support from different sources on their subjective well-being. Our findings extended the previous work on subjective well-being by identifying profession-related support as a possible antecedent, proved the linkage between profession-related support and subjective well-being, and found a direct relationship between profession-related support and subjective well-being. The results were in line with previous research indicating the positive effect of social support on college students' subjective well-being.<sup>7,32</sup> Meanwhile, our finding also supported the SDT.<sup>41</sup>

Second, much of the past research regarding the importance of predictors about social support to subjective well-being has been strictly correlational in nature or has employed multiple-regression analyses. However, it is more difficult to interpret the importance of these predictors on the dependent variable if there is a high degree of multicollinearity between predictors. Thus, we use dominance analysis to assess the contribution of multiple social agents (government, teacher and parent) simultaneously to provide more comprehensive insight into their differential effects on TFNUS's subjective well-being, and found that all sources of profession-related support were positively related to subjective well-being, in a descending order of relative importance were as follows: teacher, parent and government. Our findings demonstrated that teachers, parents and government all played an important role in TFNUS's subjective well-being, furthermore, their influential roles were different. To the best of our knowledge, this article was the first study to analyze the relative importance of profession-related support from different sources in predicting subjective well-being. In addition, our findings are useful in advancing the theoretical understanding of the potential social environmental influences, such as profession-related support from government, teacher, parent, on subjective well-being among TFNUS by comparing the relative importance about different sources of support.

Third, some researchers have proved the positive association between social support and subjective well-being. However, we currently did not have a clear understanding of the underlying mechanism that could explain how profession-related support influenced subjective well-being among TFNUS. Grounded in SDT, we took intrinsic motivation for teaching as a bridge to link profession-related support and TFNUS's subjective well-being. As predicted, we found that intrinsic motivation for teaching mediated the relationship between the main profession-related sources of support and subjective well-being among TFNUS. Our finding not only integrated the existing study on social support, intrinsic motivation, and subjective well-being but also revealed the process concerning how profession-related support fostered TFNUS's subjective well-being through intrinsic motivation for teaching. It also revealed the proactive role that profession-related support from government, teacher and parent might play in enhancing TFNUS's intrinsic motivation for teaching, which, in turn, resulted in increased subjective well-being.

Last, the present study contributes to a better understanding of how trait gratitude acts as a moderator of the beneficial effects of social support on intrinsic motivation and subjective well-being. In the current research, our findings added to the existing literature suggesting trait gratitude was an important tool for strengthening social support and intrinsic motivation effects.<sup>90,91</sup> As shown by past research,<sup>92,93</sup> trait gratitude was useful as a promoting mechanism to enhance the positive effects of social support on intrinsic motivation and subjective well-being. We proved that trait gratitude, like



other individual personality differences variable, was a personal dispositional characteristic, which influenced the way how TFNUS response to the profession-related support (eg, teachers, parents) they have obtained. Moreover, the indirect effect of profession-related teacher and parent support on TFNUS's subjective well-being was found to be contingent on their trait gratitude.

## Impractical Implications

Our findings also have some practical implications. First, the current study demonstrated that government, teachers and parents in the university context were all significant sources of profession-related support, they play vital roles in the profession-related aspects of the motivations and experiences of TFNUS. The results of this study suggest that education administration department should not only pay attention to whether and to what extent profession-related support from government, teacher and parent stimulate TFNUS's intrinsic motivation for teaching but also build profession-related support according to their needs, thus contributing to the promotion of their intrinsic motivation for teaching and the improvement of TFNUS's subjective well-being. Besides, counseling psychologists in university or college should consider undertaking systematic, ongoing efforts to monitor and promote TFNUS's intrinsic motivation for teaching and subjective well-being from the perspective of profession-related support.

Second, we found that profession-related support from teacher made the most contribution in TFNUS's subjective well-being, suggesting that colleges and universities should especially strive to maintain strong profession-related teacher support for TFNUS. For example, teachers should provide TFNUS with frequent opportunities to express their confusions about future teaching profession. In addition, teachers should help TFNUS to master knowledge, develop skills and mold values concerning the teaching profession. In terms of profession-related support from parents and government, parents should help their children to choose the courses about professional development, and encourage them to participate the practical activities about teaching. Meanwhile, the government should enact the policy which make the TFNUS perceive more support rather than restrictions.

Third, the finding on the mediating effect of intrinsic motivation for teaching may also have some practical implications. By indicating that the positive effects of profession-related support are indirectly transmitted to the subjective well-being via intrinsic motivation for teaching, our study informs the teachers about the importance of promoting intrinsic motivation for teaching. Teachers should take actions to meet three innate psychological needs: autonomy, competence and relatedness. Specifically, they can not only give TFNUS choices wherever possible, such as choosing as partner for a major group project, but also can arrange activities in which TFNUS work together in ways that are mutually supportive that recognize students' diversity, and minimize competition among individuals. Additionally, teachers should select activities that are challenging but nonetheless achievable with reasonable effort and assistance for TFNUS. Such efforts may ultimately increase TFNUS's subjective well-being by boosting the levels of intrinsic motivation for teaching.

Last, we found that trait gratitude moderated the direct effects of profession-related support from teacher and parent on intrinsic motivation for teaching and their indirect effects on TFNUS's subjective well-being through intrinsic motivation for teaching, rather than profession-related government support. Therefore, teachers and parents should pay more attention to cultivating and enhancing the trait gratitude, especially those TFNUS with low trait gratitude. Numerous studies have shown that practicing gratitude can cultivate and develop people's trait gratitude, such as keeping a gratitude journal, writing a gratitude letter, and expressing gratitude in one's daily interactions. Meanwhile, these results can guide the university or college to enhance the intrinsic motivation for teaching and subjective well-being based on the trait gratitude, such as priority can be given to recruit and select those TFNUS with high levels of trait gratitude.

## Limitations and Future Research

There are several limitations of this study that should be noted. First, self-reported questionnaires were used to collect the data, which might lead to a response bias called social desirability, it could limit the validity of the outcome,<sup>94</sup> while multiple methods of assessment would enhance confidence in the validity of the data. Thus, future research can obtain reports of profession-related support directly from government, teacher and parent, in order to avoid social desirability bias and common method bias as far as possible. Meanwhile, some new methods, such as experience sampling methodology,<sup>95</sup> should be introduced to measure subjective well-being for replicating our results. Second, the study was conducted with the sample of

TFNCS, and it is not yet known whether our findings can be generalized to other samples (eg, general normal university students). In addition, the sample of TFNCS is only from two Chinese normal universities, which may limit the generalizability of our findings to the whole normal university student populations. Thus, replicating these results with diverse samples from different normal universities is needed. Finally, in the current study, we only examined the moderating role of dispositional gratitude. In fact, gratitude can exist both a disposition and a state.<sup>96</sup> Scholars found that individuals with high level of trait gratitude experience more intense affective states in response to a gratitude-arousing situation.<sup>52</sup> For this reason, investigating how dispositional and state gratitude interact in moderating the effect of profession-related support, profession identity, and TFNUS's subjective well-being can be an important topic for future research.

## Conclusion

To conclude, the present study proposes a moderated mediation model to explore the impact of professional support from different sources on subjective well-being among Chinese tuition-free normal university students, and the mediating (intrinsic motivation for teaching) and moderating (trait gratitude) effects of this impact. Results indicated that the profession-related support had positive direct effect on TFNUS's subjective well-being, as well as indirect effect through intrinsic motivation for teaching. Dispositional gratitude moderated the relationship between profession-related teacher, parent support and intrinsic motivation for teaching, and the strength of the indirect effect of these support on subjective well-being. Our findings can not only enrich the previous research on social support, dispositional gratitude and subjective well-being but also can provide some suggestions on how to improve TFNUS's subjective well-being.

## Data Sharing Statement

The data that support the findings of this study are available on request from the corresponding author.

## Ethical Approval

The original study has been performed in accordance with the Declaration of Helsinki. The studies involving human participants were reviewed and approved by the Research Ethics and Ethics Committee of School of Psychology in Shanghai Normal University, and the Research Ethics and Ethics Committee of School of Foreign Languages in East China Normal University. The research purpose and design were reviewed and approved by Shanghai Normal University and East China Normal University prior to the data collection.

## Informed Consent

Informed consent was obtained from all individual participants included in this study.

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## Disclosure

The authors report no conflicts of interest in this work.

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