Research Article

Professional Well-Being and Work Engagement of University Teachers Based on Expert Fuzzy Data and SOR Theory

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The study of the professional well-being of university teachers not only encompasses the quality of teachers' personal lives but can also reflect satisfaction and loyalty to their careers and has an irreplaceable impact on students' thinking and political education. The article starts from explaining the connotation of professional happiness of university teachers and analyses the significance of improving the professional happiness of university teachers. Through a questionnaire survey of 504 young teachers in Jiangxi province universities, based on expert fuzzy data and SOR theory, the article analyses various influencing factors in this framework and finds that the current professional happiness of young teachers in universities is positively related to various influencing factors. Based on expert fuzzy data and SOR theory, this paper investigates the professional happiness and work commitment of college teachers. The results of several research tests show that young college teachers have different professional happiness under different conditions, which indicates that material incentives can improve the professional happiness of young college teachers to a certain extent. Therefore, the professional happiness of young university teachers can be improved in terms of enhancing comprehensive quality, improving social status, strengthening humanistic care, broadening growth platform, and establishing scientific system.

1. Introduction

The fact that teachers in higher education have a sense of professional happiness is not only a measure of their personal quality of life but also a reflection of their satisfaction and loyalty to the cause of higher education, as well as an indispensable element affecting the ideological education of students. Teachers with a sense of professional happiness can only take education work as the pursuit of their life values, put themselves into education work with a positive and active mindset, and give creative play to their talents [1]. The professional happiness of university teachers comes not only from the institutional measures at the national and school levels but also from the internal psychological quality of university teachers, their correct professional values, and all aspects of their external lifestyle [2]. It is of great theoretical and practical significance to interpret and study the connotation and realisation path of professional happiness of

university teachers in order to promote the ideological education of universities and explore the ideological elements in the curriculum.

To understand the happiness of university teachers, we need to understand the meaning of "happiness," "profession," and "professional happiness." "Happiness" is a way of life and the ultimate goal of life. As individuals, teachers in higher education are also in pursuit of their own values and happiness [3]. In recent years, happiness has been a hot issue of concern and research in many disciplines such as philosophy, ethics, sociology, economics, psychology, and pedagogy. Philosophers such as Freud and Kant have analysed and elaborated on happiness from a variety of perspectives [4], including ethics, freedom, and morality. According to a Harvard lecturer, who is famous for his lectures on happiness, "Happiness should be defined as "a combination of pleasure and meaning." A truly happy person is able to enjoy every bit of his or her life in a way that

he or she finds meaningful." He believes that happiness should be a combination of pleasure and meaning [5]. Regarding "occupation," domestic and foreign scholars have defined it from the perspective of sociology and psychology. The Modern Chinese Dictionary explains it as "the work performed by an individual in society as the main source of livelihood." Research has shown that the subjective criteria for career success have overtaken the objective ones, and that the inner satisfaction gained in the process of career development has overtaken the concern for the amount of salary and the number of promotions [6].

The study of professional well-being emerged in the 1950s, and the teaching profession has an emotional experience that is difficult for other professions to share [7]. Scholars have different interpretations of teachers' occupational happiness, mostly from the perspective of their profession. For the understanding of the professional happiness of college teachers, scholar Li Qiong in "Research on the Professional Happiness of College Teachers" believes that it refers to a sense of psychological pleasure that can arise for HE teachers under the influence of a variety of factors in schools, which relies on the satisfaction that teachers get from their positions [8]. In a sense, the professional well-being of university teachers is a state of high quality existence achieved by university teachers in their positions.

The professional happiness of university teachers has value in life from the perspective of teachers' own development and social value from the perspective of education for students' happiness [9]. This paper focuses on the significance of the professional happiness of university teachers from the perspective of improving the effectiveness of students' thinking and political education. Chinese and foreign educators attach particular importance to the role of higher education in its ability to promote human development, especially the spiritual development of people [10]. The Ministry of Education points out in the Guideline for the Construction of Civic Politics in Higher Education Courses that "to comprehensively promote the construction of Civic Politics in courses means to integrate the guidance of values into the teaching of knowledge and the cultivation of abilities and to help students shape a correct world view and outlook on life and values." In-depth exploration of the ideological and political education resources contained in various courses will enable students to grasp the laws of development [11], understand the world, enrich their knowledge, increase their insight, and build their character through learning. Teachers are the key to comprehensively promoting the construction of curricular thinking and politics. The professional happiness of university teachers plays a crucial role in cultivating students' moral quality and socialist core values, while the cultivation of students' happiness is an extremely important component of moral quality and socialist core values, so the professional happiness of university teachers is an important cornerstone and internal motivation for cultivating students' happiness [12].

Civic education is an important guarantee for implementing the fundamental task of building moral character and training socialist builders and successors. By tapping into the Civic Education elements in the curriculum, students are trained and enabled to practise the core socialist values in teaching and learning to better guide and plan their lives and achieve happiness. "While happiness is an ultimate goal of individual students for school life as well as society, cultivating and enhancing students" happiness can play a role in regulating external objective conditions as well as among individual students, which is also an external expression of individual values in the life world." For the cultivation of students' happiness, university teachers must first have a sense of professional well-being. Teachers' education for students is both tangible and intangible education. The teachers' own quality, especially moral quality, is particularly important in the ideological education of students [13]. The words, behaviour, worldview, outlook on life, and political outlook of teachers in higher education all influence students implicitly. According to Sukhomlinsky, in order for children to become educated, they must first have joy, happiness, and an optimistic feeling about the world. In a sense, the purpose of education is to promote individuals to gain the experience of happiness and develop the ability to be happy. Only when college teachers have a sense of professional happiness can they have the ability to guide students to feel happy.

Teachers in higher education are full of enthusiasm in the activities of thinking and political education, and they are earnestly studying, creatively solving various problems, and actively seeking ways and measures to improve thinking and political education, which is a kind of happiness in itself [14]. The effectiveness of thinking and government brings joy and happiness and in turn inspires teachers to work even harder. So, in this sense, the professional happiness of university teachers is the spiritual force for good thinking and political education. Cultivating students' happiness is also internalised in moral education. Values, goals, and morals have an important influence on happiness, and cultivating students' happiness is an important task of moral education, which is the basic education for forming a correct outlook on life and values. The professional happiness of university teachers and the moral education are complementary to each other [15, 16]. College teachers with a sense of professional happiness can show a strong enterprising spirit and confidence and perseverance to do well in teaching and learning in the field of thinking and politics, constantly learning and reflecting, figuring out, and creating. It is in this constant learning, reflecting, and creating that the thinking element of excavation is enhanced, thus enabling university teachers to gain greater satisfaction in their progress.

The SOR model has been widely used to predict and explain teachers' behaviour, such as the study of teachers' well-being and behaviour. The theory suggests that environmental factors such as scenario and category can have an impact on teachers' internal psychological state, which in turn affects their well-being index [17]. Teachers with a sense of professional happiness are mostly optimistic and confident teachers. These qualities not only enable teachers to devote themselves with the greatest enthusiasm to teaching Civic and Political Science education but also can have a subtle influence on students [18]. Teachers in higher

education can draw the happiness factor from the excellent Chinese traditional culture and educate and guide students to deeply understand the essence and contemporary value of the ideas of benevolence, people-oriented, honesty, justice, harmony, and commonwealth in the excellent traditional culture. Through a questionnaire survey of 504 young teachers in Jiangxi Province universities, based on expert fuzzy data and SOR theory, the study was conducted to analyse a variety of influencing factors under this framework, and it was found that the current professional happiness of young teachers in universities is positively related to a variety of influencing factors, and specific measures to enhance the professional happiness of highly effective teachers were given.

2. Expert Fuzzy Data

2.1. Fuzzy Knowledge Representation. Let $D_1, D_2, \ldots, D_n$ be the domain of n arguments, taking them as the domain of values of the properties of the relation to be defined. Make a Cartesian product over the value field $D_1, D_2, \ldots, D_n$.

$$D_1 \times D_2 \times \ldots \times D_n. \tag{1}$$

For each of these tuples, there are

$$r = (x_1, x_2, \ldots, x_n), \quad x_i \in D_1 \, (i = 1, 2, \ldots, n). \tag{2}$$

We define a credibility factor as

$$CF(r) = CF(x_1, x_2, \ldots, x_n). \tag{3}$$

It satisfies $-1 \leq CF(r) \leq 1$; a fuzzy relation R_f on the value field $D_1, D_2, \ldots, D_n$ can be defined as a binary group:

$$R_f = \{R, CF\}, \tag{4}$$

where R denotes a subset of $D_1 \times D_2 \times \ldots \times D_n$ and CF is a confidence function defined on R satisfying $-1 \leq CF(r) \leq 1$, indicating the degree of confidence in the corresponding tuple. If $CF(r) = 1$, it means that r must hold; if $CF(r) = -1$, it means that r must not hold, i.e., NOT(r) must hold, and $CF(r) = 0$ means that we know nothing about r. The greater the $CF(r)$ the higher the probability that r is true.

Obviously, the general nonfuzzy relation is a special case of this fuzzy relation, where the value of $CF(r)$ is constant at 1 [19].

For rules, the general form is as follows:

$$A: - B_1, B_2 \ldots, B_n; CF. \tag{5}$$

It indicates the degree of confidence in hypothesis A if evidence $B_1, B_2 \ldots, B_n$ is known to hold. More generally, we use $CF(H, E)$ to denote the degree of confidence in hypothesis H given known evidence E. $CF(H, E)$ is defined as follows:

$$CF(H, E) = MB(H, E) - MD(H, E), \tag{6}$$

where MB is the growth of trust, which represents the increase in trust in hypothesis H being true due to the appearance of evidence E, i.e., $P(H|E) > P(H)$ when $MB(H, E) > 0$. MD is the growth of distrust which represents the decrease in trust in hypothesis H being true due to the appearance of evidence E, i.e., $P(H|E) < P(H)$ when $MD(H, E) > 0$. MB and MD are defined as follows:

$$MB(H, E) = \begin{cases} 1, & \text{;if } P(H) = 1, \\ \dfrac{\max[P(H|E), P(H)] - P(H)}{1 - P(H)}, & \text{;others,} \end{cases}$$

$$MD(H, E) = \begin{cases} -1, & \text{;if } P(H) = 0, \\ \dfrac{\min[P(H|E), P(H)] - P(H)}{-P(H)}, & \text{;others.} \end{cases} \tag{7}$$

In an expert database, all facts of each predicate are described by a fuzzy relation, the name of which is the name of the predicate [20], which differs from a nongeneric fuzzy relation in which each tuple introduces an additional system-defined attribute, which has the meaning described above.

For rules, in order to use DBMS to manage and query a large number of facts, a system-defined "rule" relationship can be designed, which is automatically generated by the database management system and does not need to be defined by the user. It consists of three attributes: rule header name, rule body number, and confidence, of which the rule header name is a normal string type that represents the predicate name of the rule antecedent and the rule body number is also a system-defined attribute, which is actually a long integer that refers to the record number of the rule in the rule base corresponding to the rule header name. This can be defined as a confidence factor, provided that the rule predicates are valid [21]. Therefore, all tuples of this type of rule can be retrieved from the "rule" relation of the database, and the corresponding rule definition can be read directly from the rule body number of each tuple.

2.2. Fuzzy Relational Algebra. Similar to the operations of relational algebra, the operations of fuzzy relational algebra can be divided into two categories:

(1) Fuzzy set operations are as follows: union, difference, intersection, and Cartesian product

(2) Special fuzzy relational operations are as follows: projection, selection, and concatenation

With fuzzy relation $R_{f1} = \{R_1, CF_1\}, R_{f2} = \{R_2, CF_2\}$, where R_1 and R_2 are of the same kind, then

(1) The fuzzy sum operation U_f can be defined as follows:

$$R_f = R_{f_1} \bigcup_f R_{f_2} = \{R, CF,\}$$

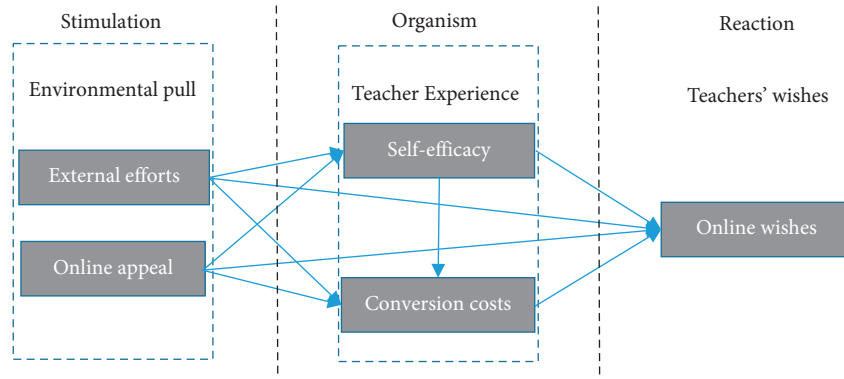$$R = R_1 \cup R_2; \tag{8}$$

$$f = CF_1 \vee CF_2.$$

FIGURE 1: A model for studying teachers' professional well-being from a "stimulus-organism-response" perspective.

$R_1 \cup R_2$ denotes a set consisting of tuples belonging to R_1 or of R_2 or both R_1 and R_2.

V is a function under $[-1, 1] \times [-1, 1] \longrightarrow [-1, 1]$, which can be defined as follows:

$$CF(r) = CF_1(r) \vee CF_2(r)$$
$$= \begin{cases} CF_1(r); \text{if } r \in R_1, \quad r \notin R_2, \\ CF_2(r); \text{if } r \in R_2, \quad r \notin R_1, \\ \max(CF_1(r), \quad CF_2(r)); if \, r \in R_1, \quad r \in R_2. \end{cases}$$
(9)

(2) The fuzzy difference operation $\sim_f$ can be defined as follows:

$$R_f = R_{f1} -_f R_{f2} = \{R, CF\},$$
(10)

where $R = R_1 - R_2$ denotes the set consisting of all tuples that belong to R_1 but not to R_2, $CF(r) = CF_1(r)$.

(3) The fuzzy nonoperation $\sim_f$ can be defined as follows:

$$R_f = \sim_f R_{f1} = \{R, CF\} = \{R_1, CF\},$$
$$CF(r) = -CF_1(r).$$
(11)

This is because $CF(H, E) + CF(\sim H, E) = 0$.

(4) The fuzzy intersection operation $\cap_f$ can be defined as follows:

$$R_f = R_{f1} \underset{f}{\cap} R_{f2} = \{R, CF\},$$
$$R = R_1 \cap R_2,$$
$$CF(r) = \min(CF_1(r), CF_2(r)).$$
(12)

(5) The fuzzy Cartesian product X_f can be defined as follows:

$$R_f = R_{f_1} \times_f R_{f_2} = \{R, CF\},$$
$$R_f = R_1 \times R_2,$$
$$CF(r) = \min(CF_1(r), CF_2(r)).$$
(13)

TABLE 1: Basic distribution of the age sample.

Demographic variables	Variables	Number of people
Age	21–25	129
	26–30	152
	31–35	189
	36–40	135

TABLE 2: Basic profile distribution of the wage and salary sample.

Demographic variables	Variables	Number of people
Wages	3000	65
	5000	235
	7000	180
	9000	98

Other important operations in a relational database, such as projection, join, select, and update, can largely be defined in the same way as in a normal relational database, with the exception of bringing in the confidence level.

2.3. Implementation of Inexact Reasoning. In the knowledge representation model of EDB, each fact and rule has a plausibility factor. Thus, an uncertain logical program is a set of sequential couples, where CLAUSE is a fact or rule and FACTOR is a plausibility factor [22]. To calculate the plausibility factor for the logical conclusion, similar to MYCIN, we use the following rules:

$$CF(A, B) = \min\{CF(A), CF(B)\},$$
$$CF(A) = \max\{CF(B) * CF | (A \leftarrow B; CF) \in PROGRAM\}.$$
(14)

3. SOR Theory

3.1. Model Study. Based on stimulus-response theory, McLean and Connor proposed the "stimulus-organism-response (S-O-R)" model, which incorporates the organismic variables. The model incorporates the organismic variables and assumes that individuals do not react mechanically and passively to external stimuli but have the ability to process information effectively in order to make rational behavioural decisions [23]. In this paper,
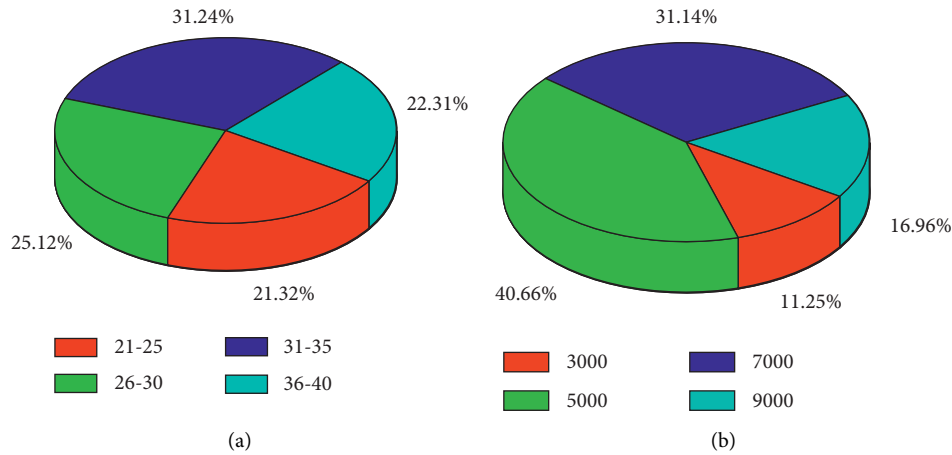
FIGURE 2: Pie chart of age and salary package: (a) age (b) salary package.

TABLE 3: The overall situation of the quality of professional well-being of young teachers in higher education.

Projects	Average value	Standard deviation	Maximum value	Minimum value
Beyond	3.50	1.46	1.70	4.64
Moderation	3.48	1.52	1.65	4.59
Humanity	3.40	1.48	2.02	4.56
Courage	3.37	1.46	2.12	4.55
Fairness	3.35	1.49	1.80	4.51
Wisdom	3.34	1.45	1.80	4.69

based on the SOR theoretical model, we consider the external environment as an external stimulus for teachers' well-being, the internal experience of teachers as an organism with internal cognition a psychological response to the stimulus, and the willingness to arrange multiple courses as a behavioural response in response to this psychological response. The specific research model is shown in Figure 1.

4. Experimental Study

In addition to maintaining a good state of psychological well-being Table 1 positive psychological qualities in individuals can also be effective in enhancing their occupational well-being [24]. Professional well-being is the cornerstone of teachers' psychological quality [25], which can effectively alleviate the stress faced by teachers' profession and address their physical and mental health, thus enhancing their professional well-being [26, 27]. Therefore, the study of teachers' psychological quality will be an important way to enhance teachers' professional well-being.

4.1. Subjects of the Study. In terms of the subjects, young teachers in higher education institutions in Jiangxi Province were taken as the subjects, and the study population covered all kinds of undergraduate and junior colleges and universities, so the sample selected was somewhat representative. A random sample of 600 questionnaires was distributed, and 504 valid questionnaires were collected. The basic distribution of the valid sample is shown in Tables 1 and 2.
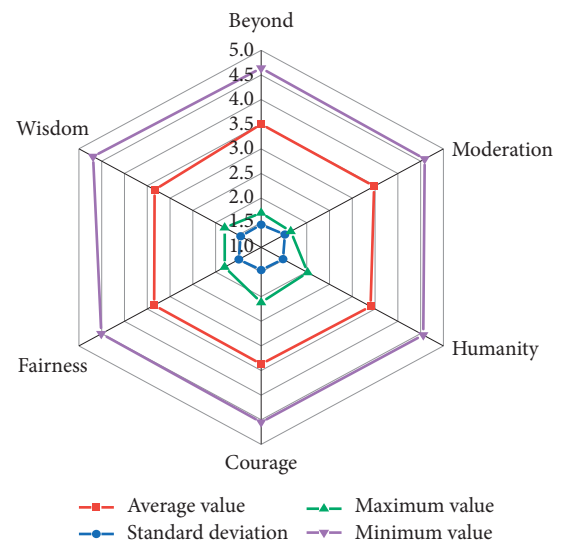

FIGURE 3: Comparison of the quality of professional well-being of young teachers in higher education.

A pie chart of age and salary package is shown in Figure 2.

For the overall situation of positive psychological qualities of young university teachers, the specific distribution of the mean, standard deviation, and maximum and minimum values of the different dimensions is given in Table 3. The analysis and comparison of the four influencing factors in Table 3 reveal that the tested group is in the middle to upper range of the happiness index. Ranking the

TABLE 4: Professional well-being status of young university teachers with different qualities.

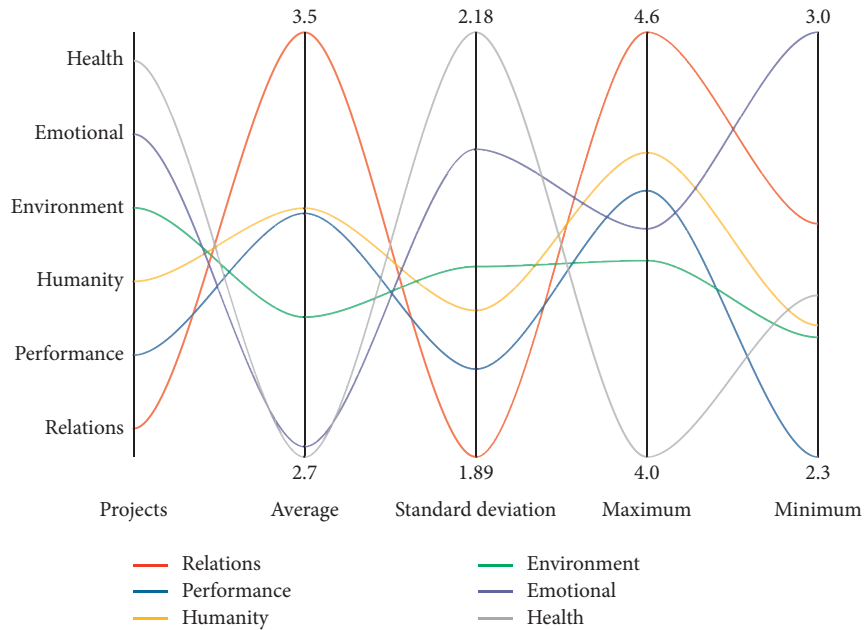| Projects	Average value	Standard deviation	Maximum value	Minimum value
Relations	3.49	1.89	4.64	2.70
Performance	3.14	1.95	4.39	2.31
Humanity	3.15	1.99	4.45	2.53
Environment	2.94	2.02	4.28	2.51
Emotional	2.69	2.10	4.33	3.02
Health	2.67	2.18	3.97	2.58
Saves	2.38	2.23	3.90	2.81

FIGURE 4: Comparison of the overall status of the second type of young university teachers' professional well-being.

dimensions from highest to lowest, they are transcendence, moderation, humanity, courage, justice, and wisdom.

A graph comparing the overall status of the quality of professional well-being of young teachers in higher education under various dimensions is shown in Figure 3.

The overall status of the second type of young university teachers' professional well-being is given according to the different quality differences. It is at a moderately low level of occupational well-being, with its seven dimensions ranked from highest to lowest, the first being interpersonal relationships and the seventh being salary and benefits, as shown in Table 4.

Comparative data on the overall status of the second type of young university teachers' professional well-being are given in Figure 4.

4.2. Research Findings.
The research revealed that the six dimensions of psychological quality were significantly and positively correlated with the overall level of occupational well-being, as shown in Table 5.

The results of the mean and standard deviation of these six qualities are shown in Figure 5.

The research shows that the six dimensions of psychological quality have a very significant positive correlation

TABLE 5: Correlation analysis between various dimensions of psychological qualities and professional well-being of young teachers in higher education.

Projects	Professional well-being	
	Average value	Standard deviation
Wisdom	3.34	1.45
Courage	3.37	1.46
Humanity	3.40	1.48
Justice	3.35	1.51
Moderation	3.48	1.44
Transcendence	3.50	1.40

with the seven dimensions of occupational well-being, as shown in Table 6.

One of the effects of psychological qualities on occupational well-being is shown in Figure 6.

There is a correlation between high and low levels of psychological quality and occupational well-being. According to the analysis of the valid questionnaire data, the psychological quality scores were ranked from high to low, and 27% of the sample was taken from high to low and from low to high at each end of the high and low groups. A comparative study of the data from the high and low
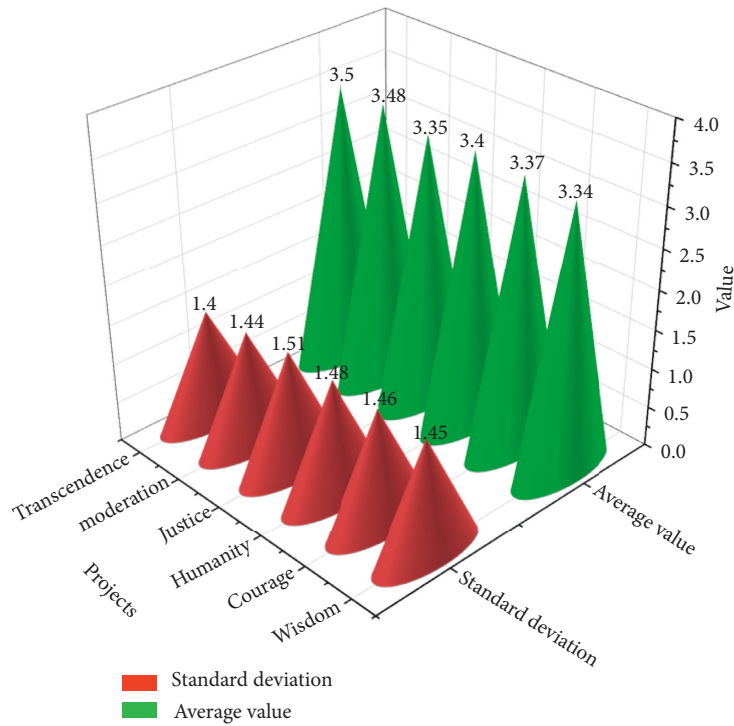
FIGURE 5: Plot of means and standard deviations for the six qualities.

TABLE 6: Correlations between the six dimensions of psychological quality and the seven dimensions of occupational well-being.

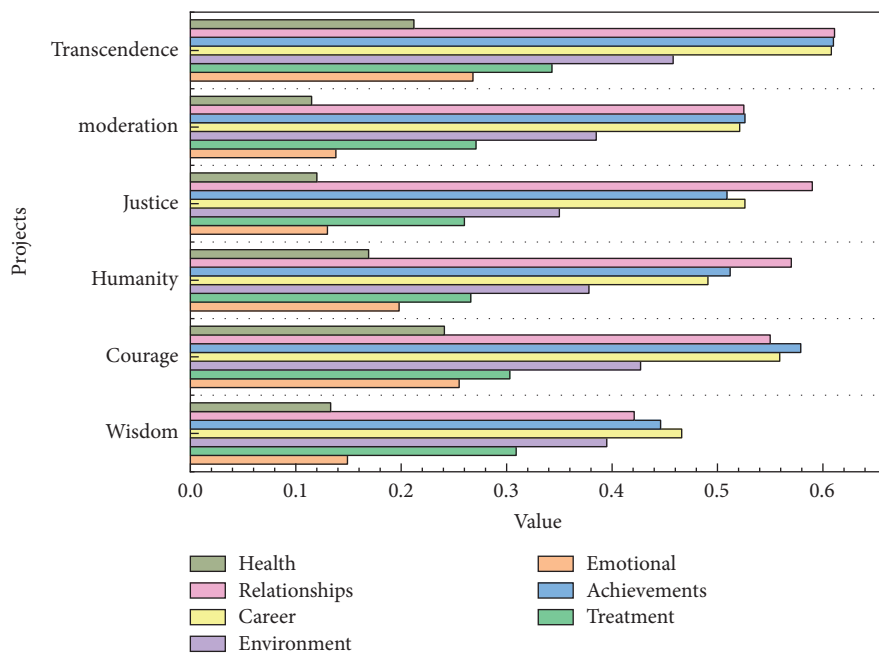| Projects	Emotional	Treatment	Environment	Career	Achievements	Relationships	Health
Wisdom	0.149	0.309	0.395	0.466	0.446	0.421	0.133
Courage	0.255	0.303	0.427	0.559	0.579	0.550	0.241
Humanity	0.198	0.266	0.378	0.491	0.512	0.570	0.169
Justice	0.130	0.260	0.350	0.526	0.509	0.590	0.120
Moderation	0.138	0.271	0.385	0.521	0.526	0.525	0.115
Transcendence	0.268	0.343	0.458	0.608	0.610	0.611	0.212

FIGURE 6: Histogram of the effect of psychological quality on occupational well-being.

TABLE 7: Tests of differences in professional well-being and its dimensions among young university teachers with different levels of psychological quality.

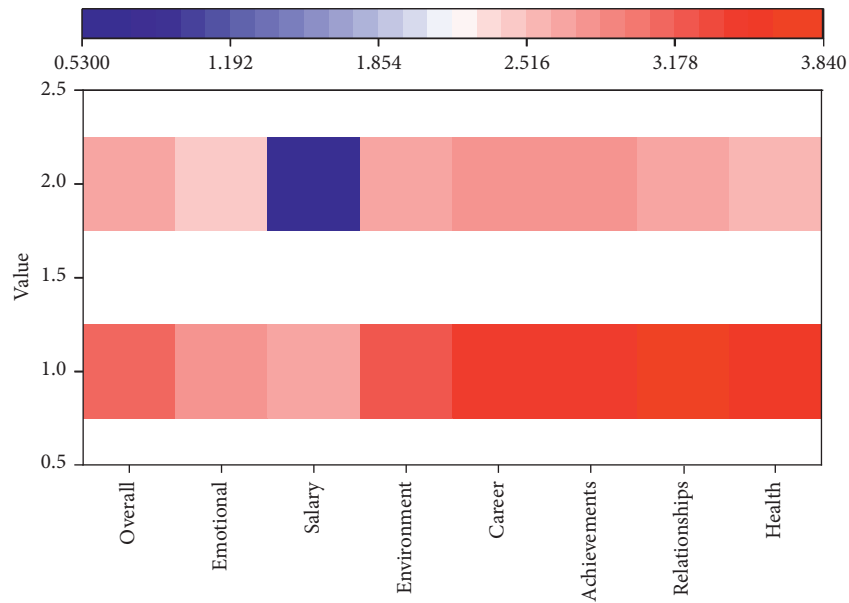| Projects	High quality grouping	Low quality grouping	T	SIG
Overall	3.17	2.67	11.31	0
Emotional	2.81	2.51	3.66	0
Salary	2.63	0.53	5.55	0
Environment	3.23	2.70	9.15	0
Career	3.46	2.84	12.55	0
Achievements	3.49	2.80	13.40	0
Relationships	3.84	2.65	13.13	0
Health	3.56	2.52	3.17	0.02

FIGURE 7: Comparison of the values of the seven different psychological qualities at high and low levels.

TABLE 8: Comparison of the titles of young university teachers with different levels of psychological quality in terms of their professional well-being.

Projects	Academic qualifications	High quality grouping $M \pm SD$	Low quality grouping $M \pm SD$	T	SIG
Professional well-being	Junior	3.09	2.68	4.70	0.02
	Intermediate	3.20	2.59	9.18	0
	Advanced	3.27	2.72	4.58	0

FIGURE 8: Histogram comparing the job titles of young university teachers with different levels of psychological quality in terms of professional well-being.

psychological quality subgroups reveals that the occupational well-being of the high subgroup is significantly higher than that of the low subgroup, and the scores on the eight dimensions of occupational well-being of the high subgroup are also significantly higher than those of the low subgroup, as shown in Table 7.

A comparison of the heat values of the high and low levels of the different mental quality levels is shown in Figure 7.

Occupational well-being was significantly higher in the high subgroup than in the low subgroup at all job title levels.
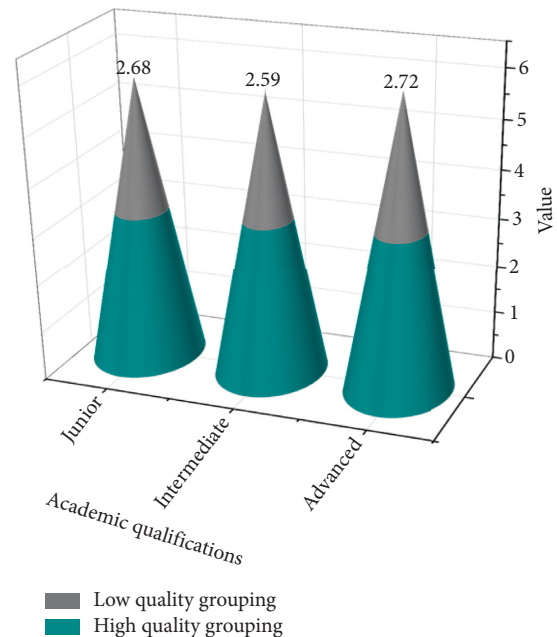
There were no significant differences in occupational well-being across job titles for the high subgroup, and the highest occupational well-being was for teachers with intermediate titles, as shown in Table 8.

In terms of differences in job titles, the high positive psychological quality group of young university teachers had significantly higher professional well-being at all job title levels than the low group. The findings also revealed that there was no significant difference in job titles among the high positive psychological quality group, which is consistent with previous studies. The results of comparing the job titles of young university teachers with different levels of psychological quality are shown in Figure 8.

As can be seen from Figure 8, the highest levels of professional well-being are found among teachers with intermediate titles. This may be due to the fact that teachers with intermediate titles are under relatively less pressure to teach and conduct research and have relatively better economic levels.

5. Conclusion

Universities should actively organize young teachers to participate in a rich and colorful leisure time cultural life, guide them to cultivate a positive attitude towards life, and help them to regulate their body and mind and live happily. Universities should regularly conduct psychological surveys and tests for young teachers, make timely and effective scientific interventions for their psychological crises, and help them relieve their stress through effective measures such as conducting psychological lectures, group psychological counselling, and providing psychological assistance. This paper examines the professional well-being and work engagement of university teachers based on expert fuzzy data and SOR theory, through a number of research tests. It also shows that young university teachers have the lowest scores in the psychological quality wisdom dimension, which indicates that young teachers still need to strengthen their learning and cognition. The occupational happiness of the high psychological quality group of young university teachers at the salary level of RMB 5,000–7,000 is significantly higher than that of the low group, which indicates that material incentives can enhance the occupational happiness of young university teachers to a certain extent. The results of the study show that teachers in the high psychological quality group have a higher sense of professional well-being than those in the low group. Therefore, according to the difference between the two, universities should establish a scientific and reasonable assessment and evaluation system. In future research work, studies should be conducted according to the different stages of teacher and student development in different schools to improve teachers' professional happiness in all aspects.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The author declares that there are no conflicts of interest.

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