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The evaluation method of college teachers' morality considering intelligent emotion recognition and data mining algorithm

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ABSTRACT

The core of teaching consists of four basic values: dignity, truthfulness, fairness, responsibility & freedom. All teaching is founded on ethics – whether it be the teacher-student relationship, pluralism, or a teacher's relationship with their work. This article combines intelligent emotion detection technology and a data mining algorithm to develop a model for evaluating college professors' morals to discover an effective way to do so. This study examines the moral hazard game model of concealed behaviors of instructors with overconfidence in four risk preference combinations based on fair fundamental assumptions and comparisons with rational teachers with the same risk preference. In addition, this research formulates the ideal incentive contract for each circumstance. It creates a model of the assessment system of college professors' morality in conjunction with their real teaching environment. In addition, the simulation model is used to assess the influence of the assessment system on the morality of college instructors. The experimental investigation indicates that the assessment technique of college professors' morality presented in this work, taking intelligent emotion detection and data mining algorithm into account, has some influence. The model and data mining algorithm are applied to evaluate college teachers' morality, the method effect is statistically evaluated, and the results showing the superiority of the proposed method are obtained.

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Introduction

Only the classroom behavior based on a complete understanding of the moral implication of the classroom is the behavior for itself. Some researchers take the selection of students to raise their hands to speak as an example to study the value education contained in the organizational management behavior of classroom teaching. The research results point out that the selection of students to raise their hands to speak has evolved from simply stimulating students' interest and testing teaching effects to carrying out value education and class culture construction in the new era. Only by fully understanding the

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values contained in it and guiding students correctly can educational behaviors demonstrate value connotations (Dubois, Gruzd, and Jacobson 2020). Moreover, the understanding of the moral connotation of the classroom is the understanding of the moral connotation and meaning of the classroom behavior. Specifically, it is the understanding of whether the classroom behavior is in line with the educational goals (Ulbricht 2020).

The educational goal is essentially the manifestation of human needs in the field of education, and the understanding of the moral implication of the classroom is to understand the moral value of the classroom. "'Value' is a subjective description of the relationship between the subject and the object, which represents the nature and degree of the subjectification process of the object, that is, the existence, attributes and lawful changes of the object are consistent, consistent or consistent with the scale of the subject. The nature and degree of proximity (Comandé and Schneider 2018)." Specifically, on the one hand, we must grasp the law of classroom behavior from the perspective of the object, that is, we must recognize that classroom behavior must be "lawful;" on the other hand, we must recognize from the perspective of the subject that classroom behavior must be consistent with the educational goals are the same, that is, "fit for purpose." In classroom teaching, teachers realize that their behavior must be "lawful" and "in accordance with the purpose," which is the fundamental requirement of "self-determination" in the value judgment of teachers' classroom teaching (Petersen, Tanner, and Munsie 2019).

Artificial Intelligence in Education (AIED) research needs to consider issues such as fairness, accountability, transparency, bias, autonomy, agency, and inclusion, as well as differentiate between doing ethical things and doing things ethically, understand and make pedagogical choices that are ethical, and account for unintended consequences. A well-designed framework for engaging with the ethics of AIED is needed, combining a multidisciplinary approach and a set of robust guidelines (Holmes et al. 2022). On the other hand, understanding student behavior is vital for virtual system developers and online education designers to integrate virtual technologies properly. This study (Sepasgozar 2022) describes designing and deploying novel virtual tour (VT) modules to serve on-the-job training needs using a case-based narrative scenario as the instructional method. The results indicate that VTAM, in conjunction with contextual learning, immersion, and social presence, has the greatest influence on student engagement, which has a good effect on student satisfaction.

The most basic rule of teachers' classroom teaching is to comply with the laws of students' physical and mental development. Whether it is the design of teaching objectives and the preparation of teaching content before class, or the use of teaching methods and the adjustment of teaching strategies in the course of classroom implementation, teachers must always check whether their presuppositions and behaviors conform to the laws of students' physical

and mental development. This kind of law exists and is manifested in the students' life world, so paying attention to the students' physical and mental development law in the classroom is bound to concern the students' life world (Williamson and Eynon 2020). "As soon as life and education collide, education will play an immediate role." If classroom teaching does not enter into students' lives and integrates with students' daily life, it is impossible to truly impress students' minds and bodies, and it is impossible to fundamentally promote students' further development explore. Such classroom teaching has caused students' physical and mental harm to a certain extent, and the classroom has become an inescapable bondage and "torture." Such a class has also become a "virtuous" class (Taylor and Pagliari 2018). Teachers' classroom teaching values "fit for purpose," the most fundamental is to meet the development of people's body and mind. This should also be the fundamental value orientation of teachers' classroom teaching. Only behaviors that meet the requirements of physical and mental development are the greatest goodness and true beauty. As generally recognized by the academic community, beauty is in the form of truth and content with goodness. The truth here is the aforementioned "regularity," and the goodness is the purpose (Kennedy 2018). Through analysis, it can be found that the value orientation of teachers in classroom teaching will inevitably lead to the unity of truth, goodness and beauty, and its core is goodness. Only kindness can reconcile the balance between what students "want" in educational practice and what teachers (or educational designers) think students "should want." Kindness has become the fundamental direction for reconciling classroom activities, and teachers' requirement of "fitness for purpose" in classroom teaching finally turns into concern for kindness. Kindness is not only the common direction of teachers and students' classroom activities, but also regulates the classroom behavior of teachers and students (Liang et al. 2018).

In the whole teaching process of colleges and universities, harmonious teacher-student relationship is the key factor to promote the smooth development of teaching work, and teachers have a decisive influence on the harmonious teacher-student relationship, which is related to the quality of the entire teaching work. Teachers' noble moral consciousness and noble moral style can promote the formation of a harmonious teacher-student relationship. As a college teacher, they have professional academic level, rigorous work style, noble moral sentiment, take students as the main object of service, and devote themselves to it. Only in the teaching and education work will you be recognized and loved by the students. As the main body of teaching and educating people, teachers can only truly achieve "preaching, accepting careers and dispelling doubts" (Etter et al. 2018). Establish a harmonious teacher-student relationship, tolerate students psychologically, communicate with students emotionally, treat students as friends in life, and treat students as interactive objects in teaching, so that students can enjoy what they learn and benefit from

Promote students' enthusiasm for learning, stimulate students' unlimited exploration ability, improve students' comprehensive quality, and improve teachers' teaching quality. If teachers do not have noble professional ethics, then teachers will not be able to love education in the process of teaching and educating people. There is a grudge between teachers and students, and students are not happy to learn, which affects the smooth progress of teaching activities, and is not conducive to the improvement of students' learning level and the improvement of teachers' teaching efficiency (Trottier 2018).

Teachers must constantly strengthen their own ideological understanding and ideological realm in order to improve their professional ethics. They must be keen on scientific research and academic research and development, and constantly improve their academic level, in order to achieve innovation in teaching, rather than blindly citing The work of others (Assumpção et al. 2018). In the process of teaching and educating people, teachers should strengthen the cultivation of professional ethics, and at the same time, they should continue to learn new knowledge and innovate teaching models based on the development of themselves and the teaching system. The guiding role of sexuality and professional ethics in teaching and educating people, so as to achieve the purpose of strengthening ideological understanding and ideological realm (Chatterjee, Kar, and Mustafa 2021).

Ideological understanding and ideological realm belong to ideological and moral understanding. Only by strengthening ideological and moral construction can we establish a correct educational concept. College teachers should adhere to the guiding ideology of educating people to carry out teaching, always put students first, and put students' teaching work in the most important position (Berendt, Littlejohn, and Blakemore 2020). In order to strengthen the education of students, teaching is carried out on the basis of students' mastery of professional knowledge and skills and noble ideology and morality, and the teaching level and quality of teaching shall be continuously improved. Professional ethics, and play the leading role of professional ethics in teaching (Ferguson and Caplan 2021).

The teaching content, teaching method and teaching experience are the results obtained through the personal practice and research of countless teachers. It is the verification obtained by teachers through practice on the premise of mastering the theoretical basis, and then imparted to students. In terms of morality, it must also be tested by moral practice, otherwise it is superficial cognition. Practice is the only criterion for testing the truth. Only by applying theory to practice and constantly learning, thinking and changing in the process of practice can we more efficiently and comprehensively understand and learn the professional ethics of teachers. Teachers also play the role of managers in school activities. Teachers and students must establish a harmonious teacher-student relationship in order to facilitate teacher management activities. A harmonious teacher-student relationship requires many

aspects of communication between teachers and students. Teachers should change their position from the role of teachers to the role of friends. Only with the same level of communication with students can the relationship between the two be closer. When students feel equality and fraternity, students will accept teachers from their hearts. Through communication, teachers can help teachers find some problems and solve them in time, which is conducive to the smooth progress of teachers' teaching and management (Saltz and Dewar 2019).

This paper combines the intelligent emotion recognition technology and data mining algorithm to construct an evaluation model of college teachers' morality to conduct intelligent evaluation of college teachers' morality.

Intelligent Moral Emotion Recognition

The Proposed Method

The dual-processing model of moral judgment is developed based on the social intuition model and the traditional rational model. It suggests that moral judgments are jointly driven by three underlying psychological processes: utilitarian tendencies, deontological tendencies, and individual self-response tendencies. This study used the median segmentation method to classify subjects higher than the median into the high sense of power group.

Moral Hazard Game Model for Hidden Actions with Different Risk Appetites and Overconfidence

As shown in Figure 1, risk-averse players have a concave utility function with decreasing marginal utility function. A risk-neutral player has a linear utility function with a constant marginal utility function of zero. Risk-loving players have a convex utility function with increasing marginal utility function (Deng, Xu, Gao, et al. 2022). However, the participants with wealth in the economics we consider are basically of diminishing marginal utility, that is, risk averse, and risk neutrality can be regarded as a special case of risk aversion. It is often considered for convenience, but risk-loving participants are often brought up for discussion in gambling problems. Therefore, for formal colleges and universities, this paper does not focus on risk-loving participants, and focuses on risk aversion and risk neutrality (Deng, Xu, Zhao, et al. 2022). Conventional artificial intelligence decision approaches emphasize maximizing expected return (or minimizing the expected cost) (Deng, Zhang, et al. 2022). This is acceptable when decision-makers are risk-agnostic. Nonetheless, many decision-makers are risk-averse and prepared to forego a portion of the anticipated profit to safeguard against catastrophic losses. Early on, the need to minimize risk while making decisions was identified, but it has not been easy

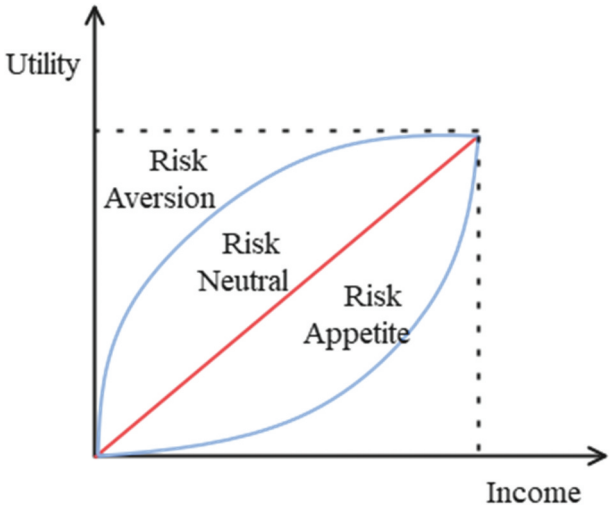


Figure 1. Utility function of risk appetite.

to design risk-capturing models. Effective risk aversion models must be simple to comprehend and interpret for decision-makers; nevertheless, they must also be broad, adaptable, and, most crucially, provide tractable optimization problems (Huang et al. 2023; Xu et al. 2023). Using anticipated utilities is the traditional way of modeling risk aversion, but they are difficult to describe and greatly complicate optimization approaches. This tutorial focuses on the innovative approach to risk aversion based on convex risk assessments. Convex measurements of risk replace the expectation operator with a more generic operator that gives negative outcomes greater weight. In recent years, the development of risk-averse decision-making strategies in artificial intelligence and machine learning has garnered increasing attention. Risk aversion is essential to apply machine learning in many practical situations, as risk-neutral solutions to mission-critical issues are sometimes prohibitively dangerous. Convex risk metrics and robust optimization are used in classification, multi-armed bandit, and reinforcement learning techniques. Although the overall notion of risk measurements is reasonably straightforward, its actual potency cannot be grasped without a deeper comprehension. For instance, combining risk aversion with sequential decision-making necessitates overcoming various temporal consistency problems. This course will throw light on these challenges and offer several research suggestions.

Hypothesis 1: The teacher's salary income is set as R_A, which is composed of the teacher's monthly fixed salary $^{\omega}$ and the corresponding monthly commission, namely $\theta\pi$. When $\theta = 0$, the management bears all the risks, and the teacher's risk cost is 0. When $\theta = 1$, the teacher assumes all risks, and the

management risk becomes 0. π is an output function, which is related to the teacher's effort level a (0≤a≤1) and the exogenous uncontrolled variable η (such as technical or market uncertainty) that affects the output. $^{\eta\tilde{N}}(0, \sigma^2)$, so there is an expression $R_A(\pi) = w + \theta\pi; \pi = a + \eta$.

Hypothesis 2: Teachers will pay the corresponding effort cost C_A when they work hard, which is related to the degree of effort of the teachers mentioned above. We assume that $C_A(a) = \frac{1}{2}ca^2, c(c > 0)$ is the cost coefficient of the teachers' effort. It is not difficult to see that as a increases, C_A also increases, because $C_A^{'}(a) > 0, C_A^{''}(a) > 0$, C_A is called a strictly monotonic function.

Hypothesis 3: The degree of risk aversion of participants is characterized by the degree of risk aversion ρ. The management's risk aversion degree is expressed as ρ_p, and the teacher's risk aversion degree is expressed as ρ_A, that is, when the management and teachers are both risk neutral, $\rho_p = 0, \rho_A = 0$. If one of the participants is risk averse, then we assume that the return of $\frac{1}{2}\rho\theta^2\sigma^2$ is exchanged for a certainty-equivalent return.

From hypothesis 1 and hypothesis 2, the actual benefit of the teacher = the salary obtained – the cost of effort, then the actual benefit of the teacher is expressed as:

$$r_A = R_A - C_A(a) = w + \theta(a + \eta) - C_A(a)$$

The expectation and variance of r_A are found, namely:

$$E(r_A) = w + \theta a - \frac{1}{2}ca^2 Var(r_A) = \theta^2\sigma^2$$

Therefore, according to the definition of the CE certainty equivalence condition, the certainty equivalence of the teacher's benefit r_A is:

$$CE = E(r_A) - \frac{1}{2}\rho_A Var(r_A) = w + \theta a - \frac{1}{2}ca^2 - \frac{1}{2}\rho_A\theta^2\sigma^2$$

Then, the actual income of the management is:

$$r_P = \pi(a, \eta) - R_A(\pi) = a + \eta - [w + \theta(a + \eta)] = a + \eta - w - \theta(a + \eta)$$

The absolute risk aversion of the utility function of management and teachers is constant, namely:

$$u(r_A) = -e^{-\rho_A r_A}; u(r_P) = -e^{-\rho_P r_P}$$

Then, there are:

$$Eu(r_A) = E(-e^{-\rho_A r_A}) = \int_{-\infty}^{+\infty} -e^{-\rho_A r_A} \frac{1}{\sqrt{2\pi}\theta\sigma} . \exp \frac{-\left(r_A - w - \theta a + \frac{1}{2}ca^2\right)^2}{2\theta^2\sigma^2} dr_A$$
$$- \exp\left[-\rho_A\left(w + \theta a - \frac{1}{2}ca^2 - \frac{1}{2}\rho_A\theta^2\sigma^2\right)\right]$$

Then, the incentive compatibility condition (IC) for the management to motivate teachers is:

$\frac{\partial CE}{\partial a} = \theta - ca = 0$, and solutions have to θ=ca (IC)

Hypothesis 4: Teachers will definitely have certain requirements for their own salary income, and we assume that the minimum limit in teachers' mind is M. If the maximum benefit that the teacher gets is less than M, then the teacher will definitely not accept such a contract, and he will definitely switch to another place to find a job, and the contract will not be established at this time. In order for the teacher to accept the contract, it must ensure that the teacher's participation constraint (IR) is met, that is, the teacher's actual salary is not less than the minimum salary, and the formula is expressed as:

$$w + \theta a - \frac{1}{2}ca^2 - \frac{1}{2}\rho_A\theta^2\sigma^2 \geq M \quad \text{(IR)}$$

Hypothesis 5: Due to the existence of certain psychological cognitive biases in teachers. When teachers are overconfident, they feel more capable of completing tasks assigned by management. Therefore, at this time, teachers have to put in more effort than before, and they will put more effort into a^*, and then the minimum salary in the teacher's mind will also increase by M^*. At this time, the management is willing to give teachers more w^* because of the increase of teachers' income. To sum up, a^* represents the teacher's effort deviation level, and $a^* > 0$ means more effort. $M^* > 0$ means that the minimum wage increases when teachers are overconfident, $M^* = 0$ means that teachers are also in a "rational person" state, and w^* is similar. It is assumed here that the commission rate under the overconfidence situation of the teacher is the same as that of the rational teacher under the same risk preference, and the commission rate remains unchanged.

Model Establishment and Optimal Incentive Contract Analysis

The purpose of the management is to meet the incentive constraints (IC) (IR) of teachers, we set an appropriate incentive contract $R_A(\pi) = w + \theta\pi$ (fixed salary + performance commission) to motivate teachers to work hard and ultimately maximize their certainty equivalent benefits. Therefore, the

management is mainly to determine the appropriate (w, θ) to motivate teachers to choose actions that are beneficial to the management. We can use the optimal knowledge to find the optimal solution through the model. The following chapters start with the most basic traditional models, and gradually change the conditions.

(1) Teacher rationality

If both the management and the teachers are risk-neutral, then neither of them has any risk aversion, then $a^* = 0$, $M^* = 0$, $w^* = 0$. The model is:

$$\begin{cases} \max\limits_{w,\theta} [-w + (1 - \theta)a] \\ s.t.(IR) Er_{A_1} = w + \theta a - \frac{1}{2}ca^2 \geq M \\ (IC)a = \frac{\theta}{c} \end{cases}$$

For the management, of course, the lower the contract for teachers, the better, so the minimum contract only needs to meet the teacher's mental limit. That is, $w + \theta a - \frac{1}{2}ca^2 = M$, then the model becomes:

$$\begin{cases} \max\limits_{w,\theta} [-w + (1 - \theta)a] \\ s.t.(IR) Er_{A_1} = w + \theta a - \frac{1}{2}ca^2 = M \\ (IC)a = \frac{\theta}{c} \end{cases} \tag{1}$$

Solving the above optimization problem, the optimal solution, that is, the optimal incentive contract (w_1, θ_1) is:

$$\begin{cases} w_1 = M - \frac{1}{2c} \\ \theta_1 = 1 \end{cases} \tag{2}$$

At this point, the management's maximum expected benefit is:

$$Er_{P\max_1} = -M + \frac{1}{2c} \tag{3}$$

Inference 1: Under the case of neutral and neutral, the optimal incentive contract designed by management for rational teachers is $\left(M - \frac{1}{2c}, 1\right)$. At this time, the teacher's commission ratio is the highest, so all risks are assumed, and the management's risk cost is 0.

At this time, there is still no risk aversion, but due to the overconfidence of teachers, adding overconfidence, that is, $a^*>0$, $w^*>0$, $M^*>0$, the expected benefits of management and the constraints of teachers have changed, the model is:

$$\begin{cases} \max\limits_{w,\theta} \left[\left(w + w_1^*\right) + (1 - \theta)\left(a + a_1^*\right)\right] \\ s.t.(IR) Er_{A_1}{}^* = \left(w + w_1^*\right)\theta\left(a + a_1^*\right) - \frac{1}{2}c\left(a + a_1^*\right)^2 = M + M_1^* \\ (IC)a = \frac{\theta}{c} \end{cases} \tag{4}$$

Bringing formula (2) into the above model, we get:

$$M-\frac{1}{2c}+w_1^*+a+a_1^*-\frac{1}{2}ca^2-caa_1^*-\frac{1}{2}c\left(a_1^*\right)^2=M+M_1^*$$

The solution is that $a_1^*=\sqrt{\frac{2M_1^*-2w_1^*}{c}}$, $w_1^*=\frac{2M_1^*-c\left(a_1^*\right)^2}{2}$, then $\frac{\partial w_1^*}{\partial a_1^*}=-a_1^*c$, so the expected return of the management is:

$$\begin{aligned}&Er_{P_1}{}^*=-\left(w+w_1^*\right)+(1-\theta)\left(a+a_1^*\right)=-\left(w+w_1^*\right)+(1-\theta)\left[\frac{\theta}{c}+\sqrt{\frac{2M_1^*-2w_1^*}{c}}\right]\\&r_{P_1}{}^*=\left(a+a_1^*\right)+\eta-\left(w+w_1^*\right)-\theta\left(a+a_1^*\right)-\theta\eta\end{aligned}\tag{5}$$

The management expects the maximum return, that is, the first derivative of (5) to a_1^* is 0, and we get:

$$\begin{aligned}&\frac{\partial r_{P_1}^*}{\partial a_1^*}=1+a_1^*c-1=c\sqrt{\frac{2M_1^*-2w_1^*}{c}}=0,solution\\&M_1^*=w_1^*\text{that is}a_1^*=0\end{aligned}\tag{6}$$

From formula (6), in the case of neutral, teachers do not have overconfidence. At the same time, we speculate that teachers' psychological cognitive bias may be related to teachers' risk preference, and we will continue to explore the proof in the next model.

Inference 2: Under the case of neutral and neutral, the overconfidence of teachers does not exist, and this discussion does not hold.

Teacher rationality

According to the establishment of the above two models (1) and (4), we can easily write the model as:

$$\begin{cases}\max\limits_{w,\theta}[-w+(1-\theta)a]\\s.t.(IR)Er_{A_2}=w+\theta a-\frac{1}{2}ca^2-\frac{1}{2}\rho_A\theta^2\sigma^2=M\\(IC)a=\frac{\theta}{c}\end{cases}\tag{7}$$

Solving the above optimization problem, the optimal solution, that is, the optimal incentive contract (w_2,θ_2) is:

$$\begin{cases}w_2=M-\frac{1}{2c\left(1+c\rho_A\sigma^2\right)^2}+\frac{\rho_A\sigma^2}{2\left(1+c\rho_A\sigma^2\right)^2}\\\theta_2=\frac{1}{1+c\rho_A\sigma^2}\end{cases}\tag{8}$$

$$\frac{\partial\theta_2}{\partial c}<0,\frac{\partial\theta_2}{\partial\rho_A}<0,\frac{\partial\theta_2}{\partial\sigma^2}<0$$

At this time, the maximum expected benefit of management is:

$$Er_{P\max_2}=-w+(1-\theta)a=-M+\frac{1}{2c\left(1+c\rho_A\sigma^2\right)}\tag{9}$$

Inference 3: Under the case of neutral and avoidance, if teachers are rational, then both management and teachers need to take certain risks, and the optimal incentive contract is (w_2, θ_2).

(2) Teachers are overconfident

According to the above hypothesis, the model is:

$$\begin{cases} \max\limits_{w,\theta}\left[-\left(w+w_2^*\right)+(1-\theta)\left(a+a_2^*\right)\right] \\ s.t.(IR)Er_{A_2}{}^* = \left(w+w_2^*\right)+\theta\left(a+a_2^*\right)-\frac{1}{2}c\left(a+a_2^*\right)^2 = M+M_2^* \\ (IC)a=\frac{\theta}{c} \end{cases} \tag{10}$$

Putting formula (8) into (IR) of the above model, we get:

$$a_2^* = \frac{\sqrt{\left[\theta_2^2-\frac{1}{\left(1+c\rho_{A_2}\sigma^2\right)^2}\right]\left(1-c\rho_{A_2}\sigma^2\right)-2c(M_2^*-w_2^*)}}{c}$$

However, we assume that the performance commission is constant, so we bring $\theta_2=\frac{1}{1+c\rho_A\sigma^2}$ into the above formula to simplify:

$$a_2^* = \frac{\sqrt{2c(w_2^*-M_2^*)}}{c}, w_2^* = \frac{c\left(a_2^*\right)^2+2M_2^*}{2} \tag{11}$$

Finding the partial derivation of w_2^* to a_2^*, we get $\frac{\partial w_2^*}{\partial a_2^*}=ca_2^*$, and because of the existence of the following formula:

$$r_{P_2}{}^* = \left(a+a_2^*\right)+\eta-\left(w+w_2^*\right)-\theta_2\left(a+a_2^*\right)-\theta_2\eta \tag{12}$$

By taking the first-order partial derivative of $r_{P_2}{}^*$, it can be obtained that the management can obtain the maximum expected return when the following w_2^* is selected, namely:

$$\begin{aligned} &\frac{\partial r_{P_2}^*}{\partial a_2^*} = 1+ca_2^*-\theta_2 = 1-\sqrt{2c(w_2^*-M_2^*)}-\theta_2 = 0, solution \\ &w_2^* = \frac{(1-\theta_2)^2}{2c}+M_2^* = \frac{c\rho_A^{2\sigma^4}}{2\left(1+c\rho_A\sigma^2\right)^2}+M_2^* \end{aligned} \tag{13}$$

Bringing the above w_2^* into formula (11), we get:

$$a_2^* = \frac{\rho_A\sigma^2}{1+c\rho_A\sigma^2} \tag{14}$$

a_2^* can be seen as a teacher's overconfidence. Therefore, through (14), it is concluded that the degree of overconfidence of teachers has a certain relationship with the variance (σ^2) of exogenous uncertain factors, the coefficient of effort cost (c), and the degree of absolute risk aversion (ρ_A).

Inference 4 is:

① $\frac{\partial a_2^*}{\partial c} = \frac{\rho_A^2 \sigma^4}{\left(1+c\rho_A\sigma^2\right)^2} < 0$ means that teachers' overconfidence is negatively correlated with their effort cost. From a practical point of view, if a person needs to pay too much effort because of the work, he is of course unwilling to put in more effort, and naturally there will be no psychological bias of overconfidence.

② $\frac{\partial a_2^*}{\partial \rho_A} = \frac{\sigma^2}{\left(1+c\rho_A\sigma^2\right)^2} > 0$ means that teachers' overconfidence is positively correlated with their risk aversion. When $\rho_A \to 0$, $a_2^* \to 0$, it can be interpreted that if the teacher's risk is neutral, the teacher's overconfidence bias will not exist. This is also the conclusion obtained in Corollary 2 above, which has been proved again from the limit point of view. However, in the real economy, in order to improve the overconfidence of teachers, it is usually not adopted to recruit teachers with high risk aversion. Because the above inference 3 shows that the higher the risk aversion of teachers, the less risk they are willing to take, which makes the management need to take more risks.

③ $\frac{\partial a_2^*}{\partial \sigma^2} = \frac{\rho_A}{\left(1+c\rho_A\sigma^2\right)^2} > 0$ means that the more unstable some uncertain factors in the work, the more easily teachers are overconfident. This is also consistent with the basic fact that we believe that when people encounter difficulties, they are more likely to have overconfidence and face them. However, in order to improve the overconfidence of teachers, it is generally not used to increase the uncertainty factor, because it may bring more negative effects to colleges and universities.

a_2^* can also be expressed as:

$$\frac{\partial}{\partial c} a_2^* = \frac{\rho_A^2 \sigma^2}{1 + c\rho_A \sigma^2} = \rho_A \sigma^2 \theta_2 \tag{15}$$

It can be seen from (15) that under the premise that ρ_A and σ^2 remain unchanged, a_2^* and θ_2 are linearly related, that is, the greater the commission ratio given by management to teachers, the more easily teachers are overconfident. This is also consistent with common sense in our economics. When the management pays the teachers more, the teachers are of course more willing to put in more effort and have more confidence in the work assigned by the management. From the real economy, we also get the argument again.

Inference 5: Under the case of neutral and avoidance and constant ρ_A and σ^2, the teacher's overconfidence a_2^* is linearly related to the commission ratio θ_2.

In this case, the maximum expected return of the management can also be calculated. Substituting the above w_2^* sum into the objective function of (10), we can get:

$$Er_{P\max_2}{}^* = -M + \frac{c^2\rho_A^2\sigma^4 + c\rho_A\sigma^2 + 1}{2c\left(1 + c\rho_A^2\right)^2} - M_2^*$$
$$= -M + \frac{1 + c\rho_A\sigma^2}{2c\left(1 + c\rho_A\sigma^2\right)^2} + \frac{c^2\rho_A^2\sigma^4}{2c\left(1 + c\rho_A\sigma^2\right)^2} - M_2^*$$

By simplifying formula (9), we get:

$$Er_{P\max_2}{}^* = Er_{P\max_2} + \frac{1}{2}c\left(a_2^*\right)^2 - M_2^* \tag{16}$$

According to (16), as long as $\frac{1}{2}c\left(a_2^*\right)^2 > M_2^*$ is satisfied, then $Er_{P\max_2}{}^* > Er_{P\max_2}$. That is to say, the appropriate overconfidence of teachers is not a bad thing, but it will bring higher expected benefits to the management than the rational maximum expected benefits, which will increase the amount of benefits for the management. At the same time, the deterministic equivalent income of the teacher at this time is $M + M_2^*$, which is also larger than the deterministic equivalent income M of rationality, so it is also beneficial to the teacher, so it is a win-win situation for both parties at this time.

Inference 6: Under the case of neutral and avoidance, for overconfident teachers, as long as $\frac{1}{2}c\left(a_2^*\right)^2 > M_2^*$, the new optimal incentive contract $\left(w_2 + w_2^*, \theta_2\right)$ will bring higher benefits to management and teachers than under rational conditions, changing the traditional principal-agent relationship.

(1) Teacher rationality

At this time, the management risk aversion, the model is:

$$\begin{cases} \max\limits_{w,\theta}\left[-w + (1-\theta)a - \frac{1}{2}\rho_P(1-\theta)^2\sigma^2\right] \\ s.t.(IR)Er_{A_3} = w + \theta a - \frac{1}{2}ca^2 = M \\ (IC)a = \frac{\theta}{c} \end{cases} \tag{17}$$

Solving the above optimization problem, the optimal solution, that is, the optimal incentive contract (w_3, θ_3) is:

$$\begin{cases} w_3 = M - \frac{1}{2c} \\ \theta_3 = 1 \end{cases}$$
$$Er_{P\max_3} = -M + \frac{1}{2c} \tag{18}$$

Inference 7: Under the case of avoidance and neutral, the optimal incentive contract designed by the management for rational teachers is $\left(M - \frac{1}{2c}, 1\right)$. At this time, the teacher's commission rate is the highest, so all risks are assumed, and the management's risk cost is 0.

(2) Teachers are overconfident

The model is:

$$\begin{cases} \max\limits_{w,\theta}\left[-w + w_3^* + (1-\theta)\left(a + a_3^*\right)\right] \\ s.t.(IR) Er_{A_3}{}^* = w + w_3^* + \theta\left(a + a_3^*\right) - \frac{1}{2}c\left(a + a_3^*\right)^2 = M + M_3^* \\ (IC) a = \frac{\theta}{c} \end{cases} \tag{19}$$

Bringing (18) into the above model, we get:

$$M - \frac{1}{2c} + w_3^* + a + a_3^* - \frac{1}{2}ca^2 - caa_3^* - \frac{1}{2}c\left(a_3^*\right)^2 = M + M_3^*$$

The solution is that $a_3^* = \sqrt{\frac{2M_3^* - 2w_3^*}{c}}$, $w_3^* = \frac{2M_3^* - c\left(a_3^*\right)^2}{2}$, then $\frac{\partial w_3^*}{\partial a_3^*} = -a_3^* c$, so the expected return of the management is:

$$\begin{aligned} &Er_{P_3}{}^* = -\left(w + w_3^*\right) + (1-\theta_3)\left(a + a_3^*\right) = -\left(w + w_3^*\right) + (1-\theta_3)\left[\frac{\theta_3}{c} + \sqrt{\frac{2M_3^* - 2w_3^*}{c}}\right] \\ &and r_{P_3}{}^* = \left(a + a_3^*\right) + \eta - \left(w + w_3^*\right) - \theta_3\left(a + a_3^*\right) - \theta_3\eta \end{aligned} \tag{20}$$

The management expects the maximum return, that is, the first derivative of (320) to a_3^* is 0, and we get:

$$\begin{aligned} &\frac{\partial r_{P_3}*}{\partial a_3*} = 1 + a_3 * c - 1 = c\sqrt{\frac{2M_3* - 2w_3^*}{c}} = 0, solution \\ &M_3^* = w_3^* \text{that is} a_3^* = 0 \end{aligned} \tag{21}$$

Inference 8: The psychological bias of teachers' overconfidence has nothing to do with the management's risk preference, but is only related to the teachers' risk preference.

In this case, both are risk averse, and of course both have a degree of risk aversion, and it is conceivable that it must be the most complicated situation.

(1) Teacher rationality

The model is:

$$\begin{cases} \max\limits_{w,\theta}\left[-w + (1-\theta)a - \frac{1}{2}\rho_P(1-\theta)^2\sigma^2\right] \\ s.t.(IR) Er_{A_4} = w + \theta a - \frac{1}{2}ca^2 - \frac{1}{2}\rho_A\theta^2\sigma^2 = M \\ (IC) a = \frac{\theta}{c} \end{cases} \tag{22}$$

Solving the above optimization problem, the optimal solution, that is, the optimal incentive contract (w_4, θ_4) that maximizes the management revenue is:

$$\begin{cases} w_4 = M - \frac{\left(1 + c\rho_P\sigma^2\right)^2}{2c\left(1 + c\rho_P\sigma^2 + c\rho_A\sigma^2\right)^2} + \frac{\left(1 + c\rho_P\sigma^2\right)^2\rho_A\sigma^2}{2\left(1 + c\rho_P\sigma^2 + c\rho_A\sigma^2\right)^2} \\ \theta_4 = \frac{1 + c\rho_P\sigma^2}{1 + c\rho_P\sigma^2 + c\rho_A\sigma^2} \end{cases} \tag{23}$$

Similarly, the maximum expected return of management is calculated as:

$$Er_{P\max_4} = -M + \frac{1 + c\rho_P\sigma^2}{2c\left(1 + c\rho_A\sigma^2 + c\rho_P\sigma^2\right)} < Er_{P\max_2}$$

$$\frac{\partial\theta_4}{\partial c} < 0, \frac{\partial\theta_4}{\partial\rho_A} < 0, \frac{\partial\theta_4}{\partial\rho_P} > 0, \frac{\partial\theta_4}{\partial\sigma^2} < 0$$

Inference 9: Under the condition of avoidance and avoidance, the optimal incentive contract for rational teachers is (w_4, θ_4), and both management and teachers bear certain risks. The teacher's performance commission day is not only negatively correlated with c, ρ_A and σ^2, but also positively correlated with the management's risk aversion degree ρ_P.

(2) Teachers are overconfident

The model becomes:

$$\begin{cases} \max\limits_{w,\theta}\left[-w + w_4^* + (1-\theta)\left(a + a_4^*\right) - \frac{1}{2}\rho_P(1-\theta)^2\sigma^2\right] \\ s.t.(IR)Er_{A_4}{}^* = w + w_4^* + \theta\left(a + a_4^*\right) - \frac{1}{2}c\left(a + a_4^*\right)^2 - \frac{1}{2}\rho_A\theta^2\sigma^2 = M + M_4^* \\ (IC)a = \frac{\theta}{c} \end{cases} \tag{24}$$

Bringing (23) into (IR) at this time, we get:

$$M - \frac{\left(1 + c\rho_P\sigma^2\right)^2 - c\left(1 + c\rho_P\sigma^2\right)^2\rho_A\sigma^2}{2c\left(1 + c\rho_P\sigma^2 + c\rho_A\sigma^2\right)^2}$$

$$+w_4^* + a^2c + aca_4^* - \frac{1}{2}ca^2 - caa_4^* - \frac{1}{2}c\left(a_4^*\right)^2 - \frac{1}{2}\rho_A a^2c^2\sigma^2 = M + M_4^*$$

Simplifying the above formula, we can get:

$$\frac{\left(1 + c\rho_P\sigma^2\right)^2 - c\left(1 + c\rho_P\sigma^2\right)^2\rho_A\sigma^2}{2c\left(1 + c\rho_P\sigma^2 + c\rho_A\sigma^2\right)^2} + w_4^* + \frac{1}{2}\theta a - \frac{1}{2}c\left(a_4^*\right)^2 - \frac{1}{2}\rho_A a^2c^2\sigma^2 = M_4^*$$

Solving the above formula, we can get:

$$\left(a_4^*\right)^2 = \frac{\left[\theta^2 - \frac{\left(1+c\rho_P\sigma^2\right)^2}{\left(1+c\rho_P\sigma^2+c\rho_A\sigma^2\right)^2}\right]\left(1 - \rho_A\sigma^2c\right) - 2c\left(M_4^* - w_4^*\right)}{c^2}$$

Moreover, since it is assumed that the teacher's performance commission is unchanged, θ_4 is brought into the above $\left(a_4^*\right)^2$, and further simplification is obtained to obtain $a_4^* = \sqrt{\frac{2c\left(w_4^* - M_4^*\right)}{c}}$, $w_4^* = \frac{c\left(a_4^*\right)^2 + 2M_4^*}{2}$, and the partial derivative of w_4^* to a_4^* is still $\frac{\partial w_4^*}{\partial a_4^*} = ca_4^*$. Therefore, the result obtained next will not change, because $r_{P_4}{}^*$ has not changed, and we get:

$$w_4^* = \frac{c\rho_A^{2\sigma^4}}{2\left(1+c\rho_A\sigma^2\right)^2} + M_4^*, a_4^* = \frac{\rho_A\sigma^2}{1+c\rho_A\sigma^2} \tag{25}$$

By comparing (25) with (13) and (14), it is found that although the risk preferences of management and teachers have changed, $w_2 \neq w_4$, $\theta_2 \neq \theta_4$. However, when teachers are all overconfident, $w_2^* \neq w_4^*$, $a_2^* \neq a_4^*$, of course Corollary 4 and Corollary 5 still hold. Therefore, we can more intuitively show the relationship between a^* and c, ρ_A and σ^2, as shown in Figure 2.

Substituting the above w_4^* and a_4^* into the objective function of (24), we can get the maximum expected benefit of management when teachers are overconfident.

$$\begin{aligned} Er_{P\max_4}{}^* &= -w + (1-\theta_4)a - \frac{1}{2}\rho_P(1-\theta_4)^2\sigma^2 + w_4^* + (1-\theta_4)a_4^* \\ &= Er_{P\max_4} + \frac{c^2\rho_A\sigma^4}{2c\left(1+c\rho_A\sigma^2\right)^2} - M_4^* \\ &= Er_{P\max_4} + \frac{1}{2}c\left(a_4^*\right)^2 - M_4^* \end{aligned} \tag{26}$$

From (26), when $\frac{1}{2}c\left(a_4^*\right)^2 - M_4^* > 0$, $Er_{P\max_4}{}^* > Er_{P\max_4}$.

Inference 10: Under the condition of avoidance, for overconfident teachers, as long as $\frac{1}{2}c\left(a_4^*\right)^2 - M_4^* > 0$, the new optimal incentive contract $\left(w_4 + w_4^*, \theta_4\right)$ will bring higher benefits to management and teachers than under rational conditions.

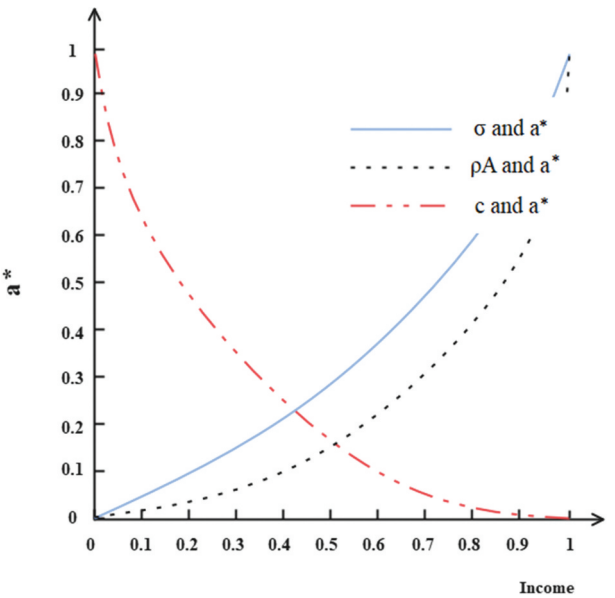


Figure 2. The relationship between teachers' overconfidence a_2^* and exogenous uncertainty variance σ^2, teachers' effort cost coefficient c and risk aversion ρ_A.

Evaluation Method of College teachers' Morality Considering Intelligent Emotion Recognition and Data Mining Algorithm

The dual-processing model of moral judgment (Figure 3) is developed on the basis of the social intuition model, while absorbing the views of the traditional rational model. The dual-processing model believes that there are two systems in the process of people making moral judgments, one is the intuitive system induced by emotion, and the other is the rational reasoning system generated by the cognitive process.

In the research on the relationship between moral judgment and moral behavior, through a large number of empirical studies, the following model is proposed in Figure 4(a), and the overall moral motivation module element model is shown in Figure 4(b):

In the CNI model, researchers believe that moral judgments are jointly driven by three underlying psychological processes: utilitarian tendencies, deontological tendencies, and individual self-response tendencies. Moreover, they are characterized by outcome-driven responses (C parameter), ethics-driven responses (N parameter), and the individual's own tendency to respond (I parameter). A diagram of the CNI model is shown in Figure 5.

Typical moral dilemmas pitting the outcomes of a particular action against the activity's adherence toto moral principles confound several moral evaluation elements. The formal CNI model of moral decision-making assesses (1) sensitivity to consequences, (2) sensitivity to moral norms, and (3) a general preference for inactivity as opposed to action in response to moral problems. The CNI model allows researchers to quantify sensitivity to consequences, sensitivity to norms, and a preference for inactivity over action, independent of consequences and norms, by dissociating these elements. The CNI model gives C, N, and I parameters to assess the mental processes underlying moral

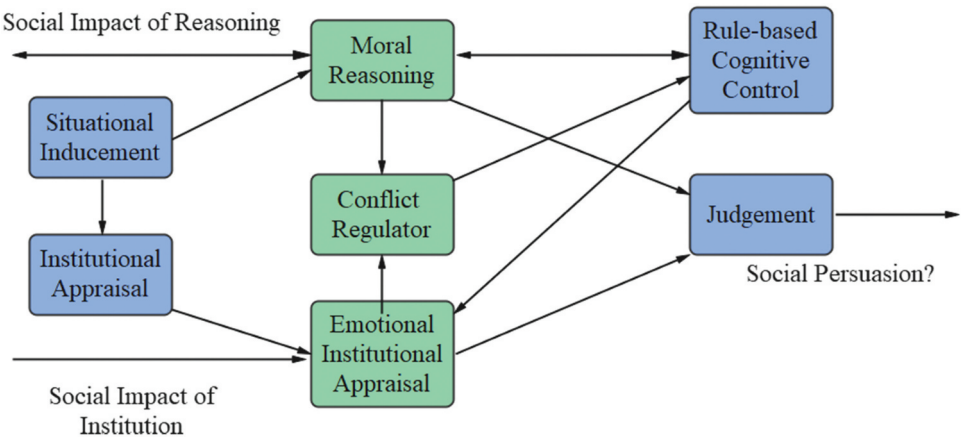
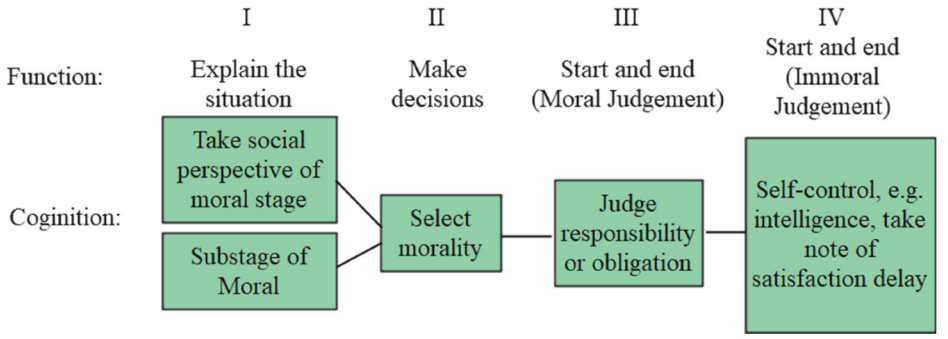
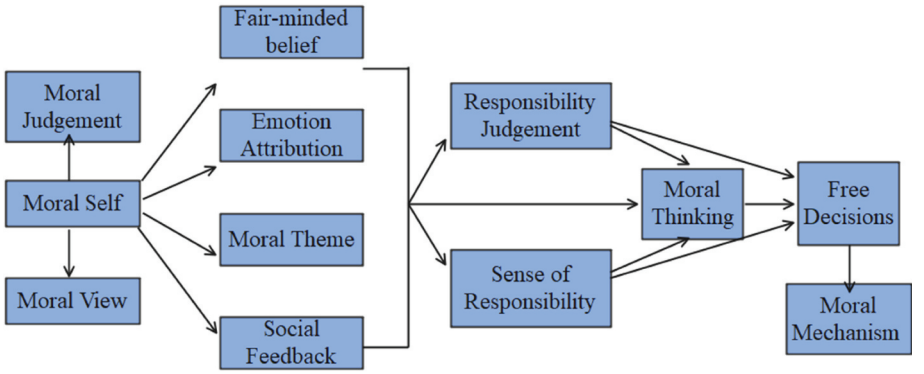


Figure 3. Dual-processing model of moral judgment.



(a) Model of the relationship between moral judgment and moral behavior



(b) Elemental model of the overall moral motivation module

Figure 4. Moral model. (a) Model of the relationship between moral judgment and moral behavior, (b) Elemental model of the overall moral motivation module.

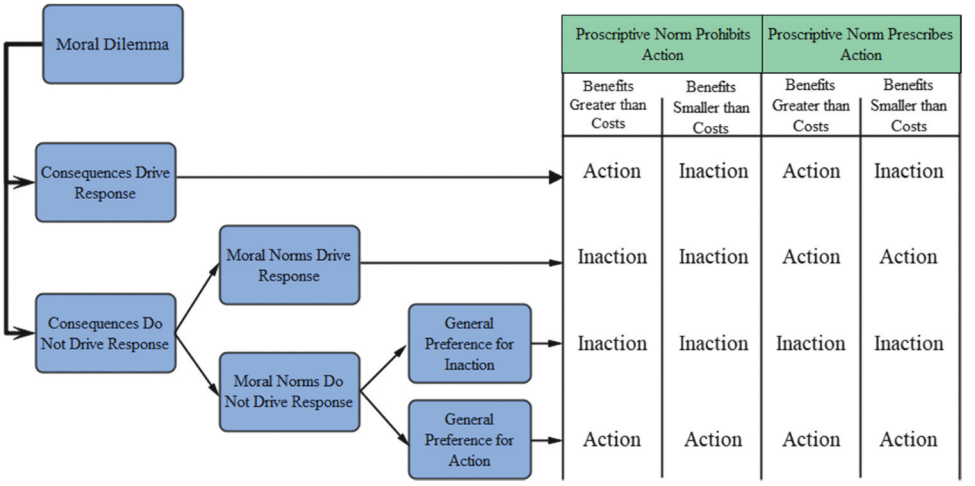


Figure 5. Illustration of the CNI model.

decision-making: consequence sensitivity (C), norm sensitivity (N), and generalized inaction/action preferences (I) (I). The CNI model gives four mathematical equations with the three model parameters as unknowns and the observed probabilities of action (vs. inactivity) responses on the four types of dilemmas as known numerical values. 1 Maximum likelihood statistics are used to estimate numerical values for the three parameters, to minimize the difference between the empirically observed probabilities of action (vs. inaction) responses on the four types of dilemmas and the probabilities of action (vs. inaction) responses predicted by the model equations using the identified parameter estimates. The predicted scores for each parameter represent probabilities ranging from 0 to 1. For the C parameter, values considerably larger than zero suggest that answers were influenced by modification of consequences in such a way that participants displayed a response pattern that optimizes the greater good. For the N parameter, values considerably larger than zero suggest that the manipulation of moral norms influenced answers to the extent that participants displayed a coherent response pattern with both proscriptive and prescriptive norms. Scores more than 0.5 for the I parameter suggest a general tendency for inactivity, whereas scores significantly lower than 0.5 show a general desire for action. The appropriateness of the model in explaining the data may be tested using goodness-of-fit statistics; a poor model fit would be shown by a statistically significant difference between the empirically observed probabilities and the anticipated probabilities.

When considering the grouping of high and low personal sense of power, this study used the median segmentation method. According to the scores of the subjects' personal sense of power, subjects higher than the median are classified into the high sense of power group, and the grouped data and the CNI model are well fitted. Figure 6 shows the estimated CNI parameters of

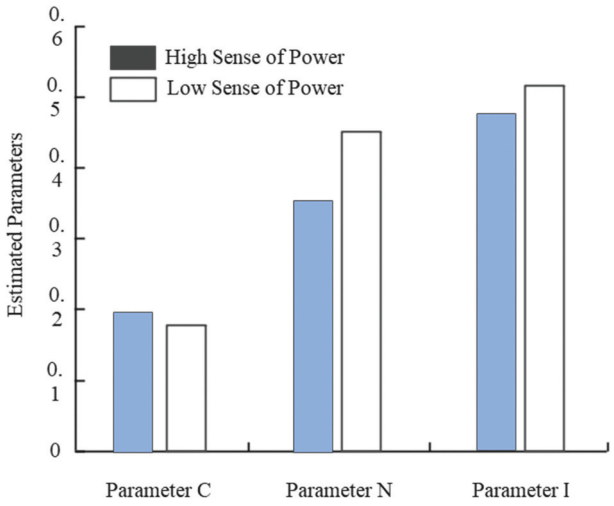


Figure 6. Differences in CNI model parameters between different personal sense of power groups.

different groups of subjects.

When considering the grouping of high and low sense of power, the data collected and the CNI model fit well, and the estimated values of CNI parameters for subjects in different priming groups are shown in Figure 7. The results show that the influence of power on the judgment of moral dilemma is reflected in the fact that power affects the individual's sensitivity to results and the sensitivity to rules. Specifically, the sense of power increases the individual's sensitivity to results, prompts the subjects to make utilitarian moral judgments, reduces the individual's sensitivity to rules, and inhibits the subjects from making deontological moral judgments. However, the sense of power has no significant effect on the general action tendency of individuals.

The above model and data mining algorithm are applied to the evaluation of college teachers' morality, and the clustering effect is statistically evaluated, and the results shown in Figure 8 are obtained.

From the above results, it can be seen that the evaluation method of college teachers' morality considering the intelligent emotion recognition and data mining algorithm proposed in this paper has a certain effect. The results show that power affects the individual's sensitivity to results and the sensitivity to rules but have no significant effect on the general action tendency of individuals. It must be noted that researchers interested in estimating the proposed approach in any research methodology are advised to work with a statistician in order to incorporate the method in their analyses.

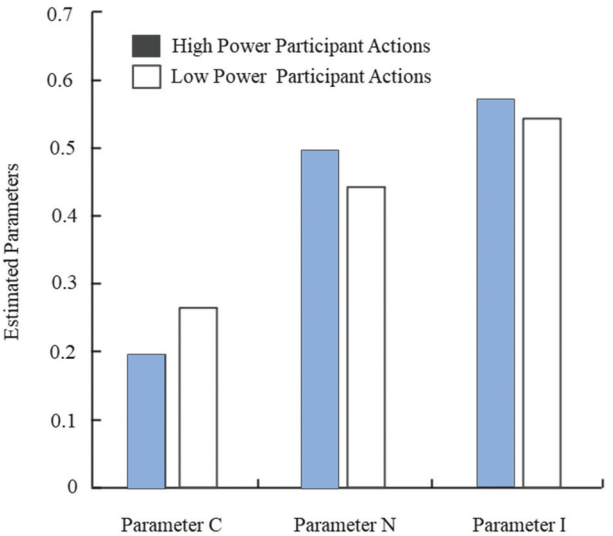


Figure 7. Differences in CNI model parameters between different power priming groups.

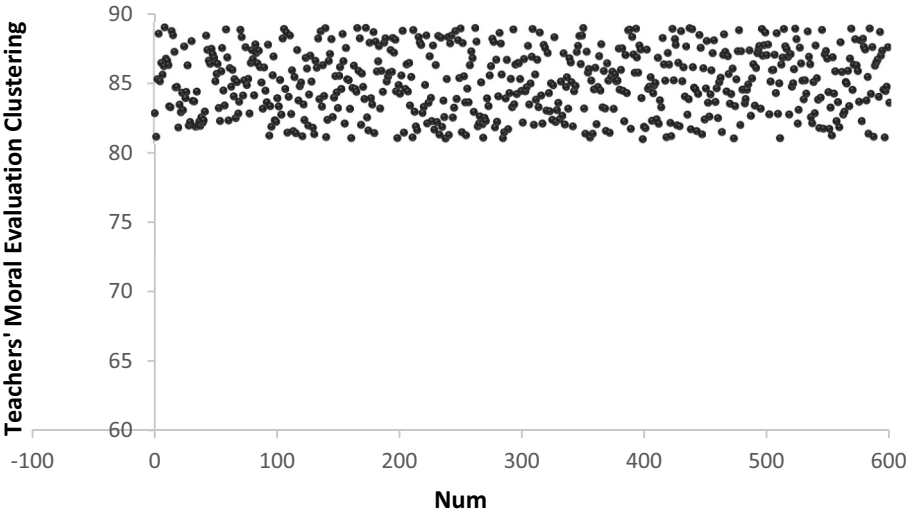


Figure 8. Clustering of teachers' morality evaluation in colleges and universities.

Conclusion

The teacher's classroom moral stance is the premise of classroom moral implication from "should" to "actually." To realize the transformation from "should" to "actually" first depends on teachers' comprehensive and accurate positioning and understanding of this moral implication. If teachers don't realize that their classroom behavior is also related to moral significance or do not fully realize the richness of such moral implication, they will not be able to guide themselves to implement and realize this moral implication in classroom teaching. Moreover, if the teacher does not have a complete understanding of the moral implication of the classroom, such classroom behavior is also spontaneous behavior. This study uses intelligent emotion recognition technology and a data mining algorithm to create the assessment model of college instructors' morality to conduct an intelligent evaluation of college and university teachers' morality. To overcome the limitations of the traditional decision-making models the proposed study used the mathematical model that allows quantifying sensitivity to consequences (C), sensitivity to norms (N), and a general preference for inaction over action regardless of consequences and norms (I) in responses to the evaluation method of college teachers' morality. Their proposed model as proved quantifies these three determinants based on responses to four kinds of moral dilemmas, capturing two orthogonal factors: whether a norm prohibits or prescribes action, and whether the benefits of the action are greater or lesser than the costs. This study offers an assessment approach for college instructors' morality that incorporates an intelligent emotion detection and data mining algorithm. According to experimental research findings, this method has a certain

influence. Based on social intuition and the classic logical models, the dual-processing model of moral judgment is created. It indicates that moral judgments are influenced by three psychological processes: utilitarian inclinations, deontological tendencies, and individual self-response tendencies. It must be mentioned, is the first in the literature to use the median segmentation approach to identify participants with a stronger sense of power than the median.

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