



The chain mediating effect of learning goal distress and excessive learning motivation from unknown locus of control on migrant middle school students' learning anxiety

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ABSTRACT

The prevalence of learning anxiety among Chinese migrant middle school students is a notable concern in academia. There is a wealth of research on the effects of internal and external locus of control on learning anxiety, but there is still a lack of research on unknown locus of control. To grasp the situation of migrant middle school students in terms of learning anxiety, to understand the relationship between migrant middle school students' unknown locus of control and learning anxiety, this study surveyed 351 migrant middle school students, using Mental Health Test, Multidimensional Measure of Children's Perceptions of Control, Middle School Students Learning Motivation Scale to do the questionnaire survey. The data analysis conducted through SPSS software revealed the following findings: (1) There is a positive prediction of learning anxiety from an unknown locus of control ($\beta = 0.139$, $p < 0.05$). (2) Unknown locus of control indirectly influences learning anxiety through both learning goal distress and excessive learning motivation. Learning goal distress and excessive learning motivation partially mediate the relationship between unknown locus of control and learning anxiety. The total magnitude of the indirect effects is 0.15 ($p < 0.05$). The effect is significant, but the size of the effect is small and the issue of generalizability should be considered. The research findings suggest that the unknown locus of control indirectly affects learning anxiety through difficulties with learning goals and excessive learning motivation. It is suggested that increasing opportunities for students to make independent choices and to develop their sense of self-control in daily lessons; guiding students to set appropriate learning goals, avoiding too high or too low, emphasizing refinement of goals and the combination of long-term and short-term goals.

1. Introduction

Learning anxiety is the feeling of nervousness caused by the contrast between expected academic performance and reality (Wu, 2018). It is also the worry caused by the uncertainty of mastering knowledge and the fear of not achieving the expected results, which is mainly experienced by adolescent students (Chang, 2014; Ni, 2010). Learning anxiety is a prevalent problem among middle school students, with the highest detection rate (Pekrun et al., 2017). The term 'migrant children of rural workers in cities' refers to children who live and study in different places with their parents who are not registered as permanent residents in cities. As of 2022, the number of migrant children in compulsory education in China has exceeded 13.7 million, accounting for >40 % of the total number of children in the same stage nationwide (Ministry of education, 2012). In 2017, Chengdu had a large floating population,

resulting in 400,000 migrant children in compulsory education. The lack of parental care and companionship from a young age has led to hidden mental health problems among migrant middle school students (F. Wang et al., 2017). The impact of moving to the city and the confusion of entering adolescence had negative impact on the development of their mental health (Xu et al., 2017). Chinese migrant children reported higher rates of emotional problems, including learning anxiety, compared to their urban counterparts (Xiong et al., 2021). This is particularly notable for migrant middle school students who are in their adolescent years. However, few studies have investigated the comprehensive status and incidence of learning anxiety among migrant middle school students. In this study, we used a scale method to investigate their learning anxiety and attempted to identify influencing factors and pathways.

Many studies have been conducted by previous researchers on the

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influencing factors of learning anxiety among migrant middle school students. For example, [Hua \(2003\)](#) believes that adolescent students have immature psychological development, lack comprehensive and profound problem-solving skills, and face academic pressure, which makes them more prone to learning anxiety. External source of psychological control can significantly predict the anxiety in middle school students, and the anxiety level of internally controlled individuals is often lower than that of externally controlled individuals ([Roddenberry & Renk, 2010](#)). [Dweck \(1986\)](#) Control Values Theory points out external factors that influence students' academic emotions, mainly including: learning tasks and teaching quality; value guidance from teachers, parents, and peers; learning environment; learning objectives and academic expectations; academic achievement. It has been found that learning goal distress positively affects learning anxiety through personality traits such as neuroticism or introversion and extroversion as indirect pathways ([Zhang, 2020](#)).

Migrant middle school students often have a low economic and social status, which may lead them to feel that they have little control over the world around them and that their role in its development is limited ([F. Wang et al., 2017](#)). Furthermore, they may have lacked personal guidance from their parents when they were young, which may have contributed to their incomplete and subjective understanding of the world ([L. Xu et al., 2018](#)). As a result, they may struggle to understand the causes of certain outcomes ([Xiong et al., 2021](#)). According to the research findings, external psychological control sources often play a mediating role between adverse environments and negative learning emotions. For example, external sources of psychological control can significantly predict the anxiety in middle school students, and the anxiety levels of internally controlled individuals are often lower than those of externally controlled individuals ([Roddenberry & Renk, 2010](#)). It was reported that the concept of unknown control is the most important control dimension among the factors affecting achievement ([Harter & Leahy, 2001](#)), including the attribution of disadvantaged students such as migrant children, who are more prone to do unknown control in their learning and life ([Wu & Ge, 2012](#)). Adolescent students' underdeveloped psychological state and limited problem-solving abilities make them more vulnerable to experiencing high levels of learning anxiety ([Hua, 2003](#)). Previous research has mainly focused on the internal and external dimensions of locus of control, learning motivation, and learning anxiety. Previous studies have shown that the external dimensions of sources of psychological control are positively correlated with learning anxiety, while the internal dimensions are negatively correlated with learning anxiety. For example, a strong external locus of control is associated with higher levels of anxiety ([Gao, 2020](#)). However, it is also important to consider the attribution of success or failure to unknown locus of control in children, as noted by [Connell \(1985\)](#). However, there are few studies on the control sources of unknown locus of control. Therefore, this study will explore the unknown locus of control required by migrant middle school students. And to explore the relationship between unknown psychological control of control and learning anxiety. In addition, short-term, practical, and specific learning goals can effectively enhance students' learning motivation ([Li & Guo, 2000](#)). The learning goal distress of high school students can significantly predict their learning anxiety ([Lu, 2014](#)).

However, research has shown that a strong internal locus of control is associated with higher levels of learning motivation. The locus of control among middle school students is only associated with weak learning motivation and is not significantly correlated with excessive learning motivation ([Chang, 2014](#)). Therefore, the relationship between an unknown locus of control and excessive learning motivation remains controversial. It is unclear what the level of learning anxiety is among those with an unknown locus of control and how this affects their learning. Are people with an unknown locus of control more or less motivated? Is motivation to learn a mediating factor between unknown locus of control and learning anxiety? Although the relationship between locus of control and motivation to learn has been studied

extensively in primary, secondary, middle and high school students, these questions remain unanswered. These questions remain to be answered.

Based on the above analysis, locus of control, learning goal distress, and learning motivation are all influencing factors of anxiety. To test the effect of unknown locus of control on learning anxiety, as well as the chain mediation mechanism between learning goal distress and excessive learning motivation in the relationship between the two, this study uses quantitative data to fill the research gap on how unknown locus of control specifically affects learning anxiety by identifying the individual and chain mediation effects of learning goals and excessive learning motivation. It also confirms the effect of chain mediation, which has not been found in previous studies. The findings combine existing theories and research analyses to propose the important role of learning goal anxiety in generating learning motivation. This study provides important information on the nature and characteristics of learning anxiety among migrant middle school children, as well as explanations for the causes of learning anxiety, which is conducive to a deeper understanding of the relationship between the psychological characteristics of migrant middle school children. The research findings can complement and improve the theoretical research on psychological health education for migrant middle school children in terms of family, school, society and other aspects.

2. Literature review

2.1. Unknown locus of control and learning anxiety

Academic emotion refers to the emotional experiences that occur in the classroom, when completing assignments, and when participating in learning-related activities such as exams. Common academic emotions include anxiety, happiness, and boredom ([Pekrun, 2006](#)). It can be seen that learning anxiety among middle school students belongs to the category of academic emotions, both from the connotation and the extension of academic emotions. Learning anxiety is a negative learning emotion in academic emotions, and it is also a frequent occurrence of negative emotions. Among the numerous research results on academic emotions, the control value theory ([Pekrun, 2006](#)) proposed by German scholar Pekrun effectively reveals the mechanism of academic emotions and provides an important theoretical basis for analysing the influencing factors of students' learning anxiety in this study. The control value theory highly summarizes the individual internal factors that affecting students' academic emotions into two aspects: one is the individual's subjective sense of control, and the other is the individual's value evaluation.

Individuals develop categorized expectations based on their unique experiences of how to construct the best possible situation when pursuing goals ([Dweck, 1975](#)). [Rotter \(1966\)](#) defines expectations as a locus of control and identifies two personality traits: internal control and external control. Individuals with an internal locus of control believe that they can control their environment and are mainly influenced by internal factors such as ability ([Rotter, 1975](#)). On the other hand, individuals with an external locus of control feel that their environment is beyond their control and are more likely to attribute their outcomes to external factors such as luck. Furthermore, according to [Connell \(1985\)](#), children between the ages of 8 and 14 often perceive the outcome of events as 'unknown', leading to the inclusion of the 'unknown control' dimension in both internal and external control. Previous studies have shown that external control can significantly predict anxiety in middle school students. Disadvantaged students such as migrant children are often attributed with unknown factors that affect their learning and life ([Zheng, 2007](#)). In addition, anxiety levels are often lower for those who are internally controlled than for those who are externally controlled ([Roddenberry & Renk, 2010](#)). The concept of unknown control is the most fundamental dimension of control among the factors affecting performance ([Harter & Leahy, 2001](#)). This is consistent with [Fini and](#)

Yousefzadeh's (2011) finding that there is a significant positive correlation between high school students' sources of psychological control and academic achievement. On the other hand, migrant children have lower academic achievement, higher academic anxiety, and a negative correlation between academic achievement and academic anxiety (Lin & Yuan, 2003). It was found that the opportunity dimension of psychological sources of control can indirectly predict mobile phone addiction through anxiety (Li, Y., & Y, 2018).

Based on this condition, **Hypothesis 1** proposes that migrant middle school students who are primarily controlled by unknown sources are more likely to experience academic anxiety.

2.2. The mediating effect of learning goal distress and excessive learning motivation

Achievement goal theory is a learning motivation theory developed by Dweck et al. based on their predecessors. Achievement goal theory states that goals are motivation. Dweck (1986) believes that students often spontaneously choose different goals during learning due to differences in their understanding of their own abilities. There are research results indicating a significant correlation between different types of achievement goal tendencies and students' mental health levels: students with low mastery goals and high achievement goal tendencies have higher levels of learning anxiety (Sheng et al., 2015). The concept of unknown locus of control refers to a lack of knowledge about the reasons for success or failure, rather than simply a lack of internal or external control beliefs. This can lead to an increased need to focus on external information and feedback. According to James P. Connell (1985), this lack of knowledge can make it difficult to make independent judgments and predictions and to form clear expectations and goals during the learning process. When learning goals do not match reality, deviations may occur, such as goals that are too high, too low or unclear. Research has shown a significant relationship between achievement goals and test anxiety (Bandalos et al., 2003; Daniels et al., 2008). The achievement goal orientation of performance avoidance can lead to test anxiety (Liu & Li, 2006). In addition, the achievement goal orientation of performance-avoidance is more likely to induce foreign language learning anxiety in students than the achievement goal orientation of performance-approach (Wei, 2014). Therefore, **Hypothesis 2** proposes that an unknown locus of control can positively predict learning anxiety positively through learning goal distress.

Combining previous research results, it has been found that locus of control can negatively predict the intensity of learning motivation among primary and secondary school students. Students with an external locus of control have weaker learning motivation, while those with an internal locus of control have stronger learning motivation (Gao, 2020). Meanwhile, the unknown locus of control is characterised by ambiguous and unpredictable situational information. Humans have a fundamental need to systematically analyse situational information in order to establish a sense of control. Lack of control creates a strong desire to regain it (Lu, 2014). It can be inferred that individuals with a vague understanding of situational information, as opposed to internal and external controllers who have a clear perception of situational information, are more likely to experience a sense of lack of control, which can lead to excessive motivation. Similarly, excessive learning motivation among high school students significantly predicts their learning anxiety (Lu, 2014). Therefore, **Hypothesis 3** proposes that an unknown locus of control can positively predict learning anxiety through excessive learning motivation.

2.3. The chain mediating effect of learning goal distress and excessive learning motivation

Dweck pointed out that goal setting and goal formation involves goal selection and goal investment. Goal selection involves the student's choice of whether to achieve high, average, or just pass learning goals.

Investment in goals refers to the amount of effort students put into achieving them, which corresponds to the intensity of their motivation to learn (Dweck, 1986). According to Locke's theory of goal-setting, valuing and setting appropriate goals can create a need to achieve them, which is a crucial process for motivating individuals. The clarity and difficulty of goals determine the level of performance, which can motivate individuals to achieve better outcomes (Locke & Latham, 2013). Individuals with potentially maladaptive beliefs often struggle with goal setting, and may have excessive learning motivation (Zou & Zheng, 2020; Wang, 2013). Therefore, the maladaptive dimension of unknown control may be associated with unclear goals and excessive learning motivation.

Furthermore, locus of control has been found to negatively predict excessive learning motivation (Gao, 2020). The theory of individual constructivism suggests that anxiety may arise when individual construction is inadequate to predict the future (Dang, 2005). Furthermore, both locus of control and excessive learning motivation are influential factors in the development of anxiety (Tang, 2017). In light of these findings, **Hypothesis 4** proposes a positive relationship between learning goal distress and learning anxiety. Learning goal distress not only triggers excessive learning motivation but also increases an individual's learning anxiety. This study aims to test the hypothesis by examining the effect of an unknown locus of control on learning anxiety. It explains the possible pathways and internal mechanisms that may lead to learning anxiety as a result of an unknown locus of control (see Fig. 1).

This study uses quantitative data to address the gap in research on the specific effects of learning anxiety caused by unknown locus of control and excessive learning motivation. It identifies the individual and chain mediating effects of learning goals and excessive learning motivation. In addition, it confirms the effect of chain mediation, which had not been found previously. The study provides valuable insights into the nature and characteristics of learning anxiety among migrant middle school students, as well as explanations for its causes. This contributes to a deeper understanding of the psychological characteristics of migrant middle school students and their relationship with learning anxiety. The research findings can enhance the theoretical research on psychological health education for migrant middle school students in areas such as family, school, and society.

3. Research methodology

3.1. Aims and hypothesis

3.1.1. Aims

This study aims to investigate the effect of an unknown locus of control on learning anxiety and the mediation mechanism between them with learning goal distress and excessive learning motivation.

3.1.2. Hypothesis

The uncertainty theory of anxiety posits that anxiety arises from uncertainty surrounding stimuli, leading individuals to feel unable to predict or control the outcomes elicited by such stimuli (Mandler, 1984). This suggests that predicting future uncertainty plays an important role in anxiety responses. It was found that the unknown control of migrant middle school students can predict their problem coping strategies for problems and emotional orientation (Wu & Ge, 2012). Therefore, we propose **Hypothesis 1**.

Hypothesis 1. (H1): The unknown locus of control of migrant middle school students positively affects their learning anxiety.

Unknown party control refers to a lack of internal or external control beliefs, as well as a lack of knowledge about the reasons for success or failure. This lack of knowledge may increase the need to pay attention to external information and feedback (Connell, 1985). It is important to note that subjective evaluations should be excluded unless they are clearly labelled as such. During the learning process it can be difficult to

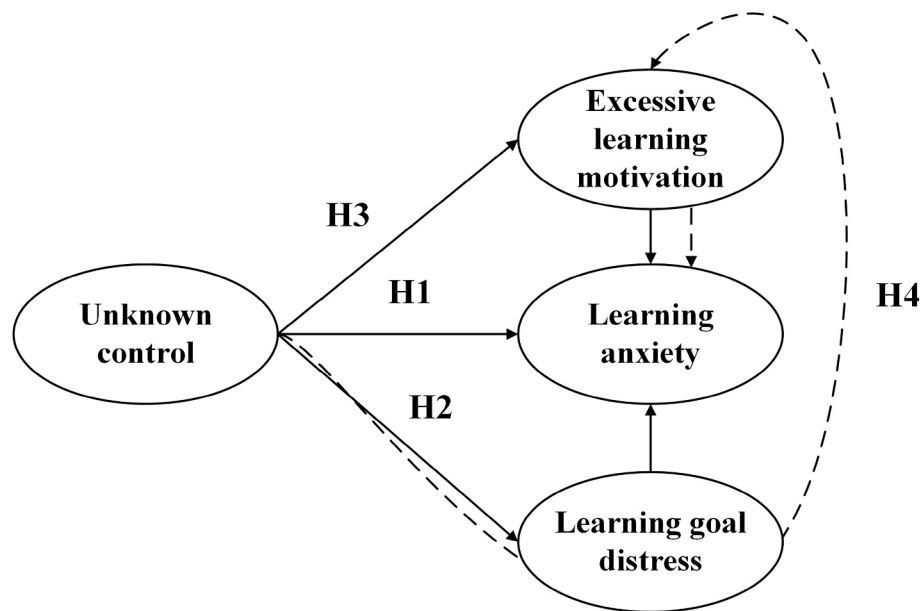


Fig. 1. Hypothesis in this study. The solid line represents direct association, while the dashed line represents indirect (intermediary) association.

make independent judgments and predictions and to set clear expectations. This can lead to learning goals that are not aligned with reality, resulting in deviations such as setting goals that are too high, too low or unclear. Research has shown a significant relationship between achievement goals and test anxiety (Bandalos et al., 2003; Daniels et al., 2008). Hypothesis 2 is proposed based on research suggesting a relationship between performance avoidance orientation of achievement goals and test anxiety (Liu & Li, 2006). Furthermore, performance avoidance orientation has been found to be more likely to induce foreign language learning anxiety in students than achievement approach orientation (Wei, 2014). Therefore, we propose Hypothesis 2.

Hypothesis 2. (H2): Learning goal distress mediates the effect of unknown locus of control on learning anxiety.

The intensity of learning motivation among primary and secondary school students can be negatively predicted by their locus of control. Students who have an external locus of control tend to have weaker learning motivation, while those who have an internal locus of control tend to have stronger learning motivation (Gao, 2020). It is important to note that sense of control is one of the most basic human needs. Individuals establish a sense of control by systematic analysing of information related to the situation, when a sense of control is taken away, there is a strong motivation to regain it (Lu, 2014). It can be inferred that unknown party controllers, who have a vague understanding of situational information, are more likely to experience a sense of control deprivation and generate overly strong motivation, unlike internal and external controllers who have a clear perception of situational information. In addition, high school students with strong learning motivation and learning goal difficulties can significantly predict their learning anxiety (Lu, 2014). Therefore, we propose Hypothesis 3.

Hypothesis 3. (H3): Excessive learning motivation mediates the effect of unknown locus of control on learning anxiety.

Locke's goal-setting theory suggests that valuing and setting appropriate goals can create a need for people to achieve them, which stimulates motivation (Locke & Latham, 2013). The individual constructivist theory of anxiety also suggests that if individual construction is not appropriate for predicting the future, anxiety may follow (Dang, 2005). Therefore, we propose Hypothesis 4.

Hypothesis 4. (H4): Learning goal distress and excessive learning

motivation play a cascading role in the influence of unknown locus of control on learning anxiety.

3.2. Materials and methods

3.2.1. Participants and settings

Cluster sampling was used to select junior high school students who had graduated from 16 different primary schools in Chengdu City and were attending a public junior high school for accompanying children. Chengdu has a population of 21.26 million, making it the fourth largest city in China. In addition, it has a floating population of 8.4596 million, which ranks among the top five in the country in terms of both total and proportion, according to data from the 7th National Population Census (2022). According to the high-frequency big data analysis report (2022) on the integrated development of the Chengdu-Chongqing dual-city economic circle, Chengdu's population continues to show a net inflow trend. The report also highlights frequent exchanges with provinces, cities, and eastern coastal areas, as well as a wide distribution of population sources. The middle schools selected for this study enrol students who have moved their household registration to the local area six months before completing primary school and come from a wide range of backgrounds. About 70 % of the students in these schools are children of migrant workers, due to regional characteristics, historical reasons and other factors. Overall, the sample has a high degree of representativeness for a wider group of migrant secondary school pupils.

A total of 367 questionnaires were collected, of which 16 were invalid due to a high number of missed answers (7), students with intellectual disabilities (4), dishonest answers such as choosing 1 (2), and athletes over 14 years of age (3). After excluding these invalid questionnaires, 351 valid questionnaires were obtained, giving a validity rate of 95.6 %. The study population consisted of children aged between 11 and 13 years old ($M = 12.31$, $SD = 0.69$), with 183 boys and 168 girls completing valid questionnaires.

Middle school students learning English show gender differences in learning anxiety (Yao, Wang, Wang, & Qin, 2013). Research shows that girls in middle schools for migrant workers experience more learning anxiety than boys (Lin & Weng, 2004). In addition, gender differences lead to significant differences in the locus of control among adolescents (Xu, 2012). Gender differences have been observed in the mental health levels of children of migrant workers who move to cities. Female students were found to have lower mental health levels than male students

(Huang, 2015). Therefore, gender was introduced as a variable in this study.

3.2.2. Measurement

The Mental Health Diagnostic Test for Elementary and Middle School Students (MHT) consists of eight content scales that categorise anxiety reactions according to their modes of expression and occasions. These scales can measure eight aspects of students' anxiety and adjustment problems (Zhou, 1991). The Learning Anxiety Scale, one of these scales, was used for measurement, with a total of 15 items. Sample questions include 'Do you think you worry more about studying than others?' and 'Do you always think about tomorrow's homework when you go to bed at night?'

The Multidimensional Measure of Perceptions of Control in Children (MMPC) is an instrument designed to measure basic locus of control tendencies in children aged 8–14 years. It consists of three subscales: Internal Control, Control by Powerful Others, and Control by Unknown Parties. The MMPC contains 48 quiz questions, half of which ask about successes and half of which ask about failures (Connell, 1985). The Cronbach coefficient of the scale is 0.96, indicating high internal consistency. The Pearson correlation coefficients between the individual subscales range from 0.64 to 0.75, indicating good convergent validity. The retest correlation coefficients for each subscale range from 0.30 to 0.48 ($p < 0.0001$), indicating good test-retest reliability. The questionnaire includes questions such as 'When I do well at school, I usually don't know why' and 'I often don't know why things go wrong for me'.

The Middle School Students' Motivational Distress Measurement Scale (MSMT) consists of 20 questions, divided into four subscales, each measuring four aspects of motivation: weak motivation, strong motivation, interest in learning, and goals (Song & Chen, 1999). The Cronbach's coefficient for the whole questionnaire is 0.627, and the standard Cronbach's coefficients for the subscales are 0.751, 0.462, and 0.629, respectively. These values indicate good internal consistency and acceptable reliability of the scale. The questionnaire includes questions such as 'Do you often feel troubled by your inability to improve your grades in a short period of time?' and 'Do you find it difficult to achieve most of the learning goals you set for yourself?'

3.2.3. Ethics

The questionnaire method was used with the approval of the school authorities and administered as a group in the classroom. The questionnaires were distributed centrally during the class meeting time with uniform instructions. The purpose of the survey and the promise of confidentiality were uniformly explained to the study participants. They completed the questionnaire independently after giving verbal consent, and the questionnaires were collected on the spot. The ethics committee of Northwest Normal University approved the study, and all participants gave their consent.

3.2.4. Statistical analysis

To reduce response bias or social approval, the MHT scale is accompanied by a validity scale to test whether the respondent is answering questions honestly. Distributing the questionnaire through a more authoritative class teacher can also help to reduce response bias. Collecting questionnaires from highly trusted psychological teachers can reduce participants' vigilance and thus reduce social approval.

Data were analyzed using SPSS 23.0 software. The analysis included a description and statistical analysis of the data on learning anxiety and different factors ($M \pm SD$). In addition, differential analysis of data from different categories was performed using independent samples *t*-tests. Correlation analysis was also performed on several factors, and regression analysis was performed between factors based on correlation analysis.

The SPSS macro programme PROCESS, prepared by Hayes, was used to conduct mediation effect analysis and chain mediation analysis. The study used the bias-corrected sub-parameter percentile bootstrap

method with 5000 iterations and 95 % confidence intervals to determine the significance of the parameters ($p < 0.05$).

3.2.5. Common method bias

As this study only used self-report methods to collect data, its results may be affected by common method bias. To minimize this bias, the study employed procedural and statistical controls. In addition, a control group was added to compare differences between the experimental and control groups, further reducing the impact of common method bias. Data collection followed standardised test administration procedures. Exploratory factor analysis without rotation was performed using Harman's one-way test for all variables. The analysis revealed four factors with eigenvalues >1 . The maximum percentage explained was 27.37 %, which did not meet the critical criterion of 40 %. None of the factors had excessive explanatory power, indicating no obvious methodological bias in this study. The significance level for the analysis was set at ($p < 0.05$).

3.3. Results

3.3.1. Descriptive analysis

3.3.1.1. The overall situation of learning anxiety among migrant middle school students. It can be seen from Table 1-1 that migrant middle school students generally have varying degrees of learning anxiety, with high anxiety (≥ 8) being the main type. Among them, more than half of the total population have obvious anxiety, more than a third have high anxiety, and only about 6 % of the total number of migrant middle school students have moderate anxiety (<3). From this, it can be seen that the learning anxiety of migrant middle school students is in a relatively high state, with the number of high segments far exceeding the number of low segments, which is a very unbalanced state.

In terms of learning anxiety among migrant middle school students, the descriptive statistic ($M \pm SD$) is 8.73 ± 3.237 . The mean score is 8.73, which belongs to high anxiety (≥ 8 points), indicating that the overall learning anxiety score of migrant middle school students is relatively high; the large standard deviation indicates that there are significant individual differences in learning anxiety among migrant middle school students.

3.3.1.2. Differences in learning anxiety between migrant middle school students and non-migrant middle school students. According to Table 1-2, there is no significant difference in learning anxiety between the surveyed middle school migrant students and non-migrant students. This may be due to the fact that in schools dominated by migrant students, non-migrant students are mostly local students with poor academic performance, distant family relationships, and similar childhood care experiences as migrant students.

3.3.1.3. Gender differences in learning anxiety among middle school migrant students. Previous studies have shown that middle school girls in migrant worker schools pay more attention to academic performance and various evaluations, and are more prone to learning anxiety. The gender differences are significant (Lin & Yuan, 2003), which is inconsistent with the daily observations of this study. To further investigate whether there are gender differences in learning anxiety among migrant middle school students in this study, an independent samples *t*-test was conducted. The results obtained are shown in Table 1-3: there is no

Table 1-1
Learning anxiety of migrant middle school children.

Gender	<3	Proportion	≥ 3 and <8	Proportion	≥ 8	Proportion
Male	4	2.5 %	55	35.0 %	98	62.4 %
Female	4	2.9 %	38	27.3 %	97	69.8 %
Total	8	2.7 %	93	31.4 %	195	65.9 %

Table 1-2

Differences in learning anxiety between migrant and non-migrant students.

Migrant(<i>n</i> = 296)	Non-migrant(<i>n</i> = 55)	<i>t</i>	<i>p</i>
8.73 ± 3.24	8.31 ± 2.76	0.897	0.370

Table 1-3

Gender differences in learning anxiety among migrant middle school students.

Male(<i>n</i> = 157)	Female(<i>n</i> = 139)	<i>t</i>	<i>p</i>
8.30 ± 3.28	8.37 ± 3.07	−0.602	0.517

significant difference between the scores of boys and girls in terms of learning anxiety, i.e. the gender difference is not significant.

3.3.2. Correlation analysis

The correlational analyses revealed that unknown party control, learning goal distress, and excessive learning motivation were significantly and positively correlated with learning anxiety (correlation coefficients: 0.149, 0.248, and 0, respectively). In Tables 1-1 to 1-3, it can be seen that unknown control was a significantly and positively correlated with learning goal distress and excessive learning motivation, with correlation coefficients of 0.374 and 0.278 respectively. In addition, learning goal distress was significantly and positively correlated with excessive learning motivation, with a correlation coefficient of 0.299 (see Tables 1-1 to 1-3).

3.3.3. Chain mediation test

The statistical requirements for further mediation effect tests on goal distress and excessive learning motivation were met by the results of the correlation analyses (Wen & Ye, 2014). The results of the regression analysis (see Table 2) indicated that the unknown locus of control had a significant positive effect on the accompanying a middle school students' learning anxiety ($\beta = 0.139$, $p < 0.01$). Furthermore, after including learning goal distress and excessive learning motivation in the regression equations, the unknown locus of control significantly positively predicted the learning goal distress ($\beta = 0.13$). The study found significant positive correlations between learning goal distress and excessive learning motivation ($\beta = 0.372$, $p < 0.01$), as well as between learning goal distress and excessive learning motivation ($\beta = 0.235$, $p < 0.01$) and learning anxiety ($\beta = 0.230$, $p < 0.01$). In addition, excessive learning motivation was found to positively predict learning anxiety ($\beta = 0.200$, $p < 0.01$). The regression equation was significant with an R^2 value of 0.14, $F(3,351) = 6.87$, and p -value of < 0.01 .

These regression coefficients indicate that unknown locus of control affects learning anxiety through three mediation pathways, with the unknown locus of control having a moderate effect in predicting learning goal distress ($\beta = 0.372$, $p < 0.01$) and other pathways having smaller effects.

The SPSS plug-in PROCESS, provided by Hayes, was used to conduct a bootstrap-based test of mediation effects using model 6–1. This model specializes in testing chained mediation models. The independent variable was unknown locus of control, and the dependent variable was learning anxiety. The chained mediator variables for the analyses were

Table 2Results of descriptive statistics and correlation analysis ($N = 351$).

Variable	M	SD	1	2	3	4
1.Unknown control	2.13	0.57	1	0.374**	0.278**	0.149*
2.learning goal distress	2.33	1.43	0.374**	1	0.299**	0.248**
3.Excessive motivation	2.50	1.19	0.278**	0.299**	1	0.229**
4.Learning Anxiety	8.66	3.17	0.149*	0.248**	0.229**	1

Note: * represents $p < 0.05$, ** represents $p < 0.01$, the same below.

goal distress and excessive learning motivation. Fig. 2 shows that the indirect effect of goal distress as a mediator variable was $0.37 \times 0.23 = 0.09$ (95 % CI = [0.0078–0.0361]), while the indirect effect of excessive learning motivation as a mediator variable was $0.21 \times 0.20 = 0.04$ (95 % CI = [0.0023–0.0229]), and the chain effect was $0.37 \times 0.24 \times 0.20 = 0.02$ (95 % CI = [0.0004–0.0051]). The narrow confidence interval indicates high sample reliability and accurate parameter estimation.

Table 3 shows that the sum of all indirect effects was $0.09 + 0.04 + 0.02 = 0.15$ (95 % confidence interval [0.0171–0.0544]) and the direct effect was 0.14 (95 % confidence interval [0.0171–0.0544]). Therefore, the total effect is $0.15 + 0.14 = 0.29$. It is important to note that the coexistence of direct and indirect effects was observed. These results indicate that unknown locus of control have a significant direct effect on learning anxiety, and that goal distress and excessive learning motivation to some extent mediate the relationship between unknown locus of control and learning anxiety to some extent. This means that, on the one hand, individuals with unknown locus of control are themselves prone to learning anxiety; on the other hand, an unknown locus of control can easily lead to learning goal distress, which further lead to excessive learning motivation and exacerbates learning anxiety.

The results of the data analysis indicate a significant direct effect of unknown locus of control on learning anxiety, supporting the research hypothesis that the mediating role of goal distress and excessive learning motivation in the effect of locus of control on learning anxiety holds true.

The theoretical significance of the research results:

1. The research findings provide a certain complement to the existing theories on learning goal anxiety, learning motivation and learning anxiety. By studying the current situation of learning anxiety among migrant middle school students, we aim to grasp and understand the characteristics, influencing factors, and developmental status of learning anxiety among migrant middle school students, and enrich the scope and content of research on learning anxiety.
2. Based on existing research, the influence of locus of control and learning motivation on learning anxiety and the relationship between the three was further analyzed and explored. The reasons for learning anxiety were explained and the relationship between the psychological characteristics of migrant middle school students was theoretically better understood.
3. Guiding practice provides a theoretical basis for possible follow-up intervention experiments. Given that the locus of control in humans is a stable psychological structure that is difficult to change in a short period of time, subsequent research could adopt a working approach to indirect effects and intervene by addressing the learning goal distress or the excessive learning motivation with the greatest effect.

4. Discussion

4.1. Current status of learning anxiety among migrant middle school students

- (1) The prevalence of learning anxiety among the interviewed middle school migrant children is consistent with previous studies (Lin & Weng, 2004). However, >90 % of the middle school migrant children surveyed in this study were anxious about learning. Such a high percentage of middle school migrant children with learning anxiety far exceeds the percentage of learning anxious individuals in other groups in previous studies. In previous studies, the percentage of learning anxious people in the general student population is mostly around 30–40 %, and the percentage of learning anxious people in rural junior high school students is mostly around 60 %. The current situation of such learning anxiety among middle school migrant children is worrying.

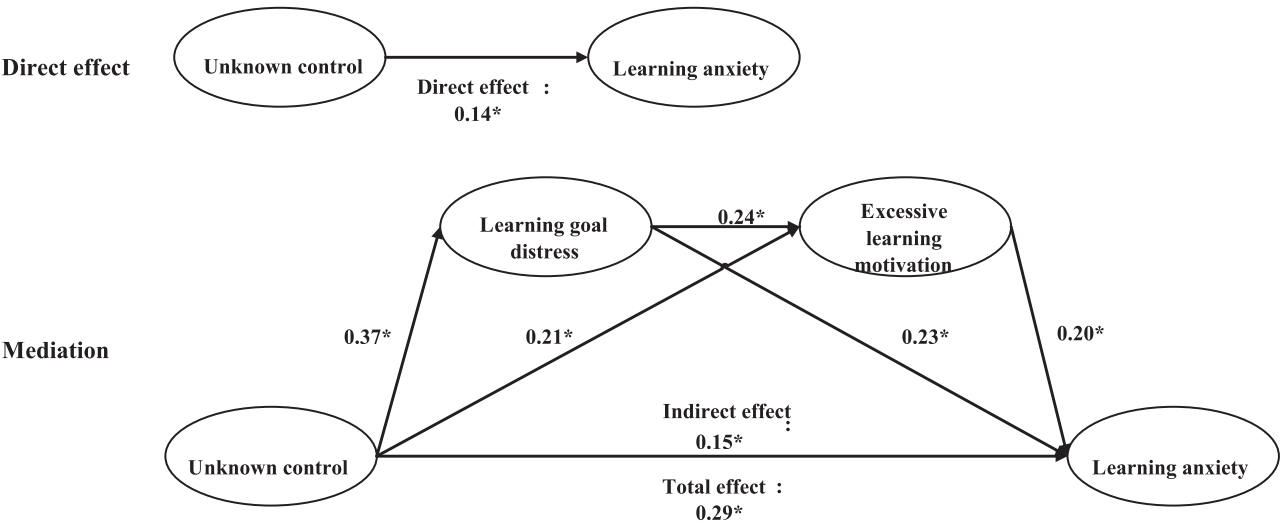


Fig. 2. Mediation Model of the Influence of Unknown locus of Control on Learning Anxiety ($p < 0.01$).

Table 3
Analysis of regression relationships among variables ($p < 0.05$).

Regression equation	Regression equation		Goodness of Fit	Goodness of Fit	Sig of regression coefficient	Sig of regression coefficient
Dependent variable	Independent variable	β	R^2	F	t	p
Learning anxiety	unknown control	0.139**	0.19	6.875	2.585	0.009
goal distress	unknown control	0.372**	0.139	56.127	7.492	0.000
Excessive motivation	unknown control	0.212**	0.045	16.464	4.058	0.000
Learning anxiety	goal distress	0.230**	0.053	19.565	4.423	0.000
Excessive motivation	goal distress	0.235**	0.055	20.348	4.511	0.000
Learning anxiety	Excessive motivation	0.200**	0.040	14.545	19.029	0.000

Worrying about academic performance is a common emotional experience, in order to eliminate this anxiety and emotion and study hard can get good results. However, when learning anxiety is highly enhanced, students are at a loss for learning, have difficulty in being practical in their learning attitudes, have significantly lower learning outcomes, and may even have behaviors of avoiding learning and taking tests. The distribution of the study anxiety scores of the interviewed groups in this study is very uneven, with an overall tendency to concentrate towards high scores, in which $>60\%$ of the scores reach a high degree of study anxiety. Moreover, the results of descriptive statistics show that there are large individual differences within the group, indicating that some students have particularly high learning anxiety scores, a phenomenon that should be taken seriously.

- (2) The difference in learning anxiety between the interviewed middle school migrant children and non-migrant children was not significant. Based on our understanding of the actual situation, this may be due to the fact that in schools with predominantly migrant children, the student population of non-migrant children are mostly local students with poorer academic performance, estranged family relationships, and childhood foster care experiences similar to those of migrant children. These characteristics are similar to the factors affecting migrant children. Non-migrant children in schools with predominantly migrant children may have similar learning anxieties to those of migrant children, suggesting that all students in schools with migrant children should be given the same attention.
- (3) The gender differences in learning anxiety among the interviewed middle school migrant children were not significant, which is inconsistent with previous studies. Previous studies have shown that female students in junior secondary schools for migrant children pay more attention to academic performance

and the various evaluations produced, and are more likely to experience learning anxiety, with a relatively significant gender difference (Lin & Weng, 2004). This difference may be due to the time factor, geographical differences and other reasons. The fact that there is no gender difference in learning anxiety suggests that learning anxiety among middle school migrant children should be equally valued for both boys and girls.

4.2. The relationship between unknown locus of control and learning anxiety

This study explores the relationship and internal mechanisms between unknown control of control and learning anxiety among migrant middle school students. The research results indicate that there is a significant negative correlation between the unknown locus of control and learning anxiety among migrant middle school students. Unknown locus of control can significantly negatively predict learning anxiety among migrant middle school students. This finding supports the theoretical explanation of social learning theory about maladaptation, i.e. when individuals do not know the reasons for success or failure, their expectations about learning status are unclear, which may lead to excessive learning anxiety (Bandura & Walters, 1977). At the same time, it supports the uncertainty theory of anxiety, which states that anxiety arises from the uncertainty of stimuli and results from the individual's inability to predict, control stimuli and the outcomes elicited by stimuli (Mandler, 1984).

It is worth noting that, on the one hand, from the perspective of the path of this research model, learning goal distress and excessive learning motivation have a mediating effect on the influence of unknown psychological control sources on migrant middle school students. This result supports Bruner's motivation theory, that is, there is a positive correlation between excessive motivation and learning tension (Bian,

2012). This also supports Dweck's achievement goal theory, which states that the difference in achievement goals between the implicit observer and the entity observer of abilities further leads to different levels of learning anxiety (Sheng et al., 2015). On the other hand, the direct effect of the unknown locus of control on the learning anxiety of migrant middle school students is significant, indicating that the unknown psychological control source can also affect the learning anxiety of migrant middle school students through other mechanisms, such as overestimating the value of learning tasks, which leads to an increase in learning anxiety (Pekrun et al., 2007).

For migrant middle school students, poor academic performance is a punishment in itself, so parents and teachers do not need to reprimand them. Increasing the chances of getting good grades and the likelihood of success is a good way to increase enthusiasm and motivation for learning. For example, migrant middle school students with high learning anxiety can be deliberately given tests of lower difficulty in order to achieve "good grades". Using this method in daily examinations can reduce the learning anxiety of migrant middle school students and increase their enthusiasm for learning. In addition, attention should be paid to cultivating a good learning attitude, mastering scientific learning methods and cultivating self-discipline. Specific measures that can be taken include: allowing migrant middle school students to fully understand the details and procedures of curriculum teaching and other educational scenarios, and make efforts to guide them to participate in family, class and school affairs, thereby enhancing their experience of control over life, thereby improving the situation of excessive control by unknown parties, and increasing internal motivation; under the premise of confidentiality, the class teacher and other teachers shall arrange for students to participate in and organize various class affairs and activities, and give them a certain degree of autonomy, so as to enhance their experience of actual school life; the class teacher and other teachers shall arrange for students to participate in and organize various class affairs and activities, under the premise of confidentiality, and give them a certain degree of autonomy, so as to enhance their experience of real school life. Enable migrant middle school students to decide on their own whether and when to engage in proactive behavior; enable migrant middle school students to choose freely from a variety of options, and provide them with as many options as possible to choose from freely; reduce the likelihood of migrant middle school students acting passively or under the command of others, and enable them to make active choices and fully experience the pleasure and satisfaction brought by their own choices.

4.3. The individual mediating effect of learning goal distress and excessive learning motivation

The results of this study indicate that the unknown locus of control may have an impact on migrant middle school students through the sole mediating effect of learning goal distress or excessive learning motivation. An individual's unknown locus of control has a negative goal facilitating effect, which is consistent with previous research supporting achievement goal theory. Dweck's achievement goal theory suggests that goals are motivation and that intrinsic attributional tendencies have a positive facilitating effect on goals (Dweck, 1986). And when the unknown locus of control is unable to determine the reasons for academic success or failure, it may make it difficult for individuals to formulate adaptive goals, increasing the learning goal distress. Individual goal distress leads to high levels of learning anxiety, which is also consistent with previous findings. Relevant research findings also show that students with over high achievement goals tend to have higher levels of learning anxiety (Sheng et al., 2015), indicating that when learning goals are distressed, learning anxiety increases accordingly.

A sense of control is one of the most basic human needs. People establish a sense of control by systematically analysing information related to the situation (Pittman & Dagostino, 1989). When a sense of control is taken away, there is a strong motivation to regain it (He,

2012). Due to the uncertainty of the situation and the difficulty in obtaining clear information, individuals with unknown locus of control may lack a sense of control, resulting in overly strong motivation. Learning motivation belongs to the category of motivation, which is a driving force that can initiate and sustain learning behavior. According to previous research, individuals with strong learning motivation have higher learning anxiety than those with moderate learning motivation. This suggests that individuals with unknown psychological sources of control also develop learning anxiety by generating strong learning motivation.

Furthermore, specific path analysis revealed that the positive predictive effect of unknown psychological sources of control on learning goal distress was greater than the positive predictive effect of overly strong learning motivation. The positive predictive effect of learning goal distress on learning anxiety was greater than the positive predictive effect of strong learning motivation on learning anxiety. This may be because the learning goal dilemma is a relatively stable state, whereas learning opportunities show variability due to various factors. Therefore, the relationship between learning goals and unknown sources of psychological control and learning anxiety is closer than that of learning motivation. This supports the idea of goal setting theory that the specificity of goals is separate from the impact of goals (Locke & Latham, 2020).

Based on the findings of the current study, teachers need to create a specific atmosphere for middle school mobility students by, among other things, showing concern and enthusiasm for their goals, encouraging them to recognize their goals, understanding them as part of their learning, and continuing to provide positive feedback and guide students to set appropriate learning goals. Firstly, we could choose an intervention programme that could enable migrant middle school students to fully understand the characteristics of clear, specific, measurable, achievable, relevant and time-bound required for goal setting (Locke, E.A. et al., 1990), and learn to independently set reasonable, clear and appropriate goals for themselves in order to improve their goal management skills and better plan their learning and life. We could also help them to understand the meaning of goals and to recognize the importance of goals through games and fun surveys. Second, based on the theoretical model of goal setting and the SMART principle of goals (Liu and Chen, 2018), the courseware could be self-edited by teachers, and the relevant courses could be set up, which mainly emphasized the reasonable goal setting in the teaching process, strengthened the awareness of goals, and cultivated the ability to adjust goals. Lessons could be designed with detailed cognitive, skill and affective objectives based on the KAPO model of teaching and learning (Li, 2010). Finally, the homework could be designed to encourage students to apply what they have learned in class to their daily studies and lives. We could also use programme that improved the goal awareness of migrant middle school students, clarified their understanding of goals, learned to set goals that are more in line with their own situation, and improved their learning anxiety.

4.4. The chain mediation effect of learning goal confusion and excessive learning motivation

The research findings support the hypothesis which suggests that reducing learning goal distress can improve motivation for excessive learning, thereby reducing excessive learning anxiety. This is consistent with previous research findings (Xu et al., 2018). This may be due to the fact that, with the gradual increase of academic burden, migrant middle school students began to accept various forms of academic evaluation (Xu et al., 2018). On the one hand, considering that their own control position is unknown, they feel that their academic performance is not determined by themselves, and they feel powerless over their learning, thus confused about the meaning of learning; on the other hand, the urgent need from the family to change the status quo through learning, which in turn may lead to the emergence of excessive learning

motivation (F. Wang et al., 2017).

The results of this study also suggest that the unknown controller may have an impact on the learning anxiety of migrant middle school students through a separate mediating effect of learning goal distress or excessive learning motivation. This may be because the unknown controller's ignorance of the factors that lead to success or failure leads to confusion when setting learning goals, which hinders the formation of reasonable learning goals. This finding is consistent with previous research that has found an association between unknown control and excessive learning anxiety through an unstable coping style. Unknown controllers are more likely to respond to success or failure in an emotional and unstable manner (Wu & Ge, 2012), which indicate a state of overwork and showing excessive learning motivation. However, learning-related anxiety seems to be not only influenced by unstable coping styles, but also increased by excessive learning motivation. That is, setting overly high learning goals may further trigger excessive learning motivation. This in turn leads to learning anxiety in students, and future research could further explore other influences and mechanisms in the chain mediation effect.

The findings of this study also have implications for teaching and can be used as a working guide for mental health teachers to reduce learning anxiety in migrant middle school students, as well as an important reference for teachers of other subjects. Teachers need to focus on goal setting for migrant middle school students rather than simply using stress reduction strategies. When using stress reduction strategies, teachers need to consider both the students' learning goals and their appropriateness in order to reduce students' anxiety. This is important because most subject teachers have not received relevant psychological training, and concern for students' mental health needs to permeate their daily teaching in order to achieve better results.

5. Benefits

The results of this study are consistent with a broader psychological theoretical framework. According to Bandura's self-efficacy theory, self-efficacy is a crucial factor in a person's level of motivation. A high level of self-efficacy helps to encourage middle school students to be more proactive in carrying out activities, and Schunk suggested that improving learning goals can increase self-efficacy. It can be seen that the improvement of learning goals and the intensity of their impact on learning motivation are in line with the theoretical framework of self-efficacy theory. Dweck's achievement goal theory states that goals are motivation. Goal setting and goal formation include goal selection and goal investment. It can be seen that the selection and investment of learning goals have an impact on the intensity of learning motivation, which is in line with the theoretical framework of the achievement goal theory.

Based on the uncertainty theory of anxiety, this study provides a preliminary understanding of the influencing factors and pathways of migrant middle school students' learning anxiety from the perspective of locus of control. Based on the results of this study, it can be concluded that migrant middle school students who have an unknown locus of control are more likely to have excessive learning anxiety. This finding supports the theoretical explanation of 'maladaptation' in social learning theory that when migrant middle school students do not know the reasons for their success or failure, their expectations of the learning state are unclear, which may lead to excessive learning anxiety. In addition, this study makes a substantive contribution to the study of learning anxiety by examining the quantitative relationship between unknown control and learning anxiety among migrant middle school students. This study also explored the effects of learning anxiety from the perspective of learning goal distress, thus identifying the characteristics of migrant middle school students in terms of learning anxiety and contributing to psychological research on this group.

6. Limitations

Like other studies, this study has limitations. Firstly, the data for this study were collected using convenience sampling from a middle school for migrant workers in Chengdu, where the students were mainly from western China and samples from central and eastern China were lacking. The city of Chengdu is located in the western part of the country. It is possible that there is an uneven distribution of students due to different educational styles in different regions. Secondly, due to the use of questionnaire survey as the research method in this study limits various conditions are limited and it is not possible to fully simulate real classroom scenarios. Future research needs to further explore the implementation of targeted experiments in the laboratory and in natural classroom settings.

In addition, the improvement and cultivation of learning goals is not achieved overnight, and it is difficult to cultivate a deep understanding of learning goals among migrant middle school students through external forces in a short period of time, which in turn makes it difficult to motivate them to increase their intrinsic motivation to improve learning goals. Given the above conditions and the tense parent-child relationship and weak social support among migrant middle school children, it is necessary to strengthen the cooperation between families and schools in the future, develop school-led improvement plans for learning anxiety with the participation of families, integrate the educational resources of all parties, and integrate both group and individual intervention forms to further enrich the content of improvement plans and jointly promote the mental health development of migrant middle school students.

7. Conclusion

This study sought to fill a gap in the literature on learning anxiety interventions for migrant middle school students by validating the relationship between unknown party control and learning anxiety. Quantitative data analysis revealed that unknown party control affected migrant middle school students' learning anxiety in different ways, and that reducing learning goal distress successfully reduced migrant middle school students' learning anxiety levels. Quantitative analyses also identified two main pathways: a) learning goal distress and excessive learning motivation increase learning anxiety; and b) increased learning goal distress increases excessive learning motivation, which further increases migrant middle school students' learning anxiety. Both reported the important role of learning goal distress.

The research findings indicate that the learning anxiety of migrant middle school students is worrying (>90 % are moderate or above), which is consistent with previous research findings that this group has a higher proportion of learning anxiety. The research findings also suggest that the type of locus of control for migrant middle school students is mainly controlled by the unknown side. The influence of the unknown locus of control on learning anxiety can be achieved through three pathways: first, by influencing excessive learning motivation; second, by influencing learning motivation distress; and third, by influencing learning motivation distress, further influencing excessive learning motivation and influencing learning anxiety. These results are fully consistent with the hypothesis of this study, supporting the proposed hypothesis and exploring multiple pathways that affect learning anxiety in migrant middle school students.

Ethics statement

The studies involving human participants were reviewed and approved by Northwest Normal University Academic Ethics Committee.

CRedit authorship contribution statement

Jia Hu: Writing – original draft, Methodology, Investigation, Formal

analysis, Conceptualization. **Tinghu Kang:** Supervision, Methodology. **Jianhong Zhang:** Writing – review & editing, Formal analysis. **Xingwen Ma:** Visualization, Software, Data curation.

Declaration of competing interest

All authors declare that we have no financial and personal relationships with other people or organizations that can inappropriately influence our work, there is no professional or other personal interest of any nature or kind in any product. Service and/or company that could be construed as influencing the position presented in, or the review of, the manuscript entitled.

Data availability

The original contributions presented in the study are included in the

article, further inquiries can be directed to the corresponding author.

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Appendix A

A.1. The Mental Health Diagnostic Test for primary and secondary school students (Learning Anxiety Scale)

Guidance: This test is to investigate your mood and feelings, not to test intelligence and learning ability. It is not related to academic performance, and there is no right or wrong answer. Please answer truthfully as you usually think. Yes, choose A, no, choose B.

Do you always think about tomorrow's homework when you sleep at night?

Do you feel uneasy when the teacher is asking questions to the whole class?

Do you feel nervous when you hear about the "exam"?

Do you feel unhappy when your exam results are not good?

Do you always feel anxious when your academic performance is poor?

Do you feel anxious when you can't recall the knowledge you previously mastered during an exam?

Do you always feel uneasy after an exam without knowing your grades?

Do you worry about failing an exam as soon as you encounter it?

Do you hope to pass the exam smoothly?

Do you always worry about not completing tasks before you finish them?

Are you always afraid of making mistakes when reading the texts in front of everyone?

Do you think the academic performance obtained in school is always unreliable?

Do you think you are more worried about learning than others?

Have you ever dreamed of failing an exam?

Have you ever had dreams of being scolded by your parents or teachers when you have poor academic performance?

A.2. Multidimensional measure of children's perceptions of control

Guidance: Please rate according to the following criteria based on your own situation.

4	3	2	1
Fully true	mostly true	a bit true	not true

If I win in a competition, most of the time I can't figure out why I won.

If I fail, it's usually my own fault.

The best way for me to achieve good grades is to make the teacher like me.

If someone doesn't like me, I usually can't figure out why.

As long as I am willing to put in effort, I will be proficient in various sports.

If adults don't allow me to do what I want, maybe I can't.

If I perform well in school, I usually can't figure out the reason.

If someone doesn't like me, it's usually because of something I've done.

If I win a sports competition, it's usually because my opponent's performance is not good.

If something goes wrong with me, I usually can't figure out why it happened.

If I plan to perform well in school, it's entirely up to me to do so.

If my teacher doesn't like me, I can't get along well with my classmates.

I can't figure out why I encountered good things most of the time.

If I don't perform well in school, it's my own fault.

If I want to become an important member of the class, I have to make those popular children like me.

Most of the time, if I lose in a sports competition, I can't figure out why I lost.

I can handle most of the things that happen in my life.

If I had a bad teacher, my performance in school would not be good.
 In many cases, I don't know why people like me.
 If I try to catch a ball but don't catch it, it's usually because I'm not working hard enough.
 If I want to get what I want, usually I have to please the person in charge.
 If I get a low score in school, I usually don't understand what's going on.
 If someone likes me, it's usually because of the way I treat them.
 If I lose in an outdoor game, it's usually because my opponent is better at playing the game first.
 If I win an outdoor game, in most cases I don't know why I won.
 If I don't do things well, it's usually my own fault.
 If I perform well in school, it's because the teacher likes me.
 If another child doesn't like me, I usually don't know why.
 As long as I work hard, I will be proficient in various sports.
 If adults don't agree, I won't have many opportunities to do what I want to do.
 If I get a high score in school, I usually don't understand what's going on.
 If someone gets angry with me, it's usually because of what I've done.
 If I participate in outdoor games with another child and win, it may be because that child is not playing well.
 Many times, I don't know why something goes wrong with me.
 If I plan to have good grades in school, it's entirely up to me to do so.
 If the teacher doesn't like me, I can't have too many friends in class.
 If something good happens to me, it often seems like there's no reason.
 If my grades are poor, it's all my own fault.
 If I want my classmates to value me, I have to make friends with those children who are truly popular.
 If I fail to win in outdoor games, in most cases I cannot figure out why.
 I can make decisions about most of the things that happen in my life.
 If I didn't have a good teacher, my performance in school wouldn't be good.
 In many cases, it's hard to see why someone likes me.
 If I try to catch a ball but miss it, it's usually because I'm not working hard enough.
 If I want to get what I want, I have to please the person in charge.
 If I don't perform well in school, I usually can't figure out the reason.
 If someone is my friend, it's usually because of the way I treat them.
 If I fail to win in outdoor games, it is likely because my opponent is much stronger than me.

A.3. The Middle School Students' Learning Motivation Distress Test (MSMT)

Guidance: Please carefully read each question in the questionnaire and compare it with your actual situation. If you think it matches, please choose A; If you feel it doesn't match, please choose B.

1. If others don't supervise you, you rarely take the initiative to learn.
2. When you read, it takes a long time to pick up your spirits.
3. You feel tired and boredom as soon as you read, and you feel like sleeping.
4. You don't want to read more books except for the homework assigned by the teacher.
5. If there is something you don't understand, you don't want to try to figure it out at all.
6. You often think that you won't have to spend too much time and your grades will surpass others.
7. You urgently hope to significantly improve your academic performance in a short period of time.
8. You often worry about not being able to improve your grades in a short period of time.
9. In order to complete a certain assignment in a timely manner, you would rather forget to eat and sleep and stay up all night.
10. In order to learn well, you have given up many activities that interest you, such as physical exercise, watching movies, and outings.
11. You think reading is boring and you want to find a job.
12. You often think that the basic knowledge in textbooks is not worthy to learn, only by reading advanced theories and reading large volumes of works can it be exciting.
13. Only work hard on the subjects you like, and let go of the subjects you don't like.
14. You spend much more time on extracurricular reading materials than on textbooks.
15. You allocate your time evenly among various subjects.
16. You have to give up most of the learning goals you set for yourself because you cannot achieve them.
17. Most of the learning goals you set for yourself are not easy to achieve.
18. You are always too busy to achieve several learning goals at the same time.
19. To cope with daily learning tasks, you have already felt overwhelmed.
20. In order to achieve a big goal, you no longer set small and gradual goals for yourself.

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