

The impacts of Baumrind's parenting styles on the academic anxiety of Chinese university students with education majors

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Abstract. The current study examined the impact of Baumrind's parenting styles on academic anxiety among Chinese undergraduate students majoring in education. A sample of 183 students, aged 18 to 23, was randomly selected from Northeastern Normal University (NENU), a prominent institution in mainland China specializing in education. Data were collected using the Parenting Authority Questionnaire (PAQ-2nd) and the Cognitive Test Anxiety Scale (CTAS) to evaluate perceived parenting styles and academic anxiety levels. Although the overall relationship between parenting style and academic anxiety was not statistically significant, distinct patterns emerged. Students raised with authoritative parenting exhibited the lowest levels of academic anxiety, indicating that this style may be most effective in creating a supportive academic environment. Conversely, those raised with authoritarian parenting reported the highest anxiety levels, suggesting that this more controlling approach may contribute to greater psychological stress. Students from permissive backgrounds showed anxiety levels that were intermediate, higher than those from authoritative households but lower than those from authoritarian ones. These findings highlighted the role of parenting style in shaping academic anxiety among Chinese education majors. Additionally, the study challenged the stereotype that Chinese parents predominantly use authoritarian methods, as many students reported being raised with authoritative parenting. This shift toward a more balanced, supportive approach may reflect evolving cultural norms in Chinese education, suggesting that adopting authoritative practices could help reduce academic anxiety in this population.

Keywords: parenting styles, academic anxiety

1. Introduction

1.1. Academic anxiety

Academic anxiety, a specific form of anxiety related to academic tasks, has been widely acknowledged as a significant impediment to effective learning and academic achievement [1]. Unlike general anxiety, academic anxiety is directly linked to the unique pressures and demands in educational settings, such as preparing for exams, completing assignments, and engaging in classroom discussions. This type of anxiety is not only a psychological burden but also a critical factor that can undermine a student's ability to perform to their full potential.

Previous research suggested that academic anxiety shows in three key areas: worry, emotionality, and deficits in study skills [2]. Worry involves persistent and anxious thoughts that disrupt a student's concentration, making it difficult to absorb and retain new information [3]. Specifically, high levels of academic anxiety often lead to increased worry, which can seriously disrupt working memory—a cognitive function that helps people temporarily store and process information. Working memory is crucial for tasks like understanding new concepts, following instructions, and applying knowledge, all of which are vital for academic success [4]. When anxiety takes hold, it hampers this cognitive function, making it harder for students to perform well. This creates a vicious cycle: as anxiety impairs working memory, academic performance drops, leading to even more worry and further impairing performance. Emotionality refers to the physiological manifestations of anxiety, such as an elevated heart rate, sweating, and tension, which are common physiological responses to stress [5]. These symptoms can significantly impact a student's ability to focus and perform academically. For example, an increased heart rate can make it difficult to concentrate on tasks, while sweating and muscle tension may lead to discomfort and distraction. These symptoms of emotionality not only worsen the feeling of anxiety but also create a negative feedback loop where the physical discomfort exacerbates the psychological distress [5, 6]. Deficits in study skills exacerbate academic anxiety by fostering ineffective academic behaviors like procrastination and poor note-taking [7]. These inadequate habits can lead to lower exam scores and incomplete

assignments, further fueling the cycle of anxiety. When students lack effective study strategies, they may struggle to manage their workload, leading to last-minute cramming or disorganized notes, both of which hinder academic performance [6, 7]. When the factors are combined, they create substantial barriers to academic success, making it increasingly difficult for students to perform well in their studies [6].

In recent years, anxiety among university students has emerged as a growing concern on a global scale, reflecting the increasing pressures faced by young adults in academic environments [8]. Research suggested that anxiety affects approximately 32.00% of university students worldwide, with prevalence rates varying widely from 7.40% to as high as 55.00%, depending on the region and population studied [9]. This variation highlights the pervasiveness of anxiety in academia and underlines the importance of addressing this issue across diverse educational contexts. Another study found that 34.8% of university graduates reported experiencing anxiety disorders, with 19.1% experiencing mild anxiety, 15% moderate anxiety, and 10.3% severe anxiety, which suggested the substantial mental health challenges faced by students even after completing their studies [10].

The issue of academic anxiety is particularly pronounced among Chinese university students, who have been disproportionately affected by the escalating pressures of academic life [11]. Recent studies have documented a significant rise in anxiety levels among Chinese undergraduates, reflecting broader trends in the increasing academic demands and societal expectations placed on students [12]. A comprehensive meta-analysis that compiled data from 1 million Chinese university students reported that 25.0% of these students exhibited symptoms of anxiety, further highlighting the widespread nature of this mental health challenge within the student population [13]. Moreover, research conducted at a local Chinese university involving 1,309 students found a strong correlation between academic pressure and heightened anxiety levels. The study revealed that as students' workloads increased, so did the severity of their anxiety symptoms, which included panic attacks, elevated heart rates, and other stress-related physiological responses [14]. These findings are particularly concerning, as they suggested that the academic environment itself—featured by intense competition, high expectations, and rigorous demands—plays a crucial role in exacerbating anxiety among students.

The COVID-19 pandemic has exacerbated these challenges, particularly among Chinese college students. Research shows that this demographic has experienced heightened levels of anxiety during the pandemic, with rates surpassing those observed in the general population [15]. A large-scale study involving 1,003,743 Chinese college students revealed a dramatic increase in the prevalence of anxiety, rising from 17.2% before the pandemic to 29% during the pandemic [15]. This surge in anxiety is likely attributable to the unprecedented disruptions in academic routines, social isolation, and uncertainty about the future caused by the pandemic. An online survey using the Perceived Stress Scale (PSS) conducted among 1,586 students found that 67.5% exhibited symptoms of moderate to severe stress after COVID-19, with 20% specifically reporting anxiety symptoms [16]. These findings emphasized the escalating psychological tax that the pandemic has taken on Chinese college students, especially in their academic life.

1.2. Parenting styles

Parenting style refers to a wide range of behaviors that collectively influence a child's development, shaping their growth in several domains—biological, emotional, spiritual, and social [17, 18]. Rather than being defined by isolated exercises or decisions, parenting style is understood as a complex, ongoing process that reflects the underlying values, beliefs, and goals that parents hold for their children's socialization and overall growth [19]. This process is not static; it evolves over time as parents respond to their child's changing needs across developmental stages.

Parenting styles create an emotional climate within the parent-child relationship, establishing the foundations in which specific child-rearing practices occur [20]. This emotional climate influences how children perceive themselves, others, and the world around them. It impacts their ability to form relationships, manage emotions, and develop a sense of identity. In other words, the parenting behaviors—whether they are nurturing and supportive or strict and controlling—can lead to distinct patterns in a child's behavior, cognitive development, and emotional health.

Parents who consistently apply reasonable discipline while also engaging in open communication are likely to raise children who respect boundaries and feel confident in expressing themselves. On the other hand, inconsistent discipline or a lack of clear communication can lead to confusion, defiance, or withdrawal in children. For instance, a warm and responsive parenting style, characterized by high levels of affection and support, tends to foster secure attachment, positive self-esteem, and social competence in children. These children are more likely to develop into well-adjusted adults who are able to create healthy relationships and handle stress effectively. In contrast, a parenting style marked by hostility or neglect usually leads to insecurity, low self-esteem, and difficulties in emotional regulation, potentially resulting in a range of behavioral and psychological issues among children.

Maccoby [21] identified two fundamental dimensions of parenting style: parental responsiveness and parental demandingness. Parental responsiveness, often referred to as warmth or supportiveness, reflects the degree to which parents are sensitive to their children's needs and are committed to fostering their individuality, self-regulation, and self-assertion through a nurturing and supportive environment [19]. Responsive parents are sensitive to their children's emotional and developmental needs, offering encouragement, understanding, and validation. This approach not only helps in building a strong emotional bond

between parent and child but also promotes the child's sense of security and self-worth, which are critical for healthy psychological development.

On the other hand, parental demandingness, also known as behavioral control, refers to the expectations and demands that parents impose on their children to ensure their integration into the family unit and society at large. This dimension involves setting clear standards for behavior, providing supervision, enforcing discipline, and addressing disobedience when necessary [22]. Demanding parents set maturity standards that are appropriate to the child's age and developmental stage, and they monitor their children's activities to ensure that these standards are met. This aspect of parenting is crucial for teaching children discipline, responsibility, and the ability to function effectively within the broader social context.

Together, the balance between the two dimensions determines the overall emotional climate of the parent-child relationship and significantly influences the child's development across multiple domains, including their social, emotional, and cognitive growth.

Rohner's Parental Acceptance-Rejection Theory (PART) offers a distinct perspective on socialization, emphasizing the profound impacts that parental behavior has on child development. This theory focuses on four key domains: the behavioral, cognitive, and emotional development of children, as well as adult personality functioning [23]. PART aims to explain and predict the effects that varying degrees of parental acceptance or rejection have on a child's overall growth and psychological well-being. Central to PART is the idea that individuals experience different levels of warmth and affection from significant figures in their lives, who may or may not be their biological parents. The theory argues that this spectrum of parental behavior can range from complete acceptance, characterized by high levels of warmth, affection, and emotional support, to outright rejection, which is often marked by a lack of warmth, indifference, or even hostility [24].

Parental acceptance is associated with positive developmental outcomes, fostering a child's sense of security, self-esteem, and emotional resilience. Children who perceive high levels of acceptance from their parents are more likely to develop healthy social relationships, exhibit fewer behavioral problems, and achieve higher academic success. This environment of acceptance encourages open communication, emotional expression, and the development of a strong sense of identity and self-worth. In contrast, parental rejection has detrimental effects on a child's development. Rejection can be seen in different forms, including neglect, indifference, or overt hostility. Children who experience rejection may struggle with feelings of worthlessness, anxiety, and depression. This lack of warmth and affection can lead to a range of negative outcomes, including poor social relationships, behavioral issues, and difficulties in academic and professional settings. In severe cases, parental rejection can contribute to the development of personality disorders and other long-term psychological challenges in adulthood.

PART also suggests that early experiences of acceptance or rejection do not only shape a child's immediate development but also have lasting effects on their personality and functioning in adulthood. Adults who experience high levels of acceptance during childhood are generally better equipped to handle stress, maintain healthy relationships, and possess a positive self-concept. Conversely, those who face rejection are more likely to encounter difficulties in these areas, potentially perpetuating a cycle of rejection in their own relationships and parenting styles.

Additionally, it was introduced a two-dimensional model of parenting, which focuses on the dimensions of warmth-hostility and restrictiveness-permissiveness. According to this model, parents who exhibit both high warmth and high restrictiveness are more likely to raise compliant, well-behaved children who adhere to rules and expectations. These children often develop a strong sense of discipline and responsibility, as their parents provide a structured environment coupled with emotional support. In contrast, parents who combine high warmth with permissiveness tend to foster socially outgoing, independent, and creative children. These children are encouraged to explore their interests and express themselves freely, benefiting from the emotional security provided by their parents' warmth while also enjoying the autonomy granted by a less restrictive environment [25].

Expanding on these foundational ideas, Kendler identified three critical factors that shape different parenting styles: warmth, protectiveness, and authoritarianism. Warmth reflects the emotional support and affection provided by parents, protectiveness relates to the degree of parental involvement and safeguarding, and authoritarianism is characterized by strict control and high demands. Kendler's model suggests that parenting styles can be broadly categorized into two overarching dimensions: acceptance and rejection. This bipolar framework encompasses the spectrum of a child's experience, where parenting behaviors fall on a continuum between acceptance (warmth and affection) and rejection (hostility and neglect).

Accepting parents, as defined by Kendler, demonstrate their love and affection through both physical and verbal expressions, such as cuddling, kissing, caressing, and offering praise and encouragement. These parents are attentive to their children's needs and prioritize creating an environment where the child feels valued, loved, and supported. The primary goal of accepting parents is to ensure that their child develops a secure sense of self-worth and belonging, fostering emotional stability and positive self-esteem [23]. Children raised in accepting environments are more likely to exhibit healthy social behaviors, develop strong interpersonal relationships, and have greater resilience in the face of challenges. On the other hand, rejecting parents often engage in negative behaviors that undermine their child's emotional well-being. These parents may frequently compare their children unfavorably to others, fostering feelings of inadequacy and low self-esteem in their children. They often display emotions such as anger, resentment, or bitterness toward their children and may view their child as a burden rather than a source of joy [23]. Rejection can manifest in two distinct forms: overt aggression and cruelty, or neglect and disregard. In cases of overt aggression and cruelty, rejecting parents might verbally abuse or physically harm their children, creating an environment of fear

and hostility. This form of rejection is damaging to a child's psychological and emotional health, leading to issues such as anxiety, depression, and behavioral problems. Children who experience such treatment may internalize feelings of worthlessness and develop a negative self-concept, which can persist into adulthood. Neglect and disregard represent the other form of rejection, where parents fail to meet their children's basic needs, both emotional and physical. These parents may be indifferent to their child's achievements or struggles, providing minimal support or guidance. The lack of parental involvement can lead children to feel unloved and unwanted, resulting in significant emotional and developmental challenges. Children raised in neglectful environments are at risk of developing attachment disorders, difficulties in forming healthy relationships, and problems with self-regulation and academic performance [26].

Together, the theories highlighted the profound impact that parental behavior—whether characterized by acceptance or rejection—has on a child's development. Accepting parents, through their warmth and affection, contribute positively to a child's emotional and psychological growth, whereas rejecting parents, through their hostility or neglect, can inflict long-lasting harm.

Building on Rohner's Parental Acceptance-Rejection Theory (PART) and Kendler's three-factor theory, Diana Baumrind's parenting style model has emerged as a foundational framework in modern parenting research [27]. Baumrind, a pivotal figure in developmental and clinical psychology, is renowned for her groundbreaking work in the early 1960s with over 100 infants aged forty days. Her shift in focus from individual behaviors to the dynamic interactions between parents and children marked a significant advancement in the understanding of parenting. This approach underscored the necessity for pattern-oriented models that not only consider multiple aspects but also encompass an integrated, holistic perspective. Baumrind employed various research methods, including field observations and parental reports, to develop her model. Through these methods, she identified four critical dimensions of parenting behavior: discipline strategies, warmth and nurturance, communication styles, and expectations of maturity and control [27]. These dimensions formed the basis of what are now known as Baumrind's "styles of parenting," representing the diverse combinations of approaches to each dimension. Each parenting style is distinct in how it navigates these four dimensions, and cross-cultural variations further highlight the model's applicability across different contexts. Subsequent research expanded Baumrind's framework, introducing a fourth style—neglectful parenting—characterized by low responsiveness and low demandingness.

1.2.1. Authoritative parenting in Baumrind's model: balance of warmth and structure

Authoritative parenting, featured by high responsiveness and high demandingness, is widely recognized as particularly effective in fostering positive outcomes in children's development [28]. This parenting style strikes a balance between warmth and discipline, providing children with a supportive environment while maintaining clear expectations for behavior. Over time, as research has expanded on Baumrind's original model, a fourth parenting style—neglectful parenting, defined by low responsiveness and low demandingness—has been incorporated into the framework. The inclusion of neglectful parenting has reinforced Baumrind's model as a foundational tool for understanding the complex dynamics of the parent-child relationship and its significant impact on child development [29].

In the context of authoritative parenting, parents are both attentive to their children's emotional and developmental needs while also setting firm expectations for orderly behavior. Brenner and Fox [30] describe authoritative parents as responsive yet disciplined, valuing both the nurturing aspect of parenting and the importance of setting boundaries. This parenting style involves establishing clear standards for behavior, but it also allows children the freedom to make their own decisions within those guidelines [31]. Authoritative parents balance firm guidance with a tolerance for opposition, fostering an environment where children can express their opinions and develop independence without feeling overly controlled or restricted [28].

A key aspect of authoritative parenting is its constructive approach to discipline. Unlike punitive methods, authoritative discipline focuses on fostering qualities such as assertiveness, social responsibility, self-regulation, and cooperation with others [19]. In this approach, forgiveness and understanding are prioritized over punishment, helping children learn from their mistakes and encouraging positive behavior through supportive and consistent guidance. This method not only helps children develop a strong moral compass but also builds their confidence in navigating social interactions and making decisions.

As a result of this balanced approach, children raised under authoritative parenting typically grow up to be well-adjusted, competent, and successful in their endeavors [21]. They are more likely to exhibit higher levels of self-esteem, better social skills, and greater academic achievement compared to children raised under other parenting styles. The combination of high expectations with emotional support enables these children to face challenges with resilience and to develop a strong sense of autonomy and responsibility.

The success of authoritative parenting lies in its ability to create an environment that supports a child's overall development while also preparing them to meet the demands of the world. By fostering both independence and social responsibility, this parenting style equips children with the tools they need to navigate life's challenges effectively and to build positive relationships with others. The integration of this approach into Baumrind's broader parenting model underscores its value in promoting healthy, well-rounded development in children, making it a cornerstone of effective parenting practices.

1.2.2. Authoritarian parenting in Baumrind's model: high demands, low responsiveness

Authoritarian parenting is defined by high demands and strict control coupled with low responsiveness from parents [19]. In this style, children are expected to adhere rigidly to the rules and expectations set by their parents, with any form of non-compliance typically met with punishment. This punitive approach is a key factor distinguishing authoritarian parenting from authoritative parenting, where discipline is balanced with emotional support. According to Baumrind [19], authoritarian parents often suppress and limit their children's desires, offering little in the way of emotional warmth and frequently treating their children in a rigid and arbitrary manner. This approach can be psychologically detrimental, leading to children who are inhibited, pessimistic, and struggle with independence.

The authoritarian parenting style exerts significant pressure and control over children, often resulting in diminished confidence and autonomy [22]. Children raised in such environments may find it difficult to develop a strong sense of self, as their personal needs and opinions are often disregarded in favor of strict adherence to parental expectations. This can stifle their ability to think independently and make decisions for themselves, contributing to a pervasive sense of inadequacy and dependence.

Chao [31] further noted that children raised under authoritarian parenting frequently exhibit signs of unhappiness, pessimism, shyness, and a lack of trust. These children may become overly cautious and withdrawn, fearing the repercussions of making mistakes or failing to meet their parents' rigid standards. The authoritarian style positions parents as ultimate authority figures who demand absolute obedience, often without offering explanations or fostering an understanding of the rules [19]. While children raised in such environments may appear outwardly obedient and proficient, they often rank lower in happiness, social competence, and self-esteem [32]. This lack of emotional support and the constant pressure to conform can leave lasting impacts on a child's psychological well-being, affecting their ability to navigate social relationships and develop a healthy, independent sense of self.

1.2.3. Neglectful parenting in Baumrind's model: lack of demand and responsiveness

Neglectful parents are typically disengaged from their children's lives, providing only for their basic needs, such as food and clothing, while showing minimal interest in their overall development [33]. This parenting style is characterized by a lack of both demandingness and responsiveness, leaving children largely to their own devices when it comes to fulfilling their desires, meeting their needs, and managing their responsibilities. As a result, communication between parents and children is often minimal, with few opportunities for positive interactions. In such an environment, children are forced to navigate challenges without the necessary guidance or emotional support, leading to feelings of neglect and abandonment.

Over time, this lack of parental involvement can have profound effects on a child's self-esteem. Without the reinforcement of parental attention, encouragement, or guidance, children may struggle to develop a strong sense of self-worth. They might begin to doubt their abilities and feel inadequate in various aspects of their lives, which can manifest as lower confidence and a pervasive sense of inadequacy. The absence of a supportive parental figure can also leave children ill-equipped to handle social and academic pressures, further compounding their difficulties and potentially leading to long-term emotional and psychological challenges.

1.2.4. Permissive parenting in Baumrind's model: high responsiveness, low demands

Permissive parenting, also known as indulgent parenting, is characterized by low demands and high responsiveness from parents, creating a distinct contrast to more rigid, authoritarian parenting styles [19]. In this approach, parents set few rules and provide their children with significant freedom, rarely enforcing punishments and placing considerable trust in their children's ability to make appropriate decisions. Rather than focusing on setting boundaries or enforcing strict regulations, permissive parents prioritize meeting their children's emotional and physical needs, often valuing their child's happiness and self-expression above traditional forms of discipline [19].

In permissive households, children are granted substantial autonomy to pursue their desires with minimal interference from adults. According to Baumrind [17], this parenting style is characterized by a lack of restrictions, with parents more concerned with allowing freedom than with imposing control or discipline. This permissiveness means that children are often left to navigate their own choices without the guidance or structure that more authoritative or authoritarian parenting might provide. As a result, while children in permissive environments might enjoy a warm and supportive atmosphere, they often struggle with self-regulation and may score lower on measures of happiness and well-being compared to their peers raised under more structured parenting styles.

Research has shown that children raised in permissive environments may face particular challenges in their interactions with authority figures and in their academic performance [24]. The lack of consistent boundaries and expectations can lead to difficulties in managing emotions and behaviors effectively. For example, without the experience of enforced limits, these children may find it challenging to adhere to rules in school settings or to respond appropriately to the demands of teachers and

other authority figures. This can result in academic underachievement and social difficulties, as children may not have developed the self-discipline necessary to focus on tasks, follow instructions, or delay gratification.

While permissive parenting fosters a nurturing and supportive environment, it may inadvertently impede the development of essential skills such as self-discipline, responsibility, and resilience. The absence of consistent boundaries and the prioritization of immediate emotional comfort over long-term behavioral development can hinder a child's ability to cope with challenges, set goals, and persevere through difficulties. Consequently, although permissive parenting emphasizes nurturing and responsiveness, it may compromise the development of critical life skills necessary for success and well-being in various aspects of life.

While permissive parenting is well-intentioned and aims to create a positive and emotionally supportive environment, it falls short in preparing children for the structured demands of the real world. Without the balance of freedom and responsibility, children raised in permissive households may struggle with authority, exhibit poor academic performance, and lack the self-discipline needed to navigate life's challenges effectively.

1.3. Baumrind's parenting styles and Chinese parenting styles

Chinese parenting is deeply rooted in cultural traditions that prioritize academic effort and discipline over affection. For example, Yanci is a traditional Chinese parenting mindset that intertwines nurturing with discipline, implying the belief that discipline itself is a form of care [33]. This stands in stark contrast to Baumrind's parenting model, which is rooted in Western values that emphasize individual independence and autonomy [34]. The cultural divergence between these two models is significant, and applying Baumrind's theory to Chinese parenting requires substantial adaptation to account for these unique cultural characteristics.

The concepts of training and tiger parenting are particularly relevant. Training is derived from the Chinese cultural emphasis on harmony and duty, where mothers make significant sacrifices not through emotional or physical affection, but through rigorous discipline and continuous oversight [35]. This approach reflects deeply held Chinese values of devotion to a child's academic success and the willingness of parents to sacrifice for their child's achievements [36]. In training, the focus is on instilling a sense of responsibility and discipline in children, ensuring that they meet the high academic and moral standards expected by both the family and society.

Tiger parenting, another concept specific to Chinese culture, is characterized by a combination of high parental monitoring, psychological control, shaming, and punitive actions, alongside moderate to high levels of warmth, reasoning, and democratic parenting [37]. While both training and tiger parenting share similarities with Baumrind's authoritative and authoritarian styles—particularly in their emphasis on strict control and obedience—the key difference lies in the motivation behind this strictness. Unlike authoritarian parenting, which often stems from a climate of rejection and hostility [38], training is driven by the cultural goal of maintaining harmony and fulfilling societal expectations, with discipline viewed as a means to ensure socially desirable behavior [32].

Furthermore, tiger parenting differs from authoritarian parenting by incorporating more warmth and reasoning into its framework [39]. While training and authoritative parenting both involve significant parental involvement and a concern for the child's overall development, training is more unilateral in its demands. It often involves harsher control compared to the mutual, bilateral relationships that characterize authoritative parenting. Tiger parents, in comparison to authoritative parents, tend to exhibit more hostility towards their children, using a combination of strict discipline and emotional pressure to ensure compliance with high expectations.

Under the influence of Chinese cultural values like collectivism and filial piety, Chinese parents are less likely to express affection and love openly or verbally. Instead, their love is often conveyed through higher levels of physical punishment, strict discipline, and a strong focus on academic achievement [40]. This approach is rooted in a filial mindset where parents are expected to be both strict and affectionate—embodied in the concept of Yanci—towards their children, as reflected in studies of Chinese child-rearing beliefs [32]. The concept of Yanci emphasizes that true care is shown not through overt displays of affection, but through the careful and often strict guidance that helps children succeed in life and maintain the family's honor.

In contrast, Baumrind's model, developed within a Western cultural context, emphasizes individualism, autonomy, and self-expression [34]. These values emphasize the authoritative style, which balances high expectations with warmth and open communication, and the permissive style, which prioritizes the child's independence often at the expense of structure. Because these values differ so fundamentally from those in Chinese culture, Chinese parenting styles may not be fully captured by Baumrind's framework, necessitating an analysis that takes specific cultural characteristics into account.

The concepts of training and tiger parenting help illustrate these culturally specific aspects of Chinese parenting. Training, which emphasizes parental sacrifice and a child's academic success, often does not manifest in emotional or physical expressions such as praise and affection. Instead, it involves rigorous discipline and continuous monitoring to ensure the achievement of familial and societal goals centered around harmony [35]. This emphasis on discipline over affection is seen as a crucial component of effective parenting in Chinese culture, where the family's success and the child's future are often intertwined.

On the other hand, tiger parenting is characterized by high levels of control and expectations but differs from authoritarian parenting in its underlying motivation. While authoritarian parenting is often associated with rejection and hostility, tiger

parenting is motivated by the desire to cultivate socially acceptable behavior and academic excellence within the framework of Chinese cultural values. This approach is designed to push children to achieve their fullest potential, often through rigorous academic demands and strict behavioral expectations. Compared to authoritarian parenting, tiger parenting tends to involve more warmth and reasoning, even if these are accompanied by high demands [39].

Moreover, while authoritative parenting emphasizes mutual, bilateral relationships between parent and child, training involves more unilateral demands and can involve harsher control. In the training model, the parent's role is more directive, with less emphasis on the child's autonomy and more on fulfilling the family's collective goals. Tiger parents, compared to authoritative parents, often exhibit more hostility towards their children, reflecting a greater focus on ensuring that the child meets stringent academic and social standards. This contrast highlights the unique cultural context in which Chinese parenting operates, where traditional values shape the approach to discipline and child-rearing in ways that differ significantly from Western models.

1.4. The impacts of parenting styles on academic anxiety

Research consistently suggests that university students' anxiety levels are influenced by different parenting styles [41, 42]. In one study, 997 students across four schools in Beijing were analyzed to investigate the relationship between Chinese parents' warmth and parental pressure related to academic work, and the corresponding levels of academic anxiety in adolescents [42]. Parental warmth was assessed using the Parenting Styles and Dimensions Questionnaire, while the students' academic anxiety levels were measured with the Academic Anxiety Scale. The study revealed that higher levels of parental warmth generally mitigated the negative impact of parental academic pressure on adolescents' anxiety and other psychopathological symptoms. In other words, when parents expressed warmth and support, the detrimental effects of academic pressure on their children's mental health were significantly reduced [42]. These findings suggest that parental warmth plays a crucial protective role in buffering the stress associated with high academic expectations, highlighting the importance of a balanced approach to parenting in the context of Chinese education. Silva et al [41] examined the relationship between parental demandingness and academic anxiety levels using a sample of 90 university students who reported high levels of parental demandingness. The Academic Anxiety Scale was employed to assess the students' anxiety. The results revealed a positive correlation between parental demandingness and higher levels of academic anxiety, suggesting that a lack of responsiveness from parents may contribute to increased anxiety. However, the study had several limitations. Primarily, the assessment of parental demandingness relied on self-reports from the students, which could introduce subjectivity and bias into the findings. Additionally, the relatively small sample size of 90 students limits the generalizability of the results, as outcomes may vary in different contexts or with a larger sample.

In response to the limitations, a study by Belsky [43] studied the impact of parenting style on academic anxiety levels among university students, using a sample of 232 male and 232 female participants. The study assessed parenting styles and academic anxiety levels separately, employing the Perceived Parenting Style Scale and the Symptom Checklist-90-R, a self-report questionnaire designed to evaluate a wide range of psychological symptoms [44]. The findings revealed moderate positive correlations between high levels of parental rejection, demandingness, and permissiveness, and increased academic anxiety levels [43]. This study supported the theory of a positive relationship between parenting style and academic anxiety. However, the sample's composition, consisting solely of female university students, raised concerns about the generalizability of the results.

To address these concerns, a subsequent study was conducted in Mugla, Turkey, involving a more diverse sample of 545 participants, including 255 males and 290 females. The study utilized the Parental Authority Questionnaire and the Anxiety Scale, both of which were adapted and translated into Turkish to suit the participants' language needs. The results indicated that high levels of parental rejection, authoritarianism, and acceptance were significant predictors of academic anxiety levels and were strongly correlated with academic anxiety sensitivity. This study confirmed that gender was not a confounding variable in the relationship between parenting style and academic anxiety, thereby strengthening the validity of the findings across different populations.

However, most studies on the relationship between parenting styles and academic anxiety have been conducted in Western cultural contexts, raising questions about whether these findings are applicable in other cultures, such as those in Asian countries. To address this gap, a comparative study was conducted with university students from Australia and Indonesia to investigate the influence of parenting styles on academic anxiety levels. A web-based questionnaire was distributed to 125 Australian and 31 Indonesian university students, and both students and their parents participated in the survey. The study used Rohner's Parental Acceptance-Rejection Theory (PART) parenting style scale to identify parenting styles. The findings revealed that in both cultural contexts, high levels of parental demandingness and low levels of parental acceptance were predictors of emotional and behavioral problems, whereas a parenting style characterized by high acceptance and responsiveness was associated with lower anxiety levels. Notably, when parents' self-reported ratings of their parenting styles were included, the study concluded that high acceptance and low demandingness were most effective in reducing students' anxiety levels [45].

Additionally, a study a sample of 323 honors college students at a Midwestern university in the United States to investigate the interplay between parental warmth, parental academic pressure, and the levels of academic anxiety among American

university students, aiming to understand how the emotional tone set by parents—whether warm and supportive or demanding and pressuring—affects students' mental health, particularly their experience of academic anxiety.

Parental warmth was assessed using the Parental Authority Questionnaire, a well-established tool that measures the degree of affection, support, and emotional responsiveness that parents exhibit towards their children. On the other hand, students' academic anxiety levels were evaluated using the Academic Anxiety Scale, which quantifies the intensity of anxiety symptoms related to academic tasks, such as worry, fear of failure, and test anxiety.

The study's findings highlighted a significant relationship between parental warmth and academic anxiety. Specifically, it was found that higher levels of parental warmth were associated with a reduction in the negative impact of parental academic pressure on students' anxiety levels. In other words, even when parents exerted considerable pressure on their children to perform well academically, the presence of warmth and emotional support from parents helped to buffer students against the development of anxiety and other related psychological symptoms.

1.4.1. Impacts of Baumrind's parenting styles on academic anxiety among university students

Research has shown that parenting styles, as outlined in Baumrind's model, have a significant impact on university students' academic anxiety levels across different cultural contexts. For example, a study conducted in Nigeria explored the correlation between authoritarian, authoritative, and permissive parenting styles and the academic anxiety levels of 240 students from four universities. In this study, participants completed questionnaires that assessed both their perceived parenting styles and their levels of academic anxiety. The results revealed a clear pattern: students who perceived their parents as authoritarian—characterized by high demands and low responsiveness—reported higher levels of academic anxiety. This suggests that the strict and controlling nature of authoritarian parenting may contribute to increased stress and pressure, which in turn heightens anxiety related to academic performance. In contrast, students who identified their parents as either permissive or authoritative experienced lower levels of academic anxiety. The permissive parenting style, which involves high responsiveness but low demands, seemed to create an environment with less pressure, thus reducing anxiety. Similarly, the authoritative parenting style, which balances high demands with high responsiveness, was also associated with lower academic anxiety, likely because it combines structure with emotional support, helping students manage academic challenges more effectively.

Similarly, a study conducted in Israel, which involved 204 university students (79 males and 125 females), used comparable questionnaire methods to examine the impact of different parenting styles on academic anxiety. The findings from this study revealed that both authoritative and authoritarian parenting styles had a strong correlation with academic anxiety levels. Specifically, students who perceived their parents as authoritarian, characterized by strict control and high demands, reported elevated levels of academic anxiety. This suggests that the rigid and demanding nature of authoritarian parenting may contribute significantly to the stress and anxiety experienced by students in an academic setting.

On the other hand, students who identified their parents as authoritative—where high demands are balanced with emotional support and open communication—also showed a strong correlation with academic anxiety, though the nature of this relationship is more complex. While authoritative parenting is generally associated with positive outcomes, the study suggests that even within a supportive environment, the high expectations inherent in this style can still contribute to academic anxiety, albeit in a way that might be more manageable due to the accompanying emotional support.

Interestingly, the study also found that the permissive parenting style, which is characterized by high responsiveness but low demands, had a smaller yet still significant association with academic anxiety. Students from permissive backgrounds experienced less academic anxiety compared to those from authoritarian households, but more than those from authoritative homes. This indicates that while permissive parenting may reduce some of the pressures associated with academic performance, the lack of structure and expectations can still result in anxiety, possibly due to the students feeling unprepared or unsupported in their academic endeavors [46].

Further supporting these findings, it was conducted research with a larger sample comprising 60 male and 690 female university students. Utilizing the Adolescent Parenting Attitude Four Factor Questionnaire and the Academic Anxiety Scale, the study found that the authoritarian parenting style was the most significant positive predictor of academic anxiety, while the authoritative parenting style served as the most significant negative predictor.

Despite these insights, earlier studies did not extensively explore gender differences in how parenting styles affect academic anxiety. Addressing this gap, it was conducted research in Romania with 182 university students (93 females), employing self-report measures to assess school anxiety and perceptions of parenting styles. The study concluded that school anxiety was associated with higher perceptions of both authoritarian and permissive parenting styles, with this trend being more pronounced among male students. This aligns with existing research suggesting that over-controlling, rejecting, over-protective, and overly concerned parenting is linked to increased anxiety levels. Interestingly, the authoritative parenting style was correlated with anxiety related to social evaluation in general; however, female students who perceived their parents as authoritative reported lower overall school anxiety. This supports previous findings on the role of warmth, consistent discipline, and monitoring in mitigating anxiety.

Overall, these studies confirm the contributory role of Baumrind's parenting styles on university students' academic anxiety levels within diverse cultural settings. Authoritarian parenting consistently emerges as a predictor of higher academic anxiety, while authoritative parenting is associated with lower anxiety levels, highlighting the importance of balanced parental responsiveness and demandingness in fostering students' academic well-being.

In China, earlier research also consistently found that the authoritative parenting style is most beneficial for students' mental health across different cultural contexts, while the authoritarian parenting style is most likely to exacerbate students' anxiety levels. For example, Hou's study involving 128 adolescents from Hong Kong revealed that those raised with an authoritative parenting style exhibited the lowest anxiety levels. This study also suggested that authoritative parenting might act as a protective factor, mitigating the negative impact of personal stressors on children. Moreover, another study highlighted the role of culture as a mediator between parenting styles and anxiety levels, emphasizing that low rejection and high warmth—hallmarks of authoritative parenting—are moderately and negatively correlated with academic anxiety [47].

These findings supported the broader theory that parenting styles in Baumrind's model significantly influence academic anxiety levels, a concept that holds true across various cultural contexts. Specifically, there is a strong negative correlation between the authoritative parenting style and university students' academic anxiety levels. Conversely, while the permissive parenting style shows a smaller positive correlation with academic anxiety, the authoritarian parenting style is strongly linked to higher anxiety levels. Notably, this relationship tends to be more pronounced among male students than female students, indicating a potential gender difference in how parenting styles impact academic anxiety.

1.4.2. Impacts of Baumrind's parenting styles on academic anxiety among Chinese university students

A study with 743 college students in China found significant interrelationships between authoritarian parenting, academic procrastination, and perfectionism. The study revealed that parents who adopted an authoritarian style—characterized by strict control and high expectations—tended to have an intense focus on mistakes and set exceptionally high standards for both themselves and their children. This preoccupation with avoiding errors was positively correlated with academic procrastination, suggesting that students under authoritarian parenting may delay academic tasks out of fear of not meeting these high standards. Consequently, this procrastination, coupled with the perfectionistic tendencies fostered by authoritarian parenting, may indirectly contribute to mental health issues in university students, such as increased stress and anxiety.

The findings aligned with the broader understanding that parental authoritarianism can lead to various forms of mental illness, particularly when combined with the pressures of academic performance. However, they also highlighted the complexity of this relationship within the Chinese cultural context, where societal and familial expectations play a significant role in shaping student behavior and mental health.

Another study further supported this argument. Researchers sampled 300 parents from mainland China residing in Hubei Province and utilized various instruments, including the Parents' Education Anxiety Questionnaire, Parental Authority Parenting Questionnaire, Parent-Child Relationship Scale, and Creating Self-crime Scale, to assess behavior problems within the family system. The findings indicated that authoritarian parenting was strongly associated with increased academic anxiety, which, in turn, mediated a range of behavioral problems in students. This suggests that the authoritarian parenting style not only raises the educational burden on students but also exacerbates behavioral issues, likely due to the heightened pressure and stress associated with meeting rigid parental expectations [48]. Together, the findings suggested that while authoritarian parenting may drive academic performance, it often does so at the expense of students' psychological well-being, leading to increased anxiety, procrastination, and behavioral issues.

However, despite these findings, the conclusion that authoritarian parenting universally harms students' mental well-being may be overly simplistic. In the Chinese cultural context, many students grow up equating parental control with parental affection, where strictness is perceived not as a lack of love, but as a deep expression of care and concern for their well-being and future success [32]. This perspective is rooted in Confucian values, particularly the concept of 'harmony,' which emphasizes the importance of maintaining balance and order within the family. In this context, the strict rules and collective family governance often seen in authoritarian parenting are not necessarily viewed as oppressive. Instead, they are perceived as part of a shared responsibility among family members to uphold family harmony and ensure the smooth running of household life [49].

These differing cultural perspectives suggest that traditional Western models of parenting, such as Baumrind's classifications, may be somewhat ethnocentric and may not fully capture the unique features of Chinese child-rearing practices. Baumrind's model, which categorizes parenting into authoritarian, authoritative, and permissive styles, is grounded in Western values of individualism and autonomy. In contrast, Chinese parenting practices are deeply influenced by collectivist values, where the family unit's well-being often takes precedence over individual desires, and parental control is seen as a means of guiding children toward fulfilling their roles within the family and society.

This cultural context is particularly relevant when trying to explain the academic success of students in China. The high academic achievements often observed among Chinese students may be partly attributed to the strong parental involvement and high expectations characteristic of what might be classified as authoritarian parenting in Western terms. However, within the

Chinese cultural framework, this approach is not merely about control but about fostering a sense of duty, discipline, and respect for authority—values that are highly esteemed in Chinese society.

Therefore, while authoritarian parenting may be seen as harmful in Western contexts, where it is often associated with emotional coldness and psychological distress, its impact within the Chinese cultural framework requires a more nuanced understanding. It is essential to consider how cultural values and norms shape the perception and outcomes of different parenting styles. In China, what might be viewed as authoritarianism in the West could be understood as a culturally appropriate way of demonstrating care and ensuring that children meet the expectations placed upon them by their families and society.

1.4.3. Impacts of Baumrind's parenting styles on academic anxiety among university students with education majors

Education studies is a discipline where students explore the theories and practices of teaching, often focusing on specific age groups or subject areas such as literature, math, or science [50]. Students majoring in education are expected to grasp not only the mechanics of the learning process but also the myriad factors—environmental, social, cultural, and psychological—that can influence a student's ability to learn and fully engage in school [51].

Research has indicated that education majors tend to experience higher levels of academic anxiety compared to their peers in other disciplines. For instance, Luz [52] conducted a study in Turkey, distributing online surveys to 712 university students across various majors. Using the Study Anxiety Questionnaire (SAQ) to assess anxiety levels, Luz found that education students reported the highest levels of academic anxiety, followed closely by students majoring in agriculture, food, and natural resources. This trend was similarly observed in the United States, where a study found that students in education and STEM (Science, Technology, Engineering, and Mathematics) majors exhibited the highest levels of academic anxiety [53].

Given these findings, the issue of academic anxiety among education majors in Western countries needs further investigation. Some studies have suggested that Baumrind's parenting styles may significantly influence the levels of academic anxiety experienced by these students. For example, a study conducted in the United States examined the relationship between perceived parenting styles and academic anxiety among 44 education majors, aged 18 to 24, at an American university. Using the Parental Authority Questionnaire and the Academic Anxiety Scale, the study found a negative correlation between authoritative parenting and academic anxiety levels. In contrast, a positive correlation was identified between authoritarian parenting and academic anxiety [54]. However, the study's small sample size poses a limitation, potentially affecting the generalizability of its findings.

To address this limitation, a subsequent study was conducted in India with a larger sample size of 200–215 education majors aged 17 to 25 years. This study employed the Perceived Parenting Style Scale (PPSS) and the Westside Test Anxiety Scale to measure parenting styles and academic anxiety levels, respectively. The findings were consistent with the previous study, revealing significant differences in academic anxiety across the three perceived parenting styles. Specifically, authoritarian parenting was associated with higher levels of academic anxiety, while authoritative parenting was linked to the lowest levels of anxiety [55]. These results supported the theory that in Western contexts, authoritarian parenting tends to increase academic anxiety among education majors, whereas an authoritative style tends to mitigate it.

The findings of this Ethiopian study confirmed a significant correlation between parenting styles and academic anxiety levels among education majors. Crucially, the study found that both male and female students who perceived their parents as authoritative experienced the lowest levels of academic anxiety compared to their peers who reported non-authoritative parenting styles. This consistency across gender lines suggests that the benefits of authoritative parenting—characterized by high expectations coupled with emotional support and open communication—are broadly applicable and beneficial, regardless of the student's gender [56].

Therefore, for education majors in Western contexts, and as evidenced by the studies from Ethiopia and India, authoritative parenting appears to be associated with the lowest levels of academic anxiety. Conversely, authoritarian parenting, with its emphasis on strict control and high demands, tends to exacerbate anxiety levels. These findings highlighted the critical role that parenting styles can play in shaping students' mental health, particularly in high-stakes academic environments like education programs, where the pressure to succeed can be intense.

2. The current study

This study aims to examine how different parenting styles affect academic anxiety among Chinese students, with a particular focus on those majoring in education. Academic anxiety is a significant concern among education majors in China, reflecting broader global trends that indicate a high prevalence of anxiety in students who are preparing for careers in teaching. However, understanding how parenting influences academic anxiety in this group is complex, given the unique cultural and educational context in China, particularly the teacher education model centered around Normal universities.

In China, education majors predominantly study at Normal universities, which are specialized institutions designed to train future teachers. These universities play a crucial role in China's educational system, as they are dedicated to preparing students for teaching careers by providing them with the necessary pedagogical knowledge and skills. Graduates from these universities

are awarded associate degrees, and the teacher education system operates at both national and provincial levels, making Normal universities a key component of China's educational infrastructure [56]. Due to their specialized nature and focus on teacher preparation, Normal university students represent an ideal population for investigating the intersection of parenting styles and academic anxiety.

Previous research highlighted the prevalence of academic anxiety among Chinese education majors, suggesting that this issue is widespread across different regions of the country [57, 58]. For instance, a study conducted at Inner Mongolia Autonomous Region Normal University found that 45% of education majors reported experiencing academic anxiety, as measured by the Chinese-version Self-Assessment Scale for Anxiety (SAS) [57]. Similarly, another study at Qinghai Normal University, which involved 380 undergraduate education majors, revealed that 38% of students exhibited symptoms of academic anxiety, assessed using the Self-Rated Health Scale (SRHS) [58]. These findings suggested that academic anxiety is not confined to a specific region or institution but is a prevalent concern among education majors throughout China.

Despite the documented prevalence of academic anxiety, there is limited research on how Baumrind's parenting styles—authoritarian, authoritative, and permissive—specifically influence this anxiety among Chinese education majors. Most existing studies on parenting styles and academic anxiety have been conducted in Western contexts, where authoritative parenting, characterized by high responsiveness and high demands, is often associated with lower levels of academic anxiety. In contrast, authoritarian parenting, which involves high demands but low responsiveness, tends to be linked to higher levels of anxiety. A study conducted in Hong Kong provides some insight into how these dynamics might play out in a Chinese context. The study found that students with authoritative parents reported the lowest levels of academic anxiety, while those with authoritarian parents experienced the highest levels of anxiety, consistent with findings from Western studies [59].

However, similar research in mainland China remains scarce, leaving a significant gap in the literature. Understanding how Baumrind's parenting styles influence academic anxiety in Chinese education majors is crucial because the cultural and educational context in mainland China may modify or intensify these effects. For instance, the cultural emphasis on academic achievement and the societal expectations placed on future teachers could interact with parenting styles in unique ways, potentially exacerbating or mitigating the impact of these styles on academic anxiety.

Given the distinct educational environment in China, where teacher preparation is highly structured and the pressure to succeed is intense, it is important to explore whether the patterns observed in Hong Kong and Western contexts hold true for mainland Chinese students. Specifically, there is a need to investigate whether authoritative parenting continues to serve as a protective factor against academic anxiety in this context, or if the demands of the Chinese education system amplify the negative effects of authoritarian parenting. Additionally, exploring the role of permissive parenting in this context could provide insights into whether a less structured approach to parenting might help alleviate or inadvertently increase academic anxiety among Chinese education majors.

To address this gap, the current study investigates the correlation between parenting styles—specifically authoritarian, authoritative, and permissive—and academic anxiety among Chinese education majors. I hypothesized that authoritarian parenting would have the strongest positive correlation with academic anxiety, though its impact may be moderated by cultural factors unique to China. Additionally, I expected that authoritative and permissive parenting styles will also correlate with academic anxiety, but to a lesser extent. This research aims to provide a deeper understanding of how cultural context shapes the relationship between parenting styles and academic anxiety among Chinese education students.

3. Methods

3.1. Participants

The participants for this study were undergraduates from Northeast Normal University (NENU) in Jilin Province, mainland China. NENU is widely recognized as one of the most prestigious normal universities in China, with a strong emphasis on teacher education and a well-established reputation for its research programs [60]. The university offers a broad range of academic disciplines, including science, engineering, arts, education, and economics, with a distinctive focus on the field of education. Undergraduates majoring in education were specifically chosen as participants because their foundational knowledge in psychology and education concepts significantly reduced the need for extensive explanations during the study.

During the 2024 academic year, the Department of Education at NENU had 532 enrolled undergraduates. To ensure a representative sample for the study, participants were selected using a simple random sampling method, which is effective in minimizing selection bias and enhancing the generalizability of the study's findings. A random number generator was employed to determine the starting point for systematic sampling. To reach the target sample size of 200 participants, every second student on the list provided by the university's Registrar's Office was selected, with the initial participant chosen randomly from the first five students on the list. This method ensured that each student had an equal chance of being included in the study.

Before the study started, informed consent was obtained from all participants, ensuring that they were fully aware of the study's purpose and their rights as participants. The final sample consisted of 183 participants, including 174 females and 9

males. The gender distribution reflects the demographics of the education department, where female students are predominantly enrolled. This sample size and composition were deemed adequate for the study's objectives, providing sufficient data to explore the research questions while maintaining statistical reliability. The careful selection process and the use of random sampling techniques contributed to the robustness of the study, enabling the findings to be more broadly applicable to the population of education majors at NENU and potentially other similar institutions in China.

3.2. Materials

3.2.1. Cognitive test anxiety scale

The Cognitive Test Anxiety Scale (CTAS) was first introduced in 1994 as a 44-item scale specifically designed to measure Cognitive Test Anxiety (CTA). Originally developed by Cassady and Johnson [61], the CTAS focused on assessing test anxiety from a cognitive perspective, with a particular emphasis on the traditional construct of 'worry.' Over the years, the scale has undergone extensive refinement, including factor analyses, item adjustments, and expert reviews, leading to the development of the current version, the CTAS-2nd Edition [62], which was used in this research to evaluate academic anxiety levels among students prior to testing.

The CTAS-2nd Edition is organized around three key dimensions: general worry, freezing up, and fear of failure. This version of the scale comprises 24 Likert-type items that are designed to capture a wide range of anxiety-related experiences in academic settings. The items aim to quantify the intensity and frequency of cognitive anxiety symptoms that students may experience during test-taking situations. Example items from the CTAS-2nd Edition include statements such as "I feel my heart racing when I start a test," "During exams, I find myself thinking about the consequences of failing," and "I worry that I will forget everything I know during a test." Participants respond to these items on a scale ranging from "1 = Not typical of me" to "4 = Very often indeed," allowing for a nuanced assessment of how anxiety manifests in educational contexts.

3.2.2. Parenting authority questionnaire

The Parental Authority Questionnaire (PAQ-2nd Edition) was used in this study to assess participants' perceptions of their parents' parenting styles. Originally developed by Dr. John R. Buri in 1991, the PAQ is a well-validated instrument designed to measure parental authority from the child's perspective, irrespective of the child's age. The PAQ specifically evaluates three parental authority prototypes as conceptualized by Baumrind: permissive, authoritarian, and authoritative parenting styles.

The PAQ-2nd Edition consists of 30 items for each parent, where respondents rate their level of agreement with statements on a 5-point Likert scale, with 1 representing "Strongly Disagree" and 5 representing "Strongly Agree." The questionnaire is designed to capture nuanced perceptions of parenting styles by asking participants to reflect on their experiences with both their mother and father separately. For instance, items assessing permissive parenting include statements such as "My mother felt that what her children need is to be free to make up their own minds and to do what they want." Authoritarian parenting is measured through items like "Whenever my mother told me to do something as I was growing up, she expected me to do it immediately without asking any questions." Authoritative parenting is evaluated with statements such as "My mother consistently gave us direction and guidance in rational and objective ways."

The PAQ-2nd Edition is organized into three sub-scales corresponding to each parenting style: permissive (P), authoritarian (A), and authoritative (F). Each sub-scale score is obtained by summing the responses to the relevant items, with scores ranging from 10 to 50 for each sub-scale. This scoring allows for a detailed analysis of the perceived prevalence of each parenting style within the family dynamics. Both the mother and father forms of the PAQ-2nd Edition are identical, differing only in the gender references to ensure consistency in measuring parenting styles across both parents.

The internal consistency and reliability of the PAQ-2nd Edition have been well-established through numerous studies, making it a robust tool for investigating the impact of parenting styles on various psychological and behavioral outcomes. The PAQ has been widely used in research to explore how different parenting approaches influence children's development, including aspects such as academic performance, self-esteem, and mental health.

In this study, participants completed the PAQ-2nd Edition to provide a comprehensive view of their perceived parental authority dynamics. Given the established validity and reliability of the PAQ-2nd Edition, it was particularly suitable for examining the relationship between parenting styles and academic anxiety among Chinese education majors. The use of this tool enabled me to systematically assess how variations in parenting practices might correlate with levels of academic anxiety, offering valuable insights into the potential influences of family dynamics on student well-being in the Chinese educational context.

3.3. Procedure

The entire experiment was conducted online, providing a convenient and efficient way for participants to complete the surveys while ensuring the consistency of data collection. Participants were first instructed to complete the Cognitive Test Anxiety Scale (CTAS-2nd Edition), which assessed their academic anxiety levels. This was immediately followed by the Parental Authority Questionnaire (PAQ-2nd Edition), which measured their perceptions of their parents' parenting styles. To maintain the integrity of the data, no break was permitted between the two surveys. This approach was intended to prevent potential fatigue or mood changes from influencing the participants' responses on the PAQ-2nd Edition, ensuring that their answers remained consistent and reflective of their true perceptions.

Participants' responses were automatically recorded and securely stored within the online survey platform, which was designed to prevent any data loss or manipulation. The platform employed rigorous checks to ensure that all questions were answered before submission, thereby minimizing the possibility of missing data and enhancing the overall reliability and completeness of the results. These measures were crucial in maintaining the quality and validity of the data collected, providing a solid foundation for subsequent analysis. By conducting the experiment online and implementing these safeguards, the study was able to efficiently gather reliable data from a diverse group of participants while minimizing potential biases or errors that could arise in a less controlled setting.

3.4. Results

The current study analyzed data from 183 undergraduate students at Northeast Normal University (NENU) in Jilin Province, mainland China. The sample was predominantly female, with 174 females (95.08%) and 9 males (4.92%), and participants ranged in age from 18 to 23 years ($M = 20.50$, $SD = 1.30$). The gender imbalance reflects the demographics of the education department, where female students are more prevalent.

Parenting styles were quantified using a numerical scale designed to facilitate statistical analysis. In this scale, permissive parenting was assigned a value of 1, authoritative parenting a value of 2, and authoritarian parenting a value of 3. This quantification allowed the researchers to apply regression analysis to test the hypothesis that stricter parenting styles would be associated with higher levels of academic anxiety.

The regression analysis revealed that the relationship between parenting strictness and academic anxiety was minimal. Specifically, the model accounted for only 0.9% of the variance in academic anxiety ($R^2 = .009$), indicating that the degree of strictness in parenting style had little impact on the students' anxiety levels. Moreover, the lack of statistical significance in this association ($p = .206$) further suggested that parenting strictness, as measured by the scale, was not a meaningful predictor of academic anxiety in this context. This result was somewhat unexpected, as previous research has often linked stricter parenting styles with higher levels of anxiety, especially in academic settings.

To explore whether academic anxiety levels differed significantly across the three parenting styles (permissive, authoritative, authoritarian), the researchers conducted a one-way Analysis of Variance (ANOVA). The ANOVA results indicated a statistically significant difference in academic anxiety levels among students raised under different parenting styles ($F(2, 179) = 4.56$, $p = .012$). This finding suggested that, while the overall strictness of parenting might not be a strong predictor, the specific type of parenting style could have a notable impact on students' anxiety levels.

To identify which parenting styles were associated with these differences in anxiety, a post-hoc Tukey's Honest Significant Difference (HSD) test was performed. The Tukey HSD test revealed that students who perceived their parents as authoritative reported significantly lower levels of academic anxiety compared to those raised by authoritarian or permissive parents ($M = 1.85$, $SD = .87$, $p = .038$). This finding aligns with the broader literature suggesting that authoritative parenting, which balances high expectations with emotional support, is generally beneficial for children's mental health and academic outcomes. In contrast, students who reported being raised by authoritarian parents—characterized by high demands and low responsiveness—experienced the highest levels of academic anxiety ($M = 2.23$, $SD = .75$). This result underscores the potential psychological costs of an authoritarian approach, where strict rules and high expectations are enforced without the buffering effect of parental warmth. Students from permissive households, where few rules are enforced and there is a high level of responsiveness, reported anxiety levels that were intermediate between the authoritative and authoritarian groups ($M = 2.06$, $SD = .87$). This suggests that while permissive parenting may reduce some stressors associated with strictness, the lack of structure could still contribute to anxiety, particularly in an academic context where discipline and organization are key to success.

To further substantiate these findings, a Two-Sample T-Test was conducted to compare academic anxiety levels specifically between students with authoritative and authoritarian parents. The T-test results were significant, showing that students with authoritative parents experienced markedly lower academic anxiety levels compared to those with authoritarian parents ($t(49) = -2.67$, $p = .005$, 95%CI [-0.37, -0.14]). This reinforces the hypothesis that authoritative parenting, which provides a supportive yet structured environment, is associated with reduced academic anxiety, while authoritarian parenting, with its emphasis on control and discipline, may exacerbate anxiety.

4. Discussion

The goal of the current study was to examine how different parenting styles affect academic anxiety among Chinese students, particularly those majoring in education. This study aimed to extend previous research, which has predominantly focused on parenting styles within Western cultural contexts [63]. Interestingly, despite the cultural differences, the findings in this Chinese context closely mirrored those from Western studies.

The study revealed that authoritative parenting—characterized by warmth, firm boundaries, and open communication—was associated with significantly lower levels of academic anxiety. This was particularly evident when contrasted with authoritarian parenting, which is more rigid and controlling, and permissive parenting, which lacks sufficient structure and discipline. These findings suggest that authoritative parenting may equip students with a balance of autonomy and support, fostering both the confidence and stability needed to manage academic pressure more effectively. Specifically, the combination of high expectations and emotional support inherent in authoritative parenting likely contributes to lower academic anxiety by promoting both confidence and emotional resilience [64]. This parenting approach, traditionally associated with positive outcomes in Western cultures, appears to offer similar benefits in the Chinese context as well [65].

The implications of these findings are significant, particularly in light of the evolving parenting trends in China. Historically, Chinese parenting has been characterized by authoritarian practices that emphasize strict discipline, obedience, and control. However, recent trends indicate a growing adoption of authoritative and even permissive approaches [66]. In this study, only 50% of participants reported being raised by authoritarian parents, signaling a clear departure from the conventional image of “tiger parenting,” often associated with strict, authoritarian methods [67]. This shift suggests that Chinese parents are increasingly recognizing the limitations of authoritarian parenting and are beginning to embrace more balanced approaches that include emotional support and open communication.

The broader cultural implications of this shift are profound. As China continues to modernize and integrate more global perspectives, there is a growing recognition of the need to balance academic expectations with warmth, communication, and sensitivity in parenting. This trend reflects a broader cultural change in which the rigid, discipline-focused parenting styles of the past are being reconsidered in favor of approaches that support not only academic success but also the emotional well-being of children. Chinese parents are beginning to understand that fostering emotional well-being is as crucial as maintaining high academic standards for their children’s overall development [68].

This transition toward more emotionally supportive parenting styles has important implications for educational outcomes and mental health in China. As authoritative parenting becomes more prevalent, it may lead to a generation of students who are better equipped to handle academic pressures with confidence and resilience. Moreover, this shift could contribute to reducing the high levels of academic anxiety that have been observed among Chinese students, thereby promoting a healthier and more balanced approach to education. Future research should continue to explore these evolving dynamics, particularly how they impact student outcomes across different regions and educational contexts within China. Understanding these changes will be crucial for developing culturally sensitive educational policies and interventions that support both the academic and emotional development of students in China.

5. Strength

The current study made several significant contributions to our understanding of the relationship between parenting styles and academic anxiety in the Chinese context. One of the key findings was the absence of a significant correlation between Baumrind’s parenting styles and academic anxiety levels among Chinese education majors. This suggested that other factors, such as course structure, workload, teacher-student relationships, and the degree of parental involvement in academic matters, may have played a more critical role in influencing student anxiety. This insight challenged the traditional perception of Chinese parenting as predominantly authoritarian, revealing instead that many education majors were more likely to experience authoritative parenting. This divergence from commonly held stereotypes indicated a shift towards parenting practices that aligned more closely with Western norms, where warmth, support, and reasonable expectations are emphasized.

The study also contributed to the growing body of research that suggested authoritative parenting may be more effective at reducing academic anxiety than authoritarian approaches. This finding had important implications for Chinese parents, educators, and policymakers. For parents, it suggested the value of adopting a parenting style that balances high expectations with emotional support, which could help mitigate the intense academic pressures that students often face. For educators and policymakers, the study highlighted the need to consider the role of parenting styles when designing interventions aimed at reducing academic anxiety. Culturally sensitive strategies that recognize the benefits of authoritative parenting could be key in promoting both academic success and mental well-being among students.

Furthermore, the study shed light on the evolving nature of parenting practices in China. The gradual shift from traditional authoritarian methods to approaches that integrated strictness with emotional support reflected broader cultural changes in Chinese society. This transition suggested that the impact of different parenting styles on academic anxiety may have been more

complex than previously thought, particularly as these practices interacted with other influential factors such as school culture, peer dynamics, and personal values. The findings underscored the importance of considering these broader contextual elements when evaluating the effects of parenting styles on student outcomes.

In addition to these insights, the study laid the groundwork for future research on the intricate relationships between parenting styles, education systems, and student well-being. By highlighting the need for a more nuanced understanding of how cultural and environmental factors influence academic anxiety, the research advocated for continued exploration in this area. Future studies could build on these findings by examining how specific aspects of school culture, such as teacher expectations and peer competition, interacted with parenting styles to influence student anxiety. Such research could lead to the development of more targeted interventions that address both the academic and emotional needs of students in a multicultural society.

Ultimately, this study represented a meaningful step forward in our understanding of the complex dynamics between parenting, education, and student well-being. By advancing our knowledge of how different parenting styles affected academic anxiety, particularly within the unique cultural context of China, the research offered valuable insights that could inform more effective educational and parenting practices. These practices, in turn, could support the holistic development of young people, helping them navigate the challenges of their academic journeys with greater confidence and emotional resilience.

6. Conclusion and recommendation

Despite the valuable insights gained from this study, several limitations should be addressed in future research. First, the analysis did not thoroughly examine the effects of permissive or neglectful parenting styles, which are particularly relevant in the Chinese context. In China, where parents often view themselves as primary educators and guides, permissive and neglectful styles—characterized by low demands and low responsiveness—are less common and may be perceived as irresponsible [69]. In this study, only 10 out of 183 participants reported a permissive parental style, making it difficult to assess its impact accurately. While Western research has consistently shown a negative association between permissive parenting and academic anxiety, there is limited literature exploring this dynamic within the Chinese cultural context. Future research should aim to investigate whether these effects hold true in China, potentially utilizing more robust assessment tools such as the Short-EMBU or the Parenting Styles Inventory to comprehensively measure all four parenting styles, including neglectful parenting. These tools could provide a more nuanced understanding of how different parenting approaches, particularly those less common or under-researched in the Chinese context, influence academic anxiety. By employing these comprehensive measures, researchers can better capture the full spectrum of parenting behaviors and their potential impact on students, offering insights that could lead to more effective strategies for addressing academic anxiety within diverse cultural frameworks.

Moreover, the study was constrained by its focus on gender, with a sample predominantly consisting of female participants (only 9 males). This gender imbalance made it statistically impractical to analyze how parenting styles might differentially affect academic anxiety in male and female students. However, existing research suggests that mothers and fathers may employ authoritarian styles differently, and gender expectations in Chinese culture could lead to varying impacts of these styles on male and female students. For instance, authoritarian parenting might exert different pressures on boys, who may be expected to adhere to traditional masculine roles, compared to girls, who might experience different familial expectations. Future research should strive for a more gender-balanced sample or specifically investigate how parenting styles affect boys and girls differently, taking into account cultural gender norms and expectations. Gender plays a critical role in shaping how children perceive and respond to parental behavior, and these dynamics can vary significantly across different cultures. In many societies, including China, boys and girls may be subjected to different expectations regarding academic performance, behavior, and adherence to family values. For instance, boys might experience greater pressure to succeed in traditionally male-dominated fields like STEM, where parental expectations for achievement and discipline might be more pronounced. On the other hand, girls might face different pressures related to social roles and family responsibilities, which could interact with parenting styles in unique ways. By examining these gender differences, future studies could reveal important nuances in how authoritarian, authoritative, permissive, and neglectful parenting styles impact academic anxiety in male and female students. Understanding these differences could also shed light on the specific challenges that boys and girls face in their educational journeys and how these challenges are influenced by culturally ingrained gender roles. Such insights would not only enhance the understanding of the relationship between parenting styles and academic anxiety but also inform the development of more effective, gender-sensitive strategies for supporting students in their academic and personal growth.

Another limitation of this study is its lack of differentiation between maternal and paternal influences on academic anxiety. It is well-established that mothers' and fathers' parenting styles can have distinct impacts on children, particularly in cultures like China, where parental roles are often clearly defined. Understanding how maternal versus paternal authoritarianism or warmth influences academic anxiety could provide deeper insights into the dynamics at play. Future research should aim to investigate whether these effects hold true in China, potentially utilizing more robust assessment tools such as the Short-EMBU or the Parenting Styles Inventory to comprehensively measure all four parenting styles, including neglectful parenting. These tools could provide a more nuanced understanding of how different parenting approaches, particularly those less common or under-

researched in the Chinese context, influence academic anxiety. By employing these comprehensive measures, researchers can better capture the full spectrum of parenting behaviors and their potential impact on students, offering insights that could lead to more effective strategies for addressing academic anxiety within diverse cultural frameworks.

Additionally, this study focused exclusively on undergraduate education majors, limiting the generalizability of its findings to students in other academic disciplines. Different fields of study, such as STEM, humanities, or social sciences, may impose unique academic pressures that interact with parenting styles in various ways. For instance, research on medical students in China found that authoritative parenting was associated with the lowest levels of academic anxiety, while authoritarian parenting correlated with the highest [15]. Given the distinct nature of academic demands in fields like medicine, engineering, or the arts, it is crucial for future research to examine how parenting styles influence academic anxiety across a broader spectrum of disciplines. Each field presents its own set of challenges, pressures, and expectations that could interact differently with various parenting styles. For example, students in medicine often face intense workloads, high-stakes testing, and the constant pressure to achieve academic excellence, all of which can exacerbate anxiety. In this context, an authoritarian parenting style, with its emphasis on strict discipline and high expectations, might intensify these pressures, leading to higher levels of anxiety. Conversely, an authoritative parenting style, which combines high expectations with emotional support, might help students manage these demands more effectively, potentially reducing anxiety. Similarly, engineering students often encounter rigorous coursework and complex problem-solving tasks that require sustained concentration and resilience. The stress associated with mastering technical skills and meeting tight deadlines might be influenced by the type of parenting students experienced. For instance, a permissive parenting style, which is characterized by low demands and high responsiveness, might leave students less prepared to cope with the structured and demanding environment of an engineering program, possibly leading to increased anxiety. On the other hand, a neglectful parenting style, which lacks both demands and responsiveness, might result in students feeling unsupported and overwhelmed by the challenges they face, further contributing to academic anxiety.

In the arts, where creativity and self-expression are paramount, the relationship between parenting styles and academic anxiety could manifest differently. Students in the arts may thrive in environments that encourage exploration and autonomy, which could be supported by an authoritative parenting style that balances guidance with freedom. However, an authoritarian style, which imposes rigid expectations and limits self-expression, might stifle creativity and increase anxiety, as students struggle to meet their parents' expectations while also trying to develop their own artistic voice.

By examining how parenting styles influence academic anxiety across different fields of study, researchers can gain a more comprehensive understanding of these dynamics. Such research would consider not only the general impact of parenting styles but also how the unique demands of each discipline interact with these styles to influence student outcomes. This approach could lead to more tailored interventions and support strategies that take into account the specific needs and challenges of students in various academic fields, ultimately helping to mitigate academic anxiety and promote better mental health and academic success.

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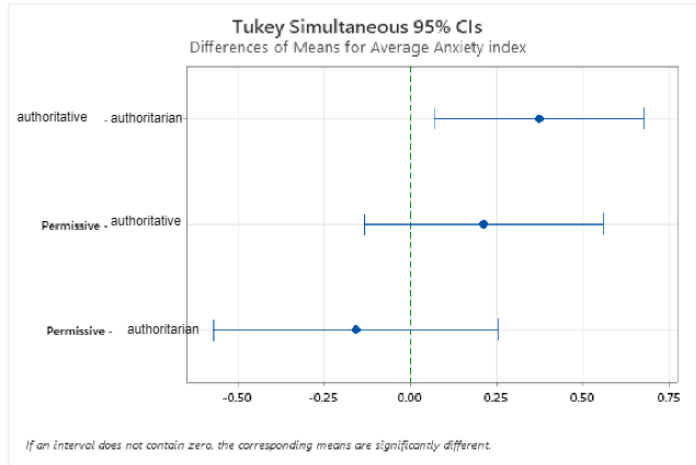
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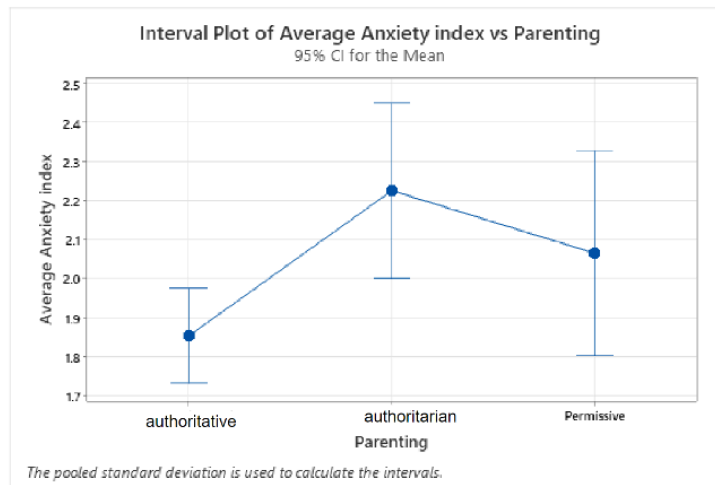
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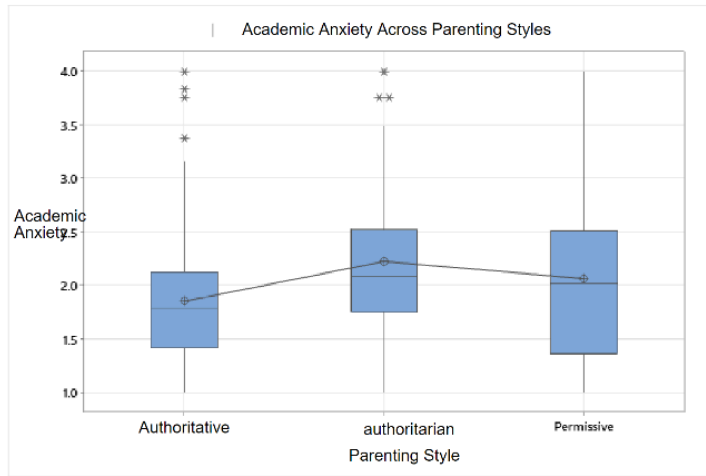
Appendix



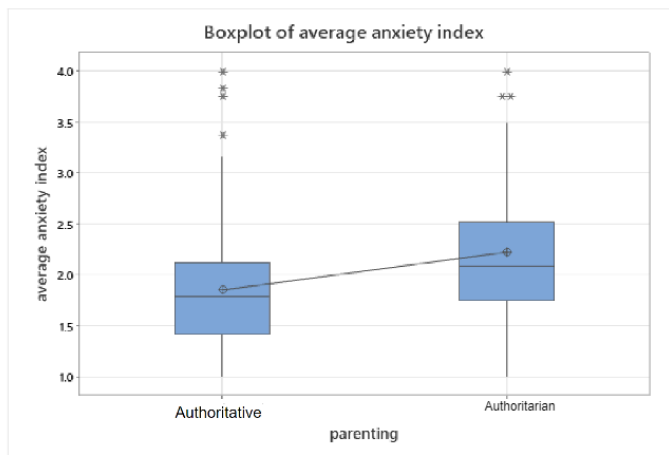
Appendix Figure 1. Tukey Simultaneous 95% CIs



Appendix Figure 2. Interval Plot of Average Anxiety index vs Parenting



Appendix Figure 3. Academic Anxiety across Parenting Styles



Appendix Figure 4. Boxplot of average anxiety index