How do the identities of ethnic and left-behind children influence their depression? Evidence from ethnic minority areas of Sichuan Province, China

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A B S T R A C T

Millions of ethnic children in China live without their parents due to financial constraints and the lure of job opportunities elsewhere, staying in their hometowns primarily for education. Yet, current research inadequately addresses the mental health status of these left-behind children from ethnic minority communities in China. This study aimed to explore the effects of the combined identities—ethnic and left-behind—on depression among children in rural ethnic minority areas. We recruited a sample of 1131 children aged 12 to 16 from the Garzê Tibetan Autonomous Prefecture (also known as Ganzi Prefecture) in Sichuan Province. The Children's Depression Inventory was employed to assess depression levels. Results indicated that left-behind children in this region exhibited significantly higher depression levels than their counterparts who lived with their parents. Notably, children of Han ethnicity were more depressed than other ethnic groups. However, no interactive effects were observed between the dual identity factors. Intriguingly, Han children, despite being the majority ethnicity in China, perceived themselves as ethnic minorities in these areas. Their self-perception of ethnic pressure and differences, coupled with a potential lack of acceptance of their ethnic differences from the native minorities, might be subdued. This study underscores that parental relocation poses a risk to the mental health of adolescents in rural China. While policies and programs supporting left-behind children are crucial, further research is imperative to comprehend the nuances of their experiences fully.

1. Introduction

Ethnic identity is a multifaceted concept emphasizing an individual's attitudes towards their ethnic group. Multiple factors shape ethnic identity, including feelings and attitudes towards an ethnic group, the labels individuals employ to define themselves, the extent to which one has consciously explored and established a sense of belonging within an ethnic group, the significance of one's ethnicity in their life, the prominence of ethnicity in various contexts, and the degree of respect society affords to that ethnicity [1]. The concept of ethnic identification pertains to the degree to which people associate themselves with and experience a feeling of inclusion within a certain ethnic group. This encompasses several elements, including shared values, customs, and cultural history. The concept encompasses both the individual's self-identification and the acknowledgment from others about their affiliation with a certain ethnic

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group [2]. Based on Phinney's [2] research, the present study examines two aspects of ethnic identification: firstly, "ethnic affirmation" and "belonging", which are tied to subjective attitudes and positive feelings towards one's ethnic group; and secondly, ethnic identity attainment, representing the depth of exploration individuals engage in to understand their role within their ethnic community.

Generally, parents often go to great lengths to support their children, even if it means forgoing the comfort of staying together, hoping for a brighter future for them. This research narrows its focus on a specific group of children—the offspring of rural-to-urban migrants in China. Left-behind children (LBC) live their native localities, while one or both of their parents relocate to urban areas or other regions in pursuit of employment opportunities. These children may encounter extended periods of absence from their parents and are often entrusted to the care of other relatives, such as grandparents, or even left to independently manage their own well-being [3]. Driven by adverse economic conditions and limited opportunities, their parents move from rural areas to urban centers for work. These children, officially termed as left-behind children (LBC) [4], are often on their own; many of them stay in their schools throughout the week [5]. Due to regulatory restrictions, rural children cannot attend schools outside their registered birthplaces, meaning without education, they face futures potentially no better than their parents'. Though parents send remittances, they seldom visit owing to low wages, long work hours, and the considerable distances separating them from their rural homes [6].

Many studies have demonstrated the adverse emotional and psychological impacts of parental absence on children [6–9]. Children with absent parents are more likely to experience loneliness, low self-esteem, study fatigue, anxiety and melancholy, interpersonal obstacles, and certain medical issues [10]. Most scholars who investigate abandoned children in China use classifications similar to the ones that follow. The term 'left-behind children (LBC)' refers to children or adolescents (under 16 years old) who have been left behind at home by one or both parents who have relocated for employment in other cities or countries, with these children having to be cared for by an adult or guardian [4,11–13]. Although various academics have differing viewpoints about the definition of left-behind children, they have a common objective. These scholars are concerned about the mental health of left-behind children and young adolescents [8]. Secondary school students have, however, received less scholarly attention, and we believe this area merits greater study. The word "students" often refers to secondary school students who confront significant study pressure, college admission tests, the need for interpersonal adaptation and increased social cognition, and less parental communication. Senior high school pupils, therefore, are the focus of our research. We characterized "left-behind" pupils in senior high schools as those having at least one parent who had relocated to a different location for over six months.

A few Chinese studies on ethnic minority college students have also shown that these college students tended to have psychological adaptation difficulties after entering school [14], and they had additional psychological symptoms such as depression [15], anxiety [16], and loneliness [17]. A significant correlation was found between ethnic identity and their level of mental health. The mental health level of college students in the positive ethnic identity group was higher than that in the negative ethnic identity group, and the high level of ethnic identity was conducive to improving their adaptability [6]. Based on these studies, national identity is seen as possibly bringing the corresponding belief and emotional support from national confidence and self-esteem. This may have a certain influence on children's psychological state and emotions, thus, to some degree, modestly reducing the probability of depression [18]. However, only a few studies have explored and analyzed the influence of ethnic identity on the depression of left-behind children.

Therefore, the present study attempts to examine the relationship between ethnic identity, left-behind status, and depression among children in ethnic areas. In this study, we attempt to investigate and compare the depression of junior middle school students, all living in relatively poor areas in the Garzê Tibetan Autonomous Prefecture (often shortened to Ganzi Prefecture) of Sichuan Province, by comparing whether they have ethnic minority identity and are left-behind children. The three main research questions are: (1) is there any difference in depression between left-behind children and the control group? (2) is there any difference in depression between minority children and the control group? (3) Is there any difference in depression between minority children who are also left-behind children and the control group?

By conducting a thorough analysis that focuses on the intersection between ethnic minority identification and left-behind status, this study lays the groundwork for addressing three crucial research inquiries that have the potential to inform future research endeavors and interventions. This research makes a valuable contribution to the academic literature, policy implications, and the development of targeted interventions aimed at supporting the mental well-being of specific groups of children, namely left-behind children, minority children, and those who fall into both categories. By illuminating the potential disparities in depression experienced by these groups, the study enhances our understanding of the topic and provides valuable insights for addressing the mental health Moreover, it is expected that the outcomes of this study will provide valuable insights for educational establishments, policymakers, and individuals responsible for the care of these children. This, in turn, will contribute to the development of a comprehensive strategy to effectively tackle the many difficulties experienced by these children.

The subsequent sections of the paper are organized in the following manner. The following section provides an overview of the existing literature; the third and fourth sections report the study's methodology and results; the fifth section describes the discussion; while the final section concludes the paper with the study's recommendations.

2. Literature review

2.1. Child depression

In child psychiatry, depression stands as a very widespread and recurring mental disease among children and adolescents [18], with this being one of the mood disorders and a form of "negative feelings". It is explained as a kind of "negative cognitive style" that includes fear, sadness, easily becoming angry, guilt, state of mind, blaming oneself for failing to adapt to the environment, and extrapolating the outcome of events from a negative perspective. Moreover, the existing research suggests that the symptoms of

depression in children can lead to impairment in social, academic, and family functioning [19]. More specifically, depression in children may trigger several psychological symptoms, such as anxiety [20]; conduct disorder [21]; oppositional defiant syndrome (oppositional rebellion) [22]; substance abuse disorders [11]; as well as producing physiological fatigue [22]. Some studies have suggested that children with depression at times cannot concentrate, so they have poor academic performance and low self-learning efficacy [23]. Other prominent features of depression include feeling unloved by others, anhedonia (inability to feel pleasure in normally pleasurable activities), and excessive guilt [24]. In addition, children with depression may be irritable, leading to poor relationships with their parents, peers, and teachers [19].

Some children with depression may even engage in risky behaviors, such as self-injury, substance abuse, or suicide [25]. In addition, as a knock-on effect, complications of childhood depression have the potential to develop into more serious psychiatric problems in adulthood, such as suicide and addiction [26]. A long-term follow-up study in New York found a sharp increase in depression in the mid-teens [25]. An investigation in China also found that the age of depressed children is significantly older than that of anxious children, with depression occurring in the late growth stage of adolescents [27].

2.2. Left-behind children (LBC) in China

In China, the traditional family structure in rural areas has changed dramatically with the economic boom of the past two decades [28]. Driven by the rapid development of the market economy, many surplus rural laborers have chosen to go out to work to alleviate family poverty and pursue urban education opportunities [29]. However, due to the points-based household registration policy, the household registration system, and other reasons, children have not been able to move out with their parents, thus giving rise to the "LBC" phenomenon [4]. In academic terms, children under the age of 18 and who are cared for by a single parent, grandparent, or other relatives due to their parent(s) working in another city are defined as left-behind children [13]. According to the report of ACWF in 2013, in the rural areas in China, there were almost 6.1 million left-behind children accounting for 40% of the total rural population [5]. The number of left-behind children increased over the years and reached 9.02 million in 2016. The LBC phenomenon is widespread in the underdeveloped areas of Jiangxi, Sichuan, Guizhou, Henan, Hunan, Hubei provinces, especially those in western provinces [12].

In the western region of China, a significant proportion of children, namely 20%, are categorized as left-behind children. This group accounts for 39.02% of all left-behind children in China, surpassing the national average by 3% [30]. The percentage of LBC exhibited considerable variation, particularly at the county level, with several counties in western China reporting figures as high as 80% of all rural children. With the continuous advancement of China's urbanization process, there will be more surplus rural labor force from the countryside to the city, and the number of rural left-behind children will continue to increase obviously.

According to the All-China Women's Federation (ACWF), China has nearly 6.1 million left-behind children in its rural areas, accounting for 40% of the total rural population [5].The number of left-behind children has increased annually, reaching 9.02 million in 2016. The LBC phenomenon is widespread in the less developed areas of Jiangxi, Sichuan, Guizhou, Henan, Hunan, and Hubei provinces, especially in the western provinces. About 20% of children in western China are left-behind children, accounting for 39.02% of all left-behind children in China, 3% higher than the national average [30]. Especially at the county level, the proportion of left-behind children is more significant. In some counties in western China, left-behind children account for up to 80% of all rural children. As China continues to urbanize, more rural labor will move from rural to urban areas and the number of children left behind in rural areas will continue to increase significantly.

2.3. Left-behind children (LBC) and depression in rural areas of Sichuan, China

Many ethnic minorities are found in western China, especially in Sichuan Province which has all 56 ethnic groups [31], with those of Yi, Tibetan, and Qiang ethnicities comprising a large proportion of the population [10]. Most ethnic minority areas in Sichuan Province are located in mountainous areas with poor transportation and underdeveloped local economies. Many rural parents choose to leave to work in big cities for a better material life and to increase their family income, while leaving their children at home.

Previous studies have focused on the psychological status of left-behind children in rural areas of China. Some studies found that left-behind children have more emotional symptoms, and those with non-relative caregivers have more prominent emotional problems than those with relative caregivers) [10,32]. Other studies indicated that depressive symptoms in left-behind children were more common and at a higher level than for non-left-behind children [11]. In terms of gender, some studies suggested that the depressive symptoms of left-behind boys were higher than those of left-behind girls. As for the age of these children, left-behind children who experienced separation from their parents at a younger age showed more depressive symptoms than those for whom separation occurred when they were older, with these effects more pronounced for children who separated from their mother or father before the age of three [15]. Many psychological studies on left-behind children focused on the following aspects: (1) research on the mental health of left-behind children, such as learning anxiety, anxiety towards others, psychological inferiority, loneliness tendency, self-blame tendency, allergy tendency, physical symptoms, terror tendency, impulse tendency, etc. [12]; (2) research on the personality characteristics of left-behind children, such as self-esteem, inferiority, mood, loneliness, etc. [33]; (3) research on the mental resilience of left-behind children, such as subjective well-being, mental toughness, adaptability, etc. [34]; and (4) other aspects of research, such as self-efficacy [35]. However, few studies have discussed the mental health status of left-behind children in ethnic minority areas.

One of the few studies, which reported on YunNan minority areas, showed that left-behind children in these minority areas scored lower on psychological elasticity than non-left-behind children, while the total score of psychological resilience [(80.51 ± 10.21)

points] was significantly lower than that of non-left-behind children (85.50 ± 10.19) points], indicating that the depression level in left-behind children was, to some extent, relatively higher [36]. In Sichuan Province, the economic situation of Miao families was found to be worse than that of Han families: more parents in Miao families chose to leave for work, with the left-behind rate of Miao children significantly higher than that of Han children. Children in the Miao ethnic group received higher scores about the pressures they experienced as they were more afraid of their security with their parents absent, which was detrimental to Miao children's psychological health [26]. Moreover, a survey with a stratified random sampling method was adopted to select 492 junior middle school students in southwest Guizhou Province as the research objects: this comprised 272 left-behind children as the research group and 220 non-left-behind children as the control group. The survey's results showed that the depression factor scores for left-behind boys were higher than those for non-left-behind boys, while the depressive symptom factor scores in female children was higher than for male children. The depressive symptom factor scores in only children among left-behind children were higher than for non-only children among left-behind children [37].

In another study, 919 students from grade 4 to grade 6 in a civilian–Chinese joint primary school were investigated for depression. The detection rate of depression was 11.2% (103 cases), with Uyghur students having higher depression scores than Han students [38]. A survey conducted in Guizhou ethnic minority areas showed that left-behind children in ethnic minority areas had relatively low levels of self-awareness, self-evaluation, and self-efficacy, and were more likely to have various mental health problems [8]. The psychological health of children belonging to the Hui minority group in rural areas was also examined [10]. The study's results showed that the psychological health of left-behind children was not as good as that of non-left-behind children, with this mainly influenced by family relationships. The mental health of left-behind children in ethnic minority areas was observed as not optimistic. They had high levels of depression mostly due to long periods of separation from their parents during this critical period of growth and development. They also lacked opportunities to enjoy normal family upbringing, education, and care, thus becoming a vulnerable group in society [39].

Previous studies in China have mainly focused on the mental health problems of left-behind children. However, studies on left-behind children in ethnic minority areas are scattered, with specific studies on depression in these children even more rare, even though this is currently a more prominent problem. As minority children have an ethnic identity, they have certain particularities. The term "ethnic self-identity" refers to the attitude of the individual toward knowing and accepting his/her ethnic identity, reflecting the individual's sense of belonging to his/her ethnic group, pride in that membership, and acceptance of the ethnic group's values, etc. Many studies have confirmed the close relationship of national identity to individual culture and mental health [25,40]. In recent years, national identity has become an interdisciplinary area of common concern in psychology, ethnology, sociology, and behavioral science.

According to the social identity theory of Tajfel and Turner [41] and Berry's intercultural adaptation model [42], the formation and development of national identity is a dynamic process. The acquisition and internalization of national identity are affected by the growth in age, accumulation of knowledge, and extensive communication with other ethnic groups, as well as by impacts on the individual's psychological and behavioral aspects. Some overseas studies have shown that national identity was closely related to the individual's mental health which could, to a certain extent, predict mental health levels. Individuals with a low level of national identity were more likely to have psychological and cultural adaptation difficulties when facing cultural shock. However, individuals with a high level of ethnic identity tended to have better mental health. In the face of cultural shock, ethnic identity could provide protection and a buffer for individuals which would help to improve their adaptive behaviors.

Some studies have shown that the ethnic identity of minority preparatory students was negatively correlated with depression [10, 24,43]. Improving their sense of ethnic identity was conducive to enhancing minority preparatory students' mental health level and promoting their adaptation to college life. At the same time, the general self-efficacy of minority preparatory students was positively correlated with ethnic identity but negatively correlated with depression, suggesting that the influences of general self-efficacy and ethnic identity on depression may have a joint effect. The results of the mediating analysis further indicated that the influence of national identity on depression could be shown by general self-efficacy, and that general self-efficacy had a partial mediating effect between national identity and depression [28].

3. Materials and methods

3.1. Study settings and participants

The participants were secondary school students studying in three public schools in Kangding, Danba, and Luding counties in Garzê Tibetan Autonomous Prefecture (often shortened to Ganzi Prefecture), Sichuan Province, China. These counties were selected as they were more densely populated than other places. Ganzi Prefecture serves as a dynamic cultural center that is deeply inspired by Tibetan Buddhism and longstanding customs, including the Horse Racing Festival and Tibetan artistic expressions. The local economy has traditionally been oriented around pastoralism. However, due to the abundance of natural resources in the area and the Chinese government's efforts to develop infrastructure, there has been a noticeable transition towards a more varied range of economic activity.

With consent from the local education bureau, schools, and teachers, 1300 questionnaires were distributed to local secondary school students, with a total of 1188 questionnaires completed and returned. After deleting questionnaires from subjects with more than 10% of missing values, 1131 responses were included in further data analyses. The ages of students ranged from 12 to 16 (median [M] = 14.09, standard deviation [SD] = 1.11), and the ratio of female to male was 492:639. Their ethnic minority identities and district distribution are shown below in Figs. 1 and 2.

Rural left-behind children are facing many difficulties that have become urgent problems, needing to be solved during the period of social transformation in China. On this basis, significant differences were found in culture and education between ethnic minority areas. Economic development was slow and living standards were not high, with mental health problems of rural left-behind children in ethnic minority areas emerging in an endless stream.

3.2. Instrument and measurement of variables

The instrument for the present research was a survey comprising three parts. The first part introduced the study's aim and the survey procedure and stated that the survey was anonymous and that answering the survey meant that the participants' consent was given. The second part comprised questions on participants' demographic information, such as age, gender, school year or grade, and ethnicity, as well as questions about their family status, for instance, how long had they been left behind at home by their parent(s); with whom they lived (including parents; relatives; at school; classmates during schooltime and grandparents during holidays; grandparents; father only; mother only; or alone); and whether their parents were divorced. In the third part, the Children's Depression Inventory (CDI) [44] was applied in this study to measure participants' depression as the CDI is suitable for children from 7 to 17 years old. The CDI has a total of 27 items which are allocated to five subscales: negative emotion (six items); interpersonal problems (four items); low efficacy (four items); lack of pleasure (eight items); and negative self-esteem (five items). Each item was used to assess the frequency of depressive symptoms at three levels: low level, moderate level, and high level. The participants were asked to tick one of the three options and each option was graded with a score from 0 to 2, with a higher level of depression receiving a higher score [26]. For example, item 1 had three options: "I sometimes feel unhappy" (score of 0); "I often feel unhappy" (score of 1); "I always feel unhappy" (score of 2). The Cronbach's alpha coefficient (α) for the whole scale was 0.82, the half reliability score was 0.79, and the retest reliability score was 0.89, showing that the CDI had good reliability [45].

3.3. Procedure

At the beginning of the present study, the main researchers communicated with the principals of three schools and gained their consent to access teachers and students at their schools. With the principals' recommendations, we introduced the aim and procedure of the present study to around 10 deans and 50 teachers in three schools, with most granting us access to students in their class. During the study, we entered classrooms and distributed the paper-based anonymous questionnaire. After 15 min to answer the questions, students were asked to hand their questionnaires to the researchers. The whole data collection period lasted for nearly two months. The responses were then entered into the computer and coded as scores by the first author, while the second and third authors checked whether the digital data file aligned with the paper-based data. With the certainty that all data were coded and recorded correctly, we then screened and analyzed the research data.

3.4. Data analysis

In data analysis, firstly, the variables' normality was checked, as normal distribution was the assumption for the following analyses. The results showed that all skewness and kurtosis statistics were within the range for a sample larger than 300 (i.e., skewness<2, kurtosis<7), indicating that each variable was normally distributed [44]. Secondly, *t*-test analyses were conducted to check whether minority identities and left-behind identities had significant effects on children's depression. Thirdly, a series analysis of variance (ANOVA) was conducted to explore how children's depression could be influenced by family-related factors, comprising the length of time of their separation from their parents, the people with whom children lived, and whether their parents were divorced. The results are presented in the next section.
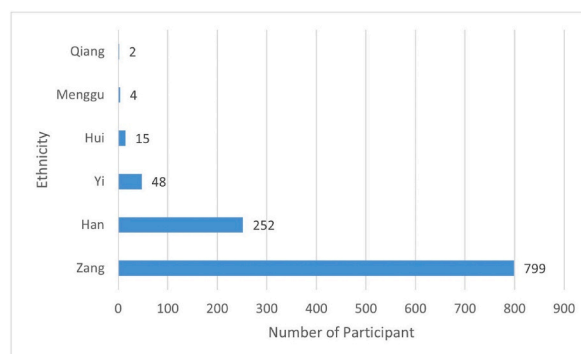

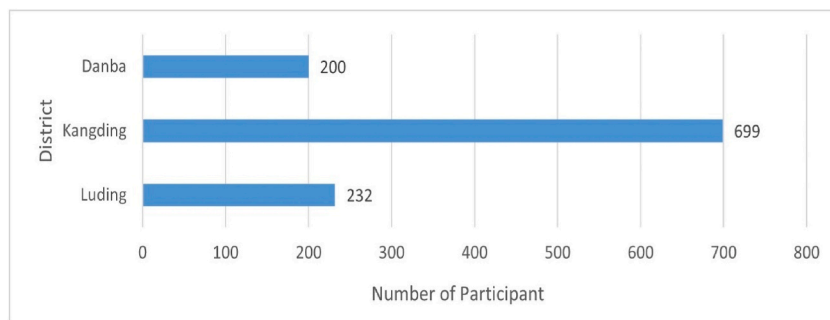**Fig. 1.** Distribution of participants based on ethnic identities.

Fig. 2. Regional distribution of participants.

Ethical approval

The present research is based on China's increasing attention on left-behind children and their mental health in rural areas of ethnic minorities. This study was approved by the Ethics Committee of the College of Teachers, Chengdu University, China. The ethical approval number is CDDXSFXY20220009. Additionally, written consent was obtained from parents before every face-to-face interview.

4. Results

4.1. Effects of identities of ethnic and left-behind children (LBC)

The ethnic and left-behind identities affect children's depression. Independent *t*-tests were conducted to compare how children's ethnic identities and left-behind identities affected depression. As shown in Table 1, Han children were significantly more depressed than ethnic minority children ($t = 3.19$, $p = .001$, $d = 0.29$); similarly, left-behind children were more depressed than their non-left-behind counterparts ($t = 2.65$, $p = .008$, $d = 0.19$). No interactive effects were detected between children with ethnic or left-behind identities ($p = .88$). Further analyses showed that Han children had significantly higher levels of negative self-esteem ($t = 2.6$, $p = .009$, $d = 0.19$); lower efficacy ($t = 4.01$, $p = .000$, $d = 0.29$); and more interpersonal problems ($t = 2.22$, $p = .027$, $d = 0.17$), while having a left-behind identity only had a negative influence on children's negative emotion ($t = 3.53$, $p = .000$, $d = 0.25$). The Cohen's *d* values indicated that both ethnic and left-behind identities had small effects on children's depression. A Pearson's correlation analysis was conducted to check whether children's age related to depression, with no significant relationship found ($p = .93$).

4.2. Effects of family-related factors

This section examines the possible effect of familial variables on the development of depression in children. Analysis of variance (ANOVA) and Bonferroni post hoc tests were carried out to investigate whether children's depression was influenced by family-related factors, comprising the length of time that children were separated from their parents, the people with whom the children lived; and whether their parents were divorced [21]. The Bonferroni test (and subscales) indicated that the length of time that children were separated from their parents had no effects on children's depression at a statistically significant level (*p* values > .05).

However, as shown in Table 2, the children who lived with both their parents reported significantly lower scores on lack of pleasure (F=3.23, $\eta^2 = 0.029$; $p = .005$) and interpersonal problems (F = 2.99, $\eta^2 = 0.026$; $p = .007$) than those who lived with only their father. At the same time, children who lived with both parents reported lower scores on lack of pleasure than children who lived at school (F = 3.23, $\eta^2 = 0.029$; $p = .029$) and lower scores on negative emotions than those who lived alone (F = 4.27, $\eta^2 = 0.038$; $p = .024$). These results echoed previous studies' findings: left-behind children had higher levels of depression.

4.3. Effects of parents' divorce on Children's depression

Since the family is such an important concept, researchers from many fields—including sociology, education, family studies, and

Table 1
Effects of identities of ethnic and left-behind children on their depression.

Identities		N	M (SD)	t	Cohen's d
Ethnic identities	Han	251	0.62 (.30)	3.19***	0.23
	Minority	867	0.56 (.28)		
Left-behind identities	Left-behind	262	0.62 (.30)	2.65**	0.19
	Non-left-behind	857	0.57 (.28)		

Note: *p < .05; **p < .01; ***p < .001.

Table 2
Effects on children's depression of family members with whom they lived.

Factors	Groups	F (sig)	η^2	p (Bonferroni)
Lack of pleasure	Living with parents vs. Living with father only	3.23 (0.002)	0.029	0.005
	Living with parents vs. Living at school			0.029
Interpersonal problems	Living with parents vs. Living with father only	2.99 (0.004)	0.026	0.007
Negative emotions	Living with parents vs. Living alone	4.27 (0.000)	0.039	0.024

Note. Although the comparisons of five sub-factors among all groups were conducted, this table only presents the significant results, owing to consideration of this paper's length.

social psychology—have come to the same conclusion about how crucial it is for a child's healthy development to have an intact family [46]. The conventional family structure is significantly altered by divorce. Many children are impacted by divorce throughout their childhood and adolescence, having implications for their intellectual, emotional, behavioral, and social development. Divorce may permanently or temporarily damage innate mechanisms that support children's health, good attitudes, and social, emotional, and economic well-being. Children in intact homes have better results for their physical and mental health and superior cognitive and social skills than children of divorce [47]. Divorce may have both short-term and long-term developmental impacts. Some effects, such as sadness, anxiety, inadequate schooling, and a loss of social support, can be seen immediately.

It was found that divorce of their parents was significantly related to children's depression (as shown in Table 3; $t = 4.17$, $p = .000$, $d = 0.443$), receiving the following results: lack of pleasure ($t = 4.65$, $p = .000$, $d = 0.513$); negative emotions ($t = 2.94$, $p = .004$, $d = 0.314$); negative self-esteem ($t = 2.58$, $p = .01$, $d = 0.24$); low efficacy ($t = 3.66$, $p = .000$, $d = 0.338$) and more interpersonal problems ($t = 3.41$, $p = .000$, $d = 0.382$). Cohen's d values indicated that their parents' divorce had small to medium-sized effects on children's depression.

5. Discussion

In this study, we investigated the relationship of ethnic identity and left-behind status with depression among children in ethnic minority rural areas in Garzê Tibetan Autonomous Prefecture (often shortened to Ganzi Prefecture, Sichuan Province, China. We found that Han children in ethnic minority areas showed more obvious depression, while left-behind children also showed more serious levels of depression than non-left-behind children. Both ethnic identity and left-behind identity were found to have an impact on children's depression.

In the existing literature, few studies have been conducted comparing the levels of depression between ethnic minority children and Han children, and even fewer studies on levels of depression among left-behind children in ethnic minority areas. Our study's results are similar to those of some studies on the mental health of left-behind students in ethnic minority areas. That is, our conclusion is that differences are found in the mental health of ethnic minority students and Han students [48–51]. A low level of depression is an important indicator to evaluate the mental health of individuals. Among left-behind children in rural areas, the depression of Han children is more obvious, with this closely related to their family environment and the social and cultural background of Han left-behind children in ethnic minority areas.

As far as the family environment is concerned, the attachment of children to family members is an emotional bond or connection between the child and the person to whom they are attached (usually a caregiver) [52]. Attachment is the tendency of infants as they seek and attempt to maintain close physical connections with their primary caregivers. The infant perceives the possibility that the attachment partner will support him/her in the face of difficulties, with the interaction between the infant and the attachment partner possibly becoming the model for all future intimate relationships, throughout childhood, adolescence, and adulthood [53]. The type and quality of children's attachment are closely related to depression. Children who have insecure attachments exhibit a deficiency in fulfilling their fundamental psychological needs and show a heightened propensity for depression as compared to children who have

Table 3
Effects of parents' divorce on Children's depression.

Depression variables	M (SD)		t	Cohen's d
	Divorced	Not Divorced		
Depression	.68 (.34)	.55 (.27)	4.17 ***	0.44
	N = 142	N = 733		
Lack of pleasure	.73 (.41)	.56 (.32)	4.65 ***	0.51
Negative emotions	.63 (.45)	.51 (.37)	2.94**	0.31
Negative self-esteem	.62 (.42)	.52 (.42)	2.58**	0.24
Low efficacy	.74 (.47)	.60 (.41)	3.66***	0.34
Interpersonal problems	.71 (.40)	.59 (.30)	3.41***	0.38

Note: *$p < .05$, **$p < .01$, ***$p < .001$.

safe relationships. Irons et al. [54] suggested that insecure attachment was one of the potential activation mechanisms of depressive symptoms in children. The present study finds that, although the absolute number of Han left-behind children in the research area is smaller than that of ethnic minority children, their number is a higher proportion of the total number of children, which means that the local Han children's parents choose to work away from the home. Therefore, due to the lack and substitution of parent–child education, Han left-behind children do not form a healthy and good attachment relationship with their parents, leading to a relatively high level of depression.

In addition, "with whom a child lives", that is, children's "attachment" to alternative caregivers, has a significant impact on depressive mood in children. Torres et al. [55] proposed that the individual's growth in an early nurturing environment affects his/her behavior and the main influence factors that lead to the healthy development of a sufficiently good cognitive environment to promote their sound development. This environment comprises a series of typical social parameters and resources, such as caregivers performing the protection function, with this being able to provide the support of a family environment and sustainable exploration opportunities. Young et al. [56] found that children who lived in environments where they were deprived of basic needs, attention, and support, as well as lacking parental attention, support, and guidance, were more likely to develop depression, conduct disorders, and behavioral disorders. Regarding the role of the individual's attachment behavioral system, Bowlby [57] believed that maintaining contact with the object of attachment is a natural and functional phenomenon of human beings, and losing access to and contact with natural and social resources is a manifestation of depression and psychological disability. In infancy, children may regard primary caregivers (both parents or one parent, grandparents, siblings, or other caregivers) as their attachment objects. In childhood, adolescence, and adulthood, other relatives, known colleagues, teachers or coaches, and close friends or romantic partners can all be considered objects of attachment. Notably, when separated from their biological parents for various reasons, children raised by relatives receive more guidance and support for their development than children raised by other non-biological families, with the rate of misbehavior significantly reduced [58]. To a certain extent, care by relatives can reverse the negative impact on children caused by the lack of parental care. Downie et al. [59] found that children raised by their grandparents developed positively under their grandparents' care. Almost half of these children scored above average on the self-concept scale and had good mental health. Being reared by relatives can provide some protection for children's emotional and social development.

In addition, parental divorce has a significant impact on children's depression, which applies to left-behind children as well as non-left-behind children, Han children, and ethnic minority children. Discussion on the relationship of depression in children and adolescents with their parents' marital conflict can be traced back to the era of Sigmund Freud. According to classical psychoanalytic theory, parents' marital conflict may cause narcissism in children and self-condemnation or punishment, thus leading to depression. Since the 1940s, many studies have shown a positive relationship between children's adjustment disorder and parents' marital conflict. Harman et al. [7] found in their study that the incidence of parent–child estrangement was higher among adolescents from families with divorced parents and a high level of conflict. Furthermore, Dai et al. [49] found that parent–child alienation was positively correlated with depression in left-behind children, but it remains unclear if it would increase their level of depression. Sun et al. [60] show that the level of parent–child alienation of LBC is higher than that of non-LBC, and that the phenomenon of parent–child alienation is more prominent among them. The emotional neglect of left-behind children increases, and parent–child communication, family support, and emotional interaction decrease which may lead to parent–child estrangement. In addition, the high level of conflict between husband and wife and their divorce may lead to the neglect of children's need for love and attention. It may even transfer the pressure from the husband–wife system to the parent–child system, leading to the deterioration of the parent–child relationship, thus increasing the possibility of children's depression [61].

The present study originally focused on the perspective of "ethnic identity", and assumed that ethnic identity might have a positive impact on the reduction of depression among ethnic minority children. The results showed that the depression of Han children in ethnic minority areas in the survey area was the most prominent among ethnic minority groups. In focusing on "national identity", the core meaning of identity is the distinction between 'self' and 'others'. Individuals or groups define their own cognition of group belonging through the confirmation of 'self' characteristics [62]. In short, identity is the cognition of belonging, a mark. Identification refers to the psychological state and process in which social subjects recognize, affirm, approve, and even appreciate social objects, or feel satisfied and close to each other because they are the same [63].

Ethnic identity, as the identity identification of ethnic groups, not only protects the interests of the group, but also provides relevant protection for group members. The term "ethnic identity" originated in the West. As ethnic identity is the subject of multidisciplinary research in psychology, sociology, anthropology, and other disciplines, as well as having its own complexity through its complicated components, no unified definition has been agreed. In Western psychology research, national identity is generally regarded as a component of social identity. That is, the person acknowledges their affiliation with a particular social group and simultaneously acknowledges the emotional and value-based importance bestowed upon them via their membership in that group. Phinney [64] believed that national identity is a dynamic and multidimensional structure involving self-concept, which not only includes an individual's sense of belonging to the group, but also includes an individual's positive evaluation of the group to which he/she belongs and his/her participation in group activities. Lai et al. [28] thought that national identity referred to national members involved in ethnic interaction and communication processes within their own ethnic identity. The authors believed that this was based on members with that ethnic identity (in-group) and other people (out-groups) examining and thinking about the attitudes, beliefs, involvement in that ethnic identity, sense of belonging, behavior of the national culture, identity of the ethnic language, their history, etc.

Social identity theory proposes that people have a positive social identity. They need to undertake comparison between their ethnic group and others to establish a positive and valuable way of distinguishing that identity and improving their self-esteem. Positive comments about their own ethnic group's individuals need to be received rather than negative evaluation of their ethnic group's

individuals to have higher levels of self-esteem and mental health [65]. Phinney [2] highlighted that group identity is more significant and has a greater influence on ethnic minority teenagers. Many empirical studies have revealed a positive relationship between ethnic identity and mental health, with significant correlations between ethnic identity and adolescents' self-esteem, depression, social adaptation, psychological adjustment, social behavior, etc. [66,67]. From the theoretical perspective, a higher level of ethnic identity can help children in ethnic minority areas to improve their national self-esteem and confidence, while improving their ability to acculturate and integrate into society, thus promoting good mental health and reducing the risk of depression in children.

Meanwhile, Di et al. [49] conducted research showing that the left-behind children in ethnic areas involved in his follow-up research have similar ethnic identities and identity characteristics. This enables them to share a more common language with each other, which also provides them with an emotional basis for better communication and assistance in daily life. In addition, left-behind children have many common challenges in life which enable them to have more emotional resonance and mutual support. Therefore, "peers" and "empathy" can protect the emotional experience of left-behind children, to some extent, improving their psychological resilience and reducing the risk of depression. In minority nationality areas, ethnic minority cultures and the local Han children were embodied in "local ethnic minorities", with the number of "companions" and "empathy" relatively low. The proportion of Han nationality children with "Han nationality identity" was not significant compared to Han nationality children with "national pride" and "national self-confidence". This result was similar to the findings of Gao et al.'s [15] research. These authors found that the ethnic identity of ethnic minority students was at a significantly higher level than that of Han nationality students. Ethnic identity was more prominent for ethnic minority members and had greater significance for, and influence on, them [68], displaying that the influence mechanism was the influence of national identity on depression and happiness, with self-esteem playing a mediating role.

However, in ethnic minority areas, Han nationality left-behind children more or less realized their "group membership", bringing their own identity, including their language, religion, customs, culture, and other differences. As a subculture group, the ability of this group of children to enter and belong to mainstream social groups was at a relatively weak level compared to their own ethnic identity, with their self-esteem low. Due to the inclination of ethnic policy, insufficient attention is received locally for Han nationality children. Surrounding facilities are more inclined to ethnic minorities and amalgamations, with Han nationality children possibly excluded from local culture, and also experiencing the potential for prejudice and discrimination. In the face of a strong mainstream culture, the long process of cultural adaptation is continuing. As a result, Han nationality children are at a higher risk of depression and need more attention.

6. Conclusion

In China's rural ethnic minority areas, some Han left-behind children are facing the prominent problem of depression. The ethnic policy in minority areas neglects the mental health status of Han children in these areas. Parental divorce is also leading to higher levels of depression in children. As a local "minority", Han children's ethnic identity and their national identity do not appear to bring significant national self-esteem and national confidence, so they do not have a significant positive impact on the mental health status of Han children. In China's rural ethnic minority areas, therefore, more attention should be paid to local Han Chinese children's living conditions and mental health. Effective intervention measures and psychological aid are needed, as is vigorous promotion of their national identity and cultural adaptation. This would help national integration and social integration, reducing the probability of depression, and promoting the level of psychological health of local children. Despite the drawbacks, our research clearly reveals that children who are left behind have a high risk of developing depression. Additionally, we have discovered a number of important characteristics, such as parental migration and low SES, that are linked to an elevated risk of depression among Chinese rural children. An essential protective element is a high degree of social support. Our research may contribute to a better understanding of the general mental health of rural Chinese youngsters who have been left behind. In the future, policies and initiatives should be created to address this population's particular areas of risk to poor mental health.

This study has four constraints. Firt, it is based on the data obtained from the Garzê Tibetan Autonomous Prefecture located in Sichuan, China, rather than the whole country. Second, our results may not possess universal applicability to other ethnic minority regions within China or on a worldwide scale. Third, this study primarily examined the ethnic identification of Han children living in ethnic minority areas, but it did not extensively explore the intricate aspects of cultural customs, beliefs, and the everyday obstacles encountered by these children. Finally, although we briefly discussed the subject of parental divorce, we did not thoroughly examine other familial relationships and their possible impact on the mental well-being of children.

Future studies should broaden their prospect by include a wider range of ethnically varied regions within China, as well as potentially extending their coverage to include other nations. Examining the impact of family dynamics beyond the occurrence of parental divorce, including aspects such as the nature of parent-child connections, interactions among siblings, and support from extended family members, would provide a comprehensive perspective on the familial elements that contribute to depression.

Author contribution statement

Mengru Li: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

YongMing Pu; Bing Xu; Shuang Wu: Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Data availability statement

Data will be made available on request.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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