

Bullying victimization and life satisfaction among rural left-behind children in Central China: a cross-sectional study

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Abstract

Background: Parental migration has many detrimental health impacts on children. This study described the associations between bullying victimization and life satisfaction among left-behind children(LBC), and examined the interactive effects of left behind experience and bullying victimization on life satisfaction.

Methods: Students from first to ninth grade in Central China participated in the present study. Life satisfaction were assessed by Chinese version of revised Bully/Victim Questionnaire and Multidimensional students' life satisfaction scale(MSLSS).

Results: A total of 1013 children were investigated, of which 42.5% were left-behind. We found LBC had a significantly 45% higher risk of being teased in a hurtful way than the non-LBC(OR=1.45, 95%CI: 1.10~1.91), and the LBC had lower self-satisfaction than the non-LBC($b=-0.14$, $P=0.017$). Being teased was only associated with self-satisfaction, and other bullying victimization behaviors had significant impact on all dimensions of life satisfaction($P<0.05$). We identified an interactive effect between left behind experience and bullying victimization on school satisfaction(P interaction =0.015), bullying was significantly related with lower school satisfaction in the LBC group($b=-0.69$, $P<0.001$), but no association in the non-LBC group. Also, there was a combined effect between left behind experience and bullying victimization on environment satisfaction(P interaction >0.05), bullying was significantly related with lower environment satisfaction in the LBC group($b=-0.31$, $P=0.033$), while no association was observed in the non-LBC group.

Conclusion: There is an interaction of left behind experience and bullying victimization on school satisfaction and a combined effect on environment satisfaction. Left behind experience could significantly amplify the associations between bullying victimization and school satisfaction/environment satisfaction.

Introduction

A recent systematic review on health impact of parent migration of left-behind children (LBC) concluded the health problems contributed to the left behind status may should be emphasized and guarantee more actions and researches to improve their health, in which 91 of 111 studies were conducted in China[1]. Actually, LBC are vulnerable to a lot of health problems, such as depressive symptoms[2], or delayed growth[3]. According to the one-percent national population sample survey in 2015, it was estimated that there are 68.77 million children left behind in hometowns with one or both parents migrating, accounting for 25.4% of the total children population (about 270 million). This indicated that there was one in four children left behind by their migrating parent[4]. With the rapid urbanization of China in the past few decades, left behind phenomenon of children has become more and more common, especially in rural areas and towns. LBC is nowadays defined as children who stay at home with one or both parents relocating elsewhere for working. LBC population would grow up with a special environment with their

grandparents or other relatives. Their chances to be well educated, to obtain good physical health or social well-being, to develop healthy lifestyles are all usually vulnerable. What's more, LBC are usually too young to voice for themselves, therefore, the health-related problems of this specific population should be paid more attention.

Previous studies demonstrated that LBC is much more vulnerable to school bullying or peer/sibling victimization since lack of supervision of parents[5]. Yan and colleagues' study in Sichuan and Anhui province showed 43.31% of the LBC reported high bullying victimization score, while only 37.94% in the non-LBC. Chen and colleagues found that parent factors were related with child victimization in rural area of Anhui Province[6].

On the other hand, a lot of studies have investigated the associations between the left behind status or school bullying and the psychological traits. For example, Zhao and colleagues found no association between left behind by migrating parents and life satisfaction, or loneliness[6]. This may due to the left behind phenomenon only influence some different aspects of life satisfaction, such as school satisfaction or friend satisfaction.

With different levels of urbanization in different provinces of China, the impact of left behind phenomenon on school bullying or other aspects of well-being may be various. The phenomenon of LBC highly distributed in major labor export provinces, especially in central and western provinces[7]. Hunan Province as a socio-economically relative deprived province, together with other four provinces (Sichuan, Henan, Anhui, Guangdong Provinces), the LBC population in these areas accounts for 43.64% of the total LBC population in China[7]. But until now, few studies investigated the interact or combined effect of left behind experience and school bullying on multidimensional life satisfaction in Hunan Province.

This is a cross-sectional study in children of Hunan Province, China. We hope the study would give us a better understanding of the situation of LBC and provide better care or related education measures for this specific population. The current study aimed to investigate their status of school bullying and multidimensional life satisfaction among the LBC, and also to examine the interact or combined effect of bullying victimization and left behind status on children's life satisfaction.

Methods

Location

The present study was conducted in Hunan Province, one of the most populated provinces in Central China, with 68.22 million residents and area of 211800 km² in 2016. Hunan Province exports large quantities of labor forces to other coastal developed cities every year. Status of left-behind is quite prevalent in children, especially in rural area or western area of Hunan Province. The estimated number of LBC population is about 4.35 million[7].

Participants

A cross-sectional study was conducted in three different districts in western Hunan Province in July 2018. The study was approved by the Review Board. Informed consents were obtained from all participants and their parents or other legal guardians.

Measurements

Status of Left behind: In the present study we used the definition of left behind by Duan[8] and Zhao[9]. One parent or both parents migrating from where the child lived, and left behind their child to live alone or to live with grandparents or other relatives, then the child will be categorized as LBC. For further analysis, we also divided into two groups: LBC with one parent migration group, and LBC with both parents migration group.

Bullying victimization: For bullying victimization, we used the Chinese version of revised Bully/Victim Questionnaire developed by Dan Olweus, we asked the participants 6 questions: in the past 30 days have you 1) Been teased in a hurtful way; 2) Been blackmailed; 3) Been rejected or isolated by peers; 4) Been threatened; 5) Been hit, kicked, pushed, shoved around, or locked indoors; 6) Been made fun of due to my physical appearance on a 3-point scale (0=never, 1=sometimes, 2=often)[10]. And this questionnaire had been proved to have a relative good reliability and validity[11] and had been used widely[12]. Children reported at least one question of being bullied with option of “often” in the past month were defined as being bullied[12, 13].

Multidimensional students’ life satisfaction scale (MSLSS): Life satisfaction was assessed by the multidimensional students’ life satisfaction scale (MSLSS) in Chinese version, with Cronbach’ α coefficient of 0.90 and the retest reliability of 0.86[14, 15]. MSLSS has five subscales to measure five aspects of life satisfaction, including family, school, friend, environment and self-satisfaction. The subscales are well correlated in expected ways with different criterion measures[14], which is useful for studies of students’ life satisfaction.

Statistical analysis

Characteristics of quantitative variables were described by mean \pm standard deviation (SD), and categorical variables by number and percentages. Chi-square tests and t-tests were performed to compare the differences for categorical and quantitative variables, respectively. The association between left-behind situations and bullying victimization was examined by univariate and multivariate logistic regression analysis. The associations between bullying victimization or left behind status and MSLSS were examined by univariate and multivariate linear regression analysis. Stratified analyses were conducted by stratified by the left behind status, then we used multivariate linear regression to test the associations between bullying victimization and different domains of life satisfaction, and the interactions were tested by multivariate general linear model with age and sex as covariates. In the stratified analyses of our study, combined effects were defined that there were different effect sizes in the subgroups, but the interaction was not significant ($P_{interaction} > 0.05$), and the interaction was defined that there were different effect sizes in the subgroups, but the interaction was significant ($P_{interaction} < 0.05$)

[16].The statistical analyses were all conducted with IBM SPSS 20.0 for windows (SPSS Inc., Chicago, IL, USA). $P < 0.05$ was considered statistically significant.

Results

General characteristics of the study population

A total of 1013 children participated in the present study, with 426 LBC and 582 non-LBC, and the mean age was 8.97 ± 2.43 years. There were 565 boys (55.8%), and 448 girls (44.2%). Among the LBC, 254 children with only one parent migrated for work or other reasons, and 177 children with both parents migrated.

For bullying victimization behaviors, LBC had a significantly higher risk of being teased in a hurtful way than the non-LBC (38.3% vs 30.2%, $P = 0.007$, Table 1). When stratified by three groups (non-left behind, one parent migration and both parents migration), the prevalence of bullying victimization behaviors was showed in Fig. 1a.

For different dimensions of life satisfaction, non-LBC had a significantly higher self-satisfaction than non-LBC (4.71 ± 0.86 vs 4.57 ± 0.87 , $P = 0.012$). There is no significant different in family, friend, school and environment satisfaction ($P > 0.05$, Table 1). When stratified by non left behind, one parent migration and both parents' migration, the average score of different dimensions of life satisfaction among children was illustrated in Fig. 1b.

Association between left behind experience and bullying victimization

Under the crude model, LBC had a significantly higher risk of being teased in a hurtful way than the non-LBC (OR = 1.43, 95%CI: 1.10–1.86, $P = 0.008$), and when with further adjustment of age and sex, left behind experience is still a significant risk factor for being teased (OR = 1.45, 95%CI: 1.10 ~ 1.91, $P = 0.009$). But in the present study, we didn't find significant association between other bullying victimization behaviors with left behind experience ($P > 0.05$) (Table 2).

With further stratification by three groups (non left behind, one parent migration and both parents migration), the odds ratio of being teased in a hurtful way is 1.43(95%CI:1.03 ~ 1.98) in the groups of one parent migration, and OR = 1.47(95%CI:1.02 ~ 2.12) in group of both parents migration (Fig. 2).

Association between left behind experience or bullying victimization and life satisfaction

For the association between left behind experience and different dimensions of life satisfaction, the results were shown in Table 3. With adjustment of age and sex, we only find a significant association between self-satisfaction and left behind experience ($b = -0.14$, SE = 0.06, $P = 0.017$).

For the association between bullying victimization behaviors and different dimensions of life satisfaction, except the being teased behavior only had a significant impact on the self-satisfaction ($b=-0.14$, $P = 0.017$). Other bullying victimization behaviors had significant impact on all dimensions of life satisfaction ($P < 0.05$). Especially for the behavior of being blackmailed and being rejected or isolated by peers, the former would significantly reduce the family, friend and school satisfaction, the latter would reduce the family satisfaction, and also the behavior of being hit, kicked, pushed, shoved around, or locked indoors would reduce the family and school satisfaction ($b<-0.4$, all $P < 0.001$).

Combined effect of left behind status and bullying victimization on life satisfaction

When stratified by the status of left behind, we found that the association between bullying victimization and life satisfaction were different (Table 4). For family, friend and self satisfaction domain, bullying victimization were significantly associated with family satisfaction or friend satisfaction in both groups, there is no combined effect and interaction effect between left behind status and bullying. For school domain, there is a significant interaction between left behind status and bullying ($P_{\text{interaction}}=0.015$). In the non-LBC group, bullying victimization is not significant associated with school satisfaction ($b=-0.20$, 95%CI: -0.47, 0.07, $P = 0.145$). While in the LBC group, bullying victimization is not significant associated with a lower level of school satisfaction with effect size of -0.69(95%CI: -0.98, -0.40, $P < 0.001$). For environment satisfaction, there is no interactive effect between left behind status and bullying victimization ($P_{\text{interaction}} >0.05$). But with the stratified analysis, we found there is a combined effect between left behind status and bullying victimization on school satisfaction. In the non-LBC group, bullying victimization is not significant associated with environment satisfaction. While in the LBC group, bullying victimization is not significant associated with a lower level of environment satisfaction with effect size of -0.31(95%CI: -0.60, -0.03, $P < 0.033$).

Discussion

Our study found LBC experience a higher risk of bullying victimization, and the left-behind experience and bullying victimizations are also associated with children's life satisfaction. Additionally, we firstly found that there is interaction or combined effect between left behind status and bullying victimization on life satisfaction. To the best of our knowledge, this is the first study to explore the interaction or combined effect of bully victimization and left-behind experience on MSLSS. Evidence from our study could help to develop better strategies for psychological intervention among LBC or children suffering bully victimizations.

In the present study, the prevalence of left behind status is 42.5%, this means more than four of ten were left behind. Our results is relative lower than the results of Duan's study, which reported about 51.14% of the rural children were left behind in Hunan province[7]. The possible reason may be that we also included some participants from schools in small towns, while Duan's study only involved the schools of rural areas, where left behind status is more prevalent.

We also found that more than one third of the children were teased by others (33.7%), and left behind status is associated with higher risk of being teased (38.3% vs 30.2%). This is similar to Li et al's study, which also demonstrated that children with parents migration had a higher prevalence of bullying victimizations than the children with parents at home[17]. Additionally, we found that LBC have a significantly lower level of self-satisfaction than the non-LBC. Which is in accordance with Zhou's study in Jiangxi Province[18], which showed LBC have lower life satisfaction than non-LBC with Diener's Happiness Scale. Left-behind children usually live with their grandparents or other relatives, without proper care from parents, is a special vulnerable population. Therefore, more attention should be paid for LBC, such as self-satisfaction or bully victimization.

The present study also suggested children have experience of being teased had a lower level of self-satisfaction, and other bullying victimization behaviors even had significant associations with all dimensions of life satisfaction (including family, school, friend, environment and self-satisfaction). These findings are similar with Bilić's study among children of Croatia[19], and Serra-Negra's study in adolescents of Brazil[20]. But there are also some differences between our study and others, bullying behavior of Serra-Negra's study focused on verbal school bullying and they used questionnaire of Brazilian National School-Based Adolescent Health Survey (PeNSE). Bilić's study focused on cyber peer bullying. We firstly used Dan Olweus's bullying questionnaire, which included physical, verbal or other bullying victimization behaviors, to assess the associations between bullying victimization and multidimensional life satisfaction. Our results indicated that for children with experience of bullying victimization, we should provide support or help from all aspects, such as family, school, friend, environment and et al.

For the newly identified combined effect or interactive effect between LBC and bullying victimization on school or environment satisfaction. No previous studies reported similar results. These findings give us implications that LBC is vulnerable to bullying victimization, and LBC children who suffering bullying victimization have a relative lower level of school and environment satisfaction. Especially, left behind status could significantly amplify the association between bullying victimization and school/environment satisfaction. Therefore, joint actions should be done to improve these domains of life satisfaction in this specific population.

There are some limitations in our study. Firstly, this is a cross-sectional study which could only provide associations but not causal inference. In future, longitudinal studies could be conducted for better understanding of these associations. Secondly, this study is only conducted in 3 districts of Hunan Province by convenience sampling, which may be limited to generalize to other areas of China.

Conclusion

The current study indicated that left behind status and bully victimization has an interaction or combined effect on multidimensional students' life satisfaction. The status of left behind exacerbated the associations between bullying victimization and multidimensional students' life satisfaction. Proper

comprehensive interventions measures should be taken to improve the situation of bully victimization and self-satisfaction of LBC. Also, for the LBC suffering bullying victimization, almost all aspects of life satisfaction should be emphasized and effectively improved.

Declarations

Ethics approval and consent to participate

The study was approved by the Ethical Committee of Hunan Normal University. Informed consents were obtained from all participants, and also consents were obtained from parents or other legal guardians.

Availability of data and materials

The datasets analyzed in this study are available from the corresponding author (Yi-de Yang, yangyide2007@126.com) upon reasonable request.

Consent for publication

Not applicable as no individual information is presented in the paper.

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Authors' contributions

JM involved in the project administration, funding acquisition and review of the manuscript. CJZ, YDY, SZH, and MLZ carried out the study and collected the data. YDY, YHD, YQZ, YLZ, ZYZ and MX designed the study, analyzed data and wrote the draft of the manuscript. All authors were involved in the writing and had read and approval of the final version of the paper.

Conflicts of interest

The authors declare that they have no conflicts of interest.

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Tables

Table 1. The general characteristics of the study population

Variables	Group	Non left behind	Left behind	Total	t/F	P
		Mean±SD/N(%)	Mean±SD/N(%)	Mean±SD/N(%)		
Age		8.97±2.56	8.97±2.26	8.97±2.43	0.00	0.998
Ethnic groups	Han Ethnicity	505(87.1%)	357(83.8%)	862(85.7%)	2.14	0.144
	Others	75(12.9%)	69(16.2%)	144(14.3%)		
Left behind	Non left behind	582(100%)		582(57.5%)		
	One parent migration		254(58.9%)	254(25.1%)		
	Two parents migration		177(41.1%)	177(17.5%)		
Sex	Male	332(57%)	233(54.1%)	565(55.8%)	0.89	0.344
	Female	250(43%)	198(45.9%)	448(44.2%)		
Grade	Grade 1 to 3	258(44.3%)	204(47.3%)	462(45.6%)	3.73	0.155
	Grade 4 to 6	262(45%)	196(45.5%)	458(45.2%)		
	Grade 7 to 9	62(10.7%)	31(7.2%)	93(9.2%)		
Been teased in a hurtful way	Never	406(69.8%)	266(61.7%)	672(66.3%)	7.17	0.007
	Sometimes or always	176(30.2%)	165(38.3%)	341(33.7%)		
Been blackmailed	Never	540(92.8%)	393(91.2%)	933(92.1%)	0.87	0.350
	Sometimes or always	42(7.2%)	38(8.8%)	80(7.9%)		
Been rejected or isolated by peers	Never	474(81.4%)	345(80%)	819(80.8%)	0.31	0.576
	Sometimes or always	108(18.6%)	86(20%)	194(19.2%)		
Been threatened	Never	500(85.9%)	356(82.6%)	856(84.5%)	2.07	0.150
	Sometimes or always	82(14.1%)	75(17.4%)	157(15.5%)		
Been hit, kicked, pushed, shoved around, or locked indoors	Never	506(86.9%)	361(83.8%)	867(85.6%)	2.03	0.154
	Sometimes or always	76(13.1%)	70(16.2%)	146(14.4%)		
Been made fun of due to my physical appearance	Never	524(90%)	376(87.2%)	900(88.8%)	1.95	0.162
	Sometimes or always	58(10%)	55(12.8%)	113(11.2%)		
school bullying	Never	534(91.8%)	396(91.9%)	930(91.8%)	0.01	0.942
	Sometimes or always	48(8.2%)	35(8.1%)	83(8.2%)		
Family satisfaction		4.94±0.89	4.87±0.85	4.91±0.88	1.361	0.174
Friend satisfaction		4.53±0.66	4.52±0.72	4.53±0.68	0.276	0.783
School satisfaction		4.99±0.82	5.06±0.83	5.02±0.83	-1.328	0.185
Environment satisfaction		4.40±0.72	4.44±0.78	4.41±0.74	-0.801	0.423
Self-satisfaction		4.71±0.86	4.57±0.87	4.65±0.86	2.522	0.012

SD: standard deviation. MLLSS: Multidimensional students' life satisfaction scale.

Table 2. The impact of left behind experience on bullying victimization

Bullying victimization behavior	Left behind Group	Crude model			Adjusted model		
		OR	95%CI	P	OR	95%CI	P
Teased in a hurtful way	Non left behind	Ref.			Ref.		
	Left behind	1.43	(1.10,1.86)	0.008	1.45	(1.10,1.91)	0.009
Blackmailed	Non left behind	Ref.			Ref.		
	Left behind	1.24	(0.79,1.96)	0.351	1.49	(0.92,2.44)	0.108
Rejected or isolated by peers	Non left behind	Ref.			Ref.		
	Left behind	1.09	(0.80,1.50)	0.576	1.07	(0.77,1.50)	0.675
Threatened	Non left behind	Ref.			Ref.		
	Left behind	1.28	(0.91,1.81)	0.150	1.35	(0.94,1.93)	0.100
Hit, pushed, shoved around, or locked indoors	Non left behind	Ref.			Ref.		
	Left behind	1.29	(0.91,1.84)	0.155	1.35	(0.94,1.94)	0.106
Made fun of due to my physical appearance	Non left behind	Ref.			Ref.		
	Left behind	1.32	(0.89,1.96)	0.163	1.32	(0.88,1.99)	0.186

Table 3. Left-behind experience and bullying victimization on the children's life satisfaction

variables	Family satisfaction			Friend satisfaction			School satisfaction			Environment satisfaction			Self satisfaction		
	b	SE	P	b	SE	P	b	SE	P	b	SE	P	b	SE	P
Left behind status	-0.06	0.06	0.257	-0.02	0.05	0.628	0.06	0.06	0.243	0.06	0.05	0.271	-0.14	0.06	0.017
Bullying(1)	-0.06	0.06	0.257	-0.02	0.05	0.628	0.06	0.06	0.243	0.06	0.05	0.271	-0.20	0.06	0.001
Bullying(2)	-0.42	0.11	<0.001	-0.47	0.08	<0.001	-0.47	0.10	<0.001	-0.33	0.09	<0.001	-0.22	0.11	0.035
Bullying(3)	-0.36	0.07	<0.001	-0.43	0.06	<0.001	-0.39	0.07	<0.001	-0.17	0.06	0.008	-0.34	0.07	<0.001
Bullying(4)	-0.30	0.08	<0.001	-0.38	0.06	<0.001	-0.40	0.07	<0.001	-0.14	0.07	0.036	-0.42	0.08	<0.001
Bullying(5)	-0.45	0.08	<0.001	-0.28	0.06	<0.001	-0.42	0.08	<0.001	-0.24	0.07	0.001	-0.27	0.08	0.001
Bullying(6)	-0.18	0.09	0.047	-0.18	0.07	0.011	-0.33	0.09	<0.001	-0.17	0.08	0.029	-0.43	0.09	<0.001

Adjustment of age and sex. Bullying (1): Been teased in a hurtful way; (2): Been blackmailed; (3): Been rejected or isolated by peers; (4): Been threatened; (5): Been hit, kicked, pushed, shoved around, or locked indoors; (6): Been made fun of due to my physical appearance.

Table 4. Combined effect of left behind experience and bullying on life satisfaction

MSLSS	Left behind status	Bullying group	Score	b(95%CI)	P	P _{interaction}
Family score	non-LBC	no bullying victimization	4.99±0.86	-0.47(-0.75, -0.19)	0.001	0.675
		bullying victimization	4.46±1.11			
	LBC	no bullying victimization	4.90±0.82	-0.38(-0.68, -0.08)	0.013	
		bullying victimization	4.56±1.11			
Friend score	non-LBC	no bullying victimization	4.55±0.64	-0.24(-0.46, -0.03)	0.026	0.075
		bullying victimization	4.28±0.84			
	LBC	no bullying victimization	4.55±0.68	-0.54(-0.80, -0.28)	<0.001	
		bullying victimization	4.14±1.01			
School score	non-LBC	no bullying victimization	5.01±0.81	-0.20(-0.47, 0.07)	0.145	0.015
		bullying victimization	4.74±0.92			
	LBC	no bullying victimization	5.11±0.79	-0.69(-0.98, -0.40)	<0.001	
		bullying victimization	4.54±1.02			
Environment score	non-LBC	no bullying victimization	4.41±0.71	-0.18(-0.42, 0.05)	0.133	0.473
		bullying victimization	4.22±0.77			
	LBC	no bullying victimization	4.46±0.77	-0.31(-0.60, -0.03)	0.033	
		bullying victimization	4.22±0.79			
Self score	non-LBC	no bullying victimization	4.74±0.84	-0.28(-0.55, 0.00)	0.046	0.508
		bullying victimization	4.43±1.02			
	LBC	no bullying victimization	4.60±0.84	-0.41(-0.71, -0.10)	0.009	
		bullying victimization	4.22±1.06			

Figures

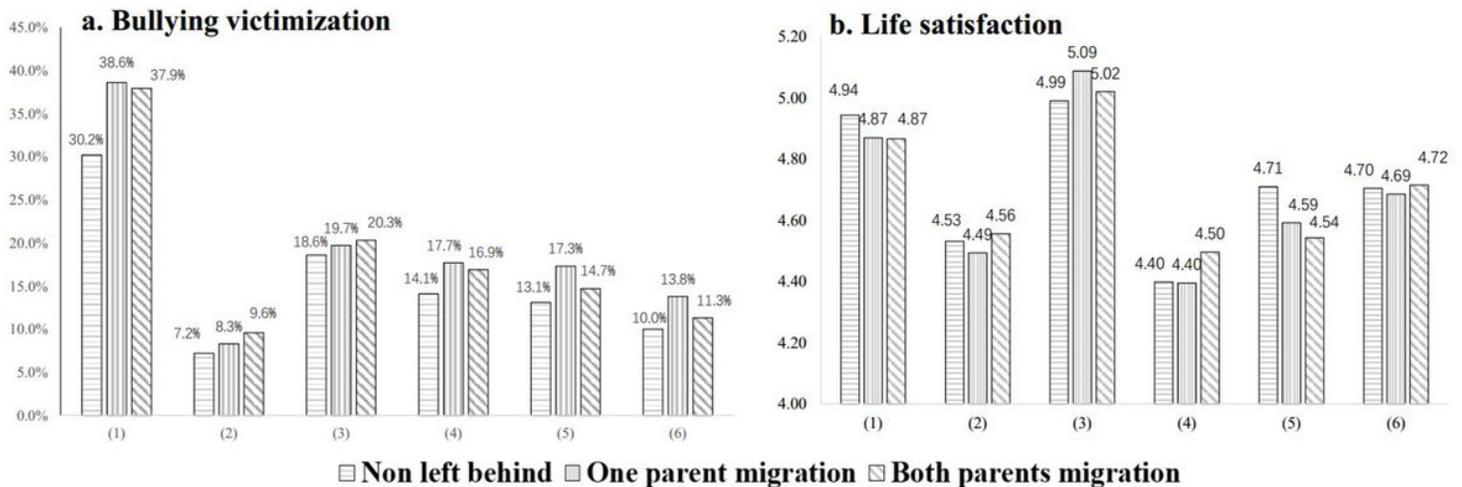


Figure 1

1. Comparison of bullying victimization or life satisfaction of children with different left-behind status 1a: (1) Been teased in a hurtful way; (2) Been blackmailed; (3) Been rejected or isolated by peers; (4) Been threatened; (5) Been hit, kicked, pushed, shoved around, or locked indoors; (6) Been made fun of due to my physical appearance. 1b: (1) Family satisfaction; (2) Friend satisfaction; (3) School satisfaction; (4)

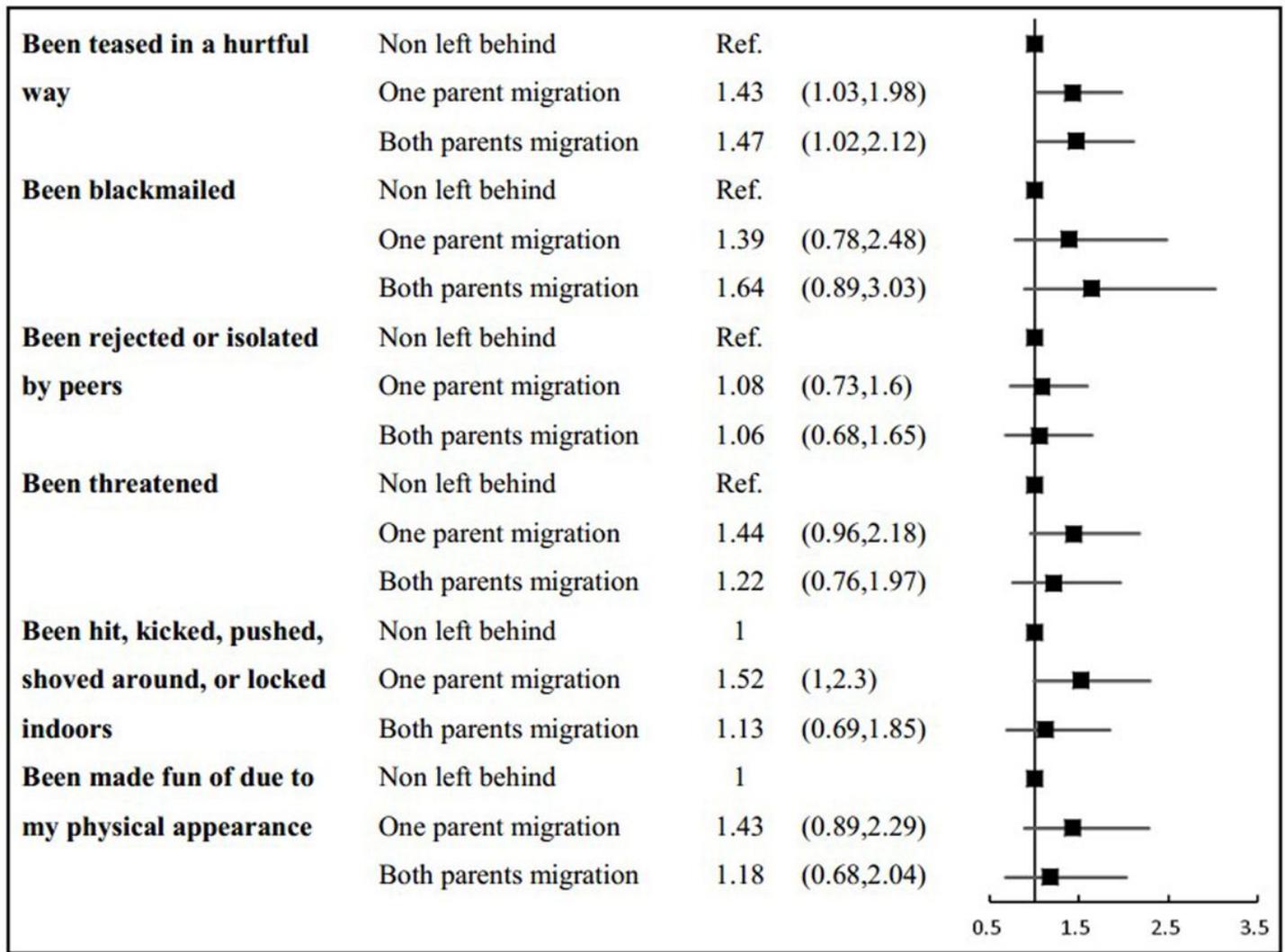


Figure 2

Association between left behind experience and bullying victimization. Adjusted model was adjusted for age and sex.