

# 童年逆境与中老年人社会隔离关联的时变效应分析

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**摘要:**目的 探索童年逆境与中老年人社会隔离关联的年龄效应, 为早期发现社会隔离的高危人群, 制定合适的干预措施提供科学依据。方法 研究对象为参加了 CHARLS 2014 年中国居民生命历程调查, 且至少参加了一次 2011、2013、2015、2018 和 2020 年调查的受访者。童年逆境通过自我报告的方式收集, 根据经历童年逆境的数量划分为四组: 未经历童年逆境组、经历一种童年逆境组、经历两种童年逆境组和经历三种及以上童年逆境组。采用时变效应模型, 以年龄作为时间变量, 探索童年逆境与中老年人社会隔离关联的年龄效应。结果 研究共纳入 14 397 名研究对象, 与未经历童年逆境的中老年人相比, 经历一种童年逆境的中老年人在 61 岁至 70 岁时发生社会隔离的风险增高 ( $OR = 1.22, 95\% CI: 1.06 \sim 1.41$ ); 经历两种童年逆境的中老年人在 50 至 65 岁时发生社会隔离的风险增高 ( $OR = 1.33, 95\% CI: 1.13 \sim 1.57$ ); 经历三种及以上童年逆境的中老年人在 45 岁至 58 岁时发生社会隔离的风险增高 ( $OR = 1.86, 95\% CI: 1.16 \sim 2.99$ )。结论 童年逆境与中老年人社会隔离的关联存在年龄效应, 经历的童年期逆境越多, 发生社会隔离的年龄越小。

**关键词:** 童年逆境; 社会隔离; 时变效应模型

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## Time-varying associations between adverse childhood experiences and social isolation in middle-aged and older adults

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**Abstract: Objective** To explore the time-varying association between adverse childhood experiences and social isolation in middle-aged and older adults and provide a scientific evidence for the early identification of people at risk of social isolation and the development of appropriate interventions. **Methods** Data were used from respondents who participated in the life history survey of the China Health and Retirement Longitudinal Study (CHARLS) and at least one of the surveys conducted between 2011 and 2020. Adverse childhood experiences were collected through self-reporting and divided into four groups based on the number of adverse childhood experiences, which were categorized into the group that had not experienced adverse childhood experiences, the group that had experienced one type of adverse childhood experience, the group that had experienced two types of adverse childhood experiences, and the group that had experienced three or more types of adverse childhood experiences. A time-varying effect model was used to explore the age-varying association between adverse childhood experiences and social isolation among middle-aged and older adults, using age as the time variable. **Results** A total of 14 397 middle-aged and older adults were included in the study. Compared with those who had not experienced adverse childhood experiences, those who had experienced one adverse childhood experience had a higher risk of social isolation between the ages of 61 and 70 ( $OR = 1.22, 95\% CI: 1.06 - 1.41$ ); those who had experienced two adverse childhood experiences had a higher risk of social isolation between the ages of 50 and 65 ( $OR = 1.33, 95\% CI: 1.13 - 1.57$ ); and those who had experienced three or more adverse childhood experiences had a higher risk of social isolation between the ages of 45 and 58 ( $OR = 1.86, 95\% CI: 1.16 - 2.99$ ). **Conclusion** There is age-varying association between adverse childhood experiences and social isolation among middle-aged and elderly people, with the more childhood adversities experienced, the younger the age at which social isolation occurs.

**Keywords:** Adverse childhood experiences; Social isolation; Time-varying effect model

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社会隔离是指客观上缺乏或与他人的社交接触有限<sup>[1]</sup>。社会隔离与多种不良健康结局有关,如认知障碍<sup>[2-3]</sup>、心血管疾病<sup>[4-5]</sup>和抑郁<sup>[6]</sup>等。一项 meta 分析显示,我国社区老年人社会隔离的发生率为 29.5%<sup>[7]</sup>,已成为不可忽视的公共卫生问题。探索社会隔离的危险因素有助于预防老年人社会隔离的发生。

既往研究显示,童年逆境对成年人社会隔离存在影响<sup>[8]</sup>。然而,目前还未有研究探索童年逆境对中老年人社会隔离远期影响。此外,童年逆境对不同年龄的中老年人社会隔离的影响可能不同。因此,研究童年逆境和中老年人社会隔离随年龄变化的动态关系能为早期发现社会隔离的高危人群,制定合适的干预措施提供科学依据。

时变效应模型 (Time - Varying Effect Model, TVEM) 可用于探索暴露与结局的关联如何随时间变化,为研究暴露与结局之间的动态关联提供了技术手段。时变效应模型可用于纵向密集型数据,也可用于横截面数据和面板数据<sup>[9]</sup>,如 Sunderland 等运用时变效应模型探讨了不同年龄青少年生活方式因素与严重抑郁障碍的关联<sup>[10]</sup>。在本研究中,假设童年逆境与中老年人社会隔离的关系随年龄改变,以年龄作为

时变效应模型中的时间变量,其余变量作为时不变变量纳入,探索童年逆境与中老年人社会隔离随年龄变化的动态关联,以期为中老年人社会隔离的预防和干预提供科学依据。

### 1 资料与方法

**1.1 研究对象** 本研究数据来源于中国健康与养老追踪调查 (China Health and Retirement Longitudinal Study, CHARLS)。该项目于 2011 年对全国 28 个省 (自治区、直辖市) 的 45 岁及以上中老年人进行了基线调查,并在 2013、2015、2018 和 2020 年进行了随访。此外,CHARLS 在 2014 年进行了中国居民生命历程调查。本研究使用了 CHARLS 项目的 2011 至 2020 年的调查数据,以及 2014 年的生命历程调查数据。

研究对象纳入标准:①研究对象的年龄大于等于 45 岁且小于等于 85 岁;②参加了 2014 年中国居民生命历程调查,且至少参加了一次 2011—2020 年的调查;③主要变量 (包括童年逆境、社会隔离和年龄) 无缺失。最终,本研究纳入 14 397 名研究对象,共 56 324 条观测记录。

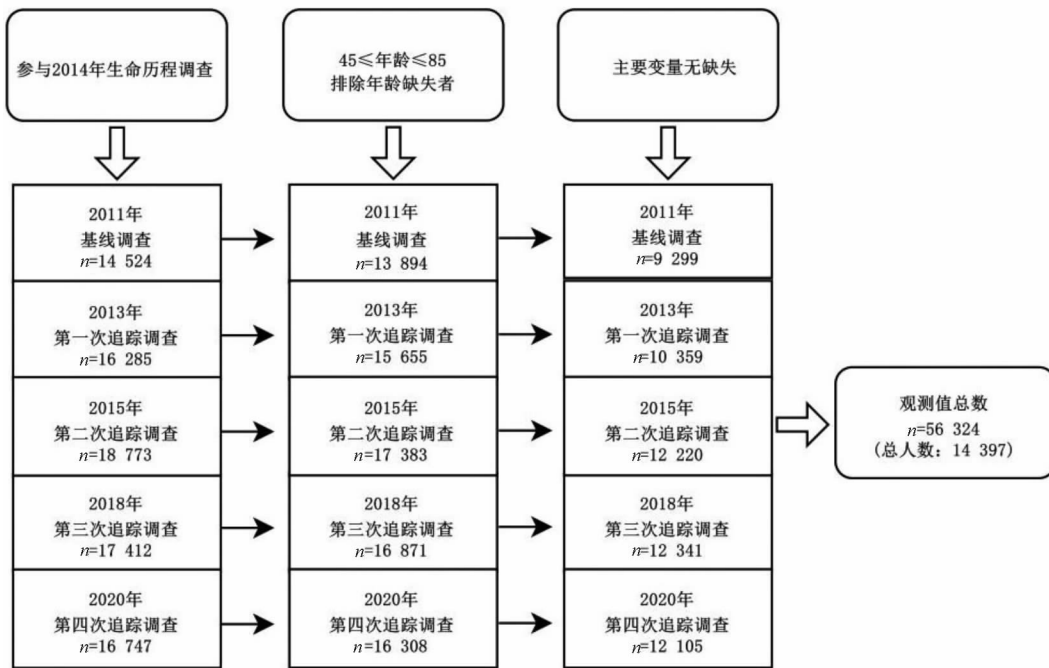


图 1 样本筛选流程

Fig. 1 Sample screening flow chart

### 1.2 研究变量及测量方法

**1.2.1 童年逆境** CHARLS 在 2014 年的生命历程调查中,通过面对面访谈收集了被调查对象 17 岁之

前曾经历的童年逆境信息。本研究的童年逆境为父母死亡、父母分居或离婚、抚养人患有精神疾病、抚养人被监禁、抚养人酗酒或吸毒、家庭暴力、不安全的居

住环境、同龄人欺凌、身体虐待和情感忽视 10 种<sup>[11-12]</sup>。每经历一种童年逆境则计分为 1, 计算其累积得分, 并根据累积得分将其分为以下 4 组: 没有经历童年逆境的赋值为 0; 经历一种童年逆境的赋值为 1; 经历两种童年逆境的赋值为 2; 经历三种及以上童年逆境的赋值为 3。

**1.2.2 社会隔离** 社会隔离指数通过 4 个变量进行评估, 包括婚姻情况、居住情况、与子女的联系频率, 以及社交活动。若不在婚(包括分居、离婚、守寡或从未结婚), 则婚姻情况赋值为 1, 否则赋值为 0; 若独自居住, 则居住情况赋值为 1, 否则赋值为 0; 若与子女的联系频率少于每月一次(包括见面或通过电话、短信或邮件联系), 则与子女的联系频率赋值为 1, 否则赋值为 0; 若在过去一个月中从未参与任何社交活动(包括与朋友交往、下棋或打牌、参与运动社交或其他俱乐部), 则社交活动赋值为 1, 否则赋值为 0<sup>[13-14]</sup>。将四个变量相加以计算社会隔离指数, 社会隔离指数总分为 0~4 分, 得分大于等于 2 则表示存在社会隔离。在本研究中, 社会隔离作为二分类变量纳入模型。本研究将存在社会隔离赋值为 1, 否则赋值为 0。

**1.2.3 协变量** 本研究中, 将社会人口学变量和儿童时期社会经济状况作为控制变量纳入模型<sup>[15-23]</sup>。社会人口学变量包括性别、受教育程度(文盲、小学及以下、初中和高中及以上)。儿童时期社会经济地位包括儿童时期居住地、父母受教育水平和儿童时期家庭经济状况: 儿童时期居住地根据研究对象的第一个户籍确定, 分为农村和城镇; 父母受教育水平被定义为任意一方最高受教育程度, 分为文盲和非文盲; 儿童时期家庭经济状况根据研究对象自我报告划分为较差、一般和较好。此外, 年龄作为时间变量纳入模型。

**1.3 统计分析** 根据变量类型进行描述性分析, 其中定量变量采用  $\bar{x} \pm s$  进行描述, 定性变量采用频数和构成比进行描述。

本研究主要应用了时变效应模型分析童年逆境与中老年人社会隔离关联的时变效应。时变效应模型是线性模型的拓展模型, 可将自变量和因变量之间的关联预测为时间的连续函数。时变效应模型中的“时间”可以是历史时间、生物年龄或与某一事件相关的时间以及某一特定行为或状况发生的年龄<sup>[24]</sup>。在本研究中, 以年龄作为时变效应模型中的时间变量。首先, 运用仅具有截距项的时变效应模型估计不同年龄中老年人社会隔离的发生率; 其次, 运用时变效应模型探索中老年人童年逆境与社会隔离随年龄变化的动态关联。使用 P 样条(P-spline)构建时变效应模型, 个体内重复测量误差通过“三明治”标准误

(“Sandwich” standard errors)控制。由于时变效应模型的结果报告多个时点的系数值, 故模型结果以图形展示。使用 STATA/MP 18.0 进行数据清洗, SAS 9.4 进行数据分析。

## 2 结果

### 2.1 研究对象的基本特征

**2.1.1 研究对象的一般情况** 研究对象平均年龄为(59.81 ± 9.18)岁, 男性占比 48.81%, 受教育程度为文盲、小学及以下、初中和高中及以上的分别为 30%、27.51%、27.61% 和 14.88%, 童年时期居住地为农村占比 91.37%, 父母为非文盲占比 47.21%, 童年时期家庭经济情况为较差、一般和较好分别为 37.59%、52.71% 和 9.70% (表 1)。

表 1 研究对象的一般情况 (n = 56 324)

Table 1 General situation of the research object (n = 56 324)

特征	总计(n)	$\bar{x} \pm s / (\%)$
年龄(岁)	56 324	59.81 ± 9.18
性别		
男	27 489	48.81
女	28 835	51.19
受教育程度		
文盲	16 899	30.00
小学及以下	15 494	27.51
初中	15 548	27.61
高中及以上	8 383	14.88
童年时期居住地		
农业	51 465	91.37
城镇	4 859	8.63
父母受教育程度		
文盲	29 732	52.79
非文盲	26 592	47.21
家庭经济情况		
较差	21 174	37.59
一般	29 689	52.71
较好	5 461	9.70

**2.1.2 研究对象的童年逆境和社会隔离情况** 本研究中研究对象的童年逆境和社会隔离情况如表 2 所示, 未经历童年逆境、经历一种、两种或三种以上童年逆境的占比分别为 29.33%、34.12%、21.53% 和 15.02%。存在社会隔离情况的中老年人占比为 13.54%。

**2.2 不同年龄中老年人社会隔离的发生率** 运用仅具有截距项的时变效应模型估计不同年龄中老年人的社会隔离发生率, 结果如图 2 所示。随着年龄的增大, 中老年人社会隔离发生率逐渐上升。在 45 岁的中年人, 社会隔离的发生率为 4.36% (95% CI: 3.72% ~ 5.09%); 在 85 岁的老年人中, 社会隔离的发生率达到 51.3% (95% CI: 46.90% ~ 56.68%)。

表 2 研究对象的童年逆境和社会隔离情况

Table 2 Adverse childhood experiences and social isolation of the study participants

特征	总计(n)	百分比(%)
童年逆境(种)		
0	16 521	29.33
1	19 215	34.12
2	12 129	21.53
≥3	8 459	15.02
社会孤立		
否	48 696	86.46
是	7 628	13.54

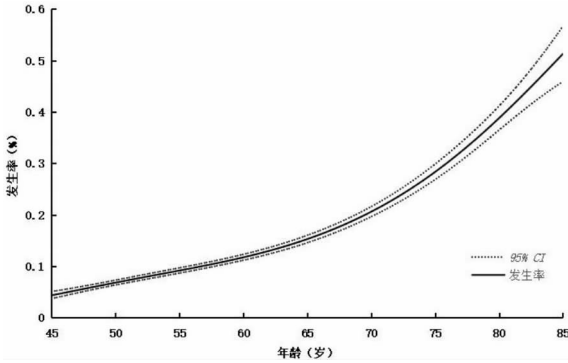


图 2 中老年人社会隔离发生率的年龄趋势

Fig. 2 Age trends in the prevalence of social isolation among middle-aged and older adults

**2.3 童年逆境与中老年人社会隔离随年龄变化的动态关联** 童年逆境与中老年人社会隔离的动态关联如图 3 所示。相较于未经历童年逆境的中老年人,经历一种童年逆境中老年人在 61 岁到 70 岁时社会隔离的风险增加,关联具有统计学意义。在 61 岁至 66 岁时,关联强度逐渐升高,在 66 岁时,二者之间关联较强( $OR = 1.22, 95\% CI: 1.06 \sim 1.41$ ),在 66 岁至 70 岁时,关联强度逐渐减弱。在 70 岁以后,二者之间的关联无统计学意义,见图 3A。相较于未经历童年逆境的中老年人,经历两种童年逆境中老年人在 50 岁到 65 岁时社会隔离的风险增高,关联具有统计学意义。在 50 岁至 56 岁时,关联强度逐渐升高,在 56 岁时,二者之间关联较强( $OR = 1.33, 95\% CI: 1.13 \sim 1.57$ ),在 56 岁至 65 岁时,关联强度逐渐减弱。在 65 岁以后,二者之间的关联无统计学意义,见图 3B。相较于未经历童年逆境的中老年人,经历三种及以上童年逆境中老年人在 45 岁到 58 岁时社会隔离的风险增高,在 45 岁时,经历三种及以上童年逆境中老年人社会隔离的风险是未经历童年逆境中老年人的 1.86 倍( $OR = 1.86, 95\% CI: 1.16 \sim 2.99$ ),此时关联最强,随后,二者之间的关联强度逐渐降低,在 58 岁以上的中老年人中,二者之间的关联无统计学意义,见图 3C。

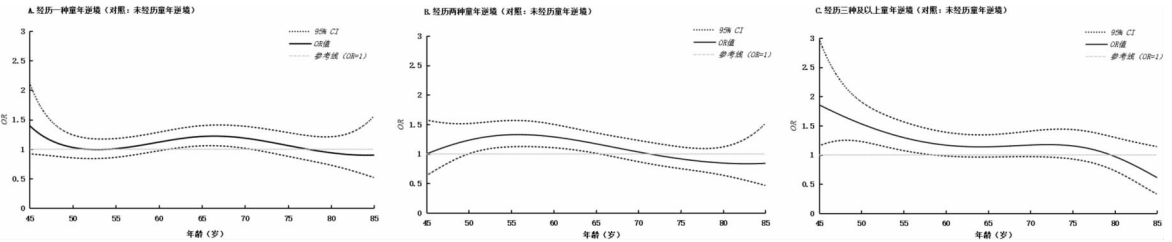


图 3 童年逆境与中老年人社会隔离随年龄变化的动态关联

Fig. 3 age-varying association between adverse childhood experiences and social isolation in middle-aged and older adults

### 3 讨论

本研究发现,我国中老年人社会隔离的发生率随年龄增加而升高,与既往研究结果一致<sup>[22,25]</sup>。Ran 等的 meta 分析显示,在 60 至 69 岁的老年人中,社会隔离发生率为 19%,在 70 至 79 岁的老年人中,社会隔离发生率为 28%,而在 80 岁及以上的老年人中,社会隔离发生率为 41%<sup>[26]</sup>。这可能是由于随着年龄的增长,中老人生理机能逐渐减退、社会角色及家庭结构等发生变化,更容易出现社会功能减退、社交活动减少等社会网络缩小的现象,从而导致社会隔离。

时变效应模型的结果显示,童年逆境与中老年人

社会隔离存在关联。Choi 等在韩国的研究发现,相比低童年逆境组,经历更多童年逆境的成年人社会隔离发生率更高<sup>[8]</sup>。Rovito 等在美国的研究也发现,相比未经历儿童时期家庭功能障碍的成年男性,经历儿童时期家庭功能障碍的成年男性发生社会隔离的风险更高<sup>[27]</sup>。此外,Kwong 和 Wang 等研究发现,经历虐待的儿童更可能拥有不良的同伴关系<sup>[28-29]</sup>。不良的同伴关系并不孤立于童年,而是青春期和成年期约会和浪漫关系的基础。因此,健康同伴关系网络的缺陷继续影响着个人未来的人际关系<sup>[30]</sup>。Ebbert 和 Umberson 等发现,童年时期的情感虐待会对成年后甚至中年时期的人际关系产生负面影响<sup>[31-32]</sup>。经历童

年逆境的人维持健康社会关系的能力降低,其影响可能持续至生命晚期,致使经历童年逆境的中老年人发生社会隔离的风险升高。

此外,本研究还发现童年逆境与中老年人社会隔离的关联存在年龄效应,经历的童年期逆境越多,发生社会隔离的风险越早。相比未经历童年逆境的中老年人,经历一种童年逆境的中老年人在 61 岁至 70 岁时发生社会隔离的风险增高;经历两种童年逆境的中老年人在 50 至 65 岁时发生社会隔离的风险增高;经历三种及以上童年逆境的中老年人在 45 岁至 58 岁时发生社会隔离的风险增高。此前还未有研究探索童年逆境与中老年人社会隔离随年龄变化的动态关联。童年逆境与诸多不良心理健康结局有关,如焦虑、抑郁等,并且,经历童年逆境的数量越多,发生精神障碍的风险越高<sup>[33]</sup>。Thompson 等的研究发现,社会隔离是心理健康状况不佳的表现之一<sup>[34]</sup>。尽管中老年人的社会隔离发生率随年龄增大而上升,由于经历更多童年逆境的中老年人往往心理健康状况更差,更难以适应由年龄的增加而带来的种种改变,因此,经历更多童年逆境的中老年人在更低龄时发生社会隔离的风险升高。

本研究仍存在一定局限性。首先,童年逆境为受访者回顾性自我报告,可能存在回忆偏倚;其次,本研究中时变效应模型的结果无法区分年龄效应、世代效应和时期效应。

综上所述,本研究发现经历童年逆境的中老年人发生社会隔离的风险增高,并且经历的童年逆境数量越多,中老年人发生社会隔离的风险升高的年龄越小。因此,建议社区工作者重点关注经历童年逆境的中老年人,定期组织各种志愿及娱乐活动,增加其社会接触。此外,对于经历童年逆境的儿童,应由相应的社会机构提供支持和保护,并进行及时干预,从而减轻童年逆境的不良影响。

**利益冲突声明** 本研究不存在任何利益冲突

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