

# Childhood Misfortune and Adult Health in a National Study: The Mediation Role of the Quality of Social Relations

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Jiyoung Lyu<sup>1</sup> and Stefan Agrigoroaei<sup>2</sup>

## Abstract

This study investigated the relationship between childhood misfortune and 10-year change in health and whether this relationship was mediated by the quality of social relations. We used data from the Midlife in the United States (MIDUS) national longitudinal study, 1995–1996 (Time 1) and 2005–2006 (Time 2). Childhood misfortune was measured at Time 1 using indicators of financial strain, family structure, and abuse. Self-rated physical and mental health indicators were obtained at both occasions. The measure of quality of social relations was based on items relative to social support and social strain from spouse, friends, and family at Time 1. Mediation models showed that a higher level of childhood misfortune was associated with low-quality family relations which in turn tend to account for change in mental health. These findings suggest that childhood misfortune is associated with the quality of social relations, which in turn explain individual changes in mental health in adulthood.

## Keywords

childhood misfortune, physical health, mental health, quality of social relations, MIDUS

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<sup>1</sup>Hallym University Institute of Aging, Chuncheon, Korea

<sup>2</sup>Psychological Sciences Research Institute, Université catholique de Louvain, Louvain-la-Neuve, Belgium

## Corresponding Author:

Jiyoung Lyu, Hallym University Institute of Aging, 1 Hallimdaehak-gil, Chuncheon 200-702, Korea.

Email: [jjyoo200@hallym.ac.kr](mailto:jjyoo200@hallym.ac.kr)

## **Introduction**

Human development is a continuous process and there is evidence that early childhood is a critical period of time with prominent long-term consequences. For example, several studies have extensively examined the role of childhood misfortune and have consistently shown that childhood misfortune is associated with worse health in adulthood (Morton, Schafer, & Ferraro, 2012; Schafer & Ferraro, 2012, 2013; Schafer, Wilkinson, & Ferraro, 2013; Umberson, Williams, Thomas, Liu, & Thomeer, 2014). This pattern of results has been obtained in studies using multiple indicators of health, such as self-rated health, morbidity, functional limitation, cancer occurrence, hypertension, and heart problems (Morton et al., 2012; Schafer & Ferraro, 2012; Schafer et al., 2013; Umberson et al., 2014).

One of the commonly used indicators of childhood misfortune is childhood socioeconomic status (SES; Cohen, Janicki-Deverts, Chen, & Matthews, 2010; Laaksonen, Rahkonen, Martikainen, & Lahelma, 2005; Luo & Waite, 2005; Osler et al., 2009). Studies showed that lower socioeconomic position in childhood was associated with poor self-rated health in later life, even while controlling for the participant's SES in adulthood (i.e., education, income) and level of health in childhood. There is also empirical evidence for the negative, long-term effects of other childhood experiences, such as physical and emotional abuse (Felitti, 2002; Greenfield, 2010; Morton et al., 2012). For instance, those who frequently experienced parental emotional and physical abuse in childhood had both mental and physical health problems in adulthood (Felitti, 2002). Growing up in a single-parent family is also associated with adult health outcomes (Hemminki & Chen, 2006; Schafer & Ferraro, 2013). Studies have shown that parental divorce during childhood was associated with poorer adult health (Miller, Chen, & Parker, 2011; Repetti, Taylor, & Seeman, 2002). The dynamic processes between childhood negative experiences such as living in a lower SES household, experiencing abuse, and living in a single-household family are often linked together as a chain of risk leading to health disparities in adulthood.

Using the life course perspective, Crosnoe and Elder (2004) suggest that there are direct and indirect pathways that account for the association between early life experiences and the outcomes measured later in life. Directly, childhood conditions can have independent relationships with adult health outcomes. Indirectly, childhood conditions can impact health via experiences during the life course. In the current study, we focus on the role of adult social experiences and more specifically on the role of quality of social relations with spouse, friends, and family for changes in health.

Evidence shows that childhood experiences are associated with the quality of social relations (Beatty, Kamarck, Matthews, & Shiffman, 2011; Bradley & Corwyn, 2002; Poulton & Caspi, 2005). Poulton and Caspi (2005) found that individuals with socioeconomic disadvantage during childhood are more likely to lack personal resources such as emotional and instrumental social support

from childhood. According to Bradley and Corwyn (2002), better-educated parents have various resources (e.g., better social connections through their occupational status, high quality of learning experiences, and living in safe neighborhoods) that can help their children to develop better social skills and to establish supportive social relations. Dodge, Pettit, and Bates (1994) suggest that socializing experience from early life can shape the social relationships later in adulthood. This is in line with the Reserve Capacity Model according to which the psychosocial resources such as social support can be transmitted from childhood to adulthood. In addition, according to recent theoretical models of childhood adversity (e.g., Miller et al., 2011), those exposed to various forms of stress and negative experiences in childhood mature into adults with “persistent difficulties forming and keeping close social ties.”

Furthermore, there is increasing evidence from empirical studies that the quality of social relations is associated with better physical and mental health outcomes (Agrigoroaei & Lachman, 2011; Hatch, 2005; Lachman & Agrigoroaei, 2010; Umberson & Montez, 2010). An individual’s social relations involve a combination of supportive and stressful experiences and high-quality relations are those in which support is relatively high and strain relatively low. Social support is associated with health, in that those who are socially embedded and experience positive relationships are better off than those who are isolated or involved in strained or stressful relationships (Cohen, 2004; Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015; House, Landis, & Umberson, 1988). Although limited, some research has also examined family, friends, and partner as separate sources of relationships in association with broader health outcomes and well-being with stronger results obtained for the social relations with the partner (e.g., Venkatraman, 1995; Walen & Lachman, 2000).

To summarize, previous studies empirically support the associations (a) between the negative childhood experiences and the quality of social relations in adulthood, (b) between the measures of quality of social relations and health taken in adulthood, and (c) between the negative childhood experiences and health in later life. Together, these results suggest that social relations could represent a mechanism accounting for the association between negative childhood experiences and worsening of health in adulthood. To the best of our knowledge, one recent study (Umberson, Williams, Thomas, Liu, & Thomeer, 2014) explored the mediational role of the quality of social relations in a national representative sample and showed that the level of relationship strain mediated the effect of childhood adversity on adult physical health. Other studies (e.g., Vonneilich et al., 2012) have also examined the mediational role of social relations, but with a focus on the effects of adulthood SES rather than childhood SES.

From a methodological point of view, our approach presents all the assets of the prior work and extends the previous studies in multiple ways. As in the recent studies (e.g., Vonneilich et al., 2012), we analyzed data from a national

longitudinal sample aged 24 and over and we used a lifespan perspective to look at long-term changes in adult health. Moreover, in line with recent frameworks (e.g., Schafer and Ferraro, 2013), our operationalization of negative childhood experiences (i.e., childhood misfortune) was based not only on the level of childhood SES (e.g., parental education, financial status growing up), but also captured negative aspects related to family structure (e.g., parental divorce and death) and frequency of abuse (e.g., physical and emotional abuse by father, mother, etc.). In addition, we also made the distinction between the different types of social relations (i.e., with spouse, family, and friends) and examined them as separate potential mediators. Compared with previous work, a unique feature of our study was that we tested our research questions while focusing on both physical and mental health outcomes. In our study, we decided to use self-reported measures of health, given that, from a lifespan perspective, subjective health has the potential of capturing even the undiagnosed and subclinical health problems and can reflect family history and health trajectories rather than the current level of health (Idler & Benyamini, 1997). Importantly, we also examined the long-term consequences of childhood misfortune and the mediational role of social relations while controlling for relevant sources of variance such as age, gender, race, marital and work status, childhood health, adulthood SES, smoking, alcohol consumption, physical exercise, and indicators of obesity.

In line with previous research, we were expecting higher levels of childhood misfortune to be significantly associated with lower levels of health at Time 2 compared with Time 1, over and above the role of sociodemographic and relevant health-related variables. Also, we hypothesized that the quality of social relations will mediate the relationship between childhood misfortune and 10-year change in adult health.

## **Methods**

### *Participants*

We used data from the Midlife in the United States (MIDUS) national longitudinal survey, which was conducted in 1995–1996 (Time 1) and 2005–2006 (Time 2, Brim et al., 2011). MIDUS includes measures of behavioral, social, and psychological factors in order to understand health and well-being as people age from early adulthood into midlife and old age. At Time 1, MIDUS included 7,100 noninstitutionalized, English-speaking adults in the United States, aged 25 to 74 ( $M = 46.40$ ,  $SD = 13.00$ ). Participants were selected by random digit dialing from 48 contiguous states ( $N = 4,238$ ). The sample also included siblings ( $N = 949$ ) and twins ( $N = 1,913$ ) of the main respondents. At Time 2, the longitudinal retention rate, adjusted for mortality, was 75% ( $N = 4,955$ ). In the current study, we used only the longitudinal participants who completed

all measures of interest ( $N=3,366$ ). Compared with those with missing variables ( $N=1,589$ ), participants with complete data had better physical (incomplete data,  $M=3.43$  vs. complete data,  $M=3.59$ ) and mental health (incomplete data,  $M=3.71$  vs. complete data,  $M=3.86$ ), had higher levels of childhood misfortune (incomplete data,  $M=1.32$  vs. complete data,  $M=1.40$ ), were more likely to be married (incomplete data,  $M=41.5\%$  vs. complete data,  $M=92.5\%$ ), and were less likely to be current smokers (incomplete data,  $M=27.7\%$  vs. complete data,  $M=17.7\%$ ). The two samples did not differ in terms of age, sex, and educational attainment.

## Measures

**Health.** Two health measures were taken at both Time 1 and Time 2. Respondents rated their physical and mental health, separately, on a scale from 1 (*poor*) to 5 (*excellent*).

**Childhood misfortune.** At Time 1, the participants retrospectively reported their childhood experiences. As suggested by Schafer and Ferraro (2013), we used 14 categorical indicators of childhood misfortune: (a) receipt of welfare (1 = *ever on welfare*, 0 = *never on welfare*), (b) parental education (1 = *less than a high school education for father (or mother, in households where father was not present)*, 0 = *otherwise*), (c) financial status growing up (1 = *worse off than others*, 0 = *otherwise*), (d) male head of household (1 = *no male in the household*, 0 = *otherwise*), (e) parental divorce (1 = *yes*, 0 = *no*), (f) death of a parent (1 = *yes*, 0 = *no*), (g)–(j) physical abuse by father, mother, siblings, and others (1 = *often/sometimes*, 0 = *otherwise*), and (k)–(n) emotional abuse by father, mother, siblings, and others (1 = *often/sometimes*, 0 = *otherwise*). For physical abuse, respondents were asked: “During your childhood, how often did your father/mother/siblings/others do any of the things to you (pushed, grabbed, or shoved you; slapped you; threw something at you)?” For emotional abuse, respondents were asked: “During your childhood, how often did your father/mother/siblings/others do any of the things to you (insulted you or swore at you; sulked or refused to talk to you; stomped out of the room; did or said something to spite you; threatened to hit you; smashed or kicked something in anger)?”

These 14 childhood misfortune indicators correspond to three conceptual domains: financial strain (receipt of welfare, parental education, and financial status growing up), family structure (male head of household, parental divorce, and death of parent), and abuse (physical and emotional abuse by father, mother, siblings, and other). For each domain, as in previous studies (Morton et al., 2012), having one or more of childhood misfortune indicators was coded as 1. Then, an overall childhood misfortune composite was created by summing the three domains. The final score ranged from 0 to 3, with higher scores indicating higher levels of misfortune in childhood.

**Quality of social relations.** At Time 1, separate measures were obtained for the three types of social relations (i.e., with spouse, friends, and family). Each measure was based on the average of eight items (Cronbach's alphas: social relations with spouse = .88, social relations with family = .82, social relations with friends = .78). Four items captured the level of social support (e.g., How much do members of your family really care about you?). The other four (reverse coded) items measured the level of social strain (e.g., How often do members of your family make too many demands on you?; Walen & Lachman, 2000). The values ranged from 1 (*never*) to 4 (*often*), with a higher value indicating a better quality of social relations.

**Sociodemographics.** Sociodemographic variables included age (in years), gender (1 = *female*, 0 = *male*), race (1 = *White*, 0 = *all others*), and marital status (1 = *married*, 0 = *all others*) at Time 1.

**Adult SES.** Five SES indicators were used to generate adult SES score at Time 1: (a) education level, (b) family-size adjusted income to poverty ratio, (c) current financial situation, (d) availability of money to meet basic needs, and (e) difficulty level of paying bills (Gruenewald et al., 2012). Education level was categorized as (2 = *high school/GED or less*, 1 = *some college/associate arts degree*, 0 = *bachelor's degree or higher*), family size-adjusted income to poverty ratio was categorized as (2 = *less than 300%*, 1 = *300–599%*, 0 = *600% or more*), current financial situation was categorized as (2 = *worst possible*, 1 = *average*, 0 = *best possible*), availability of money to meet basic needs was categorized as (2 = *not enough*, 1 = *just enough*, 0 = *more than enough*), and difficulty level of paying bills was categorized as (2 = *very or somewhat difficult*, 1 = *not very difficult*, 0 = *not at all difficult*). After each SES indicator was measured, the adult SES score was created by summing the scores from the above five indicators. The score ranged from 0 to 10, with higher scores indicating higher socioeconomic disadvantage in adulthood.

**Working status.** At Time 1, participants were asked whether they were working (1 = *currently working*, 0 = *currently not working*).

**Childhood health.** At Time 1, participants were asked to rate their physical and mental health at age 16 using two separate items and a scale ranging from 1 (*poor*) to 5 (*excellent*).

**Parental affection in childhood.** At Time 1, participants were asked to rate their overall relationship with each parent separately. Each measure was based on the average of seven items (Cronbach's alphas: maternal affection = .90, paternal affection = .92). Then, a parental affection measure was computed by averaging the maternal and paternal affection. Higher values indicate greater levels of parental affection.

*Smoking.* Participants were asked if they were currently smoking cigarettes regularly at Time 1 (1 = *yes*, 0 = *no*).

*Alcohol and drug problems.* At Time 1, participants reported if they have experienced or have been treated for alcohol or drug problems during the past 12 months (1 = *yes*, 0 = *no*).

*Physical exercise.* Participants reported the frequency of engagement in vigorous physical activities (e.g., running or lifting heavy objects) during the summer and the winter months at Time 1 (Cotter & Lachman, 2010). The ratings ranged from 1 (*never*) to 6 (*several times a week*). We computed the mean of the summer and winter ratings and used this value as the final physical exercise score. Higher values indicate more frequent physical exercise.

*Body mass index.* At Time 1, body mass index (BMI) was measured for each participant.

### Data Analysis

We examined the association between childhood misfortune measured retrospectively at Time 1 and change in health between Time 1 and Time 2, as well as the mediational role of Time 1 quality of social relations (with spouse, friends, and family) using the SPSS PROCESS macro (Hayes, 2013). Our statistical models focused on residual change in health, using the Time 2 measure as an outcome while controlling for the baseline level (Time 1). The multiple mediation macro tests the significance of the association between childhood misfortune and the quality of social relations (Paths a1, a2, and a3), between the quality of social relations and health change (Paths b1, b2, and b3), and between childhood misfortune and health change (Paths c and c'). The difference between Path c (total effect) and Path c' (direct effect) is that c' is estimated while adjusting for the multiple mediator variables, which in this context is the quality of social relations with spouse, friends, and family. The indirect effects of childhood misfortune on health through the quality of social relations (e.g., Path a1  $\times$  Path b1) were estimated using a bootstrapping approach ( $N = 5,000$ ) and the 95% confidence intervals (CIs). We also contrasted the indirect effects in order to examine whether they differ in size. A CI not including zero indicates a significant effect. Two multiple mediational models were conducted, one for each dependent variable (i.e., Time 2 physical health and Time 2 mental health), while controlling for health at Time 1, age, gender, race, marital status, adult SES, working status, parental affection in childhood, childhood health, smoking status, alcohol and drug problems, physical exercise, and BMI.

Our sample included siblings of the main respondents ( $N = 848$ ) and a subsample of twins ( $N = 1,707$ ). To deal with the non-independence of observations,

we also conducted hierarchical logistic regression models using the cluster option in Stata (StataCorp, 2009). This option uses robust standard errors and takes dependencies into account by clustering at the family level. The first regression model included the baseline measure of health (Time 1) and our key predictor, the childhood misfortune composite. Model 2 includes Model 1 and the sociodemographic covariates (i.e., age, sex, race, marital status, adult SES, and working status, parental affection in childhood). The health-related variables (i.e., childhood health, smoking, alcohol, physical exercise, and BMI) were included in Model 3. Finally, the Model 4 included the Model 3 and the three mediators (i.e., quality of social relations with spouse, friends, and family).

## Results

### *Descriptive Statistics*

Table 1 presents the descriptive statistics of the study variables. The means of the health scores at Time 1 and Time 2 were 3.67 ( $SD = .92$ ) and 3.59 ( $SD = .99$ ) for physical health and 3.91 ( $SD = .90$ ) and 3.86 ( $SD = .90$ ) for mental health. The mean of the childhood misfortune scores was 1.40 ( $SD = .84$ ), and the mean of the quality of social relations at Time 1 was 3.21 ( $SD = .53$ ) for spouse, 3.17 ( $SD = .43$ ) for friends, and 3.20 ( $SD = .48$ ) for family.

### *Effects of Childhood Misfortune on Health Change Through the Quality of Social Relations*

The total effect of childhood misfortune on each health outcome is shown by the Path c in Figures 1 and 2. As expected, while controlling for health at Time 1, age, gender, race, marital status, adult SES, working status, parental affection in childhood, childhood health, smoking, alcohol and drug problems, physical exercise, and BMI, a significant total effect was obtained for both physical health ( $b = -.052$ ,  $SE = .018$ ,  $p = .003$ ) and mental health ( $b = -.039$ ,  $SE = .018$ ,  $p = .028$ ). Over and above the Time 1 health level, those with a higher level of childhood misfortune showed lower levels of health at Time 2.

Figure 1 and 2 also present the multiple mediation models linking childhood misfortune to each health outcome, with the three indicators of quality of social relations as mechanisms. In both models, while controlling for the covariates, childhood misfortune was significantly associated with social relations with family only. The higher the levels of childhood misfortune, the worse the social relationships with family in adulthood. The results also revealed a significant direct effect (Path c') of childhood misfortune on physical health ( $b = -.050$ ,  $SE = .018$ ,  $p = .005$ ; Figure 1) and mental health ( $b = -.035$ ,  $SE = .018$ ,  $p = .048$ ; Figure 2).

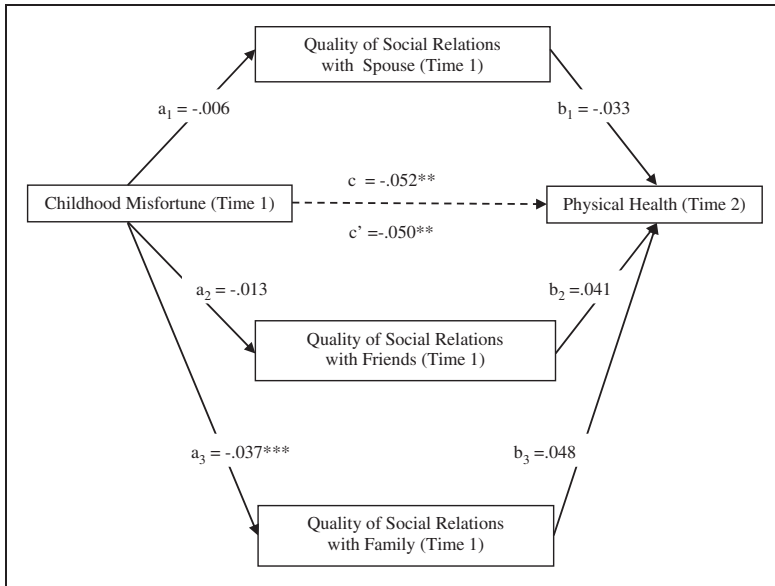


**Table 1.** Descriptive Statistics for the Study Variables ( $N = 3,366$ ).

	Mean (%)	SD
Dependent variables		
Physical health at Time 2 (Range: 1–5)	3.59	0.99
Mental health at Time 2 (Range: 1–5)	3.86	0.90
Independent variable		
Childhood misfortune (Range: 0–3)	1.40	0.84
Mediators		
Quality of social relations with spouse (Range: 1–4)	3.21	0.53
Quality of social relations with friends (Range: 1–4)	3.17	0.43
Quality of social relations with family (Range: 1–4)	3.20	0.48
Control variables		
Parental affection in childhood (Range: 0.96–3.96)	2.97	0.62
Age (Range Time 1: 24–74)	46.46	12.18
Female	50.4%	
White	94.2%	
Married	92.5%	
Adult socioeconomic status (Range: 0–10)	4.13	2.46
Work now	63.9%	
Childhood physical health (Range: 1–5)	4.44	0.81
Childhood mental health (Range: 1–5)	4.17	0.97
Smoking	17.7%	
Alcohol	1.6%	
Physical exercise (Range: 1–6)	4.29	1.64
Body mass index (Range: 9.44–61.08)	26.61	4.97
Physical health at Time 1	3.67	0.92
Mental health at Time 1	3.91	0.90

Table 2 includes the bootstrapped estimates and CIs for the indirect effects of quality of social relations with spouse, friends, and family, and their contrasts. The total indirect effect was significant (the CIs did not include zero) only for mental health, indicating that the association between childhood misfortune and mental health was significantly accounted for by quality of social relations. When examining the specific role of quality of social relations by sources, the significant mediator was the quality of social relations with family. Pairwise contrasts of the indirect effects showed that the size of the three indirect effects was not statistically different from each other.

The information about the mediational role of the quality of social relations is also presented in Tables 3 and 4, with the exception that these results were



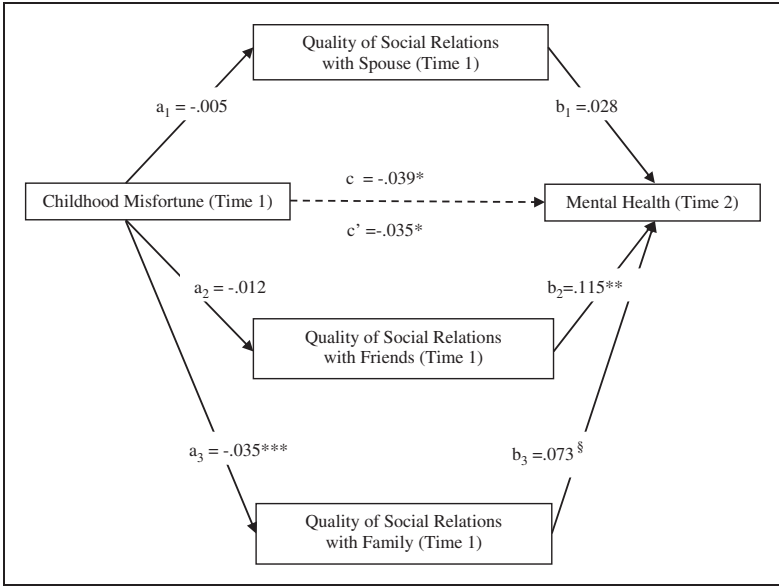
**Figure 1.** The multiple mediation model of childhood misfortune and change in physical health, adjusted for Time 1 indicators of age, gender, race, marital status, adult SES, working status, parental affection in childhood, childhood physical health, smoking, alcohol and drug problems, physical exercise, and BMI. Unstandardized coefficients from a bootstrap procedure are presented ( $N = 3,366$ ).

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ .

obtained using robust standard errors in Stata. This approach did not change the pattern of results, but showed how much unique variance in change in adult health was accounted for by childhood misfortune and adult social relationships while controlling for multiple confounders. The comparison of fit statistics (Adjusted *R*-square) in Models 3 and 4 allow determining, for each outcome (i.e., physical and mental health), the amount of variance accounted for by the mediators. Based on our results, the unique portion of variance explained by adult social relationships was larger in mental health (.6%) compared with its contribution to the physical health (.1%). For both adult health outcomes, the association between childhood misfortune and change in adult health was largely explained by factors entered into the model before Model 4, namely adult SES and physical activity.

## Discussion

The goal of the current study was to examine the association between childhood misfortune and change in health, measured later in adulthood, and the



**Figure 2.** The mediation model of childhood misfortune and change in mental health, adjusted for Time I indicators of age, gender, race, marital status, adult SES, working status, parental affection in childhood, childhood mental health, smoking, alcohol and drug problems, physical exercise, and BMI. Unstandardized coefficients from a bootstrap procedure are presented ( $N = 3,366$ ).

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ , § $p = .052$ .

mediational role of the quality of social relations with spouse, friends, and family. As a unique feature of our approach, we used data from the two occasions of a national longitudinal study (MIDUS) to predict 10-year change in both mental and physical health. As expected, higher childhood misfortune was significantly related to worsening of adulthood health over time. This pattern was obtained for physical health and remained significant after controlling for, age, gender, race, adult SES, working status, parental affection in childhood, childhood health status, smoking, alcohol and drug problems, physical exercise, and BMI. Importantly, the significant association between childhood misfortune and physical health was obtained over and above the participant's SES at adulthood. In other words, our study showed that irrespective of possible patterns of social mobility, measured by adulthood SES, one's early childhood conditions and experiences impact his or her future physical health.

In addition, in line with the previous study carried out by Umberson et al. (2014), the association between childhood misfortune and adulthood health was mediated by the quality of social relations. However, one feature of our study was making the distinction between the types of social relations.

**Table 2.** Indirect Effects of Childhood Misfortune on Change in Physical and Mental Health ( $N = 3,366$ ).

	Bootstrap estimate	SE	95% BC CI
<i>Physical health</i>			
Total effect	-.0520	.0178	[-.0869, -.0172]
Direct effect	-.0500	.0178	[-.0850, -.0150]
Indirect effects			
Total	-.0021	.0015	[-.0058, .0005]
Quality of social relations with spouse	.0002	.0006	[-.0004, .0021]
Quality of social relations with friends	-.0005	.0007	[-.0027, .0003]
Quality of social relations with family	-.0018	.0014	[-.0052, .0007]
Contrasts			
Spouse vs. Friends	.0007	.0009	[-.0006, .0033]
Spouse vs. Family	.0020	.0016	[-.0006, .0059]
Friends vs. Family	.0012	.0017	[-.0020, .0048]
<i>Mental health</i>			
Total effect	-.0390	.0177	[-.0738, -.0043]
Direct effect	-.0350	.0177	[-.0697, -.0002]
Indirect effects			
Total	-.0040	.0020	[-.0085, -.0003]
Quality of social relations with spouse	-.0001	.0005	[-.0020, .0005]
Quality of social relations with friends	-.0013	.0012	[-.0045, .0005]
Quality of social relations with family	-.0026	.0015	[-.0063, -.0003]
Contrasts			
Spouse vs. Friends	.0012	.0013	[-.0009, .0043]
Spouse vs. Family	.0024	.0016	[-.0002, .0062]
Friends vs. Family	.0012	.0019	[-.0026, .0050]

Note: Based on 5,000 bootstrap samples; BC CI = bias-corrected confidence interval.

Specifically, while controlling for sociodemographic variables and health-related risk factors, higher childhood misfortune was associated with poor quality of social relations with family that in turn tended to negatively impact mental health. The two other indirect effects (via social relations with friends and spouse) were not significant, confirming that making the distinction between the multiple types of social relations is meaningful and theoretically useful. For example, previous studies (Walen & Lachman, 2000) showed that compared with other types of social relations (family and friends), the relations with the partner was a better predictor of chronic problems. In the current study, when

**Table 3.** Hierarchical Regression Models With Physical Health as an Outcome ( $N = 3,366$ ).

Variables	Model 1		Model 2		Model 3		Model 4	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Childhood misfortune	-.106***	.017	-.066***	.018	-.052**	.018	-.050**	.018
Physical health at Time 1	.553***	.017	.498***	.017	.458***	.018	.455***	.018
Age			-.011***	.001	-.010***	.001	-.011***	.001
Female			.052	.028	.034	.030	.021	.030
White			.086	.058	.076	.058	.074	.058
Married			.010	.057	-.001	.058	.001	.058
Adult SES			-.058***	.006	-.049***	.006	-.049***	.006
Work now			.013	.032	.030	.032	.029	.032
Parental affection in childhood			.049	.025	.051*	.025	.039	.026
Childhood physical health					.000	.018	-.002	.018
Smoking					-.209***	.041	-.209***	.041
Alcohol					-.013	.116	-.009	.117
Physical exercise					.018	.010	.019	.010
Body mass index					-.020***	.003	-.019***	.003
Quality of social relations with spouse							-.033	.030
Quality of social relations with friends							.041	.038
Quality of social relations with family							.048	.037
Adjusted <i>R</i> -square	0.284		0.317		0.331		0.332	

\*\*\* $p < .001$ . \*\* $p < .01$ . \* $p < .05$ .

we examined the possible consequences of childhood misfortune on social relations in the adulthood, the results indicated that childhood experiences were associated only with the quality of social relations with family. Notably, these results were obtained over and above the role of parental affection in childhood, a proxy of the quality of the children–parents relations. With respect to the association between social relations and health, our results indicate the role of the quality of social relations with friends and family (in the specific case of mental health). Even though in previous work the quality of social relations with the spouse accounted for physical health and well-being, in our study, while

**Table 4.** Hierarchical Regression Models With Mental Health as an Outcome ( $N = 3,366$ ).

Variables	Model 1		Model 2		Model 3		Model 4	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Childhood misfortune	-.090***	.017	-.045*	.018	-.039*	.018	-.035*	.018
Mental health at Time 1	.407***	.017	.359***	.018	.322***	.018	.308***	.019
Age			-.003*	.001	-.004**	.001	-.004**	.001
Female			-.035	.028	-.020	.030	-.040	.031
White			-.007	.065	-.014	.066	-.023	.066
Married			-.027	.055	-.060	.055	-.063	.055
Adult SES			-.049***	.006	-.044***	.006	-.041***	.006
Work now			.016	.032	.021	.032	.025	.032
Parental affection in childhood			.115***	.025	.084**	.025	.049	.027
Childhood mental health					.086***	.017	.085***	.017
Smoking					-.088*	.039	-.092*	.039
Alcohol					-.080	.109	-.052	.109
Physical exercise					.027**	.010	.026**	.009
Body mass index					-.004	.003	-.002	.003
Quality of social relations with spouse							.028	.031
Quality of social relations with friends							.115**	.040
Quality of social relations with family							.073 <sup>§</sup>	.037
Adjusted R-square	0.179		0.202		0.213		0.219	

\*\*\* $p < .001$ . \*\* $p < .01$ . \* $p < .05$ . <sup>§</sup> $p = .051$ .

controlling for multiple covariates, this type of social relations was not related to any of our subjective health measures.

Our findings, obtained using national data, have theoretical and practical implications. They confirm the idea that childhood represents a vulnerable period of time that influences future health. First, our results showed that the quality of social relations with family is negatively associated with the level of childhood misfortune. Second, the quality of social relations with family represents one of the mechanisms of the association between childhood misfortune

and changes in mental health during adulthood. Thus, consistent with a life course perspective, the current study shows that factors characterizing one's childhood are associated with adulthood social experiences which in turn impact later health.

Our results suggest that programs aimed to optimizing mental health in adulthood, especially for those with lower childhood conditions, should be especially focused on the quality of social relations with family. Previous studies have shown that the quality of social relations is modifiable through interventions (Berkman et al., 2003). Thus, programs focused on maintaining good quality of social relations during adulthood could have positive consequences in terms of health in later life.

The findings of this study should be considered in light of some limitations. As in other studies focused on early influences on adult development, the childhood misfortune indicators were obtained retrospectively, using self-reports. Therefore, the accuracy of information about childhood conditions might be in question. In addition, in the MIDUS sample, we observe significant correlations between Time 1 and Time 2 health measures: physical health,  $r(3,364) = .53, p < .001$ , and mental health,  $r(3,364) = .43, p < .001$ . This pattern of results suggests that there are relatively small residual changes in health and can partially explain the small amount of variance accounted for by our indirect effects.

Despite these limitations, our study not only contributes to the existing literature by expanding the understanding of the relationship between childhood misfortune and 10-year change in mental health later in adulthood, but also leads to new empirical questions. Some adults may be resilient to the effects of negative childhood experiences and maintain high quality of social relations and good levels of mental health. In the future, researchers could build on this study by focusing on the personal and situational factors that could foster resilience (e.g., personal beliefs, coping skills, residential environment, etc.) and that might moderate the association between childhood misfortune and the quality of social relations with friends and family or the association between negative childhood experiences and adult health.

### **Author Contributions**

J. L. planned the study, performed all statistical analyses, and wrote the paper. S. A. helped to plan the study, helped in interpreting data, and revised the manuscript.

### **Declaration of Conflicting Interests**

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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### Author Biographies

**Jiyoung Lyu** is an assistant professor in Hallym University Institute of Aging. Her primary interests include the biopsychosocial factors that contribute to health outcomes among older adults. She is also interested in conducting cross-national comparison studies.

**Stefan Agrigoroaei** is an assistant professor in psychology and aging at the Université catholique de Louvain, Belgium. His research program is in the area of health and human development and aging. He approaches his research with an interdisciplinary and lifespan perspective. His projects focus on the contribution of psychosocial, behavioral, and physiological factors for optimizing and maintaining good cognitive and physical health, and reducing health disparities as people age.