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Short Communication

Cross-Temporal Patterns of Care Provision by Older Adults during COVID-19 Pandemic: Lessons for Resilience

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Abstract

The current study aimed to examine the link between cross-temporal patterns of care provision and loneliness in older adults. Social capital and caregiver stress perspectives served as a theoretical framework for the study. The data were obtained from the two COVID-19 waves of the Survey of Health, Ageing, and Retirement in Europe (SHARE) conducted in 2020 and 2021. The data were analyzed using logistic regression models. The analytical sample consisted of 48,722 older adults residing in Europe and Israel. The analysis results show that both starting and continuing to provide instrumental care between the survey waves negatively related to loneliness. In contrast, all cross-temporal patterns of personal care (starting, ceasing, and resuming) were positively associated with loneliness. The results suggest that cross-temporal patterns of care provision correspond differently to loneliness while supporting both theoretical perspectives. The results also suggest that the studied link exhibits different directions depending on the type of care provided.

Keywords
Instrumental care; loneliness; longitudinal; older adults; personal care

1. Introduction

COVID-19 has created a major crisis in the public and mental health spheres [1], causing restrictions on public movement and decreased economic and educational activities, negatively affecting people's wellbeing [2]. In general, this period has required many populations to be resilient, although some populations, like members of ethnic minorities, were less resilient than others [3].

Although older adults are frequently seen as recipients of care [4], many people from this age category provide various types of care to others from their social networks. They tend to do this also during major health crises, like COVID-19 [5-7]. Older adults constitute a risk group in the current pandemic [8] demonstrating disproportionally high levels of morbidity and mortality following the infection with the virus (for example, see [9]). Moreover, many reported loneliness and mental health impairments during the pandemic [10]. All this stems, *among other things*, from the maintenance of physical distance from others which was highly advised to older adults during the pandemic [11].

Provision of care by older adults in this period can therefore be seen as a part of the proactive coping with the pandemic further contributing to their resilience [12]. Generally, older adults bounce back relatively quickly following major world crises [13]. This is mainly because their life experience gives them to have more developed coping skills and emotional regulation than younger people [12]. Social support, information dissemination, and cultural norms contribute to older adults' resiliency [14]. The role of the care provision during major crises on this resiliency remains underresearched. The current study will fill this gap.

COVID-19-related restrictions, like shelter-in-place orders [15], seem to impact older care providers' wellbeing and quality of life. A Finnish study conducted at the beginning of the pandemic among older family caregivers found that a notable share of them reported an increase in loneliness since the pandemic outbreak. Moreover, negative associations were found between loneliness, physical health, and social relationships [16]. COVID-19-related restrictions could also impact older adults' care provision indicators. A Finnish study showed that older family caregivers wanted to have days off from caregiving [16].

The impact of COVID-19 on care provision patterns may not be standalone but also have further influences like changes in the frequency of experiencing loneliness [15]. Two theoretical frameworks can explain the association between cross-temporal care provision patterns and loneliness. According to the *social capital perspective*, social networks possess resources. When people engage in relationships within their social networks, they can access these resources and benefit from this access [17]. From the psychological aspects, these benefits may include a reduction of stress, an increase in self-esteem, and more, ultimately contributing to greater subjective wellbeing [18]. Consequently, engagement in the instrumental or personal care provision, be it by starting it or resuming it over time, can be viewed in this perspective as an emotionally beneficial activity (expressed, in the current study's case, in decreased levels of loneliness). In contrast, according to the *caregiver stress model* [19], providing care is a time-consuming activity that reduces the amount

of time dedicated to other activities, some of which may benefit older adults more than any care provision. In addition, caregivers may experience detachment from the broader society, perceive their social contacts as restricted, and experience deterioration of cognitive functioning associated with a possible shortage of sleep hours [20]. Indeed, a recent systematic review conducted by [20] indicated that most of the reviewed studies (some of which were longitudinal) found a positive relationship between caregiving and loneliness. We argue that this can also apply to those who started providing personal care during the pandemic and those who kept providing it through COVID-19.

While the associations between care provision and loneliness are relatively well-understood, less is known about what happens when the care provision patterns change or remain the same across time during a major health crisis. Therefore, the study aims to assess the relationship between cross-temporal patterns of care provision (meaning stability or changes in these patterns) and loneliness during COVID-19.

Numerous studies examined the factors associated with loneliness in older adults during COVID-19 [10, 15, 21, 22]. However, the only studies that assessed associations between changes in care and loneliness [23-25] investigated this relationship in the general population, in the pre-pandemic era, and concerning *personal* care only, leaving the role of *instrumental* care provision, including that performed by older adults, underresearched. Moreover, the COVID-19 pandemic, mostly in the pre-vaccination period but also during its initial stages, has been characterized by various public restrictive measures such as curfews, home quarantine, social distancing policies, isolation of the infected people [26] and even lockdowns [27]. These facts could have placed difficulties in care provision during most of 2020. However, the situation with care provision could have changed in 2021 as the immunization campaigns proceeded relatively fast, with large shares of the population in many countries being vaccinated at least once [28], diminishing the need for social distancing and isolation practices. Nevertheless, the impact of the cross-temporal patterns of care provision on loneliness in light of the abovementioned differences between the pandemic stages is yet to be understood. Therefore, the following research question is proposed: How do the cross-temporal patterns of (instrumental and personal) care provision relate to loneliness in later life during the COVID-19 pandemic?

2. Materials and Methods

2.1 Data and Sample

The data for the current study were obtained from the two databases each referring to a separate wave of the COVID-19 survey collected in the Survey of Health, Aging and Retirement in Europe (SHARE) framework. SHARE is a cross-national panel survey that collects data from people aged 50 and older and their partners aging in the community [29]. SHARE is a longitudinal multi-disciplinary project [5] held on a bi-annual basis [30] asking its participants about various aspects of life: economics, health, social networks and more [5]. The data collected in the SHARE framework is nationally representative of the mentioned age bracket [30], and the selection probability for each respondent is known [5].

The data during COVID-19 were collected from participants in 26 European countries and Israel using computer-assisted telephone interviews between June and August 2020 for the first wave of

the survey (from now on: SCS1) [31] and between June and July/August 2021 using the same method and from (mostly) the same participants for its second wave (from now on: SCS2) [32].

The study sample included older adults who reported any frequency of feeling lonely in SCS2. The initial sample of respondents to both SCS (N = 49,253) was further restricted to adults aged 50 years or older, removing the entries of 184 participants' spouses younger than 50. Of the remainder, 347 respondents had missing values on the loneliness item in SCS2. After eliminating their entries, the final sample size was defined (N = 48,722). The study can be defined as prospective as it refers to cross-temporal phenomena.

2.2 Measures

2.2.1 Dependent Variable

Loneliness. The original three-category item ("How much of the time do you feel lonely? Often, some of the time, or hardly ever or never?") was dichotomized. Respondents who felt lonely often or some of the time as the study ('feeling lonely') category, and respondents who hardly ever or never felt lonely as the reference ('not feeling lonely') category [33].

2.2.2 Independent Variable

Cross-temporal patterns of care provision. This variable was built in several stages. At the first stage, for each type of care, a general variable was computed based on the dichotomous variables asking whether instrumental/personal care was provided or not[1]. At the second stage, for each of the two types of care, three dummy variables were created: *(a) starting providing instrumental/personal care between the survey waves*, *(b) ceasing providing instrumental/personal care between the survey waves,* and *(c) carrying on providing instrumental/personal care between the survey waves*. Therefore, those who carried on not providing instrumental/personal care between the survey waves represented the reference category in the multivariable analysis.

2.2.3 Covariates

Gender (0 = Women, 1 = Men); *age* (in years); *education level* ((high level (ISCED 5 and 6), middle level (ISCED 3, and 4), and low level (ISCED 0, 1, and 2) = reference) [33]; *living with a partner* (0 = No; 1 = Yes); *self-rated health* (from 1 = Poor, to 5 = Excellent); *feeling recently sad/depressed* (0 = No, 1 = Yes), *stringency* [34] (0 = Low, 1 = High)[2], and *loneliness at SCS1* (0 = Not lonely, 1 = Lonely).

2.3 Data Analysis

Sample statistics are presented using percentages (for categorical variables) and means and standard deviations (for continuous variables). At the multivariate level, logistic regression analysis

[1] Since in contrast to SCS1, in the SCS2 there were no binary items asking about provision of instrumental/personal care, such variables were created based on the information from the items assessing provision of care to four categories of people: children, parents, other relatives, and non-kin.

[2] In the beginning, two variables were created reflecting the value of the index for the beginning and the end dates of data collection in each country. Then, a variable was created by taking the mean of the values in these two variables. Similar to (26), the variable was further dichotomized using the median value (which, in the current case, was 21.3). Hence, countries with this score or lower represented the reference ("low stringency") category.

was used to estimate the likelihood of feeling lonely in SCS2. The examined model was significant. The variance inflation factor values were below two, suggesting that multicollinearity was not the issue in the analyses. All the analyses were performed in SPSS 23. The level of significance was set at 0.05. Missing cases were handled by listwise deletion.

2.4 Ethics Statement

Since SHARE Wave 4 including the SHARE Corona Surveys the project is reviewed and approved by the Ethics Council of the Max Planck Society (https://share-eric.eu/). The permission to access the data was received on December 1, 2022. The request form for access permission was signed and sent to the Israeli SHARE coordinator who approved it upon getting the email.

3. Results

3.1 Descriptive Statistics

The statistics on the study variables are summarized in Table 1.

Table 1 Sample statistics.

	N *n*	*% or M*	*SD*
Study measures			
Felt lonely on SCS2	48,722		
Yes	*14,806*	*30.4*	
No	*33,916*	*69.6*	
Cross-temporal instrumental care provision patterns	47,759		
Started providing instrumental care	*7,489*	*15.7*	
Ceased providing instrumental care	*3,095*	*6.5*	
Kept on providing instrumental care	*4,417*	*9.2*	
Kept on not providing instrumental care	*32,758*	*68.6*	
Cross-temporal personal care provision patterns	47,780		
Started providing personal care	*2,986*	*6.2*	
Ceased providing personal care	*955*	*2.0*	
Kept on providing personal care	*682*	*1.4*	
Kept on not providing personal care	*43,157*	*90.3*	
Demographic, economic and health background			
Gender	48,722		
Men	*20,377*	*41.8*	
Women	*28,345*	*58.2*	
Age *(50-100)*	48,722	*71.2*	*8.96*
Level of education	47,677		
Primary/elementary	*15,936*	*33.4*	
Secondary/postsecondary	*20,561*	*43.1*	
Tertiary	*11,180*	*23.5*	

Living with partner	48,722		
Yes	*33,722*	*69.2*	
No	*15,000*	*30.8*	
Self-rated health *(1-5)*	48,702	*2.7*	*0.98*
Was sad/depressed last month	48,601		
Yes	*14,340*	*29.5*	
No	*34,261*	*70.5*	
Stringency	48,722		
High	*21,659*	*44.5*	
Low	*27,063*	*55.5*	
Felt lonely on SCS1	47,711		
Yes	*13,205*	*27.7*	
No	*34,506*	*72.3*	

Note. M = Mean, N = Total number of observations in each variable, n = number of observations in each category of each variable, SCS = SHARE COVID-19 Survey, SD = Standard Deviation.

The sample was mostly female (58.2%), with an average age of 71.2 years (*SD* = 8.96). Most of the respondents had either primary (33.4%) or secondary/postsecondary (43.1%) levels of education. Most respondents lived with a partner in the household (69.2%). The sample was characterized by moderate levels of self-rated health (*M* = 2.7, *SD* = 0.98), and by a relatively large share of people who reported feeling sad or depressed (29.5%) during the month before the survey. As to the stringency of COVID-19 measures, 44.5% of respondents resided in countries of high stringency. Finally, 27.7% of the sample reported feeling lonely in the SCS1. Regarding the study dependent variable, 30.4% of the sample reported feeling lonely in the SCS2.

Regarding the cross-temporal patterns of *instrumental* care provision, 68.6% of respondents kept not providing such care, whereas 15.7% started, 9.2% kept on, and the remaining 6.5% ceased providing instrumental care to someone from their social networks between the survey waves. Regarding the cross-temporal patterns of *personal* care provision, 90.3% of respondents continued not providing such care, whereas 6.2% started, 2% ceased, and 1.4% continued providing personal care to someone from their social networks between the survey waves.

3.2 Multivariable Analysis

Table 2 shows the analysis results predicting the likelihood of feeling lonely as a function of cross-wave patterns of care provision.

Table 2 Results of the logistic regression analysis estimating the likelihood of feeling lonely on SCS2 by cross-temporal patterns of care provision.

Effect	Estimate (SE)	Exp (B)	95% CI for Exp (B)		*p*
			LB	UB	
Constant	-0.52				0.000
Started providing instrumental care[1]	***-0.08 (0.04)***	***0.92***	***0.86***	***0.99***	***0.022***
Ceased providing instrumental care[1]	-0.09 (0.05)	0.91	0.82	1.01	0.070

Kept on providing instrumental care[1]	***-0.30 (0.05)***	***0.74***	***0.67***	***0.82***	***0.000***
Started providing personal care[2]	***0.20 (0.05)***	***1.22***	***1.10***	***1.35***	***0.000***
Ceased providing personal care[2]	***0.25 (0.09)***	***1.29***	***1.09***	***1.53***	***0.004***
Kept on providing personal care[2]	***0.36 (0.10)***	***1.43***	***1.17***	***1.76***	***0.001***
Men[3]	**-0.10 (0.03)**	**0.90**	**0.86**	**0.95**	**0.000**
Age	-0.001 (0.002)	0.999	0.996	1.002	0.562
Secondary/post-secondary education[4]	**-0.15 (0.03)**	**0.86**	**0.81**	**0.91**	**0.000**
Tertiary education[4]	**-0.20 (0.03)**	**0.82**	**0.76**	**0.87**	**0.000**
Lives with partner[5]	**-0.94 (0.03)**	**0.39**	**0.37**	**0.41**	**0.000**
Self-rated health	**-0.22 (0.01)**	**0.80**	**0.78**	**0.82**	**0.000**
Sad/depressed last month[6]	**1.32 (0.03)**	**3.76**	**3.57**	**3.95**	**0.000**
Resident of a high stringency country[7]	**0.20 (0.03)**	**1.22**	**1.16**	**1.28**	**0.000**
Felt lonely at SCS1[8]	**1.69 (0.03)**	**5.41**	**5.14**	**5.69**	**0.000**
-2log likelihood	42,357.98				
Nagelkerke R	0.392				
N	46,675				

Note. B = Regression estimate (coefficient), CI = Confidence Interval, N = Number of cases included in the analysis, p = Significance value, SCS = SHARE Corona Survey;
SE = Standard Error.
Reference categories: [1]Kept on not providing instrumental care to anyone, [2]Kept on not providing personal care to anyone, [3]Women, [4]Primary/elementary education level, [5]Does not live with partner, [6]Was not sad/depressed last month, [7]Resident of a low stringency country, [8]Did not feel lonely at SCS1.

Starting to provide instrumental care was negatively associated with loneliness (*OR* = 0.92, *p* = 0.022). Respondents who began providing instrumental care between the survey waves were 8% less likely to feel lonely than those who kept not providing it. Carrying on providing instrumental care was also negatively associated with loneliness (*OR* = 0.74, *p* < 0.001). Respondents who kept on providing instrumental care to someone from their social networks were 26% less likely to feel lonely than those who did not provide it to anyone between the survey waves. Ceasing the provision of instrumental care between the survey waves was unrelated to loneliness.

In contrast, all personal care-related variables exhibited associations with loneliness. Providing personal care was positively associated with loneliness (*OR* = 1.22, *p* < 0.001). Respondents who began providing personal care between the survey waves were 22% more likely to experience loneliness than those who kept on not providing it. Ceasing and providing personal care were also positively associated with loneliness (*OR* = 1.29, *p* = 0.004). Respondents who stopped providing personal care between the survey waves were 29% more likely to experience loneliness than those who kept on not providing this type of care. Finally, resuming providing personal care was positively associated with loneliness (*OR* = 1.43, *p* = 0.001). Respondents who provided personal care between the survey waves were 43% more likely to feel lonely than those who did not provide such care to anyone from their social networks.

4. Discussion

The study aimed to test the associations between cross-temporal patterns of care provided by people aged 50 years and older. The study's findings suggest that cross-temporal patterns of care provision represent a set of factors that can explain the loneliness in the older population during COVID-19. However, each type of care seems to contribute to loneliness in opposite directions. Patterns of instrumental care provision were associated with decrease in loneliness, thereby corresponding to social capital [5, 17]. In contrast, the provision of personal care seems to correspond mostly to the notion of caregiver stress or burden [19, 20].

Delving into the findings on personal care, it can be maintained that the finding on starting the provision of this type of care between the survey waves contradicts the results found in the study using pre-COVID-19 data where no association was found between transitioning into caregiving and loneliness [25]. This result of the current study may be attributed to the COVID-19 period, which was highly stressful. Ceasing the provision of personal care was positively associated in contrast to a previous study, where former caregivers tend to exhibit lower levels of loneliness with time [24]. The current study's finding may be explained by the immediacy of the effect of ceasing caregiving. In the short run, the end of caregiving may create some kind of social vacuum that expected to be filled through time. In the long run, as the study findings by [24] suggest, loneliness indeed drops. Therefore, future studies should continue observing the relationship between the end of providing personal care and loneliness.

4.1 Strengths and Limitations

The study has several strengths. The primary strength is in using a large sample that allowed for establishing reliable associations. Another strength is that the study examined the association of various patterns of care provision throughout time rather than merely distinguishing between providers and non-providers of care. Furthermore, these patterns were examined concerning two types of care.

This study is not without limitations. First, only two waves of the survey were examined. It would be interesting to see whether the care provision patterns will undergo additional changes after COVID-19 or remain the same in older adults. Second, no further information on cross-temporal patterns of care provision was provided. Future studies should examine the mere patterns and frequency, intensity and other care provision characteristics across time. Third, loneliness is only one of the subjective wellbeing domains [35]. Therefore, it is yet to be understood whether its other domains are affected by cross-temporal care provision patterns.

5. Conclusions

Resilience is often described in the emotions framework [12]. However, one can also build resilience proactively, by performing activities that contribute to a better emotional state. The results of the current study have shown that this also applies to care provision patterns across time. The findings suggest that in addition to the care provision patterns at a single point in time [20], the cross-temporal patterns also mean the loneliness level.

The study can be applied to further examine the cross-temporal patterns of care. Moreover, future qualitative studies can shed light on why changes in care patterns lead to varying levels of loneliness.

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Author Contributions

Dennis Rosenberg – Conceptualization, data analysis, investigation, software, validation, writing of original draft; Sharon Shiovitz-Ezra – Funding acquisition, project administration, data curation, resources, supervision, draft review and commenting.

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Competing Interests

The authors have declared that no competing interests exist.

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