**Loneliness Before and During the COVID-19 Pandemic:
Are Unpartnered and Childless Older Adults at Higher Risk?**

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ABSTRACT

Objectives: COVID-19 mitigation efforts had the potential to exacerbate loneliness among older adults, particularly for the unpartnered or childless, yet COVID-19 loneliness among these groups remains unstudied. **Methods:** Using data from the Survey of Health, Ageing and Retirement in Europe (SHARE) collected before (October 2019- March 2020) and during the pandemic (June-August 2020), we examine two loneliness outcomes: 1) “have you felt lonely recently?” (both waves), and 2) “have you felt lonelier than before the pandemic?” (2020), and explore differences by partnership and parenthood status. **Results:** Before COVID-19, those who lacked one tie but had the other (unpartnered parents or partnered childless) were at highest loneliness risk. During COVID-19, unpartnered and childless—especially unpartnered—remain at higher risk for loneliness, entering loneliness, and not “exiting” loneliness. **Discussion:** We discuss these findings in light of family norms and needs in pandemic and non-pandemic times, and provide recommendations for future research.

INTRODUCTION

In the decade preceding the COVID-19 pandemic, scholars and public health officials warned of an upcoming threat of a “loneliness pandemic,” driven by shifts such as decreasing fertility, increases in living alone, and other factors, especially in the United States and Europe (Holt-Lunstad et al. 2015; Klinenberg 2016; Verdery et al. 2019; Zoutewelle-Terovan & Liefbroer 2018; Dahlberg et al., in press; Holt-Lunstad, 2017; National Academies of Sciences, Engineering, and Medicine, 2020). While loneliness appears to be increasing among the general population globally, older adults may be at heightened risk for loneliness and its consequences (Holt-Lunstad et al. 2015; Klinenberg 2016; Verdery et al., 2019), including poor physical health (Valdorta et al., 2016) and mortality (Holt-Lunstad et al., 2015). This is particularly a concern for older adults who do not have traditional family ties—like partners and children.

However, after the arrival of the COVID-19 pandemic, “physical distancing” was emphasized at national, regional, and local levels to mitigate the spread of the disease. These mitigation recommendations included avoidance of public social spaces, minimizing physical contact with others, stay-at-home” orders, and full physical isolation of high-risk individuals, such as some older adults (Plümper & Neumayer, 2020). While these mitigation efforts were likely useful to “slow the spread” of COVID-19 and reduce mortality, they may have exacerbated the “loneliness pandemic” especially among older adults (Dahlberg, 2021). This trend may have been particularly problematic for older adults with fewer family ties—such as unpartnered or childless older adults. Although there is a recent explosion of studies examining loneliness during COVID-19, with several studies focused on older adults (e.g., Bundy et al., 2021; Choi et al., 2021; Macdonald & Hulur,

2021; van Tilburg et al. 2021), no study to date has specifically examined the loneliness risk of unpartnered older adults and childless older adults during COVID-19.

In this paper, we investigate if unpartnered older adults and childless older adults report higher loneliness compared to their partnered and parents counterparts, respectively, and whether the gaps in loneliness between those with and those without these family ties have changed during the COVID-19 pandemic (compared to before). To do so, we analyze a representative sample of adults aged 50+ from the Survey of Health, Ageing and Retirement in Europe (SHARE), which includes data collected before the pandemic that was interrupted by COVID-19 (SHARE regular wave 8, October 2019 – March 2020) as well as a special module during the pandemic (SHARE COVID wave 8, June-August 2020). Specifically, we compare loneliness levels before and during the COVID-19 pandemic (regular Wave 8 and COVID wave 8) as well as examine older adults' subjective assessments about whether or not they feel that their loneliness increased during the pandemic (COVID wave 8).

Loneliness

Loneliness is defined as a negative feeling that arises from discrepancies in individuals' desired and actual social interactions and emotional support derived from these social contacts (Perlman & Peplau, 1981; Tesch-Roemer & Huxhold, 2019). Conceptually, loneliness is sometimes conflated with concepts of social isolation. Although having fewer social contacts is a risk factor for loneliness (Conkova et al., 2019), not all individuals who have lower social interaction feel lonely. For example, individuals with a higher number of social contacts may hold high expectations for social interaction frequency and may feel disappointed if their expectations are not met, thereby increasing risk of loneliness

(Dykstra, 2009). In this way, loneliness carries a subjective component that can vary according to individual and cultural expectations as well as family or lifestyle decisions. During 2020, loneliness may also be shaped by the “physical distancing” experiences of the COVID-19 pandemic. These experiences may be different for older adults who are unpartnered or childless.

Older Adults’ Loneliness during COVID-19

Despite potential overlap between “the loneliness epidemic” and the COVID-19 pandemic and the elevated risk for older adults, preliminary studies suggest that older adults’ were more resilient than younger adults to loneliness during COVID-19. Several online and nationally representative studies from multiple countries found that age was a protective factor against loneliness (Beam & Kim, 2020; Bu et al., 2020; Groarke et al., 2020; Luchetti et al., 2020; McQuaid et al., 2021; Li & Wang, 2020; Palgi et al., 2020; Varga et al., 2021). These patterns may reflect a combination of factors, including older adults’ life course experiences (Carr, 2020) and perhaps lower expectations for social interaction during COVID-19 (Dahlberg, 2021).

Although older adults may have an advantage relative to younger adults, it is unclear whether older adults across the globe experienced increases in loneliness during COVID-19. For example, Choi et al. (2021) found that US older adults who limited social interactions during the early stages of the pandemic (April to May 2020) were at higher risk for loneliness, but Luchetti et al. (2020) found no sustained increase of loneliness among older Americans (Luchetti et al., 2020). A qualitative US study found that older people who had lived with persistent loneliness before the pandemic did not report feeling lonelier than before COVID-19 (Bundy et al., 2021). Killgore et al. (2020) and Sutton et al. (2020)

debated, via letters to the editor, the conflicting findings in online samples regarding American older adults' experienced loneliness increases during COVID-19. Beyond the US, there is evidence of increased loneliness among older adults in Switzerland (Macdonald & Hult, 2021), the Netherlands (van Tilburg et al., 2020), and Hong Kong (Tso & Park, 2020), but evidence of resilience to loneliness in Israel (Palgi et al., 2020).

Overall, existing studies on COVID-19 and older adults' loneliness cross-nationally are difficult to compare due to wide variation in these studies in terms of sampling strategies and social contexts (e.g., local, regional, country variation in policy and COVID-19 mitigation strategies). Many studies conducted during the early phase of the COVID-19 pandemic were based on convenience samples, online only sampling techniques, etc. As Dahlberg (2021) argues, more work is needed using large, nationally representative samples of older adults.

Loneliness among Unpartnered and Childless Older Adults

Research prior to the COVID-19 outbreak identifies partners and children as important family resources to buffer older adults' loneliness. Being unpartnered, childless, or both are risk factors for loneliness among older adults (Dahlberg et al., in press; Greenfield & Russell, 2011; Hazer & Boylu, 2010; Fokkema et al., 2012; Iecovich et al., 2013; Korepeckyj-Cox, 1988; Vozizaki et al., 2018; Zhang & Hayward, 2001). Therefore, unpartnered and childless older adults may also experience higher risk of loneliness during COVID-19. For example, unpartnered and childless older adults typically have broader networks of extended kin and non-kin ties (Djundeva et al., 2019; Mair, 2019), which may have been more vulnerable to disruption during COVID-19 compared to partner and child

ties. This network disruption during COVID-19 may have further enhanced loneliness risk among childless and unpartnered.

On the other hand, linkages between parenthood, partnership, and loneliness may be particularly complex during COVID-19, and therefore the associations between these factors may not be so clear cut. For example, older parents who are accustomed to frequent in-person contact with their children may experience an uptick in loneliness when that contact is disrupted. If this occurs, the pre-pandemic loneliness gap between older adults with and without children may narrow. One of the few studies to examine this topic found mixed results. Older adults in the Netherlands who had low contact with children and unmet social support needs had increased loneliness, yet declines in contact were not associated with loneliness increases (van Tilburg et al., 2020). The authors note that these findings could be interpreted several ways, depending on different coping strategies used by older adults to face loneliness (Rokach & Brock 1998). For example, older adults might have temporarily lowered their expectations of interaction with family (Schoenmakers et al. 2012) while also resorting to increased digital contacts to compensate for the loss of face-to-face interactions (Arpino et al., 2021; Dahlberg, 2021; Freedman et al., 2021; Pan et al., 2021). More work is needed to understand older adults' changes in loneliness during COVID-19 social disruptions.

Overall, unpartnered older adults, childless older adults, and older adults who are both unpartnered and childless appear to be at higher risk of loneliness (compared to partnered, parents, and partnered parents) prior to COVID-19 and may remain so during COVID-19. However, COVID-19 mitigation efforts yielded many complex social disruptions for older adults of all family structures. Older adults likely adjusted their expectations of social contact and their methods of achieving it. Despite public health

concerns about “the loneliness pandemic” before and during COVID-19, we were unable to find any existing studies that explore this topic using nationally representative data and that focus on the potential heightened loneliness risk for unpartnered and childless older adults.

Research Questions

In this paper, we examine loneliness among older adults during the COVID-19 pandemic and explore if unpartnered and childless older adults are at heightened risk for loneliness. Specifically, we ask:

- RQ1) Did unpartnered and childless older adults report more loneliness than partnered and parents before the pandemic?
- RQ2) If so, have the gaps in loneliness between those with and those without these family ties changed?
- RQ3) Do unpartnered and childless older adults subjectively report feeling lonelier than before the start of the pandemic?
- RQ4) Are partnership and parenthood associated with the likelihood of starting, continuing or stopping to feel lonely after the onset of the pandemic?

METHOD

Data

We use data from the Survey of Health, Ageing and Retirement in Europe (SHARE), a panel survey representative of the non-institutionalized population aged 50+ administered every 2 years since 2004 in several European countries and Israel. We use data from wave 8, which started in October 2019 but was suspended in all countries in March 2020 due to the COVID-19 outbreak. Regular data collection is based on computer-assisted personal

interviewing (CAPI), which provides pre-COVID information (“regular wave 8” hereinafter). A special module, (SHARE-COVID19; Börsch-Supan et al., 2020), was added to wave 8 and administered with CATI (computer assisted telephone interviewing) between June and August 2020 to collect information on individuals’ behaviors and conditions during the pandemic (“COVID wave 8” hereinafter). The later wave provides information collected after the onset of the pandemic (we will refer to it as “during pandemic” data). We excluded observations from Portugal (which did not participate in “regular wave 8”), thus restricting the analyses to individuals from the 27 countries included in both regular and COVID wave 8. After discarding relatively few observations with missing values (1,941 from regular wave 8 (4.2%) and 2,059 from COVID wave 8 (3.7%)), our analytic samples comprised 44,329 (regular wave) and 53,820 (COVID wave) individuals. 35,068 individuals (70,136 observations) have been interviewed in both waves. Data from Austria have been removed in a robustness check due to different timing of their COVID wave 8 data collection (July-September).

Dependent Variables

We examine two single-item outcomes of loneliness (feeling lonely and feeling more lonely during the pandemic). Feelings of loneliness (“How much of the time do you feel lonely?”) was assessed before the pandemic (regular wave 8, 2019-2020) and during (COVID wave 8, 2020) and is used to answer to RQ1 and RQ2. Given only 7 percent of the sample felt lonely “often” we combine “often” and some of the time” (1=felt lonely often/some of the time; 0=felt lonely hardly ever or never). Combining these two categories is also practical because the group who felt lonely “often” or “some of the time” received an additional

follow-up question during the pandemic (COVID wave 8), which we describe below for use as our second outcome measure.

The second indicator of loneliness was asked only once during the pandemic (COVID wave 8, 2020) and assessed if respondents felt more lonely during the pandemic as a follow-up to the standard feeling lonely question described above. In COVID wave 8 (2020), respondents who indicated that they felt lonely “often” or “some of the time” were additionally asked “Has that been more so, less so, or about the same as before the outbreak of Corona?”. We also dichotomized this measure (1=felt more lonely during the pandemic, 0=felt the same or less lonely during the pandemic, or did not indicate they were lonely in the general question and so received a 0 on “felt more lonely” for this second outcome). This was used to answer RQ3.

In order to observe potential changes in loneliness with more detail (RQ4), we also created a third outcome variable which is a multicategory variable to track four possible outcomes from 2019-2020 to 2020 (not lonely in both waves, lonely in both waves, from not lonely to lonely, and from lonely to not lonely).

Independent and Control Variables

Our primarily explanatory variables are partnership and parenthood status, measured with dummy variables indicating whether respondents are unpartnered (vs being in a partnership) and childless (vs having at least one child—biological, adopted, or step).

Socio-demographic controls include sex, age (dummy variables for 10-year categories; reference =50-59); education, employment status (working; retired —reference; other, including unemployed, permanently sick or disabled, homemaker), country of residence (reference = Italy). Educational groups are defined based on the International

Standard Classification of Education (ISCED; <http://www.uis.unesco.org/>): low (corresponding to ISCED 0-1, no or primary education, and ISCED 2, lower secondary education —reference), medium (ISCED 3-4, higher secondary education), and high (ISCED 5-6, tertiary education). We also control for health status: self-reports of doctor-diagnosed conditions (hypertension, diabetes, cancer, lung disease, heart disease, stroke and arthritis) with a dummy variable for at least one condition; a binary variable measuring global activity limitations (GALI), with a value of 1 for those whose activities are limited or severely limited because of health problems. In a robustness check, we also add a control for whether individuals other than the partner live in the household (versus not).

Statistical Analyses

First, we calculate descriptive statistics of all variables from before (regular wave 8, 2019-2020) and during the pandemic (COVID wave 8, June and August 2020). We also present percentage breakdowns by country to illustrate the composition of our sample (Table 1).

Next, we estimate logistic regression models of our two binary outcome measures (outcomes 1 and 2). Given our first outcome was asked twice (before and during the pandemic), we estimate three sets of models that include feeling lonely before the pandemic (regular wave 8, 2019-2020; RQ1), feeling lonely during the pandemic (COVID wave 8, 2020; RQ2), and 3) feeling that loneliness increased during the pandemic (COVID wave 8, 2020 asked of the subset who felt lonely often/some of the time in COVID wave 8; RQ3) (Table 2). For each of these, we include four models fully adjusted for covariates that incrementally add independent variables, including childlessness (Model 1, M1), unpartnered (Model 2, M2), both (Model 3, M3), both variables and their interaction

(Model 4, M4). All models presented in Table 2 also include dummy variables for each country (not shown in tables).

For ease and clarity of interpretation and to avoid issues with comparison of coefficients from different logistic regressions, Table 3 includes calculated Average Marginal Effects (AMEs) (Mood, 2010). Due to the binary nature of our outcomes and explanatory variables, the AMEs are to be interpreted as the discrete effect of the variable, or the difference between the predicted probabilities (in percentage points; pp) across the groups being compared (e.g., childless vs parents). In model M4 that includes the interaction term, we calculated the AMEs of each explanatory variable (e.g., childlessness) separately for the categories of the other explanatory variable (unpartnered and partnered) to allow for clearer interpretation of the potential joint effect of being unpartnered and childless on each outcome at each time point. For the main analysis (Tables 2 and 3), all models are estimated separately according to the cross-sectional sample size of each wave (regular wave 8 and COVID wave 8).

Finally, for our third multcategory outcome we estimated multinomial logistic regression models (RQ4). To ease the interpretation of the signs of the associations, in Table 4 we report coefficients estimated from two statistically equivalent models that only differ for the reference category. First, we report estimated coefficients for being (1) “*lonely in both waves*” and (2) “*from not lonely to lonely*” with both compared to “*not lonely in both waves*.” In other words, these first two comparisons can be interpreted as the likelihood of staying lonely or becoming lonely (compared to not being lonely). Next, we provide coefficients for going (3) “*from lonely to not lonely*” compared to the reference category of being “*lonely in both waves*”, as this represented a more meaningful contrast. These results represent the probability of “exiting” loneliness (compared to being lonely in

both waves). Because this portion of the analysis seeks to compare changes from one wave to the other, we limit this sample to respondents who answered the loneliness questions in both the regular wave 8 and the COVID wave 8 (35,068 individuals, or 79% of the regular wave sample).

RESULTS

Descriptively, there is very little difference between the independent and control variables before (2019-2020) and during (2020) the pandemic (Table 1). In the outcome variables, the prevalence of feeling lonely only increased by 0.8 percentage points during (2020) compared to before (2019-2020) the pandemic. Yet, 11.6% perceived themselves as more lonely during (2020).

Multivariate Logistic Regression Results

Loneliness Before vs During the Pandemic

Table 2 reports estimated coefficients of the explanatory variables from logistic regression models described above and Table 3 displays the corresponding AMEs. Table 2 shows that before the pandemic (regular wave 8), childless and unpartnered individuals were at higher risk of loneliness compared to those with these family ties (RQ1). The positive and statistically significant ($p < 0.01$) associations remain in M3 where the two variables are included together. However, the coefficient of childless is considerably reduced. Likewise, the AME of childlessness reduces from 11.3 pp to 5 pp (Table 3). Instead, the AME of unpartnered remains fairly stable in M3. Individuals who lack a partner are 18 pp more likely to feel lonely as compared to their partnered counterparts, which is a rather strong association. Due to a correlation between being childless and unpartnered, in M1 the effect

of childlessness is partially confounded with being unpartnered. When the two effects are separated, however, the association between childlessness and loneliness is reduced. The interaction between childless and unpartnered is negative and statistically significant (M4, Table 2; $p < 0.01$). Consequently, the loneliness effect of lacking one tie is stronger when the other tie is present. For example, the AME of childlessness is 7.6 for partnered and 3.7 for unpartnered (Table 3). Similarly, the AME of being unpartnered is higher among parents (18.4 pp) than childless (14.5 pp) individuals. These differences are statistically significant ($p < 0.01$) and substantial in relative terms especially for childlessness.

During the pandemic (COVID wave 8), overall, associations between parenthood and partnership status and feeling lonely barely changed (RQ2). The AMEs for childlessness and being unpartnered on loneliness during the pandemic are similar to those observed before: 3.8 pp (vs 5 pp) for childless and 18 pp (vs 17.9) for unpartnered (M3, Table 3). The differences between the associations during versus before the pandemic were also not statistically significant ($p > 0.1$). This was tested by pooling the regular and COVID wave 8 samples and adding a dummy variable for the COVID wave 8 sample interacted with the explanatory variables. None of the interactions (separately or jointly) were statistically significant, confirming the stability of associations across the two periods as shown by the separate analyses in model M3 of Tables 2 and 3.

We conducted similar tests for the other models and interactions. The only one that resulted to be statistically significant ($p < 0.05$) referred to the test of the triple interaction between childlessness, being unpartnered, and the COVID wave 8 sample dummy. This interaction reveals that before the pandemic, there was a statistically significant interaction between being childlessness and being unpartnered (where lacking one tie had a stronger effect when the other tie was present), but that interaction is not present during the

pandemic (M4, Table 2). As a result, the AMEs of being unpartnered (childless or not) are very similar during the pandemic, *and* the AMEs for childless (partnered or not) are also very similar during the pandemic. In other words, prior to the pandemic—lacking one tie was more strongly associated with loneliness when the other tie was present. During the pandemic, these effects “uncouple” and are associated with loneliness more independently.

Feeling as Though Loneliness Increased During the Pandemic

Our second outcome examines whether people subjectively assessed that they felt more lonely during the pandemic (last four columns of Tables 2 and 3; RQ3). In this case, only being unpartnered displays a positive and statistically significant coefficient and AME. Being unpartnered during the pandemic was associated with 5.4 pp higher probability of feeling lonelier than before the outbreak as compared with individuals in a partnership (M3 in Table 3). Although, this association is slightly stronger among childless (6.7 pp) than among parents (5.3 pp; M4 in Table 3) the difference between the AME of being unpartnered does not vary significantly ($p > 0.1$) by parenthood status. This is also reflected in the insignificant coefficient of the interaction between being unpartnered and childlessness (M4, Table 2).

Changes and Stability in Feeling Lonely Across Waves

Our third outcome (having felt lonely before and/or since the start of the pandemic) was used to test whether childlessness or being unpartnered was associated with changes in feeling of loneliness since the start of the pandemic (RQ4; Table 4). Consistent with results shown in Tables 2 and 3, the model without the interaction (M3) confirms that childless and unpartnered individuals were more likely to report feelings of loneliness both before

and during the pandemic compared to their partnered and parent counterparts (Table 4, Part 1). Unpartnered were more likely to “become lonely” during the pandemic (compared to not reporting this feeling in both periods), unlike childless (Table 4, Part 2). Among those who felt lonely before the pandemic, childless and unpartnered were less likely to “exit” loneliness (Table 4, Part 3). The interaction terms between childlessness and partnership (M4) suggest that lacking one tie does not influence the probability of changes in loneliness due to the other (consistent with Tables 2 and 3 for the second outcome).

Robustness Checks

We performed a series of robustness checks on respondents’ household composition and unpartnered marital status. In Table 5, we first replicate the results of Table 2 adding a control variable for “others in the household” to determine if having a person other than the respondent or the partner changes the patterns we observed. Results barely changed adding this additional control variable. Second, in order to better determine the relationship between being unpartnered and loneliness, we separate the “unpartnered” category into never married, separated/divorced, and widowed. All three types of unpartnered individuals are at higher risk of loneliness both before and during the pandemic with widowed being at highest risk. Additionally, in the before-COVID period the negative and statistically significant interactions between being unpartnered and childlessness found in Table 2 are confirmed for separated/divorced and never married older adults but not for widowed. Therefore, the effect of childlessness on loneliness is similar for widowed and married individuals (and higher than that for separated/divorced and never married). We also find that a positive interaction between childlessness and widowhood for the second outcome, suggesting that the effect of childlessness on the probability of having felt lonelier than

before the pandemic is higher for widowed than for married (and all the other partnership groups; for these the coefficients of the interactions are small and not significant). More precisely, a statistically significant effect of childlessness is only found for widowed.

Finally, we conducted additional miscellaneous robustness checks that excluded: 1) respondents who tested positive for COVID-19 and those who had a close relative or friend who tested positive or died during the pandemic time; 2) respondents from Austria due to data timing differences; 3) respondents who were not observed in both surveys. These final miscellaneous robustness checks indicated no variation in the patterns observed and are not presented in the results, but are available in Table S.1 of the Supplementary Materials.

DISCUSSION

This paper examines loneliness among older adults in Europe and Israel before and during the COVID-19 pandemic, with a particular emphasis on loneliness by partnership and parenthood statuses. We found that prior to the pandemic, unpartnered parents had the highest risk of loneliness, followed by partnered childless, but “kinless” older adults (unpartnered and childless) were not more lonely than these other two groups who lacked only one tie. Additionally, we find that being unpartnered during the pandemic was associated with higher likelihood of becoming lonely. Finally, being unpartnered and childless were associated with a higher likelihood of staying lonely during COVID-19. Below, we discuss the meaning of these findings, as well as potential explanations, limitations, and future avenues for more research.

Pre-Pandemic Loneliness Risk for Unpartnered Parents, Partnered Childless

Our first research question asked whether unpartnered and childless older adults were at higher risk of feeling lonely than partnered and parents before the pandemic (RQ1). Prior to the pandemic, both unpartnered and childless older adults appear to be at higher risk for loneliness compared to their partnered and parental counterparts. Consistent with prior research, being unpartnered is a stronger predictor of loneliness than being childless (Zhang & Hayward, 2001). However, risk of loneliness is not compounded (or higher) for older adults who are “kinless” (unpartnered and childless at the same time). Our findings suggest that lacking one family tie but having the other tie places older adults at higher risk of loneliness prior to the pandemic than someone who is “kinless”, with unpartnered parents having the highest probability of pre-pandemic loneliness. Although there could be a number of possible explanations for this finding, this pattern could reflect expectations and belief in familialistic values. Older adults who maintain at least one of the “traditional” family ties may be more likely to expect connections from family, and therefore more likely to feel a sense of loneliness if they lack one of the other ties. For unpartnered parents, in particular, the presence of children without a partnership may contribute to loneliness. One of our robustness checks showed that this is especially the case for older adults who never married and those who lost their partner because of divorce/separation.

Pandemic Loneliness, Especially for Unpartnered and Childless

In answer to our second research question, we found that during the pandemic, the loneliness gaps by partnership and parenthood status did not change substantially, but the interaction between the two that was found before the pandemic was not confirmed. In addition, unpartnered older adults were more likely to increase their levels of loneliness

(RQ3), become lonely if they were not already, and not “exit” loneliness if they were already lonely (RQ4). Childless older adults were more likely to be lonely and not “exit” loneliness, but they were not more likely to become lonely if they were not already. So-called “kinless” older adults (unpartnered childless) were not necessarily at higher risk of loneliness during the pandemic than each group separately. This finding may reflect and support qualitatively the resilience of “already lonely” older adults (Bundy et al., 2021) such that “kinless” older adults potentially have long-standing resources and preparations (psychological, emotional, and instrumental) to cope with limited social resources and thus manage loneliness due to the absence of these traditional family resources. Additionally, “kinless” and childless older adults, whose networks are more friend-based (Mair, 2019), may have reduced their expectations for in-person social contacts thereby reducing their discrepancy in desired versus actual interactions and subsequent likelihood of becoming lonely during the pandemic (Dahlberg, 2021). Nevertheless, our findings underscore prior research on the salience of lacking particularly a partner in terms of loneliness among older adults (Greenfield & Russell, 2011) and hint to the heightened isolation experienced by the unpartnered during COVID-19 mitigation efforts.

Limitations, Future Research, and Conclusions

Our results provide several avenues for future research. First, our analysis considers two measures of loneliness that show variation, but future studies should examine additional well-being outcomes, such as anxiety and depression, among childless and unpartnered older adults during the pandemic. Second, future work should explore in-depth information about social interactions (e.g., care and help received, social contacts including potentially digital contacts) that may mitigate potential social isolation. Third, further research can

investigate whether the pandemic levels or reinforces gender differences in loneliness by parenthood and partnership status identified in prior research (Zhang & Hayward, 2001; Greenfield & Russell, 2011). Finally, cross-national heterogeneity in loneliness was evident before the pandemic (Vozikaki et al., 2018) and future studies should examine cross-country differences in these patterns, due to different mitigation approaches by country.

Despite these limitations, our results highlight important conceptual considerations about loneliness among childless, and particularly unpartnered, older adults. These groups are at higher risk regardless of global events and felt lonelier during the pandemic. While “physical distancing,” “lockdown,” and “stay-at-home” mitigation measures provided protection, the restrictions on face-to-face interactions and public spaces for socializing also removed key sources of social integration for those who are already more likely to spend time alone (e.g., unpartnered). As the population of unpartnered and childless older adults grows globally, future public health strategies should seek a balanced mitigation approach that also considers the mental health consequences of isolation, particularly for populations who are already at higher risk for loneliness.

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Table 1 – Descriptive statistics (%) on all variables separately for the regular (before the pandemic) and COVID (during the pandemic) wave 8 samples

Variable	Period		Variable	Period	
	Before	During		Before	During
feel lonely	27.8	28.6	Netherlands	4.0	1.4
felt lonelier than before pandemic		11.6	Spain	4.4	3.9
childless	8.7	8.7	Italy	4.6	7.0
unpartnered	28.9	28.4	France	5.4	3.9
female	57.7	57.9	Denmark	4.8	3.7
<i>Age (mean)</i>	70.4	70.8	Greece	6.4	6.8
age 50-59	12.4	10.7	Switzerland	4.2	3.5
age 60-69	36.8	36.7	Belgium	4.4	7.1
age 70-79	33.1	33.6	Israel	1.9	2.8
age 80-89	15.6	16.4	Czech Republic	5.9	4.9
age 90+	2.1	2.5	Poland	4.4	5.4
<i>Education</i>			Luxembourg	2.0	1.6
low	17.5	17.3	Hungary	1.7	1.9
medium	17.0	17.4	Slovenia	5.3	5.7
high	65.5	65.3	Estonia	6.5	8.4
<i>Work status</i>			Croatia	2.6	3.8
Retired	69.6	64.6	Lithuania	3.0	2.2
Working	17.6	21.0	Bulgaria	1.9	1.5
Other	12.8	14.4	Cyprus	1.1	1.4
Illness	55.8	54.0	Finland	2.5	2.5
Gali	49.1	47.4	Latvia	1.6	1.8
<i>Country</i>			Malta	1.7	1.6
Austria	3.4	5.0	Romania	2.7	2.7
Germany	6.4	5.2	Slovakia	2.1	1.7
Sweden	5.2	2.5	N	44,329	53,820

Table 2 – Estimated coefficients for the explanatory variables from logistic regressions

Independent variables	Before the pandemic (regular wave 8)				During the pandemic (COVID wave 8)							
	Do you feel lonely?				Do you feel lonely?				Have felt lonelier than before the pandemic?			
	(M1)	(M2)	(M3)	(M4)	(M1)	(M2)	(M3)	(M4)	(M1)	(M2)	(M3)	(M4)
childless	0.57*** (0.04)		0.28*** (0.04)	0.43*** (0.06)	0.51*** (0.03)		0.20*** (0.04)	0.21*** (0.06)	0.17*** (0.05)		0.00 (0.05)	-0.09 (0.08)
unpartnered		0.97*** (0.02)	0.93*** (0.03)	0.96*** (0.03)		0.94*** (0.02)	0.91*** (0.02)	0.91*** (0.02)		0.52*** (0.03)	0.52*** (0.03)	0.51*** (0.03)
childless * unpartnered				-0.27*** (0.08)				-0.01 (0.07)				0.15 (0.10)
female	0.43*** (0.02)	0.26*** (0.02)	0.27*** (0.02)	0.26*** (0.02)	0.60*** (0.02)	0.42*** (0.02)	0.43*** (0.02)	0.43*** (0.02)	0.64*** (0.03)	0.54*** (0.03)	0.54*** (0.03)	0.54*** (0.03)
Age (Ref.: 50-59)												
age 60-69	0.03 (0.04)	-0.02 (0.04)	-0.01 (0.04)	-0.01 (0.04)	0.05 (0.04)	0.00 (0.04)	0.01 (0.04)	0.01 (0.04)	0.04 (0.06)	0.01 (0.06)	0.01 (0.06)	0.02 (0.06)
age 70-79	0.15*** (0.05)	0.05 (0.05)	0.06 (0.05)	0.06 (0.05)	0.22*** (0.04)	0.13*** (0.05)	0.14*** (0.05)	0.14*** (0.05)	0.15*** (0.06)	0.10 (0.06)	0.10 (0.06)	0.10 (0.06)
age 80-89	0.59*** (0.05)	0.36*** (0.05)	0.38*** (0.05)	0.38*** (0.05)	0.63*** (0.05)	0.42*** (0.05)	0.44*** (0.05)	0.44*** (0.05)	0.43*** (0.07)	0.30*** (0.07)	0.30*** (0.07)	0.30*** (0.07)
age 90+	0.96*** (0.08)	0.59*** (0.09)	0.60*** (0.09)	0.60*** (0.09)	0.80*** (0.07)	0.44*** (0.07)	0.45*** (0.07)	0.45*** (0.07)	0.39*** (0.10)	0.17* (0.10)	0.17* (0.10)	0.17* (0.10)
Education (Ref.: low)												
medium education	-0.18*** (0.04)	-0.15*** (0.04)	-0.15*** (0.04)	-0.15*** (0.04)	-0.11*** (0.03)	-0.09*** (0.04)	-0.10*** (0.04)	-0.10*** (0.04)	0.03 (0.05)	0.04 (0.05)	0.04 (0.05)	0.04 (0.05)
high education	-0.33*** (0.03)	-0.27*** (0.03)	-0.27*** (0.03)	-0.27*** (0.03)	-0.25*** (0.03)	-0.20*** (0.03)	-0.20*** (0.03)	-0.20*** (0.03)	-0.06 (0.04)	-0.03 (0.04)	-0.03 (0.04)	-0.03 (0.04)
Work status (Ref.: retired)												
working	-0.20*** (0.04)	-0.23*** (0.04)	-0.23*** (0.04)	-0.23*** (0.04)	-0.22*** (0.03)	-0.23*** (0.03)	-0.23*** (0.03)	-0.23*** (0.03)	-0.25*** (0.05)	-0.26*** (0.05)	-0.26*** (0.05)	-0.26*** (0.05)
other	0.22*** (0.04)	0.22*** (0.04)	0.22*** (0.04)	0.22*** (0.04)	0.15*** (0.03)	0.16*** (0.03)	0.17*** (0.03)	0.17*** (0.03)	-0.02 (0.04)	-0.01 (0.04)	-0.01 (0.04)	-0.01 (0.04)
illness	0.09*** (0.03)	0.08*** (0.03)	0.08*** (0.03)	0.08*** (0.03)	0.20*** (0.02)	0.19*** (0.03)	0.19*** (0.03)	0.19*** (0.03)	0.21*** (0.03)	0.21*** (0.03)	0.21*** (0.03)	0.21*** (0.03)
gali	0.56*** (0.03)	0.57*** (0.03)	0.56*** (0.03)	0.56*** (0.03)	0.43*** (0.02)	0.43*** (0.03)	0.43*** (0.03)	0.43*** (0.03)	0.34*** (0.03)	0.33*** (0.03)	0.33*** (0.03)	0.33*** (0.03)
Constant	-1.11*** (0.07)	-1.07*** (0.07)	-1.11*** (0.07)	-1.11*** (0.07)	-1.15*** (0.06)	-1.11*** (0.06)	-1.14*** (0.06)	-1.14*** (0.06)	-2.14*** (0.08)	-2.13*** (0.08)	-2.13*** (0.08)	-2.13*** (0.08)
N	44329	44329	44329	44329	53820	53820	53820	53820	53820	53820	53820	53820

Note: This table includes full results from logistic regression models, except coefficients for country dummy variables. Standard errors in parentheses. * p < 0.1; ** p < 0.05; *** p < 0.01.

Table 3 – Average Marginal Effects (AMEs) of being childless and of being unpartnered on the probability of feeling currently lonely or lonelier than before the pandemic

AME of:	Before the pandemic (regular wave 8)				During the pandemic (COVID wave 8)							
	Do you feel lonely?				Do you feel lonely?				Have felt lonelier than before the pandemic?			
	(M1)	(M2)	(M3)	(M4)	(M1)	(M2)	(M3)	(M4)	(M1)	(M2)	(M3)	(M4)
childless	0.1126*** (0.0078)		0.0504*** (0.0073)		0.1005*** (0.0071)		0.0377*** (0.0067)		0.0177*** (0.0050)		0.0004 (0.0046)	
unpartnered		0.1874*** (0.0050)	0.1794*** (0.0051)			0.1857*** (0.0046)	0.1795*** (0.0047)			0.0545*** (0.0034)	0.0544*** (0.0034)	
childless partnered				0.0758*** (0.0112)				0.0367*** (0.0099)				-0.0077 (0.0065)
unpartnered				0.0367*** (0.0111)				0.0444*** (0.0102)				0.0074 (0.0074)
unpartnered parents				0.1843*** (0.0054)				0.1789*** (0.0050)				0.0526*** (0.0037)
childless				0.1451*** (0.0148)				0.1866*** (0.0133)				0.0677*** (0.0092)
N	44329	44329	44329	44329	53820	53820	53820	53820	53820	53820	53820	53820

Note: The AMEs reported in this table have been calculated based on estimates from logistic regression models reported in Table 2. Control variables have been averaged out. Standard errors in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 4 – Modeling changes in loneliness: Estimated coefficients from multinomial logistic regressions for the explanatory variables selecting only individuals included in both the regular wave 8 and covid wave.

Independent variables	(M3)	(M4)
<i>1) Continued loneliness. Effect on: Lonely in both waves (ref. = not lonely in both waves)</i>		
Childless	0.34*** (0.05)	0.52*** (0.09)
unpartnered	1.37*** (0.04)	1.40*** (0.04)
childless * unpartnered		-0.28** (0.11)
<i>2) Entering loneliness. Effect on: From not lonely to lonely (ref. = not lonely in both waves)</i>		
childless	0.10 (0.06)	0.02 (0.10)
unpartnered	0.67*** (0.04)	0.66*** (0.04)
childless * unpartnered		0.12 (0.13)
<i>3) Exiting loneliness. Effect on: From lonely to not lonely (ref. = lonely in both waves)</i>		
childless	-0.17** (0.07)	-0.24** (0.11)
unpartnered	-0.61*** (0.05)	-0.62*** (0.05)
childless * unpartnered		0.07 (0.14)
N	35,068	35,068

Note: The outcome has four categories that compare the pre-covid and during-covid lonely feelings. Estimates from two (statistically equivalent models) are presented that differ for the reference category. We present coefficients from the first model where the reference category is “not lonely in both waves” for the first two categories of the outcome, while for the last one (from lonely to not lonely) we present results from the second model where the reference category was “lonely in both waves”. All independent variables are measured at the time of the regular wave. Only model version number 3 and 4 are displayed for simplicity.

Table 5 – Robustness checks of the main analyses presented in Table 2 above. Estimated coefficients for the explanatory variables from logistic regressions

Independent variables	Before the pandemic (regular wave 8)				During the pandemic (COVID wave 8)							
	Do you feel lonely?				Do you feel lonely?				Have felt lonelier than before the pandemic?			
	(M1)	(M2)	(M3)	(M4)	(M1)	(M2)	(M3)	(M4)	(M1)	(M2)	(M3)	(M4)
<i>1) Controlling for whether individuals other than the respondent and his/her partner are present in the household</i>												
childless	0.50*** (0.04)		0.24*** (0.04)	0.38*** (0.06)	0.42*** (0.03)		0.16*** (0.04)	0.15*** (0.06)	0.11** (0.05)		-0.03 (0.05)	-0.09 (0.08)
unpartnered		0.92*** (0.03)	0.89*** (0.03)	0.92*** (0.03)		0.89*** (0.02)	0.86*** (0.02)	0.86*** (0.02)		0.47*** (0.03)	0.48*** (0.03)	0.46*** (0.03)
childless * unpartnered				-0.23*** (0.08)				0.03 (0.07)				0.18 (0.11)
others in the household	-0.55*** (0.04)	-0.39*** (0.04)	-0.37*** (0.04)	-0.36*** (0.04)	-0.59*** (0.03)	-0.43*** (0.03)	-0.42*** (0.03)	-0.42*** (0.03)	-0.50*** (0.05)	-0.40*** (0.05)	-0.40*** (0.05)	-0.40*** (0.05)
<i>2) Distinguishing between never married, separated/divorced and widowed</i>												
childless	0.57*** (0.04)		0.35*** (0.04)	0.43*** (0.06)	0.51*** (0.03)		0.24*** (0.04)	0.21*** (0.06)	0.17*** (0.05)		-0.02 (0.05)	-0.09 (0.08)
never married		0.96*** (0.05)	0.74*** (0.06)	0.86*** (0.08)		0.98*** (0.04)	0.84*** (0.05)	0.82*** (0.07)		0.56*** (0.06)	0.57*** (0.07)	0.60*** (0.10)
separated/divorced		0.84*** (0.04)	0.83*** (0.04)	0.85*** (0.04)		0.86*** (0.04)	0.85*** (0.04)	0.85*** (0.04)		0.59*** (0.05)	0.60*** (0.05)	0.60*** (0.05)
widowed		1.05*** (0.03)	1.05*** (0.03)	1.05*** (0.03)		0.98*** (0.03)	0.97*** (0.03)	0.97*** (0.03)		0.47*** (0.04)	0.47*** (0.04)	0.45*** (0.04)
childless * never married				-0.25** (0.12)				0.04 (0.10)				0.03 (0.14)
childless * separated/divorced				-0.23* (0.14)				0.04 (0.13)				0.03 (0.18)
childless * widowed				-0.04 (0.12)				0.06 (0.11)				0.30** (0.14)
N	44329	44329	44329	44329	53820	53820	53820	53820	53820	53820	53820	53820

Note: All control variables described in the main documents are included in all models. ^a This is an additional control variable added as a robustness check. Standard errors in parentheses. * p < 0.1; ** p < 0.05; *** p < 0.01.

Table S.1 – Additional robustness checks of the main analyses presented in Table 2. Estimated coefficients for the explanatory variables from logistic regressions

Independent variables	Before the pandemic (regular wave 8)				During the pandemic (covid wave 8)							
	Do you feel lonely?				Do you feel lonely?				Have felt lonelier than before the pandemic?			
	(M1)	(M2)	(M3)	(M4)	(M1)	(M2)	(M3)	(M4)	(M1)	(M2)	(M3)	(M4)
<i>1) Excluding respondents who tested positive and those who had some close relative or friend who tested positive and/or died (during the pandemic only)</i>												
childless					0.52*** (0.03)		0.22*** (0.04)	0.22*** (0.06)	0.19*** (0.05)		0.03 (0.05)	-0.09 (0.08)
unpartnered						0.94*** (0.02)	0.91*** (0.02)	0.91*** (0.02)		0.52*** (0.03)	0.51*** (0.03)	0.49*** (0.03)
childless * unpartnered								-0.00 (0.07)				0.18 (0.11)
N					51153	51153	51153	51153	51153	51153	51153	51153
<i>2) Excluding respondents from Austria because of different timing of the covid survey compared to the other countries (during the pandemic only)</i>												
childless					0.53*** (0.04)		0.22*** (0.04)	0.25*** (0.06)	0.18*** (0.05)		0.02 (0.05)	-0.06 (0.08)
unpartnered						0.94*** (0.02)	0.91*** (0.02)	0.92*** (0.03)		0.51*** (0.03)	0.51*** (0.03)	0.50*** (0.03)
childless * unpartnered								-0.04 (0.07)				0.13 (0.10)
N					49191	49191	49191	49191	49191	49191	49191	49191
<i>3) Selecting only individuals observed both in the regular and covid surveys</i>												
childless	0.57*** (0.04)		0.26*** (0.04)	0.41*** (0.07)	0.50*** (0.04)		0.21*** (0.04)	0.24*** (0.07)	0.14** (0.06)		-0.03 (0.06)	-0.13 (0.10)
unpartnered		1.01*** (0.03)	0.97*** (0.03)	1.00*** (0.03)		0.94*** (0.03)	0.91*** (0.03)	0.92*** (0.03)		0.53*** (0.04)	0.54*** (0.04)	0.52*** (0.04)
childless * unpartnered				-0.26*** (0.09)				-0.05 (0.09)				0.15 (0.12)
N	35068	35068	35068	35068	35068	35068	35068	35068	35068	35068	35068	35068

Note: All control variables described in the main documents are included in all models. ^a This is an additional control variable added as a robustness check. Standard errors in parentheses. * p < 0.1; ** p < 0.05; *** p < 0.01.