Supplementary data

Supplemental Table 1. HRS wave serving as data source for baseline, first follow-up, and second follow-up.

|                      | Baseline, n (% of total) | First Follow-up, n (% of total) | Second Follow-Up, n (% of total) |
|----------------------|--------------------------|--------------------------------|---------------------------------|
|                      | 2008                     | 2012                           | 2016                            |
|                      | 5,974 (100%)             | 5,974 (100%)                   | 2,705 (44.6%)                  |
| Baseline, n (% of total) | 4,603 (77.1%)            | 4,299 (72.0%)                  | 2,705 (100%)                   |
|                      | 8 (0.1%)                 | 1,675 (28.0%)                  |                                 |
| First Follow-up, n (% of total) |                  |                                 |                                 |
| 2012                 | 1,363 (22.8%)            |                                 |                                 |
| Participants with a single follow-up only, n (% of total) | 3,269 (54.7%)             |                                 |                                 |

Notes: Data source: Health and Retirement Study, 2006-2016.
Supplemental Table 2. Lagged association of loneliness as a time-varying predictor of depression and the symptom cluster, excluding “lonely” question from CES-D as a sensitivity analysis (n=5,969)

| Outcome          | Model 1<sup>a</sup> | Model 2<sup>b</sup> | Model 3<sup>a</sup> | Model 4<sup>b</sup> |
|------------------|----------------------|----------------------|----------------------|----------------------|
|                  | OR (95% CI)          | p                    | QIC                  | OR (95% CI)          | p                    | QIC                  |
| Symptom Cluster  | 2.69 (2.18, 3.33)    | **2033.69             | 2.23 (1.77, 2.80)    | **1889.39            |
| Depression       | 2.54 (2.22, 2.92)    | **4737.98             | 2.29 (1.97, 2.65)    | **4498.73            |

Notes: Data source: Health and Retirement Study, 2006-2016. Generalized estimating equations (GEE) logistic regression was used for all models. The comparison was the absence of the dependent variable (depression or symptom cluster excluding the “lonely” question). QIC: quasi-likelihood under the independence model criterion.

<sup>a</sup> Models 1 and 3 include time-varying loneliness at previous wave (s) as the primary predictor of outcomes, adjusting for follow-up time in years and the presence of the outcome variable at baseline.

<sup>b</sup> Models 2 and 3 include time-varying loneliness at previous wave (s) as the primary predictor of outcomes, adjusting for follow-up time in years, the presence of the outcome variable at baseline, and baseline sociodemographic covariates (age, sex, race/ethnicity, education, total wealth in quartiles, living arrangement and total number of comorbidities).

**p < .0001