



Technology-Mediated Contact and Depression Across Homebound Status Among Older Adults

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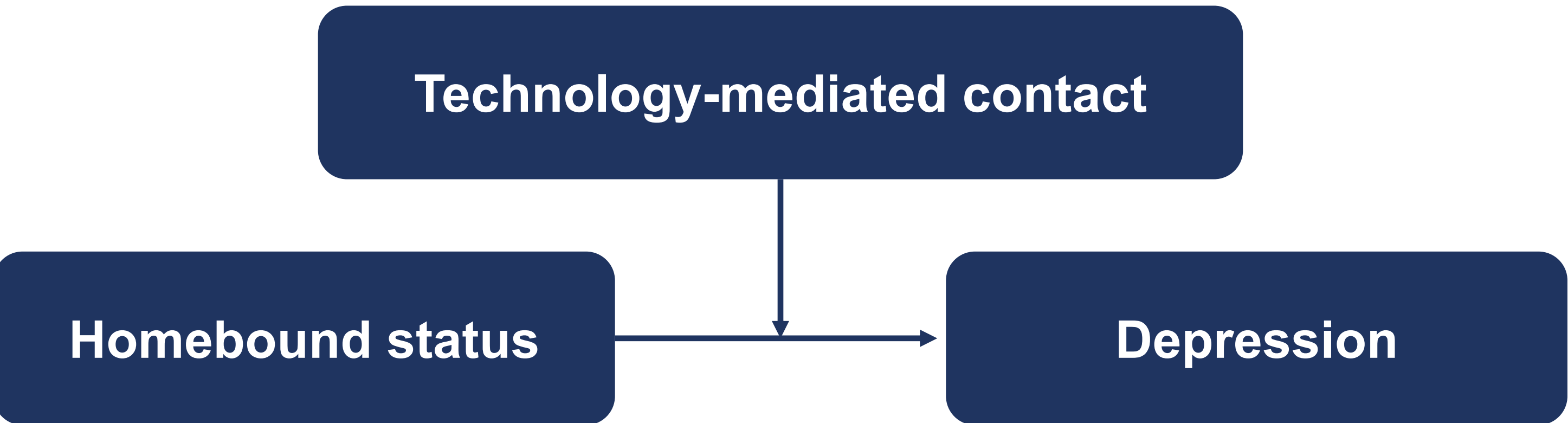
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Background

- Homebound older adults have limited access to in-person social contact and experience elevated risk of depression.
- Technology-mediated contact (TMC), including video calling and telehealth, may help older adults maintain social connection and access health support without leaving home.
- Stress-buffering theory proposes that supportive resources should be most beneficial for people facing greater stress or social restriction.
- Yet fully homebound older adults are among the least likely to use TMC, despite potentially having the greatest need for it.
- Prior research links technology use with lower depression and loneliness and show that homebound status is associated with worse mental health; however, few nationally representative U.S. studies have tested whether TMC modifies the association between homebound status and depression.

Aim: To examine whether TMC use moderates the association between homebound status and probable depression among U.S. older adults.



Methods

Data and sample: Round 14 (2024) of the National Health and Aging Trends Study (NHATS); self-respondents aged 65 and older (N = 6,543) who are living in the community or in residential care settings (excluding nursing homes).

Homebound status: Non-homebound (left home every day or most days), semi-homebound (some days), or fully homebound (rarely or never).

TMC use: Reported video calling with family or friends or a telehealth visit (1 = yes, 0 = no).

Outcome: Probable depression, defined as PHQ-2 score ≥ 3 .

Covariates: Gender, age group, race/ethnicity, living alone, education, income quintile, and ADL/IADL limitations.

Analysis: Adjusted logistic regression models estimated associations with probable depression and tested homebound status $\times$ TMC use interactions. Analytic N = 6,470 after listwise deletion; odds ratios and 95% confidence intervals are reported.

Table 1. Sample Characteristics (N = 6,543)

	Total N = 6,542	Non-HB n = 4,938	Semi-HB n = 1,113	HB n = 491	p
Age, %					<.001
65–74	30.8	32.7	25.2	24.2	
75–84	47.2	48.3	44.0	42.6	
85+	22.0	19.0	30.8	33.2	
Female, %	57.3	52.8	72.7	68.0	<.001
Race/ethnicity, %					<.001
White	60.3	66.0	45.1	37.2	
Black	19.2	17.2	27.7	20.1	
Hispanic	17.4	13.7	23.5	40.5	
Other	3.2	3.1	3.7	2.3	
Living alone, %	31.8	30.6	34.8	37.1	<.001
Education, %					<.001
Less than HS	17.8	13.7	25.3	42.8	
Bachelor or higher	38.0	42.3	28.5	16.5	
Lowest income quintile, %	19.1	13.5	31.4	47.3	<.001
ADL+IADL, M (SD)	1.40 (1.64)	1.12 (1.40)	2.09 (1.93)	2.69 (2.01)	<.001
TMC, %	45.1	50.8	31.0	19.8	<.001
Probable depression, %	12.4	8.5	19.1	36.1	<.001

Note: HB = homebound. 1 case missing for homebound status. TMC = technology-mediated contact (video calling or telehealth). Probable depression = PHQ-2 ≥ 3 . Unweighted. ADL+IADL = number of daily activities needing help (range 0–11). p from χ^2 or F tests. Selected categories shown for education and income; tests use all categories.

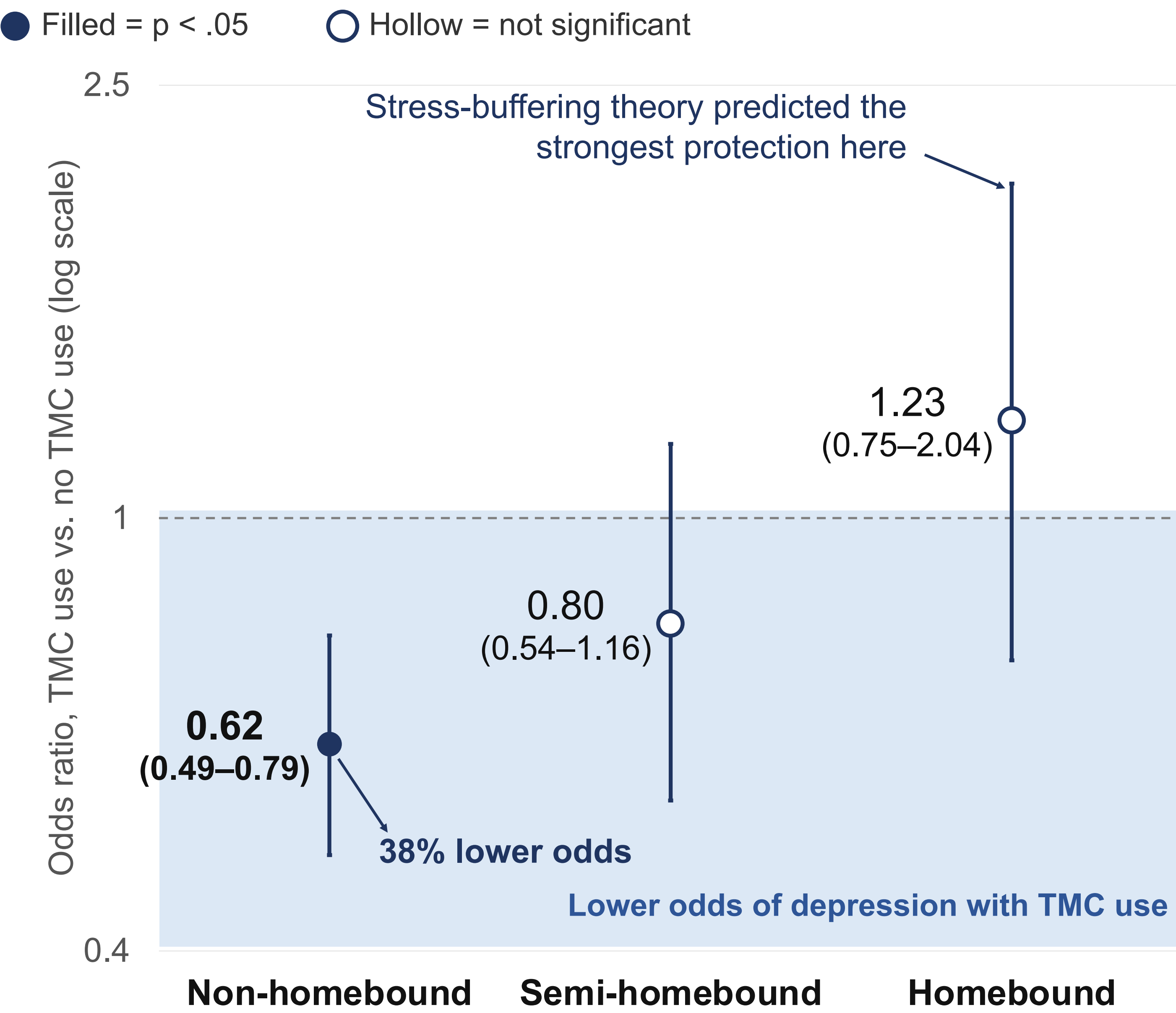
Table 2. Odds Ratios for Probable Depression

Model 1: Main-effects	OR (95% CI)	
Homebound (ref: non-HB)		
Semi-homebound	1.43 (1.17–1.75)***	
Homebound	2.55 (2.00–3.25)***	
TMC use (ref: no use)	0.71 (0.59–0.87)***	
Model 2: TMC by homebound status	TMC OR (95% CI)	Ratio of ORs
Non-homebound	0.62 (0.49–0.79)***	Reference
Semi-homebound	0.80 (0.54–1.16)	1.28 (0.83–1.96)
Homebound	1.23 (0.75–2.04)	1.98 (1.15–3.41)*
Overall test of difference	Wald omnibus p = .039	

Note: OR = odds ratio; HB = homebound; TMC = technology-mediated contact. N = 6,470, unweighted; adjusted for gender, age group, race/ethnicity, living alone, education, income quintile, and ADL+IADL. Model 2: TMC ORs within each group, from a model adding homebound $\times$ TMC interactions; ratio of ORs (95% CI) compares each group with non-homebound (= interaction OR). * p < .05; *** p < .001.

Figure 1. TMC Use and Probable Depression

Protective association of TMC use disappears among homebound older adults



Note: ORs compare older adults who used TMC with those who did not, within each homebound group (OR < 1 = lower odds of depression with TMC use); from Table 2, Model 2. Bars = 95% CI; dashed line = no difference; log scale. Homebound vs. non-homebound ratio of ORs = 1.98, p = .014.

Discussion and Implications

- Contrary to stress-buffering theory, TMC use did not show a stronger protective association with depression among fully homebound older adults.
- Exploratory analyses suggested that the interaction was driven by telehealth rather than video calling. Among fully homebound adults, telehealth use may reflect greater health needs or healthcare engagement rather than a source of social connection.
- TMC may supplement, rather than replace, in-person social contact and other supports for older adults who rarely leave home.
- Programs seeking to reduce depression among homebound older adults should consider the purpose of technology use and address social connection needs alongside access to technology.

Limitations: The cross-sectional design cannot establish temporal order or distinguish whether technology use precedes or follows depression. Estimates are unweighted.

Next steps: Longitudinal analyses will examine prior depression and homebound status, video calling and telehealth separately, and healthcare utilization.