Supplemental File to:

Caregivers' Internet-Delivered Insomnia Intervention Engagement and Benefit: SHUTi-CARE Trial Primary Quantitative Analysis

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Supplemental Participant Recruitment Information

Participants may have learned about our trial from any of the multiple recruitment pathways: (1) seeing in-clinic flyers or handouts within select clinics at the University of Virginia (UVA) or University of Pittsburgh (Pitt) health systems; (2) receiving a letter about the trial through the Pitt Center for Social and Urban Research Caregiver Research Registry; (3) receiving a letter about the trial through the Pitt Alzheimer's Disease Research Program; (4) matching with the study through the Pitt Clinical and Translational Science Institute Pitt+Me Research Registry; (5) seeing a trial advertisement on Facebook or Instagram through a paid UVA-sponsored campaign; (6) seeing a trial posting on other social media platforms (i.e., Reddit, Twitter); or (7) seeing a trial posting through local and national non-profit organizations that provide care to family caregivers.

As discussed in Limitations and Future Research, these recruitment strategies may have contributed to a participant sample that was disproportionately non-Hispanic white and highly educated relative to national estimates of the broader population of family caregivers. Focusing largely on research registries to identify caregivers may have contributed to these imbalances. In-person and community-based recruitment through strategies, such as offering workplace lectures or maintaining a consistent presence at community events, may help reach a more diverse sample. While expensive, contracting with a clinical research recruitment agency may also help to efficiently identify a broader pool of potential participants.

Supplemental Measures Information

Full measure names, interpretations, and citations are detailed in the primary manuscript; this Supplementary File provides further information about select measures.

Cognitive mechanisms. All participants completed these measures at baseline; SHUTi users completed these measures again at post-assessment.

Sleep beliefs (DBAS) [1]: Items are rated on an 11-item Likert scale (0=*Strongly Disagree* to 10=*Strongly Agree*). Scale reliability was adequate in the current sample (Cronbach's α=0.87, 0.92 at baseline and post-assessment, respectively).

Sleep control (SLOC-int and -ext, respectively) [2]: Items are rated on a six-item Likert scale (1=*Strongly Disagree* to 6=*Strongly Agree*). Subscale reliability was adequate in the current sample for SLOC-int at both time points (α=0.67, 0.78); reliability was adequate for SLOC-ext at baseline (α=0.71) but low at post-assessment (α=0.55).

Distal outcomes. All caregivers completed measures of insomnia severity, physical health, and distress at both time points; only SHUTi users completed sleep diaries at post-assessment.

Insomnia symptom severity (ISI-2) [3]: This abbreviated version of the ISI strongly correlates with the full seven-item ISI and was selected as part of an effort to reduce overall measurement burden. Items are rated on a five-item Likert scale (0=*Very Satisfied / Not at all Interfering* to 4=*Very Dissatisfied / Very Much Interfering*). Subscale reliability was low at baseline for all participants (α=0.50) and post-assessment for SHUTi Users (α=0.42), but adequate at post-assessment for SHUTi Non-users (α=0.78).

Global physical health (PROMIS Global Physical Health) [4]: Items are rated on a five-item Likert scale (1=*Excellent / Completely* to 5=*Poor / Not at all*). Scale reliability was low at

baseline for all participants (α=0.57) and at post-assessment for SHUTi Non-users (α=0.55), but adequate at post-assessment for SHUTi Users (α=0.66).

General distress (PHQ-4) [5]: Items are rated on a four-point Likert scale (0=*Not at all* to 3=*More than half the days*). Scale reliability was adequate at both time points (α=0.82, 0.81, 0.90, for baseline, SHUTi User post-assessment, and SHUTi Non-user post-assessment, respectively).

Caregiving-related user characteristics.

Caregiving stress (Caregiving Overload subscale of the Pearlin Stress Scale) [6]: Items are rated on a four-point Likert scale (1=*Not at All* to 4=*Completely*). Scale reliability was adequate (α=0.78).

Caregiving self-efficacy (Caregiving Competence subscale of the Pearlin Stress Scale) [6]: Items are rated on a five-point Likert scale (1=*Never* to 5=*Always or almost always*). Scale reliability was adequate (α=0.78).

Caregiving guilt (Caregiver Guilt Questionnaire) [7]: Items are rated on a five-point Likert scale (0=*Never* to 4=*Always or almost always*). Reliability was adequate for all three subscales (α=0.90, 0.86, 0.87, respectively).

Caregiving-related environmental characteristics.

Care recipient functional status (modified Barthel Activities of Daily Living [ADL] index) [8]: Items are rated on a two- or three-point Likert scale (e.g., 0=*Dependent* to a maximum of 2=*Independent*).

Care recipient cognitive status (Cognitive Status subscale of the Pearlin Stress Scale) [6]: Items are rated on a five-point Likert scale (0=*Not at all difficult* to 4=*Can't do at all*). Scale reliability was adequate (α=0.92).

Care recipient problem behavior (Problematic Behavior subscale of the Pearlin Stress Scale) [6]: Items are coded on a four-item Likert scale (1=*No days* to 4=*Five or more days*). Scale reliability was adequate (α=0.81).

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