**Electronic Supplementary Material 1: Study Descriptions**

**Health and Intergenerational Activities Research Project (HARP Study)**

Study Overview

The study examined daily experiences of loneliness and solitude, and prosocial engagement in a socioeconomically diverse sample of community-dwelling, middle-aged, and older adults. Additionally, the study sought to assess for which individuals, and under what circumstances, solitude may be experienced positively or negatively. The study employed a daily repeated-measures design to capture nuances in the experience of loneliness and solitude.

Inclusion Criteria

Participants were required to be community-dwelling adults aged 50+ who were living in the greater Vancouver area. Participants could complete the study in either English, Mandarin, or Cantonese, but needed to be proficient in their language of choice.

Exclusion Criteria

The study used technology devices (iPads), and therefore excluded participants with physical impairments that would limit their manual dexterity. Participants were ineligible if they were unable to read newspaper-sized print. Lastly, participants were ineligible if they had been diagnosed with a neurodegenerative disease or brain dysfunction, including stroke.

Study Recruitment

Participants were recruited through the distribution of flyers posted at community centres, seniors’ centres, churches, and stores, as well as through a database of previous study participants.

Missing data

Two older adults in the initial sample dropped out before the study began or during the baseline session due to time constraints or concerns about questionnaires. Another four participants dropped out during the time-sampling period due to time constraints or concerns about their own abilities. A total of *n* = 102 completed the 10-day time-sampling, however only *n* = 100 were retained after data cleaning; 2 participants were removed due to accidental deletion of questionnaire data or considerable difficulty completing questionnaires (see also Lay et al., 2018). This resulted in a final sample of n = 100 participants.

**Study Procedures**

Baseline Session

The initial study session was held in a research lab or somewhere in the community. During the baseline session participants engaged in an informed consent process, and completed a questionnaire package which included self-report measures, as well training on the usage of an iPad mini. Older adults completed all baseline measures in paper-pencil format. Following this, participants were given a pre-programmed tablet device (iPad), and the study materials for the 10-day time-sampling phase. A research assistant demonstrated how to appropriately complete electronic questionnaires, make voice recordings, and take photos using the iPad.

Time-Sampling

The time-sampling phase generally started the day after the baseline session. During the 10-day period, participants went about their daily life while carrying the tablet device. At three pre-programmed times throughout the day the tablet would “beep”, indicating that the participant needed to complete an electronic questionnaire that assessed their thoughts, affect, activities, contexts, and social interactions. The three daily questionnaires were dispersed by a minimum of 4 hour intervals, in the morning, afternoon, and evening, respectively. In addition, participants were asked to photograph moments in their day where they 1) had an opportunity to help someone in need; 2) did help someone in need; or 3) did not help someone in need. Once participants completed the third questionnaire of the day, the tablet would automatically prompt them to choose a photo(s) of one of the three examples listed above, where they would recount what happened.

Exit Session

Following the 10-day time-sampling, participants attended a second meeting with a research assistant. In the exit interview they completed a questionnaire package which included self-report and cognitive measures. The participants kept their tablet devices after the exit interview, as they would need them to participate in the second portion of the study, a six-month time-sampling phase. Participants were then trained on how to complete bi-weekly electronic questionnaires on their tablets to be completed over the next 6-month period. Participants had the opportunity to engage in a technology workshop led by student researchers/assistants, which was tailored to the preferences and skill levels of the participant. The bi-weekly questionnaires inquired about the extent of tablet usage, what functions or applications were used, and physical activity. Participants were notified to complete the questionnaire by a “beep” from the tablet every two weeks at a time that best suited them.

Follow-Up

Participants attended a third and final meeting with a research assistant to complete a follow-up questionnaire package, which included self-report and cognitive measures. Participants were asked to share their experience of using a tablet device, and were reimbursed for their participation with an iPad mini.

**Publications**:

Archer Lee, Y., Lay, J. C., Pauly, T., Graf, P., & Hoppmann, C. A. (2022). The differential roles of chronic and transient loneliness in daily prosocial behavior. Psychology and Aging, 37(5), 614–625. <https://doi.org/10.1037/pag0000681>

Lay, J. C., Fung, H. H., Jiang, D., Lau, C. H., Mahmood, A., Graf, P., & Hoppmann, C. A. (2019). Solitude in context: On the role of culture, immigration, and acculturation in the experience of time to oneself. International Journal of Psychology, 55(4), 562–571. <https://doi.org/10.1002/ijop.12641>

Lay, J. C., Pauly, T., Graf, P., Biesanz, J. C., & Hoppmann, C. A. (2019). By myself and liking it? Predictors of distinct types of solitude experiences in daily life. Journal of Personality, 87(3), 633–647. <https://doi.org/10.1111/jopy.12421>

Lay, J. C., Pauly, T., Graf, P., Mahmood, A., & Hoppmann, C. A. (2018). Choosing Solitude: Age Differences in Situational and Affective Correlates of Solitude-Seeking in Midlife and Older Adulthood. The Journals of Gerontology: Series B. <https://doi.org/10.1093/geronb/gby044>

Pauly, T., Lay, J. C., Kozik, P., Graf, P., Mahmood, A., & Hoppmann, C. A. (2019). Technology, Physical Activity, Loneliness, and Cognitive Functioning in Old Age. GeroPsych, 32(3), 111–123. <https://doi.org/10.1024/1662-9647/a000208>

Pauly, T., Lay, J. C., Scott, S. B., & Hoppmann, C. A. (2018). Social relationship quality buffers negative affective correlates of everyday solitude in an adult lifespan and an older adult sample. Psychology and Aging, 33(5), 728–738. <https://doi.org/10.1037/pag0000278>

**Partners Using Linked Strategies Effectively (PULSE Study)**

Study Overview

The study aimed to explore how partners help shape each other’s health behaviours after a stroke. Specifically, how partners may facilitate healthy choices and support the well-being of one another. A daily repeated-measures design was used to capture nuances and fluctuations in health behaviours, affect, and relationship functioning.

Inclusion Criteria

Within an intimate partnership, at least one partner had experienced a stroke. Couples were included if they were community dwelling (i.e. not living in an assisted care facility). Both partners had to be able to walk a minimum of 10 metres with or without a mobility device, and both partners were required to participate in the study.

Exclusion Criteria

Individuals were excluded if they resided in a nursing home or assisted care facility. They would also be ineligible if either partner suffered from a medical condition that prohibits physical activity or the consumption of fruit and vegetables, were unable to read newspaper sized print or handle a device the size of a book, or were unable to provide informed consent.

Study Recruitment

Participants were recruited through flyers, posters, and pamphlets distributed in the community (e.g. libraries, community centres, coffee shops etc.), as well as through online advertisements on platforms such as Facebook and Twitter. Additionally, individuals who participated in the “Living with Stroke” program provided by the Heart and Stroke Foundation of Canada, were contacted directly by phone or e-mail.

Missing data

Out of the 101 adults who have experienced a stroke entering Study 1, one individual helped pilot study procedures, nine individuals dropped out, data from one person were excluded due to non-compliance, and one individual did not have any mindfulness/pain data due to a technical error (Pauly et al., 2021). This resulted in a final sample of n = 89 participants.

**Study Procedures**

Mailout/Take-home Package

Prior to the baseline session, participants were mailed a questionnaire package which included a copy of the consent form, a background questionnaire, as well as various additional questionnaires on health behaviours, personality, affect, and personal beliefs. Should there not be sufficient time before their first session, participants instead received the questionnaire package to take home and complete during the time-sampling phase.

Baseline

The initial study session was held either in a research lab, the participant’s home, or somewhere in the community, based on accessibility and preference. A researcher or research assistant went through an informed consent process with both participants, and acquired contact information. An initial baseline questionnaire package was then administered, in either paper-pencil format or electronically using a tablet (iPad). Following this, health measurements were taken (blood pressure, height, weight, etc.). A food test was then administered, followed by a final questionnaire package. Lastly, participants were shown how to wear activity monitors and how to use the iPad to complete daily questionnaires, and to take photographs of their food and beverages during the time-sampling phase.

Time-Sampling

A 14-day time-sampling phase followed the baseline session. Participants were asked to fill out a morning questionnaire shortly after waking up using the iPad, and also an evening questionnaire shortly before going to bed. Both sets of questionnaires looked at situational context, individual and dyadic goal pursuits, planning, efficacy, nutrition and physical activity. The morning questionnaire asked about their plans for the day, whereas the evening questionnaire asked them to reflect back on what was actually accomplished. Participants wore an accelerometer from the moment of waking until bedtime, and wore FitBits day and night during the 14 day time-sampling phase. Participants were asked to take photos of all food and beverage consumed during the 14-day period. Lastly, participants were asked to complete a blood draw at a LifeLabs centre at some point in the 14 day time-sampling phase (a requisition form was provided).

Exit Session

Following the 14-day time-sampling phase, participants attended a second meeting with the researchers. At this point the researchers asked them to provide feedback on their experience in the study, and administered the first of two questionnaire packages. Cognitive measures were then taken for each participant individually, in separate rooms. The final questionnaire package was administered, and participants were reimbursed with the option of an iPad mini, or 100 CAD each. Participants had the option of scheduling a technology workshop with 1-2 research assistants, which was tailored to their interests and abilities.

Follow-Up

Three months after the exit session the participants were mailed a follow-up package, which contained questionnaires on well-being, physical activity, fruit and vegetable consumption, relationship satisfaction, and technology use.

**Publications**:

Luo, M., Pauly, T., Broen. T., Ashe, M. C., Murphy, R. A., Linden, W., Madden, K. M., Gerstorf, D., & Hoppmann, C. A. (accepted). Daily affect and daily prospective memory in people after stroke and their partners: The moderating role of resting heart rate. Gerontology.

Pauly, T., Ashe, M. C., Murphy, R., Gerstorf, D., Linden, W., Madden, K. M., & Hoppmann, C. A. (2021). Active with whom? Examining the social context of physical activity in individuals after stroke and their partners. Frontiers in Public Health, 9, Article 754046. <https://doi.org/10.3389/fpubh.2021.754046>

Pauly, T., Lüscher, J., Berli, C., Hoppmann, C. A., Ashe, M. C., Linden, W., Madden, K. M., Murphy, R., Gerstorf, D., & Scholz, U. (2023). Let’s enjoy an evening on the couch? A daily life investigation of shared problematic behaviors in three couple studies. Personality and Social Psychology Bulletin. Advance online publication. <https://doi.org/10.1177/01461672221143783>