Reducing Loneliness among Older Adults through Enhancing Positive Affect: A Randomized Controlled Trial with Ecological Momentary Assessments

The world currently faces two trends: 1) an aging population and 2) the loneliness epidemic. By 2036, the proportion of adults aged 65 and older predicted to double from 16.6% in 2016 to 31.1%. Meanwhile, the loneliness epidemic persists and has further escalated in the aftermath of the COVID-19 pandemic. Loneliness has been identified by the World Health Organization as one of the major health concerns for older adults, as it has detrimental effects on their physical, mental, and cognitive well-being. Our previous studies have indicated a prevalence of loneliness affecting over 40% of older adults in Hong Kong. Given the high prevalence of loneliness and its detrimental effects, the primary aim of the proposed study is to test the effectiveness of two brief psychosocial interventions for reducing loneliness in older adults in Hong Kong.

Previous research on behavioral interventions to reduce loneliness has the following limitations. First, most interventions have primarily focused on the cognitive and social aspects of loneliness, whilst neglecting the crucial aspect of *affective experiences*, considered to be one of the most important components of loneliness. Second, while the discrepancy between one's expected and actual social network is considered the *core mechanism* driving loneliness, few previous studies have directly investigated whether and how the interventions have truly reduced such discrepancies in everyday life and thereby reduced loneliness. Third, most interventions have relied on retrospective surveys. This methodology is prone to recall bias and fails to address whether the interventions are effective in reducing loneliness in daily life by capturing the dynamic nature of real-life affective and social interactions. These limitations are particularly detrimental for loneliness interventions in older adults, as they place greater value on emotional goals and may have greater difficulties in recalling past events.

The proposed study will aim to address these limitations through a three-arm randomized controlled trial. We will assess the effectiveness of two scalable brief telephone interventions delivered by laypersons, one targeting positive affect enhancement (Tele-PA) and the other targeting behavioral activation (TeleBA), compared with a telephone-based friendly visit (Tele-FV) in a representative sample of 276 community-dwelling Hong Kong older adults experiencing loneliness. We will combine retrospective surveys with ecological momentary assessments (EMAs). Specifically, retrospective surveys will be conducted at baseline (T1a), 3-month (T3), and 6-month (T4) follow-ups, and EMAs will be administered at baseline (T1b) and a 2-week (T2) follow-up (3 times/day × 7 days for each wave).

The primary outcome of this study will be loneliness, and the secondary outcomes will be psychological well-being, perceived stress, depressive symptoms, anxiety, depression, and cognitive functioning. First, we will examine the effects of the interventions on the primary and secondary outcomes. Second, we will examine the mechanisms underlying the effectiveness at both the momentary and individual levels. Third, because old older adults value emotional goals to a greater extent (i.e., the focus of Tele-PA) and young older adults have more opportunities to be engaged in different activities (i.e., the focus of TeleBA), we will investigate whether age will moderate the effectiveness of the interventions.

Our study will (1) fill major gaps in the field of interventions targeting loneliness, both theoretically and methodologically; and (2) provide a comprehensive model on how, when, where, and for whom the interventions affect loneliness, using a combination of retrospective surveys and ecological momentary assessments.