Comments 1: *This protocol proposed to investigate the impact of ACL (Adult Cognitive Learning) on social loneliness and mental health in older adults, offering important insights into the role of psychiatric interventions in enhancing psychological well-being in aging populations.*
Response 1: Thank you very much for your affirmation.

Comments 2: *First, the authors should provide a clear explanation of how the sample size of 70 participants was determined. Specifically, they should consider using statistical methods such as an effect size estimation to justify the adequacy of the sample size for detecting meaningful differences or effects in the study.*
Response 2: Thank you for your helpful feedback. We have revised the manuscript to provide a clear explanation of the sample size determination, including the use of effect size estimation and G*Power analysis. This ensures that the sample size is adequate for detecting meaningful differences in the study.

Comments 3: *Additionally, the manuscript would benefit from a detailed report on the reliability and validity of the scales used to measure the study's key outcomes. Demonstrating that the tools used to assess mental health and social loneliness are both reliable and valid is crucial for the study.*
Response 3: Thank you for your comment. The concern part was revised, and we have reported the reliability and validity of the scales in the manuscript.

Comments 4: *Finally and most importantly, the research design, which includes a one-time, two-hour intervention, should be better supported by existing literature. It is important to provide evidence that such a brief intervention can produce significant and lasting psychological and mental health benefits in older adults. Including more references to previous studies that have successfully implemented similar short-term interventions will help substantiate the study's approach.*
Response 4: Thank you for the advice, we have included references (systematic review as well) to support one-session interventions for the general public as well as, most importantly, older adults. Specific quotes are stated from lines 120 – 131.

4. Response to Comments on the Quality of English Language
Point 1: *English language fine. No issues detected.*

Response 1: Thank you very much for your affirmation.