

Investigating the effect of first-time hearing aid use on self-rated social participation

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Introduction

In recent years, the topic of social isolation as a psychosocial consequence of living with hearing loss has gained increasing attention. Studied to a lesser extent is the influence of wearing hearing aids on feelings of social isolation and, on the other hand, social participation. The aim of this study is to evaluate whether first-time hearing aid use affects self-reported social participation in a population of adults with hearing loss.

We measure self-rated social participation in two groups: first-time and experienced hearing aid users. The repeated measure, longitudinal design uses a Danish translation of the Social Participation Restrictions Questionnaire (SPaRQ, Heffernan et al., 2019) and a Danish translation of the Hearing Handicap Inventory for the Elderly/Adults (HHIE/HHIA, Ventry & Weinstein, 1982). The SPaRQ comprises two subscales, *social perceptions* and *social behaviours*, and the HHIE/HHIA comprises two subscales, *emotional* and *social*. The preliminary findings presented here focus on data collected at the first and second timepoints (i.e., questionnaire “rounds”) of the larger, longitudinal study.

Translation method

1. Translated to Danish independently by three native Danish speakers
2. The three translators met to agree on one version
3. Danish version back-translated to English by two professional fluent English speakers
4. All five translators met to discuss dis/agreements between the two English versions, and to agree on the best possible Danish version

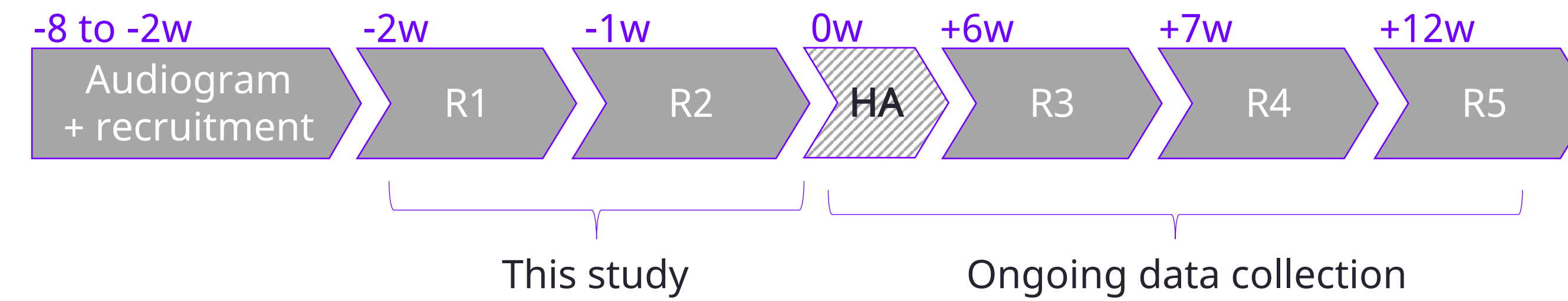
Modifications

- Hearing Handicap Inventory for the Elderly / Adults (HHIE/HHIA)
- All 28 combined questions used for all participants
 - For four select items the option “not relevant” was added. These items address situations that some participants likely never encounter: Religious ceremonies, conversations with clients, colleagues or customers, cinema and theatre

Study design

Ninety-six adult hearing aid users were recruited. Approximately half were first-time hearing aid users (intervention group), and half were experienced hearing aid users with a minimum of one year of hearing aid use (control group). Study data were collected and managed using REDCap electronic data tools hosted at Region Hovedstaden. Participants were asked to fill out the SPaRQ and HHIE/HHIA questionnaires five times over the course of 18 weeks. Data collection is ongoing for the longitudinal aspect of the investigation. In the study presented here, we assess:

- i) the test-retest reliability of the Danish translation of SPaRQ and HHIE/HHIA for the first two rounds of data collection (~1 week apart)
- ii) the difference in baseline SPaRQ subscale scores between groups, and
- iii) the difference in baseline HHIE/HHIA subscale scores between groups



Analysis

Sixty-five participants were included in the test-retest reliability analysis (intervention group: n=21, control group n=44). Participants were included in this analysis if they had provided consent, completed round one and two, were fitted with hearing aids after round two (intervention group only) and had not explicitly quit the study. We conducted correlation analyses between Rounds 1 and 2 to measure the test-retest reliability.

Seventy-nine participants were included in the baseline comparisons of the SPaRQ and HHIE/HHIA between the intervention (n=32) and control (n=37) groups. Participants were included in these analyses using the same criteria as above, except without the requirement that they completed round two of data collection. Only the first round of questionnaire scores were included in the analyses. Comparisons between groups were carried out using analysis of variance (ANOVA) for linear fixed-effect models.

Results

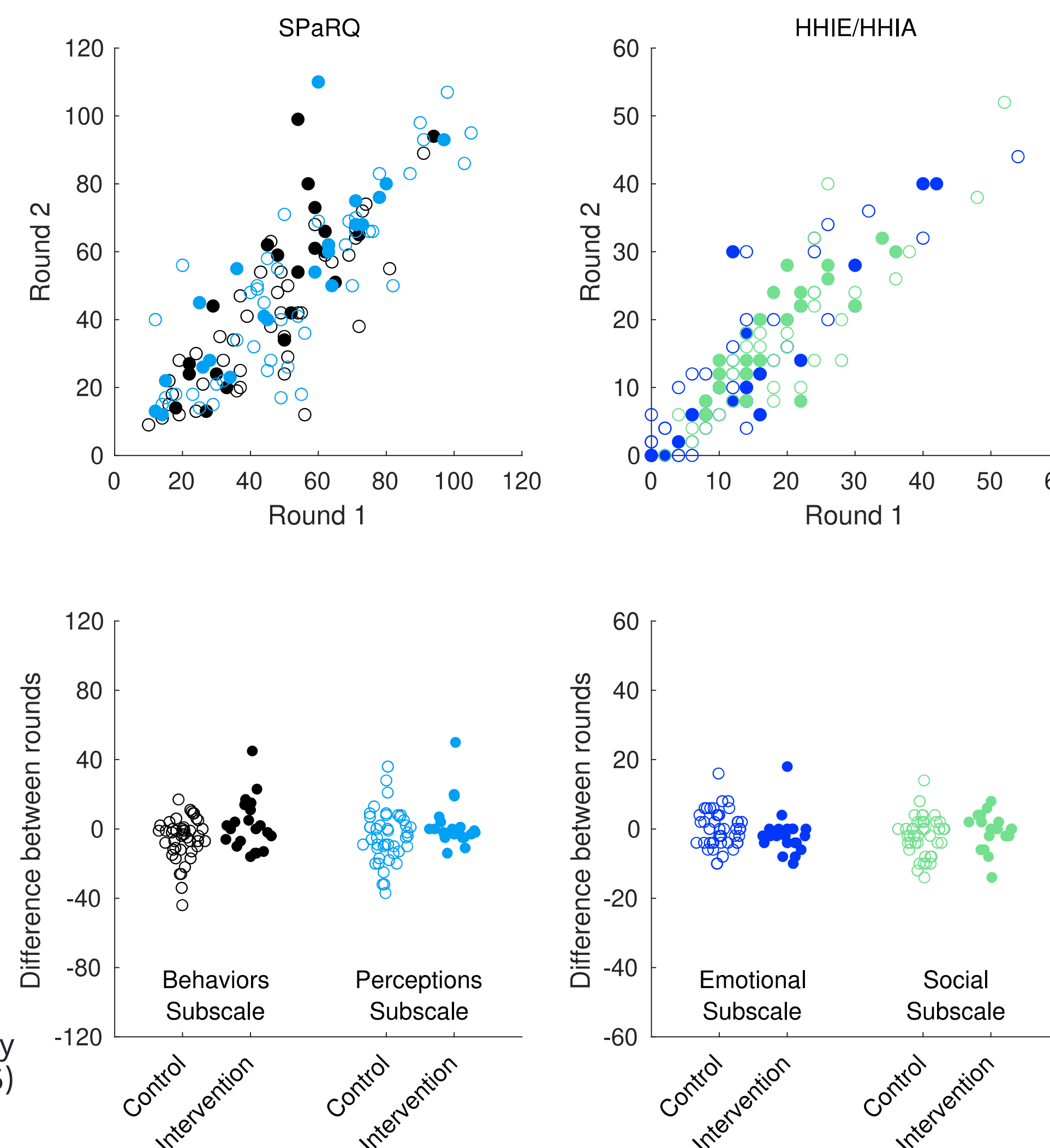
The Danish translation of both the SPaRQ and the HHIE/HHIA showed strong test-retest reliability (Fig. 1).

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SPaRQ Behaviors	0.80*
SPaRQ Perceptions	0.84*
HHIE/HHIA Emotional	0.89*
HHIE/HHIA Social	0.85*

* p<0.001

Individual changes in scores between Rounds 1 and 2 are also shown in Fig. 1.

Fig. 1 Test-retest reliability (n = 65)



Contrary to expectation, comparison of baseline SPaRQ scores between the control and intervention groups (Fig. 2) showed no significant differences between the two groups on either subscale (behaviors subscale: p=0.87; perceptions subscale: p=0.32).

Comparison of baseline HHIE/HHIA scores between the control and intervention groups also did not show any significant differences between the two groups (emotional subscale: p=0.56; social subscale: p=0.53).

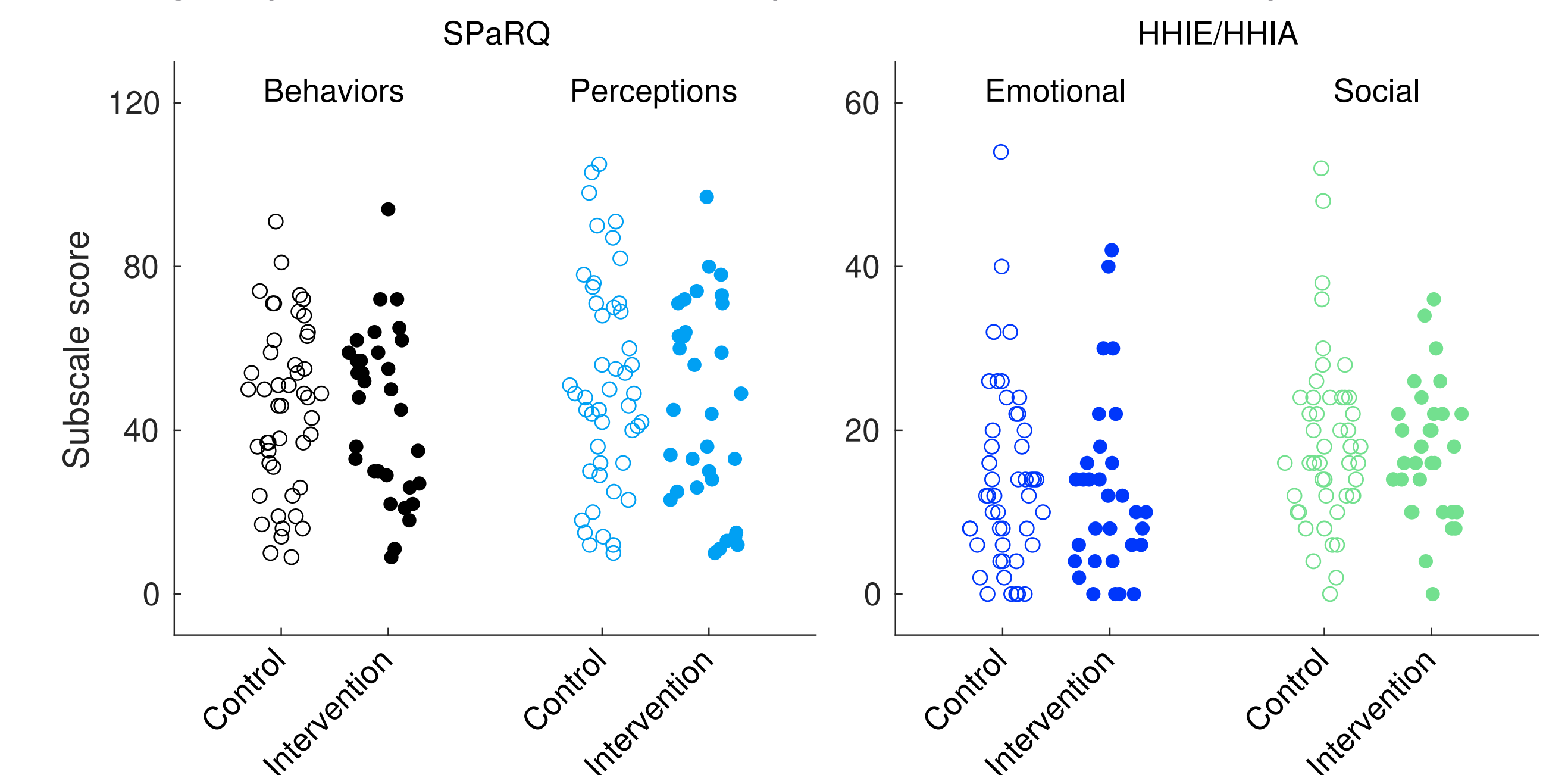


Fig. 2 Group differences in baseline SPaRQ and HHIE/HHIA ratings (n = 79)

Discussion

- Test-retest reliability indicates that the questionnaire translations can reliably score feelings of social restrictions and hearing handicap.
- The lack of differences between baseline scores for the control and intervention groups across all four subscales was unexpected and requires further consideration.
- The groups have not been actively matched for age, gender, employment status, degree of hearing loss, etc., so further investigation is required to understand these potential confounding factors.
- This study design does not allow for exclusion of the confounding placebo effect, which will be an important distinction to make when we begin to analyze the longitudinal data in the ongoing study.

Conclusion

This study validated the test-retest reliability of the Danish translation and adaptation of SPaRQ and HHIE/HHIA. However, there are no group-level differences between the intervention and control groups at baseline for the SPaRQ subscales nor for the HHIE/HHIA subscales. It is, therefore, an important preliminary component of the longitudinal study that will inform our hypotheses about the relationship between hearing aid use and self-rated social participation over time.