

INTRODUCTION

- Participation in social activities is associated with better brain and cognitive health among older adults (Barnes et al., 2011; Hamlin et al., 2022; Kelly et al., 2017)
- Previous work has indicated intersectional group differences in the association between individual social activities and cognition (Scambray et al., in prep)
- The current study aims to extend previous findings by investigating whether social activities impact brain health and/or cognitive reserve

STUDY AIM

- AIM 1:** Examine what social activities are associated with brain health across race and gender
- AIM 2:** Explore what social activities are associated with cognitive reserve across race and gender

METHODS

- Sample:**
 - 299 older adults aged 55+ from the Michigan Cognitive Aging Project (MCAP)
- Predictors:**
 - Frequency of participation [Never (1) to Daily (7)] in eight social activities:
 - Attending religious or spiritual services
 - Attending church activities (i.e., dinners)
 - Activities with grandchildren
 - Volunteer work with children
 - Attend sport/social/other club
 - Attend meetings of non-religious organizations (i.e., political)
 - Play cards or other games
 - Participate in local community arts groups (i.e., choir, dance)
- Outcome:**
 - Brain health is composed of (1) white matter hyperintensities, (2) total gray matter volume, (3) average cortical thickness of 9 Alzheimer's disease signature regions, and (4) total hippocampal volume
 - Cognitive reserve is assessed by the moderating effect of social activity on the brain-cognition relationship
 - Comprehensive neuropsychological battery including episodic memory, executive function, and language
- Covariates:**
 - Age, race, gender, education, income, and strength of religious belief
- Statistical Models:**
 - ANOVAs assessed group differences across variables
 - Multiple linear regressions stratified by race or gender conducted in RStudio

	White Older Adults n= 123	Black Older Adults n= 154	Men n= 126	Women n= 173	Unadjusted ANOVA
Age at Visit (years) [55-82]	63.3 (3.3)	63.0 (3.0)	63.3 (3.4)	62.9 (2.9)	WA=BA; M=W
Education (years) [7-17]	14.8 (2.1)	13.3 (2.2)	13.8 (2.2)	14.2 (2.3)	BA<WA; M=W
Income Bin [1-32]	13.7 (8.2)	7.7 (6.6)	11.0 (8.5)	9.9 (7.7)	BA<WA; M=W
Religious Belief [1-4]	3.0 (0.9)	3.7 (0.5)	3.2 (0.9)	3.5 (0.7)	WA<BA; M<W
Episodic Memory [-2.3-1.5]	0.3 (0.6)	-0.3 (0.7)	-0.2 (0.8)	0.1 (0.7)	BA<WA; M<W
Executive Function [-3.4-1.8]	0.4 (0.6)	-0.4 (0.8)	-0.1 (0.8)	0.0 (0.8)	BA<WA; M=W
Language [-2.0-2.1]	0.4 (0.7)	-0.4 (0.7)	0.0 (0.8)	-0.1 (0.8)	BA<WA; M=W
Total Gray Matter Volume	0.4 (1.1)	-0.4 (0.8)	0.3 (1.0)	-0.2 (1.0)	BA<WA; W<M
Total Hippocampal Volume	0.2 (1.0)	-0.2 (1.0)	0.1 (1.1)	-0.1 (0.9)	BA<WA; W<M
Cortical Thickness of Alzheimer's Disease Signature Region	0.0 (0.9)	-0.2 (1.1)	-0.1 (1.0)	0.0 (1.0)	BA<WA; M=W
White Matter Hyperintensities (WMH)	-0.01 (1.0)	0.3 (1.0)	0.2 (1.1)	0.1 (1.0)	WA=BA; M=W
Brain Health Composite	0.1 (0.6)	-0.1 (0.6)	0.1 (0.6)	0.0 (0.6)	BA<WA; W<M

TABLE 1. Demographics table. Means (SDs). Income ranges from \$0-\$4999.99 [1] to \$250000+ [32]. Religious belief ranges from Not at all [1] to Very [4]. All cognitive scores and brain health metrics are z-score composites. *Abbreviations:* WA: White older adults; BA: Black older adults; M: Men; W: Women

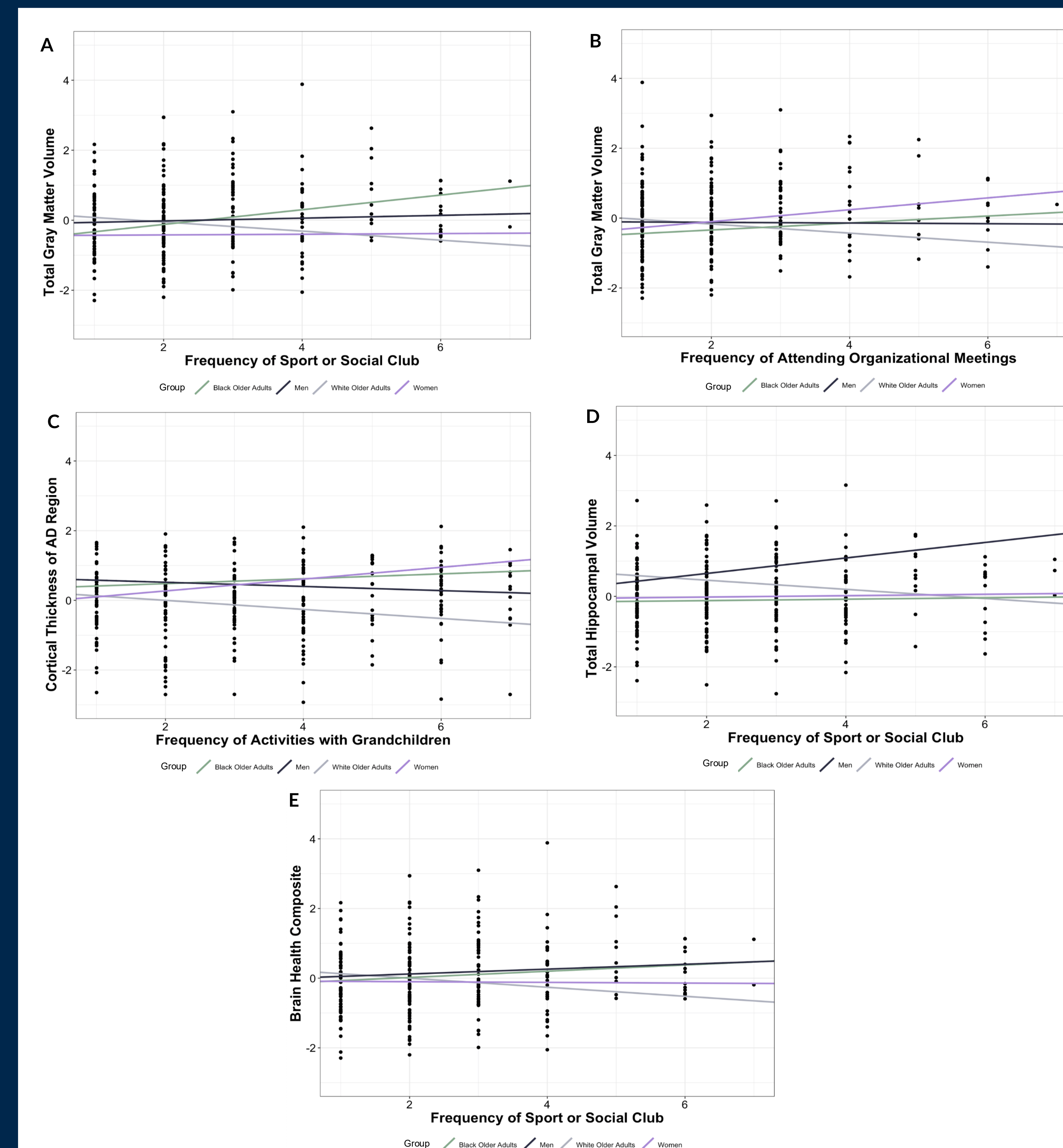


Figure 1. Linear regressions assessing social activities and brain health metrics across race and gender. Among Black older adults, frequent participation in sport or social club is associated with greater total gray matter volume (Panel A; $B=0.21$, $p=0.04$). Among women, frequent attendance of organization meetings is associated with greater total gray matter volume (Panel B; $B=0.17$, $p=0.04$) and frequent participation in activities with grandchildren is associated with greater cortical thickness in Alzheimer's disease (AD) signature region (Panel C; $B=0.17$, $p=0.04$). Among men, more frequent participation in sport and social club was associated with greater hippocampal volume (Panel D; $B=0.22$, $p=0.03$) and brain health composite (Panel E; $B=0.22$, $p=0.02$).

RESULTS

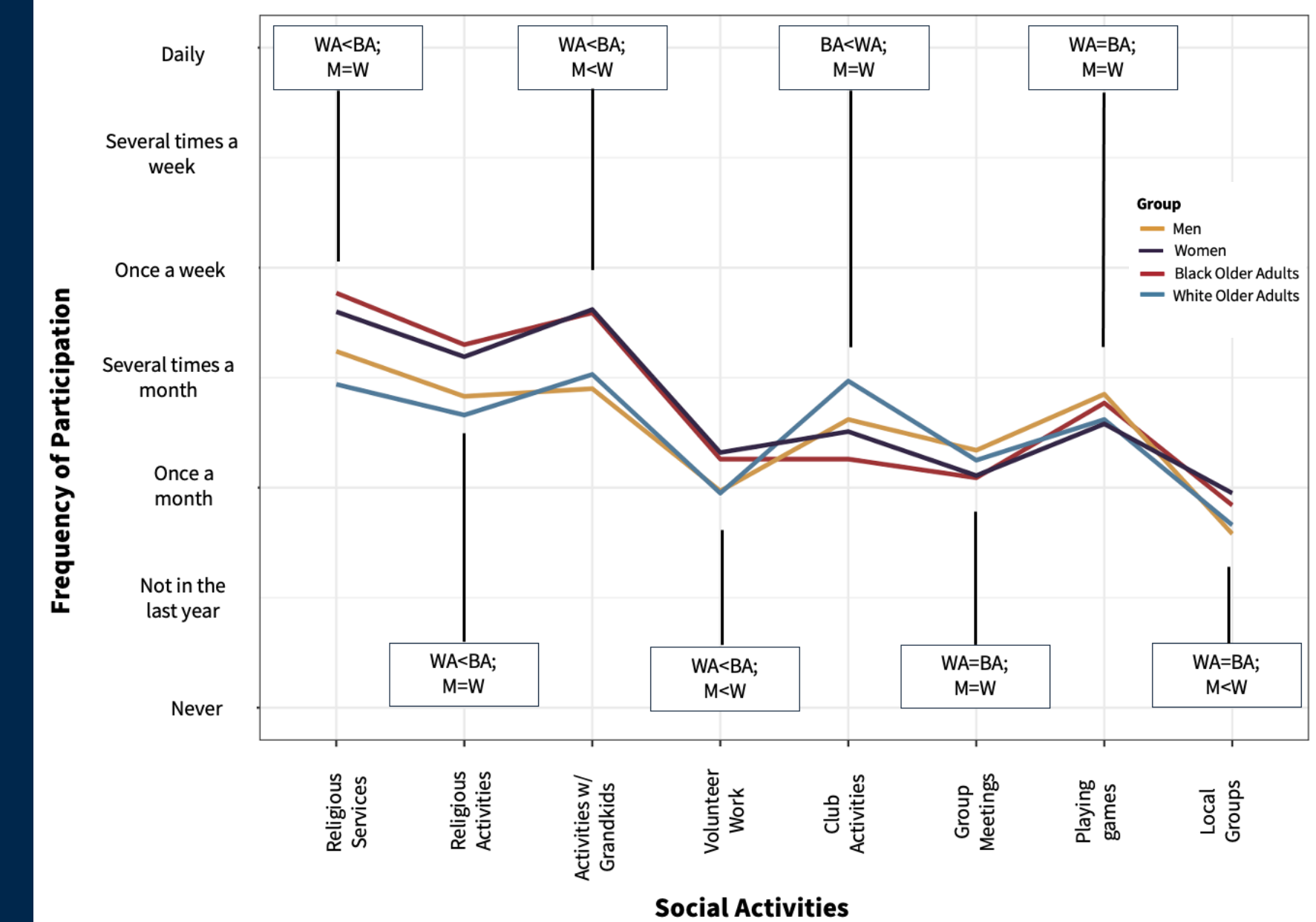


FIGURE 2. Significant group differences in the frequency of participation across social activities. *Abbreviations:* BA: Black older adults; WA: White older adults; M: Men; W: Women

DISCUSSION

- Findings highlight individual social activities differentially relate to markers of brain health (i.e., total gray matter volume, total hippocampal volume, cortical thickness of AD region) across race and gender
- White matter hyperintensities are not associated to individual social activities across race or gender
- Findings did not suggest a moderating effect of any social activity on the brain-cognition relationship
- More evidence that social activities are associated with brain health compared to cognitive reserve
- This work demonstrates the importance of considering group differences to understand the impact of lifestyle factors in order to promote individualized approaches for future interventions
- Future work can elaborate on these findings by examining these associations longitudinally

ACKNOWLEDGEMENTS

MCAP is funded by the National Institute on Aging (grant numbers R01AG082307, P30AG012846, P30AG024824, P30AG053760). The authors have no conflicts of interest to disclose.

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