

Assessing bidirectional longitudinal associations between changes in social network structures and cognitive decline in late life

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Introduction

- **Gaps:** The role of social networks in maintaining cognitive health is unclear, in part because few longitudinal studies have explored bidirectional associations between changes in social network structures and cognition.
- **Aims:** This study aimed to better understand their bidirectional relationships by examining how changes in social networks and cognitive decline are associated longitudinally and testing how neighborhood social cohesion and cognitive decline are associated in late life.

Methods

- **Data:** Secondary analyses of data collected during nine waves of the National Health and Aging Trends Study (NHATS; 2011–2019).
- **Cognitive performance:** Global cognition was the main outcome, but domain-specific analyses examined episodic memory, orientation, and executive function.
- **Social network:** Measured by the “name generator” approach and self-reported social participation activities.
- **Analyses:** Linear mixed models were used to investigate longitudinal effects of neighborhood social cohesion and physical environment on cognitive decline. Dual-outcomes models were used to examine bidirectional associations between social network structures and cognitive decline. Covariates included socioeconomic status, physical measurements, mental health, and lifestyle indicators.

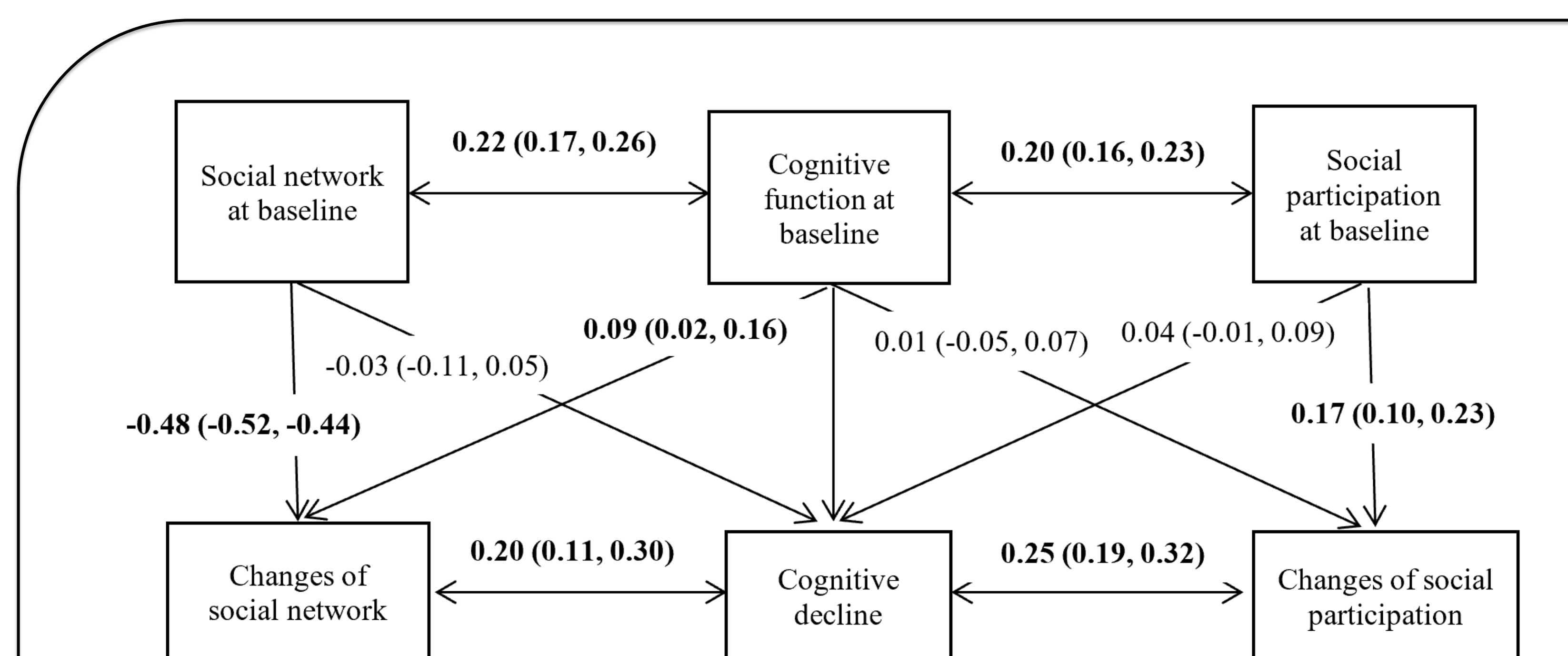


Figure 1. Research Results on Associations Between Social Network Size, Social Participation, and Global Cognition in Later Life

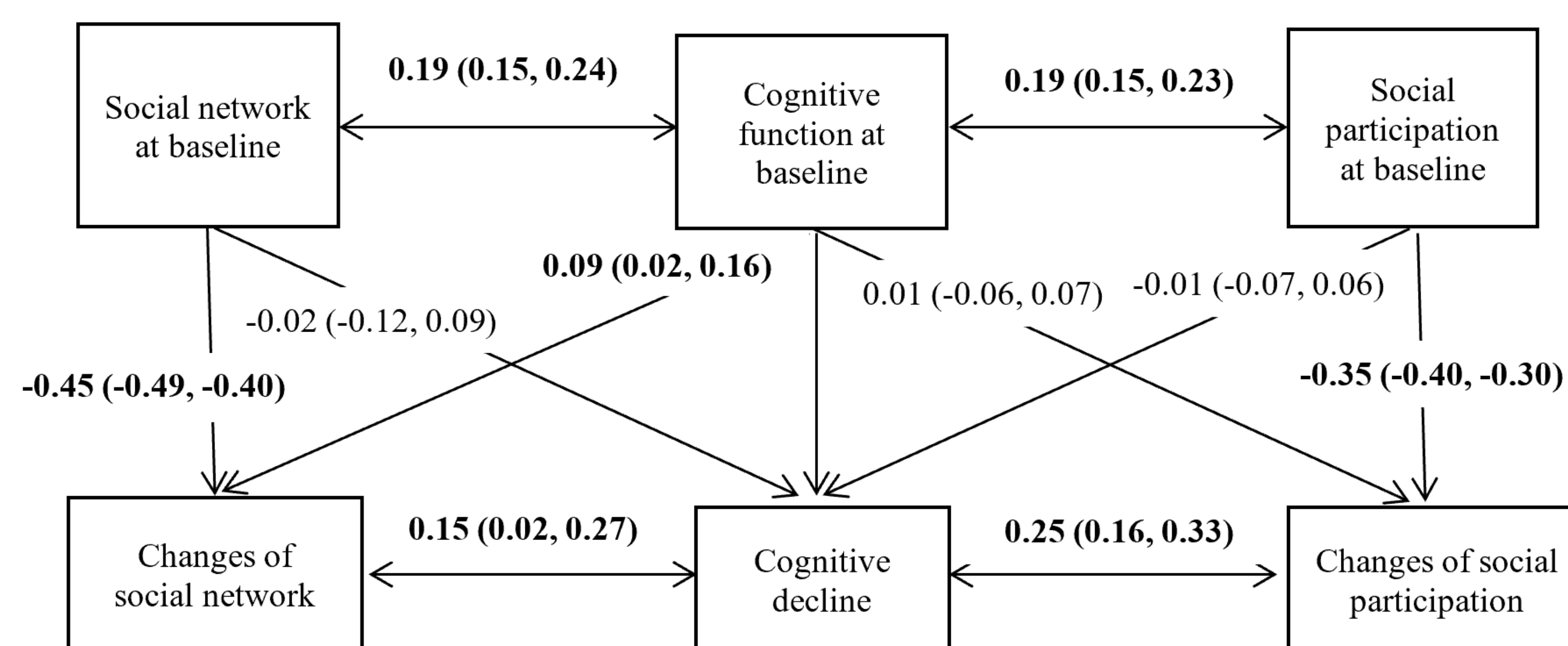


Figure 2. Research Results on Associations Between Friend Network Size, Social Participation, and Episodic Memory in Later Life

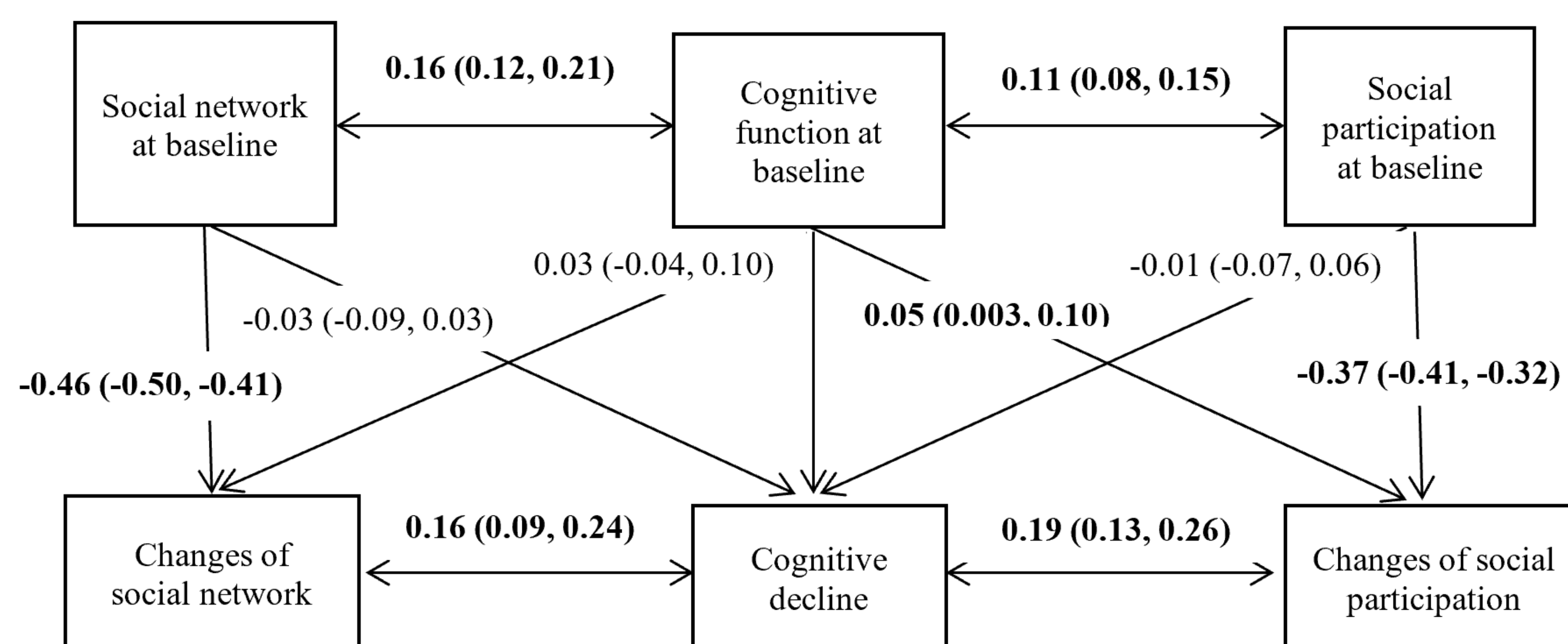


Figure 3. Research Results on Associations Between Social Network Characteristics, Social Participation, and Orientation Function in Later Life

Results

- Eligible participants ($N = 7,325$) were recruited at baseline and followed for an average of 4.86 ± 3.22 years.
- Bivariate correlations indicated that slopes of changes in social networks or participation and cognitive decline were positively correlated.
- Having more friend ties and a higher percentage of college graduates at baseline were associated with slower declines in global cognition and episodic memory, whereas higher global cognition at baseline was associated with smaller changes in social network size.
- Less disorientation at baseline was associated with a slower decline in social participation.

| | | N (%) |
|----------------------------|-----------------------------|---------------|
| Sex | Female | 4,252 (58.05) |
| | < High School | 1,945 (26.83) |
| Education | High School graduate | 3,752 (51.76) |
| | College and beyond graduate | 1,552 (21.41) |
| Race | White, non-Hispanic | 5,030 (69.36) |
| | Black, non-Hispanic | 1,585 (21.86) |
| | Other non-Hispanic | 205 (2.83) |
| | Hispanic | 432 (5.96) |
| Baseline marital status | Married | 3,553 (48.56) |
| | Living with a partner | 147 (2.01) |
| | Separated | 125 (1.71) |
| | Divorced | 778 (10.63) |
| Baseline physical function | Widowed | 2,436 (33.29) |
| | Never married | 278 (3.80) |
| | Low | 2,077 (32.57) |
| Baseline depression status | Medium | 2,460 (38.58) |
| | High | 1,840 (28.85) |
| Smoke status | Yes | 2,016 (27.52) |
| | Yes | 3,726 (50.92) |
| Total | | 7,325 |

Conclusions

- Findings indicate bidirectional longitudinal relationships between social network structure and cognitive decline. Social networks may improve cognitive health but are also vulnerable to cognitive decline related to disorientation.