PHYSICAL FUNCTION: THE ROLES OF SOCIAL ENGAGEMENT AND COGNITIVE IMPAIRMENT

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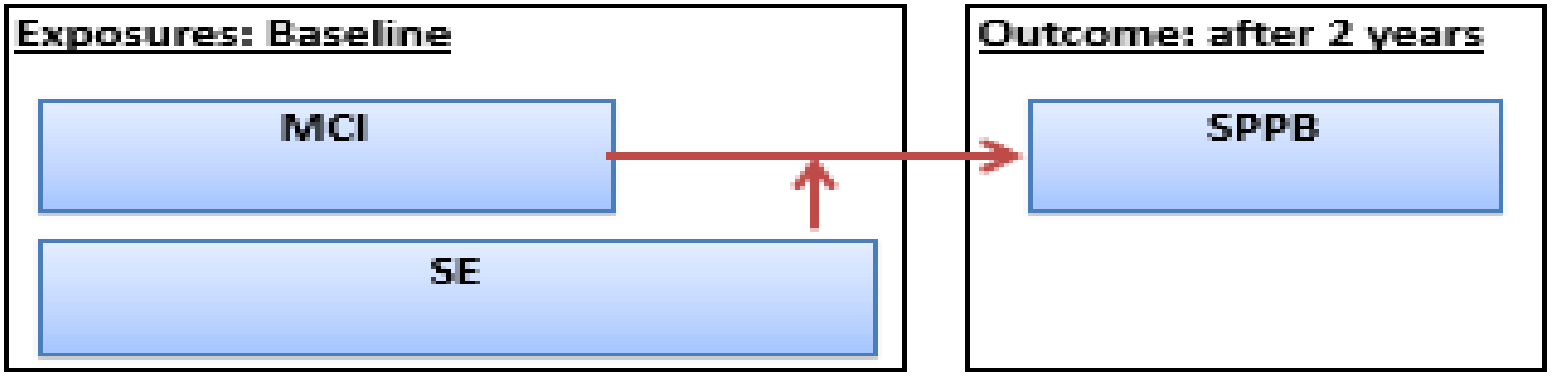
Specific Aims

Specific Aim 1: Investigate the relationship between social engagement and physical function over 2 years of follow-up

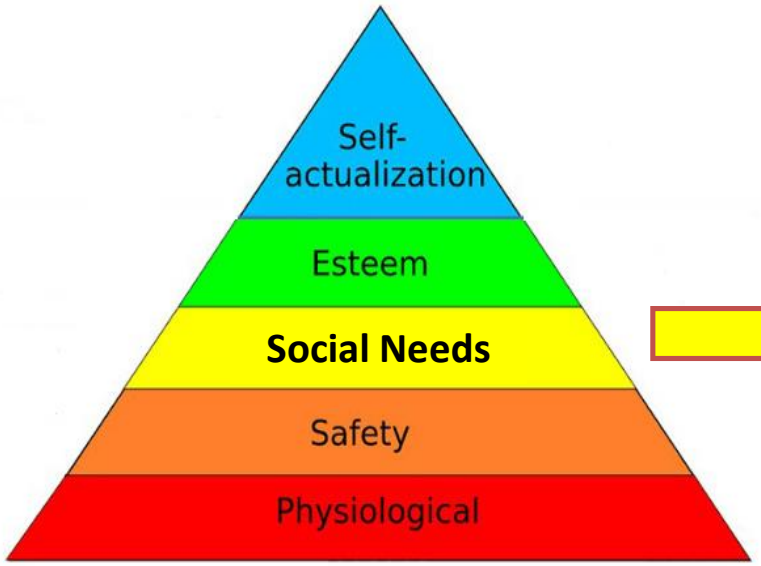
Specific Aim 2: Investigate whether social engagement moderates the association between MCI and physical function



Background

- Functional limitation affects 33-50% of older adults
- Mild cognitive impairment (MCI) is associated with reduced physical function
- Social behaviors are critical for health outcomes
  - Social engagement (SE): keeping in touch with friends and family, volunteering, and engaging in social activities
- Social engagement is complex
  - hasn't been studied in relation to MCI and physical function

Rationale


Self-actualization
Esteem
Social Needs
Safety
Physiological


MORE CONNECTIONS
ACTION
CLARITY
SELF WORTH
5 GOOD THINGS
ZEST

SE and Cognitive Function

- Increase neural metabolic activities, synthesis and neural growth.
- Create an internal biological environment for neural plasticity (Cozolino, 2006).

Innovation

Theoretically and methodologically innovative

- explore impact of psychosocial factors on physical function using combination of psychosocial pathways
- establish the feasibility of deeper social engagement phenotyping

Methods

Design:

Boston Rehabilitative Impairment Study of the Elderly (Boston RISE).
430 older primary care patients mean age of 76. 6 (range: 65-96).
Longitudinal analysis: data from December 2009 to January 2012.

- Inclusion criteria:
  - living in the community,
  - aged 65 or older,
  - English proficiency,
  - at risk of mobility decline.

- Exclusion criteria:
  - terminal illness,
  - MMSE score <18,
  - SPPB score <4,
  - severe visual impairment.

Measurements

- **Mobility:**
  - **Short Physical Performance Battery (SPPB)**

    Chair stands, standing balance, and gait speed

- **Cognition:**
  - Trail A and B, Digit Symbol Substitution Test (DSST), Hopkins Verbal Learning Test
  - MCI: least two tests with a cutoff of 1.5 SD below the age-adjusted mean

- **Social Engagement:** Late Life Function and Disability Instrument

  Likert questions: “how often do you…”.

  1) keep in touch with others;
  2) Visit friends and family in their homes;
  3) Provide care or assistance to others;
  4) Volunteering;
  5) Take part in active recreation;
  6) Travel out of town;
  7) Invite people into your home;
  8) Go out with others to public places;
  9) Take part in organized social activities.

  - Good social engagement: at least 49 out of 100

Statistical Analysis

Generalized Linear Regression

Network Analysis (NA)

The map of social activities
– MCI vs. non MCI
– Higher physical function vs. lower physical function

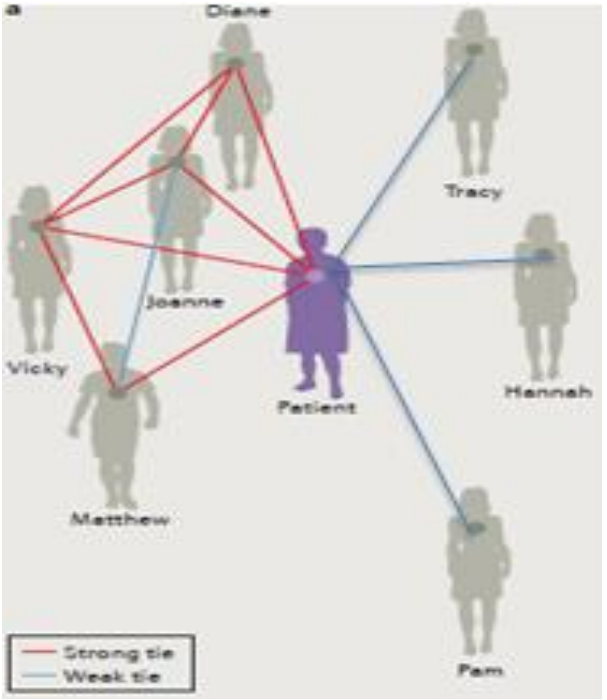
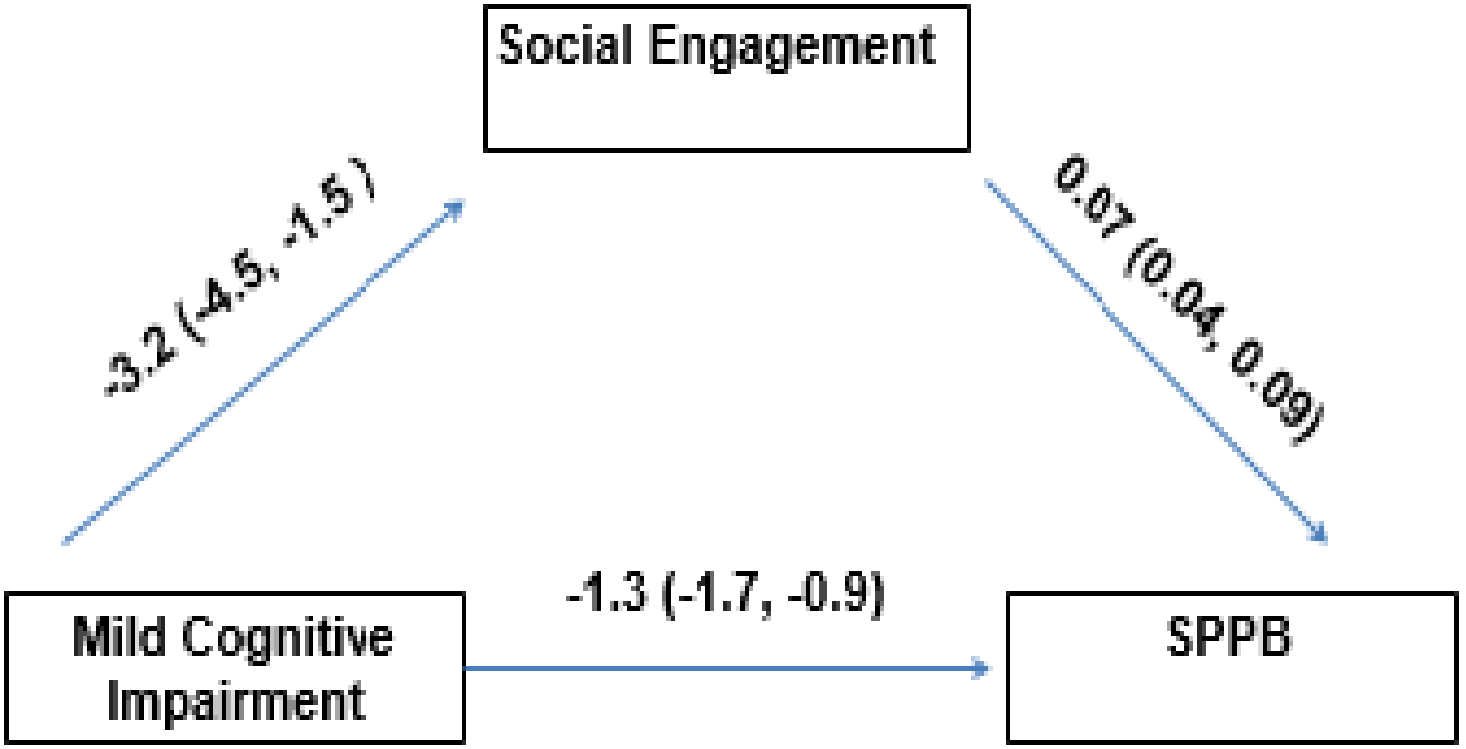


Table 1: Characteristics of Study Participants by Social Engagement (SE)

Characteristics	Low SE	High SE	p-value
	N=209	N=221	
Age (years) [mean (SD)]	76.55 (7.12)	76.57 (6.91)	0.97
Male [N(%)]	70 (33.5)	69 (31.2)	0.61
Living with spouse/partner [N(%)]	62 (29.7)	86 (38.9)	0.04
White and Non-Hispanic [N(%)]	171 (81.8)	184 (83.3)	0.69
BMI [N(%)] (kg/m^2)			
Normal (BMI <25.0)	50 (23.9)	52 (23.6)	0.7
Overweight (BMI 25.0-29.9)	75 (35.9)	87 (39.5)	
Obese (BMI ≥30)	84 (40.2)	81 (36.8)	
Education [N(%)]			
Less than 12th grade or General Education	112(53.5)	72(32.6)	<.0001
Undergraduate or Vocational or Technical School	61 (29.2)	79 (35.7)	
Graduate or Professional School	36 (17.2)	70 (31.7)	
Comorbidity Index [N(%)]	7.02 (3.8)	6.17 (3.5)	0.02
Brief Pain Inventory Total [mean (SD)]	2.71 (2.0)	2.38 (1.8)	0.07
Depressive symptoms [N(%)]	24 (11.5)	4 (1.8)	<0.0001
Mild Cognitive Impairment [N(%)]	107(51.2)	74 (33.5)	0.0002

SE mediates the Association between MCI and SPPB



Conclusion

- The potential benefit of SE.
- Physiological linking between SE, cognitive and physical functions.

Next Steps/Career Trajectory

- Complete analysis on Network Analysis (NA)

  The map of social activities:

  - MCI vs. non MCI
  - Higher physical function vs. lower physical function

- K award or VA career development grant using national representative data (NHATS)

- Inform potential non-pharmaceutical interventions targeting social engagement

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Thank you!

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