



Do fatigue, apathy, and ADL/IADL participation influence social participation post-stroke? A mediational analysis

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Introduction

Stroke is the **fifth leading cause of death** in the United States (1). This event can cause lasting deficits.

- **Social Participation:** 15-30% reduced participation in pre-stroke activities ^{2,3,4,5}
- **Communication:** 30% of strokes result in aphasia ⁶
- **Activities of Daily Living (ADLs) and Instrumental Activities of Daily Living (IADLs):** 59-68% reported challenges with ADLs ⁷ & 70% report difficulties with housework, meal prep and shopping ⁸; driving is significantly impacted ^{5,9}
- **Fatigue:** prevalence 33-76% ^{11,25}; negatively correlated with ADL, IADLs, quality of life, self-efficacy ^{10, 11}
- **Apathy:** 33% of persons post-stroke will develop; significant negative correlations w decreased QOL, ADL/IADL ^{12, 14, 15}

Objectives

- (1) Determine if there are post-stroke differences in social participation for persons with aphasia (PWA) and persons without aphasia (PWOA).
- (2) Quantify the relationships among fatigue, apathy, and ADL/IADL participation with social participation in a chronic stroke population.
- (3) Determine the extent to which ADL/IADL participation mediates the relationships between fatigue and social participation and apathy and social participation.

Methods

Recruitment

- Local support groups, community centers, rehabilitation centers
- Inclusion Criteria: 18+, singular stroke experience, ability to withstand two 3hour testing sessions

Assessment Measures

Outcome Variable

- **Social Participation:** % Retained on Social Domain of Activity Card Sort ¹⁶

Predictor Variables

- **Fatigue:** Global Fatigue Index, Multidimensional Assessment of Fatigue ¹⁷
- **Apathy:** Apathy Evaluation Scale ¹⁸
- **ADL/IADL Participation:** Activities Domain, from Stroke Impact Scale, version 4.0 ¹⁹

Data Analysis

- **Independent t-test:** determine if there is a group difference for persons with and without aphasia on social participation
- **Pearson correlations:** calculate the magnitude of correlation between predictor and outcome variables
- **Multiple regression:** determine the percent variance of the outcome accounted for by predictor variables
- **Partial correlations:** quantify mediation of ADL/IADL participation on fatigue to social participation and apathy to social participation

Results

(n=66)	n	Percent of Total
Caucasian	36	54.5%
African American	28	42.4%
Hispanic/Latino or Asian	2	.03%

Table 1. Self-reported race and ethnicity.

(n=66)	Min	Max	Average (SD)
Age	33	80	59.8 (10.4)
Edu (yrs)	12	24	15.1 (2.6)
NIHSS Total	0	10	2.8 (2.5)

Table 2. Demographic data on sample. NIHSS = National Institute of Health Stroke Scale

	PWA (SD)	PWOA (SD)	Significance (2-tailed)
N = 66	N = 38	N = 28	
ACS % Retained SP	79.9 (19)	76.2 (22)	.474

Table 3. Non-significant t-test results (sig. > .05) indicating no difference for persons with aphasia (PWA) versus persons without aphasia (PWOA) on social participation (SP) outcome.

	β weight	Sig. (2-tailed)
Fatigue	-.187	.148
Apathy	.216	.129
ADL/IADL Part	.231	.088
		R ² = .266

Table 4. Multiple Regression for ACS % Retained for Social Participation by predictor variables (sig>.05).

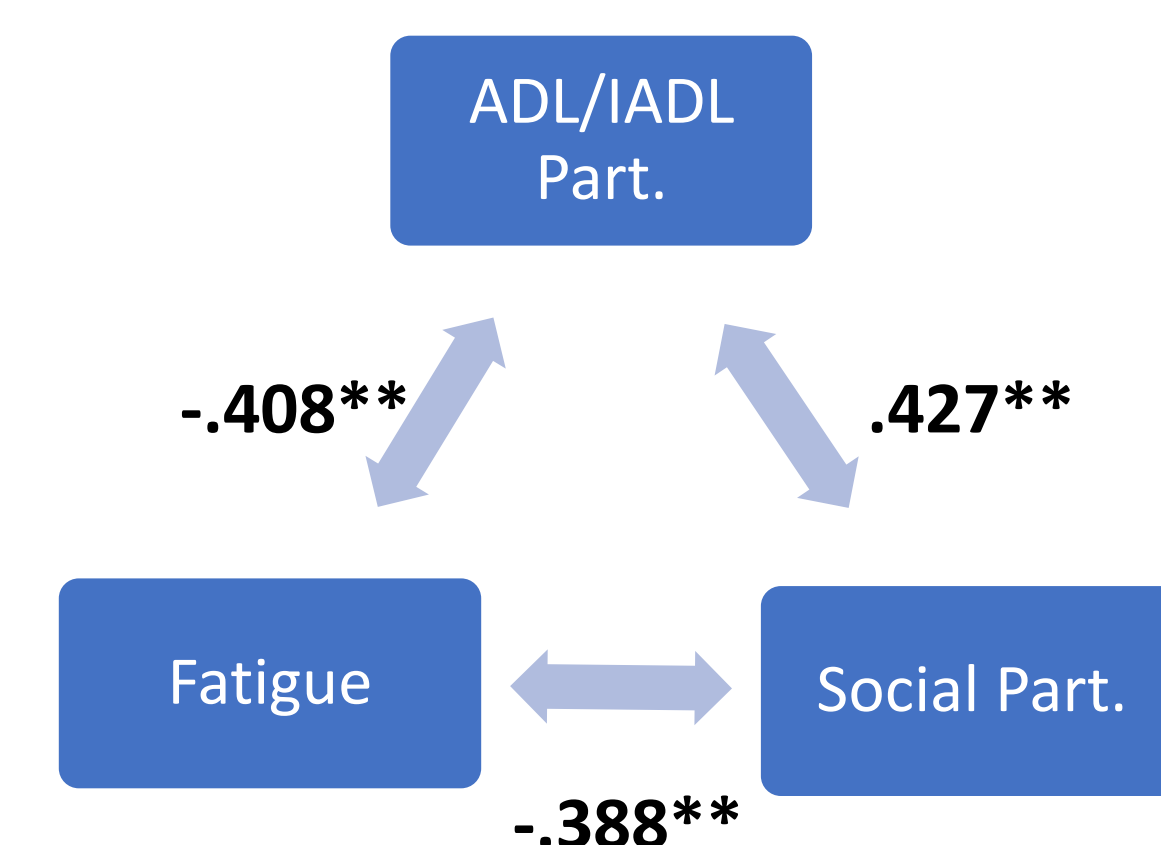


Figure 1. Pearson correlations between fatigue, ADL/IADL participation, and social participation

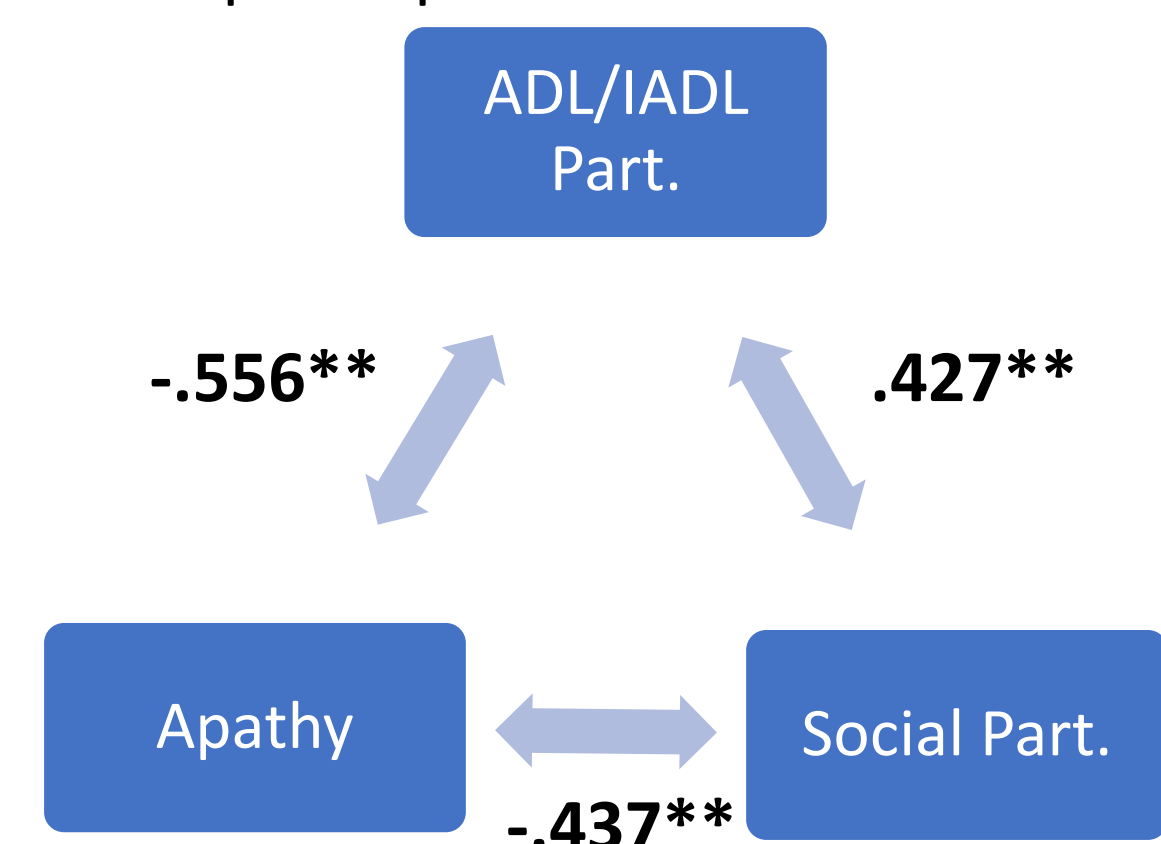


Figure 3. Pearson correlations between apathy, ADL/IADL participation, and social participation

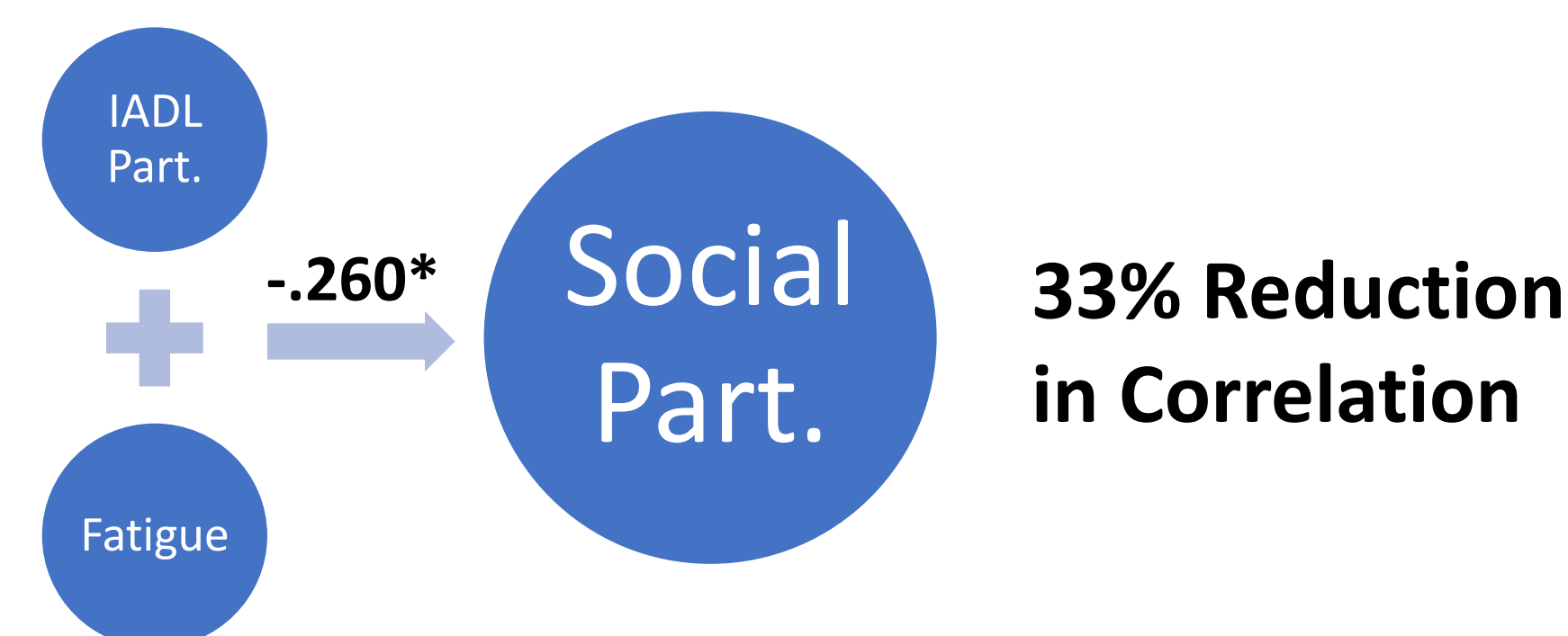


Figure 2. Partial correlations between fatigue, ADL/IADL participation, and social participation

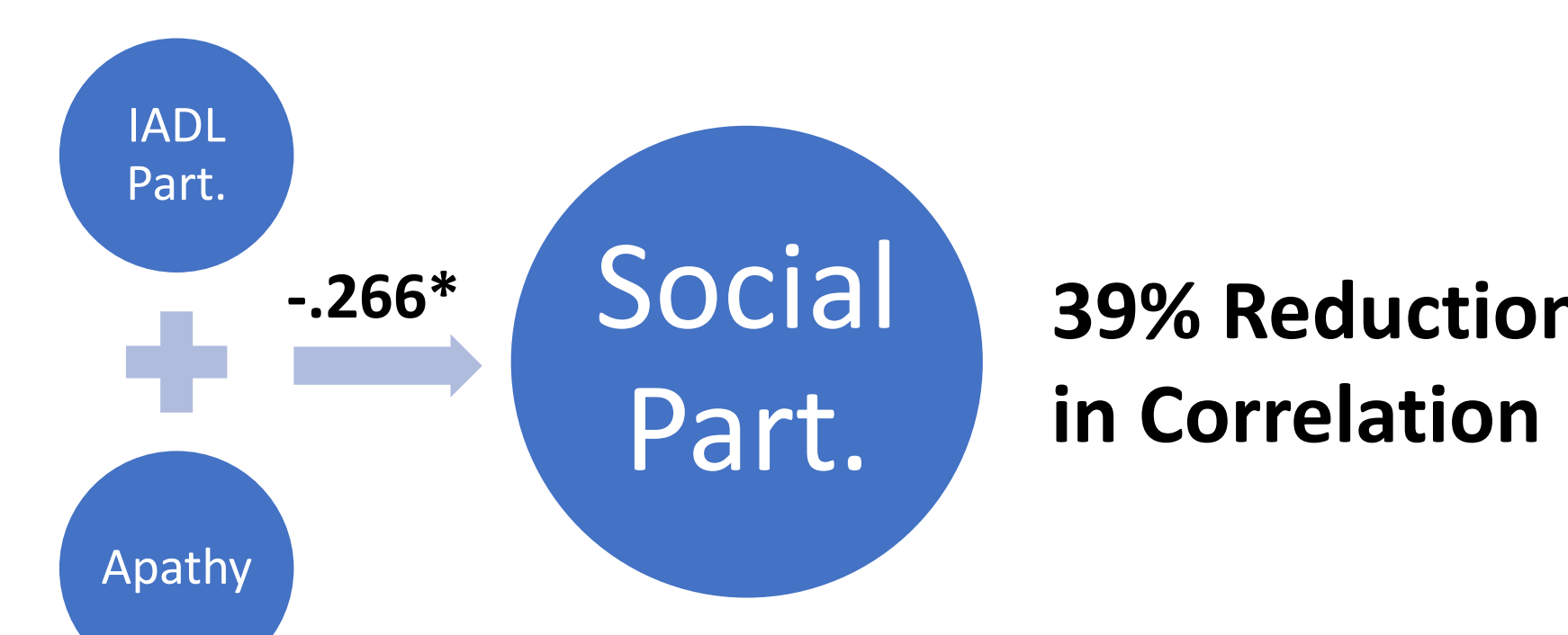


Figure 4. Partial correlations between apathy, ADL/IADL participation, and social participation

*p< 0.05
**p≤ 0.001

Discussion

- (1) On average, participants (PWA and PWOA) reported social participation reductions from pre-stroke levels of 20%. The PWA did not differ in post stroke participation outcomes from PWOA. Social participation is consistently reported to be negatively impacted post stroke^{2, 3, 4, 5}.
- (2) Combined, the predictor variables accounted for 27% variance of social participation. Although all predictor variables significantly correlated with social participation, none were found to be independent predictor variables. This reinforces the complex nature of social participation.
- (3) ADL/IADL participation accounted for 33% of the correlation between fatigue and social participation and 39% of the correlation between apathy and social participation. Fatigue and apathy have significant negative correlations with social participation, and ADL/IADL participation mediates approximately one-third of these relationships. Capitalizing on ADL and IADL supports may assist in promoting social participation.

Limitations

First, the generalizability is limited due to the size and racial distribution. Second, the recruitment may have skewed the sample as many participants were recruited from community support groups, including those who are intrinsically more active.

Implications For Rehabilitation

- Social participation is a complex, multidimensional occupation consistently decreased by stroke. Social participation needs to be a focus across all areas of rehabilitation to support persons returning to their pre-stroke levels.
- The correlations of fatigue, apathy, and ADL/IADL participation to social participation were significant and may be used by rehabilitation professionals to develop evidence-based interventions to target social participation.
- ADL/IADL participation demonstrated a moderate mediational capability; supporting rehabilitation in this area may improve daily function and potentially partially counteract the negative relationships between fatigue and apathy to social participation.

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