Frailty and Depression in Older Couples

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Background:

- The older adult population is expected to double between 2010 and 2050.
- Depressive symptoms reported in 10-20% of older adults.
- Frailty is a clinical condition of exacerbated vulnerability associated with adverse health outcomes and reported in 17% of community dwelling older adults.
- Depression has previously shown an association with frailty and falls.
- Prior studies show an interdependence of physical activity, self rated health and mental health between spouses and caregivers/care recipients.

Current Goals:

- To investigate the association between frailty and depression within individuals
- To investigate the interdependence between frailty and depression within spousal dyads amongst older couples.
  - Hypothesis: An individual's and their spouse's depression has a positive association with future frailty, adjusting for confounders

Methods:

- HRS data collected from couples over 50 years old via biannual phone surveys
- Depression - “Over the past week have you felt depressed?”
  - 8% depressed
- Frailty - Difficulties in 2 of 4 domains: physical, nutritive, cognitive, sensory
  - 10% frail 2010, 13% frail 2012
- Average age is 65 and average income is $84,000
- Most have at least a high school education
- On average overweight and most reported their health as good or very good

Statistical Methods:

- Treated missingness with listwise deletion
  - Only about 3% missingness in final model
- Final model adjusts for income, age of self and spouse, and education of self and spouse
- Modelled education as a linear effect
- Initial models used logistic generalized linear models with generalized estimating equations to adjust standard errors for clustering (correlation) between couples
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- Found the correlation between couples to be neglible (r = -.02) so we removed the generalized estimating equation from final model

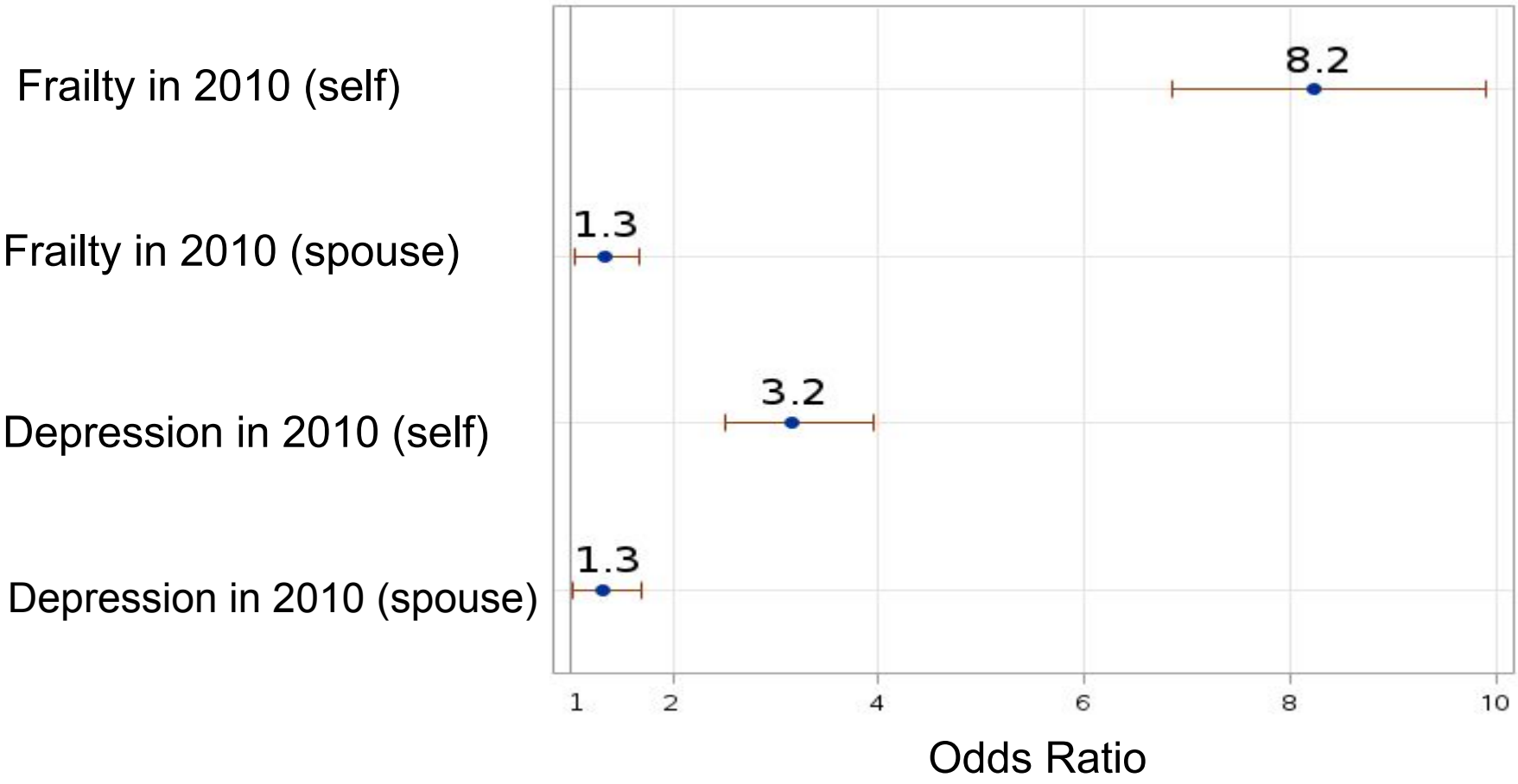
Unadjusted Association between Depression and Frailty

Table 2. Marginal associations between depression and frailty in 2010 with frailty in 2012

	% Frail 2012 (n)	Odds Ratio	95% Confidence Interval		*p*-value
			Lower Bd	Upper Bd	
Not frail (2010)	8.43 (584)	11.25	9.58	13.33	<.0001
Frail (2010)	51.38 (380)				
Not depressed (2010)	10.55 (732)	4.01	3.32	4.85	<.0001
Depressed (2010)	32.52 (199)				
Spouse not frail (2010)	11.37 (787)	2.46	2.03	3.00	<.0001
Spouse frail (2010)	23.79 (177)				
Spouse not depressed (2010)	11.72 (813)	1.86	1.48	2.32	<.0001
Spouse depressed (2010)	20.92 (128)				

All odds ratios were computed using a univariate logistic GLM using GEE to adjust standard errors for clustering within each spousal dyad (*r*'s ranged from .00 to .05 across analyses).

Adjusted Association between Depression and Frailty



Confounders:
Household income, age (self & spouse), education (self & spouse)

Results

- Significant associations
  - Current depression → Future frailty
  - Current frailty → Future frailty
- Effect magnitude comparison

  Self current frailty

  > Self current depression

  > Spouse current depression

  = Spouse current frailty

- Household income, age, and education of husband and wife are significant confounders that need to be adjusted for

Limitations and Future directions

- Missing data treated with listwise deletion
- Education modelled linearly
- More robust construct of depression based on more than one question
- Adding depression measured in 2012 could allow use to explore the direction of causality
- Construct frailty as sum of the number of domains with difficulties (values between 0 and 4) to make the outcome more informative and to allow more flexibility with modeling

Final Model:
Depression and Frailty Interdependence within Couples

Supplemental Table 3. Association between Depression in 2010, Frailty in 2010, and Frailty in 2012 within Couples

Predictor	Person	Adjusted Odds Ratio	95% Confidence Interval		*p*-value
Income (per $1000)	Dyad	1.00*	1.00*	1.00*	<0.0001
Age	Self	1.06	1.04	1.07	0.0002
	Spouse	0.98	0.97	1.00	<0.0001
Education (per level)	Self	0.81	0.74	0.89	0.02
	Spouse	0.89	0.81	0.98	<0.0001
Depressed in 2010	Self	3.2	2.52	3.94	<0.0001
	Spouse	1.3	1.02	1.70	0.03
Frail in 2010	Self	8.2	6.84	9.90	<0.0001
	Spouse	1.3	1.06	1.68	0.02

All odds ratios were computed using a logistic GLM. Odds ratios are adjusted by each of the covariates listed within the table.