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Extended Abstract: Depression and Mortality Risk among Older Adults

This study aims to add to the understanding about the relationship between depression and mortality in later life. Previous work yielded contradictory findings as to whether depressive symptoms have an independent causal effect on mortality. Among older adults, depressive symptoms predicted mortality at three-year follow-up, net of socio-demographic, health, and cognition characteristics; however, the association disappeared after incorporating subjective health and disability (Blazer, Hybels and Pieper, 2001). Likewise, in a population-based study of adult Americans, a depressive symptom and mortality association was eliminated following physical health controls (Everson-Rose et al. 2004). In contrast, among individuals over age 75 in the U.K., depressive symptoms were associated with increased mortality at three-year follow-up, net of socio-demographic characteristics, cognition, health and behaviors, and disability (Adamson et al., 2005). Similarly, at the six-year follow up of a U.S. population-based study, depressive symptoms increased the risk of mortality even after controlling for health behaviors, socio-demographic characteristics;, and clinical and even sub-clinical illness; however, physical functioning and subjective health measures were not considered (Schulz et al., 2000).

Other work has sought to leverage the construction of the Center for Epidemiological Studies Depression Scale (CES-D), a common scale for diagnosing depression, in order to better understand the underlying phenomena. The CES-D's positive affect factor predicted reduced mortality over ten years, net of socio-demographic characteristics, cognition and disability, whereas the other CES-D factors (negative affect, somatic symptoms and interpersonal problems) did not predict mortality (Blazer and Hybels, 2004); however, the analysis omitted health characteristics such as chronic illness. In contrast, in other work, the CES-D somatic

symptoms factor dominated, although somatic symptoms did not predict mortality net of

subjective health (Pettit et al., 2008).

More recently, a single CES-D question predicted five-year mortality among older

Canadians, with potential implications for survey research and clinical practice. However, the

results for neither the single-question nor the longer instrument were robust to the inclusion of

subjective health, nor did they hold for cognitively-impaired individuals (St. John and

Montgomery, 2009).

In addition to the conflicting results, these studies have not yet identified the causal

pathways between depression and mortality. None of their approaches addresses multi-

directional causality whereby depressive symptoms may directly contribute to disability, illness,

or subjective health, each of which may simultaneously augment or alleviate depression. For

instance, in a sophisticated study that identified that depressive symptoms predicted physical

decline over ten years (Penninx et al., 1998), whether physical decline exacerbated depressive

symptoms is not known, nor is the effect of functional decline on mortality risk.

This analysis seeks to address these limitations and inconsistencies. Studies have

incorporated disparate sets of covariates, with few encompassing physical health, subjective

health, and cognitive ability. Moreover, conflicting interpretations of the CES-D factors and

other measures illustrate that the underlying depression–mortality relationship remains obscured.

Considerable traction is needed on the question of feedback processes and causal directionality

in depression–mortality linkages. Thus, this analysis will seek to answer the following

questions: 1) Does depression predict mortality, net of cognition, health conditions, subjective

health, and socio-demographic characteristics? 2) Which factor within the CESD scale

dominates and what story does it tell? 3) Are results robust to reduction to a single item

question? 4) How does multi directional causality inform the relationship between depressive symptoms, physical health, disability, and mortality?

Data for this analysis will consist of public use versions of Waves 2 through 8 of the Health and Retirement Study, a longitudinal survey of Americans age 50 and older. Analyses will be conducted using Cox proportional hazard modeling for the first three questions and structural equation modeling for the final question.

Early findings from preliminary logistic regression models (Table 1) indicate that the CES-D single depression question predicts 12-year mortality net of socio-demographics and selected disability and subjective health characteristics; later models will incorporate more sophisticated approaches and covariates. I anticipate the following findings: 1) Depressive symptoms will predict subsequent mortality net of cognition, health conditions and socio-demographic characteristics, but not net of subjective health. 2) The CES-D positive affect factor will protect against mortality and thus be the strongest CES-D mortality predictor. 3) Results will be robust but attenuated with the single-item CES-D formulation. 4) Structural equation modeling will yield evidence of positive feedback loops between depressive symptoms, disability, physical heath and mortality.

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Table 1. Preliminary Logistic Regression Results (Weighted):
Odds Ratios, Increased Mortality Risk by 12-Year Follow-Up
Health and Retirement Study, Wave 2 (1993-95)

	Model I n=15,019	Model II n=15,012
CESD-1Q	1.911 ***	1.211 **
	(0.091)	(0.076)
Female	0.803 ***	0.541 ***
	(0.029)	(0.026)
Age *(years)*		1.138 ***
		(0.003)
Race/ethnicity		
Black	1.090 +	1.118 +
	(0.056)	(0.076)
Hispanic	0.613 ***	0.640 ***
	(0.049)	(0.066)
Other	0.807	1.039
	(0.099) +	(0.161)
Education *(years)*		0.990
		(0.008)
Assets		1.000 **
		(0.001)
Fair/Poor Subjective Health		3.004 ***
		(0.168)
IADL difficulty *(0-3)*		1.748 ***
		(0.114)

+ p<0.10; **p<0.01; ***p<0.001
Data source: RAND HRS, version I