"Religion and Depression in Adolescence" by Jane Cooley Fruehwirth, Sriya Iyer, Anwen Zhang

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January 2017

Research Question

Does Religiosity Affect Mental Health?

- Using plausibly random variation in adolescents' peers
  - i.e., changes in adolescents' peers' religiosity

Results

- The paper finds robust improvement
  - Especially for most depressed
  - Controlling for individual & group characteristics
  - Mechanism consistent with psychological resources & support structures

Important

- Mental health is 3rd most costly medical condition
  - Religiosity is one determinant–of many?

Identification

- Peer composition across cohorts within schools (AddHealth)
  - Hoxby 2000: The effects of class size on student achievement using longitudinal variation in the population
  - Key assumption that it is peer composition of religiosity *and not anything else changing* *simultaneously*

$$H_{is} = \alpha_0 + \alpha_1 R_{is} + \alpha_2 X_i + \alpha_s + \varepsilon_{is},$$

$$R_{is} = \beta_0 + \beta_1 \bar{R}_{g(i)s} + \beta_2 X_i + \beta_s + u_{is},$$

Data Issues

- Peer Group
  - Constructed as same **school, grade, gender, race, *and religious affiliation***
  - *The groups seem small – how sensitive is it to peer group construction*
    - 330 students per school..
    - .. 50 per grade, 25 per grade-gender .. 4 race groups and 4 religion groups, so 1.6 per group?
    - Peer variables are leave-one-out? The notation in the paper is not.
    - Robustness check w/ minimum group size?
- Why restrict to AddHealth Wave One (footnote says to use the parent survey–*but is parent survey necessary*)?

Baseline Results and Robustness Checks

	Dependent variable = depression		
	(1) OLS	(2) IV	(3) First stage
Religiosity	−0.163***	−0.698**	
	(0.024)	(0.289)	
Peer religiosity			0.112***
			(0.020)

- IV for peer-religiosity with peer-demographics and gets similar estimates [I couldn't find these tables]
  - But is it peer-demographics or peer-religiosity?
- Controls for peer group fixed effects and gets similar estimates
  - But we are mostly worried about things changing simultaneously
    - Why focus on -0.16 with school FE and -0.14 with peer group FE?
    - Shouldn't we have expected -0.70, if 2SLS is true effect?

Baseline Results and Robustness Checks

	(1)		(2)		(3)	
	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage
Religiosity	−0.675**		−0.606**		−0.655**	
	(0.295)		(0.302)		(0.314)	
Peer depression					0.010	−0.009
					(0.025)	(0.006)

- Controls for peer-depression (& -characteristics trends), gets similar estimates
  - But shouldn't peers' religiosity affect peers' depression?

Smaller points

- CES-D scale
  - How often you experience the feeling of... e.g., "You felt life was not worth living"
  - *Were there any revealed preference measures? suicide? absenteeism or disciplinary predictors?*
- Religiosity
  - Frequency / importance of
  - *Intensive margin*
    - Only those who report affilation were asked
    - (*Is Smith's work on religious affiliation being fixed about across-affiliations or in/out-of-affiliating?*)
- Sample
  - A lot of droppage due to missing covariates (down to 76%) and missing peer variables (to 62%)
  - *Understandably difficult. What about including another dummy indicator for some covariate being missing?*

Smaller points

- Over-identification
  - Same-denomination peer (including both genders') religiosity
  - Don't you want *other-gender peer religiosity*?
- Is religiosity the most salient feature of variation in peers?
  - LASSO to see if anything else of peers predicts own and peer religiosity?
- Larger effects for those more depressed
  - *Is it possible that's due to the manner of reporting, which allows more skewed responses? In a sense, the reports are all 'cheap talk'.*

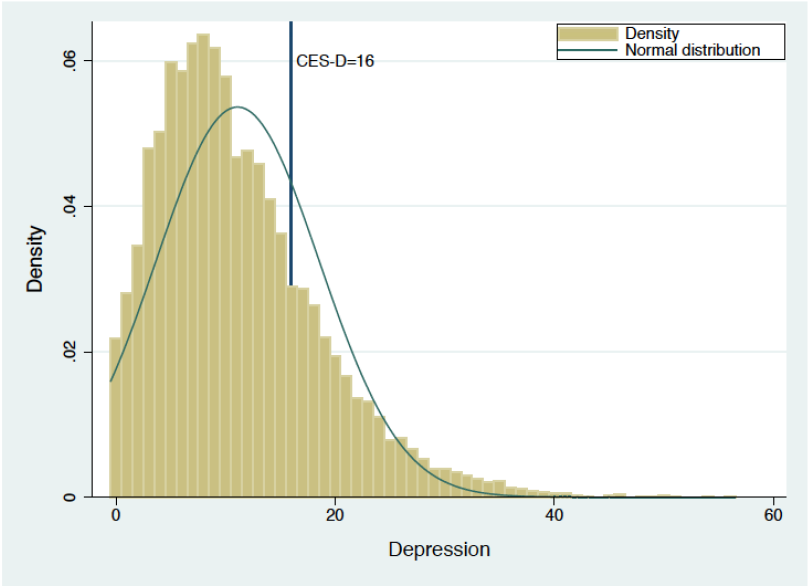

Figure A.1: Distribution of the CES-D scale of depression

Smaller points

	(a) Dependent variable = stressor			(b) Dependent variable = depression		
	(1) GPA	(2) Family or friends suicide	(3) General health	(4) GPA	(5) Family or friends suicide	(6) General health
Religiosity	0.033	−0.006	−0.063	−0.667*	−0.643**	−1.436***
	(0.031)	(0.019)	(0.039)	(0.349)	(0.293)	(0.389)
Interaction				0.015	−0.598***	0.160**
				(0.088)	(0.197)	(0.072)
Stressor				−1.747**	8.214***	−3.050***
				(0.780)	(1.687)	(0.623)
Baseline controls	Yes	Yes	Yes	Yes	Yes	Yes
F-statistic	30.425	30.284	30.416	14.615	14.914	16.010
N	12,838	12,888	12,944	12,838	12,888	12,944

- Mediation Analysis
  - *Not identified; IV is needed for self-esteem or passive problem solving*
  - *Stress buffering is OK, but the stressors (GPA, health, or friend suicide) need to be exogenous to the peer religiosity IV*
    - *maybe consider localized newsworthy events or news of suicides*
  - *Need pre-treatment measure of support structure or school activities*
    - *these would exist if using more AddHealth waves*
- Conclusion - *"CBT is less effective for the most depressed"–was CBT being evaluated on the same measure of depression (cheap talk)?*