A Multilevel Study of the Role of Social Capital in Shaping Chronic Disease Risk Behavior

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Current Approaches to Prevention of Chronic Disease[1]

- Focus on individual
  - Proximal, intro & inter-individual determinants to the exclusion of more fundamental, contextualized factors
  - "blame the victim"
- Focus on high-risk
  - Resources predominantly targeted to reduction of suffering of small group with greatest burden of disease and not to population-level targets

This perspective has served not to reduce the disparate burden of disease, but rather to worsen it.

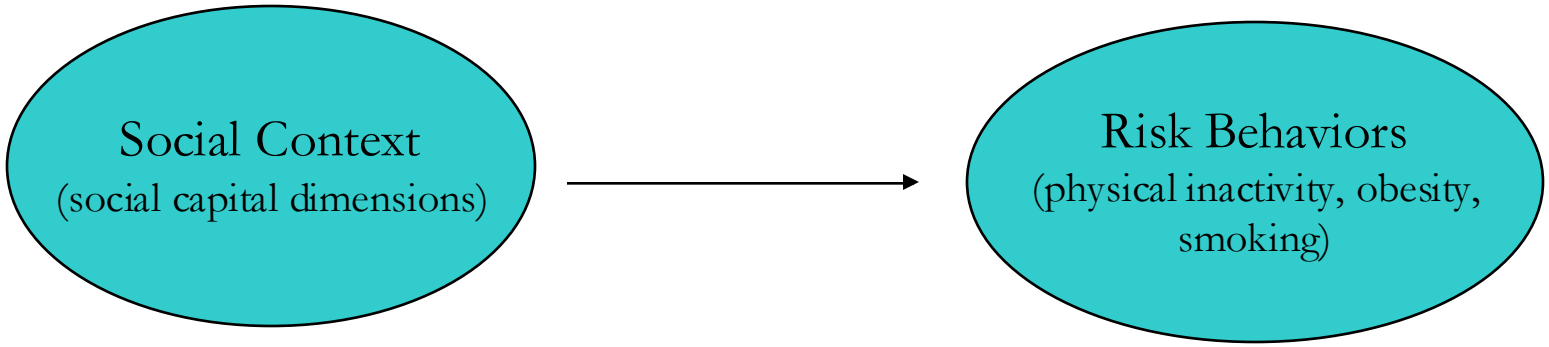
[1]Rose, *The Strategy of Preventive Medicine*, 1992

Expanded Approaches to Population-Based Prevention

- Population-based strategies limited if rely on *behavioral* change
- Macro-level influences cannot be reduced – "at risk of risks" (Link & Phelan, 1995)
- In addition, intermediary factors may expose individuals to contexts within which behavior occurs (Berkman & Glass, 2000)
- Relative effect of context on risk behaviors not well known; decontextualized (Macintyre & Ellaway, 2000)

Purpose of Study

- Apply ecosocial & political economy frameworks



- Extent to which contextual factors directly influence individual risk behavior common to several chronic diseases

Social Capital & Health

- Social capital: features of social organization, which act as resources to facilitate collective action (Putnam, 2000)
- Growing evidence of social capital's association with health
- Regional differences
- Mediating effects found

Social Capital & Risk Behavior

- Social environment provides opportunities or barriers
- Limited literature
  - Majority examine either other forms of behavior (e.g., sexual behavior & STD/HIV, alcohol use) OR individual indicator of social capital
- Physical activity
  - Social disengagement associated with low physical activity
- Obesity
  - Positive association between area of residence & obesity
  - Weakened social context, socially disorganized environments, social disengagement associated with increased obesity
- Smoking
  - Positive association of weak social capital (e.g., social engagement) and smoking

Methods

- Design
  - Multilevel, retrospective, cross-sectional
  - Secondary data
- Data sources & sampling
  - Context: Social Capital Community Benchmark Survey (2000) *N = 27*
  - Individual: Behavioral Risk Factor Surveillance System (2001) *N = 25,932*

Social Capital Community Benchmark Survey Methodology

- Sponsored by Saguaro Seminar at Kennedy School, Harvard University
- First to measure aspects & correlates of social capital
- Annual Conference of Community Foundations
  - Convenience sample, proportionate sampling, RDD
  - 500-1500 per community (one county, contiguous, states)
  - Indices reflect scores aggregated for each community (means)

Social Capital Community Benchmark Survey Measures

- Social trust
  - Characteristics of the collective (e.g., general interpersonal trust, level of trust amongst neighbors, coworkers); 5 item index, 5-7 point Likert scale
- Informal social engagement
  - Informal activities in past year (e.g., how often had friends over to home); 5 items, continuous response
- Organizational activism
  - Count of 18 activities (e.g., involvement in professional, service, charity groups) and public involvement (in past year, how often attended public meeting, served on a committee); dichotomous and 4-point Likert scale
- Mutual aid
  - Includes volunteering and contributions; 9 items, dichotomous, continuous, and 5-7 point Likert scale

Behavioral Risk Factor Surveillance System Survey & Measures

- CDC sponsored annual public health survey of behaviors, administered to random sample of non-institutionalized U.S. adults
- Physical inactivity
  - Meeting current recommended levels (=0) OR not (=1)
  - Level ≥ 20 minutes of moderate activity 4+ days/week
- Overweight/obesity
  - Normal body mass index (=0) OR not (=1)
  - Standard USDHHS cutoff ≥ 24.9, then dichotomized
- Smoking
  - Never smoked (=0) OR current &/or history (=1)

Sample

SCCBS N	Community	Location (State/County)	BRFSS N
500	1	Alabama/Jefferson, Shelby	496
501	2	Arizona/Maricopa	856
515	3	California/Los Angeles	1002
504	4	California/San Diego	346
500	5	California/San Francisco	95
500	6	Colorado/Boulder	124
501	7	Colorado/Denver	228
1379	8	Delaware/state of	3514
510	9	Georgia/DeKalb, Fulton, Cobb, Rockdale, Henry	646
1001	10	Indiana/state of	3993
500	11	Louisiana/Baton Rouge	461
500	12	Michigan/Kalamazoo	89
501	13	Michigan/Wayne, Oakland, Macomb, St. Clair, Washtenaw, Monroe, Livingston	1554
503	14	Minnesota/Dakota, Ramsey, Washington	844
502	15	Montana/state of	3338
711	16	New Hampshire/state of	4068
541	17	New York/Onondaga	106
988	18	New York/Monroe, Wayne, Ontario, Livingston, Genesee, Orleans	164
750	19	North Carolina/Forsyth	454
750	20	North Carolina/Guilford	413
1100	21	Ohio/Cuyahoga	459
1001	22	Ohio/Butler, Clermont, Hamilton, Warren Kentucky/Boone, Campbell, Kenton Indiana/Dearborn	1038
500	23	Oregon/Crook, Deschutes, Jefferson	99
500	24	Pennsylvania/York	127
500	25	Texas/Harris	802
500	26	Washington/Yakima	119
500	27	West Virginia/Kanawha, Putnam, Boone	497

Pooled Sample Sociodemographic & Behavioral Factors

Gender	
Male	40.7%
Female	59.3%
Age	
20-34	24.9%
35-44	22.5%
45-64	33.8%
65+	18.9%
Race/Ethnicity	
Hispanic	5.2%
White	84.1%
Black	9.6%
Other	6.4%

Education	
<12	9.9%
12	30.7%
13-15	26.9%
16+	32.6%
Income	
<$20,000	18.4%
$20,000<$50,000	42.9%
$50,000<$75,000	17.8%
>$75,000	20.9%
Marital Status	
Married	54.3%
Separated/Widowed/ Divorced	27.5%
Never	18.2%

Risk Behavior Prevalence Across Communities

	Physical Inactivity	Overweight/ Obesity	Smoking
Highest	66.1% (E. Baton Rouge)	66.0% (Kanawha Valley WV)	27.4% (Kanawha Valley WV)
	63.7% (Greensboro)	65.5%(Yakima WA)	27.2% (Indiana)
	62.0% (Cincinnati)	64.8% (York PA)	26.4% (Cleveland)
Lowest	46.7% (San Francisco)	44.1% (San Francisco)	14.8% (San Diego)
	42.3% (Central OR)	43.1% (Denver)	14.5% (Boulder)
	35.0% (Boulder)	39.7% (Boulder)	8.1% (Central OR)

Physical Inactivity	
Inactive	15.1%
Some activity	40.1%
Meets recommendations	44.8%

BMI	
Normal	42.1%
Overweight	36.1%
Obese	21.8%

Smoking	
Yes	23.6%
No	76.4%

Contextual Characteristics Across Communities

	Social Trust[1]	Informal Social Engagement[1]	Organizational Activism[1]	Mutual Aid[1]
Highest	2.35 (Montana)	2.19 (Kalamazoo)	2.17 (Boulder)	2.19 (St. Paul)
	2.33 (New Hampshire)	2.13 (Indiana)	2.17 (E. Baton Rouge)	2.18 (Winston-Salem)
	2.30 (St. Paul)	2.11 (Central NY)	2.10 (Montana)	2.18 (E. Baton Rouge)
Lowest	1.82 (Atlanta)	1.89 (Winston-Salem)	1.92 (Rochester)	1.93 (Central OR)
	1.75 (Houston)	1.89 (Los Angeles)	1.91 (Yakima)	1.92 (Yakima)
	1.74 (Los Angeles)	1.87 (Houston)	1.84 (Houston)	1.89 (Houston)

Social Trust[1]	Mean = 2.04, range 1.74 – 2.35
Informal Social Engagement[1]	Mean = 2.02, range 1.87 – 2.19
Organizational Activism[1]	Mean = 2.02, range 1.84 – 2.17
Mutual Aid[1]	Mean = 2.05, range 1.89 – 2.19

[1]where 1=low, 2=moderate, 3=high

Community Social Capital Influence on Individual Physical Activity

Community Characteristic	Crude τ	Crude Odds Ratio	Crude 95% CI	Crude *p* value	Adjusted τ	Adjusted Odds Ratio	Adjusted 95% CI	Adjusted *p* value
No predictors model								
intercept, γ_{00}	0.050	1.24	1.12-1.37	<.0001				
Level 1 control model								
intercept, γ_{00}					0.041	1.02	0.88-1.19	0.777
Model for social trust								
intercept, γ_{00}	0.040	1.27	1.25-1.39	<.0001	0.031	1.04	0.90-1.21	0.542
social trust, γ_{01}		0.50	0.27-0.96	0.037		0.51	0.28-0.90	0.023
Model for informal social engagement (ISE)								
intercept, γ_{00}	0.050	1.24	1.12-1.37	<.0001	0.041	1.02	0.88-1.18	0.811
ISE, γ_{01}		0.47	0.10-2.26	0.336		0.48	0.11-2.09	0.314
Model for organizational activism (OA)								
intercept, γ_{00}	0.053	1.27	1.11-1.46	0.002	0.044	1.04	0.88-1.24	0.620
OA, γ_{01}		0.71	0.21-2.43	0.567		0.74	0.23-2.39	0.600
Model for mutual aid								
intercept, γ_{00}	0.047	0.50	0.16-1.58	0.226	0.038	0.37	0.13-1.10	0.072
mutual aid, γ_{01}		1.19	0.96-1.48	0.114		1.21	0.99-1.49	0.064

Community Social Capital Influence on Individual Obesity

Community Characteristic	Crude τ	Crude Odds Ratio	Crude 95% CI	Crude *p* value	Adjusted τ	Adjusted Odds Ratio	Adjusted 95% CI	Adjusted *p* value
No predictors model								
intercept, γ_{00}	0.030	1.31	1.21-1.43	<.0001				
Level 1 control model								
intercept, γ_{00}					0.033	3.79	3.26-4.39	<.0001
Model for social trust								
intercept, γ_{00}	0.033	1.31	1.20-1.43	<.0001	0.034	3.76	3.23-4.37	<.0001
social trust, γ_{01}		1.11	0.62-1.98	0.724		1.25	0.69-2.29	0.446
Model for informal social engagement (ISE)								
intercept, γ_{00}	0.033	1.31	1.21-1.43	<.0001	0.033	3.79	3.27-4.40	<.0001
ISE, γ_{01}		1.09	0.29-4.05	0.895		1.51	0.39-5.86	0.537
Model for organizational activism (OA)								
intercept, γ_{00}	0.031	1.40	1.25-1.56	<.0001	0.034	4.00	3.38-4.73	<.0001
OA, γ_{01}		0.42	0.16-1.15	0.088		0.47	0.16-1.37	0.158
Model for mutual aid								
intercept, γ_{00}	0.029	2.60	1.00-6.73	0.049	0.033	6.42	2.28-18.12	0.001
mutual aid, γ_{01}		0.88	0.73-1.05	0.152		0.90	0.74-1.10	0.300

Community Social Capital Influence on Individual Smoking

Community Characteristic	Crude τ	Crude Odds Ratio	Crude 95% CI	Crude *p* value	Adjusted τ	Adjusted Odds Ratio	Adjusted 95% CI	Adjusted *p* value
No predictors model								
intercept, γ_{00}	0.038	0.28	0.26-0.31	<.0001				
Level 1 control model								
intercept, γ_{00}					0.045	1.02	0.87-1.20	0.801
Model for social trust								
intercept, γ_{00}	0.036	0.28	0.26-0.31	<.0001	0.041	1.01	0.86-1.19	0.892
social trust, γ_{01}		1.34	0.72-2.50	0.345		1.44	0.74-2.82	0.277
Model for informal social engagement (ISE)								
intercept, γ_{00}	0.034	0.28	0.26-0.31	<.0001	0.033	1.03	0.87-1.21	0.747
ISE, γ_{01}		2.23	0.56-8.92	0.244		2.31	0.50-10.58	0.269
Model for organizational activism (OA)								
intercept, γ_{00}	0.042	0.29	0.25-0.33	<.0001	0.049	1.04	0.86-1.26	0.672
OA, γ_{01}		0.76	0.24-2.44	0.628		0.75	0.21-2.68	0.646
Model for mutual aid								
intercept, γ_{00}	0.041	0.24	0.08-0.74	0.016	0.048	0.73	0.21-2.49	0.596
mutual aid, γ_{01}		1.03	0.83-1.28	0.780		1.07	0.85-1.35	0.571

Limitations of Study

- Use of secondary data sources & sampling
  - Use of data
  - Power
- Measurement & design
  - Composition of communities
  - External validity

Strengths of Study

- Used data collected to study effects of social capital on common behavioral risks
- Self-identification of communities
- Added to current empirical evidence re: differential influence of dimensions of social capital

Suggestions for Future Research

- Conceptual
  - Dimensions of social capital
  - Restructuring of national surveillance to include contextual data
- Methodological
  - Improve assessment of influence of broader factors
    - Longitudinal studies
    - Timing & individual development

Thank You