

Neighborhood social processes, access to health care, and child health

Amanda L. Roy
University of Illinois – Chicago

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Health disparities for US children

- Low-income children have worse health relative to higher income peers
 - More likely to have a chronic health condition, asthma, higher rates of health-related school absenteeism, and lower parent-rated health (Seith & Isakson, 2011)
- May in part be driven by accompanying gaps in access to health care services
 - Low-income children are twice as likely to be uninsured than higher-income children (Seith & Isakson, 2011)
 - Uninsured children are three times more likely to have an unmet health need than children who are privately insured (Newacheck, Hughes, Hung, Wong, & Stoddard, 2000)
 - When low-income children do receive care, it tends to be of a lower quality (Newacheck, Hung, Park, Brindis, & Irwin, 2003)

The role of neighborhood in access to health care

- Living in an economically disadvantaged neighborhood is related to decreased access to health care for both children and adults (Andersen et al., 2002; Auchincloss et al., 2001; Kirby & Kaneda, 2005)
- One explanation is that disadvantaged neighborhoods have fewer and lower quality health care services (e.g. medical clinics, pharmacies)
- Alternatively, perceptions of neighborhood social processes (e.g. safety, collective efficacy) may affect residents' ability to access services *regardless of the physical presence of services*

How might neighborhood social processes affect access to health care?

- Social processes may hinder access
 - Perceptions of neighborhood threat may make it less likely for residents to seek out services; Constant fear of victimization may diminish the importance of obtaining care
 - Perceived neighborhood safety is related to greater treatment adherence (Billimek & Sorkin, 2011) and treatment management (Coutinho, McQuaid, & Koinis-Mitchell, 2013)
- Social processes may promote access
 - Perceptions of neighborhood cohesion may be accompanied by shared information about local services; Perceived neighborhood control may promote perceptions of safety
 - Perceived neighborhood social cohesion is related to increased primary care use (Ryvicker et al., 2012) while a lower sense of community is predictive of reduced choice, cost, and satisfaction in interactions with the health-care sector (Ahern et al., 1996)

Neighborhood social processes and child health

- Parents who perceive their neighborhoods as less safe are more likely to have a child who:
 - Has asthma (Vangeepuram, Galvez, Teitelbaum, Brenner, & Wolff, 2012)
 - Experienced childhood asthma morbidity (Kopel et al., 2014)
 - Engages in lower levels of physical activity (Datar, Nicosia, & Shier, 2013)
 - Has a higher BMI (Cecil-Karb & Grogan-Kaylor, 2009)
- Parents who perceive their neighborhoods as more cohesive and having higher levels of control are more likely to have a child who:
 - Has better general health (Abada, Hou, & Ram, 2007; Browning & Cagney, 2002)
 - Lower risk of injury (Soubhi, Raina, & Kohen, 2004)

Methodological considerations

- Research on neighborhoods commonly relies on census geographic boundaries to define neighborhoods
 - Makes the assumption that all residents define and experience “neighborhoods” similarly
- There may be significant within-neighborhood variation in residents’ perceptions of social processes
- Neighborhood fixed effects models can be used to examine relationships between perceived neighborhood social processes and individual outcomes net of any neighborhood-membership effects
 - Remove omitted variable bias by only testing relationships *within* neighborhoods

Study aims

1. To examine the relationship between perceived neighborhood social processes (safety, police responsiveness to threat, cohesion and control) and child health
2. To examine the relationship between perceived neighborhood social processes and families' ability to access medical care and a pharmacy
3. Using a neighborhood fixed effects approach, test whether access to health care explains the relationship between neighborhood social processes and child health

Data and sample

- Data for this study were collected as part of the Annie E. Casey Foundation Making Connections (MC) project
 - A neighborhood transformation initiative implemented in low-income neighborhoods in 10 US cities
 - Collected between 2002 and 2004
 - Households represent probability samples in the target neighborhoods
- 3,499 households who had at least one child between the ages of 1 and 17 ($M = 8.31$, $SD = 5.279$) make up the analytic sample
 - Living in 126 neighborhoods (defined here as census tracts)
 - An average of 59 households ($SD = 60.11$, range = 1 - 238) per neighborhood
 - On average, 34% ($SD = .15$) of the population living in poverty in sample neighborhoods

Sample

| | Valid N | %/M(SD) |
|---------------------------|---------|-------------|
| Income below \$30,000 | 3101 | 75% |
| R is female | 3366 | 81% |
| R is Latino | 3450 | 26% |
| R is African American | 3450 | 35% |
| R is White | 3450 | 16% |
| R is other race/ethnicity | 3450 | 23% |
| C is female | 3258 | 50% |
| C age | 3418 | 8.31 (5.29) |
| C has insurance | 3450 | 90% |

R = Respondent, C = Child

Neighborhood social processes

Correlations between
neighborhood
process measures
range from .27 to .52

- Neighborhood safety
 - 5-item scale ($\alpha = .74$), 7 point scale
 - “I feel safe being out in my neighborhood during the day”
- Police responsiveness
 - 5-item scale that measures how satisfied respondents are with “the police serving my neighborhood” ($\alpha = .88$), 5 point scale
 - “Quick to respond when called”
- Neighborhood cohesion
 - 4 items that capture perceptions of belonging and trust among neighbors ($\alpha = .71$); 5 point scale
 - “I live in a close-knit neighborhood”
- Neighborhood control
 - 5 items that measure perceptions of how willing neighbors are to intervene on each other’s behalf ($\alpha = .79$); 5 point scale
 - “If a child was showing disrespect to an adult, or acting out of line, how likely is it that people in your neighborhood would scold the child?”

Access to health care

- Respondents were asked whether they (or any member of the household) had used **basic medical care services** and a **pharmacy/drug store** in the past year
 - 92.4% had used basic medical care and 89% a pharmacy/drug store
- “How difficult or easy is it for you to use [SERVICE/AMENITY]” and “How dissatisfied or satisfied are you with the [SERVICE/AMENITY]” on 7 point scale
 - Highly correlated within each of the resources (medical care $r = .67$; pharmacy $r = .69$)
 - Combined to create an overall measure that captures both ease of access and satisfaction

Child health

- General health
 - “In general, would you say [CHILD]’s health is...”
 - Coded on a 5 (excellent) to 1 (poor) scale
 - $M = 4.13$, $SD = .97$
- Health condition
 - “Has a health professional ever told you that [CHILD] has a physical, learning, mental, or chronic health condition that limits (his/her) participation in the usual kinds of activities done by most children (his/her) age or limits (his/her) ability to do regular school work?”
 - Coded as 0=no, 1=yes
 - 14% of sample had health condition

Analytic approach

- Ordinary least squares (OLS) and logistic regression models
 - Use Mplus with full information maximum likelihood (FIML)
- Neighborhood fixed-effects models include a vector of dummy codes representing each of the neighborhoods in the sample
 - Non-linear fixed-effects models can be severely biased when many strata are present (Breslow & Day, 1980, p. 249)
 - Use an analogous approach in which each predictor and covariate are centered around its neighborhood mean (Raudenbush & Bryk, 2002, p. 137)
- Mediation tested according to steps outlined by Baron & Kenny (1986)
 - Test whether the indirect effect is different from 0 using bias-corrected bootstrapping with 5000 sample replicates
- All models adjust for family SES, access to institutional resources, respondent sex, respondent race/ethnicity, child sex, child age in years, and whether the child has health insurance

Aim 1: Test the relationship between neighborhood social processes and child health

| | General Health | | | Health Condition | | |
|-------------------------|----------------|---------|----|------------------|---------|----|
| | b | β | | OR | β | |
| Intercept | 4.13 | | ** | 2.99 | | ** |
| NH safety | .036 | .050 | * | .953 | -.065 | * |
| Police responsiveness | .037 | .033 | † | .957 | -.039 | |
| NH cohesion | .035 | .024 | | .940 | -.041 | |
| NH control | -.033 | -.030 | | 1.05 | .041 | |
| Family SES | .124 | .089 | ** | .945 | -.040 | |
| Institutional resources | .018 | .029 | | .957 | -.068 | * |
| R is female | -.028 | -.011 | | .935 | -.026 | |
| R is Latino | -.237 | -.092 | ** | .831 | -.069 | |
| R is African American | -.069 | -.025 | | .845 | -.060 | |
| R is Other | -.246 | -.098 | ** | .858 | -.059 | |
| C is female | .056 | .028 | † | .789 | -.116 | ** |
| C age | -.025 | -.133 | ** | 1.03 | .134 | ** |
| C has insurance | .095 | .028 | † | 1.16 | .043 | |

R = Respondent, C = Child, NH = Neighborhood
†p < .01, *p < .05, **p < .01

Aim 2: Test the relationship between neighborhood social processes and access to health care

| | Access to Medical Care | | | Access to Pharmacy | | |
|--|------------------------|---------|----|--------------------|---------|----|
| | b | β | | b | β | |
| Intercept | .695 | | ** | .766 | | ** |
| NH safety | .023 | .097 | ** | .018 | .084 | ** |
| Police responsiveness | .052 | .145 | ** | .029 | .085 | ** |
| NH cohesion | .010 | .021 | | .018 | .041 | * |
| NH control | .001 | .002 | | -.006 | -.019 | |
| Family SES | .014 | .031 | | -.006 | -.012 | |
| Institutional resources | -.004 | -.018 | | -.003 | -.018 | |
| R is female | .043 | .052 | ** | .018 | .024 | |
| R is Latino | -.104 | -.017 | | .041 | .053 | * |
| R is African American | -.015 | -.018 | | .046 | .057 | * |
| R is Other | -.018 | -.022 | | -.003 | -.004 | |
| C is female | .029 | .045 | * | .001 | .003 | |
| C age | .001 | .008 | | .001 | .010 | |
| C has insurance | .052 | .047 | ** | .011 | .011 | |
| R = Respondent, C = Child, NH = Neighborhood | | | | | | |
| †p <.01, *p < .05, **p <.01 | | | | | | |

Aim 3: Test the explanatory role of access

| | General Health | | | General Health including Access | | | Health Condition | | | Health Condition including Access | | |
|--------------------|----------------|---------|----|---------------------------------|---------|----|------------------|---------|----|-----------------------------------|---------|----|
| | b | β | | b | β | | OR | β | | OR | β | |
| Intercept | 4.13 | | ** | 4.13 | | ** | 2.99 | | ** | 2.99 | | ** |
| Access to MD | | | | .115 | .036 | † | | | | 1.019 | .006 | |
| Access to RX | | | | .163 | .047 | * | | | | .880 | -.036 | |
| NH safety | .036 | .050 | * | .030 | .042 | * | .953 | -.065 | * | .955 | -.062 | * |
| Police response | .037 | .033 | † | .027 | .024 | | .957 | -.039 | | .959 | -.036 | |
| NH cohesion | .035 | .024 | | .031 | .021 | | .940 | -.041 | | .942 | -.040 | |
| NH control | -.033 | -.030 | | -.032 | -.029 | | 1.05 | .041 | | 1.046 | .040 | |
| Family SES | .124 | .089 | ** | .124 | .089 | ** | .945 | -.040 | | .944 | -.041 | |
| Institutional res. | .018 | .029 | | .019 | .030 | | .957 | -.068 | * | .957 | -.068 | * |
| R is female | -.028 | -.011 | | -.035 | -.014 | | .935 | -.026 | | .936 | -.025 | |
| R is Latino | -.237 | -.092 | ** | -.242 | -.093 | ** | .831 | -.069 | | .837 | -.067 | |
| R is AA | -.069 | -.025 | | -.074 | -.027 | | .845 | -.060 | | .850 | -.058 | |
| R is Other | -.246 | -.098 | ** | -.243 | -.097 | ** | .858 | -.059 | | .858 | -.059 | |
| C is female | .056 | .028 | † | .054 | .027 | | .789 | -.116 | ** | .789 | -.116 | ** |
| C age | -.025 | -.133 | ** | -.025 | -.134 | ** | 1.03 | .134 | ** | 1.026 | .134 | ** |
| C has insurance | .095 | .028 | † | .087 | .026 | | 1.16 | .043 | | 1.161 | .043 | |

R = Respondent, C = Child, NH = Neighborhood
†p < .01, *p < .05, **p < .01

Aim 3: Test the explanatory role of access

- Significant indirect effects

- Safety → access to pharmacy → health ($t = 2.09$, $SE = .001$, $p = .04$, 95% CI = .001, .006)

- Police responsiveness → access to pharmacy → health ($t = 2.18$, $SE = .002$, $p = .03$, 95% CI = .001, .010)

- Trend-level indirect effects

- Safety → access to medical care → health ($t = 1.65$, $SE = .002$, $p = .09$, 95% CI = .000, .006)

- Police responsiveness → access to medical care → health ($t = 1.74$, $SE = .003$, $p = .08$, 95% CI .000, .013)

Conclusions

- The relationship between social processes and access to health care varies
 - Safety and police responsiveness more strongly related to access than cohesion and control
 - Safety may be more important for accessing services while cohesion may more important for identifying services
- Access to services predictive of general health but not health condition
 - The protective influence of access to services may vary depending on the severity of the health problem
- Stronger evidence for the mediating role of pharmacy over medical care
 - Regularity of use may matter
- Interventions aimed at promoting community safety may positively affect child health via and increased access to health services

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