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Neighborhood Processes, Self-Efficacy, and Adolescent Mental Health

Véronique Dupéré¹, Tama Leventhal², and Frank Vitaro¹

Abstract
Self-efficacy beliefs are central to mental health. Because adolescents’ neighborhoods shape opportunities for experiences of control, predictability, and safety, we propose that neighborhood conditions are associated with adolescents’ self-efficacy and, in turn, their internalizing problems (i.e., depression/anxiety symptoms). We tested these hypotheses using three waves of data from the Project on Human Development in Chicago Neighborhoods (N = 2,345). Results indicate that adolescents living in violent neighborhoods tended to report lower self-efficacy beliefs, partly because they were more likely to experience fear in their neighborhood. However, moving out of Chicago neighborhoods marked by violence and low collective efficacy to neighborhoods outside of the city was associated with adolescents’ increased self-efficacy (vs. staying in such neighborhoods), an association explained by adolescents’ school-related experiences. Finally, through self-efficacy, these neighborhood processes had an indirect association with adolescents’ internalizing problems. Results partially support a model linking neighborhood conditions, cognitions about the self, and emotions.

Keywords
adolescence, anxiety, context, depression, distress, mental health, neighborhood, self-efficacy

Considerable research documents a relationship between the contexts in which adolescents grow up and their subsequent mental health (Huston and Bentley 2010). The neighborhood, because it circumscribes adolescents’ social world, serves as a potentially important context. Supporting this view, many nonexperimental studies have observed a link between residence in a disadvantaged neighborhood and adolescents’ internalizing problems, including depression and anxiety (for a review, see Leventhal, Dupéré, and Brooks-Gunn 2009). There is also experimental evidence showing that adolescent girls who moved from poor to non-poor neighborhoods reported less psychological distress a few years after relocation, as compared with their peers who remained in disadvantaged neighborhoods (Kling, Liebman, and Katz 2007). Thus, living in a stressful neighborhood environment may impair mental health, while leaving such an environment may enhance it.

Despite their merits, most of these studies leave open a central question: What is it about living in a disadvantaged neighborhood that leads to internalizing problems (i.e., anxiety and depression symptoms)? A few studies have examined this issue and found that neighborhood social processes, such as collective efficacy, linked neighborhood structural disadvantage and adolescents’ mental health problems (e.g., Xue et al. 2005). However, these studies did not elucidate the psychological processes through which these neighborhood characteristics...
are internally processed before becoming expressed as anxious and depressive feelings.

This study proposes that neighborhood processes influence adolescents’ thoughts about themselves (i.e., self-efficacy), which in turn affect their emotional health. This proposition is guided by research conducted among adults demonstrating that exposure to environmental stresses in the neighborhood is associated with perceptions of powerlessness and low self-efficacy, which in turn are associated with anxiety and depression (Rosenbaum, Reynolds, and DeLuca 2002; Ross and Mirowsky 2009; Ross, Mirowsky, and Pribesh 2001). It is also guided by research conducted among adolescents highlighting links between neighborhood processes, self-efficacy, and adolescent violence (Sharkey 2006). In the present study, we expand these findings by considering links between neighborhood processes, self-efficacy, and adolescents’ internalizing problems and by examining whether these links vary depending on residential mobility both within and outside a large city. We do so by using data from the Project on Human Development in Chicago Neighborhoods (PHDCN), a longitudinal study specifically designed to examine connections between neighborhood processes and child and adolescent development.

BACKGROUND

Neighborhood Characteristics, Self-Efficacy, and Adolescents’ Mental Health

Bandura’s (1997) sociocognitive theory proposes that self-efficacy, the belief that one has the capacity to achieve valued goals, increases motivation for undertaking and carrying through the actions required to achieve these goals and, as such, is central to adjustment and mental health (Bandura et al. 1999). According to Bandura, self-efficacy beliefs form as a result of experiences of control or lack of control in one’s environment. By shaping opportunities for such experiences, the neighborhood environment could influence the development of self-efficacy and, in turn, mental health. There are at least three ways in which neighborhood characteristics could shape these opportunities for adolescents.

First, some neighborhoods are much more violent than others (Sampson, Raudenbush, and Earls 1997). Violent neighborhoods may increase exposure to violence and victimization and create a sense of fear and insecurity (Buka et al. 2001). In turn, exposure to such threatening environments could erode self-efficacy beliefs. For instance, self-efficacy theory and research suggest that the development of efficacy beliefs is hindered among children who interact daily with harsh, unresponsive, or unpredictable parents (Bandura 1997). In the same manner, adolescents living in neighborhoods where violence is common may come to perceive that there is not much they personally can do to shield themselves from confrontations and, more generally, to succeed in the larger world. This may be especially true for those who are themselves directly exposed to violence or victimized and who develop a sense of fear (see Ross and Mirowsky 2009; Sharkey 2006).

Second, access to high-quality institutions that foster positive adolescent development, such as schools and recreational centers, varies across neighborhoods (Dupéré et al. 2010). Facilitated access to such local institutions could enhance opportunities for positive control experiences, the kind of experiences that are central for the development of strong self-efficacy beliefs (Bandura 1997). Notably, high-quality institutions provide a context where positive interactions with adults in the community, most prominently teachers and coaches or instructors, are likely to occur. Just as daily interactions with warm, consistent, and responsive parents in childhood are central to the development of self-efficacy, these kinds of interactions with community adults are likely to be especially important in adolescence, when an increasing amount of time is spent outside of the home. The idea that access to high-quality local organizations and services may play an important role for the development of adolescents’ self-efficacy is also supported by research showing that participation in challenging, high-quality, extracurricular activities in the school or community is associated with positive adolescent development (Larson 2000).

Third, neighborhoods vary in their level of collective efficacy, that is, the collective belief in the capacity to achieve common goals through social cohesion and control (Sampson et al. 1997). Adolescents may benefit from the ability of residents to attain collectively valued goals, such as creating a safe and resourceful environment. Neighborhoods with high levels of collective efficacy may offer adolescents a richer environment in a number of ways that intersect with those discussed previously. For instance, collective efficacy may keep violence and disorder in check and enhance residents’ capacity to attract and maintain high-quality services in the neighborhood. Adolescents may
participate more in local activities if collective efficacy is high, and as a result, residents feel more empowered and safer when walking the neighborhood. In contrast, adolescents immersed in a social world where collective efficacy is low and where they witness signs of failure to attain collectively desired goals may come to believe that efforts to improve the environment and, more broadly, their life circumstances are futile (see Ross et al. 2001; Sharkey 2006).

To summarize, we propose that over and above neighborhood concentrated poverty, three neighborhood processes, namely, neighborhood violence, the presence of institutions and services providing potential outlets for positive development, and collective efficacy, may enhance or hinder the development of self-efficacy beliefs among adolescents and in turn influence their emotional health. These neighborhood processes are thought to influence individual self-efficacy beliefs by shaping individual experiences of control (including positive experiences in the school and participation in extracurricular activities) or lack thereof (including exposure to violence, victimization, and fear).

### The Role of Residential Mobility

The connections between neighborhood characteristics, adolescents’ self-efficacy, and internalizing problems are likely to depend on changes in the individual and in his or her context over time (Leventhal and Brooks-Gunn 2001). One such instance is neighborhood change brought about through residential mobility. Self-efficacy theory and research suggests that leaving distressed communities may provide new opportunities for building agency (Elder 1995; Rosenbaum et al. 2002), a situation that could explain experimental results documenting that moving out of disadvantaged city neighborhoods is favorably associated with adolescents’ lower self-efficacy, over and above neighborhood concentrated poverty. These associations are expected to depend on mobility, with mobility outside of Chicago reducing these negative links with self-efficacy, compared with staying in the city.

**Hypothesis 1:** Perceived neighborhood violence, lack of activities and services for adolescents, and low levels of collective efficacy will be associated with adolescents’ lower self-efficacy, over and above neighborhood concentrated poverty. These associations are expected to depend on mobility, with mobility outside of Chicago reducing these negative links with self-efficacy, compared with staying in the city.

**Hypothesis 2:** In terms of underlying mechanisms, these neighborhood processes are expected to shape adolescents’ direct experiences of control (including positive experiences in the school and participation in extracurricular activities) or lack thereof (including exposure to violence, victimization, and fear) and, through these positive and negative experiences, be associated with adolescents’ self-efficacy beliefs. These individual-level mechanisms are also considered to explain potential protective effects associated with residential mobility outside of Chicago.

**Hypothesis 3:** Lastly, low self-efficacy should be associated with adolescents’ internalizing problems.

To test these hypotheses linking neighborhood circumstances and individual outcomes, we also include control variables to reduce potential selection bias, a major threat to validity in neighborhood research (Sampson, Morenoff, and Gannon-Rowley 2002). These control variables include family and adolescent characteristics likely
to affect neighborhood choice, residential mobility, and adolescents’ adjustment, such as family economic, cognitive, and emotional resources.

**DATA AND METHODS**

**Design**

PHDCN is a multilevel, longitudinal study designed to investigate the role of neighborhood factors on individual development (for details, see Raudenbush and Sampson 1999; Sampson et al. 1997). Participants were drawn from a multistage probability sample. At the first stage, 343 neighborhood clusters (NCs), including two to three contiguous census tracts (approximately 8,000 residents), were created from 847 census tracts comprising the city of Chicago in the 1990 census. Geographic boundaries and knowledge of Chicago neighborhoods were considered to ensure ecological validity of the NCs. Then, for the purpose of the longitudinal cohort study, a probability sample of 80 NCs stratified by two dimensions, racial-ethnic composition and socioeconomic status (SES), was drawn among the 343 NCs. Then, within the 80 NCs, distinct samples were drawn for the community survey and for the longitudinal cohort study.

**Community survey.** The community survey was conducted in 1994 to 1995 in all of the 343 NCs, but we describe the sampling methodology for the 80 NC-subgroup only. Within each NC, a simple random sample of census blocks was selected. Within those blocks, a systematic random sample of dwelling units was selected, and within each dwelling unit, one respondent over 18 was sampled at random. The objective was to obtain a sample of 50 households within each NC, a sample size large enough to create reliable NC measures. The selected households constituted a representative and approximately self-weighting sample. The overall response rate for the community survey in the 80 targeted NCs was 78 percent. Participants were interviewed in their homes about various aspects of their neighborhoods. Their answers were aggregated at the NC level to create scales representing ecological neighborhood characteristics.

**Longitudinal cohort study.** In addition to the community survey, an independent random sample of approximately 1,000 children in each of seven age cohorts (birth, 3, 6, 9, 12, 15, and 18 years) was selected (N = 6,226) within the 80 target NCs, following a similar stratified methodology. Among those identified as eligible in a screening phase, the response rate at Wave 1 (conducted between 1994 and 1997) was 75 percent. Home-based assessments were conducted with children and their primary caregiver (usually the mother) at three time points. At Wave 2 (conducted between 1997 and 2000), the response rate was 86 percent, while 77 percent of those who participated in Wave 1 also participated in Wave 3 (conducted between 2000 and 2002).

**Sample**

For the current study, we used data on children from three age cohorts (9-, 12-, and 15-year-olds), for a final sample of 2,345. Participants had diverse backgrounds (see Online Supplement Table S1 for details). Some participants dropped out or had partial missing data on specific measures. For instance, the response rate on the main outcome measure at Wave 3 was just under 70 percent (see Valid N column in Online Supplement Table S1). Many significant differences on Wave 1 characteristics emerged between those who dropped out and those who did not (full results available from authors). These differences suggest that simply deleting cases with missing data would result in potential bias. To avoid such bias, we used multiple imputation to handle missing data (Allison 2001). It allowed us to keep all of the cases in the analysis while taking into account imputation uncertainty. Five multiply imputed data sets (created through the SAS MI procedure) were used for all analyses.

**Measures**

Online Supplement Table S1 presents descriptive statistics and waves of data collection.

**Neighborhood characteristics.** Four neighborhood characteristics were considered (for details and psychometric properties, see Raudenbush and Sampson 1999; Sampson et al. 1997). The first one, concentrated poverty, is a structural characteristic assessed using 1990 census data and comprised
of the poverty rate, percentage of residents receiving public assistance, percentage of female-headed families, and unemployment rate. The three other variables represented neighborhood processes and were derived from the community survey. Perceived neighborhood violence (14 items) is a composite measure comprised of perceived neighborhood violence (e.g., fights, robbery), danger (e.g., dangerous to go out at night), and disorder (e.g., litter, public drinking). The level of neighborhood activities and services (14 items) reflects the presence of services for adolescents (e.g., youth center, recreation programs) and of neighborhood organizations (e.g., park, family health services). Collective efficacy (10 items) entails residents’ sense of mutual trust (social cohesion) and willingness to intervene for the neighborhood’s common good (informal social control).

Residential mobility. Two dummy variables were created to represent residential mobility within and outside of Chicago (reference category = no change in NC between Wave 1 and 2; first dummy = change in NC, and Wave 2 NC is within Chicago; second dummy = change in NC, and Wave 2 neighborhood is outside the city of Chicago).

Exposure to violence, victimization, and fear of violence. Exposure to violence and victimization were, respectively, measured with eight (α = .74) and seven (α = .53) dichotomous items indicating whether the participant witnessed various violent events (e.g., seeing someone being hit) or was personally involved in violent acts (e.g., being attacked) in the past year (Selner-O’Hagan et al. 1998). Fear of violence was measured with one item asking participants how afraid they were of being hurt by violence in their neighborhood (1 = not afraid to 3 = very afraid). This last measure is more specific to neighborhood violence (in contrast, the victimization and exposure measures are not specific to the neighborhood and could include violence in the home for instance).

Neighborhood and school extracurricular activities. Breadth of extracurricular activity participation in the neighborhood and in the school were, respectively, measured by summing six (α = .55) and five (α = .45) items asking participants whether they were involved in community (e.g., church groups, clubs) or school-based (e.g., school sports, school government) activities in the past year. Lower reliability coefficients are to be expected here because the items do not tap into a single underlying construct; for instance, it is not expected that someone who is involved in sports would necessarily also be involved in school government.

Quality of school experiences. Three variables were used to assess the quality of adolescents’ school experiences at Wave 2. In the first one, the primary caregivers rated the quality of participant’s education on a 4-point scale ranging from 0 = poor to 3 = excellent. Adolescents reported on their educational aspirations by stating how far they would like to go in school on a 7-point scale ranging from 1 = eighth grade or less to 7 = more than college. Finally, the mean of five items (e.g., “I like school a lot”) answered on a 4-point scale (1 = strongly agree, 4 = strongly disagree) was used to assess participant’s attitude toward school. Higher scores indicated a more negative attitude toward school.

Self-efficacy. A questionnaire especially designed for PHDCN was used to measure self-efficacy in various domains. For the present study, we created a “neighborhood” self-efficacy scale by collapsing six items from the street efficacy subscale and four items for the future efficacy subscale, two subscales that are theoretically expected to relate to neighborhood conditions. The two subscales were collapsed to strengthen internal consistency. The street efficacy subscale (Sharkey 2006) revolved around the ability in one’s neighborhood to feel safe alone and with friends, to travel safely from one place to another, and to avoid gangs, fights, and getting scared on the way to school. Each item was built from two parallel statements among which the respondent had to choose which applied best (e.g., Some kids feel they can not avoid gangs in their neighborhood even if they try but other kids feel even though it may not be easy, there are things they can do to avoid gangs) and the degree to which it applied (e.g., sort of true or very true), resulting in a 4-point response scale. The future efficacy subscale had a similar scale (e.g., ability to become a successful person, to go far in the world). The total score represents the average score among the 10 street and future items and ranges from 1 to 4 (α = .68).

Internalizing problems. The presence of internalizing problems (i.e., anxiety and depression symptoms) was assessed with the Adolescent
Self-Report or with the Young Adult Self-Report, both adaptations of the Child Behavior Checklist (CBCL) for use with adolescents and young adults (Achenbach 1991). The scales included 16 items ($\alpha = .83$ and .85 at Waves 2 and 3, respectively), answered on a 3-point scale (from 0 = not true to 2 = very true or often true), such as: I cry a lot; I am nervous.

Child characteristics. Sex (0 = female, 1 = male), age (in years), race-ethnicity (African American, Mexican American, other Latino, or other race/ethnicity with European American serving as omitted referent) and immigrant status (third generation or more = 0; first or second generation = 1) were included as control variables. In addition to these basic demographics, three other child characteristics were included. First, adolescents' verbal ability was assessed with scaled scores from the vocabulary subtest of the Wechsler Intelligence Scale for Children–Revised (WISC-R; Wechsler 1974). In addition, t-scores from two scales from the CBCL (Achenbach 1991) evaluated the presence of internalizing and externalizing problems as reported by primary caregiver at Wave 1.

Family background. Caregivers’ marital status (single or partnered with married as omitted referent) education (less than high school = 1 to bachelor’s degree or more = 5), and employment status (unemployed = 0, employed full- or part-time = 1) as well as household income-to-needs ratio were included as controls. The income-to-needs ratio is the reported total annual family income divided by the official poverty threshold for the respective household size in 1995; thus, an income/needs ratio of 1 or less signifies poverty status. Caregiver warmth and responsivity was assessed by the Home Observation and Measurement of the Environment (HOME) inventory, a semi-structured interview administered at home (for details and psychometric properties, see Leventhal et al. 2004). The mean value of nine dichotomous items (e.g., caregiver spontaneously praises child’s qualities) was used to create this variable. Another variable indicated the caregiver’s length of time at current address, in years, an important predictor or residential mobility (Sharkey and Sampson 2010).

We also considered changes in other domains that may bring about or covary with residential mobility. We thus included variables representing changes between Wave 1 and Wave 2 in terms of marital status (two dichotomous, not mutually exclusive variables representing separations and new unions), employment status (one three-level dummy variable distinguishing those who had no change in employment status, those who became employed, and those who became unemployed), and income (Wave 2 income to needs – Wave 1 income to needs).

**Analytic and Model-Building Strategy**

Hypotheses were tested using hierarchical linear models (HLMs) with the HLM 6.04 software (see Raudenbush and Bryk 2002). These models are designed to analyze multilevel data, as in the present case where individuals are nested within neighborhoods. Models were built using a stepwise approach to test our hypotheses. First, we explored unconditional models to determine whether there was significant variation in adolescent self-efficacy at the neighborhood level. Provided that there was, we moved on to a second series of models predicting self-efficacy that incorporated neighborhood-level variables one by one as well as their interaction with residential mobility. The third step was to test mediated effects between neighborhood variables and adolescents’ self-efficacy, through participants’ individual experiences. In a final step, we examined direct links between neighborhood characteristics and adolescents’ internalizing problems, as well as mediated or indirect links through their self-efficacy. The difference between mediated and indirect effects is that unlike mediated effects, indirect effects do not require that a direct link exist between the initial variable and outcome, but only that strong enough links exist between the initial and intermediate variable and intermediate variable and outcomes for an indirect association between initial variable and outcome to exist (Preacher and Hayes 2004).

**RESULTS**

Unconditional multilevel models including no covariates were first conducted to determine if significant variation between neighborhoods existed in terms of self-efficacy. Results indicated
significant variation at the neighborhood level (with 79 df; χ² = 232; p < .001), with 6 percent of the variance at that level. Thus, we next moved to conditional models of self-efficacy that included neighborhood-level variables.

**Neighborhood Characteristics and Adolescents’ Self-Efficacy**

Table 1 presents results of HLM models linking neighborhood characteristics and adolescents’ self-efficacy and including the full set of control variables. Neighborhood-level variables were incorporated one by one, along with their interaction with residential mobility (moving within and moving out of Chicago), starting with neighborhood structural characteristics and then moving on to neighborhood processes.

In model 1, we started by incorporating neighborhood concentrated poverty, a structural characteristic. Results indicated that it was associated with adolescents’ lower self-efficacy beliefs. This association was not moderated by residential mobility. Thus, in the next models we retained neighborhood concentrated poverty but not its interaction with residential mobility.

Model 2 incorporated a first neighborhood process, perceived neighborhood violence. Neighborhood-concentrated poverty was also included to see if perceived neighborhood violence would be associated with adolescents’ self-efficacy over and above structural disadvantage. A negative main effect emerged, showing that adolescents in more violent neighborhoods tended to report lower self-efficacy beliefs, as expected. Unlike what was found for neighborhood concentrated poverty, model 2 also revealed a significant interaction between residential mobility and perceived neighborhood violence. More specifically, a significant positive interaction emerged between perceived neighborhood violence and the dummy variable representing residential mobility outside of Chicago.

To help with interpretation, the breakdown of this interaction is depicted in Figure 1 (left panel). Figure 1 illustrates that among adolescents from highly violent neighborhoods (2 SDs above the mean), moving out of the city was associated with higher self-efficacy levels, as compared with not moving or moving within the city. Conversely, among adolescents from neighborhoods with low levels of violence, moving out of the city was associated with lower levels of self-efficacy. To gauge magnitude, we compared those who left highly violent neighborhoods to move outside of the city to those who stayed in such neighborhoods. Results showed that the level of self-efficacy for those who had left highly violent neighborhoods to move outside of the city (predicted self-efficacy = 2.41) was higher than that of those staying in a violent city neighborhood (predicted self-efficacy = 2.18) by more than one-third of a SD (d = (2.41 – 2.18) / .61 = .38). In contrast, the effect size of the main effect between perceived neighborhood violence and self-efficacy among those staying in the same neighborhood was small (d = (predicted self-efficacy in a low violence neighborhood: 2.34 – predicted self-efficacy in a neighborhood of average violence: 2.26) / .61 = .13).

Model 3 presents the results for collective efficacy. The results are similar to those found for perceived neighborhood violence, with a significant interaction between collective efficacy and moving out of the city, although in this case, no main effect emerged. The right panel of Figure 1 illustrates these results. Again, those who moved out of suboptimal neighborhoods with low collective efficacy (2 SDs below the mean) to resettle outside of the city showed especially high levels of self-efficacy, compared with those who stayed in such neighborhoods. In terms of effect size, leaving a city neighborhood with low self-efficacy to move outside of the city (predicted self-efficacy = 2.45) as compared with staying in such a neighborhood (predicted self-efficacy = 2.22) was associated with higher levels of self-efficacy, by more than one-third of a SD (d = (2.45 – 2.26) / .61 = .38), a moderate effect size.

For activities/services for adolescents in the neighborhood, no main or interactive effects were found (results not shown). For this reason, this neighborhood dimension was not considered further.

**Neighborhood Characteristics and Adolescents’ Self-Efficacy: Potential Pathways**

The next set of models (Table 1, right panel) aimed to unpack some of the possible explanations for the associations between neighborhood processes and
### Table 1. Hierarchical Linear Models (HLMs): Neighborhood Characteristics Predicting Adolescent’s Self Efficacy at Wave 2 (N = 2,345)

<table>
<thead>
<tr>
<th>Models</th>
<th>Neighborhood Characteristics</th>
<th>Mediation</th>
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<td><strong>Residential mobility</strong></td>
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<tr>
<td>Within Chicago</td>
<td>Residential mobility</td>
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<td>(.033)</td>
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<tr>
<td>Outside of Chicago</td>
<td>Residential mobility</td>
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<td>(.068)</td>
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<td><strong>Neighborhood characteristics</strong></td>
<td>Concentrated poverty</td>
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<td>× move out</td>
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<td>Perceived violence</td>
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<td>Collective efficacy</td>
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<td>× move out</td>
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<td><strong>Individual experiences</strong></td>
<td>Extracurricular activities in school</td>
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<td>Education aspirations</td>
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<td>× move in</td>
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<td>× move out</td>
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<td></td>
<td>Negative attitude about school</td>
<td>−.130***</td>
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<td>× move in</td>
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<td>(.047)</td>
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<tr>
<td></td>
<td>Fear of violence in neighborhood</td>
<td>−.156***</td>
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<td>(.016)</td>
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Notes: Control variables listed in Table 1 are included in all models, along with an interaction between neighborhood change and change in employment status, as a significant interaction emerged between this variable and residential mobility in preliminary analyses (full results available from authors). Analyses are based on multiply imputed data sets.

\[ p \leq .10, \quad *p \leq .05, \quad **p \leq .01, \quad ***p \leq .001. \]
self-efficacy. In other words, the goal was to look for mediators. Because these associations were moderated by residential mobility, a special procedure was adopted to look at mediation in this context (Muller, Judd, and Yzerbyt 2005). This procedure entails verifying if a set of criteria are met for each potential mediator.

We applied this procedure to determine which (if any) of our potential mediators explained the interaction effect found in model 2, between perceived neighborhood violence and moving out of Chicago (details available from authors). We found that adolescents’ educational aspirations, participation in school extracurricular activities, and negative attitude toward school met the mediation criteria. Results of model 4 including these three mediators illustrate the findings. They show that the value of the interaction between perceived neighborhood violence and moving out of Chicago was reduced in magnitude by more than a third \(((.130 \div (.085)) \div .130 = .35)\) and became nonsignificant. Indeed, when this variable was included (see model 5), the main association between perceived neighborhood violence and adolescents’ self-efficacy was reduced by 38 percent \(((0.489 \div 0.300)) \div 0.48 = .375)\) and became nonsignificant.

In addition to looking at mediation criteria, we formally tested for the significance level of each of these mediation pathways, using a method tailored for multilevel models (Krull and MacKinnon 2001). For the interaction between perceived neighborhood violence and moving out of Chicago, we found significant mediated effects for adolescents’ educational aspirations \((B = .013; SE = .006; \text{Sobel statistic} = 2.196; p = .014)\) and their negative attitude toward school \((B = .015; SE = .007; \text{Sobel statistic} = 2.164; p = .015)\) and a marginally significant one for participation in school activities \((B = .009; SE = .006; \text{Sobel statistic} = 1.508; p = .066)\). For the main effect between perceived neighborhood violence and adolescents’ self-efficacy, results also confirmed a pathway through fear of violence \((B = –.017; SE = .006; \text{Sobel statistic} = –2.70; p = .003)\). Because the power to detect significant mediation effects is comparatively low (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002), Sobel tests were one-tailed.

We repeated these steps for collective efficacy (details available from authors). We found that only one of the potential mediators, adolescents’ educational aspirations, partially mediated the interaction between collective efficacy and moving out of Chicago.

Indeed, when this variable was included (see model 5), the main association between collective efficacy and moving out of Chicago was reduced by 38 percent \(((0.489 \div 0.300)) \div 0.48 = .375)\) and became nonsignificant.
out of Chicago found in model 3. Results of model 5 illustrate this finding. They show that the interaction effect is reduced in magnitude when adolescents’ educational aspirations are considered. They also show that mediation is partial, since the interaction remained significant and was reduced only by about one-tenth \((-0.421 - (-0.374)) / -0.421 = 0.11\). Formal testing confirmed the significance of this mediation pathway \((B = -0.039; SE = .019; Sobel statistic = -2.00; p = .023)\).

**Neighborhood Characteristics, Self-Efficacy, and Adolescents’ Internalizing Problems**

The final set of analyses examines the last part of the proposed model (see Online Supplement Figure S1)—that is, whether neighborhood characteristics are indirectly linked with adolescents’ internalizing problems via low self-efficacy.

The left part of Table 2 presents models with adolescents’ internalizing problems at Wave 2 as the outcome. Models 1 and 3 show that neither perceived neighborhood violence nor collective efficacies were associated with adolescents’ internalizing problems at Wave 2, directly or interactively with residential mobility. However, models 2 and 4 indicate that adolescents’ self-efficacy was significantly and negatively associated with their internalizing problems. Thus, adolescents with higher levels of self-efficacy also report better mental health at Wave 2. Moreover, although there are no direct links between neighborhood processes and adolescents’ internalizing problems, indirect effects could nonetheless exist because collective efficacy and perceived neighborhood violence were associated with adolescents’ self-efficacy (Table 1), and self-efficacy in turn was associated with adolescents’ internalizing problems (Table 2). Formal testing was again used to look for potential indirect effects (see Krull and MacKinnon 2001). We first looked at interaction effects between neighborhood processes and mobility, and results confirmed the presence, among adolescents moving out of the city, of an indirect link between perceived neighborhood violence and adolescents’ internalizing problems through self-efficacy \((B = 0.1201; SE = 0.375; Sobel statistic = 3.20; p < .001)\). Based on the results of Table 1 (models 2 and 4) showing a direct effect between perceived neighborhood violence and self-efficacy, we also tested for a general indirect effect between perceived neighborhood violence and adolescents’ internalizing problems through self-efficacy. As expected, these results revealed a general indirect effect for perceived neighborhood violence \((B = -0.134; SE = 0.069; Sobel statistic = 1.935; p = .027)\).

The right part of Table 2 presents the same models, but this time with adolescents’ internalizing problems assessed at Wave 3. The results are similar to those found above for Wave 2 internalizing problems, with formal testing confirming the presence, among adolescents moving out of the city, of an indirect link between perceived neighborhood violence and adolescents’ internalizing problems through self-efficacy \((B = 0.130 \times -1.583 = -0.206; SE = 0.096; Sobel statistic = 2.14; p = .016)\) and between collective efficacy and adolescents’ internalizing problems through self-efficacy \((B = -0.421 \times -1.562 = 0.658; SE = 0.232; Sobel statistic = 2.83; p = .002)\). Again, we also found a significant general indirect effect for perceived neighborhood violence \((B = -0.047 \times -1.583 = 0.074; SE = 0.040; Sobel statistic = 1.844; p = .033)\).

**DISCUSSION**

The objective of this study was to examine how neighborhood processes could shape adolescents’ experiences and self-efficacy and, in turn, their internalizing problems. We also considered how residential mobility could moderate these links. More specifically, we proposed: (1) that living in a neighborhood characterized by violence, low levels of collective efficacy, and lack of services and activities would be associated with adolescents’ lower self-efficacy above and beyond structural poverty and that those remaining in such disadvantaged city neighborhoods would fare worse than those leaving these neighborhoods; (2) that adolescents’ experiences of control (including positive experiences in the school and participation in extracurricular activities) and of insecurity (including exposure to violence, victimization, and fear) would explain these associations; and (3) that low
self-efficacy would in turn be associated with adolescents’ greater internalizing problems. In short, we proposed that self-efficacy would be part of a chain that indirectly links neighborhood processes and adolescents’ internalizing problems. Results regarding each of these three main hypotheses are reviewed in sequence in the following.

Generally, results were consistent with our model. Importantly, they indicate that adolescents’ self-efficacy develops not only in accordance with individual dispositions or family experiences, but also in response to larger social contexts such as the neighborhood, supporting previous findings (Sharkey 2006), but also expanding these findings in several ways. First, they reveal that the link between neighborhood processes and self-efficacy is conditioned by residential mobility. Second, they highlight the role of new mediators linking neighborhood processes and self-efficacy, namely, school experiences and fear of violence. Finally, they suggest that connections between neighborhood circumstances and adolescents’ self-efficacy are relevant for adolescents’ internalizing problems, although neighborhood processes were only indirectly linked with internalizing problems.

### Neighborhood Processes and Self-Efficacy

Controlling for structural disadvantage, perceived neighborhood violence was found to be associated with self-efficacy beliefs, but the direction of this association depended on residential mobility. Adolescents living and staying in violent neighborhoods had lower self-efficacy beliefs than their peers in less violent neighborhoods, but those leaving such violent city neighborhoods to resettle outside of Chicago (but not within Chicago) had higher self-efficacy compared with their peers remaining in the city (see Figure 1). Conversely, moving out of Chicago and leaving behind more advantaged neighborhoods with low levels of violence had an adverse association with adolescents’ self-efficacy. In terms of size, the effect was small for the main trend, in line with results from other
studies linking neighborhood characteristics and adolescents’ outcomes (see Leventhal and Brooks-Gunn 2000), but a moderate-size association emerged among those who moved out of the city.

Similarly, results for collective efficacy showed that those leaving city neighborhoods with low levels of collective efficacy to resettle outside Chicago exhibited particularly high levels of self-efficacy, as compared with those staying in such neighborhoods. Although the main effect was non-significant for collective efficacy, a moderate size association between collective efficacy and self-efficacy paralleling that described for perceived neighborhood violence emerged among those who moved out of the city. Again, the results showed that leaving disadvantaged city neighborhoods was associated with a positive outlook about one’s ability to avoid violence in the neighborhood and, more generally, to succeed in the future.

Residential mobility emerged as an important moderator of the link between neighborhood processes and adolescents’ self-efficacy. Moving outside of Chicago could have both positive and negative consequences, depending on the kind of neighborhood that was left behind. However, moving within the city was not associated with adolescents’ self-efficacy. What explains this? Results from the quasi-experimental Gautreaux Program are telling in this regard. In this program, families living in public housing located in highly segregated and disadvantaged Chicago neighborhoods were relocated to private housing units either within Chicago or outside Chicago in mostly white suburbs. Gautreaux participants who relocated to the suburbs exhibited higher levels of self-efficacy than their counterparts who stayed in the city (Rosenbaum et al. 2002). Qualitative evidence suggests that this is in part because their new suburban environment had greater racial and economic integration and afforded them new opportunities, particularly in the educational domain. In contrast, moving within Chicago was not associated with such increased opportunities and self-efficacy.

Because all Gautreaux families left highly disadvantaged neighborhoods, we need to turn to a broader mobility literature to understand the low self-efficacy found among those adolescents leaving relatively advantaged city neighborhoods to move outside of the city. In this literature, residential mobility is usually presented as a stressful event for adolescents, likely to lead to disruptions in their social world and to adversely impact their functioning (e.g., Adam 2004). Indeed, adolescents’ friendships are largely school- and neighborhood-based (e.g., Dishion, Andrews, and Crosby 1995), and social integration following residential moves can be challenging. Supporting this view, research confirms that residential mobility is associated with characteristics of adolescents’ peer networks and with their unfavorable behavioral and emotional outcomes (e.g., Haynie and South 2005; South and Haynie 2004). Perhaps when a demanding transition such as moving from the city to the suburbs or to another city is not offset by other important gains such as escape from a particularly violent and stressful environment, adverse associations with adolescents’ self-efficacy may emerge, especially given that adolescents typically have little control over their parents’ residential decisions.

In contrast to moving outside of the city, moving within the city may represent a less abrupt transition, as such moves are less likely to entail immersion into a radically different environment in terms of lifestyle and culture. In addition, moves within the city are not necessarily accompanied by school change (Popkin, Harris, and Cunningham 2002), and even adolescents who change schools within a city tend to stay in similar school environments (Sanbonmatsu et al. 2006), at least in part because they often remain in the jurisdiction of the same public school system and within the system of segregation and violence that characterize many city neighborhoods (see Sharkey and Sampson 2010). Finally, remaining in the city and having access to its public transportation system provide adolescents the opportunity to maintain contacts with friends from one’s original neighborhood if they so desire (Clampet-Lundquist et al. 2011). Thus, moving within the city may represent a less dramatic change and entail fewer consequences than farther mobility.

These results highlight the importance of taking into account residential mobility as well as the broader metropolitan context to understand the role of neighborhood characteristics on adolescents’ functioning. Of note is that the literature on residential mobility has typically not considered neighborhood characteristics, while the neighborhood effect literature has tended to treat the neighborhood context as static (Leventhal and Brooks-Gunn 2001). Clearly, our study suggests that contextualizing
research on residential mobility and considering neighborhoods more dynamically are critical steps for future research.

Finally, it is important to acknowledge that the presence of activities and services in the neighborhood was not associated with adolescents’ self-efficacy. We interpret this finding as suggesting that it is not the mere presence of activities and services that is important, but rather that considering quality is essential to fully evaluate the role of local institutions (for a similar argument, see Dupéré et al. 2010; Sampson et al. 2002). Notably, the development of agency is fostered by participation in high-quality structured activities capable of sustaining high levels of intrinsic motivation (Larson 2000). This highlights the need for additional research considering not only the presence, but also the quality of services provided by neighborhood institutions.

Mechanisms Explaining the Neighborhood-Adolescent Self-Efficacy Connection

The next hypothesis pertained to the mechanisms underlying the links between neighborhood processes and adolescents’ self-efficacy. We posited that adolescents’ personal experiences of control (activity participation and positive school experiences) and insecurity (exposure to violence, victimization, and fear) would play a mediating role. Different experiences played a mediating role for adolescents who stayed in the city and for those who moved out of it.

Among adolescents staying in the city, the link between exposure to high perceived neighborhood violence and low self-efficacy was explained by their fear of violence, but not by exposure to violence and victimization. There are at least two potential explanations for this pattern of results. First, the fear measure was the only one to refer explicitly to the neighborhood environment (exposure to violence and victimization were not necessarily confined to the neighborhood). Second, fear of violence is a comparatively comprehensive concept, as it reflects not only direct involvement in violent events as a victim or a witness but also hearsay about such events. This is important, as word of mouth about violent incidents in the neighborhood is a central dimension of perceived neighborhood dangerousness (Tyler 1980). These findings suggest that it is not necessary to be directly involved in violent events in the neighborhood to be negatively affected by them.

Among adolescents moving out of the city, the link between leaving a neighborhood characterized by violence and low collective efficacy and adolescents’ high self-efficacy was mediated by their school experiences, namely, educational aspirations, attitude toward school, and to a lesser extent, participation in school-based activities. Apparently, adolescents who left behind struggling neighborhoods were likely to perceive school favorably after they relocated outside of the city, presumably because they entered less problematic schools. These findings suggest that being within or outside the boundaries of Chicago and its public school system may influence adolescents’ educational experiences and shape their attitudes and expectations toward school and, in turn, their self-efficacy beliefs.

Indirect Links between Neighborhood Processes and Mental Health

Because low self-efficacy beliefs have been found to predict adolescents’ depression (Bandura et al. 1999), we posited that they could mediate the reported association between neighborhood conditions and adolescents’ internalizing problems (e.g., Xue et al. 2005). In contrast with other studies, we did not find a direct link between neighborhood processes and adolescents’ internalizing problems once the full set of control variables was incorporated. The lack of direct associations may indicate that neighborhood processes are distal and, as such, are likely to influence adolescents’ internalizing problems only indirectly. This premise is consistent with the proposed model, where neighborhood processes are thought to first influence adolescents’ perceptions of themselves and their world and, second, their emotional state. It is also consistent with observed indirect links between neighborhood processes and adolescents’ internalizing problems via their self-efficacy. Thus, our results are consistent with the condition-cognition-emotion model first tested among adults (Ross and Mirowsky 2009).

Alternative explanations for the lack of direct associations between neighborhood processes and
adolescents’ internalizing problems include potential overcontrol. Overcontrol occurs when processes that might relay neighborhood influences, such as previous internalizing problems, are included as controls, thus masking neighborhood-level differences. Also, neighborhood processes may be linked with adolescents’ internalizing problems contemporaneously but not longitudinally, a possibility that could not be tested due to data limitations.

Despite its important methodological strengths such as the use of prospective data from a study designed to investigate links between neighborhood conditions and adolescent development, this study has several limitations. In addition to limitations already mentioned, another is the inability to rule out third unaccounted factors as an alternative explanation for the findings. Even after inserting an inclusive set of control variables, there is always a possibility that other variables not accounted for might underlie the observed links between neighborhood characteristics or residential mobility and adolescents’ outcomes. On another front, multiple imputation is a preferred strategy for dealing with missing data, but it is not without limitations and it is susceptible to bias when data are not missing at random (Allison 2001).

CONCLUSION

The results are generally consistent with the proposed model suggesting that neighborhood processes shape adolescents’ experiences, self-efficacy beliefs, and, in turn, their internalizing problems. More specifically, we found that adolescents living in violent neighborhoods were more likely to internalize low self-efficacy beliefs, that is, beliefs of powerlessness regarding their ability to avoid violence in their immediate urban environment and, more generally, to succeed in the future. This link was partly due to fear of violence in their neighborhood. We also found that in some circumstances, adolescents from disadvantaged neighborhoods could benefit from residential mobility because those who left neighborhoods characterized by violence and low efficacy to resettle outside of Chicago exhibited high levels of self-efficacy compared with other groups of adolescents, such as those who stayed in violent neighborhoods, apparently because their school experiences were superior. Results are consistent with the idea that life experiences in one’s neighborhood as well as changes in these experiences impinge on adolescents’ internal processes, namely, self-efficacy beliefs. In turn, adolescents who reported low self-efficacy were more likely to report internalizing problems, although links between neighborhood processes and adolescents’ internalizing problems were only indirect, through self-efficacy.

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REFERENCES


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