Measuring Neighborhood and School Environments: Perceptual and Aggregate Approaches

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ABSTRACT. This paper describes scales measuring perceptions of neighborhood and school quality. The scales are short and easy to administer, and easily understood by respondents. The measure of neighborhood quality (the NegNeb) has high reliability (alpha = .81), correlates with census data, shows sensitivity to change in neighborhood quality, and discriminates among urban neighborhoods. The measure of school quality (the NegEd) correlates to an index of aggregate school problems. Theories posit that the impact of environment on mental health is determined by perception of that environment. A regression model controlling for family and other characteristics showed that perception of neighborhood (as measured by the NegNeb) contributed unique variance to adolescent mental health. Perception of school did not. However, a second regression model showed that perception of school environment contributed unique variance to peer misbehavior, which was the largest predictor of mental health problems in the first equation. In each regression model aggregate measures of neighborhood and school quality contributed less to the model than did perceived measures. Because adolescents’ perceptions of their neighborhood and school environments are clearly linked to their mental health and peer environment, researchers interested in effects of neighborhood
and school environment should use subjects’ perceptions to conceptualize and measure these realities. [Article copies available for a fee from The Haworth Document Delivery Service: 1-800-342-9678. E-mail address: <getinfo@haworthpressinc.com> Website: <http://www.haworthpressinc.com>]

KEYWORDS. Neighborhood, school quality, environment on mental health, regression models, adolescents

Most theories of how neighborhoods and schools are associated with behavior posit the influence of perceptions of these environments. This paper presents two brief scales for measuring perceptions of neighborhood and school environments. Clinicians and researchers need short indices with good psychometric properties because these perceptions influence behavior and mental health.

A comprehensive review of published articles and books dealing with neighborhood and community influences shows that most researchers use only census data to estimate neighborhood qualities and rarely measure perceptions of general neighborhood quality. The omission of perceptions is perplexing since many researchers do measure perceptions of other social processes theoretically linked to neighborhood quality, such as various forms of social organization (Jargowsky, 1997), environmental risks (Hyson & Bollin, 1990), and social networks (as discussed in Burton et al., 1997). One potential reason that researchers use census data rather than perceptual data for assessing environments may be the lack of appropriate survey instruments.

Aggregate data available from the Census Bureau, police, schools, and public health areas have been used to study both the influence of aggregate indicators on aggregate outcomes (such as local rates of certain behaviors) and particular outcomes for specific individuals within aggregate communities. Jencks and Mayer (1990) reviewed such research and remarked on the lack of consensus concerning which aggregate indicators best reflected neighborhood quality. Theoretically measures of poverty and joblessness should have greatest influence (Wilson, 1987). Thus, census figures for income, unemployment, and poverty rates are used in almost all studies of neighborhood effects (e.g., Coulton, Pandey, & Chow, 1990; Curry & Spergel, 1988; Jencks & Mayer, 1990; O’Regan & Wiseman, 1989). Some researchers have used crime and delinquency rates (Bursik & Webb,
Evaluations of neighborhoods have also considered job opportunities and representation of professional occupational sectors (Crane, 1991a; Ellwood, 1986; Wilson, 1987), the concentration of female-headed households (e.g., Hogan & Kitagawa, 1985; Jencks, 1992), racial composition (e.g., Duncan, 1994; Garbarino, Kostelny, & Grady, 1992; Mayer, 1991), or age and gender ratios (e.g., Figueira-McDonough, 1992; Wilson, 1983).

The use of aggregate data has certain limitations. For example, census tract or similar aggregate data may not accurately reflect the geographic boundaries of a neighborhood as experienced by residents. Census tract data is gathered only once every ten years, and conditions in a neighborhood may change dramatically within a few years. Aggregate data do not include fundamental aspects of neighborhood quality, such as fear of criminal or violent acts, the physical appearance of a neighborhood, or the availability and quality of local resources and organizations.

Despite such limitations, aggregate data or expert observation have been used to create scales measuring neighborhood quality. Duncan and Aber (1997) used factor analysis with a national sample of census tracts to create scales measuring five dimensions of neighborhood quality. However, this method’s usefulness is limited by its reliance on census tract data and the complexity of using such a scale in diverse settings. Similarly, a recent study has researchers complete a checklist called the Neighborhood Assessment of Community Characteristics (NACC) (Spencer et al., 1997). Its length, at 145 items, makes it too long for most survey or clinical uses.

The perceptual approach to neighborhood influence (as opposed to the aggregate approach) uses surveys or interviews to examine how and why perceived or experienced neighborhood environment correlates with problems such as mental illness (e.g., Caspi, Bolger, & Eckenrode, 1987; Deccio, Horner, & Wilson, 1994; Garbarino & Sherman, 1980; Green, 1993; Jencks & Mayer, 1990; Kaljee, Stanton, Ricardo, & Whitehead, 1995). The few studies that combined aggregate and perceptual approaches (e.g., Deccio et al., 1994; Garbarino, Kostelny, & Grady, 1992; Garbarino & Sherman, 1980; Korbin & Coulton, 1994) have tended to find stronger relationships between environment and outcomes than those studies that rely only on aggregate data. This is not surprising in light of the recognized limitations of aggregate data and the theoretical emphasis on perceptions. Howev-
er, we have found no published attempt to use or develop any scale assessing perception of general neighborhood or school environment. Although methods used in existing studies have contributed to knowledge about particular environmental conditions and their influence on behaviors, they have not yielded a general measurement of neighborhood quality. Some have even argued that neighborhood arrest rates and family composition patterns vary so much among poor neighborhoods that generalized measures of neighborhood quality are unsuitable (Case & Katz, 1991). Most attempts to generalize measures of neighborhood quality have been qualitative estimates of only one or two specific aspects of a neighborhood problem (e.g., danger or fear of danger, social support), and lack reports of validity or reliability. Out of 35 published works considering neighborhood quality, only two used perception instruments aimed at general neighborhood characteristics and discussed reliability and validity (Caspi, Bolger, & Eckenrode, 1987; Peeples & Loeber, 1994).

We used both perceptual and aggregate approaches in a broad examination of the association between environmental conditions and various problems experienced and perceived by adolescents. Our research was based on interviews of adolescents that gathered information about perceived neighborhood and school environments. We then merged available aggregate data with the youths’ reports. For the interviews, we developed a short, simple series of structured questions concerning the environment. These are brief enough to be used in situations where time is constrained, such as in a large survey, or when counseling clients. Theoretical rationales directed the selection of items addressing aspects of neighborhoods and schools. We compared youths’ perceptions of environment with other indices measuring specific social processes such as peer behavior, social support, and family attributes. We also compared perceived environment and social processes to aggregate measures (census, police, and school data) matched to youths’ addresses. The association between the aggregate and perceived environmental data and individual characteristics (such as mental health and problem behaviors) illustrates how the impact of perception differs from that of aggregate environmental data.

**THEORETICAL BASIS FOR INDEX DEVELOPMENT**

An index of perceived neighborhood or school quality should measure perceptions of general neighborhood or school conditions, not
social processes. For example, researchers should separate from neighborhood quality, measures of those aspects of neighborhood life that theoretically result from some original deficiency in material or social conditions. Constructs such as supportiveness of local social networks, peer misbehavior, informal social control and community monitoring of youths, or out-of-wedlock childbearing are more appropriately considered as factors influenced by a neighborhood’s poor quality rather than direct indicators of neighborhood problems. This distinction between neighborhood or school environments and social processes is necessary because the social world of adolescents often extends beyond their immediate neighborhood or school.

Our two environmental indices, the negative neighborhood index (NegNeb) and the negative school index (NegEd), include a total of 12 items. The NegNeb included items asking about drug dealing, violence and crime, housing quality, homelessness, and welfare dependence. A theory of environmental impact posited each item as important (see below). The NegEd used the same constructs in items concerning violence, crime, vandalism, and stress at school. Compared to neighborhood ecological models, there have been few theories developed specifically for school environments. However, because such theories as the theory of social capital (Coleman & Hoffer, 1987) are used in both school and neighborhood comparisons, we posited that the important environmental effects should be applicable in schools just as in neighborhoods.

Drug Dealing. Neighborhood leaders frequently mention drug use and the drug trade as important problems (Brunswick, 1985). Drug and alcohol abuse are often associated with violence or accidents, and contribute to chronic health conditions, crime, and unemployment (Brunswick, 1985). Popular aversion to the public display of illicit drug commerce and use may further worsen neighborhood quality by driving away businesses, positive role models, and formal institutions (Wilson, 1987). In our own surveys of youths and adults, using open-ended questions about problems in their neighborhoods, subjects mentioned drug dealing and use more often than any other problems except violence and violent crime.

Violence and Crime. Violence and property crimes are clearly social problems in their own right, but they also spawn other social problems in a cycle of neighborhood deterioration (Bowen & Chapman, 1996; Garbarino, 1990; Martinez & Richters, 1993; Wilson, 1987). Accord-
ing to the Social Comparison and Reasoned Action theories of behavior, neighborhoods with high crime create environments in which youth come to view crime as an acceptable activity (Ajzen, 1987). The high crime rates are likely to drive away positive role models and employment opportunities as businesses relocate to safer areas (Crane, 1991b; Rothenberg, Galster, Butler, & Pitkin, 1991). Perhaps most importantly, neighborhoods with high concentrations of violent or delinquent persons provide more potential for negative peer influences (Thornberry et al., 1994).

Abandoned Buildings and Homelessness. Housing quality reflects neighborhood quality. When housing stock is in poor repair or many buildings are vacant, residents may feel demoralized. Vacant buildings may also increase crime as empty buildings become locations for illegal activities. Home ownership may help stabilize a community as homeowners take an interest in maintaining property values by organizing their neighborhood against threats to its well-being (Coulton et al., 1990).

Welfare. In recent decades many analysts have emphasized the problem of welfare dependence (Jencks, 1992; Wilson, 1987). People fear that high concentrations of persons receiving welfare, unemployment benefits, disability, food stamps, and other public assistance programs create an environment of higher school drop-out rates, crime rates, risky sexual behaviors, and low career aspirations (Andersen, 1991; Crane, 1991a; Jencks & Mayer, 1990). It is important to notice that there is little difference between poverty and welfare use, but welfare use, rather than poverty, seems more likely to be identified with auxiliary problems.

Jobs. Low job availability in a community is associated with stress and poverty for urban residents. Young people may not see jobs available in their neighborhood, and thus conclude that employment is not achievable (Wilson, 1987). Prostitution and drug dealing may indicate a bad job market in an area as well, since presumably people choose such dangerous professions only as a last resort when other work opportunities are unsatisfactory or limited (Fagen, 1994; VanWesenbeeck, 1994).

METHODS

The neighborhood and school environment instruments were developed for the Youth Services Project (YSP). The YSP was a study of
adolescent mental health and services use funded by the National Institute of Mental Health. This larger study interviewed adolescents from the city of St. Louis, Missouri, between April and October of 1994, following up 85% of these same youths in 1996. All had used services provided by four public service sectors: Child Welfare, Primary Health Care, Juvenile Justice, and Education. Trained professional interviewers collected the data through face-to-face interviews. Service providers aided interviewers in recruiting adolescents in the service sector waiting rooms, and through letters and posters requesting volunteers from each sector’s service users. Informed consent was obtained from all subjects and their guardians prior to interviews. When possible, the interviewer completed the interview on site, immediately before or after services were obtained. Otherwise, the interviewer arranged an appointment for a future interview in the adolescent’s home, or at a mutually acceptable site.

We used the NegNeb again in a local survey of three St. Louis neighborhoods as part of an evaluation project conducted by the Life Crisis Services agency in St. Louis. Life Crisis Services created a program called Neighborhood Connections designed for intensive outreach in specific neighborhoods. Neighborhood Connections wanted to measure several aspects of neighborhood quality, and used the NegNeb as one of its assessment instruments. For the Neighborhood Connections surveys all the NegNeb items were modified very slightly so they could be taken as self-administered tests. We also added three items to improve reliability. Neighborhood Connections did not use the NegEd because they were not examining school environment.

**SAMPLE**

The 792 subjects of the Youth Services Project (YSP) were between 13 and 18 years of age, with a mean age of 15.3 years. Thirteen percent were white, 86% Black, and 1% other. Forty-three percent were male and 57% female. The occupation of the head of household who provided the most financial support to the family in the last 6 months determined socioeconomic status. Accordingly, 15% were on welfare, 39% were unskilled or semiskilled workers, 16% were skilled blue collar, 20% white collar, and 9% professional. Forty-two percent of the children lived in families headed by their mother only, another 11% with their mother and other adults, 14% with both biological
parents, 14% in foster or group care, and 12% with non-parent relatives. Comparisons with tallies of the demographics of youths using the four public service sectors found that the sample was representative of adolescent service sector users. Over all the sites, there were no significant differences in race or gender, although the adolescent users of services were, on average, 2 months older than our YSP subjects. Those youths sampled from the Child Welfare or Educational sectors did not differ in race, gender, or age from teenagers using the respective service sectors. However, our Health sample averaged 3 months younger than youths using the Health sector and our Juvenile Justice sample had fewer males (60% vs. 75%) and averaged 2 months younger than youths using the Juvenile Justice sector. Note that in terms of race, teenage users of the sector services and our sample are not representative of the population of St. Louis City, which has a population that is closer to 50% Black and 50% white.

In 1998, Neighborhood Connections administered the NegNeb to 393 individuals living in three distinct St. Louis neighborhoods. Subjects were between the ages of 14 and 83, with a mean of 36.1 years old. The Neighborhood Connections sample was 84% Black and 60% female. Subjects were recruited by fliers distributed to every home on randomly selected street blocks in the neighborhoods. Most respondents completed their surveys in community centers or churches while an agency social worker was present to explain the survey, obtain informed consent, and answer questions. A few filled out the scales at home and reviewed them with an agency social worker who visited to retrieve the completed instruments.

**INSTRUMENTS**

The neighborhood and school indices were administered in the YSP as part of a much longer survey of adolescent mental health and service use. The Neighborhood Connections surveys were also longer surveys in which the NegNeb was just a part.

**Environmental Measures**

*Negative Neighborhood Environment.* The NegNeb was made from seven items based on the previously discussed environmental constructs.
We asked subjects the extent to which drug dealing, shootings, murders, abandoned buildings, neighbors on welfare, homeless people on the street, and prostitution existed in the areas where they lived. Each question could be scored with a 0 (none), 1 (some) or 2 (a lot). Pilot focus groups were used to refine the items and potential responses so that youths with low literacy levels could understand and respond. The items were summed to give a score between 0 and 14. In the Neighborhood Connections sample we added three additional items, lengthening the original scale to ten items so the scale was scored from 0 to 20. These new items asked for the presence of: businesses closing, bad schools, and graffiti and/or vandalism. The index is shown in Appendix 1.

**Negative School Environment.** The NegEd measured negative school climate with five questions relating to drug dealing, shootings or knifings, teachers injured by students, school equipment damaged, and anger/stress at school. Answers were scored on the same 3-point scale used with the NegNeb. The index is shown in Appendix 2.

**Outcome Measures**

**Mental Health Problems.** Measures of depression, conduct disorder, and alcohol and other drug abuse or dependence came from the Diagnostic Interview Schedule for Children-Revised (DISC-R) (Schafer, Schwab-Stone, Fisher, Cohen et al., 1993). The DISC-R allows two separate operationalizations of these constructs: (a) a diagnosis of a specific disorder based on computer algorithms that combine symptoms according to the criteria in the DSM-IV; and (b) a count of symptoms lasting 2 weeks or more, or which interfere significantly with the adolescent’s life (Cronbach’s alpha = 0.78 for depression, 0.89 for conduct disorder, and 0.91 for substance abuse). Information about post-traumatic stress symptoms came from a modified version of the Diagnostic Interview Schedule (DIS) (Robins, 1985; Robins, Helzer, Croughan, & Ratcliff, 1981). Symptom counts for depression, conduct disorder, substance abuse and dependence, and post-traumatic stress were summed into an overall sum of mental health problem symptoms which was then standardized (to $M = 0$ and $SD = 1$).

**Social Process Measures**

**Family Support.** Parent-child relationships were assessed with an adaptation of the Family Satisfaction Scale (Hudson, 1982). Subjects
rated how much of the time, over the course of the last 6 months, their family got on their nerves, they really enjoyed their family, they could depend on their family, their family argued too much, and they felt like a stranger in their home. The possible answers to each question ranged over five points from “almost all of the time” to “rarely or never.” The sum of these Likert type scores provided an index of the quality of their family relationships.

Family Mental Health Problems. Family mental health problems were measured with nine items from the National Institute of Mental Health—Epidemiologic Catchment Area (NIMH-ECA) program (Robins, 1985). Youths were provided with brief descriptions of diagnostic criteria for each mental illness, including alcohol and other drug problems, and were asked if a family member ever met those criteria (Stiffman, 1989a, 1989b).

Perception of Violence. Fear of violence was measured with three items from the fear subscale of the Exposure to Violence Interview (EVI) (Kindlon, Wright, Raudenbush, & Earls, 1996). Youths were asked how much they feared violence in their neighborhoods and in front of their homes. They were also asked how much their fear of violence influenced where they went. Youths responded in five categories ranging from “not at all” to “very much.”

Peer Misbehaviors. Peer misbehaviors were measured through youths’ ratings of how many of their peers (none, a few, about half, most, or all) had trouble with the police, used drugs or marijuana, were both unemployed and out of school, used drugs/drank alcohol daily, or had become pregnant. Responses to these questions were summed (Cronbach’s alpha = 0.77). These peer misbehaviors correlate with violent behaviors (Stiffman et al., 1996) and change in HIV risk behaviors (Stiffman et al., 1992).

ANALYSES

We used principal components analysis and inter-item correlations to determine reliability of the perceived environment scales. Scales and their individual items were compared to census data and police crime statistics to establish validity. We then examined the construct validity of the scales in a multistage process. First, we examined correlations among the NegNeb, NegEd, and the social processes scales (e.g., peer misbehaviors) and outcome measures (e.g., mental
health problems) where theories suggested we could find relationships. We then ran two regression models. One predicted mental health problems as a dependent variable, using, as independent variables, the NegNeb and NegEd, demographic characteristics, aggregate data indicators, and social process measures. The other model used peer misbehaviors as the dependent variable. Our final regression models used only those independent variables which retained significant unique contributions.

**RESULTS**

*The NegNeb*

Average scores on the seven item NegNeb for the YSP sample ($M = 6.2$, $SD = 3.8$) and the Neighborhood Connections sample ($M = 6.6$, $SD = 3.7$) were about the same despite the differences in the ages of the samples. The ten item NegNeb had a mean score only one point higher ($M = 7.6$, $SD = 4.7$). These scores may be typical for an urban midwestern setting, but the scale has not been used with suburban or rural samples.

Drug dealing in the neighborhoods was widespread, with about half (49%) the YSP respondents reporting a lot of drug dealing and another 29% reporting some (see Table 1). The youths in this survey also reported shootings in their neighborhood; 36% reported a lot and 37%

<table>
<thead>
<tr>
<th>Problem</th>
<th>Percentage Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem</td>
<td>n</td>
</tr>
<tr>
<td>Drug dealing</td>
<td>782</td>
</tr>
<tr>
<td>Shootings</td>
<td>787</td>
</tr>
<tr>
<td>Murders</td>
<td>779</td>
</tr>
<tr>
<td>Abandoned buildings</td>
<td>788</td>
</tr>
<tr>
<td>Neighbors on welfare</td>
<td>717</td>
</tr>
<tr>
<td>Homeless</td>
<td>782</td>
</tr>
<tr>
<td>Prostitution</td>
<td>779</td>
</tr>
</tbody>
</table>
somewhat. Murders were less common; 15% of the subjects reported a lot; but 34% some. Abandoned buildings were regular features of most youths' neighborhoods, with 35% reporting a lot and 34% some. Most of our subjects perceived that either a lot (42%) or some (36%) of their neighbors were receiving welfare. Many (43%) said their neighborhoods had a lot or some homeless people in the street, while a third (33%) reported a lot or some prostitution. Results in the Neighborhood Connections sample were similar in univariate distributions, with the adult sample tending to more often answer “some” and less often answer “a lot” for most items except abandoned buildings, where 48% of the sample perceived a lot and 35% reported some.

Reliability and Validity. We examined internal consistency reliability using two methods: principal component factor analysis and Cronbach’s alpha. Construct validity was tested by comparing the NegNeb and its items to census and police district data. The index’s ability to discriminate was assessed by testing for variance on scores from two well-represented neighborhoods using those neighborhoods’ census tract and crime data. We also replicated this ability to discriminate by comparing scores between the three distinct neighborhoods in the Neighborhood Connection sample.

Principal component analysis showed all items loading reliably on a single factor (see Table 2). Perceptions of shootings and drug dealing

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor Loading</th>
<th>Variance Explained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neighbors on welfare</td>
<td>.71</td>
<td>.50</td>
</tr>
<tr>
<td>Homeless in the streets</td>
<td>.62</td>
<td>.38</td>
</tr>
<tr>
<td>Prostitution</td>
<td>.59</td>
<td>.34</td>
</tr>
<tr>
<td>Drug dealing</td>
<td>.78</td>
<td>.59</td>
</tr>
<tr>
<td>Shootings</td>
<td>.83</td>
<td>.69</td>
</tr>
<tr>
<td>Murders</td>
<td>.74</td>
<td>.54</td>
</tr>
<tr>
<td>Abandoned buildings</td>
<td>.72</td>
<td>.52</td>
</tr>
</tbody>
</table>

Final commonality estimate total = 3.56
in a neighborhood had the highest loadings at .83 and .78 respectively. No item had less than the prostitution item with its .59 loading. The perception of homeless persons had a slightly higher loading at .62. The perceptions of neighbors on welfare, abandoned buildings, and murders in the neighborhood all loaded similarly at .71, .72, and .74 respectively. This range demonstrates that each item is important to the index, and no item should be left out. The three items added to the scale for the Neighborhood Connections sample had similar component loadings. Principal components analysis confirmed that the ten item scale still had only one strong and meaningful factor, but internal reliability increased only slightly from .84 to .87 in the longer version.

Internal consistency, as expressed by Cronbach’s alpha, was sufficient (a = .81), especially when considering that the index had only seven items. This alpha exceeds the minimum level of .80 recommended for scales by Carmines and Zelleras (1979), who state that, at this level of reliability, random measurement error can attenuate correlations only slightly. The YSP used the NegNeb again in 1996, and Neighborhood Connections used it again in 1998. Both found acceptable scale reliability for the NegNeb at .83 and .84, respectively. Various split-half reliability tests confirmed a reliability for the scale between .80 and .85.

To test the index’s consistency and ability to discriminate between census tracts, we compared average NegNeb scores from two clusters of census tracts representing St. Louis neighborhoods with disparate violent crime rates as reported by the St. Louis Police. We chose to compare the Jeff Vander Lou (n = 29) and Tower Grove South (n = 25) neighborhoods because these represented two extremes of St. Louis neighborhood environments. The Jeff Vander Lou neighborhood in north St. Louis ranked 7th out of the city’s 78 neighborhoods in violent crime with a rate of 8.25 violent crimes per 100 residents, and had the second highest number of murders in the city with 33 between 1993 and 1995; the Tower Grove South neighborhood ranked 56th with 1.90 per 100 residents (Holleman & Bryan, 1996). Both the t-test and point biserial correlations demonstrated that the index discriminated between census tracts. Subjects from the Jeff Vander Lou neighborhood consistently reported higher scores (M = 6.4, SD = 3.3) than did those from Tower Grove South (M = 4.0, SD = 3.4; t = 2.6, p < .01 and t = 2.3, p < .05, respectively). The overall mean for the two neighborhood subsample of 54 youths was 5.3 (SD = 3.5).
The Neighborhood Connections study also supported the scale’s ability to discriminate. Social workers from Neighborhood Connections had neighborhood leaders, local experts, police, and area social workers describe their neighborhoods. From these descriptions it was clear that the three neighborhoods in the study—College Hill, Forest Park Southeast, and the Spring Itaska region of Dutchtown—could be ranked with College Hill as most troubled and Spring Itaska as least so. Police crime statistics and census tract indicators supported this ranking. An ANOVA showed that each neighborhood’s mean score differed significantly from the other two, with Spring Itaska having the lowest (best) score and College Hill the highest (worst) ($F = 56.9$, $p < .0001$).

In the College Hill neighborhood, 36 residents who completed the NegNeb in early 1998 had also answered the survey in late 1996. According to a local police administrator crime declined by about 22% in College Hill between 1996 and 1997, which was about triple the drop enjoyed by St. Louis as a whole. The average scores on the 7-item NegNeb declined significantly from 10.0 ($SD = 3.0$) to 8.7 ($SD = 3.4$) ($t$-value of 2.3, $p = 0.03$). This sensitivity to change in a neighborhood’s crime level confirmed the scale’s sensitivity to environmental change.

The NegNeb correlated significantly with all census data we used for validity testing. Perceptions reported on the NegNeb were negatively associated with objective census indicators of higher income [household incomes ($r = .36$, $p < .001$), and per capita incomes ($r = .36$, $p < .001$)], and positively associated with census indicators relating to lower income [the proportion of households on public assistance ($r = .38$, $p < .001$), the proportion of unemployed ($r = .35$, $p < .001$), the proportion of families below the poverty line ($r = .38$, $p < .001$), and the proportion of idle youths ($r = .16$, $p < .001$)]. Finally, the youths’ perceptions of their neighborhoods were significantly associated with census tract measures for poor housing [greater proportions of vacant units ($r = .34$, $p < .001$), lower percentage of owner occupied housing units ($r = .26$, $p < .001$), higher proportions of low value rentals ($r = .15$, $p < .001$) and purchase values less than $15,000$ ($r = .27$, $p < .001$)].

Specific items from the neighborhood index correlated with parallel aggregate measures. The youths’ perception of the number of neighbors on welfare correlated significantly with census tract data concerning the proportion of households on public assistance ($r = .33$, $p < .001$). Furthermore, the youths’ perception of the number of aban-
doned buildings correlated with census tract data about the proportion of vacant housing units ($r = .29, p < .001$).

In conclusion, the NegNeb showed high internal reliability and construct validity, indicating that the index can be used with confidence.

**The NegEd**

The NegEd revealed some of the problems our sample faced in the school environment, and evidenced moderate reliability and validity (see Table 3). Drug dealing was prevalent in schools, with almost half (48%) the teens in our sample reporting drug dealing in their schools. Violence was also common in school, where 23% of the teens reported some or a lot. (Contrast these with 78% reporting drug dealing and 73% reporting shootings in neighborhoods.) Only 2% said a lot of teachers were injured by students, but 22% reported some. Vandalism was more common, with 20% reporting a lot of school equipment damaged and 42% some. Answers to the question about anger and stress at school were similarly distributed, with 19% reporting a lot of anger and stress, 44% some, and 37% none. NegEd scores ranged from 0 to 10 ($M = 2.8, SD = 2.1$). The levels of violence these adolescents perceived in their schools are similar to those reported by teachers and social workers in other studies (Astor, Behre, Fravil, & Wallace, 1997).

**Reliability and Validity.** We examined the NegEd for reliability through factor loadings and Cronbach’s alpha (see Table 4). We were able to check for construct validity using available county and city.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Percentage Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students injuring teachers</td>
<td>753</td>
</tr>
<tr>
<td>Equipment damaged</td>
<td>751</td>
</tr>
<tr>
<td>Drug dealing</td>
<td>745</td>
</tr>
<tr>
<td>Shootings/knifings</td>
<td>754</td>
</tr>
<tr>
<td>Anger and stress</td>
<td>753</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Problem</th>
<th>n</th>
<th>None</th>
<th>Some</th>
<th>A Lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students injuring teachers</td>
<td>753</td>
<td>76</td>
<td>22</td>
<td>2</td>
</tr>
<tr>
<td>Equipment damaged</td>
<td>751</td>
<td>37</td>
<td>43</td>
<td>20</td>
</tr>
<tr>
<td>Drug dealing</td>
<td>745</td>
<td>51</td>
<td>35</td>
<td>14</td>
</tr>
<tr>
<td>Shootings/knifings</td>
<td>754</td>
<td>77</td>
<td>19</td>
<td>3</td>
</tr>
<tr>
<td>Anger and stress</td>
<td>753</td>
<td>37</td>
<td>44</td>
<td>19</td>
</tr>
</tbody>
</table>
TABLE 4. Unrotated Principal Component Factor Loadings and Correlation to Scale Score for NegEd Items

<table>
<thead>
<tr>
<th>Items</th>
<th>Unrotated Factors</th>
<th>Variance Explained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students injuring teachers</td>
<td>.56</td>
<td>.31</td>
</tr>
<tr>
<td>Equipment damaged</td>
<td>.68</td>
<td>.46</td>
</tr>
<tr>
<td>Drug dealing</td>
<td>.74</td>
<td>.54</td>
</tr>
<tr>
<td>Shootings/knifings</td>
<td>.65</td>
<td>.42</td>
</tr>
<tr>
<td>Anger and stress</td>
<td>.59</td>
<td>.35</td>
</tr>
</tbody>
</table>

Final commonality estimate total = 2.07

statistics on St. Louis schools and school districts. Although the scale’s reliability and validity were marginally acceptable, the scale demonstrates parallels to the relationship between aggregate and perceived environment shown by the NegNeb.

Principal component analysis demonstrated that all NegEd items loaded on a single factor using minimum Eigenvalue-one criterion. Table 4 shows the (unrotated) factor loadings. Drug dealing had the highest loading on this index with .74. The other items’ loadings were .56 (students injuring teachers), .59 (anger and stress), .65 (shootings and knifings), and .68 (school equipment damaged). As with the NegNeb, these loadings indicate that each item in the NegEd is important and no item should be removed.

The Cronbach’s alpha for the index was .62 at the first wave [and .63 in 1996]. As with the other index, this stability of the measure suggests that researchers can generalize a construct of school environment. This approach contrasts with the usual methods for assessing schools, which include comparing scholastic aptitude test scores, measuring the socioeconomic status of students, or surveying teachers about school organizational climate (Coleman & Hoffer, 1987; Mayer, 1991; Raudenbush, Rowan, & Kang, 1991). However, the alpha of .62 is at the low end of what would be considered acceptable in an index. At this level, the index is likely to be very conservative in estimations of relationships between school environment and other constructs. Such conservative indices with lower alphas have a better chance of
avoiding type-II errors with larger samples (e.g., survey research projects) than with smaller samples.

To compare the NegEd to aggregate school quality data we first had to determine which aggregate data to use. Unlike neighborhood census data, no aggregate school measures directly assess the environmental factors measured in our instrument. However, several widely recognized indicators of school quality should correlate with the general climate of distress measured by our scale. We created a single factor score of six standardized quality indicators for each of the 125 schools YSP youth attended. We included the drop-out rate, average attendance rate, ratio of teachers to students, percent African-American, percent getting a free or reduced priced lunch, and an index of academic excellence. We created the academic excellence index by taking a school’s average scores on Missouri achievement tests in reading, math, science, and social studies. These averages were standardized within subjects for the St. Louis schools of the same grade levels, so relative achievement could be compared across academic subjects and grade levels. These standardized test scores were then added to a standardized college-bound index representing the percentage of each school district’s graduates continuing on to college. We generated this college-bound index by subtracting the percentage of students who did not continue their education after graduation from the percentage of students who went to a 4-year college.

Correlations among these indicators were very high, supporting our creation of a factor score combining them. Table 5 shows intercorrelations in a sample of 66 schools for which we had values for

<table>
<thead>
<tr>
<th>Problem</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ratio of students per teacher</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Absence rate</td>
<td>.14</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Academic excellence index</td>
<td>.38</td>
<td>.52</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Drop out rate</td>
<td>.16</td>
<td>.49</td>
<td>.65</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Percent getting free or reduced lunches</td>
<td>.46</td>
<td>.70</td>
<td>.69</td>
<td>.64</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>6. Percent African-American</td>
<td>.49</td>
<td>.60</td>
<td>.60</td>
<td>.48</td>
<td>.86</td>
<td>1.0</td>
</tr>
</tbody>
</table>

TABLE 5. Correlations Between Aggregate Measures of School Quality
TABLE 6. Mental Health of YSP Youths in 1996

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Estimate</th>
<th>unique r²</th>
<th>F Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer Misbehaviors</td>
<td>0.05</td>
<td>***</td>
<td>.06</td>
</tr>
<tr>
<td>Gender</td>
<td>0.45</td>
<td>***</td>
<td>.06</td>
</tr>
<tr>
<td>Family History of Mental Illness</td>
<td>0.09</td>
<td>***</td>
<td>.04</td>
</tr>
<tr>
<td>Perceived Violence Threat</td>
<td>0.11</td>
<td>***</td>
<td>.03</td>
</tr>
<tr>
<td>Family Support</td>
<td>0.03</td>
<td>***</td>
<td>.03</td>
</tr>
<tr>
<td>Perceived Negative Neighborhood</td>
<td>0.04</td>
<td>***</td>
<td>.02</td>
</tr>
</tbody>
</table>

Model Statistics F value = 62.1 R² = .41 p < .0001
*** p < .001  n = 553

TABLE 7. Peer Misbehaviors of YSP Youths, 1996

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Estimate</th>
<th>unique r²</th>
<th>F Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Negative Neighborhood</td>
<td>0.36</td>
<td>***</td>
<td>.07</td>
</tr>
<tr>
<td>Family Support</td>
<td>0.18</td>
<td>***</td>
<td>.02</td>
</tr>
<tr>
<td>NegEd 1994</td>
<td>0.28</td>
<td>**</td>
<td>.01</td>
</tr>
<tr>
<td>Age</td>
<td>0.42</td>
<td>*</td>
<td>.01</td>
</tr>
<tr>
<td>Gender</td>
<td>0.86</td>
<td>*</td>
<td>.01</td>
</tr>
<tr>
<td>Aggregate School Problems 1994</td>
<td>0.53</td>
<td>*</td>
<td>.01</td>
</tr>
</tbody>
</table>

Model Statistics F value = 20.3 R² = .18 p < .0001
* p < .05  ** p < .01  *** p < .001  n = 557

all six elements. A principal components analysis suggested one strong factor (Eigenvalue of 4.5) accounted for most of the variance among these six dimensions of school environment. Internal reliability was high (alpha = .88). The factor score of aggregate school data correlated significantly but weakly with our own NegEd (r = .11, p < .05). Clearly the NegEd measures something different from the aggregate school data. The restricted range (few of the region’s better schools were represented and no aggregate data were available for private schools) further lowers our sample’s estimation of
what the true correlation between aggregate measures and the NegEd must be.

Further Evidence of Construct Validity

Both the NegEd and the aggregate measures of school quality correlate to outcome measures, although again correlations are fairly low. The factor score of aggregate school data correlates at 0.09 with mental health problems (borderline significant) and 0.11 with peer misbehaviors (significant but low). The NegEd correlates at .29 with mental health problems and .27 with perceived peer misbehaviors, both low correlations, yet higher than those obtained with aggregate data.

In the YSP study, after comparing the perceived environment measures with aggregate data we were ready to examine how the two types of scales (self-reported perceptions and aggregate) predicted outcomes (mental health) and social processes (peer misbehaviors). Most theories emphasize the influence of the environment on social processes that lead to outcomes, but some theories allow for environmental influences directly on outcomes. As noted before, most researchers have used aggregate data, but because theory posits perceived environment to be key we wanted to compare the relative predictive powers of aggregate and perceived data in determining youth mental health problems. Aggregate measures from census and school data along with the two perceived environment scales were included as independent variables in regression models. Also added into these models were proximal social and family processes measures, as well as demographics. When regressed on mental health outcomes, perceived neighborhood quality (the NegNeb) retained a small but significant influence in the model, while census data and all the measures of school quality dropped out.

Most theories do not posit a strong direct relationship between neighborhood quality and mental health outcome. The distal environment as measured by census data or our perceived environment scales influences mental health or other outcomes through effects on proximal social processes, such as peer behaviors. Notice that peer misbehavior had the largest unique contribution to the mental health outcome. Therefore we ran a regression model testing the theory that school and neighborhood environments predicted peer misbehavior, and thus indirectly contributed to outcomes such as mental health problems. We again used the same personal attributes, family charac-
teristics, and neighborhood and school environments, both perceived and aggregate, as independent variables. Indeed, we found that the NegNeb, the NegEd, as well as the aggregate measure of school quality all contributed unique variance to peer misbehaviors, the major predictor of youth mental health in the prior regression.

**CONCLUSION**

The NegNeb and NegEd demonstrate that researchers can measure perceptions of general neighborhood and school quality, and that such measures may be stronger predictors of intermediate social processes and final outcomes than aggregate data. Although both the NegNeb and NegEd show adequate scalar properties, the NegNeb in particular shows high reliability. Researchers or practitioners can confidently use the NegNeb in either its seven item or ten item configuration and know that they will obtain a reliable and valid measure of perceived neighborhood quality. The NegNeb has also shown its ability to detect changes in neighborhood quality and discriminate between neighborhoods, even when used with purely urban samples (having less between-neighborhood variance than would be expected in studies including suburban residents). The NegNeb’s effect on mental health and peer misbehavior is further evidence of its construct validity. We have used it successfully with youth and adult samples as part of an interview and as a self-administered survey. In addition to their psychometric properties these indices offer ease of use, simplicity, and a record of fruitful utilization (Stiffman et al., 1999).

The use of aggregate data in census reports or police district crime statistics assumes that such data represent the most accurate measure of environmental quality. However, most theories of neighborhood effects suggest specific environmental realities (e.g., concentrations of poverty or crime) define neighborhood quality and influence behavior indirectly by encouraging social processes that have a stronger influence on personal behaviors. These theories imply that reality must be perceived in order to have influence. Theories such as social isolation, spatial mismatch, social disorganization, heightened competition, relative deprivation, collective socialization, culture of poverty, and contagion all assign primary importance to how residents perceive their community. People must perceive that they live in a rough neighborhood, that many of their neighbors are poor and rely on welfare, that
few work regular hours in well paying jobs, that many engage in criminal activities while few work effectively to maintain order, or that the government neglects them. Resident perceptions of these realities in their environment then trigger the social processes that lead to outcomes. Perceptions may not strongly correlate to the realities measured by aggregate data.

Correlations between the neighborhood index and census data were significant, but not high. This suggests that youths’ conceptions of their neighborhoods and the government’s census tract indicators measure related, but different constructs. The common reliance on census tract data to determine neighborhood quality very likely misses much information that could be gained with direct questioning concerning residents’ perceptions.

The fact that our measure of perceived neighborhood had a direct unique contribution to mental health while aggregate measures did not illustrates how aggregate measures can miss significant relationships. Other studies using aggregate data have found weak or questionable effects of neighborhood quality on mental health and other outcome variables when controlling for family environment (Jencks & Mayer, 1990; Spencer, Cole, Jones, & Swanson, 1997). However, there are still theoretical and empirical reasons for suspecting such an influence. Case and Katz (1991), using a perceived environment scale, found a strong relationship between neighborhood quality and drug use. Other researchers have found a strong relationship between results on community climate interviews and rates of child maltreatment (Garbarino, Kostelny, & Grady, 1992). The YSP has found that the predictive path from the NegNeb to externalizing mental health problems, such as conduct disorder and substance abuse, is stronger than the path predicting internalizing problems, such as depression. (Stiffman et al., 1999). These results suggest that if more researchers include perceived neighborhood quality measures such as the NegNeb in their studies we would have more significant findings.

Although the two indices presented in this paper worked well in our study, our study had some limitations. All the youth in our sample were from public service sectors in only one midwestern city. Adolescents in other U.S. cities or adolescents not using public services may experience and perceive different ranges of environmental characteristics. Further, because the entire sample of youths came from one city, the variance in census data from tract-to-tract does not reflect as wide
a variance as would be the case if we compared tracts from widely disparate areas. Our sample’s concentration in depressed urban areas is not a serious limitation since there is some evidence that neighborhood influences may become strongest when neighborhood quality deteriorates below a threshold (Crane, 1991b), thus a neighborhood quality scale such as ours, designed for tough environments, may be most appropriate for urban research.

The availability of a good measure of perceived environment does not eliminate the need to use aggregate data. Aggregate data still tell us whether a particular reality exists locally, which helps us determine whether subject perceptions are plausible. Also, some theories (such as resource deprivation) may posit direct influences of an environment regardless of subject perceptions. Thus, although perceived environmental quality is theoretically most important, researchers should still use aggregate measures of objective reality, if only to validate perceptions.

Our indices offer a useful tool for researchers or clinicians attempting to quickly assess perceived environmental conditions. The indices are easy to administer and score, and can be delivered quickly (in about four minutes or less). This short administration time makes the indices useful when time is of major importance. Unlike census data where tracts may not reflect social realities, answers to these indices can reflect how adolescent service users actually perceive their neighborhoods. Clinicians will find the indices useful in their assessment of clients’ environments. The indices have a further advantage in that they are appropriate for use with respondents of low literacy. Scales that use a community’s average socioeconomic status or racial composition to measure environment quality offer less insight toward feasible change than our neighborhood index, which offers insights into perceptions of the negative community conditions that are significant to adolescents and amenable to change.

In conclusion, neighborhood and school environments play important roles in ecological theories and many predictive models purporting to explain social problems such as juvenile delinquency, child abuse, mental illness, welfare dependence, and unwed teen-age childbearing. This paper presents two sets of short questions that constitute good indices for measuring perceived problems in neighborhood and school environments. The indices described in this paper could serve usefully as brief instruments for use in situations where time is limited
(e.g., in survey research or in clinical settings). Each index showed adequate scalar reliability and correlated with commonly used aggregate data. These indices contribute towards advancing knowledge of how environment effects individuals, as well as towards intervention planning for individual clients.

NOTE

1. In addition to our measures of neighborhood and school environment we used a scale measuring perceptions of service and resource availability. This index included items concerning social, private, and government resources. The questions asked if any of the following existed in the neighborhood: health clinics, community centers, transportation, counseling/social services, parks/playgrounds/gyms, job opportunities, police who are helpful. These seven yes or no questions made a 0-7 count of whether various resources existed in the neighborhood ($M = 4.1$, $SD = 2.1$). This scale proved difficult in two ways. First, all resources were available somewhere in the city, and it is not clear whether a resource’s being located in a person’s neighborhood or ten blocks away or five miles away made much difference in terms of its influence on a person. Second, even when resources are close by and excellent, people may not be aware of them. For example, in the Neighborhood Connections survey, where social workers in the neighborhoods had intimate familiarity with local resources, they were amazed by how many residents were unfamiliar with the community centers and social services located within a few blocks of any home in the neighborhood (over 30% reported no counseling/social services or community centers). One prominent agency administrator predicted almost universal recognition of his agency after over a decade of intensive outreach and delivery of services to a significant proportion of the households in the neighborhood. Yet, even when residents were specifically asked if they had heard of that agency, a third claimed to have never heard of it. These questions concerning resident ignorance of local resources and the relationship between proximity of a resource and its influence, made us doubt that one could assess the validity of this checklist. The internal consistency as measured by the Alpha was low in the YSP sample (.49) but was much higher with the adult sample in the Neighborhood Connections survey (Alpha of .77).

REFERENCES


Hadley-Ives et al.

... environment on adolescent mental health and behavior. American Journal of Orthopsychiatry, 69(1), 73-86.

APPENDIX 1. Negative Neighborhood Scale

In the past 6 months, how much of the following has been in your neighborhood—none, some, a lot?

<table>
<thead>
<tr>
<th></th>
<th>NONE</th>
<th>SOME</th>
<th>A LOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug dealing</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Shooting</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Murders</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Abandoned buildings</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Neighbors on welfare</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Homeless people in street</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Prostitution</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Businesses closing*</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Bad schools*</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Graffiti and/or vandalism*</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

* These four items used only with Neighborhood Connections sample.
APPENDIX 2. Negative School Scale

Now let me ask you about your school. In the past 6 months, how much of the following has been in your school—none, some, a lot?

<table>
<thead>
<tr>
<th></th>
<th>NONE</th>
<th>SOME</th>
<th>A LOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug dealing</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Shootings or knifings</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Teachers injured by students</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>School equipment damaged</td>
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<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Anger/stress</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>