The association of perceived neighbourhood factors and social class with depressive symptoms among Grade 6 elementary school children in Jamaica

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Abstract
This project investigated the association between Jamaican school-age children’s perception of their communities and their levels of depressive symptoms. A cross-sectional survey of sixth-grade students from schools in Kingston, Jamaica was conducted. Results of correlational analyses indicated that there were significant associations between neighbourhood factors and depressive symptoms while multiple regression analyses suggested that neighbourhood factors and social class were predictive of children’s depressive symptoms. It appears that the perception of neighbourhood factors, particularly neighbourhood quality and network are associated with depressive symptom while neighbourhood factors may mediate the relationship between low social class and depressive symptoms.

Keywords
community, demographic factors, depression, depressive symptoms, elementary school, neighbourhood factors, school-aged children, social class

Introduction
Depression is a common illness that affects about 350 million persons worldwide (World Federation for Mental Health, 2012). Depressive symptomatology is common among children and adolescents, but frequently goes unrecognized (Son & Kirchner, 2000). When depression has its onset during a child’s developmental years, it can interfere with all aspects of the child’s functioning, placing them at future risk for academic underachievement, substance misuse and teenage pregnancy. In addition, adolescents with a history of depression are at an elevated risk of a major depressive episode during young adulthood (Lewinsohn et al., 2000).

Neighbourhood factors and depression
Adverse living conditions may constitute an unremitting stressor capable of causing deleterious effects on a person’s mental health (Schneiderman et al., 2005). In the elementary school years, the presence of this type of stressor may predispose children to depressive and anxiety disorders (Shaw, 2003).

Because stress represents a disruption in the adaptive capabilities of an individual (Pearlin, 1999), the impact of stressors is ideally explored at the individual level. In this context, the question of how individuals perceive their neighbourhoods assumes greater salience than the physical objective parameters of their communities.

Of note, in young persons it has been found that the perceived neighbourhood measures most associated with poor

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mental health outcomes were unsafe conditions and economic hardships (Aneshensel and Sucoff, 1996; Snedker and Hooven, 2013). Greater social intervention and enhanced social attachment to the neighbourhood were positively associated with better emotional well-being.

**Neighbourhood factors, social class and depression**

Children from more destitute homes have been found to be three times more likely to be depressed than children from less deprived dwellings (Department of Health, 1999). It is posited that children from lower social classes are exposed to poorer amenities and significantly greater stressors, with fewer resources to manage them, increasing the chance of developing a depressive disorder (Murali and Oyebode, 2004).

**Extension to the Caribbean context**

As with other regions of the world, each Caribbean nation has its own unique set of social and economic circumstances (Lowe et al., 2014). Jamaica has been described as a ‘classist’ society in which skin colour, social class and socioeconomic status form a complex system of social stratification (Nettleford, 2003). This social stratification is reflected in the type of school (private or public) children attend and their place of residence. Upper- and middle-class parents and caregivers pay for their dependents to attend private preparatory schools, while children from the lower social class enroll in public elementary schools funded by the government of Jamaica (Nettleford, 2003).

Places of residence, in Jamaica, vary in neighbourhood quality and amenities such as road maintenance and garbage collection as well as levels of crime and neighbourhood disorder. These variations are strongly associated with social class (Nettleford, 2003). Emerging research has highlighted a positive relationship between neighbourhood characteristics and depressive symptoms among adolescents in Jamaica and other Caribbean Nations (Lowe et al., 2014). However, there is insufficient data on younger children with depressive symptoms and their associated neighbourhood factors. In Jamaican society, neighbourhood factors may also have a significant effect on children’s mental health (Sampson and Groves, 1989).

We hypothesized that there would be higher levels of depressive symptoms among Jamaican children who perceived their communities as being of poor quality, highly disordered, and with significant crime while youngsters with a stronger attachment to, and better networking in their neighbourhoods, would report fewer depressive symptoms.

**Method**

**Study design**

A cross-sectional survey design was employed. The demographic data for each of the students as well as their parents’ highest level of education and occupation were obtained in addition to their perceptions of their neighbourhoods and reports of depressive symptoms.

**Participants**

A sample of 321 students from the sixth grade of seven elementary (private and public) schools in Kingston and St Andrew, Jamaica was obtained. Students from private and public schools were deliberately sampled to obtain a diverse sample with differences in social classes. To obtain this sample, a listing of all of the schools in Kingston and St Andrew was obtained from the Ministry of Education (2015). The listing was divided into public (government funded) and private schools and each school was assigned a number by type of school. Using a table of random numbers, schools from each type were chosen. This resulted in a sample of four public and four private schools for the initial sample of the study. One public school proved to be too difficult to gain entry and one of the private schools provided access to only one of their Grade 6 classes. Data for this study were obtained from the third wave of the larger longitudinal study. Figure 1 provides a flow diagram of the sample selection.

The final sample for this study consisted of 132 children from the third wave of data collection who were obtained from four schools that are exclusively private schools, and 189 obtained from three schools that are public schools (Figure 1 and Table 1).

**Measures**

**Perception of neighbourhood factors.** The children’s perception of their neighbourhood was assessed using a modified version of the Simcha-Fagan Neighbourhood Questionnaire (J. Barnes-McGuire, 1997). The original scale was modified by Barnes-McGuire to be relevant for use with urban samples of children from different ethnic groups and to be sufficiently brief to be included in survey research. There were 38 items which were divided into a series of five subscales: neighbourhood quality, neighbourhood crime, neighbourhood disorder, neighbourhood network and neighbourhood attachment.

Depending on the subscale, the number of items ranged from two to nine items. All items had responses which utilized either a yes (1)/no (0) format or a 1–5 Likert-type scale. For each subscale, the summed scores were tallied for each item. Higher scores represented more undesirable
characteristics on the quality, crime, and disorder subscales but more desirable characteristics on the network and attachment subscales. Internal consistency reliability ranged from 0.64 to 0.72 for the subscales.

Overall, the scale has demonstrated adequate validity and reliability for use with a wide variety of ethnic populations (J. Barnes-McGuire, 1997). It has been used widely in a number of studies to capture respondent’s perceptions of their local communities (J. Barnes-McGuire and Shay, 1996; Buckner, 1988; Coulton et al., 1996; Hawe, 1994).

Adolescent Depression Rating Scale. The Adolescent Depression Rating Scale (ADRS; Revah-Levy et al., 2007) is a 10-item measure of depressive symptoms for use with preteens and adolescents. It was created using factor analysis of an initial 44-item self-report depression scale. The scale explores the physical, cognitive and emotional aspects of depression. Participants were asked to indicate whether each item was true or false for them.

The ADRS has been found to have acceptable levels of internal consistency reliability as well as good concurrent validity as demonstrated by large correlations with the Hamilton Depression Rating Scale, the Beck Depression Inventory and the Clinical Global Impression Severity Scale (Myers and Winters, 2002; Poznanski et al., 1984; Radloff, 1977). From the receiver operator curve, the cut-off score corresponding to Diagnostic and Statistical Manual of Mental Disorders (4th ed.; DSM-IV) for clinical depression was 4 (Revah-Levy et al., 2007).

Demographic data. Information was collected on the socio-demographic characteristics of children taking part in the study. It included a series of questions on children’s age, gender, parents’ occupation and highest level of education modelled after the Jamaican census of population that was modified by the researcher. Modifications to the original questions involved collapsing the range of response options for the age and levels of education questions into a smaller number of categories which were more easily understood by the participants.

Procedure

Prior to data collection, contact was made with the Ministry of Education in Jamaica and the principals of each school to inform them of the study and obtain their approval. Informed consent was obtained from parents or legal guardians. Data were collected from the students during their regular class time, provided that their parents had given written consent and they had completed their assent forms. Children’s social class was assigned using their mothers’ occupation as a proxy measure. The Derrick Gordon (1987)1 Social Class Scale for Jamaica was used to determine mothers’ social class. The Derrick Gordon Social Class Scale is the most recent, and the only measure of social class for Jamaica.

Statistical analyses

The data from the study were initially scanned for data entry errors using Epi-Data 3.0. They were subsequently transferred into the Statistical Package for the Social Sciences (SPSS version 20.0) for analysis. An examination was done on the extent of missing data and no variable was missing more than 10 per cent of the data. As such, we estimated the
values for missing data and substituted values on each variable, with the exception of nominal data such as gender.

Chi-square tests were conducted to analyse the associations of type of school with parents’ educational level and social class. Spearman’s correlation was utilized to determine the relationship between neighbourhood factors and depressive symptoms. Independent samples t-tests and analyses of variance (ANOVAs) were used to investigate the relationship between socioeconomic status and levels of depression.

A two-stage hierarchal regression analysis was performed to examine the influence of neighbourhood factors independent of the possibly biasing, background factors of social class and gender. In the first stage of the model, the background factors of gender, school type, maternal education and social class were entered into the regression equation. Then controlling for background factors, further regression analysis was conducted using neighbourhood factors as predictors of levels of depressive symptoms.

For all analyses, statistical significance was taken at \( p < 0.05 \).

**Ethical considerations**

Approval for the study was obtained from the Ministry of Education in Jamaica and the principals of each school. Ethical approval was obtained from the Faculty of Medical Sciences Ethical Committee, University of the West Indies – Mona.

**Results**

A sample of 321 children, (160 girls and 136 boys with 25 children reporting no gender), was obtained. The ages ranged from 10–12 years with a mean age of 10.79 ± 0.71 years. A total of 132 children were obtained from four private schools, while 189 were obtained from three government-funded public schools (Table 1).

Boys had a mean ADRS score of 1.56 (standard deviation (SD) = 1.89) and girls, 1.89 (SD = 1.82). There was no significant difference between the genders in their levels of depression (\( t(294) = 1.549, p \geq 0.05 \)).

**Parental education level**

In both the public and private schools, parents’ highest level of education was post-secondary. A significant difference was found between mother’s and father’s educational level for students in public school compared with those in private school (\( \chi^2 = 152.26, df = 4, p < 0.001 \); Table 2).

**Social class**

In the public schools, most of the children were from the working class, 72 per cent (\( n = 136 \)), but the reverse was true for students from private schools with just 4 per cent (\( n = 6 \)) being from the working class (\( \chi^2 = 52.93, df = 2, p < 0.001 \); Table 3).

**Relationship between depression and neighbourhood factors**

The neighbourhood factors correlated significantly with ADRS depression scores (Table 4), with the exception of neighbourhood disorder which did not correlate to depressive symptoms. The more attached the children felt to their

### Table 2. Highest educational level obtained by parents of study participants.

| Educational level | Public school (n = 189) | Private school (n = 132) |
|-------------------|------------------------|-------------------------|
|                   | Mother | Father | Mother | Father |
| Primary or less   | 22 (12) | 17 (9) | 2 (2)  | 1 (1)   |
| Secondary         | 76 (40) | 55 (29) | 12 (9) | 16 (12) |
| Post-secondary    | 88 (44) | 110 (58)| 102 (77)| 99 (75) |
| Missing           | 7 (4)  | 4 (4)  | 16 (12)| 16 (12) |

### Table 3. Social class (by mother) of study participants by school.

| Social class | Public school (n = 189) | Private school (n = 132) |
|--------------|-------------------------|--------------------------|
|              | Frequency, n (%)        | Frequency, n (%)         |
| Working class| 136 (72)                | 6 (4)                    |
| Middle class | 26 (14)                 | 97 (74)                  |
| Missing      | 7 (4)                   | 29 (22)                  |

### Table 4. Correlation coefficients obtained from Spearman’s correlation analyses of neighbourhood factors and levels of depression among students.

| Neighbourhood factors | Depression, \( r \) |
|-----------------------|---------------------|
| Network               | \(-0.161^{**}\)     |
| Attachment            | \(-0.143^{*}\)      |
| Disorder              | 0.072               |
| Poor quality          | 0.185^{**}          |
| Crime                 | 0.126^{*}           |

\(^{*}\)Significance at level of \( p < 0.05 \).

\(^{**}\)Significance at level of \( p < 0.01 \).
neighbourhood and the better the local social networking that they perceived, the lower their reported level of depressive symptoms. The poorer the perceived quality of the neighbourhood and higher level of crime, the higher the level of depressive symptoms noted by students.

Perceptions of neighbourhood factors
A series of $t$-test’s and ANOVAs were used to explore the differences in children’s perceptions of their neighbourhood characteristics by school type, and social class. There was a statistically significant difference noted between public and private schools for neighbourhood order, quality and level of crime ($p < 0.01$). Public school students had higher mean values regarding perceived negative neighbourhood characteristics. They thought that their neighbourhoods had more disorder and crime and were of poorer quality when compared with students from private schools (Table 5). Private school students perceived better community networking and attachment to their neighbourhoods; however, the differences were only statistically significant for neighbourhood attachment ($t(317) = −2.185$, $p = 0.005$).

Table 5. Mean perceived neighbourhood factors for school type.

|                  | Network, mean (SD) | Attachment, mean (SD) | Disorder, mean (SD) | Poor quality, mean (SD) | Crime, mean (SD) |
|------------------|--------------------|-----------------------|---------------------|-------------------------|------------------|
| Public           | 4.83 (1.89)        | 17.84 (4.45)          | 2.33 (2.16)         | 5.25 (2.28)             | 3.18 (2.74)      |
| Private          | 5.06 (1.92)        | 19.26 (4.43)          | 1.23 (1.62)         | 3.23 (1.44)             | 1.54 (2.21)      |
| $t$              | −1.102             | −2.815**              | 5.003**             | 9.008**                 | 5.695**          |
| SD: standard deviation.**Significance at level of $p < 0.01$.

Regression analysis of sociodemographic factors, neighbourhood factors and depressive symptoms
A two-stage hierarchal regression analysis for depression and neighbourhood factors controlling for socio-demographic variables was performed. The children’s perceived quality of their neighbourhood ($p \leq 0.01$) and of their neighbourhood network ($p \leq 0.001$) were significant and predictive of the children’s depressive symptoms. Of the socio-demographic factors, social class was the only one which was significantly associated with depression ($p = 0.037$) in the regression model.

Approximately 2.3 per cent of the variability for depressive symptoms in children was related to socio-demographic factors, with a significant change of 0.072 in $R^2$ in Stage 2 of the analysis. This suggests that neighbourhood factors were responsible for 7.2 per cent of the depressive symptoms in children in the study ($p \leq 0.001$; Table 6).

Discussion
Overall, students from public schools reported less neighbourhood attachment and more neighbourhood disorder and crime as well as poorer neighbourhood quality than

Table 6. Multiple regression analysis of neighbourhood factors predicting ADRS depression score, controlling for student’s gender, school type, maternal education level and social class ($n = 321$).

| Predictor                  | $B$   | $\beta$  | $t$   | $p$ value | Change in $R^2$ |
|----------------------------|-------|----------|-------|-----------|-----------------|
| Stage 1 Control            |       |          |       |           |                 |
| Gender                     | 0.312 | 0.082    | 1.470 | 0.143     | 0.023           |
| School type                | 0.260 | 0.71     | 0.907 | 0.365     |                 |
| Secondary education        | 0.136 | 0.035    | 0.179 | 0.858     |                 |
| Post-secondary education   | 0.392 | 0.101    | 0.513 | 0.609     |                 |
| Social class               | −0.661| −0.165   | −2.098| 0.037*    |                 |
| Stage 2 Main effects       |       |          |       |           | 0.072***         |
| Neighbourhood attachment   | −0.022| −0.054   | −0.874| 0.383     |                 |
| Neighbourhood network      | −0.147| −0.154   | −2.663| 0.008**   |                 |
| Neighbourhood quality      | 0.144 | 0.175    | 2.593 | 0.010**   |                 |
| Neighbourhood crime        | 0.035 | 0.051    | 0.654 | 0.514     |                 |
| Neighbourhood disorder     | −0.042| −0.047   | −0.628| 0.531     |                 |

ADRS: Adolescent Depression Rating Scale.
All tests of significance for the change in $R^2$ were conducted using F-tests.
*p ≤ 0.05; **p ≤ 0.01; ***p ≤ 0.001.
their counterparts from private schools. In addition, perceived poor neighbourhood quality and networking were predictive of higher ADRS depression scores in the study.

Neighbourhood characteristics and its relationship to depressive symptoms

In Caribbean research, Lowe et al. (2014) found that neighbourhood factors were highly associated with depressive symptoms among Jamaican adolescents. Abel et al. (2012) stated that the factors most associated with depression in Jamaican children were negative community attributes. This study found a significant relationship between depressive symptoms and neighbourhood factors among Jamaican children.

In keeping with international research (Galea et al., 2005), our study found children who perceived their neighbourhoods to be of poorer quality reported higher levels of depressive symptoms. In a more general sense, previous research has also shown that characteristics of the physical environment are influential components to a person’s sense of well-being (Cutrona et al., 2006).

Snedker and Hoover (2013) indicated that neighbourhood networking was associated with lower levels of depressive symptoms. Such positive attributes of a community (network and attachment) may mitigate against the symptoms of depression, whereas the negative ones (crime and poor quality) might potentiate depressive symptoms in children (Brooks-Gunn and Leventhal, 2000; Jencks and Mayer, 1990; Sampson and Groves, 1989; Wandersman and Nation, 1998). This study demonstrated similar findings. It is possible that the perception of good community network gives children a sense of support and stability thus diminishing the likelihood of feelings of hopelessness and isolation which often accompany depression.

Perceived neighbourhood factors and depressive symptoms

This study showed that children from public schools had higher mean scores for neighbourhood disorder, crime and poor quality. This is understandable because the majority of the children from public schools had caregivers in the lower socioeconomic status (SES) and were likely to reside in less adequately maintained communities with more adverse conditions such as violence. It has been suggested that neighbourhoods with poor quality housing, unsafe conditions and minimal resources are likely to cause stress and eventually lead to depression (Cutrona et al., 2006). This concept is supported by the findings of associations between socioeconomic status and adverse neighbourhood perceptions as well as the regression analysis regarding neighbourhood factors and depressive symptoms.

Limitations

There were several noticeable limitations in this study. The measures administered were all self-report tools, and the dilemma of honesty, variable interpretation of questions and accurate introspective ability may influence responses. This was a cross-sectional study, and the data on neighbourhood factors and depressive symptoms were measured contemporaneously, making it difficult to establish a causal relationship between both.

Conclusion

Perception of neighbourhood factors, particularly quality and network, are associated with depressive symptoms. The relationship between low social class and depression may be mediated by some perceived neighbourhood characteristics, for example, crime and disorder.

Declaration of Conflicting Interests

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Note

1. Derrick Gordon is a social scientist who developed a social class scale for Jamaican society, taking into account its unique nature.

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