ASSOCIATIONS AMONG SOCIOECONOMIC STATUS, PERCEIVED NEIGHBORHOOD CONTROL, PERCEIVED INDIVIDUAL CONTROL, AND SELF-REPORTED HEALTH

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Recent research has suggested that perceived control and a person's perceptions of their neighborhood environment may mediate the association between socioeconomic status (SES) and health. This cross-sectional study assessed whether perceptions of informal social control mediated the association between SES and self-reported health, and if these two constructs represented distinct mechanisms linking SES with self-reported health. The sample consisted of 869 adults residing in 300 census tracts in Montreal, Canada. Multilevel methods were used to assess the associations among self-reported health, SES, perceived control, and perceived informal social control adjusting for socio-demographic variables. Perceived control (mediation estimate = −0.16, p <.001) and perceived informal social control (mediation estimate = −0.05, p <.05) partially mediated the association between SES and self-reported health. Perceived control did not mediate the association of perceived informal social control with self-reported health. Perceived informal social control may act alongside but distinct from perceived control as a mechanism linking SES to self-reported health. © 2010 Wiley Periodicals, Inc.

Research has shown that perceived control partially mediates the association between socioeconomic status (SES) and self-reported health (Bailis, Segall, Mahon, Chipperfield, & Dunn, 2001; Bobak, Pikhart, Hertzman, Rose, & Marmot, 1998). Perceived locus of control, hereafter referred to as perceived control, consists of a person's generalized expectation that outcomes are contingent on one's own choices and actions (Mirowsky & Ross, 2003). Perceived control is considered an important dimension of individual psychological well-being (Mirowsky & Ross, 1986, 2003; Pearlin & Schooler, 1978). Besides a person's sense of perceived control, a person's conscious perceptions of the environment have also been identified as a key risk mediator lying along an indirect cognitive path linking social structure to health (Daniel, Moore, & Kestens, 2008). Informal social control has been generally considered to represent the capacity of a group to regulate its members according to desired principles, and, as such, has been treated primarily as a contextual characteristic of social environments (Sampson, Raudenbush, & Earls, 1997). Yet, besides the collective aspect of informal social control, informal social control may also operate as an individual-level subjective factor, representing one dimension of how a person may consciously perceive their local neighborhood environment. In this regard, individual perceptions of informal social control, hereafter referred to as perceived informal social control, represent a person's generalized expectation that their neighbors will help regulate and keep safe their local residential environment.

Self-reported health, particularly reported poor or fair health, has been shown to be a strong prognostic indicator for mortality (Idler, Kasl, & Lemke, 1990; McGee, Liao, Cao, & Cooper, 1999; Moeller, Kristensen, & Hollnage, 1996), coronary heart disease (Feldman &

Steptoe, 2004), and illness (McCallum, Shadbolt, & Wang, 1994). Perceived control has been shown associated with self-reported health (Chipperfield, Campbell, & Perry, 2004), and as a mediator of the association between socioeconomic status (SES) and self-reported health (Bailis et al., 2001; Bobak et al., 1998). Individuals with low SES may be predisposed to poorer self-reported health outcomes due in part to reduced psychological coping resources or tendencies to ascribe greater importance to external factors as determinants of their health (Bailis et al., 2001; Leganger & Kraft, 2003). Perceived control's mediation of the link between SES and self-reported health is seen to operate through individual stress coping mechanisms (Bandura, 1997). Stressful life events do not themselves adversely affect health; instead, it is a person's psychological capacity to handle stressful events that results in particular health consequences (Bandura, 2002). Research has shown that low SES and disadvantaged circumstances influence individual perceived control through access to inadequate resources, few social opportunities, and an inability to achieve goals (Mirowsky & Ross, 1991).

Until now, research has shown area- or group-level informal social control to be associated with self-reported health (Carpiano, 2007), but given little attention to perceived informal social control. Yet, group perceptions of informal social control are rooted in individual perceptions of efficacy and control (Bandura, 1997). Individuals living in the same place may vary in their experiences of a place and have different perceptions of the capacity or willingness of neighbors to intervene in local affairs. Perceived informal social control may mediate the relationship between SES and self-reported health along similar stress-coping pathways as those of perceived control. The sense of social control that one perceives others as exercising in the neighborhood may be a critical element in a person's appraisal of neighborhood safety and the degree to which they must be vigilant against possible threats. Individuals living in areas where they believe their neighbors are capable of managing local events may not feel a need to be as vigilant as those who live in areas perceived as low in informal social control. Low SES may predispose individuals to poorer self-reported health due in part to a disproportionate exposure to disadvantaged residential environments in which individuals may feel less secure and maintain heightened levels of vigilance. Nevertheless, no research, as far as we are aware, has examined whether perceived informal social control mediates the association between SES and self-reported health.

Besides the question of whether perceived control and perceived informal social control mediate the relationship between SES and self-reported health, there is also a question of whether perceived control may act as a more proximal factor than perceived informal social control in influencing a persons' self-reported health. Previous studies have shown perceived informal social control and perceived control to be positively correlated (Feldman & Steptoe, 2004), but no research has assessed whether perceived control mediates the association between perceived informal social control and self-reported health. The potential that perceived control might mediate the relationship between perceptions of informal social control and self-reported health has however been implicated in Bandura's work on self-efficacy. Bandura posits vicarious experience as an important source of self-efficacy (1997). Neighborhood social environments may be seen to represent one particular context in which vicarious experiences arise, and in which individuals compare and appraise their own capabilities with those of others. Individual assessments of one's own sense of control would in this instance be partly influenced by one's appraisal of the degree of informal social control that one's neighbors exercise over social circumstances. Perceived control may thus mediate and operate as a more proximal factor influencing self-reported health than a person's perceptions of local informal social control. Alternatively, perceived control and perceived informal social control may operate

independently of each other in terms of their association with self-reported health. Such findings may suggest that people's perceptions of the environment act separately from personal sense of control to affect how individuals assess their health status.

Daniel et al. (2008) posit perceived control alongside conscious perceptions of the environment as an indirect cognitive mechanism potentially mediating the association of SES with downstream health outcomes. This study examines these two constructs as potential pathways linking SES and self-reported health. First, given research that has found perceived control to mediate the association between SES and self-reported health, we confirm whether perceived control mediates the SES and self-reported health relationship in our sample. Second, we examine if perceived informal social control also acts as a mediator of the association between SES and self-reported health. Finally, we examine if perceived control and perceived informal social control represent two distinct cognitive pathways linking SES and self-reported health, or whether perceived control and perceived informal social control lie along the same pathway with perceived control mediating the association between perceived informal social control and self-reported health. The benefit of greater differentiation and specification is a clearer elucidation of the pathways by which SES and direct and indirect cognitive mechanisms, and a more-thorough conceptual understanding of the impact of the social environment on health.

METHOD

Sample

Data were drawn from the 2008 Montreal Neighbourhood Social and Organizational Environments Study (MoNSOE). MoNSOE used a 2-stage stratified cluster sampling design. In Stage 1, Montreal Metropolitan Area (MMA) census tracts ($N = 862$) were stratified using 2001 Canada Census data into tertiles of high, medium, and low household income. One hundred census tracts were selected from each tertile ($n_j = 300$). In Stage 2, we randomly selected three individuals per census tract who fulfilled the following target population criteria: noninstitutionalized persons 25 years or older who had resided at their current address for at least one year ($n_i = 902$). Listed telephone numbers in the MMA provided the sampling frame. Random digit dialing of listed numbers was used to select households and a computer-assisted telephone interviewing system guided questionnaire administration. Participants were able to complete the telephone interview in either French or English.

Measures

Outcome. For self-reported health, participants were asked "In general, would you say your health was excellent, very good, good, fair, or poor?" Excellent, very good, and good responses were grouped into the high self-reported health category; fair and poor responses were grouped into the low self-reported health category. This dichotomization aligns with studies that have shown the two lower categories of self-reported health to be related to mortality risk (McGee et al., 1999).

Main study variables. The informal social control scale consisted of modified items from Sampson and colleagues' original informal social control subscale (Sampson et al., 1997). Perceived informal social control items asked participants "how likely is it that

your neighbors could be counted on to intervene if (a) people were spray-painting graffiti on a local building or were vandalizing the local park or park equipment; (b) a fight or domestic dispute broke out in front of their house; (c) a local service in your neighborhood, such as a library, community center, or a health clinic was in danger of closing down; (d) children were hanging out in the neighborhood or around a school at night; and (e) a neighbor was acting unfairly toward another neighbor?'' Original response options were on a 4-point Likert scale of *very likely*, *likely*, *unlikely*, and *very unlikely*. These responses were recoded such that scores ranged from *very unlikely* (-2) to *very likely* ($+2$). Following Sampson et al. (1997), ''don't know'' responses were coded into a neutral response category, thus providing a 5-point Likert scale with response values ranging from -2 to 2. Constituent items from the scale were averaged to arrive at a value for each respondent. Ancillary analyses examining whether the addition of the ''don't know'' category changed the final results showed that this coding procedure did not affect those results. The Cronbach's α value for the perceived informal social control scale was 0.70. Perceived control was measured using the externality subscale from Mirowsky's and Ross's locus of control scale (Mirowsky & Ross, 2003). The externality subscale measures peoples' fatalistic beliefs, with one of its strengths being its balance of questions about control over good and bad outcomes. Participants were asked how strongly they agreed with the following statements: (a) most of my problems are due to bad breaks, (b) the really good things that happen to me are mostly luck, (c) I have little control over the bad things that happen to me, and (d) there's no use planning a lot if something good is going to happen it will. Original response options were on a 4-point Likert scale of *strongly agree* to *strongly disagree* with a ''don't know'' category. Following Mirowsky and Ross (1991), ''don't know'' responses were recoded into a neutral category (0), providing a 5-point Likert scale with values ranging from -2 to 2 with higher values representing a greater locus of control. Constituent items from the externality subscale were averaged to arrive at a value for each respondent. Ancillary analyses examining whether the addition of the neutral ''don't know'' category altered the results showed that this procedure did not affect final results. The α reliability for the perceived control scale was 0.63, which falls within the range of reliability values of the eight-item locus of control scale reported in other studies (Keeton, Perry-Jenkins, & Sayer, 2008; Mirowsky & Ross, 1991).

Socioeconomic status was expressed as a score from an iterated principal factors procedure using income, educational attainment, and employment status. Participants selected their income bracket from an option of five categories: (1) less than $28,000, (2) $28,000–$49,000, (3) $50,000–$74,000, (4) $75,000–$100,000, and (5) more than $100,000 (Canadian dollars). Missing responses (23%) to the income question were imputed from questionnaire data on a range of socioeconomic variables including education, age, gender, and census data on the median income of the census tract in which respondents resided. Participants were asked to select their highest level of educational attainment from a list of seven categories: (1) no high school degree or certificate, (2) high school diploma or equivalent, (3) trade certificate or diploma, (4) college certificate or diploma below bachelor's degree, (5) bachelor's degree, (6) master's degree, or (7) earned doctorate, medical, or professional degree. Education was recoded into four categories: (1) less than a high school degree, (2) high school degree or trade certificate, (3) college certificate or equivalent, and (4) university bachelor's degree or higher. For employment status, respondents were asked to state whether they were currently employed or not. The factor score weighted household income at 0.53, educational attainment at 0.30, and employment status at 0.24.

Study covariates. Age, marital status, and primary household language were included as study covariates. Marital status was grouped into four categories: (1) married or common-law relationship, (2) single, (3) divorced or separated, and (4) widowed. Participants were asked what was the primary language spoken in their homes. Responses were grouped into (1) French, (2) English, (3) French/English (bilingual), and (4) Other.

Statistical Analysis Procedures

Before analyzing data, MoNSOE response and cooperation rates were calculated according to accepted, standardized definitions published by the American Association for Public Opinion Research (AAPOR, 2000). The response rate was the number of completed interviews divided by the sum of the number of (a) interviews completed, (b) eligible participants from whom no interview was obtained (e.g., refusals or noncontacts), and (c) and an estimated proportion of participants of unknown eligibility with no interview. The cooperation rate is the proportion of all completed interviews divided by the sum of the number of (a) interviews completed, and (b) noninterviews that involved contact with an eligible respondent. This calculation excludes those who report being unable to do an interview (AAPOR, 2000). To assess the representativeness of the MoNSOE sample, the overall sample was compared with the 2006 Canada census data. Given the small sample size in each census tract, census tract by census tract comparisons were not possible. Instead, using the original Stage 1 sampling design, census tracts were grouped into low, medium, and high income tertiles of 100 census tracts each. For each SES tertile, average values of sample data for a range of variables including income, foreign-born status, education, and residential duration were compared to the expected values for the same variables as estimated using 2006 Canada census data and χ^2 analyses.

Multilevel regression was used in the statistical analyses to account for the clustered sampling design and data structure of individuals nested within neighborhoods. Multilevel logistic regression was used to assess (a) the association of sociodemographic factors with self-reported health (Model 1); (b) the association between perceived control and self-reported health, with adjustment for SES and other individual sociodemographic factors (Model 2); (c) the association between perceived informal social control and self-reported health, with adjustment for SES and other individual sociodemographic factors (Model 3); and (d) the association among perceived control, perceived informal social control, and self-reported health with adjustment for SES and sociodemographic factors (Model 4).

To test for mediated effects, the three-step analysis procedures along with the notational convention outlined by Krull and Mackinnon were followed (Krull & Mackinnon, 1999). First, the association between SES and perceived control was assessed using a multilevel linear regression equation:

$$M_{ij} = \beta_{0j} + aX_{ij} + Z_{ij} + \varepsilon_{ij} + u_{0j}$$

where M is the potential mediating variable (i.e., perceived control or perceived informal social control), β_{0j} is the intercept, a is the coefficient representing the estimated association of individual-level SES with individual-level perceived control or perceived informal social control, Z represents the matrix of covariates, η the error term of the predicted M_{ij}, and u_{0j} is the residual variance with respect to the random intercept (Krull & Mackinnon, 1999). Second, the association between self-reported

health, SES, and perceived control or perceived informal social control was assessed using multilevel logistic regression with a Bernoulli response distribution and logit link:

$$Y_{ij} = \beta_{0j} + bM_{ij} + cX_{ij} + Z_{ij} + u_{0j}$$

where Y is self-reported health, β_{0j} is the intercept, c is the coefficient representing the estimated association of SES with self-reported health, b is the coefficient representing the estimated association of the potential mediating variable M with self-reported health, and Z represents the matrix of covariates (Krull & Mackinnon, 1999). Third, the product of the two estimated coefficients, ab, provides an estimate of theeffect of the variable X. The ab point estimate of the mediated effect can be considered the product of two random variables, and first-order Taylor series expansion can be used to provide estimates of the standard error of the mediated effect (Krull & Mackinnon, 1999). In our case, the estimates of the standardare expected to be conservative because the number of census tracts is large. The ratio of the ab estimate and its standard error wereto calculate z-scores, Wald statistics, and 95% confidenceto test the null hypothesis that the ab estimate of the

Table 1. Characteristics of Montreal Neighbourhood Social and Organizational Environments (MoNSOE) Self-Reported Health and SES Study Sample (n = 869), 2008

Variables	M	SD
Perceived control	0.54	0.83
Perceived informal social control	0.44	0.85
Age	50.5	14.4
	%	
Income		
Less than $28,000	23.0	
$28,000–$49,000	24.9	
$50,000–$74,000	24.4	
$75,000–$100,000	9.8	
More than $100,000	18.0	
Sex		
Female	64.3	
Male	35.7	
Education		
Less than a college degree	8.2	
High school degree or trade certificate	25.9	
College certificate	23.4	
Bachelors degree and higher	42.6	
Employed	62.1	
Marital status		
Married/Common-law relationship	56.4	
Single	22.5	
Divorced/Separated	13.5	
Widowed	7.6	
Household language		
French	78.6	
English	10.9	
French/English (Bilingual)	1.6	
Other	8.9	
Self-reported health		
Low (Fair/Poor)	12.1	
High (Excellent/Very good/Good)	87.9	

Table 2. Adjusted Odds Ratios and 95% Confidence Intervals From Multilevel Logistic Model Regressing Self-Reported Health on Socioeconomic Status, Perceived Control, Informal Social Control, and Study Covariates (n = 869)

Variable	Model 1 ORs (95% CI)	Model 2 ORs (95% CI)	Model 3 ORs (95% CI)	Model 4 ORs (95% CI)
Perceived informal social control	–	–	0.63*** (0.49–0.82)	0.63*** (0.49–0.82)
Perceived control	–	0.61*** (0.47–0.79)	–	0.60*** (0.46–0.79)
Socioeconomic status	0.47*** (0.34–0.65)	0.56*** (0.39–0.79)	0.49*** (0.35–0.69)	0.59** (0.41–0.83)
Age	1.02* (1.00–1.04)	1.02 (0.99–1.04)	1.02* (1.00–1.04)	1.02 (0.99–1.04)
Gender				
Female	1.03 (0.64–1.64)	1.03 (0.65–1.65)	1.14 (0.71–1.85)	1.18 (0.73–1.91)
Male (referent)	1.00	1.00	1.00	1.00
Marital status				
Widowed	0.84 (0.34–1.43)	0.82 (0.38–1.78)	0.88 (0.40–1.96)	0.86 (0.39–1.90)
Divorced/Separated	0.70 (0.34–1.50)	0.75 (0.37–1.53)	0.72 (0.35–1.48)	0.79 (0.39–1.61)
Single	1.53 (0.88–2.63)	1.64 (0.95–2.85)	1.56 (0.89–2.72)	1.69 (0.97–2.95)
Married/Common-law relationship	1.00	1.00	1.00	1.00
Primary household language				
Other	1.21 (0.55–2.62)	1.13 (0.52–2.47)	1.26 (0.56–2.81)	1.14 (0.51–2.56)
English	1.79 (0.94–3.43)	1.80 (0.95–3.43)	1.88 (0.97–3.66)	1.90 (0.99–3.66)
English/French	2.60 (0.49–13.76)	2.78 (0.54–14.23)	2.58 (0.47–14.19)	2.72 (0.52–14.34)
French (referent)	1.00	1.00	1.00	1.00

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

mediation effect was zero. In contrast to Krull and Mackinnon (1999), our analyses used the multilevel model to examine potential mediating effects at the individual level while accounting for the hierarchical data structure.

RESULTS

MoNSOE had a response rate of 33.8% and cooperation rate of 73.6%. χ^2 analyses comparing the MoNSOE sample to 2006 Canada census data showed that the sample overrepresented (a) females, (b) individuals with an income less than 50,000 per year, (c) with more than a high school degree, or (d) in a married or common-law relationship. Table 1 provides descriptive information on the study sample ($n_i = 869$; $n_{ct} = 300$). Of the original 902 MoNSOE respondents, data for 33 respondents were

Table 3. Estimated Coefficients, Standard Errors, and 95% ConfidenceRepresenting the Mediated Association Between Self-Reported Health and Socioeconomic Status (SES)

Mediation test	a^a(SE)	b^b(SE)	ab^c(SE)	95% CI	Wald statistic
1. Perceived control mediates SES–self-reported health	0.32 (0.04)	−0.50 (0.14)	−0.16 (0.05)	(−0.25, −0.06)	10.81
2. Perceived informal social control mediates SES–self-reported health	0.12 (0.04)	−0.45 (0.13)	−0.05 (0.03)	(−0.10, 0.00)	4.59
3. Perceived control mediates ISC–self-reported health	0.01 (0.03)	−0.50 (0.14)	0.00 (0.02)	(−0.03, 0.03)	0.06

Note. ISC = Informal social control.
[a]a is the coefficient representing the estimated association of SES with perceived control or perceived informal social control, or in Test 3 the estimated association of perceived control with perceived informal social control.
[b]b is the coefficient representing the estimated association of the potential mediating variable (perceived control or perceived informal social control) with self-reported health.
[c]ab is an estimate of the mediated effect.
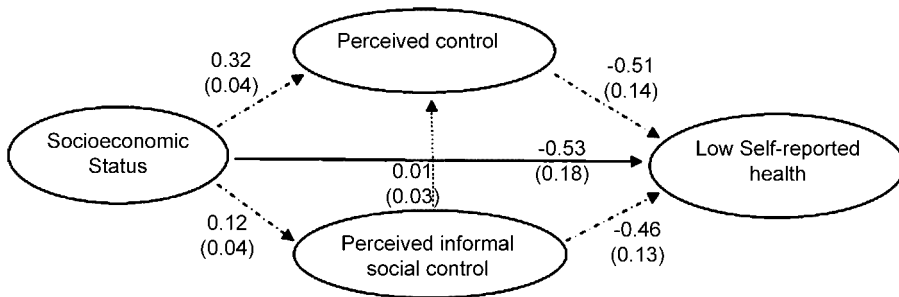
Figure 1. Conceptual diagram of tested mediating associations among socioeconomic status, perceived control, perceived informal social control, and self-reported health.

dropped from these analyses due to missing information on education or employment status ($n = 21$), marital status ($n = 8$), household language ($n = 3$), or age ($n = 1$).

Table 2 provides the adjusted odds ratios (ORs) and 95% confidence interval (95% CI) of the association between self-reported health, SES, perceived control, perceived informal social control, and study covariates. Final results (Model 4) indicated that (a) the higher the SES of the respondent the less likely they were to report low self-reported health (OR = 0.59, 95% CI = 0.41–0.83); (b) the higher their sense of control, the less likely they were to report low self-reported health (OR = 0.60, 95% CI = 0.46–0.79); and (c) the higher the respondent's sense of perceived informal social control in the neighborhood, the lower the likelihood of reporting low self-reported health (OR = 0.63; 95% CI = 0.49–0.82).

Table 3 reports results from the mediation analyses. Perceived control partially mediated the association between SES and self-reported health (ab = -0.16, $p < .001$) and perceived informal social control also partially mediated the association between SES and self-reported health ($ab = −0.05$, $p < .05$). Perceived control was not shown correlated with perceived informal social control, nor was it found to mediate the association between perceived informal social control and self-reported health.

Figure 1 provides a conceptual diagram of the analyses and the coefficients representing the estimated relationships.

DISCUSSION

This cross-sectional analysis of 869 Montreal adults indicated that perceived control and perceived informal social control were each associated with self-reported health. Adults with higher levels of these measures had a lower likelihood of reporting low self-reported health. Second, perceived control and perceived informal social control were both found to mediate partially the association between SES and self-reported health. These two psychosocial factors may underlie socioeconomic inequalities in self-reported health, but only partially as SES remained associated with self-reported health after adjustment for these variables. Finally, perceived control was not found to mediate the association between perceived informal social control and self-reported health. This finding suggests that perceived control and perceived informal social control may operate along distinct pathways in linking SES to self-reported health.

Socioeconomic status remained a significant marker for differences in self-reported health. Associations between SES and health have been linked to the differential exposure of low SES individuals to greater levels of stress (Adler et al., 1994; Taylor & Seeman, 1999). Low SES individuals tend to have fewer psychological and social resources on which to draw compared to higher SES individuals, thereby exposing them to greater levels of stress (Taylor & Seeman, 1999). Studies have suggested and found that a person's psychological sense of control may act as an important mediator or partial mediator of the relation between SES and health (Bailis et al., 2001; Bobak et al., 1998). This study supports these previous findings.

Research on informal social control and health has tended to examine informal social control as an area-level contextual variable (Cantillon, 2006; Carpiano, 2007, 2008). Few studies have examined perceived informal social control at the individual level as an important dimension of a person's conscious perceptions of the environment. Yet, people who live in places that they perceive as high in informal social control may feel less of a need to be vigilant or "on guard" about their social surroundings (Feldman & Steptoe, 2004). Residing in a place perceived as high in informal social control may reduce the levels of social environmental stressors to which one is exposed because people perceive others who live nearby as capable of overseeing and solving problems in the environment. As a mediator of the SES-self-reported health relationship, low SES individuals may tend to live in more adverse environments and among others who have fewer psychological and social resources at their disposal.

Daniel et al. (2008) have posited perceived control as potentially mediating the relationship between a person's perceptions of the environment and downstream health outcomes. This would suggest that individual perceptions of the environment are an important source for a person's sense of control. In this study, perceived control did not mediate the association between perceived informal social control and self-reported health. Although perceived informal social control and perceived control are positively correlated and act similarly in their association with self-reported health, present findings suggest that perceived informal social control and perceived control should be recognized as two distinct mechanisms linking SES to self-reported health.

In other words, in terms of how people assess their own health, a person's sense of control appears to operate separately from the way in which someone perceives the social controls available in their residential environment. This distinction may arise in part because the sources of a person's sense of control are potentially more wide-ranging in context, i.e., the work or family settings, than the residential environment alone. Yet, both mechanisms may partially ameliorate the association between SES and self-reported health through the reduction of potential social stressors.

Limitations

This study has several limitations. First, this study focuses specifically on perceived informal social control. Perceived informal social control represents only one dimension of a person's conscious perceptions of the environment, and other dimensions, such as neighborhood disorder, may hold a different relationship with perceived control in relation to self-reported health. Second, the cross-sectional design of this study limits the types of causal inferences that can be drawn from the mediation analyses. There may be reciprocal effects present whereby one's own self-reported health may influence one's sense of perceived control or even come to affect how one views one's neighbors. In this regard, dependencies between SES and perceived informal social control should be interpreted with caution. Nevertheless, this cross-sectional mediation analysis may help guide future research that can examine longitudinally the effects of perceived control and conscious perceptions of the environment on health. Third, the MoNSOE cooperation rate of 73.6% and response rate of 33.8% may suggest potential response bias. Although direct comparability between survey response rates is difficult given differences in the way in which researchers may define eligibility (Smith, 2002) dramatic decreases in survey response rates have been reported over the past decade (Curtin, Presser, & Singer, 2005). Keeter, Kennedy, Dimock, Best, and Craighill (2006), for example, report a decline in response rates in a Pew Research Center standard telephone survey from 36% in 1997 to 25% in 2003. Yet, even at low response rates, no consistent empirical relationship has been found between response rates and nonresponse bias in random digit dialing surveys, and there is no minimum response rate below which a survey estimate is biased (Groves, 2006; Singer, 2006). In other words, surveys with low response rates may still have excellent demographic representativeness (Groves, 2006).

CONCLUSIONS

Socioeconomic status, perceived control, and perceived informal social control were found associated with the self-reported health of Montreal adults. Socioeconomic status remained a significant marker for differences in self-reported health. The study supports previous research showing perceived control's partial mediation of the relationship of SES with self-reported health but extends that research to examine the importance of perceived informal social control as a potential mediator of the association between SES and self-reported health. Although often considered a neighborhood-level contextual variable, this study supports the idea that perceived informal social control may also act as an important individual-level psychosocial factor associated with self-reported health. Self-reported health has been predictive of cardiovascular disease and mortality but further research examining the link between people's perceptions of the social environment and their biological responses to the

environment is required. This study suggests that a person's perception of informal social control may act alongside but distinct from perceived control as a mechanism linking social structural factors to self-reported health and potential downstream cardiometabolic outcomes. Future longitudinal research may further interrogate the cognitive pathways linking SES to health outcomes.

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