Neighborhood Safety and Public Health: Intervention Evaluations and New Directions

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Perceived neighborhood safety in Canada

- (i) "[In 2014], the overall proportion of Canadians who perceived neighbourhood disorder has decreased slightly over the past decade, down 2 percentage points since 2004 (25% compared with 23%)." (Statistics Canada, 2016)
 - (i) Women perceive somewhat more disorder
 - (ii) Younger people perceive more disorder
 - (iii) Those with lower household incomes perceive more disorder
 - (iv) Those in living in lower income neighborhoods, with more residential instability, and with more lone-parent families perceive more disorder



Socio-Ecological Models of Public Health



Socio-ecological model of pathways predicting perceived safety and well-being

(adapted from Lorenc et al., 2012)



Central research questions

- (i) What factors contribute to youths' perceptions of safety in their neighbourhood?
 - (i) Are these different from adult perceptions of safety?
- (ii) Are youths' perceptions of safety associated with their health (e.g., level of physical activity, obesity) and wellbeing (e.g., educational adjustment)?
- (iii) Does the built and social environment mediate the association between disadvantage and health and wellbeing?



Data

- Québec Longitudinal Study of Child Development (QLSCD)
 - Ongoing longitudinal study that began in 1998 with a populationbased cohort of 2,120 Quebec five-month old infants and their parent or primary caregiver
 - Includes measures on a range of developmental, family, academic, health and well-being outcomes
 - Data are from 2010 (age 12 years) and 2011 (age 13 years)



Data

- Montreal Epidemiological and Geographical Analysis of Population Health Outcomes and Neighborhood Effects (MEGAPHONE)
 - Spatial data infrastructure for the Greater Montreal Area
 - Data were from validated sources collected in 2006 (e.g., Census Canada and Statistics Canada) and later
 - Includes indicators of traffic, residential density, land use mix, proportion of visible minorities, single-parent households, lowincome households
 - For each measure, population-weighted proportions or averages of dissemination areas overlapping a 1-km circular buffer centered on family's residential location were computed





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EMPIRICAL RESEARCH

The Role of the Residential Neighborhood in Linking Youths' Family Poverty Trajectory to Decreased Feelings of Safety at School



Carolyn Côté-Lussier · Tracie A. Barnett · Yan Kestens · Mai Thanh Tu · Louise Séguin

Conceptual model





disagreed

QLSCD: Poverty trajectories (latent growth modeling)



Note. The four trajectories represented: no poverty (reference group) (68.47 %), chronic poverty (13.26 %), early-childhood poverty (9.61 %) and later-childhood poverty (8.66 %).



School safety results: Structural Equation Model



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School safety results: Structural Equation Model



Note. No significant association with residential density. This model adjusted for the school safety climate, victimization, age and sex.



Safety at school and obesity

Original Contribution

Poor, Unsafe and Overweight: The Role of Feeling Unsafe at School in Mediating the Association Between Poverty Exposure, Youth Screen Time, Physical Activity and Weight Status

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This study applied socioecological and cumulative risk exposure frameworks to test the hypotheses that (i) the experience of poverty is associated with feeling less safe at school, and that (ii) feeling less safe is associated with engaging in poorer weight-related behaviors, and an increased probability of being overweight or obese. Data were from the ongoing Québec Longitudinal Study of Child Development, initiated in 1998 with a population-based cohort of 2,120 Québec (Canada) five-monthold infants and their parent or primary care-giver. Measures of youths' (age 13 years) self-reported feelings of safety, screen time, physical activity and objectively assessed not overweight/obese (70%), overweight (22%) and obese (8%) weight status were collected in 2011. Family poverty trajectory from birth was assessed using latent growth modeling. As hypothesized, exposure to poverty was associated with feeling less safe at school, and in turn to an increased probability of being overweight or obese. The association was most pronounced for youth who experienced chronic poverty. Compared to youth who experienced no poverty and felt unsafe, those who experienced chronic poverty and felt unsafe were nearly 18% more likely to be obese (9.2% vs. 11.2%). Although feeling unsafe was associated with screen time, screen time did not predict weight status.

trajectory, safety, television, obesity, Canada, birth cohort, structural equation modeling





Safety at school, classroom engagement and symptoms of depression

Original article

Feelings of Safety at School, Socioemotional Functioning, and Classroom Engagement

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ABSTRACT

Purpose: Classroom engagement is a key indicator of student motivation, learning potential, and the eventual probability of persisting to high-school completion. This study investigated whether feeling unsafe at school interferes with classroom engagement and simultaneously considered whether this association is mediated by poorer student well-being in the form of experiencing symptoms of depression and demonstrating aggressive behavior problems.

Methods: Data were from the Québec Longitudinal Study of Child Development, an ongoing study that began in 1998 with a population-based cohort of 2,120 Quebec 5-month-old infants. Structural equation modeling was used to test the central hypothesis that concurrent youth self-reported feelings of a lack of safety at school are associated with poorer teacher-reported student class-room engagement (at age 13 years) and the mediating role of emotional and behavioral problems. The model controlled for concurrent measures of victimization, the school safety climate, and earlier measures of students' academic adjustment.

Results: The findings support the central hypothesis that youth who feel safer at school are also more engaged in the classroom ($p \le .05$). Students who felt safer demonstrated less depressive symptoms, but this only partly explained the association between feeling safe and being engaged. **Conclusions:** Increasing student feelings of safety at school (e.g., by reducing victimization, improving the overall school and neighborhood safety climate) is likely to represent an effective strategy for promoting classroom engagement. Such interventions could also contribute to future academic achievement and high-school completion and decrease symptoms of mental health problems among youth.

IMPLICATIONS AND CONTRIBUTION

Youth who feel less safe at school are less engaged in the classroom, in part due to increased symptoms of depression. Given the prohibitive role of feeling unsafe for mental health and academic success, interventions should target the overall school climate and broader sociophysical environment.





General Discussion

- Poverty trajectory partly explains decreased feelings of safety at school
 - Chronic, later- and early-childhood poverty
- The residential neighborhood mediates the association between poverty trajectory and feelings of safety
 - Particularly neighborhood disorder, but also greenery and the proportion of lone-parent households
- Feeling less safe at school is associated with:
 - Greater screen time, and an increased risk of obesity
 - More symptoms of depression
 - Decreased classroom engagement



Evaluating neighborhood interventions: Impact on perceived safety and health



SPHERE LAB and CIHR Chair of Applied Public Health: Yan Kestens Université de Montréal/Direction de Santé Publique de Montréal

- Development of new tools
 - Ekogito (online software, conceptual mapping of stakeholders' perceptions of processes linked to the implementation of an intervention)
 - Veritas-Intervention (multiple function online interactive mapping survey software multiple functions to document urban interventions, collect data for the analysis of actor networks, and measure perceptions relating to the effectiveness and impacts of interventions)





Future directions: Evaluating Interventions

- Data matching with spatial markers of interventions
 - Use of existing longitudinal data sets to evaluate impacts of interventions on measurable health outcomes (e.g., QUALITY, QLSCD, etc.)
 - Measuring impact using a kernel density function (i.e., based on proximity to intervention)
 - Before and after interventions, with matched neighborhoods







Future Directions: New Measures

- Crime and safety and public health
 - Spatialization of victimization data (vs. crime rates)
- Police relations with vulnerable populations, and public health
 - Spatialization of police interventions, policing strategies, police complaints
- Night Time Lighting, perceived safety and public health
 - "Use of ISS photos for measurement of night time lighting". University of Ottawa, Faculty of Arts Special Projects Funding Program, \$4,973.00. (Co-P.I.: Anders Jensen Knudby, Department of Geography, University of Ottawa).



Thank you!

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