

# Health, Multiculturalism and Social Integration

Ling Na

Dale Hample

University of Maryland

Research Done at McMaster

University RDC

# Introduction

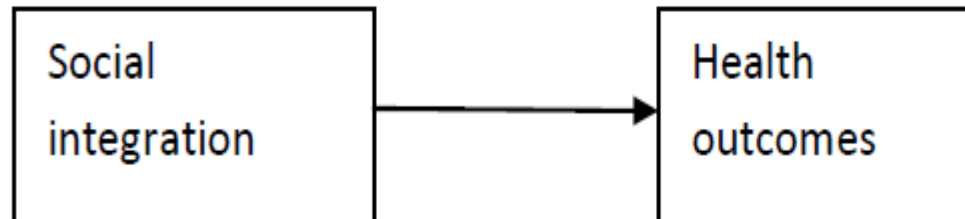
- The effects of social integration on health outcomes
- The role of social network *homophily* (to what extent the network members are similar to the ego) in this framework
- Psychological mediators in this framework

# Health Related Effects of Social Integration

Numerous studies demonstrated a positive relationship between social integration and self-reported health, mental health, and psychological well-being.

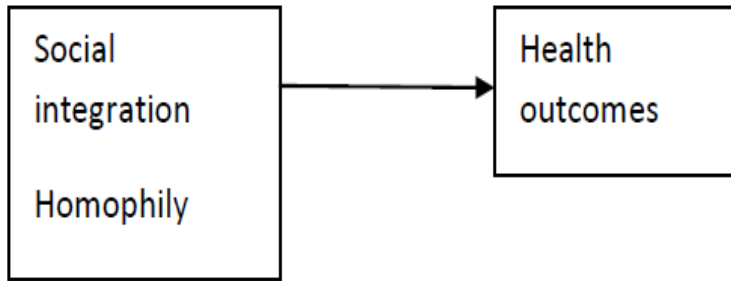
Origin: Durkheim (1897)

Lack of social integration → suicide



# Social Integration in a Multicultural Society

“Intercultural integration,” or intercultural interactions and relationships, or the level of our ethnic or racial homophily, should also be part of social integration in a multicultural society.



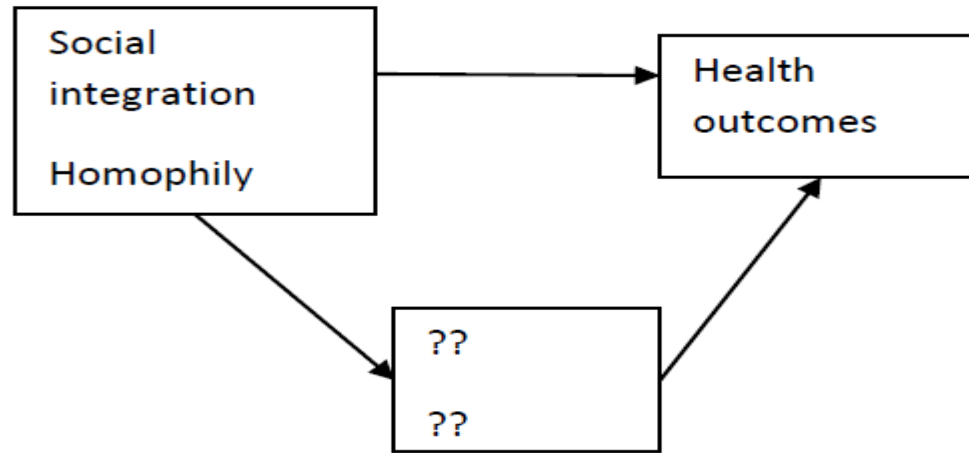
Factors that affect ethnic homophily:

Intergroup face-to-face encounters reduce intergroup hostility (Allport, 1954)

Larger friend networks, civic participation, younger age, and living in a metropolitan area ( Marsden, 1990; 1987)

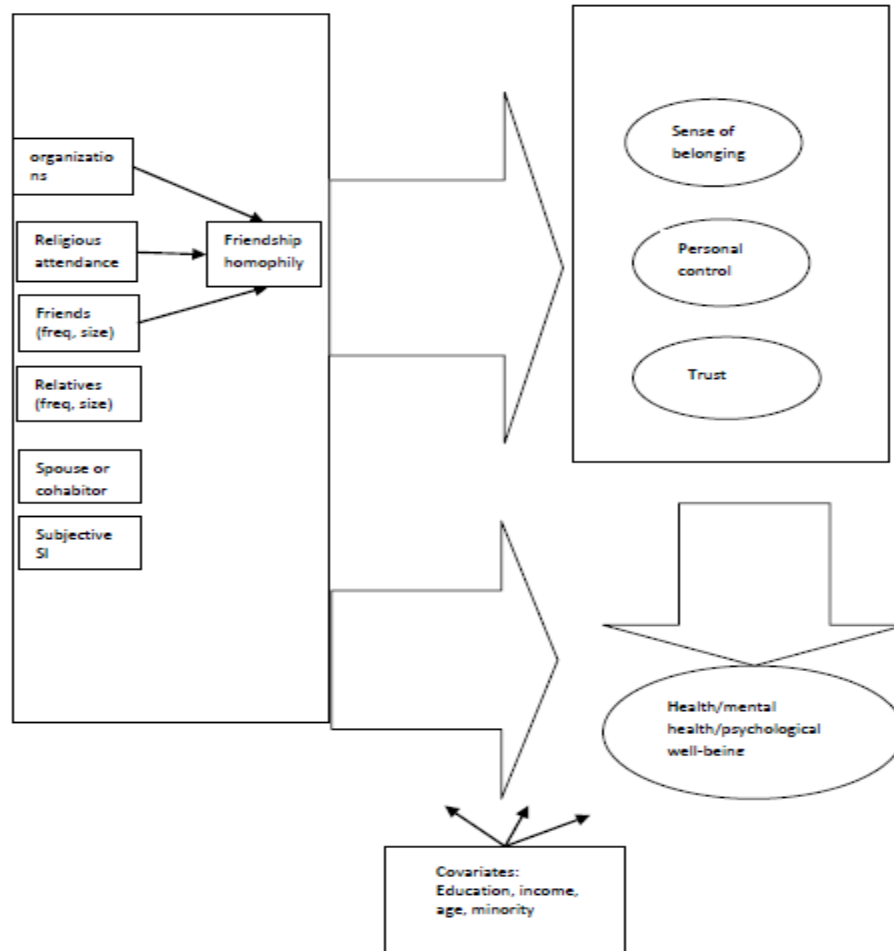
decreased friendship homophily.

# Model Development



- ▶ Personal control – health (+)
- ▶ Sense of belonging – social functioning (+), psychological functioning (+)
- ▶ Social trust – self-rated health (+), interracial ties of the majority (+)

# Theoretical Model



# Research Questions

When ethnic groups of Canadians (native-born majority whites, immigrant whites, visible minority immigrants, native-born visible minorities and the aboriginal people) are compared to each other, how are they similar/different to each other in terms of

- social integration?
- friendship homophily?
- sense of belonging, personal control, and generalized trust?
- self-reported health, mental health and psychological well-being?
- socioeconomic status?

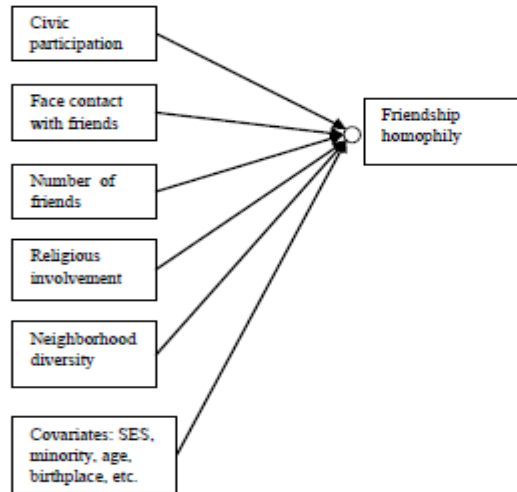
# Hypotheses

- *H1*: Individual level variables, including number of friends, frequency of face-to-face contact with friends, volunteering, religious attendance, neighborhood level and city level proportion of visible minorities, all affect network homophily of Canadians, after controlling for socio-demographic variables.

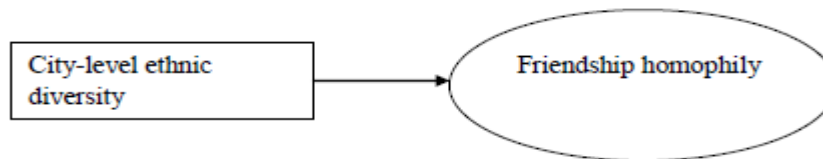


# Homophily Model (Figure 1)

Within-level, random  
intercept (individual level)



Between-level  
(city level)



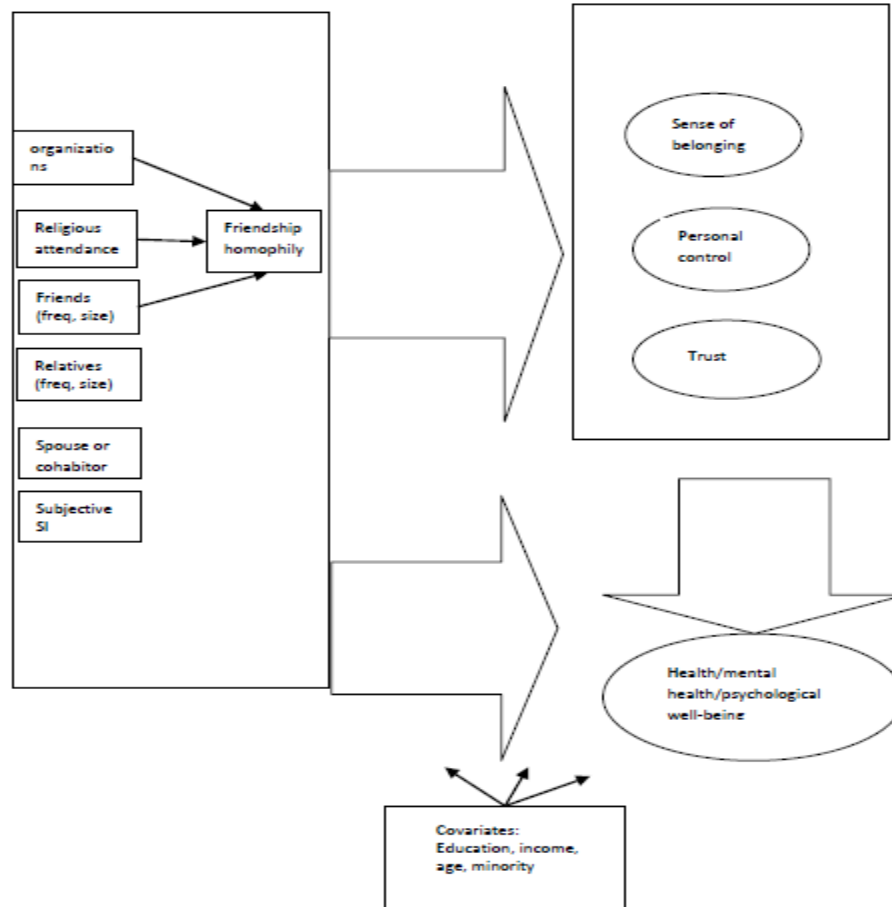
*Figure 1. A two-level model of friendship homophily*

*H2 and H3* state that intercultural integration has psychological benefits

- *H2*: A lower level of network homophily enhances generalized trust of white Canadians, and neighborhood proportion of visible minorities negatively influences trust of white Canadians.
- *H3*: A lower level of network homophily increases a sense of belonging for both white Canadians and visible minorities in multicultural communities.

- *H4*: Sense of belonging, personal control, and generalized trust mediate the causal pathway from social integration to self-reported health and mental health. Sociodemographics are covariates that directly affect different health outcomes and mediators (Figure 2).

# Theoretical Model (Figure 2)



# Method

- Data Source

Canadian General Social Survey 2008

CMA & CA subsample:  $N = 12,091$

- Software

SPSS version 20 and Mplus 6.0

- Estimator

MLR (maximum likelihood estimator with robust standard errors)

# Method – Measurement

## Objective social integration

- **Size of kin and friend networks** (number of close relatives and close/other friends),
- **frequency of contact** (how often contact with relatives and friends face-to-face),
- **proximity** (number of friends and relatives living in the same community or city).
- **Frequency** of volunteering and religious attendance
- **Marital or common-law status** (yes, no)
- **Ethnic homophily** (network has at least one visible ethnic other =0, network has no visible ethnic other =1)
- **Linguistic homophily** (at least 1 linguistic other =0, none =1)

## Subjective social integration

- **Loneliness** – I miss having people around (yes, no).

# Method – Measurement

- **Sense of belonging.** Three 4-point (very weak – very strong) Likert scale questions: How would you describe your sense of belonging to your local community? To your province? To Canada?
- **Personal control.** Five 5-point (Strongly agree – strongly disagree) Likert scale questions. E.g., you have little control over the things that happen to you; there is really no way you can solve some of the problems you have.
- **Generalized Trust.** Two Likert scale questions, e.g., how much do you trust strangers (5-point scale, cannot be trusted at all – can be trusted a lot)? If you lost a wallet or purse that contained two hundred dollars, how likely is it to be returned with the money in it, if it was found by a stranger (3-point scale, very likely – not at all likely).

# Method – Measurement

## Sociodemographic variables

- Education (5 level)
- Household income (12 levels)
- Age
- Group status (four dummy variables, native-born white majority (0000), immigrant whites (0001), visible minority immigrants (0010), native-born visible minority (0100), aboriginal people (1000))
- Years in Canada (if immigrants) (12 levels)
- Census variables: proportion of foreign language speakers in the city; proportion of neighborhood visible minority



# Preparation for Analysis

Data transformation to satisfy multivariate normality

All count variables were transformed into normally distributed variables and then treated as continuous.

For instance, number of close friends was a count variable ranging from 0 to 200. After transformation, it had a normal distribution from 0 to 5 (0→0; 1-2 → 1, 3-4 →2, 5-9→3, 10-25→4, and 26-200→5).

# Confirmatory Factor Analysis of Measurement Model

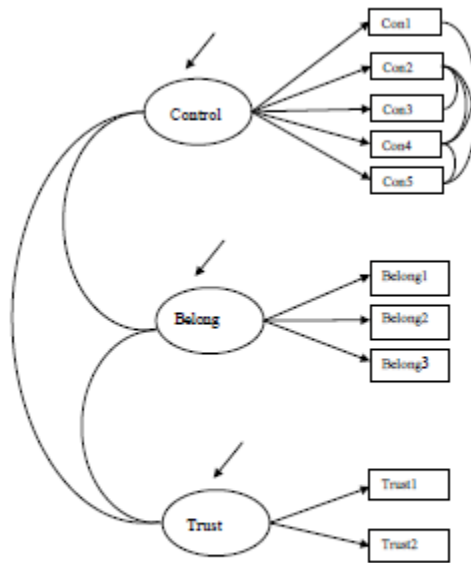


Figure 3. Confirmatory Factor Analysis of Psychological Mediators

- Fit Indices:

$\chi^2 (26, N = 11943) = 548.110, p < .001$ ; CFI = .967, RMSEA = .041 (90% CI = [.038, .044]), SRMR = .027 .

# Selected Results

*Unstandardized Regression Coefficients and Standard Errors of Five Groups Compared on Relative Networks (N=11679)*

	Close relatives	close relatives in proximity	Face contact with relatives	Phone contact with relatives	Online contact with relatives
	B(SE)	B (SE)	B (SE)	B (SE)	B (SE)
Native-born white (Reference)					
Aboriginal	0.020 (0.078)	0.036 (0.070)	-0.071 (0.076)	0.082 (0.067)	0.034 (0.112)
Native-born visible minority	0.000 (0.040)	0.057 (0.064)	<b>-0.216*</b> (0.096)	<b>-0.255**</b> (0.082)	0.065 (0.095)
Immigrant visible minority	<b>-0.212**</b> (0.071)	<b>-0.365***</b> (0.071)	<b>-0.805***</b> (0.088)	<b>-0.307***</b> (0.056)	<b>-0.259***</b> (0.065)
Immigrant white	<b>-0.183***</b> (0.044)	<b>-0.289***</b> (0.068)	<b>-0.356***</b> (0.074)	<b>-0.122*</b> (0.054)	0.079 (0.091)

\* p < .05, \*\* p < .01, \*\*\*p < .001

*Unstandardized Regression Coefficients and Standard Errors of Five Groups Compared on Friend Networks (N=11673)*

	Close friends	Other friends	Face contact with friends B (SE)	Phone contact with friends B(SE)	Online contact with friends B (SE)
Native-born White (Reference )					
Aboriginal	-0.064 (0.054)	0.079 (0.086)	0.114 (0.100)	<b>0.270**</b> <b>(0.100)</b>	0.006 (0.130)
Native-born visible minority	<b>0.188*</b> <b>(0.094)</b>	<b>0.197*</b> <b>(0.083)</b>	0.002 (0.082)	0.172 (0.124)	<b>0.539***</b> <b>(0.126)</b>
Immigrant visible minority	<b>-0.229***</b> <b>(0.047)</b>	<b>-0.328***</b> <b>(0.057)</b>	<b>-0.362***</b> <b>(0.051)</b>	-0.040 (0.075)	<b>-0.490***</b> <b>(0.102)</b>
Immigrant white	-0.027 (0.048)	<b>-0.181*</b> <b>(0.071)</b>	<b>-0.140*</b> <b>(0.055)</b>	-0.042 (0.058)	-0.104 (0.097)

\* p < .05, \*\* p < .01, \*\*\*p < .001

*Unstandardized Regression Coefficients, Standard Errors and Odds Ratios of Five Groups Compared on Loneliness, Volunteering and Religious Attendance (N=11771)*

	Loneliness B (SE) OR	Volunteering B (SE)	Religious attendance B (SE)
Native-born White (Reference )			
Aboriginal	0.059 (0.104) 1.061	0.018 (0.099)	-0.067 (0.090)
Native-born visible minority	-0.064 (0.075) 0.938	<b>0.184*</b> (0.077)	0.118 (0.124)
Immigrant visible minority	<b>0.729***</b> (0.112) 2.073	<b>-0.343***</b> (0.062)	<b>0.741 ***</b> (0.118)
Immigrant white	<b>0.293***</b> (0.069) 1.341	-0.127 (0.080)	<b>0.278 **</b> (0.083)

\* p < .05, \*\* p < .01, \*\*\*p < .001

*Unstandardized Regression Coefficients, Standard Errors and Odds Ratios of Five Groups Compared on Friendship homophily (N=11223)*

	Ethnic homophily B (SE)	Ethnic homophily OR	Linguistic homophily B (SE)	Linguistic homophily OR
Native-born White (Reference )				
Aboriginal	<b>-0.669***</b> (0.150)	0.512	<b>-0.288*</b> (0.126)	0.750
Native-born visible minority	<b>-1.492 ***</b> (0.248)	0.225	<b>-0.995***</b> (0.186)	0.370
Immigrant visible minority	<b>-1.037***</b> (0.189)	0.354	<b>-1.448***</b> (0.111)	0.235
Immigrant white	<b>-0.357***</b> (0.090)	0.700	<b>-1.257***</b> (0.078)	0.284

\* p < .05, \*\* p < .01, \*\*\*p < .001

*Unstandardized Regression Coefficients and Standard Errors of Five Groups Compared on Psychological Mediators (N=11768)*

	Personal control	Sense of belonging	Generalized trust
	B (SE)	B (SE)	B (SE)
Native-born white			
(Reference)			
Aboriginal	-0.080 (0.046)	-0.070* (0.031)	-0.241*** (0.054)
Native-born visible minority	-0.051 (0.060)	-0.207*** (0.035)	-0.286*** (0.061)
Immigrant visible minority	-0.359*** (0.026)	-0.074 *** (0.015)	-0.385*** (0.032)
Immigrant white	-0.114*** (0.024)	-0.022 (0.015)	0.003 (0.030)

*Note.* \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ . Estimator is MLR.

*Unstandardized Regression Coefficients and Standard Errors of Five Groups Compared on Health Outcomes and Psychological Wellbeing (N=11767)*

	Self-reported health B (SE)	Self-reported mental health B (SE)	Happiness B (SE)	Life satisfaction B (SE)
Native-born white (Reference)				
Aboriginal	-0.243* (0.094)	-0.291*** (0.046)	-0.094* (0.038)	-0.502 *** (0.121)
Native-born visible minority	-0.120 (0.115)	-0.081 (0.140)	-0.046 (0.045)	-0.554* (0.236)
Immigrant visible minority	-0.085 (0.069)	-0.053 (0.032)	-0.047 ** (0.015)	-0.267*** (0.056)
Immigrant white	-0.106 * (0.041)	-0.040 (0.031)	-0.015 (0.020)	-0.072 (0.068)

\* p < .05, \*\* p < .01, \*\*\*p < .001



*Unstandardized Regression Coefficients and Standard Errors of Five Groups Compared on Education and Income  
(N=11741)*

	Education	Household Income
	B (SE)	B (SE)
Native-born White (Reference )		
Aboriginal	-0.484*** (0.090)	-1.236*** (0.178)
Native-born visible minority	0.176 * (0.088)	0.130 (0.291)
Immigrant visible minority	0.329*** (0.042)	-0.710*** (0.130)
Immigrant white	0.155* (0.068)	-0.232* (0.098)
Intercept	3.460*** (0.053)	9.164*** (0.127)

*Note.* \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ . Estimator is MLR.

*Summary of Two-level Model for Variables Predicting Ethnic and Linguistic Homophily for Native-born Whites (H1)*

Variable	Ethnic Homophily N = 6461		Linguistic Homophily N = 6465	
	B	Odds Ratio	B	Odds Ratio
<i>Within level effects</i>				
Neighborhood visible minority proportion	-1.250*** (0.220)	0.286	-0.960*** (0.168)	0.383
Number of close friends	-0.167*** (0.025)	0.846	-0.055 (0.032)	0.947
Number of other friends	-0.484*** (0.032)	0.616	-0.290*** (0.050)	0.748
Frequency of face contact with friends	-0.163*** (0.021)	0.849	-0.080*** (0.018)	0.924
Frequency of volunteering	-0.105*** (0.015)	0.900	-0.086*** (0.023)	0.918
Religious attendance	-0.058* (0.023)	0.944	-0.059*** (0.022)	0.943
Education	-0.030 (0.017)	0.970	-0.063** (0.019)	0.939
Household income	0.024* (0.010)	1.024	0.026 (0.014)	1.027
Age	0.024*** (0.002)	1.024	0.004 (0.002)	1.004
R <sup>2</sup> (within)	0.193 ***		0.064***	
<i>Between level effect</i>				
City level proportion of foreign speaking population	-0.377*** (0.075)		-0.114 (0.085)	
Residual variances	0.155** (0.051)		0.220* (0.100)	
R <sup>2</sup> (between)	0.483***		0.057	

*Note.* Ethnic homophily outcome is dichotomous (51.0% of the cases scored 0 weak homophily, and 49.0% scored 1 strong homophily). Linguistic outcome is dichotomous (29.7% of the cases scored 0 weak homophily, and 70.3% scored 1 strong homophily). Estimator is MLR.

*Summary of SEM for the Effects of Neighborhood Diversity and Ethnic Homophily on Psychological Mediators among Three Groups (For H2 and H3)*

*SEM of Neighborhood Diversity and Ethnic Homophily Predicting Personal Control, Sense of Belonging and Generalized Trust for the Native-Born White Canadians (N = 5669).*

	Personal control Unstandardized path coefficient (SE)	Sense of belonging Unstandardized path coefficient (SE)	Generalized trust Unstandardized path coefficient (SE)
Neighborhood ethnic diversity	-0.002 (0.076)	<b>-0.234***</b> (0.073)	-0.174 (0.094)
Ethnic homophily	0.015 (0.021)	-0.008 (0.017)	<b>-0.066**</b> (0.025)

*SEM of Neighborhood Diversity and Ethnic Homophily Predicting Personal Control, Sense of Belonging and Generalized Trust for the White Immigrants (N = 820)*

	Personal control Unstandardized path coefficient (SE)	Sense of belonging Unstandardized path coefficient (SE)	Generalized trust Unstandardized path coefficient (SE)
Neighborhood ethnic diversity	0.133 (0.132)	0.020 (0.073)	-0.283 (0.168)
Ethnic homophily	-0.037 (0.055)	-0.040 (0.032)	<b>-0.224**</b> (0.070)

*SEM of Neighborhood Diversity and Ethnic Homophily Predicting Personal Control, Sense of Belonging and Generalized Trust for Visible Minority Immigrants (N = 730).*

	Personal control Unstandardized path coefficient (SE)	Sense of belonging Unstandardized path coefficient (SE)	Generalized trust Unstandardized path coefficient (SE)
Neighborhood ethnic diversity	<b>-0.289**</b> (0.102)	0.037 (0.062)	-0.015 (0.090)
Ethnic homophily	0.099 (0.065)	<b>-0.093*</b> (0.046)	-0.039 (0.063)

## Structural Equation Model for Native-born Majority, Outcome as Self-Reported Health (H4)

- Model results are listed:  $\chi^2$  (148,  $N = 5669$ ) = 1133.451,  $p < .001$ ; CFI = 0.916, RMSEA = 0.034 (90% CI = [0.032, 0.036]), SRMR = 0.025. The model in general was acceptable.
- $R^2$ s of outcome variables are decent:  $R^2$  for health is 0.164 ( $p < .001$ );  $R^2$  for personal control is 0.206 ( $p < .001$ );  $R^2$  for sense of belonging is 0.148 ( $p < .001$ );  $R^2$  of generalized trust is 0.163 ( $p < .001$ ).

# Total Effects

*The Structural Equation Model with the Outcome of Self-Reported Health for the Native-Born White Canadians (N = 5669)*

Self-reported Health		
	Direct effect Unstandardized Path Coefficients (SE)	Total effect Unstandardized path coefficients (SE)
<i>Psychological mediators</i>		
Personal control	<b>0.449***</b> (0.032)	<b>0.449***</b> (0.032)
Sense of belonging	<b>0.096**</b> (0.029)	<b>0.096***</b> (0.029)
Generalized trust	<b>0.164***</b> (0.031)	<b>0.164***</b> (0.031)
<i>Objective social integration (Social network)</i>		
No. of close relatives	0.005 (0.016)	<b>0.041*</b> (0.017)
No. of close relatives in proximity	0.017 (0.015)	0.003 (0.015)
No. of close friends	0.012 (0.013)	<b>0.030*</b> (0.013)
No. of other friends	0.005 (0.022)	0.002 (0.023)
Friends in proximity	-0.019 (0.017)	-0.019 (0.017)
Face contact with relatives	0.006 (0.010)	0.009 (0.010)
Face contact with friends	0.014 (0.010)	<b>0.025*</b> (0.010)
Volunteering	<b>-0.020*</b> (0.010)	0.002 (0.010)
Religious attendance	0.011 (0.009)	0.007 (0.010)
Marriage	-0.011 (0.030)	-0.014 (0.030)
Ethnic homophily	<b>0.110***</b> (0.027)	<b>0.108***</b> (0.028)
<i>Subjective Social integration</i>		
Loneliness	-0.048 (0.029)	<b>-0.168***</b> (0.028)

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<i>Sociodemographics</i>		
Household income	0.037*** (0.007)	0.068*** (0.007)
Education	0.043*** (0.011)	0.085*** (0.011)
Age	-0.005*** (0.001)	-0.005*** (0.001)

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Note.  $R^2$  (health) = 0.165\*\*\*. Estimator is MLR.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

# Mediation Effects

*The Mediation Effects of Psychological Influences in the SEM for the Native-Born Canadians (N = 5669)*

	Personal control	Sense of belonging	General trust
	Unstandardized Coefficients (SE)	Unstandardized Coefficients (SE)	Unstandardized Coefficients (SE)
<i>Objective social integration (Social Network)</i>			
No. of close relatives	<b>0.044***</b> (0.011)	<b>0.047***</b> (0.012)	<b>0.075***</b> (0.015)
No. of close relatives in proximity	<b>-0.024*</b> (0.011)	<b>0.028*</b> (0.011)	<b>-0.034*</b> (0.014)
No. of close friends	<b>0.022*</b> (0.009)	<b>0.044***</b> (0.010)	<b>0.052***</b> (0.012)
No. of other friends	0.022 (0.016)	-0.027 (0.016)	0.011 (0.020)
Friends in proximity	-0.010 (0.012)	<b>0.031*</b> (0.013)	0.011 (0.015)
Face contact with relatives	0.003 (0.007)	0.007 (0.008)	0.007 (0.009)
Face contact with friends	<b>0.023**</b> (0.007)	<b>0.033***</b> (0.008)	0.003 (0.009)
Volunteering	<b>0.022**</b> (0.007)	<b>0.049***</b> (0.007)	<b>0.062***</b> (0.009)
Religious attendance	<b>-0.015*</b> (0.007)	<b>0.035***</b> (0.007)	-0.001 (0.009)
Marriage	-0.032 (0.021)	<b>0.104***</b> (0.024)	0.009 (0.026)
Ethnic homophily	0.019 (0.019)	-0.019 (0.023)	<b>-0.052*</b> (0.025)
<i>Subjective Social integration</i>			
Loneliness	<b>-0.229***</b> (0.020)	<b>-0.053**</b> (0.020)	<b>-0.071**</b> (0.024)

# Structural Equation Model

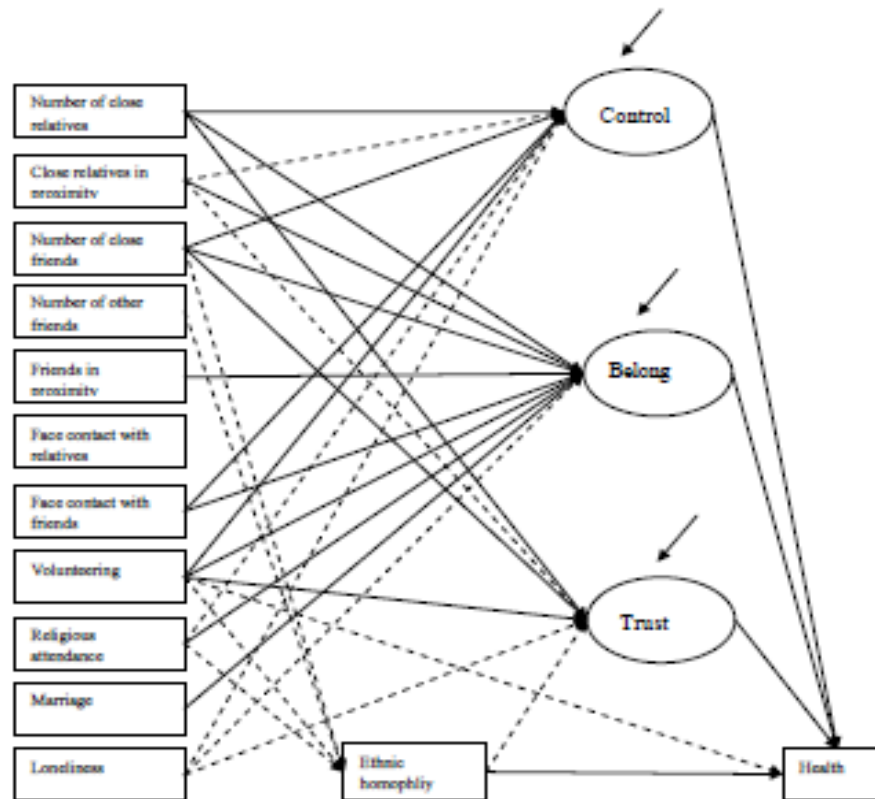


Figure 6. SEM with the Outcome of Self-Report Health for Native-born White Canadians ( $N = 5669$ )

Note. Only the significant paths are shown. Latent factor indicators and sociodemographic variables are not drawn out.



# Comparison of Total Effects of Social Integration on Self-Rated Health

Variables	Native-born Whites	Immigrant Whites	Visible Minority Immigrants	Native Minority	Aboriginal
Number of close relatives	Total: +	Total: 0	Total: 0	Total: 0	Total: 0
	Direct: 0	Direct: 0	Direct: 0		
	Total Indirect: + +control; +belong; +trust;	Total Indirect: 0	Total Indirect: 0		
Number of close friends	Total: +	Total: 0	Total: 0	Total: +	Total: 0
	Direct: zero	Direct: 0	Direct: 0		
	Total Indirect: + -homophily; +control; +belong; + trust;	Total Indirect: 0	Total Indirect: 0		
Frequency of face contact with friends	Total: +	Total: +	Total: 0	Total: 0	Total: 0
	Direct: 0	Direct: 0	Direct: 0		
	Total Indirect: + -homophily; +control; +belong;	Total Indirect: + Total indirect effect is the sum of small non-significant indirect effects	Total Indirect: 0		
Ethnic homophily	Total: +	Total: 0	Total: 0	Total: 0	Total: 0
	Direct: +	Direct: 0	Direct: 0		
Loneliness	Total Indirect: 0	Total Indirect: 0	Total Indirect: 0		
	Total: -	Total: -	Total: 0	Total: 0	Total: 0
	Direct: 0	Direct: 0	Direct: 0		
	Total Indirect: - -control; -belong; -trust;	Total Indirect: - -control;	Total Indirect: 0		

# Discussion

## **Levels of social integration and health outcomes**

- Visible minorities have the lowest level of social integration and lower level of subjective quality of life (happiness and life satisfaction).
- Aboriginal peoples have the worst health outcomes and subjective quality of life.
- Aboriginal peoples have comparable social networks (friends and relatives) to those of the native-born majority whites, but they are more ethnically homophilous than other visible minorities.

# Discussion cont'd

## Homophily

- Wider social networks and more activities within social networks may reduce ethnic and linguistic homophily.

## Social integration and health outcomes

- Some social integration variables such as number of close friends and face-to-face contact frequency with friends positively predicted health outcomes across groups.

# Discussion cont'd

## **Ethnic homophily and health**

- More interethnic ties increase generalized trust of majority whites.
- Sense of belonging is especially important for visible minority immigrants' health. Including a visible ethnic other in their social networks will increase their sense of belonging.

## **Psychological mediators**

- Sense of belonging and personal control positively mediated between social integration and health outcomes across groups.

# Limitations

- Cross-sectional survey design
- Survey questionnaire limitations (survey collection conducted in English or French, social network variables),
- Data analysis (linear relationships)
- Other pathways (behavioral, informational, etc.)

# Policy Implications

- The government and community organizations may create more opportunities for people to expand their networks. It is important for immigrants to mingle with host members.
- Positive portrayal and facilitation of inter-ethnic friendships or relationships in the media, in school and workplace.
- Intervention to increase sense of belonging and personal control

The End

Thank you !