Money and Membership: Effects of Neighbourhood Poverty, Income Inequality and Individual Income on Voluntary Association Membership in Canada

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Abstract. Examining how individual and neighbourhood economic characteristics affect membership helps us to 1) understand how access to these benefits may be restricted and 2) make policy recommendations to counter these restrictions. Applying multilevel modelling techniques to 2003 Canadian General Social Survey and 2001 Census data, this study investigates the influence of individual income, neighbourhood poverty and income inequality on voluntary association membership in Canada. As well as finding a positive effect of individual income on membership, negative effects of neighbourhood poverty are uncovered, in addition to a significant cross-level interaction between individual income and neighbourhood income inequality. Findings support claims about the negative social effects of individual and contextual economic disadvantage and confirms the importance of examining contextual influences on social outcomes. Results also indicate that policy recommendations must take into account both individual and neighbourhood characteristics when trying to motivate individual engagement.

Keywords: Voluntary association membership, poverty, income inequality, neighbourhood effects, multilevel modeling

Résumé. L'examen de l'impact qu'ont diverses caractéristiques économiques, tant personnelles qu'à l'échelle du quartier, sur l'appartenance à des associations volontaires nous permet 1) de mieux comprendre les facteurs restreignant l'accès aux avantages qui découlent de cette appartenance, et 2) de recommander des politiques aptes à réduire l'impact négatif de ces facteurs. Déployant des techniques de modélisation multiniveau pour étudier des données de l'Enquête Sociale Générale du Canada de 2003 et du Recensement de 2001, cette étude investigue l'influence qu'ont le revenu personnel, ainsi que les taux de pauvreté moyen et les disparités salariales à l'échelle du cartier sur les niveaux d'engagement

associatif au Canada. L'étude révèle que le revenu personnel exerce des effets positifs, et le taux de pauvreté des effets négatifs sur ces taux, et démontre de surcroît qu'il existe un important degré d'interaction transversale entre le revenu personnel et les disparités salariales. Ces résultats étayent l'idée que les désavantages économiques personnels et contextuels ont un impact social négatif, et démontrent la nécessité d'examiner les influences contextuelles qui informent les débouchés sociaux. Les résultats indiquent ainsi que les politiques visant à encourager l'engagement personnel doivent tenir compte des caractéristiques personnelles *et* de quartier.

Mots clés: Participation à des associations volontaires, pauvreté, inégalité des revenues, effet de voisinage, modélisation multiniveau

INTRODUCTION

Voluntary association membership has been a focus of sociological research for many decades. Joining organizations and clubs on a voluntary basis is free or low cost and affords multiple benefits. Much of the research has focused on levels of membership in modern society and the factors that may cause these levels to increase or decrease (Putnam 1995; Inglehart and Baker 1997, ch.4; Dekker and Halman 2003). Differential levels of voluntary association membership may signify differential levels of trust, cooperation, social resources, and other types of engagement that are important to civil society and democracy.

At the end of the 1900s, the rise of economic development brought with it an increase in economic inequality (Nielsen 1994) and low income (Picot and Myles 2005) across industrial countries. Inequality and poverty influence choices that individuals make about the way they spend their time and money and the opportunities they have access to. Joining voluntary organizations requires the free time and flexibility that comes with a certain level of financial security, and locally accessible organizations to join. A lack of community resources and funding may prevent poor neighbourhoods from having as many voluntary organizations as their wealthier counterparts. Individuals living in poor neighbourhoods may feel too socially isolated to want to join an organization. Neighbourhoods with high income inequality may have too much distrust and heterogeneity to support organizations based on shared interests and values. This paper tries to understand how membership levels are influenced by the prevalence of poverty and income inequality in modern Canadian society. For individuals living in poor or unequal neighbourhoods, does having a higher income improve the likelihood of becoming a voluntary association member, or is there just less opportunity to join organizations in these neighbourhoods?

Using data from the Canadian General Social Survey 17 (GSS) from 2003 and census microdata from 2001,[1] this study examines how individual income, neighbourhood poverty, and neighbourhood income inequality affect membership in Canada. Effects will be examined on the probability of membership as well as the volume of membership. As neighbourhood geographic classifications are only available for urban Canada (urban centres with populations over 50,000), the focus is on individuals living in these urban areas. This paper makes some policy recommendations to counter restrictions on membership.

Background

In the exploration of contextual effects on voluntary association membership, previous research has focused on comparative projects examining country level structural contexts or determinants of civic engagement (Schofer and Fourcade-Gourinchas 2001; Baer et al. 2001). The availability of World Values Survey data on membership for different countries has made country comparison of membership popular, although the examination of neighbourhood effects on social outcomes has become increasing popular in recent years. In the US, Swaroop and Morenoff (2006) point to the importance of neighbourhood context when examining social participation but also acknowledge that many US neighbourhood studies have focused on African American neighbourhoods which may represent a special set of characteristics. Despite sharing some social characteristics with the US, urban Canada is home to diverse communities of differing socioeconomic status, racial background, and levels of integration. Yet, no comprehensive examination of the effects of neighbourhood context on voluntary association membership has been carried out in Canada.

Cross-country comparison studies point to the importance of country level economic development as a predictor of engagement (see for example, Woolcock 1998; Hwang et al. 2005; Kaariainen and Lehtonen 2006) but don't consider poverty levels. This may be due, in part, to the lack of easily available and comparable data on country level poverty. Drawing on work by Jacobs (1961) that considers the effects of poor people and places on social networks, studies carried out by Cattell in the UK (2001; 2004) have found that poor areas exhibit low levels of trust and cooperation due to the limited facilities and resources available. This makes sense given that the existence of voluntary associations and the activity of their members rely on access to economic resources. As well as voluntary associations relying on the time and energy of volun-

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1. While the research and analysis are based on data from Statistics Canada, the opinions expressed do not represent the views of Statistics Canada.

teers, their existence also relies on monetary aid given by councils, local government, or wealthy individuals. The associations represented in the data (professional and political associations, recreational and cultural organizations, and religious affiliated, community and service groups) all need some sort of financial support to operate. This money is likely to be less accessible in poorer areas where there is either less money to give, or much needed financial aid is being swallowed up by more direct antipoverty initiatives. This means that poorer neighbourhoods will likely have fewer clubs and organizations for individuals living in the neighbourhood to join. In the US, Casciano (2007) finds that neighbourhood poverty can affect the voluntary participation of mothers. Instead of focussing on the role that limited resources in poor neighbourhoods might play, Casciano draws on theories (Wilson 1987; Cohen and Dawson 1993; Rankin and Quane 2000) suggesting that neighbourhood poverty leads to social isolation, which in turn, decreases both the opportunity for participation and the individual motivation to participate. To test this theory, this study will include individual sense of neighbourhood belonging in the analysis. Individuals who feel socially isolated will have a weaker sense of belonging to the neighbourhood than individuals who do not feel isolated. Whether the exact mechanism is lack of resources or social isolation, this study views neighbourhood poverty as a barrier to participation.

Economic inequality has been found to affect civic engagement by decreasing trust, a causal mechanism for civic engagement. Uslaner and Brown (2005) ascribe the decrease in social capital in the US to an increase in economic inequality. Rothstein and Stolle (2003) also argue that high levels of engagement in Scandinavia are partly due to high levels of social and economic equality. It is expected that these mechanisms also operate at the neighbourhood level. The exposure of individuals, particularly poorer individuals, to evident inequality may lead to more self comparison and less trust, which, combined with feelings of injustice, would deter individuals from participating in voluntary associations. Tomeh (1969) argues that there is less neighbourhood participation among individuals who perceive their neighbours to be more heterogeneous.

At the individual level, socioeconomic status has been identified as one of the most important predictors of voluntary association membership (Grabb and Curtis 1992). It is hypothesized that individuals need a certain level of wealth to have the free time and resources to participate in voluntary associations. However, this relationship is not linear but tends to taper off at higher income levels. Cutler (1976) examines the curvilinear relationship between age and voluntary association mem-

bership and acknowledges that this relationship may be explained by socioeconomic characteristics such as income and education levels that increase towards middle age and taper off in the elderly. Nonetheless, higher incomes do translate to higher membership levels. We would expect this effect to be fairly consistent across urban neighbourhoods in Canada as many urban neighbourhoods exhibit similar social and cultural norms. We will test this expectation in the analysis by examining differences in income effects between neighbourhoods. Individual income level is included in our analysis, logged to take account of its nonlinear relationship with membership.[2]

Having a higher income may facilitate participation more effectively in some neighbourhoods than others. Perhaps as income level increases, participation increases, no matter where we live. A higher income could bring opportunities and resources that override any negative effect that neighbourhood income inequality or poverty have. Alternatively, it may be that as income level increases, relative to those around us, participation increases. In this case, having a high income in a poor neighbourhood could enable participation more effectively than having a high income in an affluent neighbourhood because being relatively better off than other people in the neighbourhood provides increased access to, and opportunity for, associational membership. Similarly, higher income may have a greater effect on membership for individuals living in fairly equal neighbourhoods. To assess whether the effect of income is weaker or stronger depending on the poverty and inequality of the neighbourhood, the income variable will be interacted with both neighbourhood poverty and neighbourhood income inequality and these interactions will be included in the analysis.

At the country level, religious context is repeatedly found to be an important influence on membership (Ruiter and De Graaf 2006; Lam 2006; Buhlman and Freitag 2004). An important contextual influence at the neighbourhood level will be the religious composition of the neighbourhood given that membership levels differ between denominations (Lam 2006; Curtis et al. 2001; Ruiter and De Graaf 2006). To uncover the effects of neighbourhood poverty and income inequality regardless of the religious composition of the neighbourhood, religious heterogeneity of the neighbourhood will be controlled for in this study.

Several potentially confounding individual characteristics will be controlled for in this analysis. These include a number of demographic variable: gender, age (in years), age squared to account for the curvi-

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2. The relationship between income and membership was examined in the data and found to be nonlinear. A log transformation was the most suitable for making the relationship more linear.

linear effect of age (Cutler 1976), marital status, employment status, occupation and immigrant status. To ensure a comprehensive model that takes into account the key factors determining association membership, several important predictors are also included. Religious attendance is included as it is highly predictive of association membership (Hwang et al. 2005). Curtis et al. (1989) also find that French Canadians are less likely to join voluntary associations than English Canadians, although they expect that controlling for education and income will reduce some of these differences. Sense of neighbourhood belonging will also be controlled for to assess whether poverty effects exist regardless of the level of social cohesion or isolation. Some of these variables, such as age and years of education, will correlate with the independent variable income. However, this study wishes to isolate the effect of income and neighbourhood regardless of other sociodemographic factors that influence membership and so will include them in the model as controls.

Following from the previous literature, the following research questions will be explored:

1. Does individual income level affect whether an individual is a voluntary association member? Does this effect differ between neighbourhoods?

2. What effects do neighbourhood poverty and income inequality have on membership and do they explain any of the between neighbourhood variation in membership?

3. Does the presence of 1) neighbourhood poverty and 2) neighbourhood income inequality in an individual's context modify the relationship between income and voluntary association membership?

Data and Methods

The data for this study comes from Cycle 17 of the General Social Survey (GSS 17) on Social Engagement, which was conducted from February to December 2003. A stratified random sample representative of the Canadian population aged 15 years or older was interviewed over the telephone. The response rate was 78% and the overall sample size is almost 25,000 (Statistics Canada 2004). Census microdata from 2001 was also used for the creation of neighbourhood variables. The 2003 version of the GSS was used as it includes questions on civic engagement, social participation, trust, and reciprocity to capture information on social trends in engagement and the importance of social networks. Only individuals aged 18 and over living in urban centres (population over 50,000 in previous census) are referenced in the present analysis,

leaving 16,207 individuals nested in 4,326 Census Tracts. All results are weighted to correct the sample to population characteristics.[3] Table 1 shows the weighted sociodemographic characteristics of the study sample being used.

Table 1: Sample Characteristics

	All Individuals	Voluntary Association Members
Neighbourhood/Census Tract (n)	4,326	3,745
Average personal income ($) M(SD)	35,041(27,907)	40,521(31,739)
Proportion with income below LICO M(SD)	0.18(0.12)	0.17(0.12)
Income inequality M(SD)	0.57(0.05)	0.58(0.05)
Religious heterogeneity M(SD)	0.68(0.64)	0.70(0.62)
Individuals (n)	16,207	9,842
Personal income($) M(SD)	35,948(39,433)	41,291(44,730)
Age (years) M(SD)	44.88(17.03)	43.99(16.2)
Years of education M(SD)	13.54(2.71)	14.12(2.34)
Number of memberships held M(SD)	1.35(1.72)	2.23(1.70)
Male	49.0%	49.2%
Immigrated to Canada aged 15 yrs +	20.4%	17.1%
Immigrated to Canada aged <15 yrs	7.0%	7.3%
Married	61.9%	63.0%
Separated	13.1%	11.6%
French interview	22.0%	19.0%
In labour force (managerial/professional)	19.3%	24.3%
In labour force (other)	40.8%	39.4%
Religious attendance at least once a week	18.7%	22.2%
Religious attendance at least once a month	10.9%	11.6%
Religious attendance a few times a year	18.2%	18.1%
Religious attendance at least once a year	6.4%	5.9%
Sense of neighbourhood belonging	65.2%	69.0%

Neighbourhood Variables

Contextual variables were created at the Census Tract level using Census microdata from the 2001 Census as well as census variables already included in the GSS. These neighbourhood variables were merged with the GSS data, matching the data by geographic identifiers recorded in both datasets. The contextual area of interest in this study is neighbourhood, defined as Census Tract (CT). Statistics Canada describes Census Tracts as small, stable areas with a population of 2,500 to 8,000 located in large urban centres. This level of geography has the advantage of being small and homogeneous enough to be considered a neighbourhood, with the disadvantage that it is only available for urban areas. As a result, only respondents in urban area are used in the analysis.

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3. Multilevel models were only weighted at Level 1, as Level 2 weights were not available.

Neighbourhood poverty is measured by the proportion of individuals in the total population of the CT earning incomes below the LICO (Low Income Cut Off). The LICO is a widely used measure of poverty that looks at the percentage of total family or unattached individual income that is spent on clothing, shelter, and food. Households that spend 20% or more of their income than the average family on clothing, shelter, and food, are considered to be low-income households and thus fall below the LICO. This proportion was 0 centred.[4]

Neighbourhood income inequality is measured by the Gini coefficient, a statistical measure of inequality based on the distribution of income. As the coefficient approaches 0, the income distribution is more equal, with 0 representing perfect equality. As the coefficient approaches 1, the income distribution is less equal, with 1 representing perfect inequality where one person has all the income and everyone else has no income. The Gini coefficient has gained popularity in the social sciences as an accepted way to measure income inequality (Allison 1978) and is used in many studies of income inequality (see, for example, Muller 1995). A Gini coefficient for each CT was calculated from census income data using the inequality package in the statistical program R. The variable was 0 centred with -0.5 representing perfect equality, becoming more unequal as the score approaches 0.5.

Neighbourhood religious heterogeneity is measured by a ratio of Protestants to non-Protestants in the CT calculated from data on individual religious denomination reported in the census.

Individual Level Variables

The dependent variable, *voluntary association membership*, is measured in two ways. The first is a binary outcome indicating whether individuals have been a voluntary association member (coded 1) or not (coded 0), in the past 12 months. Types of associations that individuals were asked about are unions,[5] professional organizations, political groups, recreational/sports groups, cultural groups, religious affiliated groups, school/community groups, service clubs and fraternal organizations. An

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4. As continuous variables, the independent variables and the age covariate are centred on 0 to ensure interpretability of the intercepts and interactions and to reduce problems of multicolinearity.

5. In some analyses (Curtis et al. 2001) unions are not included as a voluntary association because their membership is not voluntary. The GSS survey question refers to "union or professional association" and so includes both voluntary and involuntary associations (many professional associations are voluntary). The question formulation makes it impossible to separate out unions from professional associations. The voluntary aspect to this category made it appropriate to include in the voluntary association membership measure. If unions had been a separate category, they would not have been included.

additional question asks whether individuals have been members of any "other type" of association in the last 12 months. This question was also used in the construction of this variable. The second outcome is a count of the number of associations individuals have been a member of in the past 12 months. Only individuals who indicated they had been a member of any type of association were asked this question.

The main individual independent variable of interest is *personal income*. Item nonresponse for this variable was approximately 25%; instead of removing a quarter of the study sample missing data, data was imputed. Dwelling ownership, various sources of income (e.g. employment insurance, benefits, welfare, etc), main source of income and income categories were included in the imputation as they were highly predictive of income and had less missing data than the main income variable. Missing values for this variable and for five other individual variables with missing data on 0.2–24.2% of data[6] were imputed using multiple imputation in the MICE (Multivariate Imputation by Chained Equations) package in R. The default method in this package uses different methods of imputation depending on the type of variable. For numeric data the program uses predictive mean matching methods, for binary data it uses logistic regression imputation methods, and for categorical data it uses polytomous regression imputation methods (Van Buuren and Oudshoorn 2007). After imputation and changing 0 values to 1,[7] the log of income was taken to account for the nonlinear relationship between income and membership. To ensure ease of interpretability, $\log_2$ was used instead of $\log_e$. The coefficient will show increases in the log odds of membership for a doubling in the value in the income. The log of income, like the other independent variables, was centred on 0.

Individual control variables include *gender* (0=male, 1=female), *age* (in years) and *age squared, education* (in years), *religious attendance*[8] (at least once a week, at least once a month, a few times a year, at least once a year, and never as the reference category), *marital status* (separated, married, and single as the reference category), *immigrant status* (immigrated to Canada age 15 years or older, immigrated to Can-

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6. Missing data was distributed as follows: marital status 0.2%, immigrant status 0.3%, labour force participation 1.0%, occupation 1.2%, education 1.9%, religiosity 4.4%, income 24.2%.

7. Zero income respondents often represent a special case of respondents, so deciding how to deal with these respondents is important. As the number of zero income respondents was small, offsetting was felt to be an appropriate approach.

8. Religious attendance as a control variable refers to frequency of churchgoing as opposed to involvement in religious affiliated groups. Religious affiliated groups include faith-based youth groups, choirs, or religious charities like The Salvation Army. GSS interviewers were specifically instructed to exclude the respondent's church or religion itself as a religious affiliated group.

ada before age 15, and nonimmigrant as the reference category), *labour force participation* (in the labour force in a professional/managerial occupation, in the labour force in another occupation, and not in the labour force as the reference category), *language of interview* (0=English, 1=French) and *sense of belonging* (0=weak or no sense of belonging, 1=strong sense of belonging).

Analysis

The data are in a hierarchical structure with two levels, where individuals at Level 1 are nested within neighbourhoods at Level 2. As a result, multilevel binomial logit models and Poisson models are fitted to the data.[9] The first set of logistic models predicts membership using the binary dependent variable and the second set of Poisson models is conditional on membership so includes only those individuals who said that they did participate in one or more voluntary association. This model uses the count of voluntary associations as the dependent variable.

Model 1 in both sets of models explores whether there are income effects on voluntary association membership, controlling for individual predictors and examines whether this effect differs between neighbourhoods. This model also looks at between-neighbourhood variation in average levels of membership. Model 2 examines the influence of the two neighbourhood variables and considers if their inclusion explains some of the between neighbourhood variation in Model 1. Model 3 examines whether income has different effects in contexts with different levels of poverty and inequality. More specifically it includes interaction effects between individual income and neighbourhood poverty, and individual income and neighbourhood income inequality. Significance in all models is assessed approximately using a Wald test. Ideally, a likelihood ratio test would be carried out but discrete response models in MLwiN are estimated using quasi-likelihood methods making the likelihood value unreliable (Rasbash et al. 2004:113).

Results

Table 2 presents the odds ratios to two significant digits for the fixed effects in the model as well as coefficients and standard errors in brackets[10] for the interactions and random effects for the logistic models. Table 3

9. Using MLwiN, the null models were fitted using 1st order marginal quasi-likelihood procedures and iterative generalized least squares estimation. Subsequent models were fitted using 2nd order predictive quasi-likelihood as recommended by Rasbash et al. (2004) to deal with issues of nonconvergence.

10. Ideally, bootstrap weights would be used for standard error estimation but given time constraints and limitations with the software, imputation was the most feasible option.

Table 2: Weighted Estimates of Logit Binomial Multilevel Regression for Voluntary Association Membership for all Individuals (n=16,207)

Fixed Effects	Model 1 Odds ratios	Model 2 Odds ratios	Model 3 Odds ratios
Individual			
Female	0.89**	0.89**	0.89**
Age	1.03***	1.03***	1.03***
Age squared	1.00***	1.00***	1.00***
Education in years	1.24***	1.24***	1.24***
Labour force participation			
Managerial/professional	1.27***	1.28***	1.28***
Other	0.88***	0.81***	0.81***
Immigrant status			
Immigrated 15 yrs+	0.41***	0.44***	0.44***
Immigrated <15yrs	0.79*	0.82*	0.82*
Marital status			
Married	0.93	0.9	0.94
Separated	0.89	0.87	0.93
French interview	0.66***	0.91	0.91
Religious attendance			
Weekly	3.26***	3.31***	3.31***
Monthly	1.81***	1.83***	1.84***
Few times a year	1.26***	1.26***	1.26***
At least once a year	0.99	0.99	0.99
Sense of belonging	1.68***	1.66***	1.66***
Income (Log$_2$)	1.17***	1.17***	1.17***
Neighbourhood			
Religious heterogeneity		1.42***	1.42***
Poverty		0.59*	0.60*
Income inequality		1.53	1.73
Interactions			
Income x inequality			-0.713(0.348)**
Random effects	β (s.e)	β (s.e)	β (s.e)
Level 2 (Intercept)	0.737(0.050)***	0.705(0.049)***	0.706(0.052)***
Level 2 (Income)	0.121(0.009)***	0.121(0.009)***	0.100(0.010)***
Level 2 (Covariance)	-0.084(0.015)***	-0.081(0.015)***	-0.082(0.015)***

*p<0.05, **p<0.01, ***p<0.001 for Wald test

presents similar results for the Poisson models but shows incidence rate ratios instead of odds ratios. Model 3 of the Poisson models does not show the interaction terms, as neither was significant.

The first research question which considers the effect of income and whether membership levels differ between neighbourhoods is addressed in Model 1 for both sets of models. Predicting membership vs. nonmembership, as income doubles the odds of membership increases by 17%. This coefficient is also highly significant. With regards to the number of memberships, as income doubles the incidence rate ratio increases by 2%. Looking at the level 2 random effects, there are significant differ-

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Without this however, it is likely that the standard errors of the fixed effects will be underestimated.

ences in average levels of membership between neighbourhoods, 0.737 for average odds of membership and 0.072 for average counts of memberships held by members. In order to assess any between neighbourhood differences in income effects in addition to the fixed effects, the individual income effect is allowed to vary at the neighbourhood level. The random effect is 0.121 in the logistic models and only 0.002 in the Poisson models. Both random effects are highly significant.

Model 2 includes neighbourhood poverty and income inequality.[11] As well as looking at the impact of these variables, this model assesses whether their inclusion explains any of the between neighbourhood dif-

Table 3: Weighted Estimates of Conditional Poisson Multilevel Regression for Number of Voluntary Associations for Members (n = 9,842)

Fixed Effects	Model 1 Odds ratios	Model 2 Odds ratios
Individual		
Female	0.98	0.98
Age	1.00	1.00
Age squared	1.00	1.00
Education in years	1.06***	1.06***
Labour force participation		
Managerial/professional	1.03	1.03
Other	0.88***	0.88***
Immigrant status		
Immigrated 15 yrs+	0.86***	0.87***
Immigrated <15yrs	1.04	1.04
Marital status		
Married	0.97	0.96
Separated	0.98	0.98
French interview	0.79***	0.83***
Religious attendance		
Weekly	1.18***	1.18***
Monthly	1.15***	1.15***
Few times a year	1.02	1.03
At least once a year	0.98	0.98
Sense of belonging	1.20***	1.20***
Income (Log_2)	1.02***	1.02***
Neighbourhood		
Religious heterogeneity		1.05***
Poverty		1.05
Income inequality		1.40
Random effects	β (s.e)	β (s.e)
Level 2 (Intercept)	0.072(0.009)***	0.069(0.009)***
Level 2 (Income)	0.002(0.001)***	0.002(0.001)***
Level 2 (Covariance)	0.003(0.003)	0.003(0.003)***

*p<0.05, **p<0.01, ***p<0.001 for Wald test

11. These variables were added to the null model one at a time in turn to see if the order of inclusion mattered. Including poverty first gave a coefficient of −0.539(0.216) compared to −0.512(0.291) when included with income inequality. Including income inequality first gave a coefficient of 0.789 (0.453) compared to 0.550(0.856) when included with poverty.

ferences in average membership levels. In the logistic model, there is no significant effect for income inequality but a change in the proportion of individuals living under the LICO in each CD from 0–1 decreases the odds of voluntary association membership for individuals by 61%. This coefficient is significant at the 0.05 level. The random effect associated with the intercept falls slightly and the random effect associated with the income effect stays the same. There is no neighbourhood poverty or income inequality effect in the Poisson models.

To examine the interrelationship and possible moderating effect of individual income on neighbourhood effects, two cross-level interactions are included in model 3. Only significant interactions are reported in the tables. Although the main effect of neighbourhood income inequality was not significant, the interaction between this and individual income is significant. As inequality increases from 0–1, the multiplicative factor of income decreases by 7%. The between neighbourhood variation in income effects decreases from 0.121 to 0.1 with the inclusion of this interaction suggesting that this interaction helps explain some of the between neighbourhood variation in income effects.

DISCUSSION

Our results show that individual income, neighbourhood poverty, and income inequality are extremely relevant when examining voluntary association membership in Canada. As we expected, and in line with previous research, a strong association was found between income and voluntary association membership, although this association was much stronger in the logistic models than the conditional models. This finding supports the hypothesis that access to financial and material resources increases the free time and opportunities individuals have to engage in voluntary activities. Once they become members, income has much less of an effect on the number of associations individuals belong to. As suspected, despite participation in voluntary associations often being inexpensive or free, this type of activity relies on factors related to economic resources. First, individuals must be able to afford to give up time they could be spending earning money. Second, participation may require access to a vehicle to facilitate attendance, the use of babysitting or childminding services, and/or the delegation of certain household and personal administration tasks to a paid individual, allowing individuals enough time for involvement. This finding implies that higher income individuals have more access to voluntary associations and the benefits of participation, such as access to networks, social trust and cooperation,

and the ensuing opportunities and advantages that voluntary association membership offers.

Once an individual becomes a member in one association, income is less important in predicting the number of associations individuals become members of. The implications of this depend on whether the benefits of membership increase incrementally as an individual joins more associations. If this is the case, a member of two associations would have double the benefits of a member of one association and a member of ten associations would have ten times the benefits of a member of one association. It is more likely that the benefits come when one is a member of any number of associations versus not being a member of any. In this case, income is important in predicting whether an individual will be a member or not, but not as important for predicting how many associations they will be a member of. The question of the amount of benefit derived from associations and whether it increases as the number of associations increases is one that would benefit from further research.

Our first research question also considers whether income effects differ between neighbourhoods. In the members vs. nonmembers model, there are significant differences between neighbourhoods in the average odds of membership and small but significant differences in income effects between neighbourhoods. This shows that while voluntary association membership does vary somewhat between neighbourhoods, only a little of the variance in membership is attributable to differences between neighbourhood in income effects. As hypothesized, income effects operate in a similar way in most neighbourhoods with higher incomes resulting in higher chances of voluntary association membership. In the conditional membership model, both the differences between neighbourhoods in average numbers of associations individuals belong to and income effects are very small, but significant.

The second research question explores the impact of the two neighbourhood variables as well as assessing whether the inclusion of these variables explains any of the differences between neighbourhoods in average voluntary association membership. With regards to the impact of neighbourhood poverty, the findings here are consistent with previous research; neighbourhood poverty had a significant negative effect on the odds of voluntary association membership. As hypothesized, increases in neighbourhood poverty are associated with decreases in the odds of voluntary association membership. It seems that claims made by Cattell (2001; 2004) about weaker social networks in poor areas in the UK are applicable in Canada too. Cattell argues that poor areas exhibit low levels of trust and cooperation due to the limited facilities and resources available. Casciano (2007) points to social isolation as the mechanism

that creates the negative effects of neighbourhood poverty on participation. In our analysis, a measure of sense of neighbourhood belonging was included in the analysis in an effort to take this into account. Although it could be argued that individuals who are voluntary association members have a greater sense of neighbourhood belonging, this variable is included to test the theory that it is social isolation caused by poverty that reduces membership levels. The analysis shows that those with a strong sense of neighbourhood belonging are 66% more likely to be members than those with a weak or no sense of neighbourhood belonging. Interestingly, even when this sense of neighbourhood belonging is taken into account there are still clear poverty effects on membership. This finding lends support to the claims made by Cattell (2001; 2004) that it is lower resources and limited facilities that cause poor neighbourhoods to exhibit low levels of participation.

Interestingly, neighbourhood income inequality had no significant effect on the odds of voluntary association membership or the number of memberships, counter to our hypothesis, which was based on suggestions made by research focused on country level income inequality (Uslaner and Brown 2005; Rothstein and Stolle 2003). However, income inequality affects membership in another way. For the second part of this research question, the inclusion of these two contextual variables does explain some of the variation in membership between neighbourhoods, but only by a small amount. Neither neighbourhood poverty nor income inequality affect how many associations a member belongs to but we can see an effect of neighbourhood religious context.

The final research question considered the possibility that effects may differ depending on an individual's income level. This hypothesis was tested by including interactions between individual income and the two contextual variables. The presence of a significant cross-level interaction between individual income and neighbourhood income inequality, despite a nonsignificant main effect for neighbourhood income inequality, shows the effect of neighbourhood contextual inequality. Estimation of simple slopes indicates that the positive effects of individual income are slightly higher for individuals living in low inequality neighbourhoods and lower in high inequality neighbourhoods. Higher neighbourhood inequality reduces the positive effect of income.

Although it is not clear what is driving this result, here are two possible explanations. First, it can be argued that neighbourhoods exhibiting more inequality between rich and poor suffer from heterogeneity between individuals on different dimensions, e.g., race, education, and socioeconomic status. It was hypothesized at the outset that heterogeneity lowers participation levels, as individuals are more likely to cooper-

ate with and form relationships with others similar to themselves. Perceived difference is thought to make forming strong bonds with others harder. It may be that in neighbourhoods of high inequality there are higher levels of heterogeneity that reduce the impact of income effects. This heterogeneity may also make the existence of organizations based on mutual interest less likely. In this case, even if you were a higher income individual, in unequal neighbourhoods there would be fewer organizations available to join. At the same time, poorer individuals may be more aware of their lot and so actively pursue opportunities to cooperate and interact in response to needs for the benefit of social networks and cooperation. Social heterogeneity may deter higher income individuals from participating whilst the neighbourhood inequality actually drives lower income individuals to participate.

Another explanation for this finding is in the composition of the equal neighbourhoods. If more equal neighbourhoods are wealthier they may have a higher average individual income than unequal neighbourhoods. Low and medium inequality neighbourhoods would consist of wealthier individuals who are more likely to be voluntary association members. The inequality in high inequality neighbourhoods may be caused by the presence of numerous very low income individuals in contrast to average income individuals. These individuals would have lower incomes and so be less likely to participate. However, average and median neighbourhood income variables were included in the exploratory stages of the analysis and neither had significant effects, which counters this explanation. Although this interaction is somewhat hard to explain, what is clear is that in more equal neighbourhoods, the poor are less able to access the benefits of membership then those with higher incomes. In more unequal neighbourhoods, the odds of membership are lower for all individuals and higher income does not afford the benefits it does elsewhere. More investigation of the precise factors involved is needed to understand the mechanism.

Finding that low-income individuals living in poor neighbourhoods experience lower levels of voluntary association membership is a significant finding for Canadians, Canadian communities, and Canada as a whole. Policy recommendations must take into account both individual and neighbourhood characteristics when trying to motivate individual engagement and social development. In the UK, Cattell (2004) explores voluntary association membership in the context of declining and regenerating neighbourhoods in combating exclusion, focussing on how access to the benefits that voluntary association membership offers is unequally distributed across different social groups and neighbourhoods. A similar role for voluntary association membership could be

put forward in Canada where neighbourhood regeneration, particularly on Native reserves is a prominent social and political issue. The Voluntary Sector Initiative in Canada ran from 2000–2005 (Treasury Board of Canada Secretariat 2007), strengthening ties between the government and the voluntary sector with regard to policy development. Some of the initiatives' claimed key outcomes were social cohesion and stronger communities. Since economic disadvantage negatively affects levels of membership, policy needs to focus on low-income individuals in poor neighbourhoods. An example of this is a current Canadian government initiative that funds fee waiving for children of poorer families joining local recreational and sports activities that encourage community cooperation and engagement.

It is important to outline some of the study limitations and weaknesses in our methods in order to keep the findings of this paper in perspective. First, neighbourhood is defined as Census Tract, which is a small and stable area with a population of 2,500 to 8,000. Since these are located in Census Metropolitan Areas and Census Agglomerations that have an urban core population of 50,000 or more in the previous census, rural areas are neglected in the analysis. It can be argued that this does not represent a great loss, as parts of rural Canada will be too dispersed to make up meaningful neighbourhood units. Applying the term neighbourhood in an urban context means the concept will have a consistent meaning across Canada.

The second study limitation is the selection of neighbourhood context variables. Several possible neighbourhood covariates were selected for inclusion: average neighbourhood income, proportion of new immigrants in the neighbourhood, proportion of managers and professionals in the neighbourhood, community size, and religious heterogeneity. All of these neighbourhood variables had significant effects when added to the model individually, with the exception of average neighbourhood income. Including all the variables as controls was not possible due to multicolinearity across these variables and also between these variables and the main independent neighbourhood variables. Inspecting correlations and also entering these variables into regressions to assess how much some variables predicted others, all the variables were found to be correlated. Both neighbourhood poverty and neighbourhood income inequality were significantly correlated with all the neighbourhood covariates (correlations from |.2| to |.5|) and were correlated with each other at −.3. It was decided that only important covariates highlighted in previous studies should be included. Based on previous research, religious context seemed to be the most important covariate while others had less

focus and discussion. Therefore, the measure of the religious context was selected for inclusion.

Finally, the use of cross-sectional data makes it difficult to make strong and reliable inferences about social causation and to separate group contextual effects from individual effects. Nonetheless, the inclusion of appropriate compositional variables and a theoretically driven approach can control for some of the causal mechanisms that may be at work. In addition, contextual effects can be explained away as a result of selective social behaviour that gives rise to what appear to be contextual effects but are, in fact, not. Hauser (1974) gives the example of parents selecting where they live on the grounds of the quality of available education, which is not an effect of group composition or context. There is, inevitably, some element of self-selection or selection mechanism that leads individuals to live in certain areas, but the precise mechanism is often empirically hard to isolate and control for. For example, poor individuals can often only afford to live in poor areas, a selection mechanism which also operates to keep the area poor. However, multilevel modelling is an appropriate method to use if we have a theoretical framework that suggests a contextual effect does exist, suitable variables are included and controlled for, and we are clear which level we should assign variables to. Furthermore, even if self-selection effects matter, it is still important from a policy point of view that these neighbourhood differences exist. Future examination and tackling of these issues is needed to give researchers the ability to make strong and valid inferences about contextual effects. Analysis of longitudinal data would also give researchers access to more information on possible causal mechanisms.

Despite the limitations, this study shows that inequality in economic advantage is reproduced as inequalities in other aspects of social life. Economic disadvantage affects voluntary association membership in a way that privileges individuals with access to economic resources. Whether an individual earns a low income or lives in a poor neighbourhood, this lack of economic resources reduces the odds of voluntary association membership and the benefits that membership affords. It can be argued that poor individuals and neighbourhoods would benefit most from the interpersonal trust, cooperation, and access to job opportunities and social mobility that voluntary association membership has been found to foster and promote. This study also revealed that if an individual lives in a neighbourhood of high income inequality, the positive effects of income are reduced. Policy measures aimed at social regeneration or encouraging participation in the voluntary sector must take these findings into account and target poor individuals and poor neighbourhoods, in particular. Further research must be conducted to uncover the

full extent of the effects of economic disadvantage on voluntary association membership cross-nationally and to see how far these findings can be generalized to other forms of social behaviour. Effort must be made to uncover why low income and neighbourhood poverty disadvantages individuals and what can be done to counter these effects.

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