Jnl Soc. Pol., 37, 1, 37–61 © 2007 Cambridge University Press
doi:10.1017/S0047279407001481 Printed in the United Kingdom

Neighbourhood Ethnic Concentration and Discrimination

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Abstract

We investigate the association between the residential concentration of Chinese in Toronto and discrimination as experienced and perceived by Chinese immigrant residents. A unique aspect of this study is our focus on perceived employment discrimination. We find that Chinese immigrants living in neighbourhoods with a high concentration of other Chinese residents are more likely to perceive employment discrimination against Chinese people as a group, and are more likely to report exposure to ethnically motivated verbal assault, than are Chinese immigrants living elsewhere. Our results are consistent with studies of other populations. However, we argue that theory and policy related to ethnic concentration and discrimination should recognise that effects of ethnic concentration on discrimination are likely to vary with the ecological setting under investigation (for example, neighbourhoods versus larger areas), as well as by size of locale (city, region, or country), and the ethnic groups involved.

Researchers have long been concerned about potential negative consequences of residential ethnic concentration (Blumer, 1958; Quillian, 1995; Dion and Kawakami, 1996; Forbes, 1997; Massey *et al.*, 1999; Bobo and Suh, 2000). Most research motivated by this concern has found that ethnic minority residents of areas with a high concentration of co-ethnics have fewer economic opportunities (Tolnay, 2001; Rydgren, 2004), and are more likely to experience interpersonal forms of discrimination at the hands of majority group members (South and Messner, 1986; Virdee, 1997; Massey *et al.*, 1999) than ethnic minorities living in less ethnically concentrated neighbourhoods. In light of these associations, some policy analysts have sought to reduce residential ethnic concentration. Indeed, much of the research on housing discrimination (Yinger, 1995; Murdie and Teixeira, 2003) can be framed as serving that end.

However, housing discrimination is not the only cause of neighbourhood ethnic concentration (Yinger, 1995). Indeed, people do choose to live with others who are ethnically similar (Yinger, 1995), and research has shown that living in an

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ethnic concentrated area can confer some benefits (Allport, 1979; Light, 1984; Min and Bozorgmehr, 2000; Edin *et al.*, 2003). For example, residence in an ethnic concentrated neighbourhood may allow one to more easily draw upon 'ethnic capital' of the area (Borjas, 1995), which is the average human capital among people with the same ethnic background. Ethnic capital may in turn help people to resist some of the negative consequences of discrimination. This implies that ethnic concentration may both increase exposure to discrimination and reduce the impact of that exposure. Thus policies targeting housing discrimination are unlikely to eliminate ethnic residential concentration, and the elimination of residential concentration may be a less appropriate goal than reducing those negative consequences of ethnic concentration that accompany its positive consequences. Of course, policies targeting potential negative consequences of ethnic residential concentration should be grounded in research that illuminates how and why residential ethnic concentration is related to economic and interpersonal discrimination.

In this study, we focus on the association between neighbourhood ethnic concentration and multiple forms of perceived discrimination against the Chinese residents of Toronto. Although we study a single ethnic group living in a single city, this research is conceptually broader than most previous studies of the association between ethnic concentration and discrimination. First, we consider more forms of discrimination than have been investigated in most previous studies. Second, we consider the association between ethnic concentration and discrimination from a broader range of theoretical perspectives.

Previous studies of ethnic concentration and discrimination have focused primarily on interpersonal forms of discrimination, such as the attitudes of majorities towards minorities, or on face-to-face inter-ethnic conflict (Forbes, 1997; Taylor, 1998; Massey *et al.*, 1999; McLaren, 2003). However, research has also shown that ethnic concentration is associated with the perception of inter-ethnic economic competition, and that economic outcomes vary with ethnic group membership (Oliver and Wong, 2003). This suggests that it would be useful to focus on employment discrimination against ethnic minorities. It is especially appropriate to extend research on discrimination against Chinese immigrants in Toronto towards a focus on employment discrimination because almost 90 per cent of Chinese immigrants in the city arrived after 1987, and most are of working age. This makes employment discrimination an important issue among this segment of the population.

Chinese in Toronto

We chose to analyse data on Chinese immigrants living in Toronto for this study because many recent immigrants to North American cities are Chinese. Moreover, many of the ethnically concentrated neighbourhoods in these cities are

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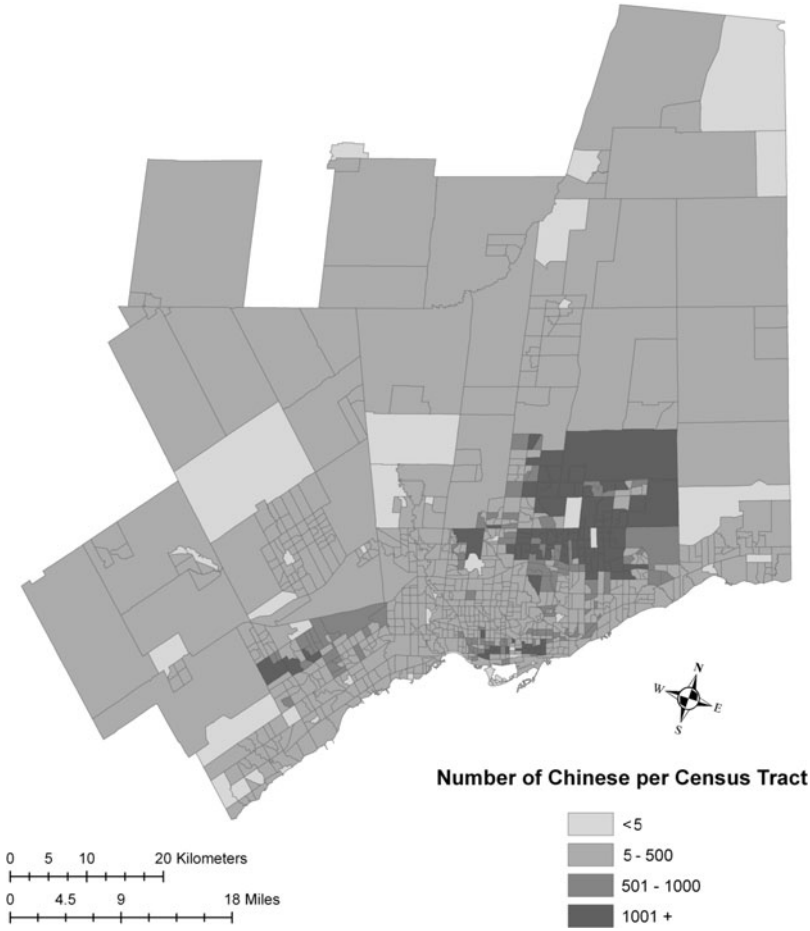
Chinese neighbourhoods. One interesting aspect of the Chinese neighbourhoods of Toronto is that they are economically diverse. In addition to settling in the old areas close to downtown, which have long been populated by waves of new immigrants with limited socioeconomic resources, many recent Chinese newcomers have settled in richer suburban areas such as Markham and Richmond Hill (Murdie and Teixeira, 2003). This pattern has implications for employment discrimination because many of these areas have developed ethnic economies. As the Chinese population has increased in the suburban areas, their ethnic businesses have flourished. Large Chinese shopping complexes and malls have been developed in or near highly concentrated Chinese neighbourhoods (Preston and Lo, 2000; Murdie and Teixeira, 2003), forming suburban ethnic communities. Employment opportunities for Chinese immigrants are considerable within these vibrant ethnic economies. However, the Canadian work experience garnered within ethnic economies may not readily translate into increased employment opportunities outside the ethnic economy (Hou and Picot, 2003). Limited access to jobs outside the ethnic economy may be perceived by Chinese immigrants as evidence of discrimination.

Variation in associations of ethnic concentration with discrimination

Although the experiences of Chinese immigrants to Toronto may be similar in some ways to the experiences of other immigrants in other parts of Canada, the effects of ethnic concentration on discrimination are likely to vary by city, over time, and by ethnic group (Oliver and Wong, 2003; Wagner *et al.*, 2006). Thus, the experiences of Chinese immigrants in Toronto probably differ from the experiences of Chinese living elsewhere. For example, changes in immigration policies (Reitz, 1988) have influenced the size of ethnic minority populations in Toronto and a few other cities that became the primary destinations for immigrants. In Toronto these changes led to increased political power of the Chinese as a group, reflected in increased representation of Chinese people in city government (Siemiatycki *et al.*, 2003). However, Chinese people are still underrepresented in political office in the city, and this pattern of demographic and political change may be unique to the city.

One implication of these demographic and political changes is that the association between residential ethnic concentration and discrimination may be historically specific. That is, shifts in ethnic concentration and political power may lead to variations in the association between ethnic concentration and discrimination. The possibility of geographic, demographic and temporal variation in research results makes it all the more important to manage complexity by drawing upon extant theory (Mears, 2001). Local variation in the relationship between ethnic concentration and discrimination also suggests that theories themselves may need to be modified to account for local patterns.[1]

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Map 1. Chinese distribution in Toronto Census Metropolitan Area, 2001.

Theory and previous research linking ethnic concentration to discrimination

Most studies of ethnic concentration and discrimination have focused on ethnic concentration within relatively large areas, ranging from nations to cities to census tracts and city districts (Forbes, 1997; Wagner *et al.*, 2006). With one exception (Kalin, 1996),[2] studies of neighbourhood ethnic concentration have generally found that as ethnic concentration increases, discrimination also tends to increase (Quillian, 1995; Forbes, 1997; Oliver and Mendelberg, 2000; Beiser *et al.*, 2001; McLaren, 2003). However, few studies have critically evaluated the applicability of diverse theories to neighbourhood effects. This is important because some theories that provide adequate explanations for ecological areas larger than neighbourhoods may not be directly applicable to neighbourhood effects.

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Another limitation of studies of both neighbourhood ethnic concentration and ethnic concentration of larger areas is that the types of discrimination assessed have also been limited. Most studies have focused on interpersonal forms of discrimination, such as interpersonal violence (Massey *et al.*, 1999), or on prejudicial stereotyping (cf. Blau *et al.*, 1982; Blum, 1985; Forbes, 1997: 84–91). Some studies have used very general measures of discrimination. For example, Beiser *et al.* (2001) assessed exposure to discrimination with a single question, 'In Canada, have you been discriminated against because of your race?'

The diversity of theories in this area is almost as great as variations in approaches to measuring discrimination. Three hypotheses have dominated research on the association between ethnic concentration and discrimination: the contact hypothesis (Allport, 1979; Forbes, 1997), the group threat hypotheses (Oliver and Mendelberg, 2000; Quillian, 1995), and the neighbourhood stigma hypothesis (Wilson, 1996; Tilly *et al.*, 2001). Each contributes something to an understanding of the relationship between ethnically concentrated neighbourhoods and discrimination. However, none of these hypotheses seems to provide a sufficient explanation of the effects of neighbourhood ethnic concentration on all forms of discrimination. We therefore developed two additional hypotheses: the density information hypothesis, and the development and discrimination hypothesis.

The contact hypothesis

According to the contact hypothesis (Williams, 1947; Allport, 1979; Forbes, 1997; Pettigrew, 1998), both positive and negative intergroup relations are influenced by the form that inter-ethnic contact takes, and the conditions under which it occurs. This hypothesis posits that cooperative contact among people who are ethnically or racially dissimilar, but of similar social status, can correct faulty presumptions, misunderstandings and prejudicial attitudes, and thereby reduce discrimination. In contrast, brief superficial contact among people of different social status is thought to reinforce pre-existing discriminatory attitudes. Although studies that have directly assessed contact have supported the hypothesis (Sigelman and Welsh, 1993; Stein *et al.*, 2000; Verkuyten and Kinket, 2000; McLaren, 2003; Wagner *et al.*, 2006), many studies have invoked the contact hypothesis without actually assessing contact (see Forbes, 1997 and McLaren, 2003 for reviews). Moreover, given that mechanisms other than contact may be responsible for an effect of ethnic concentration on discrimination, studies motivated solely by the contact hypothesis are theoretically limited. At minimum, researchers and policy makers should consider whether the potentially positive effects of interpersonal contact, and the ethnic concentration that is presumed to facilitate inter-ethnic contact, are offset by the negative effects of ethnic concentration. The group threat hypothesis posits such negative effects.

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The group threat hypothesis

The group threat or 'power-threat' hypothesis (Blumer, 1958; Quillian, 1995; Oliver and Mendelberg, 2000) posits that members of privileged majority groups tend to react with discrimination when they feel threatened by increases in the proportion of ethnic minorities in the area. In Blalock's (1967) version of this hypothesis, the 'economic threat hypothesis', threat revolves primarily around competition in the labour market (Bobo and Suh, 2000; Tolnay, 2001).

The group threat hypothesis can explain the effects of neighbourhood ethnic concentration on forms of discrimination beyond the economic domain. For example, groups that are dominant in Canadian society may feel threatened by loss of control over schools (Olzak, 1992; Hwang, 2005; Renzulli and Evans, 2005), or public spaces and the civil sphere (Kinder and Sears, 1981; Rieder, 1985; Avila, 2004), as minority group ethnic concentration increases. The group threat hypothesis has motivated research showing an association between ethnic or racial concentration and discriminatory acts ranging from physical assaults against minorities to verbal assaults and other acts that make minorities feel unwanted as neighbours (South and Messner, 1986; Massey *et al.*, 1999; Welch *et al.*, 2001). Group threat may also instigate 'White flight', which in turn increases the ethnic homogeneity of minority neighbourhoods (Renzulli and Evans, 2005).

The neighbourhood stigma hypothesis

The two hypotheses described above do not indicate why ethnic minorities who live in high ethnic concentration neighbourhoods may be especially likely to experience employment discrimination in particular. The neighbourhood stigma hypothesis does, and is supported by research that indicates some employers use information about the neighbourhood of job applicants, including the racial composition of those neighbourhoods, in making hiring decisions (Tilly *et al.*, 2001). Statements made by respondents in the Urban Poverty and Family Life Study (Wilson, 1996) show that minority group members are aware this happens (sic): 'Honestly, I believe they look at the address and your attitudes, your address, your surround you know, your environment has a lot to do with your employment status' (p. 137); and 'I think that a lot of peoples don't get jobs over here because they lives they live in the projects. They think that just 'cause people living in the projects they no good' (p. 138). These quotes, and others like them (Warr 2005), suggest that neighbourhood stigma could result specifically in employment discrimination against residents of high ethnic concentration neighbourhoods.

The density information hypothesis

The assumption implicit in all three of the previously discussed hypotheses is that perceptions of discrimination against one's ethnic group arise through a fairly straightforward translation of discriminatory events into perceptions. Yet, the social processes that influence perceptions are likely to be fairly complex.

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The density information hypothesis deals with complexities that arise as a result of the translation of information through social networks (Marsden, 1993). The central idea of this hypothesis is that neighbourhood ethnic concentration may influence the perception of discrimination because people who live in ethnically dense neighbourhoods have potentially greater access to information about the negative experiences of co-ethnic neighbours. In other words, information about group-level discrimination may be more readily accessible to those living in ethnically concentrated areas because residents of such areas have greater opportunities to talk informally with neighbours who have information about discrimination than those living elsewhere.

The density information hypothesis complements a similar hypothesis about the perceptions of majority group members (Kluegel and Bobo, 2001). According to that hypothesis, ethnic concentration influences the information that majority group members have about minorities. The focus on the perceptions of ethnic minorities in the density information hypothesis corrects what might have been an over-emphasis in previous research on the discriminatory attitudes of majorities (Bradburn *et al.*, 1971; Kalin, 1996; cf. Swim and Stangor, 1998). Another strength of this hypothesis is that it applies to both occupational and interpersonal discrimination, since ethnic concentration may increase the information that minorities have about all forms of discrimination against their own ethnic group.

One corollary of this hypothesis is worthy of note. The density information hypothesis does not require that heightened perceptions of discrimination against one's ethnic group are necessarily due to word-of-mouth dissemination of information about events occurring to individuals within one's social network. The hypothesis applies to the dissemination of all information, including information from research which suggests that there is at least *de facto* employment or labour market discrimination against minorities in Canada (Li, 1979; Reitz, 1988; Henry *et al.*, 1995; Hou and Picot, 2003).

The development and discrimination hypothesis

Our final hypothesis – the development and discrimination hypothesis – is a variation of the contact hypothesis. While the contact hypothesis suggests that ethnic concentration influences contact with neighbours, the development and discrimination hypothesis posits that residence in an ethnically dense neighbourhood may increase risk for exposure to discrimination among those living in neighbourhoods that support ethnic economies that attract outsiders (Lo *et al.*, 2000; Teixeira, 2000). The key to this hypothesis is that interactions of residents with outsiders are likely to be superficial (that is, brief, not involving cooperative activities), and to entail interactions among persons of different social status. As the contact hypothesis suggests, this type of contact might foster expressions of disrespect. The development and discrimination hypothesis contextualises the contact hypothesis by describing places where

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inter-ethnic contact may undermine positive inter-ethnic relations. For example, discrimination by outsiders in the context of hectic commercial settings may take the form of ethnic slurs.

Selection as an alternative to hypotheses of ecological effects

All five of the hypotheses described above can be contrasted to the possibility that individual characteristics influence both where people choose to live and their personal experience or perception of discrimination. In evaluating hypotheses about the ecological effects of neighbourhoods, it is necessary to control for individual characteristics that might influence neighbourhood selection, especially if those characteristics are also associated with exposure to discrimination, or the perception of discrimination. We control for a range of characteristics of respondents in our analyses to account for selection effects. These include personal sociodemographic factors such as age, gender, country of origin and length of residence in Canada, as well as personal resources such as English language skills that have been shown to influence employment outcomes (Evans, 2005).

In addition, respondents were asked their reasons for moving into their neighbourhood, and we control for moving to be close to one's relatives. Although it is possible that subtle aspects of cultural fluency are not captured by our control variables, we believe that the range of control variables included in this study are extensive enough that estimated associations between neighbourhood ethnic concentration and discrimination can be interpreted as resulting primarily from effects of place, rather than from selection effects. In sum, these controls are much more extensive than in most previous research on ecological effects, and they capture much of the variance that might be associated with differences among respondents in cultural fluency.

Data and methods

Data

Our data are from a 1997–1998 study that focused on the Chinese ethnic economy of Toronto. The sample was obtained by randomly selecting names from a list of Chinese surnames taken from telephone books in the Greater Toronto Area (including the City of Toronto and neighbouring cities of Markham, Richmond Hill, and Mississauga). Potential respondents were then called to determine whether they fell into the target group of Chinese immigrants 18 to 60 years of age. Finally, face-to-face interviews were arranged with people in the target population. Both telephone screening and face-to-face interviews were conducted in Chinese or English at the discretion of the respondents. Over 65 per cent of those selected for face-to-face interviews were interviewed.

Some missing data for some of the measures of discrimination or ethnic concentration resulted in slightly fewer than 508 total interviews for some

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TABLE 1. Descriptive statistics for dependent and independent variables.

	Mean/%	Minimum	Maximum	SD
Measures of discrimination[a]				
Perceived employment discrimination (mean)	2.5	1	4	0.6
Perceived employment discrimination (%)	20.3	0	1	
Verbally assaulted (%)	44.3	0	1	
Perceived neighborhood discrimination (mean)	2.2	1	4	0.5
Perceived neighborhood discrimination (%)	23.1	0	1	
Perceived lack of respect (mean)	2.5	1	4	0.5
Perceived lack of respect (%)	20.3	0	1	
Neighbours who are Chinese (%)	32	0	100	24.7
Contact with neighbours[b]				
sought help from neighbours for any reason	27.3	1	4	0.46
R never visits with neighbours	60.9	0	1	
Motivation for moving to neighbourhood[c]				
to be close to friends or relatives	3.40	1	4	0.82
for physical amenities	1.74	1	4	0.83
At least 1 of 3 best friends is not Chinese	27.3	0	1	
Demographic				
Age-Group (12 categories)	(41–45)	(<20)	(71+)	
Female (%)	29.5	0	1	
Born in Hong Kong (%)	58.9	0	1	
Years in Canada (mean)	14	< 1	54	9.2
Acquired human capital				
Education (categorical 1–11)	coll./trade	none	grad.degree	
Language ability (mean)	0	−1.6	1.9	0.97
Does not work (%)	2.6	0	1	
Business owner (%)	29.7	0	1	

Notes: [a]higher scores indicate higher levels of perceived discrimination. n's for the discrimination variables vary due to missing data: verbal assault $n = 499$; neighbourhood discrimination $n = 486$, employment discrimination $n = 483$; lack of respect $n = 482$.
[b]1 = never, 2 = once or twice, 3 = several times, 4 = many times.
[c]1 = very important, 2 = important, 3 = somewhat important, 4 = not important.
Distributions of control variables are calculated in sample used for the analyses of neighbourhood ethnic density on personal exposure to discrimination ($n = 499$).
Means and percentages are unweighted.
Source: Ethnic Economy Survey, Fong (1997).

analyses. The sample sizes in the different analyses, and descriptive statistics for all of the dependent and independent variables, are presented in Table 1.

Measures

Discrimination

We assess three forms of perceived discrimination against the Chinese as a group: employment discrimination, residential discrimination, and the perception that Canadians generally lack respect for Chinese. Perceived employment discrimination is assessed by agreement with the statement: 'Chinese

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are treated equally by employers in Canadian firms.' Perceived residential discrimination is assessed by level of agreement with the statement: 'Canadians prefer not to have Chinese as next-door neighbours.' Respect is assessed by agreement with the statement: 'Chinese are well respected in Canadian society.' Responses are scored on a four-point scale: strongly agree, agree, disagree and strongly disagree. The average inter-item covariance among these three items is 0.06, indicating that perceived discrimination is not a unified phenomenon.

In responding to the perceived discrimination items, very few respondents (fewer than 6 per cent) *strongly* agreed or disagreed with any of the statements. Thus, almost all of the variance in these scales is due to the difference between those who agree and those who disagree with each statement. We therefore use dichotomised versions of these variables, where the dichotomy indicates agreement versus disagreement.

In addition to measuring perceptions of group-level discrimination, we measured perceived personal exposure to ethnically motivated verbal assault. We did this by asking: 'Have you ever been verbally attacked or threatened because of your ethnic background?' Respondents were asked to answer with a simple 'yes' or 'no.'

We recognise that a focus on perceptions may both lead us to miss discrimination that exists, and perhaps also to capture perceptions of discrimination that have no basis in the actions or prejudicial attitudes of others. Although the lack of research on the relationship between perceived and actual discrimination has been noted for over a decade (Dion and Kawakami, 1996), few studies have attempted to explore this issue. One study that did (Turner and Turner, 1981), found that minority group members were more accurate in perceptions of occupational distributions, which were held to be indicative of discrimination, than were non-minority Whites. This suggests that minorities may be relatively attentive to information indicative of discrimination. However, our respondents may also hold lay theories that capture some of the subtleties of long-standing academic theories (Mill, 1965 [1848]; Wilkinson, 1981; Evans, 2005), and thus recognise that economic differences among groups may arise for reasons other than discrimination. Thus perceptions of discrimination depend not only on access to information, but also the conclusions drawn from the available information.

Neighbourhood ethnic concentration

The ethnic concentration of Chinese residents in each respondent's neighbourhood was obtained by asking, 'Based on your observation, what is the percentage of Chinese people living in your neighbourhood?' Since most individuals do not have actual statistics about the ethnic composition of their neighbours, their reports may be inaccurate. Indeed, at least one study (Semyonov *et al.*, 2004) found that perceived proportions of ethnic minorities in a region

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of Germany was not strongly correlated with the proportion in the region as estimated by official statistics.

The potential lack of accuracy in an individual's perceptions of ethnic concentration, or other measures of neighbourhood ecology, has important implications that extend even to studies that include objective measures of place. For example, many studies supplement data on the perceptions of neighbourhood characteristics with official data on proportions of ethnic or racial minorities living in census tracts or other geographical units (Sampson and Raudenbush, 2004). The problem is that the objective ecological measures may not correspond to the respondents' perceived neighbourhood. In light of the strength of perceptions of ethnic concentration as predictors of discrimination (Beiser *et al.*, 2001; Semyonov *et al.*, 2004), and the weak relationship between those perceptions and objective measures of population concentration, it may be appropriate for researchers to privilege the perceptions of their respondents over objective measures when the two are discrepant.

In the analyses presented here, the perceived percentages of neighbours who are Chinese are grouped into five categories, each indicated by a dummy variable: 10 per cent or below; between 11 and 25 per cent; between 26 and 40 per cent; between 41 and 60 per cent; and over 60 per cent. This coding strategy permits us to explore the non-linear effects observed in some previous studies of ethnic concentration (Beiser *et al.*, 2001; Stein *et al.*, 2000). Moreover, since an equivalent number of cases falls into each category, comparisons of settings with low, medium and high levels of ethnic concentration have similar statistical power.

Interactions with neighbours

We assessed two general forms of interaction: instrumental help-seeking from neighbours, and casual interaction. Four questions ask respondents to report how frequently they seek help from neighbours for a range of reasons. About 27 per cent of respondents reported seeking help from neighbours for at least one of these reasons. Preliminary analyses revealed that seeking any help for any reason has a stronger relationship with each form of discrimination than does help-seeking for any specific reason, or any subset of reasons. We therefore present the effect of any form of help-seeking.

Since asking for instrumental help may, in some cases, create a condition of status inequality (Lee, 2002), and interaction among people of different status levels may foster discrimination (Allport, 1979), instrumental help-seeking should be differentiated from other forms of social interaction with neighbours. We assessed informal socialisation with neighbours by asking, 'How often do you see neighbours in one another's home?' The response scale is (1) never, (2) once per month, (3) two-three times per month, (4) more than three times per month. Most respondents (about 61 per cent) reported that they never visited neighbours, and preliminary analyses revealed that the relationship of this form

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of social interaction to discrimination is fully captured by the contrast between those who never visited neighbours and all other respondents.

Reasons for moving to the neighbourhood

We asked respondents to rate the importance of proximity to relatives and friends and the importance of physical environment in the decision to move to the neighbourhood. The response scale ranges from (1) very important to (4) not important. Both of the variables assessing neighbourhood selection are included as covariates in these analyses.

Non-Chinese friendships

In addition to measures of social interaction with neighbours, we assessed whether respondents have any non-Chinese friends by asking, 'Among the three closest friends who are not your relatives, how many of them are not from your ethnic group?' More than 70 per cent of respondents said that all three best friends were Chinese. In preliminary analyses we found the only substantive and statistically significant difference in discrimination to be between those with any non-Chinese best friends versus all others. We therefore present results based on a dummy-coded indicator of having any non-Chinese friends.

Sociodemographic variables

Age, gender, country of origin and duration in Canada are included in the analyses because all are factors that could influence selection into ethnically dense neighbourhoods, as well as exposure to discrimination and the perception of discrimination (Wilson and Hammer, 2001). Age was assessed in three categories: 30 and under; 31 to 55; and 56 and over. Country of origin is indicated by a dummy variable, coded as 1 for respondents born in Hong Kong, and 0 for those born in all other locations (all respondents were immigrants to Canada). We use this coding because most of our respondents emigrated from Hong Kong, and too few emigrated from other places to differentiate them. Finally, duration in Canada is measured as the number of years since arrival.

Education, language ability, employment status and business ownership (all aspects of acquired human capital) are controlled. Each may influence exposure to or perception of discrimination, as well as influence settlement patterns associated with neighbourhood ethnic concentration. Educational level was measured as an ordinal variable, with eleven values, ranging from no schooling to the attainment of a graduate degree. However, education is treated as a continuous variable in the analyses because preliminary analyses revealed the effects of education on each outcome to be linear.

English language comprehension is a continuous measure, standardised with a mean of 0 and standard deviation of 1. This measure was derived from a factor analysis of three items: 'How good is your spoken English?'; 'How good is your

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written English?'; and 'How good is your understanding of spoken English?' Respondents rated themselves on a four-point scale: very good, fairly good, not very good, poor. The average inter-item covariance of these three language proficiency items is 0.66, suggesting that language comprehension items tap a single latent construct.

Employment status is measured by a dummy variable indicating that the respondent does not work. Employment status was derived from responses to multiple questions about workplaces and co-workers. Business ownership is indicated by a dummy variable indicating that the respondent is a business owner.

Results

Table 2 presents odds ratios obtained from logistic regressions of each measure of discrimination on neighbourhood ethnic concentration. Each set of columns is labelled with the type of discrimination under consideration. There are four dependent variables: (1) perception of employment discrimination; (2) personal exposure to verbal assault; (3) perception of residential discrimination; (4) perception that Canadians do not respect the Chinese.

The odds ratios in this table are the odds of discrimination reported by those living in neighbourhoods with the ethnic concentration specified by the row labels relative to the odds of discrimination reported by those living in the reference neighbourhoods (61–100 per cent Chinese). Odds ratios for neighbourhood comparisons that are significantly lower than 1.0 (as indicated by an asterisk) suggest that discrimination is less likely in the specified neighbourhood than in neighbourhoods where 61–100 per cent of residents are Chinese. For example, an odds ratio of 0.55 in the first column of the table under 'employment discrimination' suggest that those living in a neighbourhood where fewer than 10 per cent of all neighbours are ethnically Chinese are about half as likely to perceive employment discrimination as those living in the comparison neighbourhood where more than 60 per cent of neighbours are Chinese (0.55 is about half as large as 1.0). Of course, this does not mean that those living in low ethnic concentration neighbourhoods do not perceive employment discrimination. Indeed, almost half (48 per cent, or 41 out of 86) of those living in neighbourhoods with the lowest concentration of ethnic Chinese co-residents agree that there is employment discrimination against Chinese. However, in comparison, more than 60 per cent (41 out of 68) of those living in the highest ethnic concentration neighbourhoods perceive employment discrimination. Thus the perception of employment discrimination is more likely among those living in the more ethnically concentrated neighbourhoods.

Baseline effects of neighbourhood ethnic concentration

The first four rows of odds ratios in Table 2 indicate the contrast between the odds of discrimination in the most highly ethnic concentrated neighbourhoods

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TABLE 2. Zero-order odds ratios of explanatory Variables on exposure to verbal assault and perceived discrimination.

	Employment discrimination	Verbal assault	Residential discrimination	Lack of respect
	Odds ratio	Odds ratio	Odds ratio	Odds ratio
Chinese neighbours[b]				
0–9%	0.55*	0.55*	0.46**	0.76
10–25%	0.57*	0.67	0.60	0.67
26–40%	0.49**	0.59*	0.70	1.00
41–60%	0.71	0.55*	0.60	0.85
Contact with neighbours to[a]				
help-seeking	0.53***	1.16	1.30	0.67
R never visits with neighbours	1.63**	0.93	1.08	1.03
Motivation for moving to neighborhood[c]				
to be close to friends/relatives	1.04	1.13	0.76**	0.85
for physical amenities	1.39***	0.97	1.08	1.27*
At least 1 best friend not Chinese	0.57*	0.75	0.72	0.29**
Individual characteristics				
Demographic				
Age 31–55	1.47	0.88	1.02	1.03
Age 56+	0.38	0.69	0.61	0.35
Female	1.14	0.84	1.23	1.44
Born in Hong Kong	1.30	1.44*	0.48***	0.66*
Years in Canada	0.98*	1.02	0.98*	0.97*
Acquired human capital				
English language difficult	1.14	1.09	1.26*	1.52***
Education	0.99	0.97	0.87***	0.85***
Does not work	0.67	1.43	1.00	0.69
Business owner	0.90	1.22	1.49	1.07
Sample *n*	483	499	486	482

*p < .10; **p<.05; ***p<.01.

[a]Effects of each type of contact estimated separately, contrast group are those with no contact or any other type of contact.

[b]Contrast group are those living in neighbourhoods where 61–100% of residents are Chinese.

[c]Contrast group are those who reported no reasons or other reasons for neighbourhood selection.

and the odds of discrimination in each of the less ethnically concentrated neighbourhoods, separately for each form of discrimination (given in the columns). Since some hypotheses suggest that low levels of ethnic concentration will be positively associated with discrimination and other hypotheses suggest a negative association, we adopt two-tailed tests of statistical significance. However, a strong case can be made for adopting one-tailed tests of the hypothesis that ethnic concentration increases discrimination. Given this, we note effects that are statistically significant at borderline levels ($p < 0.10$) using two-tailed tests.

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These borderline effects translate into statistically significant differences at a conventional ($p < 0.05$) level if theoretically justified one-tailed hypotheses are adopted.

All the odds ratios in Table 2 are below 1.0, indicating that respondents living in the relatively low ethnic concentration neighbourhoods are all less likely to perceive or experience discrimination than those living in the highest ethnic concentration neighbourhoods. The statistically significant contrasts suggest that those living in neighbourhoods where fewer than 41 per cent of neighbours are Chinese are about half as likely to experience both employment discrimination and verbal assault than those living in neighbourhoods where more than 60 per cent of neighbours are Chinese. Analyses of residential discrimination also suggests that those living in neighbourhoods with the lowest concentration of Chinese residents are about half as likely to perceive residential discrimination as those living in the neighbourhoods with the highest concentration of Chinese residents. The general pattern of associations suggests that further analyses should be simplified by specifying a single contrast between the most ethnically dense neighbourhoods and all other neighbourhoods.

Effect of neighbourhood ethnic concentration with controls

Table 3 (Model 1) simplifies the presentation of results by using a single dummy variable indicator that identifies those who live in the highest ethnic concentration neighbourhoods. Because of this, the odds ratios in this table are all greater than 1.0, indicating the increased likelihood of discrimination perceived by those living in the highest ethnic concentration neighbourhoods compared to those living in all other neighbourhoods. These analyses suggest that individuals who live in the most highly concentrated Chinese neighbourhoods are, on average, between 70 and 80 per cent more likely than those who live in less ethnically dense neighbourhoods to perceive discrimination in various forms (that is, odds ratio are on average between 1.70 and 1.80). The 95 per cent confidence intervals presented under the odds ratios, though, encompass the value of one (that is, indicating 1:1 odds). This means that if one starts without theory it is possible to conclude that neighbourhood ethnic concentration has no effect on discrimination. Since prior research supports theory that suggests that ethnic concentration increases discrimination, we do not adopt a mechanistic atheoretical approach to hypothesis testing in this case. Instead, we consider the effects of ethnic concentration on employment discrimination and verbal assault to be statistically and substantively significant.

The odds ratios in the set of columns entitled Model 2 are measures of association between ethnic concentration and discrimination controlling for all sociodemographic variables, motivation for neighbourhood selection, and measures of interaction with neighbours. With one exception, results are essentially the same when each group of control variables is separately included in the

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TABLE 3. Odds ratios of effect of living in high Chinese ethnic concentration neighbourhoods on verbal assault, perceived neighbourhood discrimination, and perceived labour market discrimination, controlling for individual-level characteristics (95 % C.I. in parentheses).

	Employment discrimination		Verbal assault		Residential discrimination	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Ethnic concentration						
High ethnic concentration neighbourhood	1.79**(1.02–3.16)	1.81*(0.99–3.30)	1.68*(0.97–2.89)	1.75*(0.99–3.09)	1.68*(0.92–3.07)	1.43(0.73–2.76)
Contact with neighbours to:						
R has sought help from neighbours		0.56***(0.36–0.86)		1.26(0.82–1.93)		1.32(0.79–2.21)
R never vists with neighbours		1.32(0.89–1.45)		0.88(0.58–1.32)		1.09(0.66–1.82)
Motivation for move to neighbourhood:						
to be close to friends or relatives		1.14(0.89–1.45)		1.13(0.88–1.42)		0.78*(.60–1.01)
for physical amenities		1.25*(0.97–1.60)		1.02(0.80–1.29)		0.99(0.71–1.29)
At Least 1 of 3				1.06(0.67–1.65)		1.14(0.66–1.99)
Best friend is not Chinese						
Individual characteristics						
Demographic						
Age 31 to 55		1.56*(0.92–2.68)		0.66(0.38–1.14)		1.09(0.56–2.15)
Age 56 and over		0.46(0.09–2.34)		0.33*(0.09–1.12)		0.45(0.06–3.17)
Female		1.02(0.67–1.56)		0.78(0.51–1.19)		1.19(0.73–1.95)
Born in Hong Kong		1.17(0.78–1.75)		1.77***(1.17–2.67)		0.49***(0.30 − .77)
Years in Canada		0.99(0.96–1.01)		1.03***(1.01–1.06)		0.98(0.95–1.01)
Acquired human capital						
Education		1.06(0.95–1.19)		0.96(0.87–1.07)		0.89*(0.79–1.00)
Language ability		1.09(0.83–1.42)		1.26*(0.96–1.64)		0.92(0.68–1.24)
Does not work		0.78(0.20–2.99)		1.89(0.59–5.88)		1.21(0.33–4.39)
Business owner		0.85(0.53–1.55)		1.21(0.79–1.90)		1.53(0.91–2.60)
N	483.00	483.00	499.00	499.00	486.00	486.00
Log likelihood	−332.68	−314.88	−341.66	−331.26	−261.25	−247.20
Wald chi-sqaure	3.64**	33.53***	3.45*	21.94	2.86*	28.82**
d.f	1.00	15.00	1.00	15.00	1.00	15.00

Notes: *p<.10, **p<.05, ***p<.01.

analyses and when all control variables are included together. The one exception is that the sociodemographic variables alone reduce the association of ethnic concentration with perceived residential discrimination to the level observed in Table 3. In other words, the analyses suggest that personal sociodemographic characteristics influence both where people live and the residential discrimination they perceive. In the analyses of all other forms of discrimination, effects of ethnic concentration remain statistically significant, or of borderline significance, when personal characteristics, motivation for neighbourhood selection and interaction with neighbours are controlled.

Evaluating modifiers of ethnic concentration effects

In a final set of analyses motivated by the contact hypothesis, we investigate whether help-seeking from neighbours, visits to neighbours, or having any non-Chinese friends modifies the effects of ethnic concentration on discrimination. Interaction terms were created by multiplying each of the moderators with the indicator of high ethnic concentration. These interaction terms were added separately to Model 2. None of the interaction terms approached borderline statistical significance. We therefore do not present the detailed results of those analyses.

Discussion

We find that neighbourhood ethnic concentration affects the perception of employment discrimination and exposure to ethnically motivated verbal assault against Chinese immigrants living in Toronto. Discrimination against immigrants living in highly concentrated ethnic neighbourhoods (that is, in neighbourhoods where at least 60 per cent of residents are co-ethnic Chinese) is relatively common. These ecological effects hold when we control for individual-level characteristics associated with neighbourhood selection and contact with neighbours. We therefore conclude that associations are due to the effects of neighbourhood ethnic concentration on discrimination. We argue that the most plausible explanation for the effects of ethnic concentration on perceived employment discrimination is offered by the density information hypothesis, and the most plausible explanation for the observed neighbourhood effects on verbal assault is offered by the development and discrimination hypothesis.

Perceived employment discrimination

Our finding that residence in highly concentrated ethnic neighbourhoods increases the perception of employment discrimination is consistent with research showing that variation in the ethnic concentration of Chinese people across the census tracts of Toronto is associated with risk of unemployment among residents (Hou and Picot, 2003). The consistency of our results with

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analyses of observed unemployment rates suggests that the associations we observe are not attributable to the unique nature of our sample.

Of the five hypotheses about the effects of neighbourhood ethnic concentration on discrimination considered here, the contact hypothesis seems the least adequate as an explanation for employment discrimination. It is unlikely that neighbourhood ethnic concentration will lead to contact with potential employers. Moreover, it is unlikely that employers have more problematic interpersonal contacts with workers or job applicants from Toronto's ethnically concentrated Chinese neighbourhoods than with sociodemographically similar workers from other neighbourhoods.

Neighbourhood stigma also seems a weak explanation for effects of neighbourhood ethnic concentration on employment discrimination. Some of the ethnically concentrated areas in Greater Toronto, such as those in Markham and Richmond Hill, resemble the relatively high-status suburban enclaves observed in New York and Los Angeles suburbs (Logan *et al.*, 2002). There are no identifiable Chinese neighbourhoods in Toronto that are stigmatised in the same way as the Black ghettoes in some major American cities (Fong and Shibuya, 2000).

The group threat hypothesis also seems to provide an inadequate explanation for the effect of neighbourhood ethnic concentration on employment discrimination. If labour market competition exists, then it is probably a city-wide phenomenon, and there is no clear reason why majority group members would feel more threatened by Chinese living in ethnically concentrated neighbourhoods than in other neighbourhoods.

The most plausible explanation for the association between ethnic concentration and perceived employment discrimination against the Chinese as a group is that people living in high ethnic concentration neighbourhoods are more likely than those living elsewhere to have heard about such discrimination from co-ethnic neighbours. In other words, the most likely explanation for these associations is the density information hypothesis. That hypothesis posits that residents of high ethnic concentration neighbourhoods perceive employment opportunities for Chinese in the mainstream labour market as relatively limited because information about limited opportunities flows through social networks of those living in higher ethnic concentration neighbourhoods more efficiently than through the social networks of those living in less ethnically concentrated neighbourhoods. Of course, objective measures of employment opportunities for those living in high ethnically concentrated neighbourhoods suggest that such opportunities are indeed more limited (Hou and Picou, 2003; Evans, 2005). Thus the information flowing through networks may be accurate, and reflect experiences of co-residents.

Limitations in employment opportunities may be related to the ways in which employment referral networks are organised in ethnically concentrated

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neighbourhoods (Rydgren, 2004; Wang, 2004). Social networks within relatively ethnically concentrated areas may both increase risk of unemployment and influence the dissemination of information leading to the perception that there is employment discrimination. For example, immigrants who live in ethnically concentrated areas may be more likely to perceive employment discrimination than those living elsewhere because their networks are less useful for locating jobs outside the ethnic economy (Wang, 2004; Rydgren, 2004; Evans, 2005). That is, the loose ties that bridge immigrants and ethnic minorities to the larger (non-ethnic) economy may be more prevalent within less ethnically concentrated neighbourhoods (Granovetter, 1995 [1974]). Thus those living in more ethnically concentrated neighbourhoods may hear more stories about neighbours who have substantial skills but who cannot find employment in the mainstream labour market.

Our preference for the density information explanation is tempered by our finding that interactions among neighbours do not modify the effect of ethnic concentration on perceived employment discrimination. That is, our analyses suggest that help-seeking from neighbours and informal socialisation may not influence perceptions of employment discrimination. It may be necessary to collect more specific data on the information exchanged in interactions with neighbours to adequately evaluate this hypothesis. The measures of contact with neighbours available in this study are limited to general questions about the frequency of helping and socialising.

Verbal assault

We find that ethnically motivated verbal assault remains a problem for Chinese immigrants in Toronto despite a longstanding general acceptance of ethno-racial tolerance as a public value in Canada (Reitz, 1988). We find that the rate of exposure to verbal assault is particularly high among those living in the neighbourhoods with the highest concentration of Chinese. These findings contrast with the results of a study of political wards of English cities (Virdee, 1997) that found no clear relationship between ethnic concentration and discrimination against residents of Indian, Pakistani and Bangladeshi heritage. However, our results are consistent with other studies of diverse populations (Schuman and Gruenberg, 1970; Bergesen and Herman, 1998) which have also found that minority group residents living in areas with a high concentration of co-ethnics are more likely to be subjected to assaults of various types than their counterparts living in areas with lower levels of ethnic concentration.

One possibility that our analyses seem to rule out is that people who have been assaulted subsequently choose to live in ethnically dense settings. If neighbourhood selection were responsible for the association between ethnic concentration and verbal assault, we would expect controls for reasons of neighbourhood selection to dampen that association. Yet the inclusion of the

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control variables of motivation for neighbourhood selection has no effect on that association. This suggests that we should look to the relevant hypotheses about neighbourhood effects on verbal assault to explain the observed associations.

Our analyses suggest that the group threat hypothesis does not provide a compelling explanation for the increased risk of verbal assault among people living in high ethnic concentration neighbourhoods. That hypothesis suggests that non-Chinese neighbours living within high Chinese concentration neighbourhoods should be especially likely to feel threatened, and thus perpetrate such assaults. If neighbours were primarily responsible for verbal assaults, though, we would also expect a similar effect of ethnic concentration on perceived residential discrimination. That is, if neighbours engage in ethnically motivated verbal assaults, it is likely our respondents living in high ethnic concentration neighbourhoods would be more likely to perceive Canadians as not wanting Chinese as neighbours. Yet we find that neighbourhood ethnic concentration is not related to perceived residential discrimination. Thus, at minimum, this suggests that the group threat hypothesis needs to be amended to specify who is threatened and who is therefore most likely to perpetrate verbal assault.

The development and discrimination hypothesis offers one such amendment. According to this hypothesis verbal assaults may arise from interactions with people drawn to the neighbourhood from outside of it. One reason for such an attraction may be that those who intend to perpetrate verbal assaults can more easily identify places with a visible ethnic economy as locations with a high concentration of potential targets.

However, the development and discrimination hypothesis suggests an even more plausible and subtle process leading to verbal assaults. This second process does not directly stem from group threat. Instead, it may be non-Chinese visitors who are attracted to ethnic businesses located in ethnically dense areas, who more or less spontaneously use ethnically insulting language as a result of incivilities that occur in the civil sphere (Phillips and Smith, 2003). This interpretation is consistent with the study of ethnic minorities in England by Virdee (1997). That study found that the great majority of 'racial insults' and 'racial attacks' against minorities were perpetrated by 'complete strangers', 'people in a shop' or 'people in a place of entertainment', as opposed to 'neighbours' or 'acquaintances'.

Conclusion and policy implications

Our analyses build on previous studies showing that Chinese residents of Toronto perceive discrimination against their ethnic group (Dion and Kawakami, 1996; Ruck and Wortly, 2002). We expand upon previous studies of objective outcomes (Hou and Picot, 2003) to show that perceptions of a specific form of interpersonal discrimination, verbal assault, is tied to neighbourhood ethnic concentration. We also expand upon previous research by showing that ethnic concentration

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is associated with perceived employment discrimination. Chinese immigrants living in the most highly concentrated Chinese neighbourhoods of Toronto are more likely to perceive employment discrimination than those living in all other neighbourhoods. This latter finding is broadly consistent with the density information hypothesis.

A more complete explanation of the effects of Chinese ethnic concentration in Toronto on employment discrimination may require consideration of a greater range of both inter-ethnic and intra-ethnic processes that shape discriminatory acts and the perceptions of discrimination. For example, although we have focused on perceived discrimination against Chinese immigrants, neighbourhood ethnic concentration also has implications for the prejudice and discrimination of Chinese against other minorities. Oliver and Wong (2003) found that Chinese residents of Los Angeles and Boston living in neighbourhoods with relatively low Chinese ethnic concentration have more negative stereotypes of Black people and Latinos than Chinese residents of more ethnically concentrated neighbourhoods. This is consistent with research on prejudicial attitudes of other minority groups (King and Weiner, 2007; Sidanius and Pratto, 1999). Thus it may be useful to consider interventions targeting ecological effects in order to change prejudicial attitudes of minorities, as well as interventions to reduce ecological effects on discrimination against minorities. The most effective and appropriate type of intervention will depend on the type of neighbourhood and the type of discrimination.

Research that provides more details about mechanisms through which ecological effects on discrimination arise is necessary before we can be certain about what interventions might be most effective. However, our results suggest that local interventions should especially focus on ethnically motivated verbal assaults that occur within ethnically concentrated areas. For example, local community groups in ethnically concentrated neighbourhoods might be informed that there are reasons to suspect that ethnically motivated verbal assaults are relatively common in their neighbourhood. This information might foster the development of local solutions, such as encouraging residents to be more vocal, assertive, and to display solidarity in censuring such conduct, when it occurs. Solutions to address the association between ethnic concentration and employment discrimination may have to extend beyond the local. For example, one solution might involve encouragement of non-Chinese Canadian employers to conduct recruitment drives in ethnically concentrated areas.

As we noted previously, our results do not suggest that discrimination against ethnic minority group members living in low ethnic concentration neighbourhoods is rare. Substantial research and anecdotal evidence document the difficulties encountered by people who are ethnic minorities in their own neighbourhoods (Li, 1994; Liu, 1998; Wang, 2001). Interventions from outside the neighbourhood may be necessary to help people in this situation. As a first

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step, such interventions might include actions that facilitate recognition and problematisation of discrimination in the neighbourhood. Interventions should not only support people experiencing discrimination, and encourage them to speak out, but also support solidarity among those who oppose the victimisation of immigrants and minorities, to recognise and problematise discrimination in their neighbourhoods.

Acknowledgements

We wish to thank Jeffrey Reitz, Lesley Kenny, Sherri Klassen and the reviewers for helpful comments on previous drafts.

Notes

1 The limitations of theories that address the relationship between ethnic concentration and discrimination reflect a general limitation of sociohistorical theories in sociology (Ley, 2003). The literature on evaluation research (Zucker, 1977) has also addressed the difficulties associated with the application of theory to local-area issues.

2 Kalin (1996) assessed discrimination against Chinese by asking non-Chinese residents to rate how comfortable they would be 'being around' Chinese.

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