

9 **Eating Together Apart: Patterns of Segregation** 10 **in a Multi-ethnic Cafeteria** 11

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18 **ABSTRACT**

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20 Research on segregation has tended to focus on relations located at a macro-spatial level of analysis
21 and unfolding in contexts where boundaries to interaction are formally established. This research, by
22 contrast, investigated segregation as a micro-ecological process by observing patterns of seating in a
23 multi-ethnic cafeteria. A total of 3114 seating positions were coded over a 2-week period and the
24 resulting data were analysed using both adapted segregation indices (*P* and *D*) and loglinear and
25 logistic regression techniques. The results suggested that ethnic segregation existed both at the level
26 of interactional groups and in the form of broader patterns of racial clustering and dispersal in the
27 cafeteria. Moreover, the magnitude of segregation was predicted by the gender composition of seating
28 groups and by variations in the density of the cafeteria's population over time. Some implications
29 of these results for social psychological research on contact and desegregation are considered.
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31 *Key words:* segregation; desegregation; race; contact
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34 **INTRODUCTION**

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36 Contact between groups tends to encourage the development of positive forms of social,
37 ethnic and racial diversity. For this reason, segregation, its antithesis, has generally been
38 viewed problematic by social scientists. Although some favourable consequences have
39 been attributed to segregation—for example, the maintenance of minority group identity
40 (see Buttny, 1999), security (Boal, 1981), and wellbeing (Postmes & Branscombe,
41 2002)—the majority of research has documented its deleterious impact on society. Political
42 scientists have repeatedly exposed the role of segregation in maintaining ethnic and
43 racial inequalities, including the distribution of wealth (Goldberg, 1998; Massey &
44 Denton, 1993; Massey & Fisher, 2000). Social psychologists have demonstrated how it
45 maintains prejudiced stereotypes, attitudes and behaviours. For example, research on
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the contact hypothesis has suggested that regular interaction between groups tends to reduce prejudice, particularly when it occurs under facilitative conditions (Allport, 1954; Hewstone & Brown, 1986; Pettigrew & Tropp, 2000).

In this context, the persistence of high levels of segregation in some societies has become an object of increasing concern. In the US, for example, the residential isolation of race groups remains extensive in many areas of the country. Since the abolition of Jim Crow race laws around the middle of the last century, some American towns and cities have actually witnessed an increase in segregation, particularly between African-Americans and other groups (Farley & Allen, 1987; Massey & Denton, 1989, 1993). Similarly, whilst there are lower levels of segregation in the UK than the US, there is a significant level of segregation between Asians and other groups (Peach, 1996). In the north-west of England, where the present research was conducted, the problem of segregation was recently highlighted by the Cattle Inquiry, which examined the causes of racial conflict in places such as Burnley, Oldham, Leeds and Bradford (see also Webster, 2002). Although identifying a range of contributing factors, the inquiry focused chiefly on the problem of these so-called 'parallel lives':

Whilst the physical segregation of housing estates and inner city areas came as no surprise, the team was particularly struck by the depth of polarization of our towns and cities. The extent to which these physical divisions were compounded by so many other aspects of our daily lives was very evident. Separate education arrangements, community and voluntary bodies, employment, places of worship, language, social and cultural habits, means that many communities operate on the basis of a series of parallel lives. These lives do not seem to touch at any point let alone overlap and promote any meaningful interchanges. (Cattle Report, 2001, p. 9)

As this quotation implies, segregation may take varied forms and may shape relations across a range of social domains. The aim of this article is to identify a gap in the existing empirical literature on segregation and to show how this gap has limited our understanding of the processes through which 'parallel lives' are created and maintained. In summary, our argument is that researchers have prioritized processes located at a macro-spatial level of analysis and in contexts where racial and ethnic boundaries are formally established. The present research, by contrast, treats segregation as a micro-ecological process, that is, as a process that shapes relations in contexts where members of different groups share proximity and co-presence and where racial boundaries are fleeting and informal. In order to develop this theme, we present an observational study of seating arrangements in a multi-ethnic cafeteria located in a city in the north-west of England. Before turning to this study, we shall elaborate the conceptual and methodological rationale of the research.

LEVELS OF ANALYSIS IN THE DEFINITION AND MEASUREMENT OF SEGREGATION

The majority of work on segregation has been rooted in urban sociology and geography and has, understandably, reflected disciplinary commitments of researchers working in these fields. Thus, segregation has generally been investigated in three main institutional contexts: (1) the residential organization of cities or towns; (2) demographic composition of schools in urban areas or districts; (3) horizontal and vertical distribution of people and occupations. The main aim of the research has been to describe and explain processes of

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3 racial and ethnic separation within these contexts and to map their economic, social and
4 political implications. The methodological and research paradigms used in the field have
5 evolved largely to address these aims.

6 The contribution of this tradition of research should not be undervalued. For one thing,
7 as noted earlier, it has exposed the continuing role that segregation plays in structuring
8 everyday life in many societies, including the UK (see Boal, 2000; Peach, Robinson, &
9 Smith, 1981; Robinson, 1986, for illustrative contributions). In addition, it has demon-
10 strated all too starkly how segregation sustains ethnic and racial discrimination, shaping
11 the distribution of wealth and poverty, services and resources, and even health and mor-
12 tality (e.g. see Massey & Fisher, 2000). Indeed, to adapt a phrase that is popular in the
13 literature, segregation has been cast as a 'structural lynchpin' of ethnic and racial inequal-
14 ity. Finally, over several decades, researchers have elaborated a rich, multidimensional
15 concept of segregation as a process that comprises, for example, interrelated practices
16 of clustering, concentration, centralization, isolation and dispersal (Massey & Denton,
17 1988; Massey, White, & Phua, 1996). Associated with this concept is a sophisticated array
18 of statistical measures for exploring the nature, magnitude and spatial form that segrega-
19 tion assumes within specific contexts (e.g. see Duncan & Duncan, 1955; Massey &
20 Denton, 1988; Ransom, 2000; White, 1983; Wong, 1993).

21 Notwithstanding these valuable contributions, we wish to suggest that existing research
22 on segregation has under-specified some important facets of the process. Our main argu-
23 ment in this article concerns the level of analysis at which research has operated. Consider,
24 as an example, the voluminous body of work on residential segregation, which has largely
25 been based around measuring the proportional distribution of group members across dif-
26 ferent census tracts of towns and cities. Using the so-called index of dissimilarity (D),
27 researchers have sought to quantify the degree to which racial populations are distributed
28 'evenly' (low segregation) or 'unevenly' (high segregation) at this scale. In a similar
29 fashion, using indices designed to estimate the degree of racial exposure (so called
30 P -indices)—defined in terms of the average probability members of one group have of
31 sharing a given residential tract with members of another group—researchers have
32 hypothesized about residents' potential for interacting with racial others. Measures of dis-
33 similarity and exposure, in short, have used information about the dispersal of members of
34 racial populations across residential tracts or zones to determine the magnitude and lived
35 experience of segregation. A similar methodological approach has been used to explore
36 school and occupational segregation.

37 Whatever the merits of this style of work, it is in danger of overlooking important facets
38 of segregation and thereby fostering erroneous assumptions about the lived realities of
39 racial separation. Notably, in focusing almost exclusively on processes located at a
40 macro-spatial and institutional level, it has neglected the role of micro-ecological pro-
41 cesses as they unfold in what Schnell and Yoav (2001) call 'everyday life spaces'. Even
42 if, for example, city-wide measures of distributive evenness and exposure indicate that
43 levels of race segregation are low, this is no guarantee that the problem of 'parallel lives'
44 has been overcome. To the contrary, it is quite possible that boundary processes operating
45 at more intimate scales and contexts may limit the extent to which genuine integration
46 occurs (i.e. as defined by the presence of meaningful interactions between members of
47 different groups or at least by the absence of boundaries to such interactions).

48 In fairness, some aspects of this problem have been mooted in the literature (see espe-
49 cially Schnell & Yoav, 2001). Based on a study of residential relations in Los Angeles, for
50 example, Grannis (1998) has argued that metropolitan segregation is not best understood

as a product of broad distributions by race at the level of the residential tract or ward. Instead, it is a function of 'microlevel neighbourly relations along residential streets' (p. 1531). In point of fact, his data suggest that the racial organization of housing reflects residents' preferences about who lives 'down the street' rather than factors operating at more distal socio-spatial scales. One implication of this study is that macro-level structures of segregation may be an emergent product, as much as a determining factor, of micro-level processes. Another implication, which we will develop, is that the study of segregation would benefit more generally from a finer-grained analysis of social practices operating 'beneath' the level of the residential zone, the school or the occupational stratum. In our view, such a methodological shift is particularly important if one wants to understand how processes of segregation actually shape interactions in everyday life (as opposed to shaping merely the potential for sharing a large spatial tract with others).

PROCESSES OF MICRO-SEGREGATION AND THE PROBLEM OF 'ILLUSORY CONTACT'

Some evidence supporting this approach has emerged in psychological work on the contact hypothesis: a research paradigm that has explored how, when and why regular interaction between members of different groups reduces prejudice. Based on this large body of work, it is clear firstly that face-to-face contact reduces prejudice and secondly, that the positive effects of contact are maximized when the contact is explicitly socially sanctioned, co-operative and of equal status (Pettigrew & Tropp, 2000). However, despite the efficacy of contact, researchers working in this area have long discussed the problem of so-called 'illusory contact' (Taylor & Moghaddam, 1994; Taylor, Dubé, & Bellerose, 1986) in which the appearance of integration belies the reality of continued segregation. Schofield and Sagar (1977), for example, examined face-to-face and side-by-side seating arrangements in a school dining area. They found that mixing across racial and gender lines was limited, even though racial desegregation at the level of the school had been achieved. Although children were able to share the same eating space, racial contact *per se* was infrequent, an effect that was particularly marked for girls and older pupils. It is worth noting that this process of re-segregation within the school context has been documented elsewhere (see Schofield, 1986).

In another study of racial contact, Dixon and Durrheim (2003) investigated relations on a desegregated beach in South Africa and found they were characterized by countervailing processes of integration and segregation. Although the racial composition of the beach as a whole was reasonably representative of South African society, occupants maintained a variety of kinds of territorial barriers to racial interaction at more intimate scales. For example, they occupied different areas of the beach, maintained racially homogeneous 'umbrellas spaces', and exited the beach when the proportion and numbers of outgroup members reached a critical point. As a result of these practices, rates of interracial contact on the beachfront were extremely low, with over 97% of interactions occurring between members of the same racial group.

Finally, in a paper titled 'Is there contact at all?', Maoz (2002) found that contact may be illusory even in settings designed expressly to promote it. He observed 46 'planned encounter programs' designed to improve relations between Israelis and Arabs by encouraging co-operative dialogue. His results indicated, however, considerable variability in the extent of actual ethnic contact, with some 35% of dialogue groups producing

only small or medium amounts of interaction. He thus argued that researchers need to pay more careful attention to the behavioural practices through which both interaction and separation are maintained, concluding that just because members of different groups '... are sitting together in the same space does not necessarily create or entail significant interaction between them' (Maoz, 2002, p. 193).

The present study aimed to develop this line of inquiry by exploring relations in a multi-ethnic cafeteria. As we have argued, the descriptive literature on segregation has focused overwhelmingly on its macro-level expressions and has neglected the micro-level processes that may sustain racial barriers 'on the ground'. Accordingly, there is a pressing need for descriptive research on the micro-ecology of segregation. At the same time, and while accepting that a full exploration of this topic requires methodological innovation, our research draws heavily on analytic tools developed by geographers and urban sociologists. In particular, we employ adapted measures of dissimilarity and exposure to explore the organization of eating arrangements over time (see also Dixon & Durrheim, 2003; McCauley, Plummer, Moskalenko, & Mordkoff, 2001). This approach reflects our view that the kinds of processes examined in the present research may ultimately be best elucidated by an interdisciplinary framework.

METHOD

Research context and sample

University students were observed in a cafeteria affiliated to a metropolitan university located in a city in the north-west of England. There were 31 274 students enrolled at the university 2001, when the study was conducted, and of these students 60% were female and 40% were male. Based on self-ascription, 83% of students at the university were White, whilst the remaining 17% classified themselves as having another ethnic origin.

A cafeteria was chosen for study because it is a context that has been examined previously (e.g. McCauley et al., 2001; Schofield & Sagar, 1977), thus allowing us to establish continuity with the limited amount of work that has been conducted in this area. A university cafeteria was chosen because it represents a space where ethnic and racial mixing was expected to occur and where, accordingly, the dynamics of contact and segregation could be explored. Moreover, as students are generally more tolerant than members of other population groups, the study could be regarded as a conservative test of processes of racial separation that may assume more extreme forms in other settings and samples (cf. Taylor et al., 1986).

During the observation period, the numbers of customers in the cafeteria at any one time ranged from five to 155 people. A total of 3114 seating positions were coded, where 2246 positions were occupied by Whites and 868 were occupied by people from another ethnic origin. In terms of gender, 2321 seating positions were occupied by females and 793 by males. Table 1 describes the ethnic and gender composition of the sample over the observation periods.

Apparatus

Preliminary observations were made and a two-dimensional map of seating arrangements in the cafeteria was produced (see Figure 1). This map was used to record data about

Table 1. Number of seating positions in the cafeteria over the six-day observation period

	Week 1			Week 2			Overall	Percentage overall (%)
	Monday	Thursday	Friday	Monday	Thursday	Friday		
Total no. People	362	392	204	1001	792	363	3114	
White	224	243	126	734	615	304	2246	72
Asian	124	122	68	225	155	50	744	24
Black	8	23	5	17	9	2	64	2
Other	6	4	5	25	13	7	60	2
Male	73	114	53	239	206	108	793	25
Female	289	278	151	762	586	255	2321	75

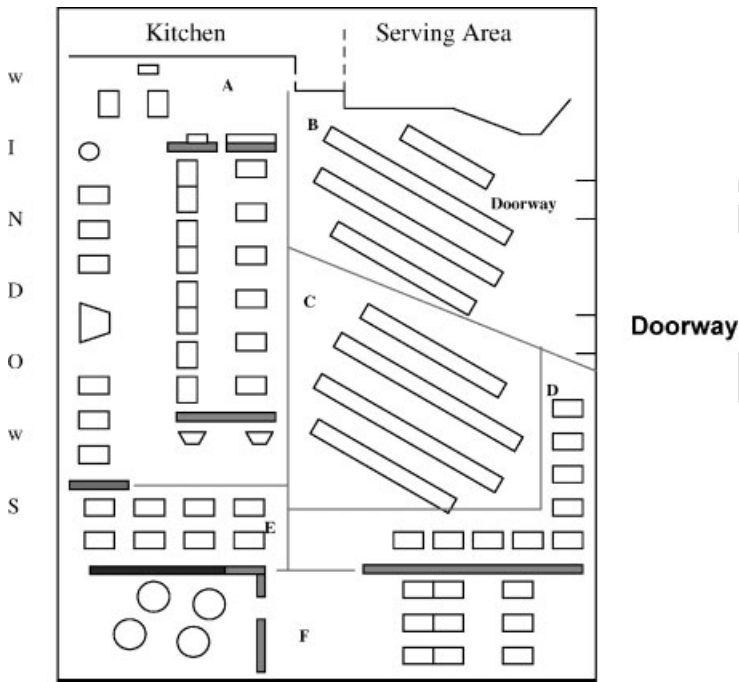


Figure 1. Section boundaries of seating arrangements; shaded areas indicate screens.

seating patterns at each time interval during the overall observation period. Based on existing patterns of social and spatial organization, the cafeteria was divided into six sections. Organizing the coding in this way meant that we could explore the possibility that Asian and White people were unevenly distributed across sections.

Section A was distinguished because it was enclosed by screens at the end of the rows of tables. Sections B and C were distinguished because they consisted of high tables with stools whereas other seating areas consisted of more conventional lower tables and chairs. Sections B and C were distinguished from one another by their relative size and spatial layout. Section D was adjacent to section C and was separated from section E by physical distance. Wooden screens separated sections A and E. Finally, section F was also screened

off from the main part of the cafeteria. The area containing the round tables was a staff seating section and was not included in the coding.

Procedure

Prior to beginning the study, we gained institutional approval to make observations in the cafeteria and offered guarantees that the students' anonymity would be protected. Observations were then collected on nine time intervals for 6 days over a period of 2 weeks, yielding a total of 45 intervals. Each week observations were made on a Monday, Thursday and Friday. On these days, data were recorded at 15-minute intervals from 11:30 a.m. to 1:30 p.m. inclusive. This time period was chosen because it coincided with the midmorning to lunchtime period when the cafeteria was most populous, providing the best opportunity to observe inter-ethnic interaction and segregation.

At each time interval, the observer worked round the cafeteria and systematically coded section by section; the order of coding by table and section was counterbalanced. Coding consisted of noting the apparent ethnicity and gender of a person, where they were seated in the cafeteria, and the social unit they were in. The ethnic categories used were White, Asian, Black and Other. Blacks were classified as anyone of Afro-Caribbean descent, Asians were Southern Asians rather than Eastern Asians, and 'Other' was anyone who was not White and not obviously in any of the other categories. Hence, the symbols W, B, A and O were used to record ethnicity on the map, with gender being recorded as M or F.

A social unit was defined as a group of interacting people, classified in terms of the presence or absence of conversation with other students and the orientation of a student's head and/or torso toward some students and away from others (cf. McCauley et al., 2001). Sometimes a unit consisted of an entire table. However, longer tables sometimes contained more than one unit, whereas unit boundaries sometimes extended across more than one smaller table. Each social unit was coded by circling its constituent members on the map image. Using this methodology, it was possible to define social units subsequently as either ethnically 'mixed' (having members of more than one ethnic category) or ethnically homogeneous (having members of one ethnic category only).

Reliability of coding

Eighteen of the 45 observational intervals were coded both by the first author (the main coder) and a trained confederate, who produced independent maps of the cafeteria at a given point in time. In order to assess interobserver reliability, three aspects of coded groups were assessed: the number of people in a social unit, the gender composition of the social unit and whether the unit was classified as ethnically mixed or homogeneous. Cohen's kappa coefficients confirmed the reliability of the observational coding, with all three aspects yielding coefficients above 0.90.

RESULTS

Overview

Segregation in the cafeteria was analysed at two complementary levels—at the level of social units and at the level of distribution across different sections of the cafeteria. In the first stage of the analysis, adapted segregation indices (P and D) were used to describe

relations in the cafeteria at these levels of analysis¹. A second stage of analysis examined a spatial form of segregation that emerged as particularly significant in the cafeteria, namely clustering. Finally, regression techniques were used to explore some demographic and ecological factors that seemed to be associated with the extent and form of segregation. Note that the analysis focused exclusively on relations between Whites and Asians because numbers of members of other ethnic categories were too low to permit meaningful analysis.

Describing the levels of segregation in the cafeteria

Ethnic exposure in social units. Adapted *P* measures were used to describe intergroup exposure at the level of the social unit in each observational interval (see also McCauley et al., 2001). Such measures yield a coefficient that can vary hypothetically between zero and one, where zero represents complete segregation (no exposure) and one represents complete integration (maximum exposure). More precisely, *P* estimates the potential that the average member of one group has for interacting with members of another group. Because this potential is relative to a group's proportional representation in a defined space, separate *P* values must be calculated for minority and majority groups. Indeed, this ability to capture the relative and experiential quality of racial exposure is generally cited as a key advantage of *P* (see Massey & Denton, 1988). For the purposes of the present research, the following *P* formulae were employed, with formula (a) modelling Whites' exposure to Asians and formula (b) modelling Asians' exposure to Whites:

$$(a) {}_wP_a = \sum_i^n (w_i/W)(a_i/t_i) \quad \text{and} \quad (b) {}_aP_w = \sum_i^n (a_i/A)(w_i/t_i)$$

where w_i and a_i are the White and Asian occupants of an areal unit, W and A are the White and Asian population in the entire study region and t_i is the total population within an areal unit, regardless of ethnic origin.

In this study, the areal units were defined as groups of people obviously seated 'together'. These units arguably comprise the most intimate interpersonal spaces in the cafeteria and are thus a vital realm of potential racial exposure and segregation (see Table 2 for descriptive data on the composition of social units). The entire study region was defined as the cafeteria as a whole.

Thirty-nine out of 45 observation intervals yielded data that were amenable to the computation of exposure indices. (We excluded intervals where there were fewer than 10 people in the cafeteria or insufficient numbers of Asian customers to make analysis meaningful.) As Table 3 records, observed *P* values measuring potential for Whites to interact with Asians ranged from 0.02 to 0.39, with a mean of 0.08. Ninety per cent of such values were significantly lower than one would expect under conditions of random

¹Despite these indices being the most useful ones to describe segregation, they have limitations. Neither index captures the spatial facets of the segregation being described and both are sensitive to variations in the size of the areal units and the number of minority members that are present (see Sapp, 1987; Wong, 1993). Sapp (1987) demonstrates that by manipulating the size of the areal units, for example, one can also manipulate the overall expected *D* value. In particular, by utilizing smaller sections, the expected *D* value is higher. Because the sections in the cafeteria were imposed for coding purposes—albeit on existing screens and spaces that lend themselves to this type of demarcation—one should bear this in mind when interpreting the data. Also, one should bear in mind that both *D* and *P* values were originally applied to residential relations. However, they have been successfully applied to relations in other contexts (e.g. employment) and scales (Dixon & Durrheim, 2003; McCauley et al., 2001).

Table 2. Social units in the cafeteria over the 6-day observational period

	Week 1			Week 2			Overall
	Monday	Thursday	Friday	Monday	Thursday	Friday	
Total no.	114	124	71	310	227	108	954
Social units							
White only	58	60	29	187	160	80	574
Asian only	34	24	18	58	22	9	165
Black only	0	1	0	0	0	0	1
Integrated	22	39	24	65	45	19	214
Gender breakdown							
Female only	73	61	42	167	118	53	514
Male only	10	13	4	32	23	14	96
Males and females	31	50	25	111	86	41	344
Percent people in integrated groups	22	29	33	19	18	16	21

mixing across social units. The observed P values measuring Asians' potential interacting with Whites revealed a similar pattern. They ranged from 0.05 to 0.50, with a mean of 0.15. Again, over 90% of these values were significantly lower than the values one would expect if random mixing occurred. Overall, these results suggest that patterns of interethnic exposure in the cafeteria were not the result of chance variations and that systematic segregation at the level of social unit was extensive.

Evenness of distribution across sections of the cafeteria. Indices of dissimilarity, or D indices, measure segregation as a function of the evenness of distribution of members of different groups across sub-areas of a social space. The assumption here is that the more 'even' the distribution by race, the lower the level of segregation. Like measures of exposure, D yields values that can vary hypothetically between zero and one; however, in this case, a value of one represents a situation of complete segregation and a value of zero a situation of no segregation. The meaning of a given D value is perhaps easiest to understand in terms of displacement. For instance, an observed D value of 0.85 would suggest that 85% of the minority population in a given space would need to be relocated in order to make racial distribution across sub-areas even. The D index is expressed as the following formula:

$$D = 0.5 \times \sum_i |w_i/W - a_i/A|$$

where w_i and a_i are the White and Asian occupants of an areal unit (in this case sections A to F of the cafeteria) and W and A are the White and Asian population in the entire study region (in this case the entire cafeteria).

Indices of dissimilarity were calculated for 38 intervals, and the resulting values ranged from 0.20 to 0.88, with a mean of 0.53. For 64% of the intervals, the observed D value was significantly higher than the D value that one would expect under conditions of random mixing. These results suggest that patterns of distributive unevenness in the cafeteria were often not the result of chance factors and that, on average, a sizeable proportion of its population (>50%) would have to be relocated in order for the ideal of no segregation to be achieved.

Table 3. Segregation indices of dissimilarity (D) and exposure (P) over six lunch time periods

Day	Time	Whites	Asians	wP_a	aP_w	D
1	11:30	18	3	0.03	0.17	0.83*
	11:45	8	8	0.06*	0.06*	0.63*
	12:00	13	7	0.05*	0.10*	0.29*
	12:15	24	13	0.08*	0.14*	0.67*
	12:30	23	16	0.07*	0.10*	0.57*
	12:45	19	22	0.10*	0.08*	0.33
	1:00	16	20	0.12*	0.09*	0.45*
2	1:15	19	7	0.04*	0.10*	0.86*
	1:30	23	9	0.03*	0.07*	0.31
	11:30	9	8	0.14*	0.16*	0.29
	11:45	44	17	0.05*	0.14*	0.29
	12:15	13	3	0.12*	0.50	0.77*
	12:30	12	5	0.10	0.23*	0.60
	12:45	11	8	0.11*	0.15*	0.36
3	1:00	15	15	0.08*	0.08*	0.20
	1:15	40	20	0.03*	0.06*	0.43*
	1:30	30	21	0.07*	0.10*	0.41*
	12:00	22	6	0.06*	0.22*	0.41
	12:15	32	11	0.07*	0.21*	0.33
	12:30	15	4	0.07*	0.25*	0.53
	12:45	13	12	0.18*	0.19*	0.53*
4	1:00	3	4	0.39	0.29	0.42
	1:15	3	10	0.17	0.05*	0.60
	1:30	25	15	0.07*	0.12*	0.52*
	11:30	51	24	0.05*	0.10*	0.61*
	11:45	69	20	0.05*	0.18*	0.50*
	12:00	88	29	0.03*	0.09*	0.55*
	12:45	61	24	0.02*	0.05*	0.71*
5	1:00	60	29	0.04*	0.08*	0.48*
	1:15	81	34	0.07*	0.17*	0.59*
	11:30	25	5	0.03*	0.13*	0.72*
	11:45	17	7	0.11*	0.27*	0.54
	12:00	40	19	0.06*	0.12*	0.46*
	12:15	52	9	0.02*	0.13*	0.40
	1:00	70	13	0.04*	0.21*	0.63*
6	1:30	108	32	0.04*	0.12*	0.48*
	12:15	22	8	0.04*	0.11*	0.88*
	12:30	24	10	0.05*	0.13*	0.73*
	12:45	36	9	0.03*	0.14*	0.56*
Average values				0.08	0.15	0.53

Note: The D index varies theoretically between 0 (complete integration) and 1 (complete segregation) and indicates distributive evenness. The P index varies theoretically between 0 (complete segregation) and 1 (complete integration) and indicates the potential for interethnic interaction.

Note: Both D and P may be linked to specific empirical circumstances. Therefore, in order to create a random sampling distribution a series of Monte Carlo simulations were conducted (for a more detailed discussion see Dixon & Durrheim, 2003; McCauley et al., 2001).

* $p < 0.05$.

Segregation as clustering

The D value is essentially an aspatial measure of segregation (cf. Wong, 1993). Although it measures the magnitude of segregation, as defined by distributive evenness, it does not clarify the spatial form it assumes in a given context. For this reason, it may mask important features of the structure and process of segregation. In the present research, as a result of making observations in the cafeteria, we came to hypothesize that clustering processes were particularly significant in maintaining boundaries between Whites and Asians.

Clustering can be defined as 'the extent to which areal units inhabited by minority members adjoin one another, or cluster, in space' (Massey & Denton, 1988, p. 293). As such, its measurement generally requires data about the physical distances between the geographic locations of members of racial categories. In the present study, such data could not be precisely and reliably determined, so an alternative analytic approach was employed. This explored the extent to which the frequency of occupancy of each section varied as function of ethnicity by applying a generalized linear model with a Poisson error structure and a log link function (see Aitkin, Anderson, Francis, & Hinde, 1990).

The results suggested that the ethnicity, section and the interaction between ethnicity and section were significantly different from the intercept-only model ($\chi^2 = 2022$, $df = 11$, $p < 0.001$). Specifically, relative to the number of Asians in section D, there were significantly fewer Asians in every other section. Furthermore, relative to the number of Asians in section D, there were significantly more Whites in sections A, B and C, and the only section where there were significantly fewer Whites was section D (see Table 4). Therefore, clarifying our analysis of distributive unevenness, the loglinear model suggests that Asian customers had a tendency to cluster in section D of the cafeteria; indeed, in this section they were often the numeric majority relative to Whites, despite being a numeric minority overall in the cafeteria. This pattern is illustrated qualitatively in Figure 2, which maps seating and standing arrangements in one of observation intervals. Note that of the 24 Asian customers in the room, over two thirds are sitting in section D.

Modelling integration at the level of social unit

In a final stage of analysis, exploring some factors that may predict levels of segregation in the cafeteria, a forward conditional binary logistic regression was conducted. The dependent variable was whether or not a social unit was integrated and the independent variables were gender composition of a unit (all female, all male and mixed), the number of Whites

Table 4. Log means estimate differences across section formembers of different ethnic groups

Section of cafeteria	Log mean estimate differences	
	Asians	Whites
A	-0.28*	1.45**
B	-0.91**	0.78**
C	-0.80**	0.18*
D	Base condition	-0.44**
E	-1.24**	-0.17
F	-0.86**	-0.13

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

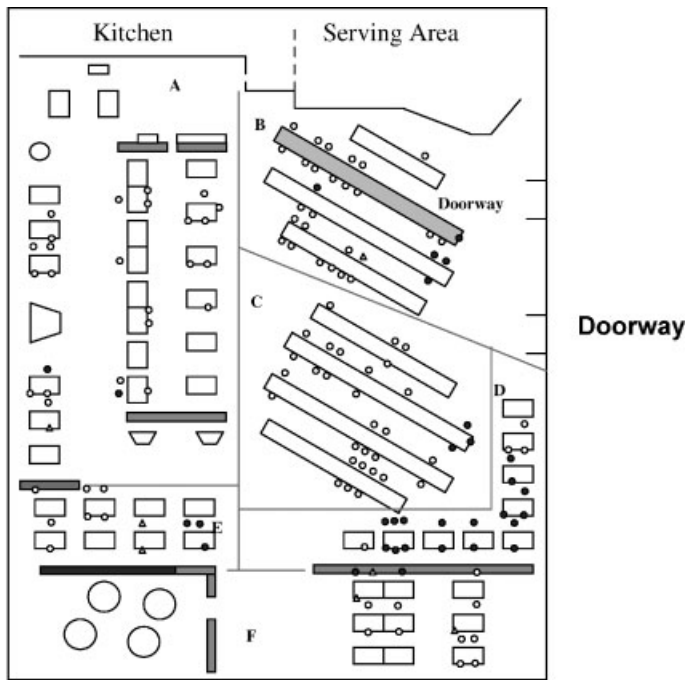


Figure 2. Asian and White seating at 12:45 p.m. on day 4—where black dots indicate Asians, colourless dots indicate Whites and triangles indicate people from other ethnic backgrounds.

in the cafeteria, the number of Asians in the cafeteria, and population density². We selected the latter variables because informal observation suggested that the occurrence of integrated social units was associated with the relative and absolute numbers of Asian and White customers in the cafeteria.

The overall regression model was significant ($\chi^2 = 29.77$, $df = 2$, $p < 0.001$). Of the variables in the model, however, only density and all female units significantly predicted the probability of a social unit being integrated; for density $\exp(B) = 0.50$, $p < 0.01$ and for all female social unit: $\exp(B) = 0.51$, $p < 0.01$. The model suggests that when there is more than 40 people in the cafeteria, then the probability of a social unit being integrated is halved relative to the probability when there is less than 40 people. Similarly, when a social unit is solely comprised of females, then it is virtually half as likely to be ethnically integrated as when a unit is comprised of males or a mixture of males and females³.

²The number of people in the cafeteria at any given time varied such that there were 41 different densities of people. In order to create the factor density, these densities were divided into three levels—where one third of densities were below 40 people (low), one third were between 40 and 75 people inclusive (medium) and one third were above 75 people (high). In order to assess the role density played in integration, the DV (percentage integrated groups) was logarithmically transformed as per Tabachnick and Fidell (2001) and an ANOVA was applied. Analysis indicated that medium and high density formed a homogeneous sub-set that differed significantly from low density. Therefore, density, for the purposes of modelling, was a two-level factor.

³Although only all-female social units played a role in predicting the level of integration, it is difficult to assess fully the role of all-male social units. These occurred relatively infrequently in the sample owing to the high female to male ratio.

DISCUSSION

Segregation at a macro-structural level remains a pervasive source of social differentiation and thus continues to generate an extensive research of literature (see Boal, 2000; Falah, 1996; Massey & Denton, 1993). This literature richly details how processes of racial and ethnic separation may permeate institutions of education and occupation and structure the residential design of cities. Comparatively little is known, however, about the role played by segregation processes unfolding within more intimate domains of social life, that is to say, within the ecology of 'everyday life spaces' such as restaurants, beaches, parks, public transport, shops, street corners, and nightclubs (Schnell & Yoav, 2001). We have suggested that this gap may limit researchers' capacity to understand fully the lived realities of contact and separation.

Accordingly, the present study investigated the micro-ecology of segregation in one type of everyday space, a cafeteria. The aim of the research was to explore how, if at all, processes of ethnic isolation manifest within the socio-spatial organization of seating and eating. When evaluating our results, one must bear in mind some limitations of external validity. Notably, the study focused on relations between Whites and Asians and thus simplifies the multi-ethnic nature of British society. Moreover, our cafeteria was located in a region of England where the recent history of 'race relations' has been troubled, which may well have affected the nature of local relations. Having acknowledged this, the study's findings have confirmed that micro-ecological processes shape everyday relations between groups and therefore warrant further research.

Multiple processes of segregation were found to operate in the cafeteria. To begin with, interethnic exposure at the level of social units—the spaces where customers chatted with friends or acquaintances whilst eating a meal—was consistently lower than one would expect under conditions of random mixing (see also McCauley et al., 2001). The majority of individuals sat in units comprised exclusively of members of their own ethnic group. In addition, White and Asian customers were often distributed 'disproportionately' across different sections of the cafeteria. Indeed, on most observational intervals, over 50% of customers would have had to be relocated in order to create the ideal of 'no segregation'. Finally, and closely related, the main spatial manifestation of this pattern took the form of a clustering formation (c.f. Massey & Denton, 1988). Specifically, as Figure 2 illustrates, Asian customers tended to converge on section D of the cafeteria, with White customers predominating in adjacent eating areas. In sum, although its clientele reflected the ethnic diversity of the wider university population, the cafeteria also emerged as a context characterized by multiple forms of segregation.

Follow up regression analysis suggested that levels of segregation were shaped by two factors, namely the gender composition of interactional groups and the population density of the cafeteria. All-female groups were found to be half as likely as all-male and mixed-gender groups to engage in interethnic interactions. This finding is consistent with previous research that has demonstrated that females tend to be more ethnically segregated than males and to engage in fewer interethnic interactions than males (see Sagar, Schofield, & Snyder, 1983; Schofield & Sagar, 1977; Singleton & Asher, 1977).

In addition, when cafeteria's population numbered more than 40, the likelihood of interacting in a multi-ethnic unit was halved. This is a counterintuitive finding. One might expect population density to be positively associated with the opportunity for casual interaction, so that as density increases so segregation decreases. Why does the reverse appear to hold true? One possibility is that this finding is a statistical artefact arising as a result of

a collinear relationship between density and number of 'Whites'. Because these variables were strongly correlated in the present study, it is possible that high density simply meant that more Whites and fewer Asians were present in the cafeteria, with a corresponding reduction in overall opportunity to form mixed units. An alternative, and psychologically more interesting, interpretation might argue that crowding creates a social context in which individuals' willingness to associate with members of other ethnic groups declines. This hypothesis was mooted in an early study by Davis, Seibert, and Breed (1966), who found that racial segregation on public transit vehicles actually increased as the number of passengers rose from low to medium levels of density⁴. Interpreting this pattern, they suggested that crowding on buses cued passengers' sense of racial threat, which in turn increased their tendency to separate.

The design of the present research does not allow us to offer definitive answers to such questions about the causes and subjective experiences of segregation. However, it may be useful to mention some of the potential social psychological implications of our analysis.

To begin with, we do not believe that the patterns of segregation in the cafeteria can be explained entirely by interpersonal factors. To be sure, it seems likely that segregation at the level of social units arises because of pre-existing patterns of friendship and acquaintance. At the same time, however, broader processes of boundary maintenance in the cafeteria are not easily explained by recourse to interpersonal factors alone. It seems unlikely that the spatial pattern modelled in Figure 2, for example, arose through a spontaneous expression of individual or interpersonal seating preferences. Rather, this pattern seems to require acknowledgement of the *sui generis* role of intergroup perceptions and practices in shaping the organization of social space.

By implication, there are at least two reasons why social psychologists should pay closer attention to the phenomena that we have investigated. First, our results confirm that presumed levels of contact may vary considerably from actual levels of contact (Maoz, 2002; Taylor et al., 1986). Even in settings that appear to be integrated, segregation may remain a powerful mechanism for regulating interaction between groups (see also Dixon & Durrheim, 1003; Schofield, 1986; Schofield & Sagar, 1977). The vast majority of social psychological research on contact has relied either on self-reports of contact or on laboratory simulations of interaction in everyday settings. If the problem of 'illusory contact' is to be explained, however, then the practices through which ethnic boundaries are maintained in everyday life spaces require closer scrutiny.

A second implication of our analysis concerns the potential psychological consequences of micro-ecological processes of segregation. In our view, such processes are significant not only because they shape the frequency or opportunity for contact. They also help to constitute the symbolic context in which intergroup relations are formed and expressed. Confirming this idea, some previous research has suggested even subtle variations in spatial arrangements may signify prejudice (Campbell, Kruskal, & Wallace, 1966; Sechrist & Stangor, 2001) or shape the contextual salience of social categories (e.g. Gaertner, Mann, Murrell, & Dovidio, 1989). Thus, a situation where ethnic boundaries are visibly inscribed within social space may also be a situation where social distance is accentuated.

In so far as the micro-ecology of segregation restricts the opportunity for face-to-face interaction and expresses social distance and division, it has applied implications as

⁴Note, however, that under conditions of high density segregation on buses declined. Davis et al. (1966) argued that this trend simply demonstrated that new passengers had a narrowing choice about where or with whom to sit when the bus became very crowded.

significant as segregation at a macro scale. If, as contact research suggests, direct interaction is a precondition of prejudice reduction, then it is insufficient to merely institute desegregation at a global level. To the contrary, interventions must be effective in transforming how people occupy, appropriate and use everyday spaces. In this way, further research on the micro-ecology of segregation may help to address the problem of 'parallel lives'.

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