

Collective Spatial Perceptions of Men and Women Commuters: Linking Space, Jobs and Activity

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ABSTRACT This paper attempts to explore an overlooked aspect of gender-based commuting by integrating women's and men's perceptions of labor markets (LMs) as a primary predictor of the commuting behavior of employees according to gender. Perceptions of labor markets (LMPs) are an innovative, exploratory term defining employees' preferences of "where to work" by using spatial symbols and has been found to vary across the genders. The data of a representative national sample of 723 Israeli employees indicated that women prefer to work in spaces they perceive as local, more proximate LMs while men favor positions in spaces perceived as more promising in terms of economic or professional advancement, or in segmented LMs, and that the LMPs of both men and women affect their commuting behaviors. The main contribution of this study has been in highlighting the influence on their commuting patterns of men's and women's dissimilar LMPs, which thus constitute a major factor underlying the disproportionate distribution of the genders in the labor force.

INTRODUCTION

A common claim of researchers of ecological and sociological aspects of labor markets (LMs) is that spatial configurations have a direct impact on the structures of these markets. They argue that the primary factors underlying this impact are the spatial distribution of employment opportunities (Hanson and Johnston, 1985; Hanson and Pratt, 1990; Hawley, 1968; Massey, 1979) and regional variations in demographic characteristics (Hart, 1990; Little and Triest, 2002; Rouwendal and Nijkamp, 2004). All tend to argue that "space matters for LM's outcomes" in (Fernandez and Su, 2004, p. 546). A complementary perspective, dealt with mainly in the social psychology and environmental psychology literature, has focused on the idea that employees' perceptions of spatial configurations are also critical factors in spatial behavior and in their decisions regarding their places of work (Rapoport, 1977; Zimring and Conroy-Dalton, 2003; Stedman, 2002). Some researchers in these fields also claim

that spatial distribution due to regional determinants (Guest and Cluett, 1976; Guest and Lee, 1984; Kasarda, 1974; Logan, 1978) and demographic characteristics (Kawase, 1999; Madden and White, 1980) are linked to spatial perceptions. If this is true, then it follows that the spatial perceptions of the LM also "matter" in LM outcomes. Yet, despite the claim of each discipline that the dynamics of spatial distributions are an integral part of LM outcomes, there is a relative lack of focus on the linkage between spatial perceptions, LMs and LM outcomes.

This paper seeks to contribute to the literature on the relationship between men's and women's spatial perceptions of LMs and how these perceptions affect LM outcomes. Exploring the impact of perceptions of LMs on men's and women's commuting patterns should therefore contribute to our understanding of how such perceptions affect several critical LM outcomes. Towards this end, we first review two distinct perspectives that focus on the relationship between space and perceptions of space, primarily by emphasizing the spatial boundary-activity model and the symbolic sense-of-place model. We then review the research in the area of commuting and gender. Finally, we propose our hypotheses and test them.

¹ Each category included some descriptions and examples specifying its meaning.

² The proportion of workers commuting by motorcycle or motorbike was negligible and this category was therefore excluded from the analyses.

SPACE AND PERCEPTIONS

Space is composed of a complex set of factors found in multifaceted, coexistent environments and is simultaneously created by and creates both social location and social identity (Massey, 1994); one of these factors is gender. Moreover, space shapes the gendering of work, and gender shapes the space of LMs (Hanson and Pratt, 1995). The relationships among space, gender and the LM are affected by spatial perceptions.

Spatial perceptions are conceived as collections of symbolic meanings within a spatial setting held by homogeneous groups (Proshansky, Fabian and Kaminoff, 1983). Central to the concept of spatial perceptions is the idea that individuals interact, compete and/or dispute spatial boundaries and, as a result, construct symbolic presentations and symbolic partitioning of space (Berry and Kasarda, 1977; Eldridge, 1998; Hawley, 1968, 1984; Lomnicki, 1988; Massey, 1979; Stamps, 1994).

LMs, on the other hand, can be viewed as sets of individuals, facilities and organizations, and the networks of association among them, all within specified activity spaces. The geographic boundaries of each set of associations, however, can be complex and difficult to describe and measure (Eldridge, 1998; Lomnicki, 1988; Stamps, 1994), and the boundaries by which a formal organization defines its LM are unlikely to coincide perfectly with the organization's actual activities. The act of delineating these boundaries and the distinctive spatial attributes associated with each LM is not likely to be a one-time changeless undertaking, but rather an ongoing process affecting various types and levels of labor behavior. While many of these processes have been described in the ecological and sociological literature concerning the spatial attributes of LMs, they have been less widely discussed in social perceptual models of LMs. To fill in this gap we will first review the literature that deals with space and behaviors in the context of LMs at the macro-level.

A. Spatial boundaries and LM activity

Tenable theoretical orientations regarding the macro-dynamics of LMs have been and continue to be generated by economists and sociologists. In the past, economists comprised the major

group of LM research pioneers that developed the supply-and-demand model (Dunlop, 1988), which was viewed as an ideal closed system manipulated by external forces. The concept of the segmented LM (Boyd, 1993; Doeringer and Piore, 1971), which viewed the LM as composed of several distinct labor groups – each related to the LM in a different way but all located within a specific, defined space – failed to incorporate into its market framework the subjective perceptions of space that determined labor behavior. Instead, LMs continued to be seen as distinct territories defined by demographic categories rather than by occupational characteristics.

The human capital approach proposed by Becker (1962, 1975) went one step further by opening up the possibility of viewing LMs as dynamic operations based on human capital inputs and business firm outputs (Fevre, 1992). This emphasis of the human capital approach on job selection led the way to the consideration of individual job choices that is, about movement within or across market boundaries, and thus provided the framework for the integration of sociological and economic models of LMs and labor behavior. This was taken up by sociologists through two basic social principles that help identify LMs: division of labor, which identifies the degree of specialization of employees' skills, and social hierarchy, which refers to the ranked evaluation of these specific skills.

In contrast to the theoretical models proposed by economists, these two principles have considerably broadened our understanding of the dynamics of "real" LMs, which could now be distinguished in terms of their quantitative and qualitative levels. More importantly, it allowed for ordinary people to perceive the LM in accordance with its meaning in their lives. And since the most salient parameter linked to the LM is occupation, most sociological research focused on this area. Occupation gradually became identified as a *territory* of the LM, eventually leading to the development of competing sociological theories of LM behavior. While still lacking clear boundary definitions, each theoretical LM evolving from this process contained some crucial element of "boundaries" in the research process of conceptualizing LMs. The development of these theoretical conceptions moved research another step closer toward integrating macro- and micro-perspectives of space and behavior within LMs.

B. Spatial attributes and LMs – the Sense-of-Place

Sense-of-place can be described as the visualization of delineated spaces based on human experiences, thoughts and social relations. The model of sense-of-place considers each space entity as the unique representation of each individual's cognitive space, acquired during spatial interaction between that individual and objective spatial attributes (Blades, 1991; Kitchin et al., 1997; Saegert and Winkel, 1990; Stokols, 1977; Timmermans, 1993). The foundation of theories of perceived spatial perspectives is contingent upon the link between perceptions of space and behavioral outcomes, and this link has an impact on theoretical bases in environmental psychology and human ecology (Hawley, 1968; as well as Rapoport, 1977; Stokols, 1977).

A basic assumption of these disciplines is that sense-of-place also has collective aspects (Rapoport, 1977; Saegert and Winkel, 1990), and that, as a rule, homogeneous groups share sets of spatial perceptions of a place. Numerous studies strengthen this by pointing out that delineated spaces, such as residential neighborhoods, urban business centers, industrial centers, or landscapes, are experienced and visualized differently by different populations, for example, by women (Ayalon et al., 1993; Coulton et al., 2001; Guest and Lee, 1984), and that similar visualizations of a space shape, or create, a collective sense-of-place (Rivlin, 1982; Stedman, 2002). Moreover, individually perceived demarcations that distinguish between spatial entities vary both between individuals and for different spatial entities; the spatial demarcations envisioned by each individual male and each individual female are unique, and each individual distinguishes between one spatial entity and another in his or her own way (Altman, 1987; Holding, 1992; Kent, 1990; Kitchin et al., 1997). This same perspective should be applied to LMs, which are, essentially, spatial entities.

Gender, Commuting and Space

For a large number of workers commuting is a typical component of labor behavior. It has long been viewed as the outcome of constraints insofar as spatial choices linked to job opportunities are

concerned (Hanson and Hanson, 1993; Hanson et al., 1997; Pas, 1984). However, its empirical reality has been confined mainly to the aggregate of macro-level variables associated with traditional LM constructs. The underlying assumption, at least theoretically, is that individuals exercise free choice in selecting jobs from a number of opportunities distributed within and across LMs (Logan, 1978; Massey, 1979; Massey and Eggers, 1990), and that making a job choice automatically entails making a LM choice. This composite macro-level focus has already been shown to be sensitive to gender, given that men and women's commuting patterns vary (Blumen, 1994; Kawase, 1999), that women, especially those with manifold household responsibilities, commute less than men (Hanson and Johnston, 1985; Hanson and Pratt, 1990; Madden and White, 1980), and that women's commuting distances tend to be shorter than those of men. Little data is available, however, on these "gendered commuting patterns" with respect to pre-commuting spatial perceptions that are likely to affect individuals' "to commute or not to commute" decisions (Zimring et al., 2003; Conroy-Dalton, 2003). The relationship between environmental-psychological and situational factors in predicting commuting choices, recently tested in a sample study of Australian university students, has proved that environmental factors and transportation networks affect commuting choices (Collins and Chambers, 2005). Incorporating the sense-of-place perspective into such a macro-level approach may be one way this gap can be narrowed. In this scenario, alternative decisions as to "where to work" are the result of subjective processes along with the spatial symbols associated with particular groups. Based on their symbolic link to the individual's work world, LMs are seen as socially endowed physical territories. The links between LMs and individuals' perceived physical boundaries therefore coalesce into market "identification tags" that act as reference points for labor-related behaviors. Not only do such "identification tags" delineate the LMs physically, they also identify them by symbolic boundaries. From this viewpoint, commuting decisions should be based on the reactions of individuals to the symbolic meanings of what they perceive as different LM attributes, and these shared perceived symbolic meanings then argue either for or against commuting to and from certain markets.

Labour Market Perceptions of Men and Women

Incorporating spatial boundaries and LM activity into sense-of-place models in the context of LMs led us to experiment with and develop a new concept, which we labeled LM perceptions (LMPs). LMP is an innovative concept in commuting research (Kariv, 1999; Kariv and Kirschenbaum, 2000), which will be methodologically introduced (in the section of *Variable definitions: The independent variables*). It is strongly inspired by human ecology theory (Hawley, 1968; Kasarda, 1974; Massey, 1979) and environmental-behavior models (Gould and White, 1974; Moore and Golledge, 1976). In essence it is based on the proposition that space, for example a LM, is perceived and socially interpreted in such a way as to have an impact on consequent spatial behavior, such as commuting. A schematic representation of our model for “gendered commuting behaviors” is presented in Figure 1.

This model led us to frame the two major research questions that guided our analysis. Our first research question is of an exploratory nature: Do men and women have different spatial perceptions of the LMs? While it is consensually accepted that homogenous groups share common perceptions of spaces and places, previous research has not investigated the association between spatial perceptions and spatial behavior in the framework of LMs; our objective is therefore to assess the actual effects of these perceptions on LMs. Our second research question, again exploratory, is: Do commuters’ LMPs along with traditional variables associated with commuting (transportation means, occupational and demographic characteristics and regional determinants) have dissimilar consequences on the commuting patterns of men and women? We believe that by illuminating this association, important insights can be gained into the relationship between individuals’ perceptions of LM attributes and their commuting patterns.

Gender

Independent variables intervening variable Dependent variable

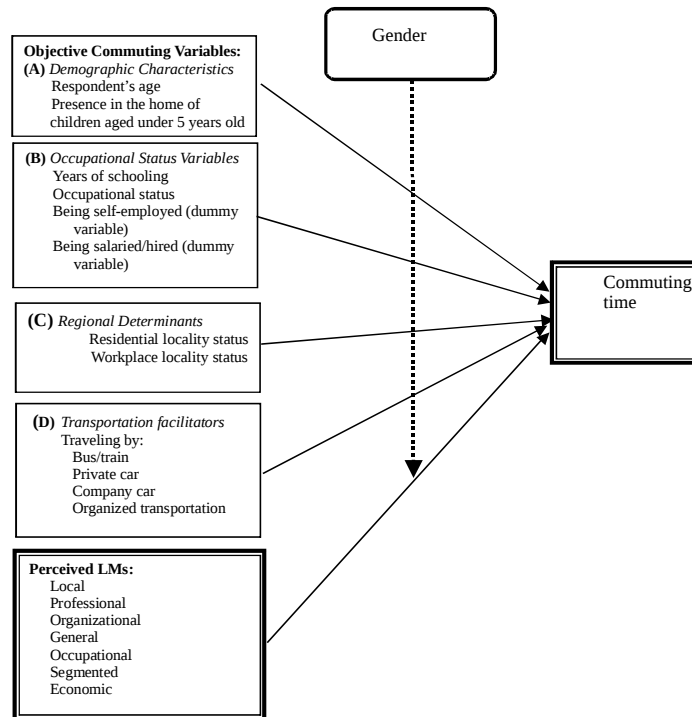


Fig. 1. A schematic model of LM perceptions and men's and women's commuting

METHODOLOGY

Data Source

The data collected and analyzed for this study were drawn from a national field survey representing a random sample of all Jewish Israeli households and was based on 750 personal interviews. Only respondents claiming to be part of the labor force were included in the final analysis; twenty-seven (27) respondents were omitted from the final analysis since they were students and retirees working part-time or per hour, thus unsuited to our specifications, leaving a total of 723 persons in the final sample.

Variable Definitions

Dependent Variable

Commuting time - Our questionnaire required respondents to estimate both their travel time to and from work and the distances involved. For the data analysis, we selected "commuting time" as our dependent variable, because this seemed both more likely to be correct and was more frequently provided by the respondents than were estimations of distance. This also corresponds to Hamilton's (1982) measures of commuting.

Independent variables

(a) *LM Perceptions (LMPs)* - The measurement of LMPs was structured through a set of closed, pre-coded questions, based on the cited definitions of LMs (see above, *Spatial boundaries and LM activity*). Respondents were asked to consider seven categories related to their choices about "where to work" and to prioritize each one separately by indicating if they considered it "the most important", "important", "somewhat important" and "the least important" in choosing a job. We presented the following question: "If you were not in the labor market and were interested in exploring job possibilities, which of the alternative markets would you look at?"¹ Decisions to select or to avoid potential jobs/workplaces reflect LM attributes relevant to the respondent; choices of potential jobs should serve as pertinent proxies of how respondents visualize LMs. The seven categories represented attributes

the respondent considered important in choosing a job: (a) potential reward for one's labor (income), reflecting an economic view of job choice (ECONOMIC); (b) working with people in the same or similar field and/or occupational status (OCCUPATIONAL); (c) working in the present place of employment (ORGANIZATIONAL); (d) social features of potential work colleagues, i.e., degree to which co-workers share the respondent's way of life, social status or other social attributes (SEGMENTED); (e) opportunity for utilizing formal training and/or professional skills (PROFESSIONAL); (f) proximity to residence and availability of means of transportation (LOCAL); and finally, (g) working anywhere in the labor market, with no preferences (GENERAL); this last category was essential, mainly for comparative reasons, in collecting information on respondents' spatial perceptions.

(b) *Demographic characteristics* - This category consisted of two sub-categories: the respondent's age and a dummy variable representing the presence in the home of children under the age of five, the latter in order to control for the effects of heavy household responsibilities.

(c) *Status Attainment Determinants* - Four variables were included in this category: (a) respondent's educational level, as defined by number of years of schooling; (b) a dummy variable representing being a hired worker; (c) a dummy variable representing being self-employed; and (d) occupational status. Respondents' total family incomes were not included in this category because of multi-co-linearity results with both educational levels and occupational status.

(d) *Regional Variables* - Two variables were constructed to represent the regional variables: location of residence and location of workplace. The delineation of these variables was based on the Israeli Central Bureau of Statistics (CBS) ranking of local councils and municipalities in Israel for the year 2001. Each location was ranked on the basis of average per-capita income, percentage of new motor vehicles, demographic variables, percentage of families with four or more children, dependency ratio, and median age. The category measures were from 1, representing the lowest rank of location, to 210, the highest rank.

(e) *Transportation Means* - Four dummy

variables of transportation facilitators are included:² (a) private car; (b) public transportation (bus, train); (c) vehicle provided by workplace for individual employee's use; and (d) company-organized collective transportation to and from the workplace.

SAMPLE PROFILE

Descriptive results revealed that the sample was almost evenly divided between men (49.1%) and women (50.9%). One quarter of the respondents (25%) had acquired a full academic degree, one-fifth (20%) had some academic credentials, and more than one-third (37%) possessed a high school diploma. Almost two-thirds of the respondents in the sample (64%) were married, with an average of 2 children, and most (67%) were native-born.

Commuting indicators revealed significant differences in men's and women's commuting times, as shown by a T-test analysis ($t = 31.18$; ($N = 710$), $p < .000$). Women were found to have somewhat longer commuting times (Mean = 24.59 minutes; S.D. = 22.49) than men (Mean = 24.19 minutes; S.D. = 19.16) even though women's commuting distances were shorter geographically (Mean = 12.73 km; S.D. = 18.14) than those of men (Mean = 15.76 km; S.D. = 19.92). This suggests that men and women use different transportation facilitators, work in more distant versus closer locations respectively, as per job accessibility, or travel at different peak or non-peak hours.

RESULTS

The first research question, which asked if men and women have different LMPs, was examined by a one-way Anova, with the seven categories of LMPs as dependent variables and gender as the independent variable. The results of the analysis (Table 1) show that certain LMPs are significantly differentiated by gender: local ($F(1,723) = 5.51$, $p < .01$), professional ($F(1,723) = 2.05$, $p < .01$), segmented ($F(1,723) = 5.91$, $p < .01$), and economic ($F(1,723) = 3.89$, $p < .05$). Subsequent descriptive statistics indicate the following: women relate to the local attributes of markets in responding to their choices as to "where to work" more than men (women: Mean = 3.12, S.D. = 1.09, $N = 357$; men: (Mean = 2.89, S.D. = 1.48, $N = 364$), men relate more to the professional attributes than

women (men: Mean = 3.11, S.D. = 1.73, $N = 364$; women: Mean = 2.94, S.D. = 1.53, $N = 359$); segmented (men: Mean = 2.83, S.D. = 1.93, $N = 364$; women: Mean = 2.52, S.D. = 1.45, $N = 359$); and economic (men: Mean = 3.69, S.D. = 1.24, $N = 364$; women: Mean = 3.53, S.D. = 1.01, $N = 359$).

Table 1: Perceived LMPs by gender – oneway anova analysis

Local	Mean	N
Women	2.85	359
Internal		
Men	2.90	364
Women	2.81	359
Professional		
Men	3.11	364
Women	2.94	359
General		
Men	2.40	364
Women	2.29	359
Segmented		
Men	2.83	364
Women	2.52	359
Economic		
Men	3.69	364
Women	3.53	359

** $p < 0.01$

* $p < 0.05$

Local $F(1,723) = 5.51$, $p < 0.01$ **; Occupational $F(1,723) = .52$, $p > 0.05$; Internal $F(1,723) = .31$, $p > 0.05$; Professional $F(1,723) = 2.05$, $p > 0.05$ *; General $F(1,723) = .77$, $p > 0.05$; Segmented $F(1,723) = 5.91$, $p < 0.01$ **;
Economic $F(1,723) = 3.89$, $p < 0.05$ *

These initial results provided the impetus to further explore how such perceptions would complement traditional commuter variables (macro-level variables) in explaining men's and women's commuting times. To test the second research question, commuting-related variables that derive from macro-level perspectives were introduced along with LMPs into a regression analysis using an "enter method", in which all of the dependent variables are entered at the same time and run against the selected independent variables; this is the default method. In this instance, commuting time was designated a dependent variable and was run against the following independent variables: the presence of children under the age of five at home; respondent's age; respondent's years of schooling; being a hired worker; being self-employed; respondent's occupational status; rank of respondent's residential locality; rank of respondent's workplace locality; transportation means; and the seven LMP variables (economic, occupational, organizational, segmented, professional, local and general).

The Role of LMPs on Commuting Time

Overall, the scores in Table 2 show that commuting time was significantly affected by the independent variables in both men's and women's equations. There was a stronger effect in the

women's equation, where the independent variables explained 25% of the total variance, compared with 11% in the men's equation. As expected, LMPs had a significant impact on men and women's commuting times, but in different ways. For men, occupational and segmented LM

Table 2: Combined regression analysis of commuting time (minutes) for objective and subjective variables by gender

Variables	B	b	t	P
<i>Men's Commuting Time – Objective Parameters (i.e. Traditional Explanatory Variables)</i>				
<i>Demographics:</i>				
Respondent's age	2.50	.02	.36	>.05
Presence in the home of children under 5 years of age	2.64	.04	.85	>.05
<i>Social Attainment Variables:</i>				
Respondent's years of schooling	.43	.04	.63	>.05
<i>Work status:</i>				
- salaried worker	-.41	-.01	-.13	>.05
- self-employed	-6.42	-.09	-1.36	>.05
Occupational status	2.38	.14	2.50	<.01*
<i>Transportation</i>				
Bus	10.28	.21	3.15	<.001**
Organized transportation	9.81	.17	2.70	<.005**
Private vehicle	.13	.00	.05	>.05
Company vehicle	5.01	.09	1.33	>.05
<i>Regional variables:</i>				
Residential locality status	1.79	.05	.78	>.05
Workplace locality status	-2.01	-.05	-.87	>.05
<i>Men's Commuting Time - Subjective Parameters (i.e. Perceived LM)</i>				
Local	.40	.03	.51	>.05
Occupational	1.06	.10	1.41	<.05*
Internal	-.70	-.08	-1.28	>.05
Professional	-.83	-.08	-1.18	>.05
General	-1.10	-.11	-1.69	<.05*
Segmented	1.29	.13	1.91	<.05*
Economic	-.51	-.03	-.54	>.05
<i>Women's Commuting Time - Objective Parameters (i.e. Traditional Explanatory Variables)</i>				
<i>Demographics:</i>				
Respondent's age	-6.94	-.04	-.74	>.05
Presence in the home of children aged under 5 years old	-4.53	-.08	-1.60	<.05*
<i>Social Attainment Variables:</i>				
Respondent's years of schooling	1.01	.07	1.32	>.05
<i>Work status:</i>				
- salaried worker	-2.27	-.03	-.50	>.05
- self-employed	3.14	.03	.45	>.05
Occupational status	.36	.02	.37	>.05
<i>Transportation:</i>				
Bus	19.66	.40	6.30	>.00**
Organized transportation	24.21	.24	4.48	>.00**
Private vehicle	6.57	.14	2.30	>.05*
Company vehicle	5.66	.03	.60	>.05
<i>Regional variables:</i>				
Residential locality status	14.42	.32	4.60	<.00**
Workplace locality status	-16.46	-.37	-5.48	<.00**
<i>Women's Commuting Time - Subjective Parameters (i.e. Perceived LM)</i>				
Local	-1.06	-.10	-1.41	<.05*
Occupational	-.12	-.10	-.16	>.05
Internal	.22	.02	.39	>.05
Professional	-.21	-.01	-.26	>.05
General	.35	.23	.54	>.05
Segmented	.52	.03	.61	>.05
Economic	-.41	-.02	-.36	>.05

Men's equation: $R = 0.334$; $R^2 = 0.111$; Adj $R^2 = 0.063$; $F(19, 364) = 2.29$; $p < 0.002$

Women's equation: $R = 0.499$; $R^2 = 0.249$; Adj $R^2 = 0.207$; $F(19, 359) = 5.90$; $p < 0.000$

attributes constitute important considerations in deciding “where to work” and significantly and positively affect their commuting time (longer travel time). So, too, did their perceptions of the LM in general terms, but here it significantly and negatively affected men’s commuting time. For women, the regression equation highlights the significance of location as negatively affecting women’s commuting time.

The Role of Macro-Level Parameters on Commuting Time

As expected, the traditional macro-level objective parameters associated with commuting appeared significant for both men and women. In the men’s equation, occupational status, traveling to work by bus and by organized transportation significantly and positively affected men’s commuting time.

When focusing specifically on women’s commuting patterns, the findings show that the presence in the home of children aged under the age of five had a significant and negative effect on women’s commuting times; in contrast, significant and positive effects on women’s commuting times were fostered by such transportation variables as availability of public transportation, organized transportation and private vehicle. Regional variables also contributed to the explanation of women’s commuting times: working in more highly ranked regions had a significant and positive effect on women’s commuting times, while residing in higher ranked regions had a significant and negative affect on women’s commuting times.

CONCLUSIONS

Studies of commuting patterns and spatial behavior are motivated not only by the desire to improve predictions of travel demand but also in order to gain a better understanding of the relationships between gender, space and behavior, specifically by discovering the factors underlying human spatial behaviors (Proshansky et al., 1983; Rapoport, 1977). LMs and gender-related labor behaviors provide an ideal and fertile ground for explorations of such relationships and offer the research potential for illuminating, and understanding, the factors leading to lesser or greater mobility vis-à-vis LMs. This study argues that by incorporating a perceptual concept, that of how people “visualize”

possible LMs, such an understanding can be enhanced.

Deciphering LM perceptions, an innovative concept conducted by asking respondents of both genders about how they choose “where to work,” allowed us to infer spatial perceptions. The statistical results of the first research question confirmed that men and women have dissimilar spatial perceptions of LMs and that they take different LM attributes into consideration in deciding where to work. While women focus on the location attributes of possible LMs, men emphasize the economic and professional attributes, as well as employment possibilities in a segmented LM, all of which are associated with occupational prestige and future career possibilities. These results are consistent with the LM picture derived from macro-level data of LM segmentation criteria which show disproportionate ratios of the genders as per distance and proximity of the LMs (Baunach and Barnes, 2003; Cohen and Huffman, 2003; Cubrigil and Miller, 1982; Hanson and Pratt, 1990; Hanson et al., 1994), and suggests the potential importance of men’s and women’s LMPs on the predictability of commuting behaviors.

The incentive to explore our second research question, that of the differences between men’s and women’s commuting patterns, evolved from the debate in the ecological, socio-psychology and environmental-psychology disciplines on the “conditions” that generate the relationships between spatial perceptions and spatial behavior. From the perspectives of these disciplines the key factors in understanding the “conditions” in which LMPs affect men’s and women’s commuting are embedded in the traditional macro-level explanations of commuting. The second research question combined macro-level variables that are traditionally related to gender-based commuting patterns and individuals’ LMPs. The results that emerged from the analyses indicated that women consider the attributes of their local LMs when seeking “where to work,” and thus tend to have shorter commuting times. Local LMPs also appeared as a significant variable in the analysis of the first research question, which differentiated between men’s and women’s LMPs in their considerations of “where to work”. Thus, women’s LMPs affect their spatial behavior, specifically by lessening their commuting time, probably because they

consciously opt for workplaces in LMs closer to their places of residence.

In the case of men, the commuting picture is different. Men's commuting time emerged as significantly and positively affected by market attributes visualized in terms of their occupational and segmented content and negatively affected by general market content. However, the identities of these influential perceptions differ from those that we initially found to be significant in men's LMPs in the first analysis (the first research question), namely economic, segmented and professional market attributes. Here, the results show that while men, like women, have specific spatial LMPs, these perceptions are only partially translated into spatial behavior, and this only in the case of the segmented LMPs. Since the premise that different spatial perceptions lead to different spatial behaviors is only partly established by these results, the need for exploration of the questions regarding the "conditions" under which spatial perceptions predict spatial behavior (Stedman, 2002) is strengthened. One such "condition" that emerged from our findings is gender: women's spatial LMPs are manifested in spatial behavior of commuting to a greater extent than those of men, while men's commuting behavior is affected by different LMPs than those that affect women's commuting behavior.

These results also provide insights that dispel the notion of an unequal power distribution among men and women in the LM, which is maintained by the LM spatial segregation and manifested through male dominant spatial status and female vulnerability (see for example, Bird and Sokolofski, 2005; Forsberg, 2001; Hanson and Pratt, 1995). The inclusion of LMPs into the commuting equation clearly shows that gender differences in visualizing LMPs are manifested in the genders' proximate behaviors, such as the use of times and distances of travel, rather than the argument that the "dominant" men encroach frequently on women's spaces while the "submissive" women are reluctant to "violate" men's personal spaces.

Turning to the macro-level variables, our results revealed that the use of public transportation positively affects men's and women's commuting time. According to the literature on commuting, both men and women employees who use public transportation and those employed in high-income/high-status occupations have longer work-trip times than

those who use a private car and/or those who work in low-income/low-status jobs (Hanson and Johnston, 1985; Cooke and Shumway, 1991; Preston et al., 1993; Wyly, 1999); conversely, according to empirical studies, women's commuting patterns are greater in distance in low-status positions than those of men or of women in high-status positions (Johnston-Anumonwo, 1997, Madden and Chiu, 1990). In partial accordance with these earlier findings our results indicated that while occupational status affected men's commuting time, it had no significant impact on that of women. These results were obtained while controlling for the regional determinants of residential and workplace locations. However, regional determinants were shown to have a significant impact on commuting patterns. The incorporation of regional determinants indicated that the ranking (high/low status) of both residential and workplace locations significantly influenced only women's commuting time. Residence in higher ranked localities resulted in shorter commuting times for women, probably because they are employed in their local LMs, while women who reside in lower ranked localities had to make longer commutes, and often commuted to areas outside of their local LMs. These findings can be explained by the spatial mismatch in models illustrating women's greater vulnerability to job accessibility compared to men – perhaps to high-status or pronouncedly male jobs – especially in the case of women residing in the lower ranked localities. Gender patterns of spatial access are contingent on occupational status and income factors as well as other factors, as evidenced by the fact that low-status women commute greater distances than men or than high-status women (see for example, Johnston-Anumonwo, 1997; McLafferty and Preston, 1996). This indicates that housing differentiation (CSB, 2001), along with dependency on public transportation, makes it more difficult for women than for men to overcome the mismatch between job and home locations (Schwanen et al., 2004) leaving women from lower ranked residential localities little choice except to commute to more distant jobs (Fernandez and Su, 2004).

In conclusion, the study's results regarding the effects of LMP on men's and women's commuting behaviors are compatible, at least partially, with the distribution of the labor force. Women, especially mothers of small children, and women who reside in higher ranked

residential areas, regardless of their occupational status, are more likely to work in local LMs and to commute shorter times compared to men. Men, on the other hand, specifically those holding high-status occupations, make longer commutes, are less rooted to local LMs, and are more widely dispersed in occupational and male-dominated LMs, in accordance with the perceptions they hold based on their choices of "where to work".

These results are encouraging because they indicate that employees' commuting behavior is not determined only by macro-level forces, but also by what they perceive as important in the LMs. In other words, decisions to opt for or to avoid jobs are now more comprehensible: women in this research describe the attributes of local LMs as important in their choices of potential LMs and workplaces, and therefore usually opt for jobs in local markets – and shorter commutes – while men, who emphasize occupational and segmented LMs, make longer commutes, apparently in order to be employed in preferred occupations or within specific segmented LMs.

Overall, the main contribution of this study has been in highlighting the involvement of "gendered" LMPs as a latent but major factor underlying men and women's commuting behaviors.

IMPLICATIONS, LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

As a result of recent research, improved predictions of travel demand are being obtained as well as a better understanding of the relations between behavior and space. Awareness of men's and women's perceptions of the labor markets and how these perceptions play asymmetric roles in predicting commuting decisions can better contribute to our understanding of labor behavior in general and commuting behavior in particular. The results of the research presented here may improve predictions of commuting and travel demands, as well as the understanding of transportation planners, policy makers and organization managers on questions such as the spatial locations of jobs (peripheries/inner-cities), organization relocation, and improvement of transportation options and thus enable better job placements for more people.

The research presented here is innovative in

its application of environmental-behavior and ecological perspectives to sociological and demographic inquiries. Future research should be executed with the focus on inter- and intra-actions between macro- and micro-effects, for example: How do LMPs affect the commuting patterns of working mothers of small children compared to working women as a whole? How do LMPs affect the commuting patterns of professionals compared to non-professionals, or of managers compared to non-managers? Do inward commuters have different LMPs compared with outward commuters?

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