
Perceived Neighborhood Environment and Walking among Japanese Adults

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Active Living Conference 2006
San Diego, USA
2006.16-18

Background

- Accumulation of evidences on environmental attributes for physical activity in USA, Australia and Europe
- Studies in limited variations of environments are likely to underestimate associations between environments and physical activity.
- Evidence from a variety of countries is more conducive to understanding the determinants of physical activity



Nakano, Tokyo
 Area: 15.59 km²
 Population: 308,604
 Population density: 19,795 / km²



Objective

- To examine the hypothesis that perceived environmental factors related to walking in Western countries can be applied to Japanese conditions.

Method 1

- **Subjects**
 - A convenient sample of 497 Japanese aged from 20 to 74 years old
- **Study Design**
 - Cross-sectional study
- **Data Collection**
 - Between October 2003 and December 2003
- **Measurements**
 - Dependent variable: Walking time
 - IPAQ (International Physical Activity Questionnaire), short version, self-administered
 - Independent variable: Perceived environments
 - IPAQ Environmental Module, self-administered

Methods

- **Statistical Analysis**
 - Logistic regression analysis
 - All models were adjusted for age, sex and education level
 - Response categories of the environmental questions were converted into dichotomous variables.
 - Walking time was also converted into dichotomous variables:
 - Active: walk 150 minutes a week or more
 - Non-active: walk less than 150 minutes a week

IPAQ Environmental Module

Core Item (7)

- Type of residence
(Residential density)
- Access to destinations
- Access to public transport
- Availability of sidewalks
- Availability of bike lanes
- Access to recreational facilities
- Neighborhood safety from crime at night

Recommended Item (4)

- Neighborhood safety from traffic
- Neighborhood aesthetics
- Social environment
- Household motor vehicles

• Optional Items (6)

- Street Connectivity
- Quality of sidewalks
- Quality of bike lanes
- Neighborhood safety for bicycling
- Neighborhood safety from crime during the day
- Destinations and mixed land use

Example: Access to Destinations

- Many shops, stores, markets or other places to buy things I need are within walking distance of my home. Would you say that you...
 - Strongly disagree
 - Somewhat disagree
 - Somewhat agree
 - Strongly agree

Translation into Japanese

Translation of original English into Japanese



Review of translation by a group of researchers



Back-translation into English



Approval of IPAQ Committee

Reliability of the Japanese Version

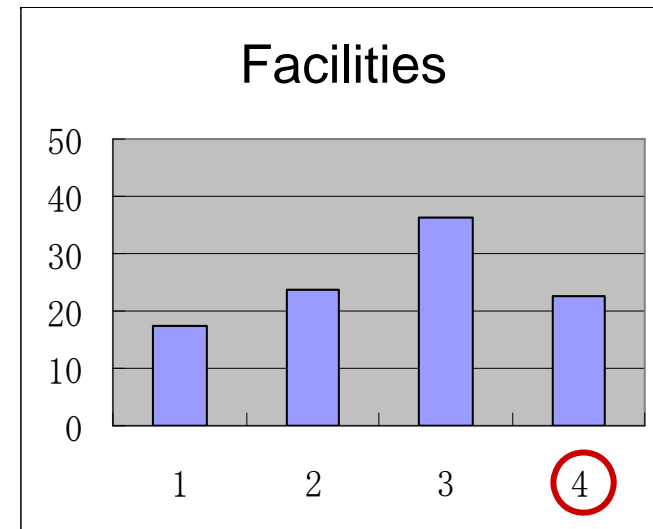
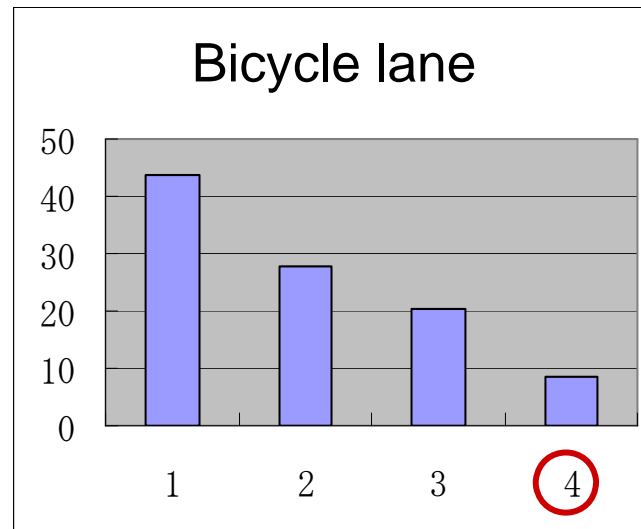
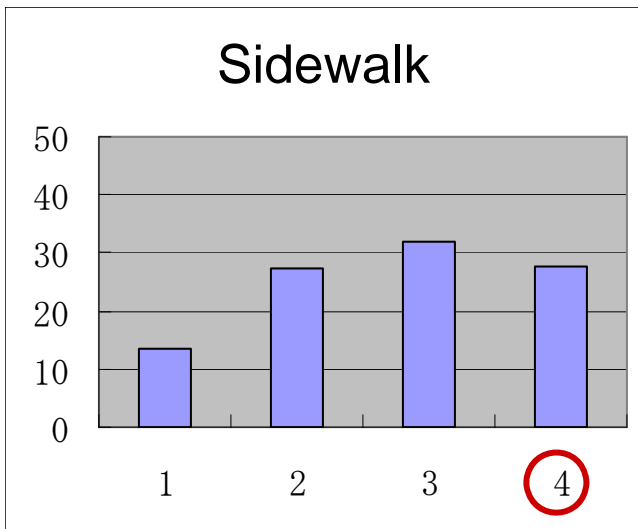
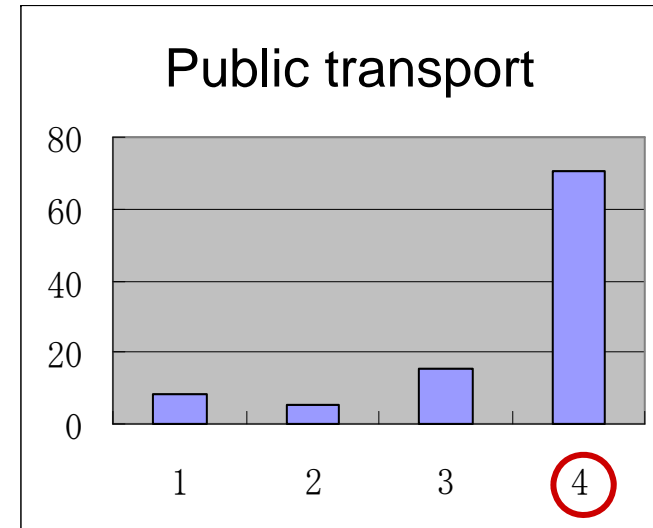
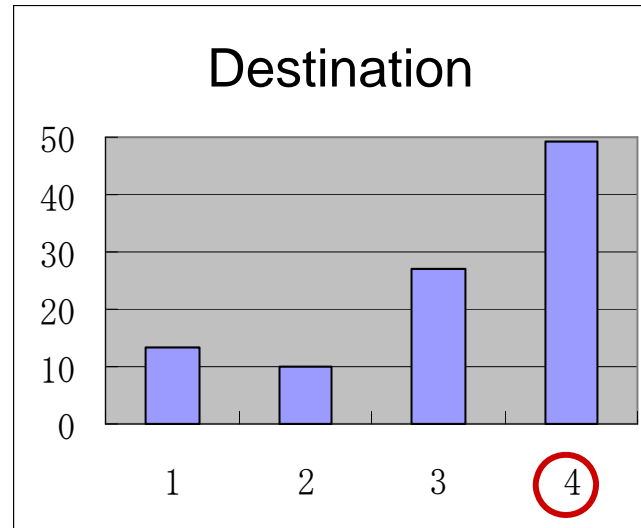
	test-retest reliability	p
Type of residence (residential density)	0.986	<0.001
Access to destinations	0.900	<0.001
Access to public transport	0.920	<0.001
Availability of sidewalks	0.796	<0.001
Availability of bicycle lanes	0.852	<0.001
Access to recreational facilities	0.851	<0.001
Neighborhood safety from crime at night	0.863	<0.001
Neighborhood safety from traffic	0.794	<0.001
Neighborhood aesthetics	0.845	<0.001
Social environment	0.855	<0.001
Household motor vehicles	0.962	<0.001

Characteristics of Subjects

	number	proportions of the categories (%)
Sex		
male	305	61.4
female	192	38.6
Age (years old)		
<= 39	255	51.3
40 - 59	183	36.8
60+	59	11.9
BMI (kg/m ²)		
<25.0	405	81.7
25.0 - 29.9	80	16.1
30.0+	11	2.2
Education (years)		
<= 12	127	25.9
13+	364	74.1
walking time (min/week)		
<150	281	57.0
150+	212	43.0

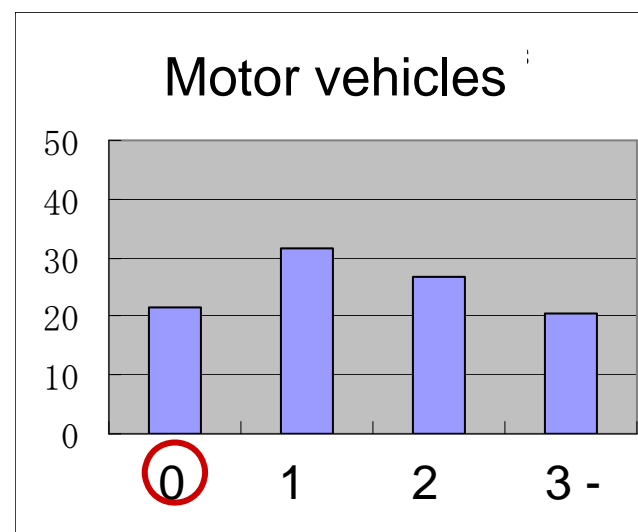
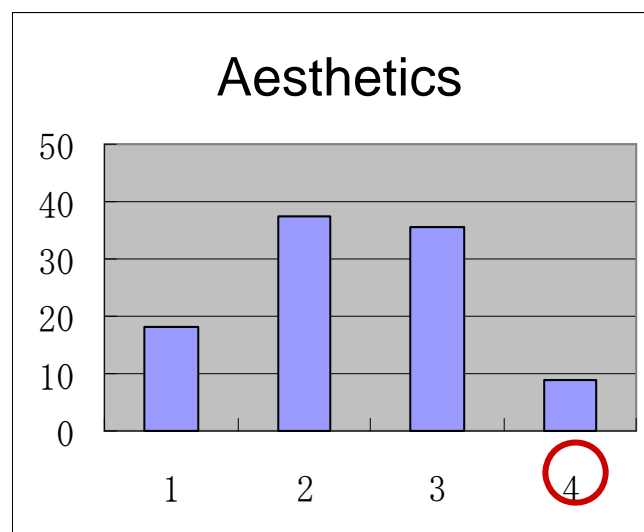
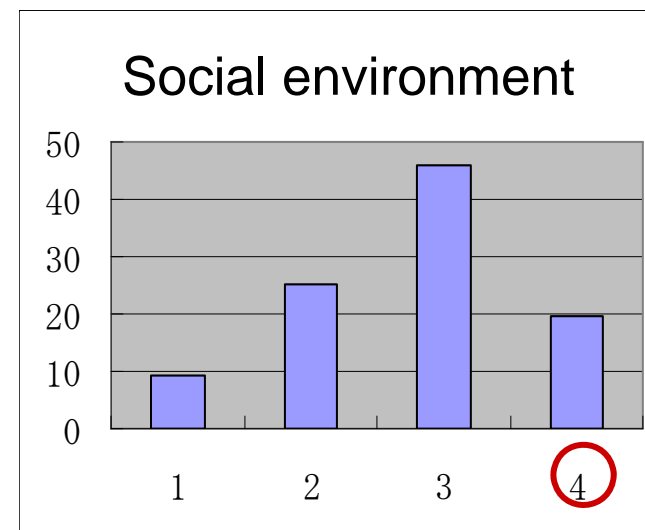
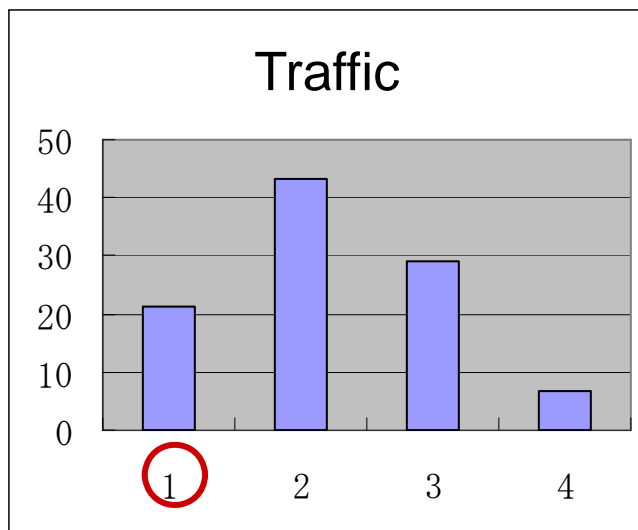
* sample sizes vary because of missing values

Distribution of responses for each item



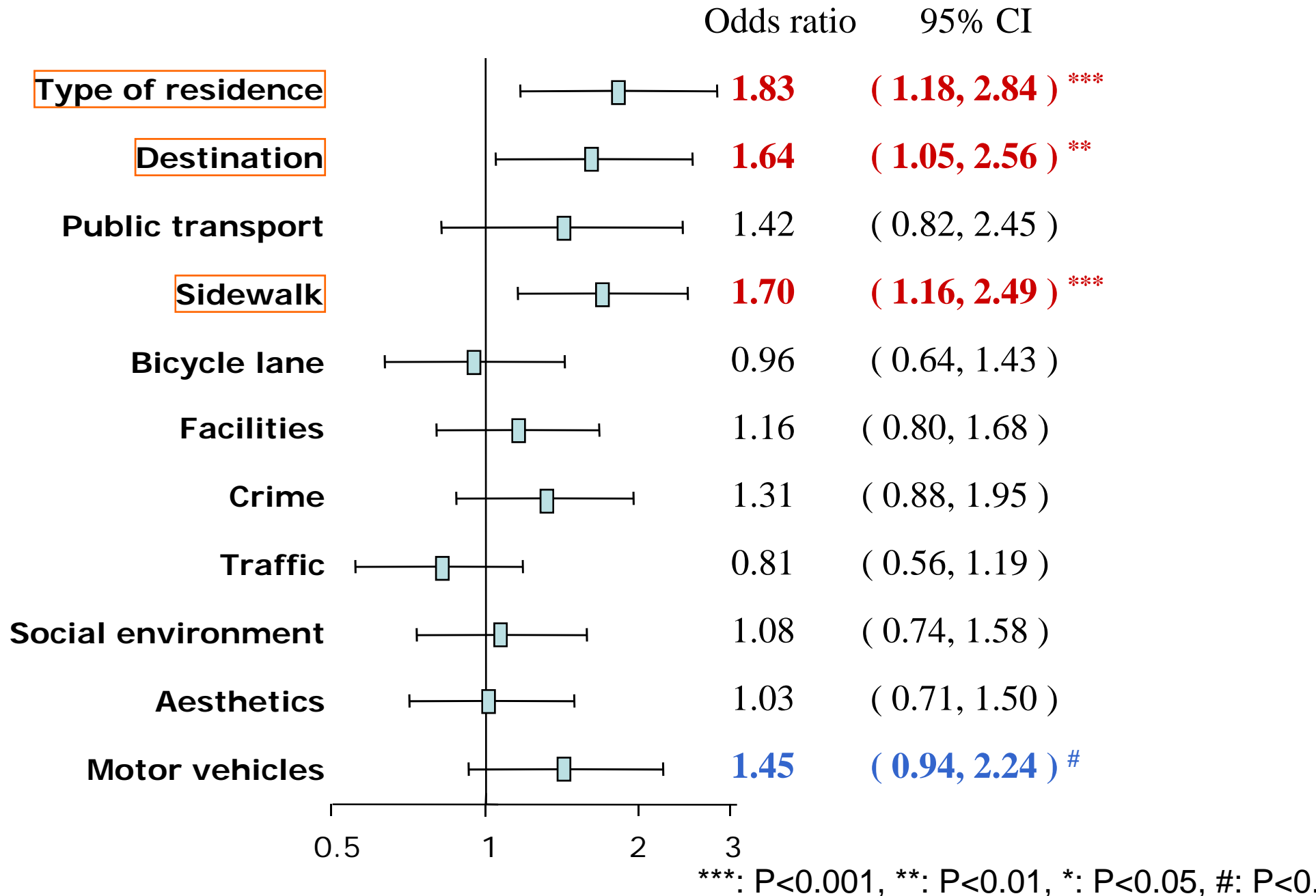
○ : Categories hypothesized to be associated with long walking time

Distribution of responses for each item



○ : Categories hypothesized to be associated with long walking time

The odds ratios and 95% confidential interval of walking 150 minutes or more per week depending on environments



Discussion

- Evidence from different culture
 - Three of eleven environments (type of residence, access to destinations, availability of sidewalk) were associated with walking.
 - These results support the previous evidences on the association of environment with walking in Western countries.
- Limitation
 - Cross-sectional design
 - Perceived scale
 - Convenient sample
- Future direction
 - Need to study in wide range of environments

Conclusion

- Three environmental factors
 - type of residence
 - access to destinations
 - availability of sidewalk

were associated with 150 minutes walking among Japanese adults