

Contributions of neighborhood street scale elements to physical activity in Mexican school children

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Acknowledgements

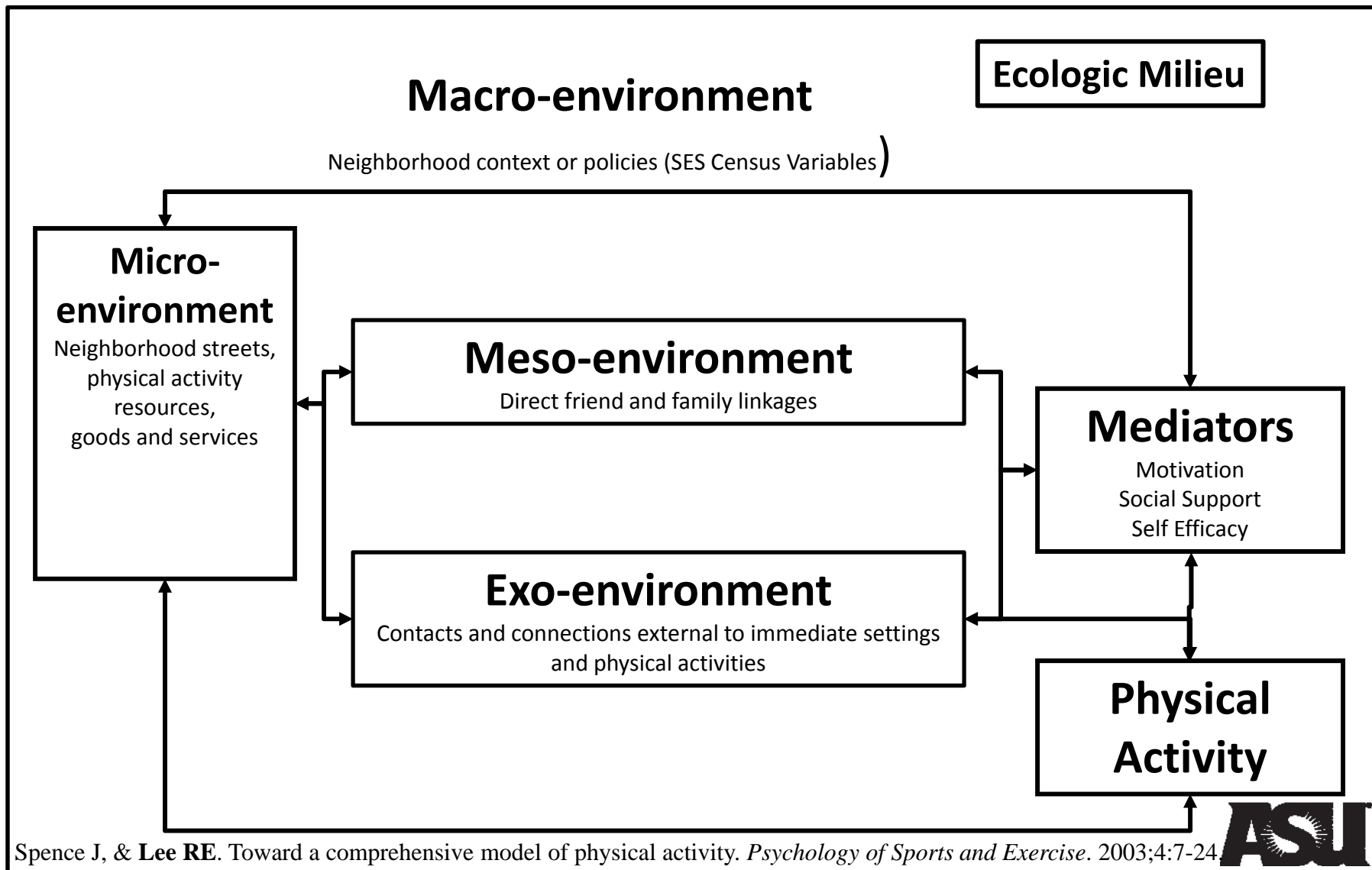
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Purpose

- Investigate relationship of walkability and street-scale elements to physical activity in Mexican children
 - we expected that neighborhood safety and walkability would be associated with outdoor play, and access to recreation facilities would be associated with participation in sports and other organized physical activities.

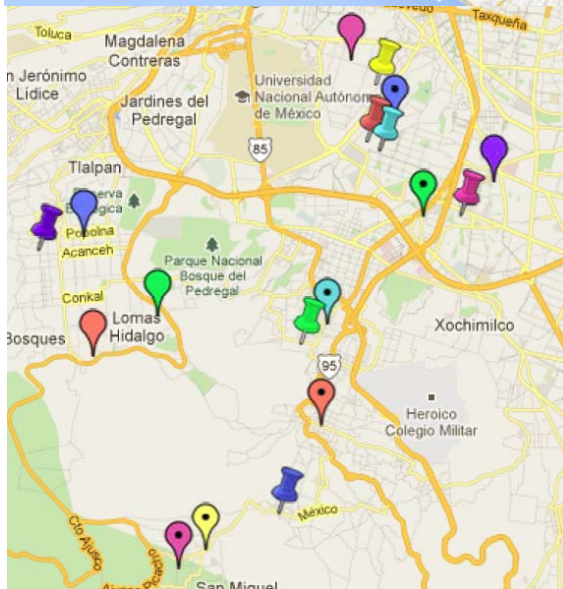
Ecologic Model of Physical Activity





Cross sectional design.
Puerto Vallarta,
Guadalajara, and
Mexico City.

Individual children and
neighborhood
surrounding schools.

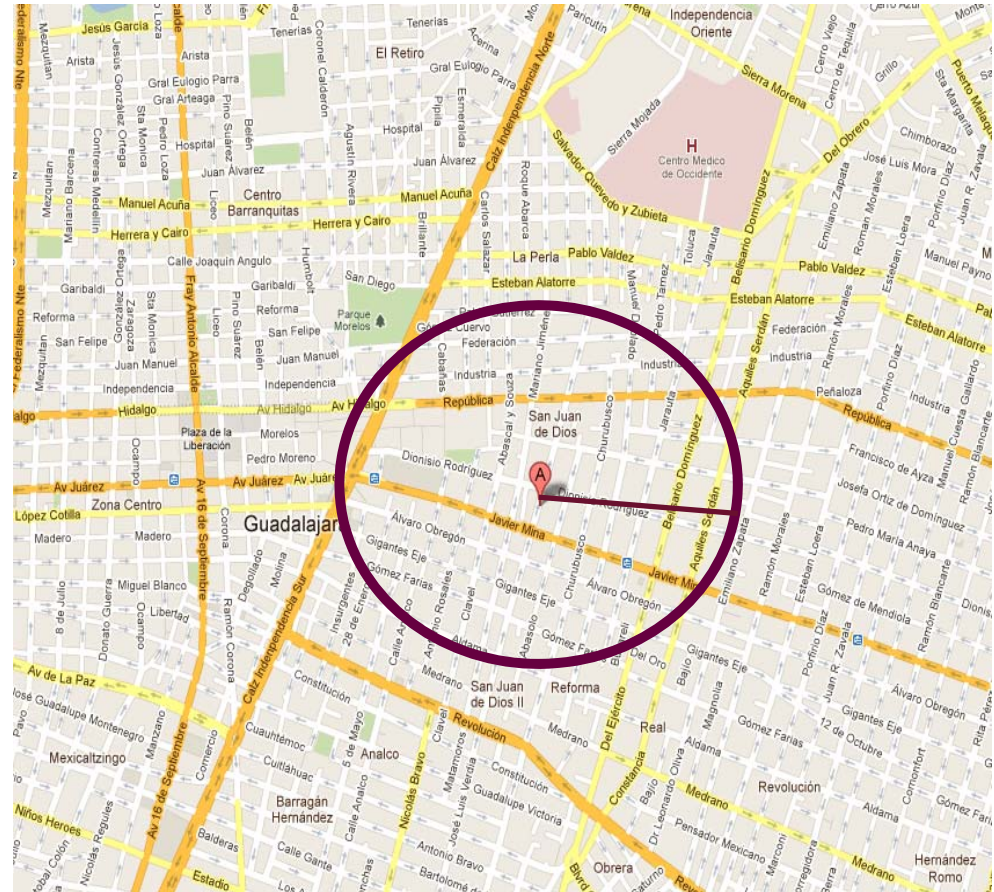


32 public schools

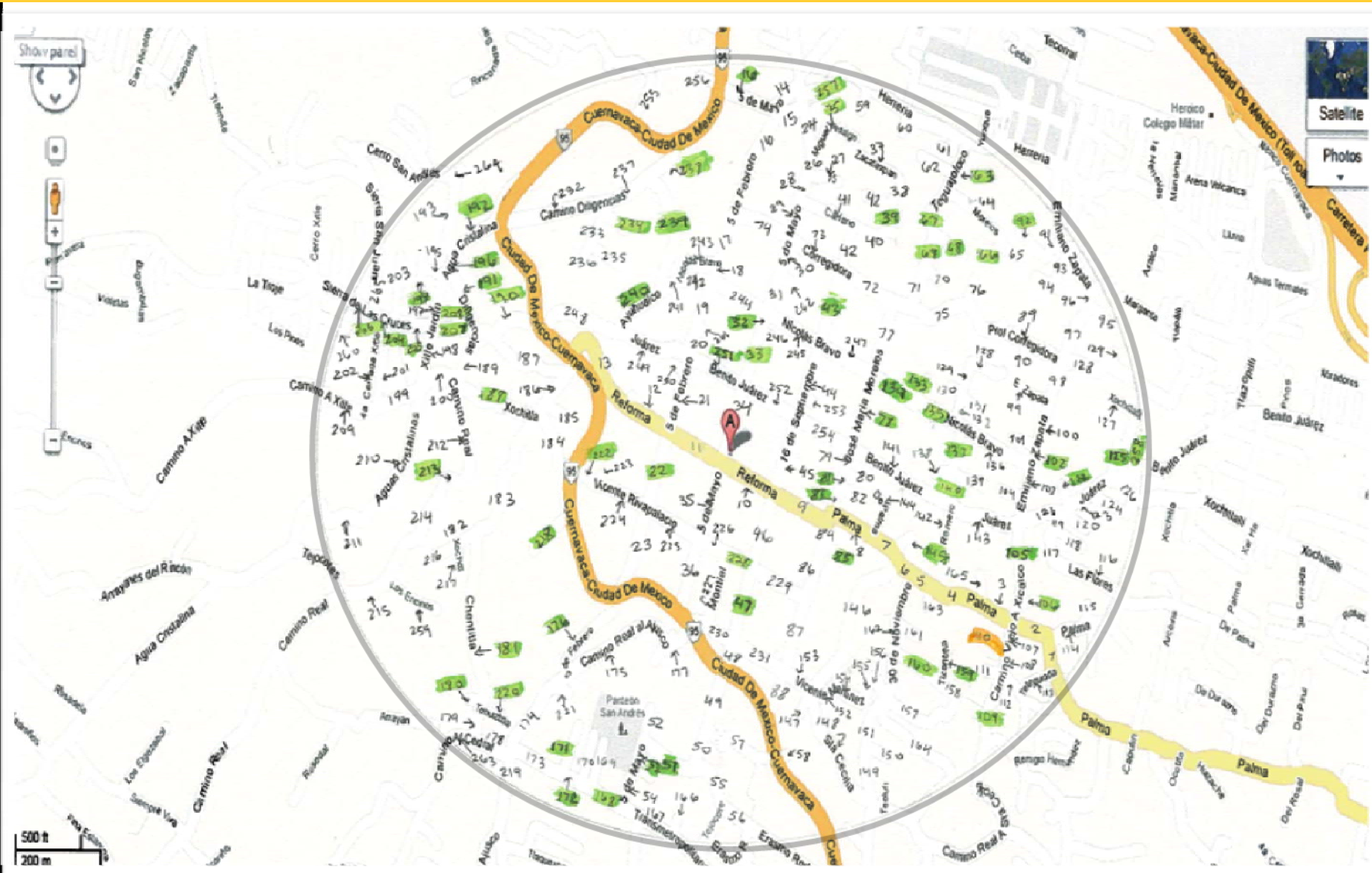
- Guadalajara ($n = 11$)
- Puerto Vallarta ($n = 7$)
- Mexico City ($n = 14$)

Defining Neighborhoods *Definir Vecindarios*

- Radial buffer
búfer radial
- All arterial streets
Todas las calles arteriales
- 25% of residential streets
25% de calles residenciales
- Street segments
Segmentos de calle



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Individual Measures

- 1,509 Mexican school children
 - 3rd, 4th, and 5th grade
 - Ambulatory & Healthy
- School Physical Activity and Nutrition (SPAN) survey
 - Demographics, nutrition, physical activity, food behaviors



Neighborhood Measures

- Pedestrian Environment Data Scan (PEDS)
 - Pedestrian facilities (sidewalks, path obstructions, path condition, pedestrian amenities, and pedestrian traffic buffers)
 - Street attributes (posted speed limits, traffic control devices, traffic volume, and number of traffic lanes)
 - Number of land uses in the segment, including presence of recreation facilities
 - Street cleanliness (absence of litter, graffiti and poor building maintenance)

Neighborhood Measures

- Neighborhood SES—Urban Poverty Index
 - National Council of Population
 - Educational attainment, household income, household size, and population density
- Walkability
 - Land use density (3-category land use entropy score, adapted from Frank et al; PEDS)
 - Connectivity (Number of intersections per kilometer squared, Federal Electoral Institute)
 - Residential Density (number of households per kilometer squared, National Institute of Geography and Statistic of Mexico)

Analyses

- Variables analyzed descriptively by frequency or mean
- Two-phase modeling analysis
 - Preliminary covariate-adjusted, single-environmental variable, multi-level logistic regression models explored associations between neighborhood-level variables, and physical activity outcomes
 - Adjusted for city, socio-economic status, and individual demographic covariates
 - Full models included all environmental variables and interactions associated with a $p < 0.20$ in the covariate-adjusted single-environmental models for each of the two physical activity outcomes
- Separate models were run for full sample and subsample adjusted for individual income

Sample Demographics

	Mean or <i>n</i>	IC95% or %
Age (years)	9.63	9.57, 9.68
Female	695	52.6
< \$5,000.00	386	50
\$5,000.00 - \$9,999.99	255	33
\$10,000.00 or more	131	17
# Children in the house	2.5	2.41, 2.54
Outdoor play	1001	75.8
Sports participation	575	47.4
Organized activities	523	40.9

Neighborhood Characteristics

- Less than 1/3 met “highly walkable” definitions for high income countries
- Poor or fair cleanliness ratings in 75%
- 20% access to recreational facilities
- 55% of neighborhoods rated very low to low SES (high poverty)

Results – Outdoor play

- Preliminary models showed walkability score, path condition, path obstructions, amenities, and recreation facilities, were associated with outdoor play
- In the final full models... having street segments with fewer path obstructions, greater pedestrian amenities and *lower* walkability was associated with more outdoor play
- Having low traffic volume roads associated with outdoor play outdoor for boys
- Similar relationships in full sample

Results – Sports and Organized Physical Activities

- Preliminary models showed walkability, sidewalk availability, sidewalk buffer, path obstructions, traffic control devices, cleanliness, number of traffic lanes, and amenities were associated with participation in sports or other organized physical activities
- Full sample walkability score negatively associated with participation
- More pedestrian amenities, more street cleanliness was associated with less participation
- More path obstruction was associated with greater participation
- No gender or income differences

Discussion





Gracias!