

Review of: "The Moderating Effects of Urban Design on Willingness to Walk in a Tropical City"

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Potential competing interests: No potential competing interests to declare.

1. Introduction and Relevance

The article addresses an important public health issue: encouraging walking in tropical cities, where physiological stressors such as high heat and humidity often deter outdoor physical activity. Zacharias frames the study by recognizing the increasing global issue of sedentariness and the critical need for strategies to promote daily walking. The author situates the research within the context of Singapore, which experiences high obesity rates and has made considerable urban planning efforts to combat physical inactivity.

The paper highlights the need for better urban design in tropical climates to encourage walking and, ultimately, healthier lifestyles. This research is particularly relevant for urban planners, public health professionals, and city authorities, especially in regions with challenging climates.

2. Research Aim and Hypotheses

The research aims to reveal the extent to which urban design can mitigate the discomfort of walking in a tropical environment. Zacharias hypothesizes that certain environmental design features, such as walkway width, shade, building façades, and vegetation, could improve willingness to walk (WTW) despite tropical conditions.

The three hypotheses presented are clear and relevant:

Selected environmental factors significantly influence pedestrians' experience.

Grouped evaluations of environmental factors will vary across different urban segments.

Environmental factors will play a role in prolonging the willingness to walk.

These hypotheses are logical and based on prior literature regarding walkability and pedestrian behavior in urban spaces.

3. Methodology

Zacharias uses a quasi-experimental design, involving a field study in the busy Orchard Road area of Singapore.

Participants walked a predetermined route and provided feedback on environmental conditions and their willingness to continue walking. The methodology of having participants respond to real-time environmental stimuli is a strength, as it allows for more dynamic insights compared to static imagery or laboratory simulations.

Key aspects of the methodology include:

Participants: A broad range of participants (n=101) were recruited via social media, with demographic representation that

included gender, age, and familiarity with the area.

Site Selection: The study took place in a well-trafficked, iconic area of Singapore, where urban design is varied and can be evaluated across multiple dimensions.

Assessment: Participants rated 10 environmental factors on a 7-point scale and indicated their willingness to walk after each segment of the route. This real-time data collection helps capture participants' immediate perceptions, improving the study's ecological validity.

While the sample size is reasonable for the study's aims, it is somewhat limited in scope. A wider range of urban environments and more diverse sample sets could increase the generalizability of the results. Additionally, the fact that participants could stop at any time introduces an element of subjectivity and self-selection, which may have skewed some of the walking distance outcomes.

4. Results

The results show that urban design features significantly impact WTW, with factors such as walkway width, building façades, pedestrian flow, and vegetation having a positive relationship with participants' willingness to continue walking. Interestingly, measured temperature and humidity were not as significant as perceived comfort, suggesting that the design of the environment can outweigh the discomfort of tropical climates.

The findings about restoration episodes, where participants regained their willingness to walk at certain points along the route, are particularly compelling. These "restorative" urban spaces offer insight into how strategic urban design can break up the perceived discomfort and motivate continued walking. This highlights the importance of designing spaces that provide relief and interest along the way, rather than focusing solely on thermal mitigation strategies.

5. Discussion and Implications

Zacharias effectively situates the findings within broader research on urban design and walkability, drawing on existing literature to support his conclusions. The study's key takeaway is that urban design, even in harsh climates, can significantly encourage walking behavior. This is highly relevant for tropical cities where walking may be seen as impractical or uncomfortable.

The comparison of walking distances in outdoor versus air-conditioned environments is another strong point. The near-identical walking distances recorded in both environments challenge the assumption that climate is the primary deterrent to walking, suggesting that urban design interventions can compensate for climate-related discomfort.

6. Limitations

The study has several limitations:

Single Site Focus: The research focuses only on Orchard Road in Singapore, limiting its generalizability. More studies across different types of tropical cities and environments are needed to confirm the findings.

Limited Variables: Although 10 environmental factors were analyzed, the study could have incorporated additional variables such as air quality, perceived safety, or socio-cultural factors, which also impact walking behavior.

Subjectivity of Responses: The use of self-reported comfort and willingness to walk introduces a level of subjectivity that

could have been supplemented with physiological measurements (e.g., heart rate or temperature) to more objectively gauge the effects of climate and urban design.

7. Conclusion and Contributions

The article provides valuable insights into how urban design can moderate the physiological discomforts of walking in tropical environments. Zacharias's research contributes to the field of urban planning by showing that environmental features like vegetation, shade, and pedestrian-friendly design elements can foster more walkable cities, even in less-than-ideal climates.

For urban planners, this research offers practical guidance on how to enhance pedestrian comfort and promote walkability through thoughtful design. For public health policymakers, the study reinforces the importance of walkable environments as part of strategies to reduce obesity and sedentary behavior.

Overall, this paper offers a solid contribution to urban design and public health fields, though future studies could benefit from expanding the research scope and incorporating more objective measures to complement the self-reported data.

Final Rating: 8.5/10

The research is well-executed, with a clear focus and valuable insights. The article could improve in terms of generalizability and breadth, but it presents actionable findings that can influence urban planning in tropical cities.