



Motivated to walk but nowhere to walk to: Differential effect of a mass media campaign by mix of local destinations

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ABSTRACT

Objective. Built environment attributes are associated with walking but little is known about how the impact of walking campaigns varies across different environments. The objective of this study was to compare the impact of a campaign on changes in walking between respondents with a high versus low mix of local destinations.

Methods. Pre- and post-campaign data from a quasi-experimental study were used to compare changes in walking for residents aged 40–65 with high and low destination mix in a West Virginia community campaign (March–May 2005).

Results. Overall samples consisted of 777 intervention community respondents and 388 comparison community respondents with pre- and post-campaign data. Among insufficiently active intervention respondents, those with high destination mix increased their walking by 0.64 days more than those with low mix ($p < 0.05$). No significant differences were observed among the comparison community.

Conclusion. The walking response to campaigns in those insufficiently active may be influenced by neighborhood attributes.

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Introduction

The importance of promoting regular moderate-intensity physical activity, particularly walking, to reduce chronic disease risk is well established (Bauman, 2004; Lee et al., 2012; World Health Organization, 2004). Mass-media communications are used as part of community interventions to increase physical activity in the US, UK, Canada and Australia (Cavill and Bauman, 2004). Walking is associated with access to a variety of neighborhood destinations (Duncan et al., 2005; McCormack et al., 2004; Owen et al., 2004),

however, little is known about how the impact of mass-media walking-focused campaigns might vary by mix of local destinations. This study aimed to compare the impact of a campaign on changes in walking between respondents with high and low mixes of local destinations. It was hypothesized that larger campaign effects would be observed among respondents with higher perceived local destination mix.

Intervention

WV Walks was a mass-media led community intervention which targeted insufficiently active adults (aged 40–65 years) to increase their walking (both transport and recreational) in north-central West Virginia (WV) (Reger-Nash et al., 2008). The intervention comprised four phases: initial, participatory planning followed by an intensive eight-week community campaign including 30-second long commercials delivering gross rating points of 3016 on network television and 1859 on cable television, 60-second long radio advertisements (gross ratings points = 1876), print advertisements in the

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Table 1
Mean baseline days walked, change in days walked and change in days walked among those insufficiently walking at baseline by high and low destination mix. Intervention and comparison community respondents living in West Virginia were surveyed one month before and month after the WV Walks campaign (March–May 2005).

	Baseline days walked		Change in days walked		Change in days walked among those insufficiently walking at baseline	
	Intervention community (North-Central West Virginia) n = 842 Mean (SD)	Comparison community (Cabell County) n = 404 Mean (SD)	Intervention community (North-Central West Virginia) n = 777 Mean (SD)	Comparison community (Cabell County) n = 388 Mean (SD)	Intervention community (North-Central West Virginia) n = 386 Mean (SD)	Comparison community (Cabell County) n = 220 Mean (SD)
<i>Destinations mix</i>						
High (scores 4–15)	4.16 (2.62)**	3.62 (2.69)	0.47 (2.56)	0.21 (2.47)	1.65 (2.81)*,**	0.94 (2.32)
Low (scores 0–3)	3.89 (2.69)	3.43 (2.65)	0.18 (2.47)	0.29 (2.81)	0.95 (2.48)	0.85 (3.09)

SD = standard deviation. Insufficiently walking defined as those walking < 150 min per week.

* p < 0.05 between high and low groups.

** p < 0.05 between intervention and comparison communities among those with high destination mix.

daily newspaper, media relations and community activities. This was supported by policy and environmental changes in the local community. The campaign was underpinned by the theory of planned behavior.

Methods

Data collection

Evaluation data was collected from random samples in intervention and comparison communities one month before and one month after the 8-week mass media campaign component. Pre-campaign (baseline) telephone interviews were completed by 1223 respondents in the intervention community of North-Central West Virginia (response rate = 57%) and 611 respondents in the comparison community of Cabell County (response rate = 46%). Post-campaign follow-up interviews were completed by 887 baseline respondents in the intervention community and 426 respondents in the comparison community. Further details on recruitment and evaluation results have been reported elsewhere (Reger-Nash et al., 2008). Ethical approval was granted by the West Virginia University Institutional Research Review Board for the protection of human subjects.

Measures

Walking

Validated items from the Behavioral Risk Factor Surveillance System (BRFSS) (Jones et al., 1999) were used to assess the number of days and duration of walking for at least 10 min, in the last week at baseline and follow-up. A walking change variable was calculated by subtracting days walked at baseline from days walked at follow-up. Frequency and duration of walking at baseline were used to identify 'insufficiently active walkers' defined as those walking less than 150 min based on global guidelines for sufficient weekly moderate-intensity activity (World Health Organization, 2010).

Table 2

Adjusted effect of being in the high, compared with the low, group for destination mix on change in days walked. Intervention and comparison community respondents living in West Virginia were surveyed one month before and month after the WV Walks campaign (March–May 2005).

	Change in days walked		Change in days walked among those insufficiently walking at baseline	
	Intervention community (North-Central West Virginia) n = 777 b (95% CI)	Comparison community (Cabell County) n = 388 b (95% CI)	Intervention community (North-Central West Virginia) n = 386 b (95% CI)	Comparison community (Cabell County) n = 220 b (95% CI)
<i>Destination mix</i>				
High versus low	0.258 (−0.09, 0.60)	−0.017 (−0.54, 0.50)	0.639 (0.13, 1.18)*	0.231 (−0.48, 0.94)

Adjusted for gender, age and education CI = confidence interval. Insufficiently walking based on walking < 150 min per week.

* p < 0.05 between high and low groups.

Destination mix

Respondents were asked if they could walk from home to 15 different destinations (corner convenience store, place of worship, park or playing field, local school, community/recreation center, child care facility, drug store, bar or pub, restaurant or coffee shop, grocery store, movie theater, library, bank, post office and their workplace) (yes/no) (Bias et al., 2010). A destination mix score (range 0–15) was created and dichotomized at the median into low (0–3 destinations, n = 622) and high (4 or more destinations, n = 683). This cut point was chosen to maintain statistical power and because West Virginia overall has relatively low walkability. For example, Morgantown is considered Somewhat Walkable according to the Walk Score® metric (Walk Score, 2015).

Statistical analysis

T-tests were used to identify significant differences in mean baseline days walked and change in days walked between: (i) intervention and control communities; and (ii) high and low groups for destinations mix. Linear regression was used to compare mean change in days walked between high and low groups for destinations mix after adjustment for gender, age and education. Change in days walked was examined among the whole sample and among those insufficiently walking pre-campaign. All analyses were conducted in SPSS version 19.

Results

As not all respondents provided data on walking and environmental perceptions, the final samples with pre- and post-campaign data were 777 in the intervention community and 388 in the comparison community. Samples were approximately two thirds female, with a mean age of 53 years and the proportion with a university education was 43% in the intervention community and 34% in the comparison community. Among those with a high destination mix, mean baseline days walked,

and mean increase in days walked among those insufficiently walking at baseline, were significantly greater in those in the intervention than the comparison community (Table 1). In the intervention community the mean increase in days walked among insufficient walkers was significantly greater in those with high vs low destination mix (mean = 1.65 vs 0.95). After adjustment, insufficient walkers in the intervention community with high destinations mix increased their walking 0.64 days more than those with low mix ($p < 0.05$) while no significant differences were observed within the comparison community (Table 2).

Discussion

This study's findings suggest that living in a neighborhood with a greater mix of local destinations may increase the behavioral response to a mass-media walking-focused campaign among insufficiently active adults. This finding supports another US study based on data from a women's walking program in Chicago (Zenk et al., 2009). Zenk et al. (2009) found that having one or two indoor walking facilities (recreation centers and shopping malls) within the neighborhood was positively associated with meeting intervention walking targets.

Nevertheless, the current study has limitations. First, self-reported walking was used as the outcome, which could be over-reported and it was not specified if the behavior was as a result of seeing the campaign. Second, overall walking was measured and previous studies have suggested that walking trips for transport and recreation should be measured separately when assessing relationships with environmental features (Owen et al., 2004). Third, the mix of local destinations was measured using self-reported survey items. There have been calls for use of objective measures of the environment, with verification using self-reported measures (Saelens and Handy, 2008). Finally, exposure to messages from other sources which may have contributed to the behavior was not collected.

Despite these limitations, this is the first study to identify a differential behavioral response to a mass-media campaign by mix of local destinations building on longitudinal evidence that the environment is associated with changing physical activity behavior.

Conclusion

This research provides evidence that insufficiently active adults who are exposed to a campaign may increase their walking more if they have nearby destinations available. While mass-media campaigns raise community awareness and increase short-term walking behavior, greater campaign effects may be achieved if local county and municipal governments ensure that those motivated to walk have access to nearby facilities and destinations. As businesses require a critical mass (i.e., density) to operate, the findings highlight a need to target other supports for

walking at highly suburban low density areas with fewer destinations. These supports might include for example, environmental improvements to sidewalks and streetscapes or on-the-ground activities (e.g., fun runs and walking groups) to encourage recreational walking.

Conflict of interest statement

The authors declare that there are no conflicts of interest.

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References

- Bauman, A.E., 2004. Updating the evidence that physical activity is good for health: an epidemiological review 2000–2003. *J. Sci. Med. Sport* 7 (1, Suppl. 1), 6–19.
- Bias, T.K., Leyden, K.M., Abildso, C.G., Reger-Nash, B., Bauman, A., 2010. The importance of being parsimonious: reliability of a brief community walkability assessment instrument. *Health Place* 16 (4), 755–758.
- Cavill, N., Bauman, A., 2004. Changing the way people think about health-enhancing physical activity: do mass media campaigns have a role? *J. Sports Sci.* 22 (8), 771.
- Duncan, M.J., Spence, J.C., Mummery, W.K., 2005. Perceived environment and physical activity: a meta-analysis of selected environmental characteristics. *Int. J. Behav. Nutr. Phys. Act.* 2, 11.
- Jones, D.A., Ainsworth, B.E., Macera, C.A., Pratt, M., Kimsey, C.D., Morgan, A., 1999. Reliability and validity of walking questions in the Behavioral Risk Factor Surveillance System (BRFSS). [Abstract]. *Med. Sci. Sports Exerc.* 31 (5 (Suppl.)), S232.
- Lee, I.M., Shiroma, E.J., Lobelo, F., Puska, P., Blair, S.N., Katzmarzyk, P.T., 2012. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *Lancet* 380 (9838), 219–229.
- McCormack, G., Giles-Corti, B., Lange, A., Smith, T., Martin, K., Pikora, T.J., 2004. An update of recent evidence of the relationship between objective and self-report measures of the physical environment and physical activity behaviours. *J. Sci. Med. Sport* 7 (S1), 81–92.
- Owen, N., Humpel, N., Leslie, E., Bauman, A., Sallis, J.F., 2004. Understanding environmental influences on walking: review and research agenda. *Am. J. Prev. Med.* 27 (1), 67–76.
- Reger-Nash, B., Bauman, A., Cooper, L., Tien, C., Simon, K.J., Brann, M., Leyden, K.M., 2008. WV Walks: replication with expanded reach. *J. Phys. Act. Health* 5 (1), 19–27.
- Saelens, B.E., Handy, S.L., 2008. Built environment correlates of walking: a review. *Med. Sci. Sports Exerc.* 40 (7), S550–S566.
- Walk Score®, 2015. Living in Morgantown [Online]. Available from: <https://www.walkscore.com/WV/Morgantown> (Accessed: 10 April 2015).
- World Health Organization, 2004. *Global Strategy on Diet, Physical Activity and Health*. World Health Organization, Geneva: Switzerland.
- World Health Organization, 2010. *Global recommendations on physical activity for health*. World Health Organization: World Health Organization, Geneva.
- Zenk, S.N., Wilbur, J., Wang, E., McDevitt, J., Oh, A., Block, R., McNeil, S., Savar, N., 2009. Neighborhood environment and adherence to a walking intervention in African American women. *Health Educ. Behav.* 36 (1), 167–181.



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