An Intervention to Reduce Distracted Walking

David C. Schwebel, PhD
University of Alabama at Birmingham

Co-author collaborators: Leslie A. McClure, Bryan Porter
Pedestrian Injuries - Background

Pedestrian Injury Deaths in US

2009  2010  2011  2012  2013  2014

3000  4000  4500  5000  5500
Why the increase???

- More driving – lower cost gas
- More walking – health promotion
- More distraction – both drivers and pedestrians
Background of Our Study

- Goal: reduce distracted pedestrian behavior on urban college campuses
- Theory-driven behavioral intervention, among the first ever to reduce distracted pedestrian behavior
- Young adults have high rate of smartphone and technology use
- Urban college campuses have high rates of pedestrian activity
Scope of the problem

- Before describing the intervention, how bad is the distracted pedestrian problem? Baseline data.

- Two campuses
  - Old Dominion University, Norfolk, VA
  - University of Alabama at Birmingham, Birmingham, AL

- Two target intersections – major boulevard with median and minor cross-street, signaled with traffic light
  - Hampton Blvd & 45th St in Norfolk
  - University Blvd & 14th St in Birmingham
Observational Data Collection - Methods

- Behavior coded continuously, weekdays 7:45 AM-5:45 PM
- 30 minute coding blocks from rotating single corner
- 3 sets of observations
  - 5 minutes, traffic count
  - 5 minutes, random selection of approaching pedestrian with observation for full crossing and detailed coding on individual differences, crossing behavior, and distraction
  - 15 minutes, coding of all approaching pedestrians as distracted or not distracted
  - (5 minutes rest/rotate)
Observational Data Collection - Outcomes

- Traffic count (vehicles/hour)
- 5-minute individualized coding
  - Apparent gender
  - Estimated age
  - Enter with walk sign
  - Look left before entering road
  - Enter within crosswalk
  - Look right while leaving median
  - Exit within crosswalk
  - Distraction and type (phone, text, headphones, etc.)
  - Multiple distractions
Observational Data Collection - Outcomes

- 15-minute coding of all pedestrians
  - Distracted vs. not distracted
  - If distracted,
    - Talking on phone
    - Texting/looking down at phone
    - Wearing headphones
    - Reading
    - Eating
    - Other distractions
  - Multiple distractions
Baseline Results: 33% of All Pedestrians were Distracted (N=9,523)
Results: Baseline Scope of Problem

- 1,020 individualized observations
- 89% young adults
- 51% female
- No major demographic differences across campuses
Baseline Results: Individualized Pedestrian Distraction (N=1,020)
Baseline Results: Distracted Pedestrians Engaging in Safe Behaviors (N=1,020)
Results: Individualized Pedestrian Gender Differences (N=1,020)

- **Distraction**
  - Women more likely to be distracted from talking on the phone, texting, and multiple distractions
  - Men more likely to be distracted from headphones

- **Safety**
  - Women more likely to exit within the crosswalk
  - Men more likely to look right at median
Scope of the problem

- Data show there is a problem - pedestrians are distracted on urban college campuses
- How do we create change???
- Health behavior theory – change is difficult
Health Behavior Change

- Distracted driving interventions show mixed results
- Distracted pedestrian interventions are few in number
- Distracted driving policy change has some efficacy
- Distracted pedestrian policy is extremely sparse
Health Behavior Change Theory

- **Perceived Vulnerability**: individuals must feel vulnerable or susceptible to a health risk in order to evoke behavior change (e.g., Health Belief Model, Transtheoretical Model).
- If one feels he/she may be harmed personally by a behavior, then there is motivation and reason to change.
- We sought this through experiential exposure – walking while texting in a simulated environment.
Health Behavior Change Theory

- Change perceived/actual norms in the community – make it "normal" to behave in the safe way (e.g., seat belt use)
- We worked to accomplish a change in norms at a university campus by creating social contagion (also called diffusion), or the spreading of ideas, behaviors, and practices through local communities via established social networks of known individuals
- Urban college campus with intermingled social networks and “community” living/working/studying in close geographic proximity offers an ideal setting for change in norms
- Used both traditional face-to-face interaction and social media
Our approach

- Quasi-experimental pre-post design with control group
  - Baseline data collected at two campuses, ODU and UAB
  - Intervention at UAB – exposure to distracted pedestrian risk in virtual reality
  - Survey data collected at UAB at baseline, post-intervention, and 5 months
  - Post-intervention and 2-month and 6-month follow-up observation at both campuses
The intervention

- Exposure to crossing the street while texting in a virtual pedestrian environment (goal: increase perceived vulnerability among individuals)

- Significant media and advertising on campus during “Distracted Pedestrian Week” (goal: change norms in community)
  - Local television coverage
  - Posters and signs around campus
  - “Buzz” of discussion on topic created
  - Virtual pedestrian environments open to public in two classroom buildings, M-F, 9-6, for “walking and texting” attempts
The virtual reality environment

- Short film to give you a sense of what it looks like, from a study we conducted in a local school using it:

http://www.uab.edu/cas/safetylab/
Community-Based VR
Community VR Screenshot
The intervention – yard signs

UAB YOUTH SAFETY LAB // Pedestrian Safety Awareness Week

POCKET & WALK IT!

Lobby of Heritage Hall and Campbell Hall
September 14-18 // 9:00AM-6:00PM
The intervention

- Social media
  - 18,000+ distributed
  - 7000+ video views

See:
https://www.youtube.com/watch?v=VF9s2Y-k0AY
The intervention
Self-Report Survey Results

- 78% received flyer/brochure on pedestrian safety
- 83% feel VR experience made them think more carefully about distracted pedestrian behavior
- 61% self-report changed behavior since engaging in the VR
- 84% feel VR experience was worthwhile to improve their health/safety
- 95% would recommend others try the VR experience
Self-Report Survey Results: Distracted Walking Behavior

- Talk while walking: Never/Rarely
- Text while walking: Never/Rarely
- Apps while walking: Never/Rarely
- Music while walking: Never/Rarely

### Bars:
- **Baseline**
- **Post**
- **5-month**

### Y-axis (Vertical):
- Percentage (%)
  - 0%
  - 10%
  - 20%
  - 30%
  - 40%
  - 50%
  - 60%
  - 70%
  - 80%

### X-axis (Horizontal):
- Talk while walking: Never/Rarely
- Text while walking: Never/Rarely
- Apps while walking: Never/Rarely
- Music while walking: Never/Rarely
Summary: Survey Results

- We accomplished our goal to change perceived vulnerability
- Individuals reported greater intent to walk undistracted
- Exposure to experience of walking while distracted in simulation may have influenced behavior
Observational Results: Proportion of Individuals Walking while Texting

Note: Differences between campuses significant. Change over time not significant. Interaction significant but not behaviorally meaningful.
Observational Results: Safety

Note: Differences between campuses significant. Change over time not significant. Interaction not significant.
Observational Results: Safety

Note: Differences between campuses significant. Change over time not significant. Interaction not significant.
Observational Results: Safety

Note: Differences between campuses significant. Change over time not significant. Interaction not significant.
Summary: Observation Results

- We did not accomplish our goal to change community-based norms.
- Some slight trends in expected direction, but mostly non-significant results in observed distraction at UAB compared to ODU.
Conclusions

- Distracted pedestrian behavior is common on urban college campuses
  - About 33% of observed pedestrians crossing a major street were distracted

- Creating a “buzz” on campus, plus allowing pedestrians to try crossing a virtual street while distracted yielded:
  - Self-reported decrease in risky pedestrian behavior (change in perceived vulnerability)
  - Small and non-significant change in observed distracted pedestrian behavior (no significant change in perceived norms)
Acknowledgements

- Bryan Porter & Old Dominion University team
- Leslie McClure, Drexel University
- Anna Johnston & UAB Youth Safety Lab team
- Joan Severson, Yefe He, and Digital Artefacts team
- Funding: Award Number R21HD078371 from the Eunice Kennedy Shriver National Institute of Child Health & Human Development. The content is solely the responsibility of the authors and does not necessarily represent the official views of the Eunice Kennedy Shriver National Institute of Child Health & Human Development or the National Institutes of Health
Questions???

David C. Schwebel, Ph.D.
Professor of Psychology
Associate Dean for Research in the Sciences
University of Alabama at Birmingham
1300 University Blvd., HHB 571
Birmingham, AL 35294  USA

Phone: (205) 934-8745
Email: schwebel@uab.edu