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The Effects of Health-Promoting Signs Encouraging Stair Use in Parking Structures

Fiona T. Tang
Chapman University, tang130@mail.chapman.edu

Vincent Berardi
Chapman University, berardi@chapman.edu

Benjamin D. Rosenberg
Chapman University, brosenbe@chapman.edu

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Introduction

The majority of Americans do not achieve the recommended amount of at least 150 minutes of moderate-intensity physical activity or 75 minutes of vigorous physical activity per week. Encouraging stair use is a common and practical way to incorporate physical activity into everyday activities.

These two studies are part of a larger investigation aimed at promoting physical activity by encouraging stair use rather than elevators using persuasive point-of-choice prompts. We completed these pilot studies to test the technology and messaging for use in the main study.

Study 1: Most studies in this area used direct observation to count pedestrian traffic. However, in the current research, we evaluated the validity of a pressure mat to measure stair and elevator use.

Figure 1. 24" x 36" wireless and wired mat with data logger.

Study 2: Previous research used a variety of messages to promote physical activity. To determine the most appropriate message for this study, we tested the acceptability of six potential prompts.

Study 1: Mat Validation – Method

We researched the type of mat that would be ideal for recording pedestrian traffic for stair and elevator use.

After initial testing, we used a 24" x 36" pressure mat with wired leads connected to a dry contact event counter. A signal gets transmitted to the data logger and records the activity when pressure is applied to the mat.

We completed various trials on the first floor of the Barrera Parking Structure to determine the validity and accuracy of the mats in different settings and situations. Specifically, we simultaneously recorded pedestrian traffic using the mat and direct observation. A 20-minute observation period was conducted for both the stairs and elevators.

No video or audio data, or information about the individuals in the parking garage was collected.

Study 1 Results

Stairs: 27 direct observations; 30 mat events
Elevators: 13 direct observations; 12 mat events

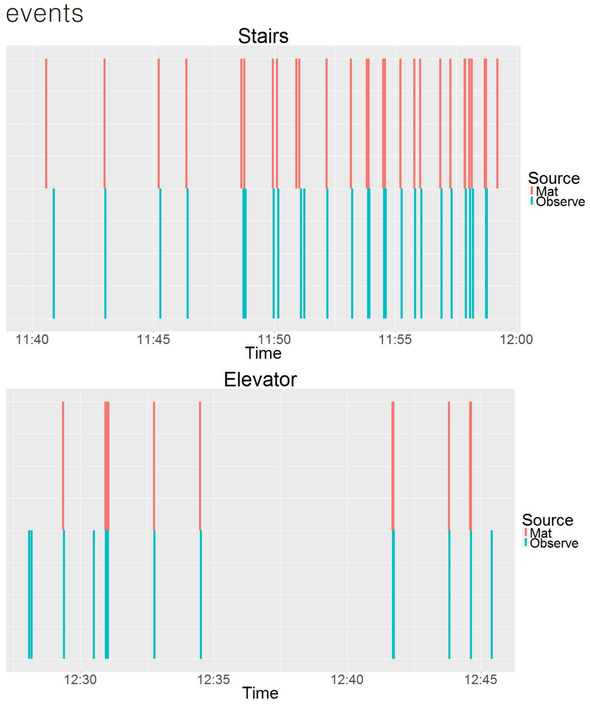


Figure 2. Event counts comparing mat versus observation for both stairs and elevators.

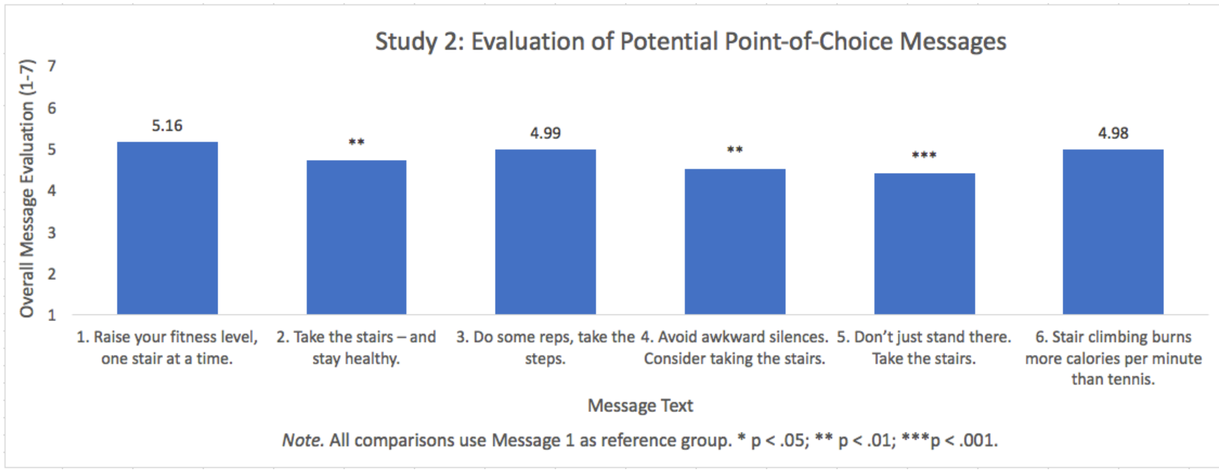
Study 2: Prompt Selection – Method

The conducted survey evaluated potential messages for the point-of-choice prompts. Within this survey, message categories were narrowed to:

Motivational/encouraging
Nudging/humor

The survey was administered in Chapman University classes and students' responses to several sample messages in each of these categories were compared via a series of six, semantic differential adjectives, rated on seven-point scales.

Qualitative feedback on an open-ended question after each message was also solicited. The highest-rated messages will be used in the main study.



Study 2 Results

Students' ratings of the messages were compared, both on each individual characteristic and an overall composite of message liking. Students' feedback to the open-ended questions were also examined to gain further insight into their evaluation of the messages. The three highest-rated messages were:

1. "Raise your fitness level, one stair at a time."
2. "Do some reps, take the steps."
3. "Stair climbing burns more calories per minute than tennis."

Discussion

The mat was nearly as accurate as direct observation in measuring pedestrian traffic. Based on the results, we will integrate this mat technology into the main study.

The three highest-rated messages included specific directives and encouraged physical activity. We will use a combination of these three messages in the full trial.

The main study that will be conducted in the fall will follow an ABA design: 1) measure stair and elevator use for two weeks; 2) introduce point-of-choice prompts and measure stair and elevator use for two weeks; 3) remove signs and continue recording for an additional two weeks for potential effects.

Acknowledgements

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References

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