Poster

A Review of the Influence of Interactivity on Health-Related Outcomes and Recommendations for Future Study

Jessica Fitts Willoughby, PhD; Zhaomeng Niu, MA

Edward R. Murrow College of Communication, Washington State University, Pullman, WA, United States

Corresponding Author:
Jessica Fitts Willoughby, PhD
Edward R. Murrow College of Communication
Washington State University
PO Box 642530
Pullman, WA, 99164-2530
United States
Phone: 1 509 335 7926
Fax: 1 509 335 3772
Email: jessica.willoughby@wsu.edu

Abstract

Background: Interactivity is a foundational characteristic of mediated communication that may influence persuasion and attention. Interactivity refers to the two-way exchange of information contingent on previous input, meaning that websites and mobile systems can be more or less interactive depending on system affordances. There are multiple types of interactivity, including functional interactivity, which is based on the affordances of the system, and perceived interactivity, which is based on users' perceptions of the responsiveness of the system as opposed to actual system features. Previous research has suggested that interactivity may be vital to the success of technologically driven health communication interventions.

Objective: The purpose of this project was to examine how interactivity has been assessed in relation to health outcomes, including what types of interactivity are discussed, how interactivity is measured, and the influence of interactivity on health-related outcomes.

Methods: We conducted a systematic review of the published literature in PubMED and EBSCO in fall 2015. Search terms included "interactivity" and "health" as well as a variety of words related to media and new media (eg, media, electronic, SMS, communication). To be included in the review, articles needed to (1) focus on studying the impact of interactivity (content analyses and intervention descriptions that did not explicitly assess interactivity effects were not included) and (2) examine outcomes related to health (eg, health knowledge, comprehension, attitudes, intentions, or behaviors). After articles had been located, we conducted backward and forward searches. Of the more than 1200 articles examined, 11 articles met the inclusion criteria.

Results: Studies that assess the role of interactivity on health-related outcomes varied greatly in the types of interactivity assessed as well as health outcome variables. All studies used an experimental design. Health topics included mental health, physical activity, skin cancer, fibromyalgia, appendicitis, allergies, and smoking. Interactivity was defined differently in many of the studies, but most focused on the functional features as opposed to perceptions of interactivity. If assessed, perceived interactivity was used primarily as a manipulation check or mediator. Effects of interactivity on health-related outcome variables were mixed, with effects mainly appearing in the connection between interactivity and attitudes toward the health topic. Knowledge was directly related to interactivity in one study, but no significant effects were found in three other studies that assessed the connection between interactivity and knowledge.

Conclusions: This study highlights that definitions of interactivity in the literature are inconsistent and ambiguous, as some scholars did not define interactivity, and others' definitions varied. Scholars should work to clearly operationalize what they mean by interactivity so that work can be compared and expanded upon. While all studies focused on functional interactivity, some also looked at perceptions as a mediator or manipulation check. With some outcomes, such as attitudes, interactivity did have an effect. Future research should continue to examine the role of interactivity and potential mediating variables on health outcomes. Interactivity may work as one technological attribute that is part of a larger system impacting the effectiveness of health behavior interventions and influencing health outcomes.

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KEYWORDS

interactivity; health; communication; health promotion; technology

This poster was presented at the Connected Health Symposium 2016, October 20-21, Boston, MA, United States. The poster is displayed as an image in Figure 1 and as a PDF in Multimedia Appendix 1.

Figure 1. Poster.

A review of the influence of interactivity on health-related outcomes and recommendations for future study

Jessica Fitts Willoughby, Ph.D., and Zhaomeng Niu, M.A.
The Edward R. Murrow College of Communication

Abstract

We conducted a systematic review to assess how interactivity is defined in health-related research. Articles (k=11) used experiments to assess interactivity effects, although interactivity definitions varied greatly. Results were mixed—some found an influence on comprehension or attitudes, and others found no effects. Researchers should continue to explore the impact of interactivity on health outcomes, paying particular attention to operationalization.

Background

- Interactivity is a foundational characteristic of mediated communication
- Interactivity refers to the two-way exchange of information contingent on previous input, meaning that websites and mobile systems can be more or less interactive depending on system affordances
- Previous research has suggested that interactivity may be vital to the success of technologically driven health communication interventions.

Objective

- To examine how interactivity has been assessed in relation to health outcomes, including types of interactivity discussed, how interactivity is measured, and the influence of interactivity on health-related outcomes.

Methods

•We conducted a systematic review of the published literature in PubMED and EBSCO in fall 2015.
•Search terms included "interactivity" and "health" and words related to media and new media
•Inclusion criteria: 1) focus on studying the impact of interactivity (content analyses and intervention descriptions that did not explicitly assess interactivity effects were not included), and 2) examine outcomes related to health (e.g., health knowledge, comprehension, attitudes, intentions, or behaviors).
•Of the more than 1200 articles examined, 11 articles met the inclusion criteria.

Results

•Studies varied by type of interactivity assessed.
•Health topics included mental health, physical activity, skin cancer, fibromyalgia, appendicitis, allergies, and smoking.
•Most studies focused on the functional features as opposed to perceptions of interactivity.
•Effects of interactivity on health-related outcome variables were mixed, with effects mainly appearing in the connection between interactivity and attitudes toward the health topic. Knowledge was directly related to interactivity in one study, but no significant effects were found in three other studies that assessed the connection between interactivity and knowledge.

Conclusions

- Definitions of interactivity are inconsistent and ambiguous.
- Scholars should clearly operationalize interactivity
- Future research should continue to examine the role of interactivity and potential mediating variables on health outcomes.
- Interactivity may work as one technological attribute that is part of a larger system impacting the effectiveness of health behavior interventions.

Table: Findings from interactivity studies related to health outcomes

Citation	Findings
Camerini and Schultz (2012)	-Functional interactivity had no impact on *empowerment dimensions* -Functional interactivity had no observable effects on *knowledge* -Participants who experienced the whole intervention (static and interactive) scored significantly lower in *meaning* than people with the static only version
Hurling, Fairley and Dias (2006)	-The more interactive system was more *engaging to users* -The more interactive system lead to *higher expectation* and *satisfaction with motivation to exercise* -The more interactive system led to greater *satisfaction with fitness*
Jaffe (1997)	-No significant differences on *knowledge gain* based on condition -No significant differences in *self-efficacy* based on condition -There was an interaction effect for interactivity and processing style on *self-efficacy gains*
Kalet et al. (2012)	-Participants did not differ in terms of *knowledge* -Participants in an interactive condition (click or drag) had small to moderate improvements in *performance of clinical skills*
Kerwin (2006)	-Participants in the interactive conditions reported being less *satisfied* with aspects of the instruction -Participants in the 100% interactive condition spent the most *time* on the intervention, followed by participants in the 50% interactive condition -*Knowledge* was not increased in the interactive condition

Table: Findings from interactivity studies related to health outcomes

Kim (2011)	-Website interactivity was a significant predictor of *attitudes toward the website* -There was a cross over effect between sponsor and web site interactivity on *behavioral intentions*. When web site interactivity was low, the government sponsor had favorable influence on intentions to engage in allergy prevention measures. The pattern was reversed when website interactivity was high
Kim and Stout (2010)	-Increased interactivity was positively associated with *message comprehensibility*, but the effects of interactivity decreased when involvement with communication is accounted for -Interactivity had positive effects on *perceived dangerousness of people with mental illness* -Interactivity had positive effects on *perceived severity of mental illness*, but involvement with communication accounted for a significant amount of the interactivity effects -Interactivity had positive effects on *perceived severity of mental illness*, but involvement with communication accounted for a significant amount of interactivity effects
Lu, Kim, Dou & Kumar (2014)	-Higher levels of interactivity was associated with greater *recommendation* of the fitness center to friends (one type of behavioral intention) -Interactivity significantly impacted *knowledge and trustworthiness*
Lustria (2007)	-Participants in the high interactivity group had higher mean *comprehension* scores than participants in the low interactivity group -Participants in the high interactivity group had greater mean *attitudes toward the site*
Oh and Sundar (2015)	-Modality interactivity positively impacted *interface assessment* -Modality interactivity (having a slider) was positively associated with *cognitive absorption* -Modality interactivity enhanced participants' *attitudes toward the website* -Modality interactivity *influenced attitudes toward the antismoking messages*, with mediating effects of interface assessment and cognitive absorption on attitudes -Modality interactivity was associated with *perceptions that smoking was a less attractive behavior* -Message interactivity enhanced *message elaboration*, which translated to more favorable attitudes toward the antismoking messages for those with average or below-average involvement with the topic
Skalski and Tamborini (2007)	-For the attractive source model, interactivity induction was positively associated with perceived interactivity, which positively impacted *social presence*, which was positively associated with positive source thoughts and message processing. Message processing was associated with more positive attitudes toward blood pressure -For the unattractive source model, interactivity induction was positively associated with *perceived interactivity*, which was positively associated with social presence. Increased social presence was associated with source thoughts, which were negatively associated with attitude toward blood pressure -For the combined model, interactivity induction was associated with *perceived interactivity*, which was positively associated with social presence. Social presence was positively associated with source thoughts and message processing with messaging processing impacting attitudes

Contact: Jessica Willoughby, Jessica.willloughby@wsu.edu, PO Box 642530, Pullman WA 99164-2530

Multimedia Appendix 1

Poster.

[PDF File (Adobe PDF File), 315KB-Multimedia Appendix 1]

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