Behavior Change and Persuasive Components in mHealth: A Scoping Literature Review

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BACKGROUND

OBJECTIVES

Aim 1: Identify and review the key conceptual components used in the design of mHealth behavior change interventions
Aim 2: Identify unexplored components that can further sustain user engagement with mHealth interventions

METHODS

• Databases searched were PubMed, Scopus, Compendex, and PsycINFO between March 2018 and July 2018
• Keywords used: "(persuasive OR tailor OR tailoring OR intervention) AND (mhealth OR mobile health OR mobile application OR mobile app OR mobile phone) AND (engagement OR improvement OR acceptance OR adherence OR retention OR dropout)"
• Full Review: Thematic analysis for similar latent concepts used in the articles was performed

RESULTS

Figure 2: CDNN model of behavior formation (Mitch, 2012)
• Mobile health interventions have been accepted by users (Loescher et al., 2018)
• User Engagement with such interventions is not well understood (Rathbone, Clary, & Prescott, 2017)
• Low engagement reported to be problematic (Laing et al., 2014)
• Long-term user engagement with the intervention is critical for it to be effective (Lally et al., 2010)

Figure 3: PRISMA diagram of the research performed

Figure 4: How Behavioral Intervention Technology assess behavior change adapted from (Mite et al., 2014)

Figure 5: Main Components of an mHealth Behavior Change Intervention

DISCUSSION

An intervention design consists of a Conceptual Framework and Design Dimensions.

• Conceptual frameworks
  • Guide the design of an intervention by incorporating various complementary behavioral theories and models
  • Help understand how to arrive at the desired behavior

• Design Dimensions consist of:
  • Content tailoring that highlights the importance of personalizing intervention content displayed to the user.
  • Optimize Timing-based design utilizes sensors to gather information about the user’s current state in order to generate a timely interaction.

• Adaptive Capabilities account for external and internal changes that affect the user’s behavior, and adapt set goals

• No comparison across the different design dimensions
• Absence of research investigating the effectiveness of a comprehensive framework

FUTURE WORK

• Authors recommend the inclusion of a unified framework that integrates the conceptual guidelines with all three design dimensions.
• Dimension of adaptive capabilities is in its infancy

Ultimately systems should be able to
• Predict user engagement and its contributing factors without obtrusively soliciting feedback from the user.
• Anticipate changes and adapt the intervention to mitigate any threats to the user’s engagement

For more information about this work, please contact Dr. Farzan Sasangohar at sasangohar@tamu.edu or (979)458-2337