

# Motivating Health Behavior Change with a Storytelling Virtual Agent

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## Introduction

- Stories can be used in the context of counseling or psychotherapy conversations.
- Tailoring – adapting messages for particular recipients – has shown to significantly improve health interventions compared to generic ones<sup>3</sup>.
- Cultural stories leverage the power of tailoring theory to increase the impact of health counseling, by relating health messages to stories the user already knows.

**GOAL:** Develop a virtual agent that provides health counseling by incorporating cultural stories to improve the efficacy of its counseling, by automatically selecting appropriate stories to tell in counseling conversations and delivering them in a way that improves health behavior change in users.

## Prototype Agent Design

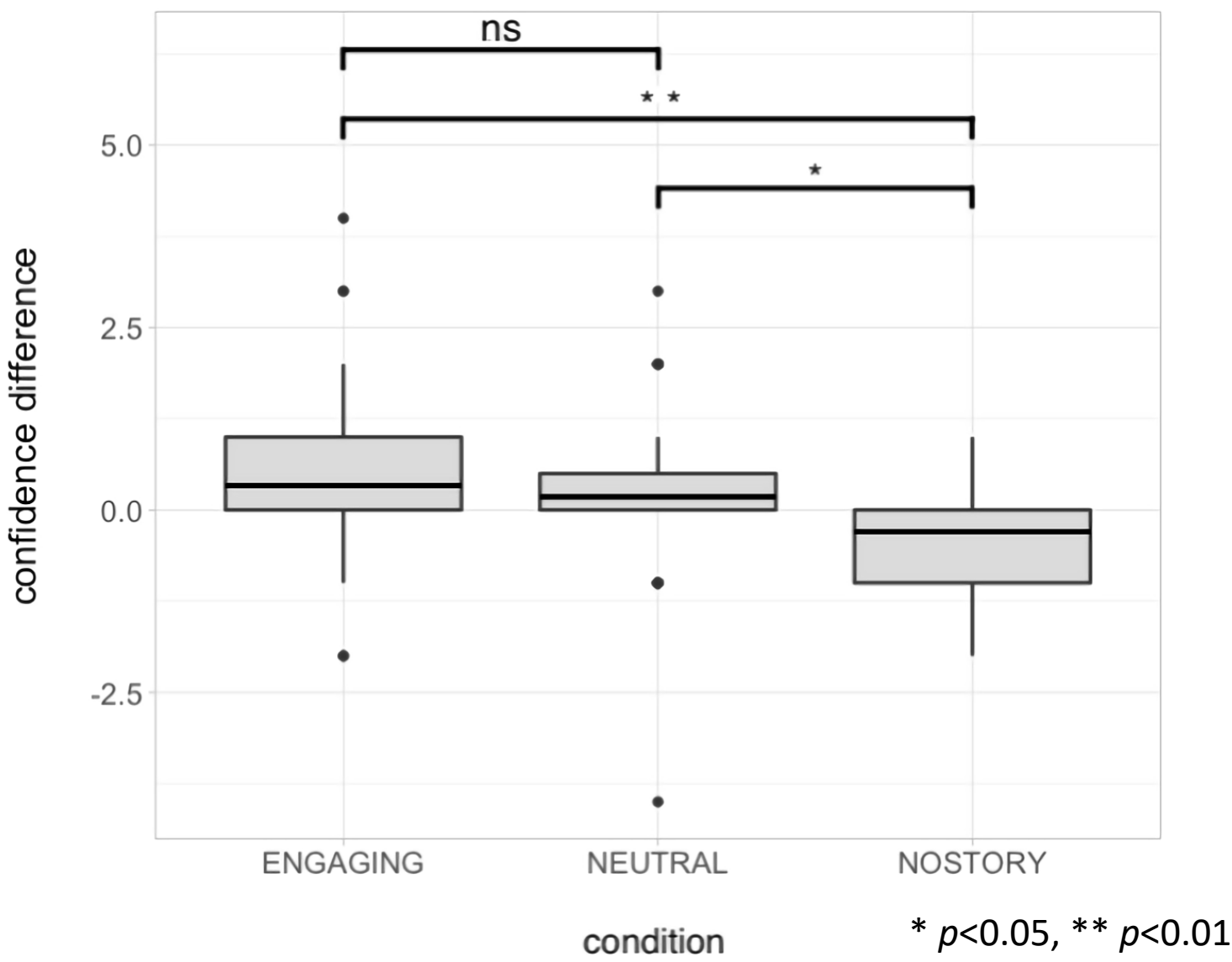
- Health counseling for diet/nutrition
- Index a story to support counseling goals<sup>5</sup>
- Generate statements to establish the relevance of the story
- Generate prosody to tell the story in an engaging manner
  - Length of pause<sup>1,2,4</sup>
  - Speech rate<sup>2,6</sup>
  - Pitch & Volume<sup>2,6</sup>
  - Repetition for emphasis<sup>4</sup>



## Evaluation Study

- Between-subjects study
- N=108 from church-going communities were randomly assigned to one of 7 conditions.
- 3 Bible stories highly relevant to diet/nutrition were used.
- 7 conditions
  - Control – no story
  - Conditions with neutral delivery of each story
  - Conditions with engaging delivery of each story including statements about the relevance

## Results



- Significantly greater **change in confidence** with both types of storytelling agents than no story condition
- For all conditions: significant increase in **motivation** (Wilcoxon signed rank,  $Z=4.21$ ,  $p<.001$ ), **decisional balance** ( $Z=3.95$ ,  $p<.001$ ), and **self-efficacy** ( $Z=3.59$ ,  $p<.001$ )
- Participants who scored higher in the religiosity measures found our agent to be trustworthy, likable, caring, and understanding.
- Participants found the Bible story to be relevant to the context, enjoyable, and familiar.

## References

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