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Kinnis Gosha  
*Morehouse College*


John Porter III  
*Morehouse College*

David Cherry  
*Morehouse College*

Chinasu Ordu  
*Clemson University*

Jennifer Horace  
*Clemson University*

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## Spiritual Counseling for Male College Students Using Embodied Conversational Agents

Kinnis Gosha  
*Morehouse College*

John Porter III  
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David Cherry  
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Chinasa Ordu  
*Clemson University*

Jennifer Horace  
*Clemson University*

This study seeks to construct an embodied conversational agent (ECA) to aid college campus counseling centers. Spiritual guidance content was chosen due to the access of content and familiarity to the subjects. An ECA was created and populated with content from a non-denominational church local to the institution where the initial study was conducted. A questionnaire was disbursed to two groups of college students to collect initial feedback on the usability of the ECA. A small sample size (N = 40) was used due to the access of participants and early stage of the research. Results from the study showed positive feedback in terms of its effectiveness for users from different religious backgrounds.

### INTRODUCTION

In recent years, university and college counseling centers have reported a change in the needs of students seeking counseling services, from more simple developmental and informational needs to more severe psychological problems (Gallagher, Gill, & Sysko, 2000; Robbins, May, & Corazzini, 1985). Researchers have found an increase in the number of students with serious psychological problems on campuses (Mowbray, Megivern, Mandiberg, et al., 2006; Robbins, May, & Corazzini, 1985; Kitrow, 2003). Studies have also shown that the number of students seeking counseling services have increased (Voelker, 2003). With the rise in the serious mental health problems, many college and university counseling centers have encountered a sharp

increase in student demand for their services (Kitzrow, 2003). Despite this, only 21% of college and university centers reported an increase in professional staff during the previous year (Gallagher, Gill, & Sysko, 2000). Gallagher et al., (2000) found that growing demand without increasing overall staff and resources is becoming a major challenge and concern for roughly 63% of campus counseling centers. According to their study, there are a variety of social and cultural factors that account for a portion of this increase in mental health problems and counseling center demand including: instability, poor parenting skills, divorce, family dysfunction, alcohol, sex, violence, poor frustration tolerance, early experimentation with drugs, and poor interpersonal attachments.

Spirituality has long been positively associated with human behavior and performance (Harlos, 2000). Recently, many studies have explored the role of spirituality in leadership (Deal & Bolman, 1995; Mendonca & Kanungo, 1996), organizational change (Bartunek & Moch, 1994; Frost & Egri, 1994) and organizational transformation (Dehler & Welsh, 1994). Absent from the literature is research on the effects of spiritual guidance where the support was provided by an Embodied Conversational Agent (ECA). ECAs have been defined as “anthropomorphic interface agents which engage a user in real-time dialogue, using speech, gesture, gaze, and verbal and nonverbal channels to emulate the experience of human face-to-face interaction” (Bickmore & Cassell, 2001, p. 1).

## **BACKGROUND**

Spiritual development theories have been a part of college student development theory literature for a number of years; however, they have only entered of the mainstream literature within the last few decades (Love, 2002). Understanding the spiritual identity development of college students is important because in the college environment, students experience dissonance as they are confronted by people, ideas, and events that contradict the knowledge and beliefs they developed during childhood (Troup, 2010). Weddle-West, Hagan, and Norwood (2013) state that spiritual development involves “developing a greater connectedness to self and others through relationships and union with community” (p. 301). Tisdell extends this saying that “spiritual development constitutes moving toward great authenticity or to a more authentic self” (2003, p. xi). When discussing spiritual development this is not synonymous with religion as they “are not the same, but for many people they are interrelated” (Komives, Lucas, & McMahan, 2007; Tisdell, 2003, p. xi).

As aforementioned, there is a growing interest on the spiritual development of college students (Love, 2001). Past literature has laid a strong foundation for the exploration of spiritual development. For example, Fowler’s theory (1981) of faith development posits that faith is a holistic orientation and that the various stages of faith development are uniform. Parks (2000) expanded Fowler’s (1981) work by proposing that an additional stage of faith development occurs from adolescence to adulthood, in which she termed “young adult,” which includes college-aged students.

In a study on college students’ spiritual beliefs, Holmes, Roedder, & Flowers (2004) “found that student relied heavily upon various institutional agents for assistance in learning [...] developing their spiritual beliefs in college” and specifically “peer and mentoring relationships were instrumental to students and shaped how students made meaning of their academic and social experience[s] in college” (p. 130). The study also showed differences in male and female participants. Male participants questioned their faith, however they never felt that they had to

give up their spiritual belief system in the college environments. According to the authors, students who did have doubts about their faith “did not stall in their spiritual development because their mentor helped them understand that questioning one’s faith in relation to the beliefs of others is a natural part of coming to understand themselves as young men of faith” (p.143). It is important to note that in this study the mentors on whom the male participants relied were campus pastors. Given this information, the question arises for college administrators looking to develop an environment for positive spiritual development: Where does a student when they need to gain information about a faith if there is no campus pastor? This embodied conversational agent is meant to assist with this situation.

### **Project Goals**

The goals of this research are twofold. The first was to collect information from undergraduate students in STEM majors at a southeastern historically Black college about the effects of spirituality in their educational pursuits. The second was to collect quantitative and qualitative feedback on the initial thoughts and reactions of those students after interacting with a prototype of an ECA designed to provide spiritual advisement.

### **METHODOLOGY**

To make an effective virtual mentor or ECA, first one will need to create an ECA, and then proceed to collect the appropriate content to add to the agent. Online video sermons from a Christian church in the southeastern region of the United States were selected as the source for spiritual content. The website from this non-denominational Christian church had over 60 recorded sermons. Of the sermons viewed, fourteen lessons were documented. A question was created that would refer to each lesson respectively. To create the agent, the SitePal tool was utilized. SitePal.com, is a paid website service, which allows users to create animated speaking characters. The preselected agents, or models, in SitePal have many a variety of genders and races. One agent was chosen, later named Liz, due to her African-American appearance. Specifically, Liz has brown eyes, medium-short black hair, and a darker skin hue compared to other agents. The background chosen for the experiment was the simple beach setting. This background was chosen because it was hypothesized that this background would make people feel the most relaxed. When customizing Liz’s facial expression, she was given a smile, compared to the other expressions, such as sadness, disgust, anger, to no expression at all.

Once the content is compiled and the agent created, the fourteen questions were uploaded into the scene of the agent. The answers also were then added in the Audio section of the scene using the Text-To-Speech (TTS) option. Once there, each audio clip was named, previewed, and checked for additional errors. Finally, a female voice dialect with an American accent was then selected to pair with the female model. With the tool designed, the next step was to study the perceived effectiveness and fidelity of an ECA containing the fourteen questions. Initially, twelve students were selected from a local southeastern Historically Black College because they were the only student that access was permitted to at the time of the preliminary study. Each student needed his or her own personal computer or access to one to participate in the study.

A formative evaluation for the Embodied Conversational Agent was conducted. This was achieved by administering a feedback questionnaire after participants used the ECA through a simulated experience for an undetermined number of minutes. The survey design used

successive independent samples. This method was selected as the time, compensation, and participants were readily available, convened by convenience sampling. The current design could be improved by using random sampling, reducing error due to individual bias or differences. A design with that sampling technique would better measure preferential and group differences. After the initial interaction with their respective tools, participants took a feedback questionnaire using an online form. As an incentive, participants were awarded a movie-style box of candy as compensation for their involvement in the study. The questionnaire entailed cumulative and summative scaling for its questions using Likert scale, dichotomous, and open-ended responses. The questionnaire asks the subject to provide general demographic information such as gender and ethnicity, as well as some college identifiers including one's classification, major, and their college attendance. In addition, it gauged the participants' current involvement regarding religious activities and their use of modern technology. Also measured was the participants' reaction to the tool by asking about the perceived effectiveness of it and which features were preferred. The participant was also allowed to write any possible considerations or advice they felt will improve the tools' effectiveness in providing them spiritual guidance.

## RESULTS

The following results are representative of participant feedback after interacting with and using the spiritual advisor, the embodied conversational agent. For the item, "Did the Spiritual Advisor contain questions that you were interested in?" response options were on a 4-point Likert scale, ranging from "None of them" to "All of them." With respect to the item, "How satisfied were you with the answers given," answer options ranged from "Not satisfied" to "Very satisfied." When asked, "How likely are you to use the spiritual advisor again," respondents had the option to answer from "Not likely" to "Very likely." Answer choices for "How well did the spiritual advisor content match what you were looking for" spanned from "didn't match at all" to "match perfectly." Lastly, for the question, "How easy was the spiritual advisor to use" we used a 5-point to measure this. Possibilities of responses spanned from "Difficult" to "Easy."

The results in this paper is a combination of two identical studies using the same ECA. The first study consisted of a large group that was added to the study of twenty-eight students. Combined, the results of forty students yielded a stronger comparison of results and opinions. Information collected from these participants was recorded, combined, and re-evaluated. The questionnaires revealed that two-thirds of the participants had never ever used a conversational agent. As far as demographics, the results showed that twenty-five students were male and the remaining fifteen female. All except one participant (Latino) identified as African American. All participants indicated that they had a major in a STEM field. Eighteen of participants were classified as juniors, eleven sophomores, while the remaining eleven were seniors. Thirty of the participants indicated having a Christian background, three indicated Islam, and the remainder indicated "Other." Three of the participants attended worship services on campus, nineteen off campus, and three attended both on and off campus services, while fifteen reported not to attend church. The majority of participants indicated they do not attend church services during the school year or the summer unless they either deemed it necessary or it is a holiday and/or special occasion. The same majority shared that they do not seek advisement from their pastors or other trusted religious figures unless for the same reasons. When interacting with the ECA, eighty percent of the participants deemed the agent at least somewhat helpful overall versus the remaining twenty percent who deemed it as unhelpful. Only five participants stated that they

were unsatisfied with the answers given, while being compared to the remaining thirty-five, who stated that the Spiritual Agent gave answers that they were somewhat satisfied with or better. All but three of the participants deemed the use of the Spiritual Agent as easy to use, with the three claiming it be somewhat easy. However, half of the participants were unlikely to use the agent again in its current state, though one-third of the participants said they would possibly use it again. Comments were recorded in the survey which included suggestions that could be implemented to make a more useful tool for future users.

## CONCLUSIONS

Participants provided a wide variety of useful comments that can lead to enhancements of the Spiritual Agent prototype. Participants liked many of the agent's features. Positive feedback included "It gives concise answers to questions which sometimes people do not always do," "Her elegance, grace, and calming spirit" and "The way she formulated and answered the questions." Negative feedback about the agent included the "I didn't like how quickly she was answering the questions," her "robotic voice," not "having other people to advise," and how the Spiritual Agent "doesn't back up answers with sufficient information." Comments made by the participants that indicated potential system enhancements included a "new voice" that was "less mechanical more human." Additional suggested enhancements include a "wider variety of questions" and "more in-depth answers." One participant even said, "I think that nothing should be added because she answers every question that I could think of asking her." Participants also elaborated on topics they would feel comfortable to discuss with the Spiritual Advisor. These topics include "Questions concerning faith and staying strong through struggle" and "How to deal with questions that challenge my faith." There were little to no topics deemed uncomfortable to talk about with the Spiritual Advisor as participants felt that the automated agent would not "judge" them and that they felt "comfortable" talking to it. Many participants relayed that they could see themselves using the agent "in an everyday scenario" and "for uplifting aspect to negative things they may be going on in my life."

In order to further the research there are improvements that can be made to the ECA as well as collecting significantly more data. Short term this could be done by getting more participants for the study and adding more questions to the questionnaire pertaining to individual questions rather than the overall experience. The ECA could also be compared to counseling directly from a real human. In terms of future additions to the ECA, making a non-religion specific version would be an option, in addition to utilizing a male ECA instead of a female ECA. The study showed interest in the tool from non-Christians and people who reported their religious affiliation as "other." It would then be important to gather participants of different religious affiliations besides Christian. It would also then be important to gauge how well the participants felt the answers reflected their spiritual beliefs. An additional task would be to share with college counselors to get their opinion on if the answers reflected the beliefs of their religion appropriately and if they think the ECA would be an effective in partnership with human-to-human counseling. If found effective, policy surrounding what stage in the process the ECA should be used will have to be determined. In addition, policy will have to be determined which students should be referred to the ECA compared to a human counselor.

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*Correspondence regarding this article should be addressed to Dr. Kinnis Gosha, Assistant Professor, Morehouse College. Email: [kinnis.gosha@morehouse.edu](mailto:kinnis.gosha@morehouse.edu)*