The Virtual Pediatric Standardized Patient Application Evaluation Findings

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Problem

Pediatric medical educators face instructional and assessment challenges regarding interaction skills. For instruction, mostly passive curricular material limits students' exposure to and practice with children, one-on-one faculty observation time, and variability in experiences with behaviors or problems [1]. For assessment, no reliable or valid standardized assessment uses children; as a result, what assessment is conducted is necessarily less authentic than assessment of interactions with adults.

Overall our project aims to study the use of synthetic child characters for training and assessment in pediatric medical education [2]. The goals are to expand cognitive, social, and linguistic models to improve the robustness of student / synthetic child interactions, and address face, content, and construct validity of scenarios.

We describe here work in refining existing scenarios involving a very young girl and her mother and a female adolescent and her father (see Figures 1,2).

Figure 1. Girl and Mother   Figure 2. Teen and Father

Method

We iteratively fed results from student and educator surveys and testing into our models. During testing, participants engaged the synthetic characters in dialog in an attempt to check the patient's ears with a virtual otoscope (young girl scenario) or elicit a patient social history (adolescent scenario). Participants' dialog served to improve the depth and breadth of linguistic models. Participants' observed and written reactions served to improve cognitive and social models. A post-usage survey captured participant opinions about validity, performance characteristics, and beliefs on the utility of synthetic character technology for training. We asked:

i. Are the scenarios enjoyable?
ii. Do the scenarios address important clinical competencies?
iii.Do participants view the simulation as a learning tool?
iv.Is improved technical fidelity required for authenticity?

Acknowledgements

Results

To date we have engaged 52 participants: pediatric experts at the annual COMSEP meeting and novice Colorado medical students.

All of our questions were answered affirmatively. Participants felt that the initial prototype needed improved language and graphic fidelity to enhance authenticity. Given subsequent refinement based upon participants responses to the characters, and as measured by logged usage data and a significant trend toward higher post-usage ratings, participant input is now better recognized and synthetic character behavior (both children and parents) is improved for both scenarios.

Pediatric educators surveyed felt these scenarios address very to extremely important pediatric competencies at which on average only half of their students are competent at graduation. Participating students initially rated response time and overall conversation as only somewhat realistic, and scenarios as only somewhat comparable or adaptable to real world situations, however subsequent programming refinements improved these ratings. Participants felt that, if limited clinical experiences were available, synthetic characters would be helpful and would allow for more experiential learning. Even at this prototype stage, participants enjoyed using the simulations and with improved technology felt they were likely to learn with synthetic characters during their career.

Discussion

Participants believed even the initial prototype could provide a learning experience. They enjoyed the scenarios and believed these applications will be used to enhance their learning in the future. The prototypes were seen as addressing important clinical competencies, skills (i.e., conducting a young child's ear exam and an adolescent social history) that many educators felt were not adequately acquired by medical school graduation.

Our early evaluation results are encouraging and suggest that virtual pediatric standardized patients may offer important educational value with continued technical enhancement.

References

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2. Hubal, R.C., Deterding, R.R., Frank, G.A., Schwetzke, H.F., & Kizakevich, P.N. (2003). Lessons Learned in Modeling Pediatric Patients. In J.D. Westwood, H.M. Hoffman, G.T. Mogel, R. Phillips, R.A. Robb, & D. Stredney (Eds.) NextMed: Health Horizon. IOS Press: Amsterdam.