Adding Human-Provided Emotional Scaffolding to an Automated Reading Tutor that Listens Increases Student Persistence

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Everyone agrees emotions are important, and some have even built supportive language into their ITSs, such as praise. But what is the effect of such emotional scaffolding, and is it worth including in a system that is already providing cognitive scaffolding? This poster presents the first statistically reliable empirical evidence from a controlled study for the effect of human-provided emotional scaffolding on student persistence in an intelligent tutoring system. We conducted an experiment that added human-provided emotional scaffolding to an automated Reading Tutor that listens.

A human wizard sat in a room with a television connection to the room where the student was seated, and either observed the student (control condition) or provided emotional scaffolding (experimental) such as praise ("Very good") or encouragement ("You're doing fine"). Students were 2nd-5th graders, including boys and girls.

Each student participated in one session with emotional scaffolding, and in a second (control) session without emotional scaffolding. Each session was divided into several portions. After each portion of the session was completed, the Reading Tutor gave the student a choice: continue, or quit.

We measured persistence as the number of portions the student completed. Human-provided emotional scaffolding added to the automated Reading Tutor resulted in increased student persistence, compared to the Reading Tutor alone – at least for the boys. Boys persisted on average twice as long with emotional scaffolding as without; however, many of the girls were already at or near maximum persistence:

Boys: N=7, 6.1 ± 3.4 (expt.) vs. 2.7 ± 2.4 (control), p=.007 by paired T-test.

Girls: N=7, 11.0 ± 4.9 (expt.) vs. 10.0 ± 4.5 (control), p=.582 by paired T-test.

Increased persistence means increased time on task, which generally leads to improved learning. If these results for reading turn out to hold for other domains too, the

implication for intelligent tutoring systems is that they should respond with not just cognitive support – but emotional scaffolding as well.