An AI-support Tool for Improving the Quality of Behavior Change Counseling in Latin America

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Background

Access to training and expert supervision in evidence-based mental health counseling practices such as Motivational Interviewing (MI) is extremely limited in Low- and Middle-Income (LMIC) countries.

LMICs face a disproportionate burden of mental health challenges alongside a severe lack of resources to address them.

- Care is often delivered by practitioners with limited health-care training
- Health systems are underfunded

Objective

We sought to develop and evaluate a Spanish-language, AI-supported online training platform to teach the MI skill of reflections (a core counseling behavior) and to assess its effectiveness in improving reflection quality among mental health professionals and community health workers in Honduras.

What is a "reflection"

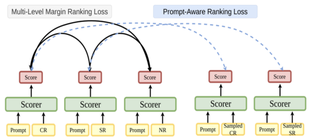
In MI, a reflection is a statement (not a question) in which the clinician restates or paraphrases what the client has said, often adding meaning or emphasis, to show understanding and encourage deeper exploration.

Reflections build report, help the client feel heard and gently guide the conversation without directing or judging.

Example:

Client: "I know I should quit drinking, but it helps me relax."
Reflection: "Part of you sees the need to quit, and part of you really values how it helps you unwind."

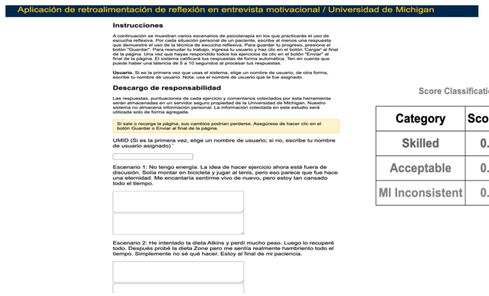
Model Development



We developed a supervised learning-to-rank model to evaluate MI reflections using a corpus of 2,544 prompt–response pairs.

Mental-RoBERTa-Base jointly encoded prompts and responses. The model was fine-tuned using a PAIR learning-to-rank framework with margin-based losses and prompt-aware constraints to enforce ordinal rankings.

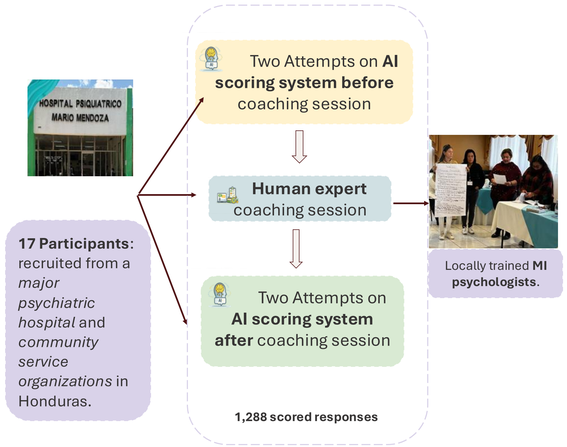
Interface Design



Score Classification

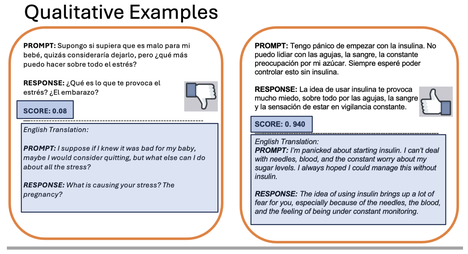
Category	Score Range
Skilled	0.7 ~ 1.0
Acceptable	0.3 ~ 0.7
MI Inconsistent	0.0 ~ 0.3

Recruitment and Data Collection

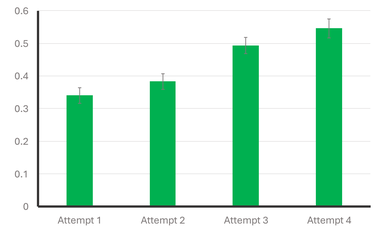


Results

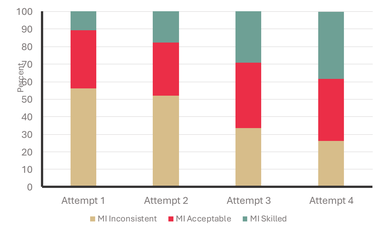
Qualitative Examples



10 psychologists & 7 non-psychologists generated 1,288 AI-scored reflection responses. Mean reflection scores increased monotonically across attempts. The booster session (red slope) had a significant effect.



High-quality reflections increased from 10% at the first attempt to 38% at the fourth, while low-quality responses decreased from 56% to 26% ($p < .001$).





Hospital Psiquiátrico Mario Mendoza Team

Conclusions

A learning-to-rank, cross-encoder–based AI system can deliver valid, scalable feedback for training MI reflection skills in Spanish-speaking, low-resource settings.

AI-augmented clinical communication training is feasible as a partial substitute for expert supervision in LMIC health systems

Next Steps

Generate context-specific feedback and examples of quality communication.

Facilitate training for other MI behaviors (open questions, affirmations).

Generate feedback from audio conversation histories between counselors and patients.

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