STQ Workshop

Individual Differences in Quality Perception

Robert P. Spang

21/11/2022

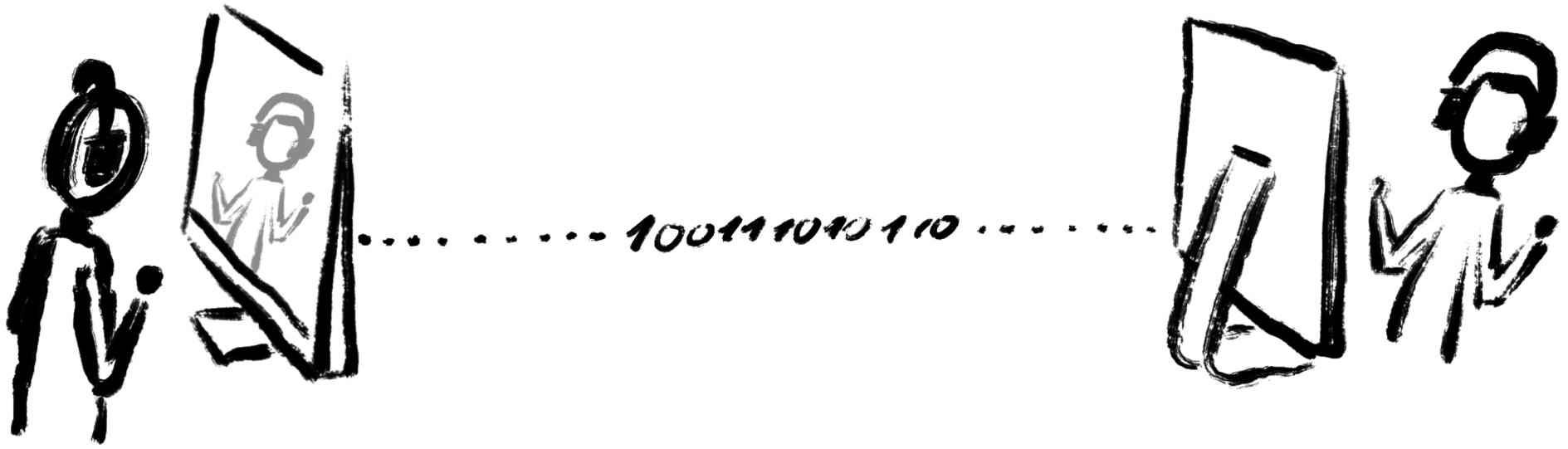
Individual Differences

Individual Differences

Variations or deviations from the **average of the group**, with respect to the mental or physical characters…

– Drever James

Individual Differences



Individual Differences

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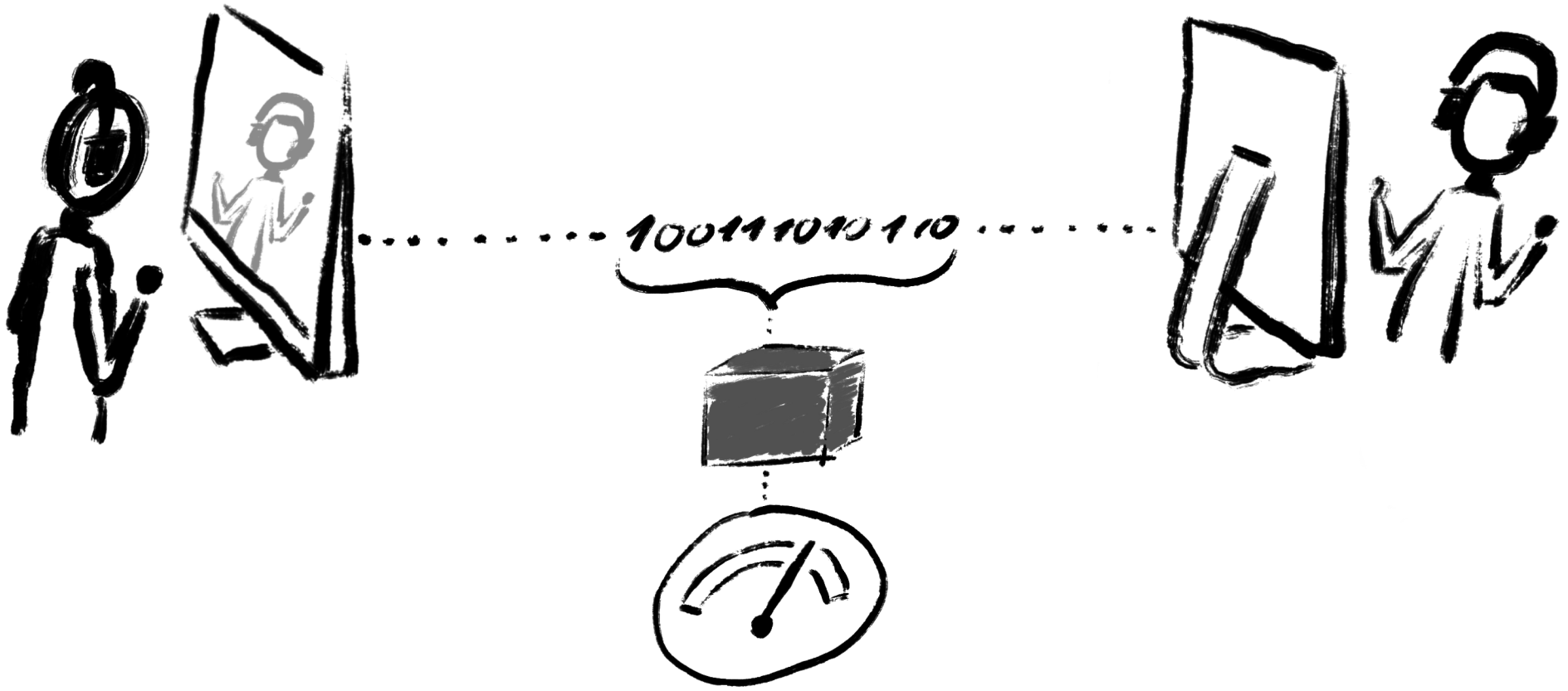

Individual Differences

„Prediction of Perceived Quality and Listening Effort Perception“

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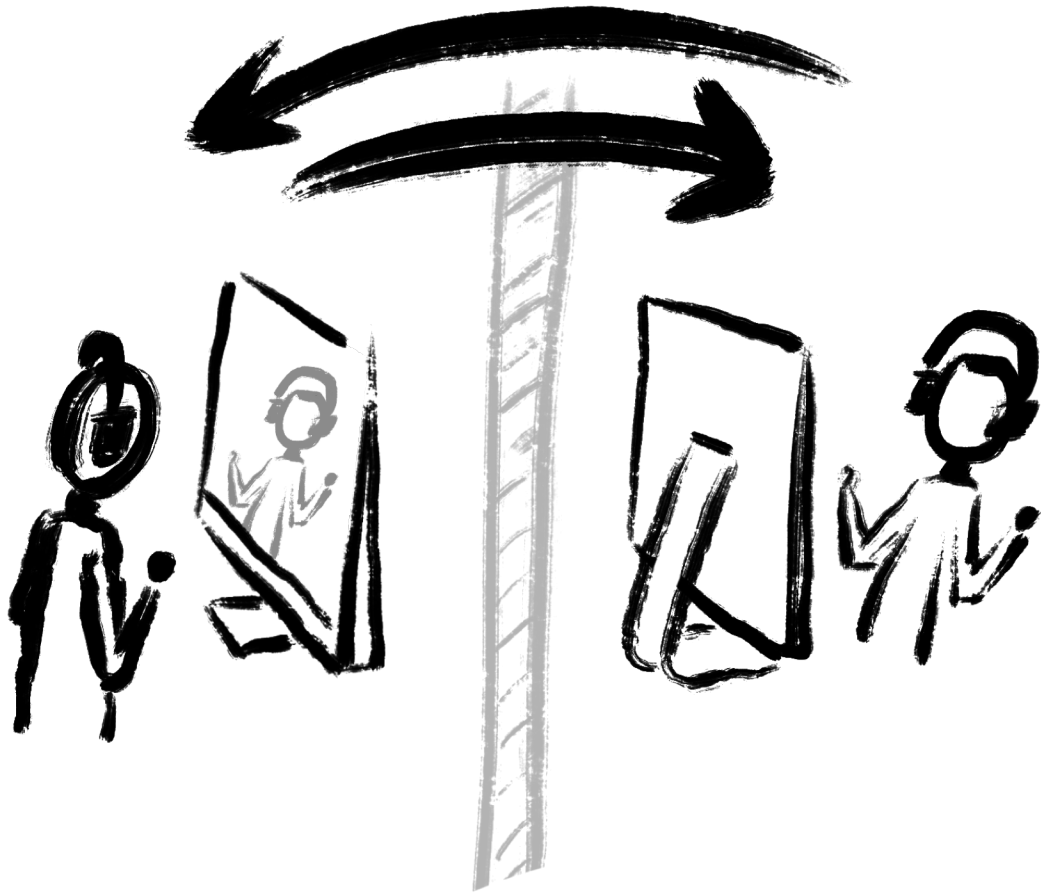
Hypothesis: We can improve predictions of perception by taking the individual into account. With all their differences, experiences, and peculiarities.

Experiment

Videotelephony



Simulated Videotelephony

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- Study multiple participants‘ responses
- Exactly comparable sequences
- Investigate responses in highly controlled settings

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- Exactly comparable sequences
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- Open Access video files, four different quality levels

Spang, R. P., Voigt-Antons, J. N., & Möller, S. (2022, September). **The Story time Dataset: Simulated Videotelephony Clips for Quality Perception Research.** In 2022 14th International Conference on Quality of Multimedia Experience (QoMEX) (pp. 1-6). IEEE.

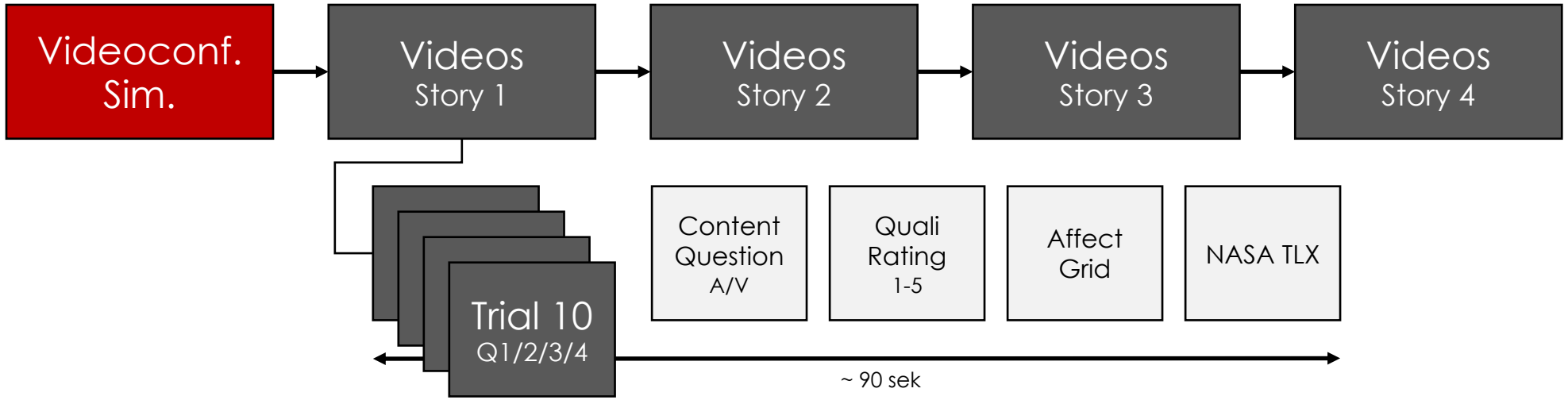
Experimental Design

Demography

N = 48

Experimental Design

Demography



N = 48

Regression Analysis

Predictor variable

- Predicted MOS of speech signal

Regression Analysis

Predictor variable

- Predicted MOS of speech signal

Outcome variables

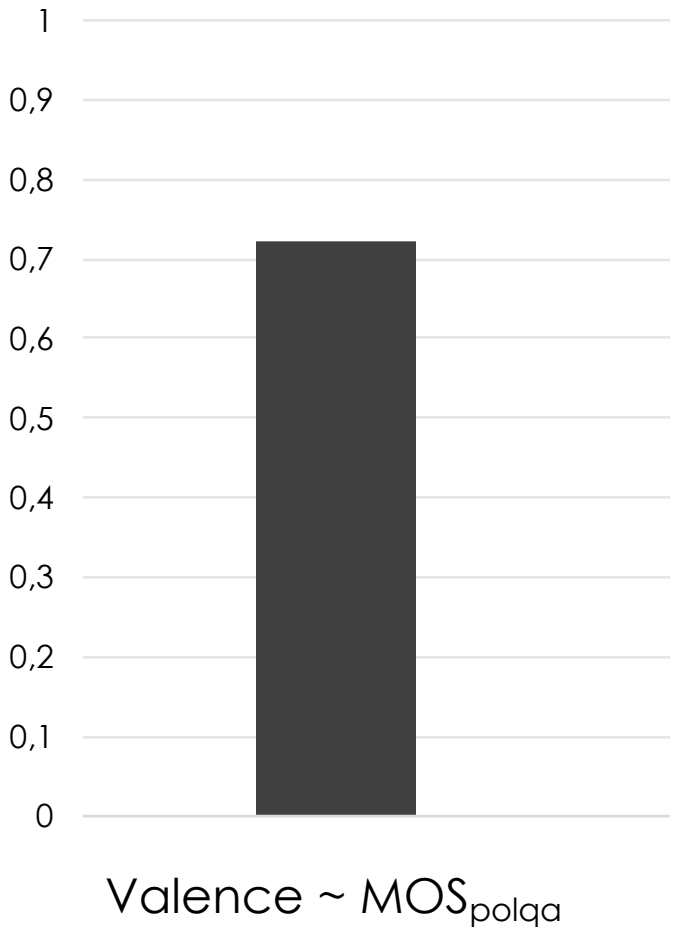
- Valence rating
- Perceived speech quality
- Perceived task load (NASA-TLX)

$Valence \sim MOS_{polqa}$

$Speech\ Quality \sim MOS_{polqa}$

$TLX \sim MOS_{polqa}$

Coefficient of Determination (R^2)



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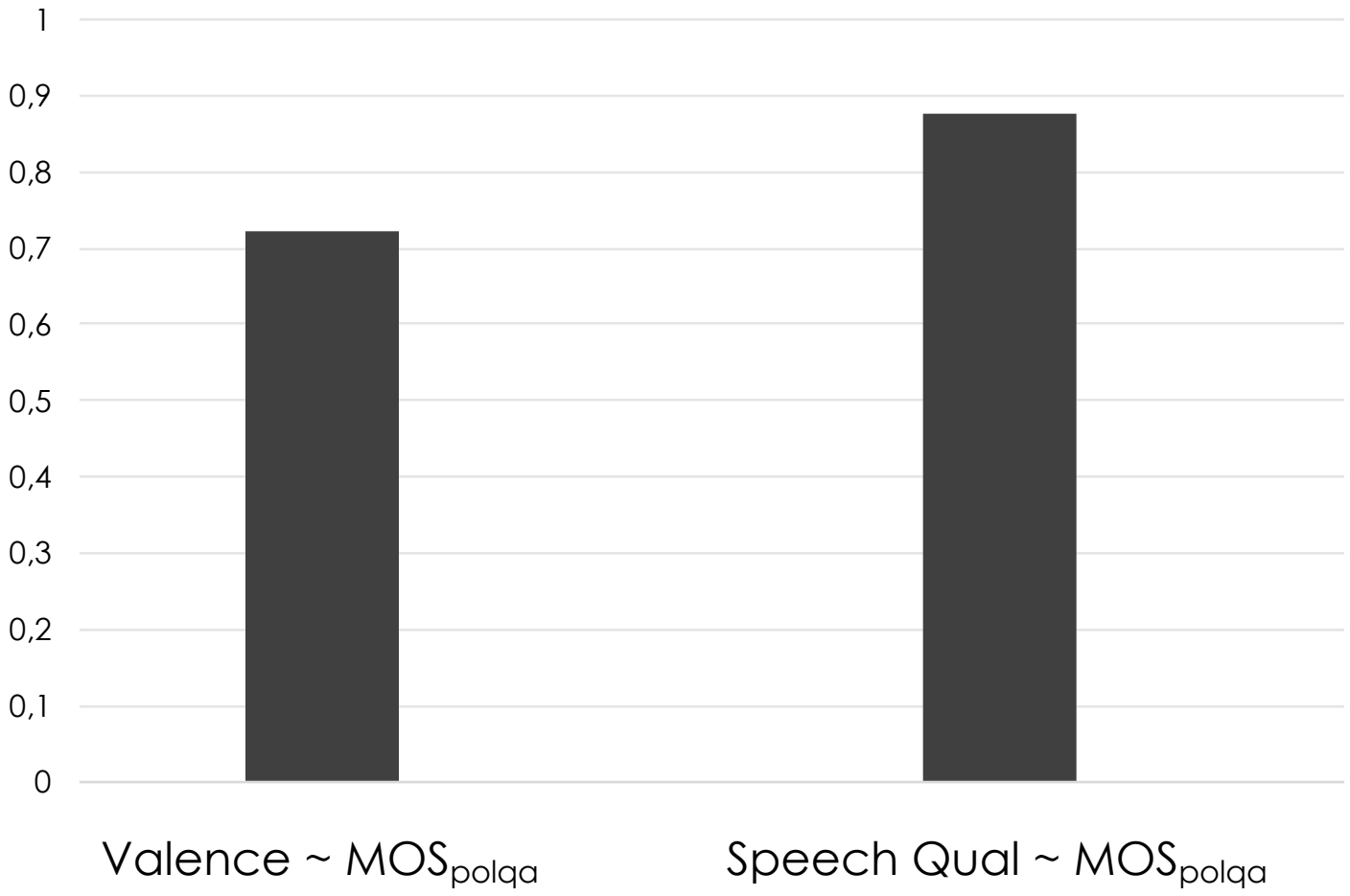

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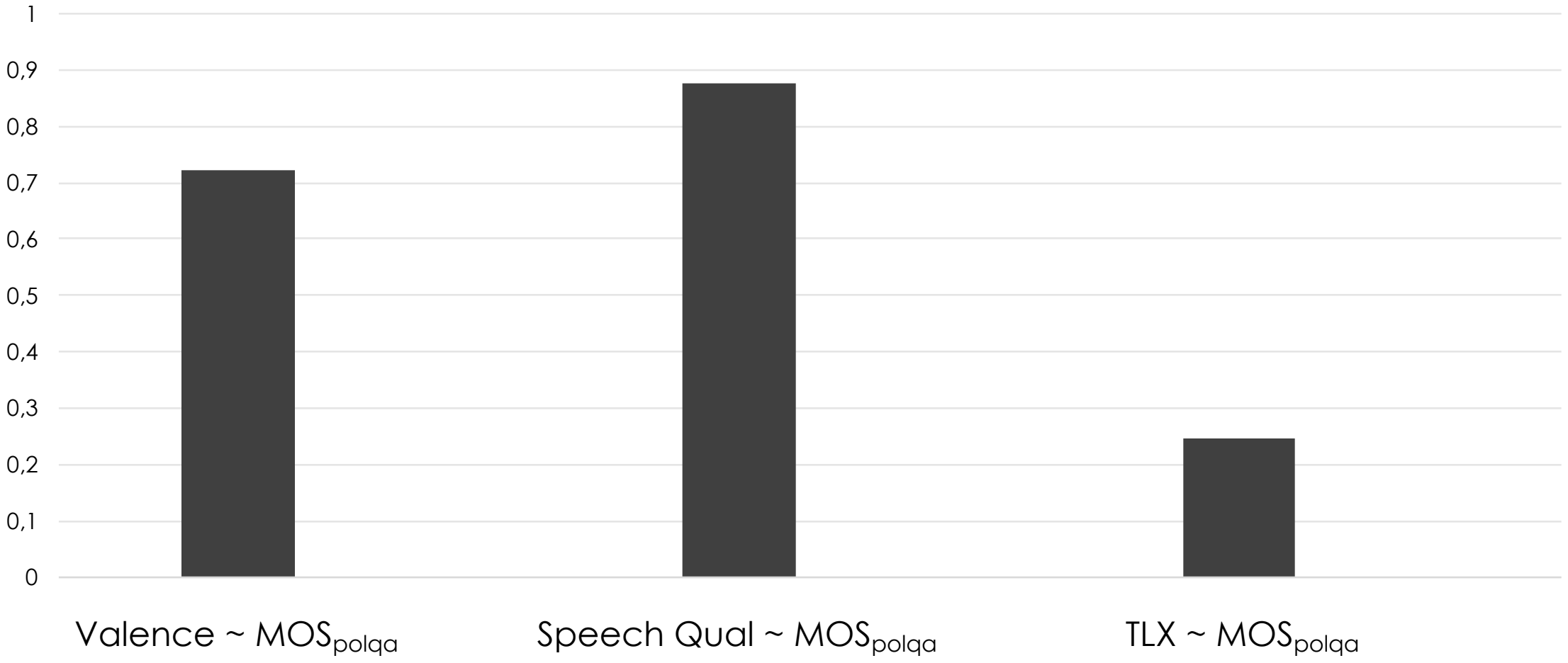


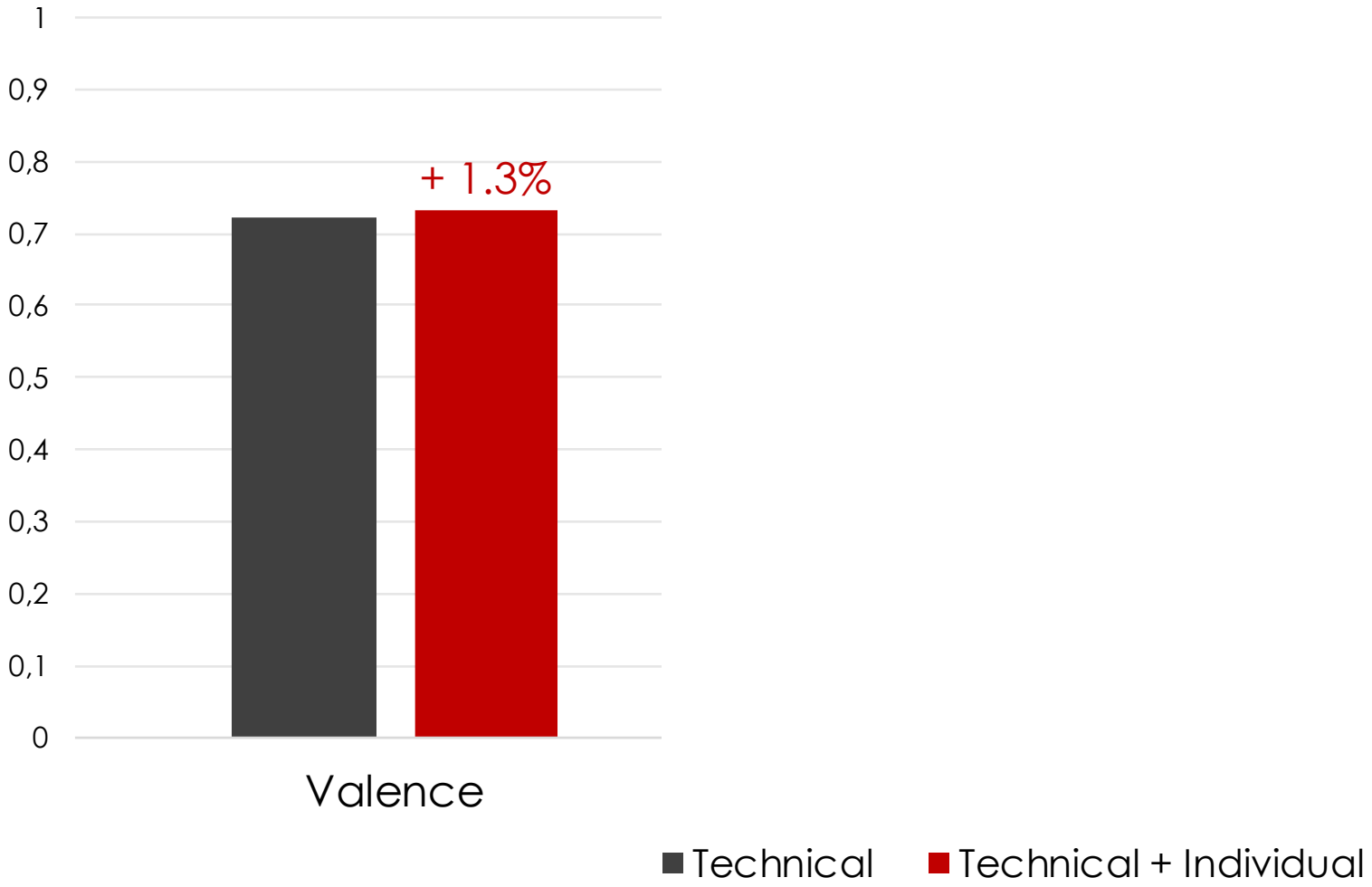
Regression Analysis

Predictor variables

- Predicted MOS of speech signal
- Big-5 personality dimensions (NEO-FFI)
- Frustration intolerance (FDS)
- Age
- Hunger

Individual Differences

Coefficient of Determination (R^2)



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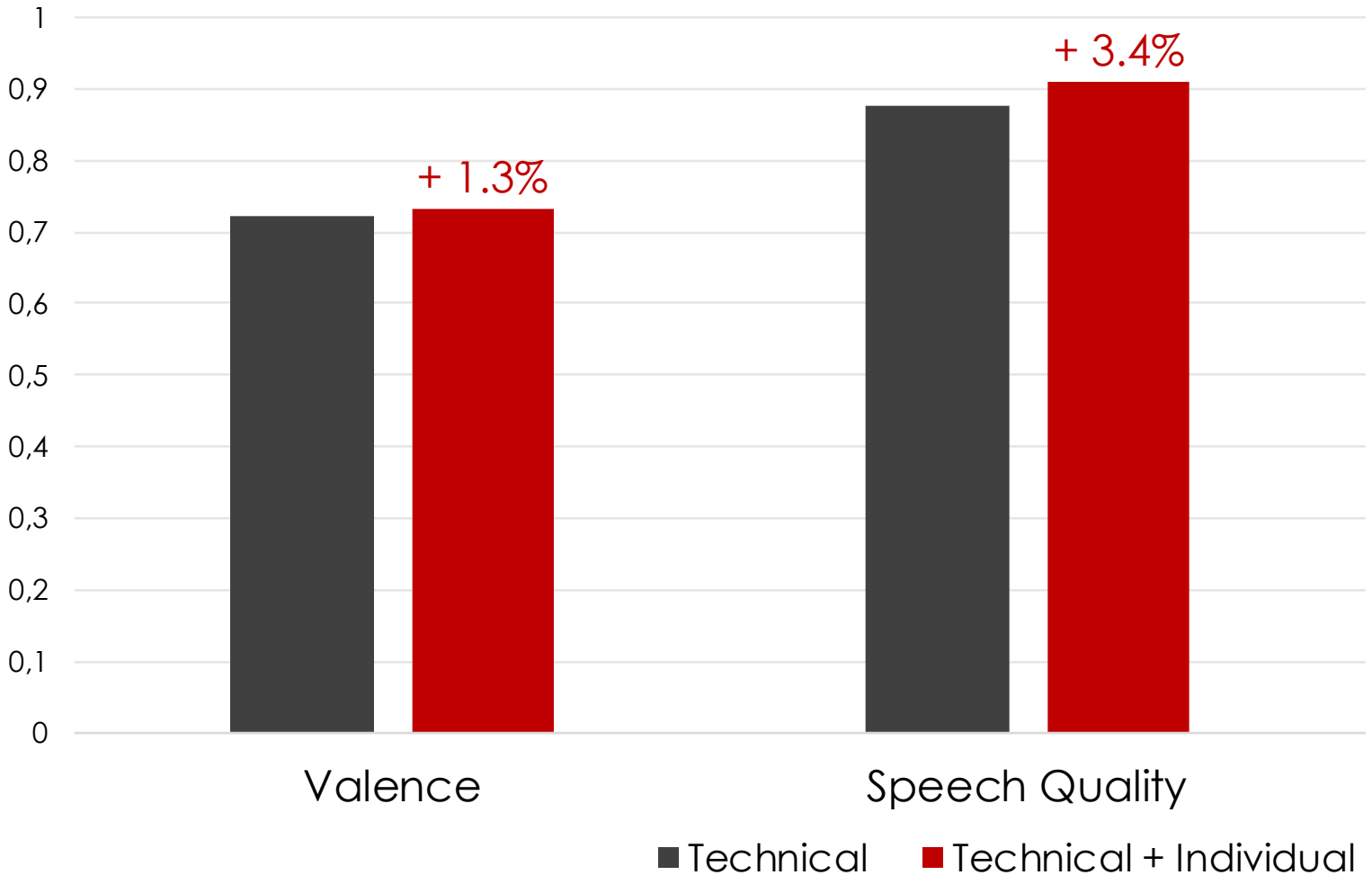

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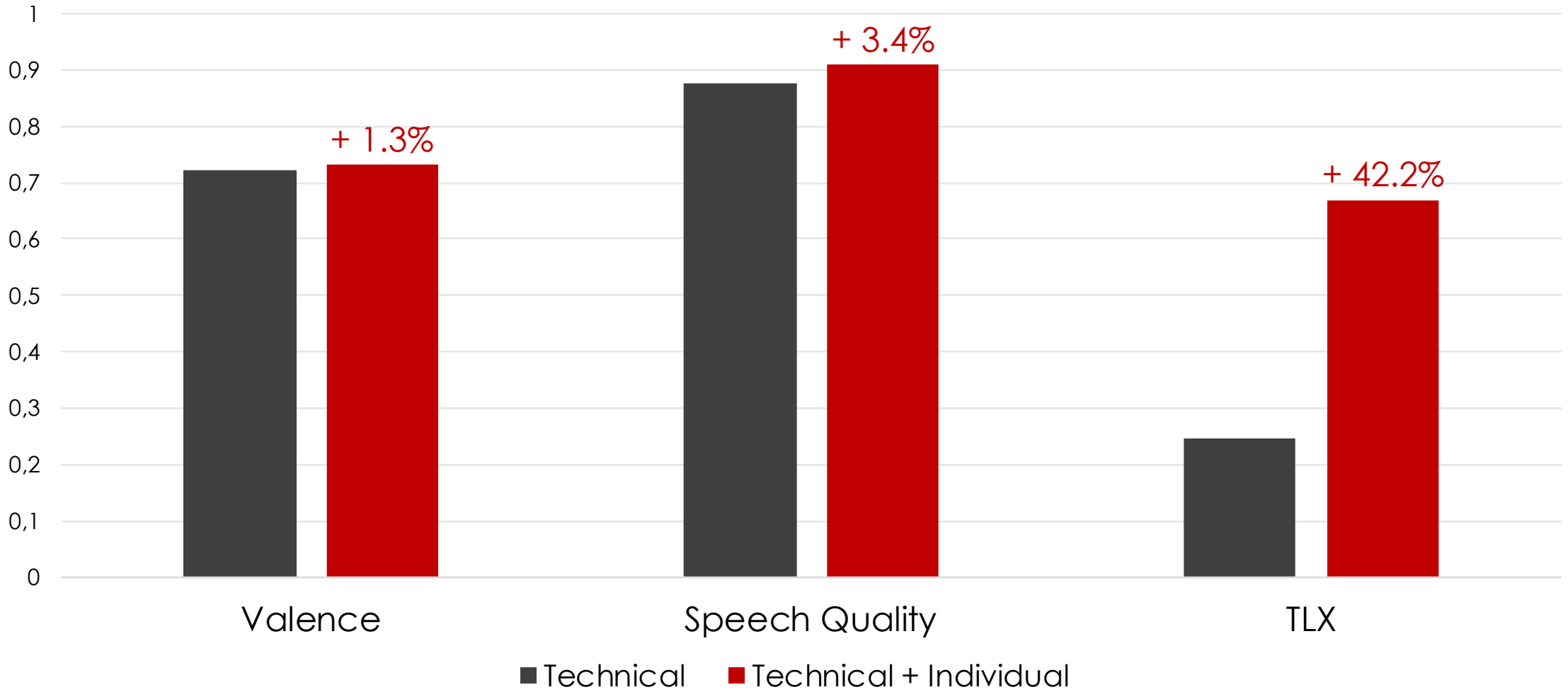
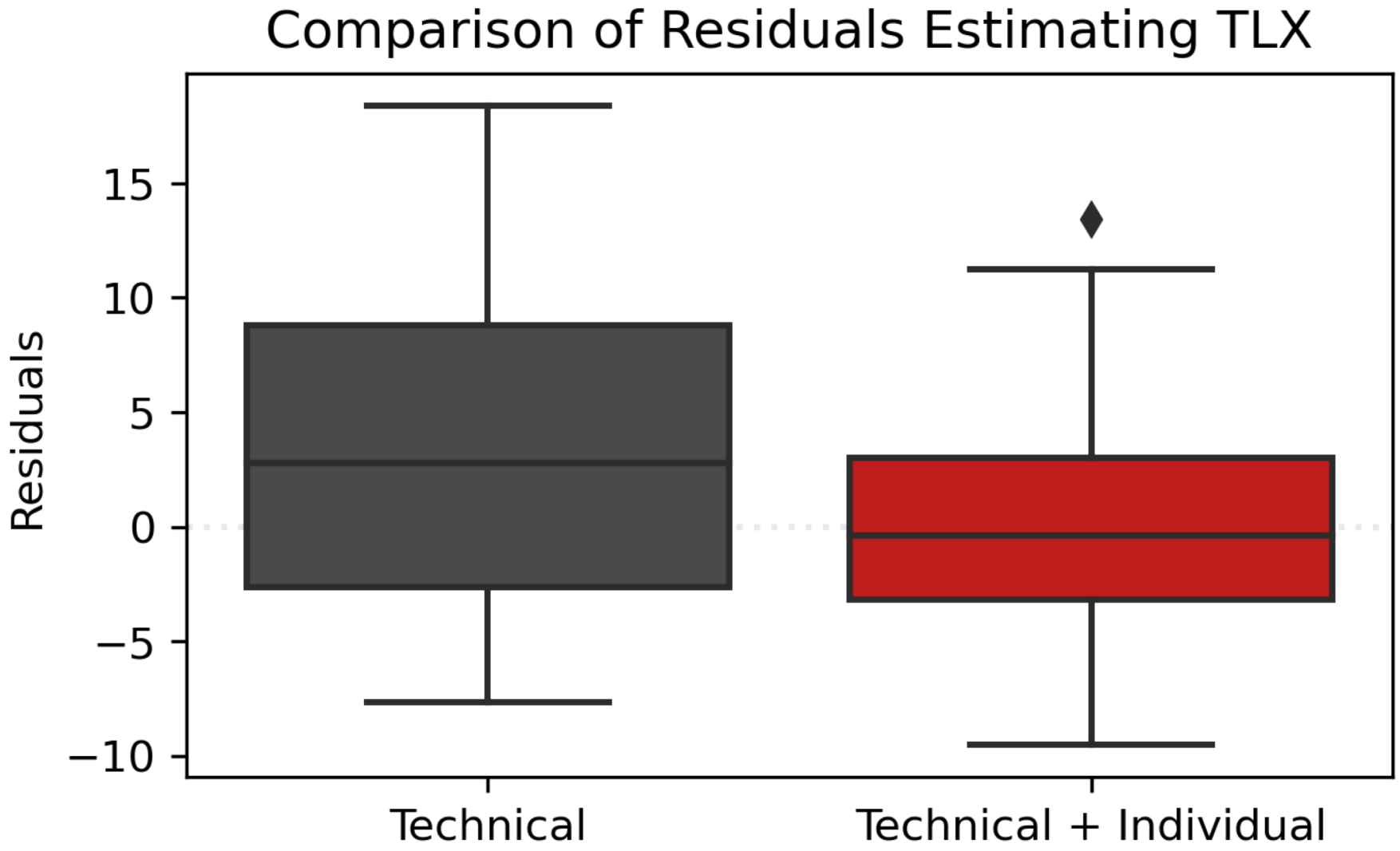


Tighter Residuals



Discussion

Improved predictions of user perception by adding knowledge of the individual user

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Still under investigation

- Replication with actual conversations
- Larger sample size

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Develop better understanding

- Strong influence on TLX, mild on valence
- Identify most meaningful factors

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