



Kayleigh Ryherd^{1,3}, Clint Johns², Julie Van Dyke², Nicole Landi^{1,2,3}

¹University of Connecticut, Dept. of Psychology & Language Plasticity IGERT; ²Haskins Laboratories; ³CT Institute for the Brain and Cognitive Sciences

Introduction

Poor comprehenders (PCs) are generally defined as individuals with poor reading comprehension despite intact decoding ability.

Important considerations for defining poor comprehenders:

- How will you measure the constructs of interest (comprehension, decoding)?
 - Keenan & Meenan (2014) – found significant variability in who is considered a “poor comprehender” as a function of the measures of comprehension & decoding used
- How will you use these measurements to define groups?
 - Classic Cutoff method:** Decoding needs to be above a certain score, comprehension needs to be below a certain score
 - Current investigation cutoffs for PCs (n=17):**
 - Nonword decoding ≥ 100 (standard score)
 - Reading comprehension ≤ 90 (standard score)
 - Often matched for IQ

Regression method:

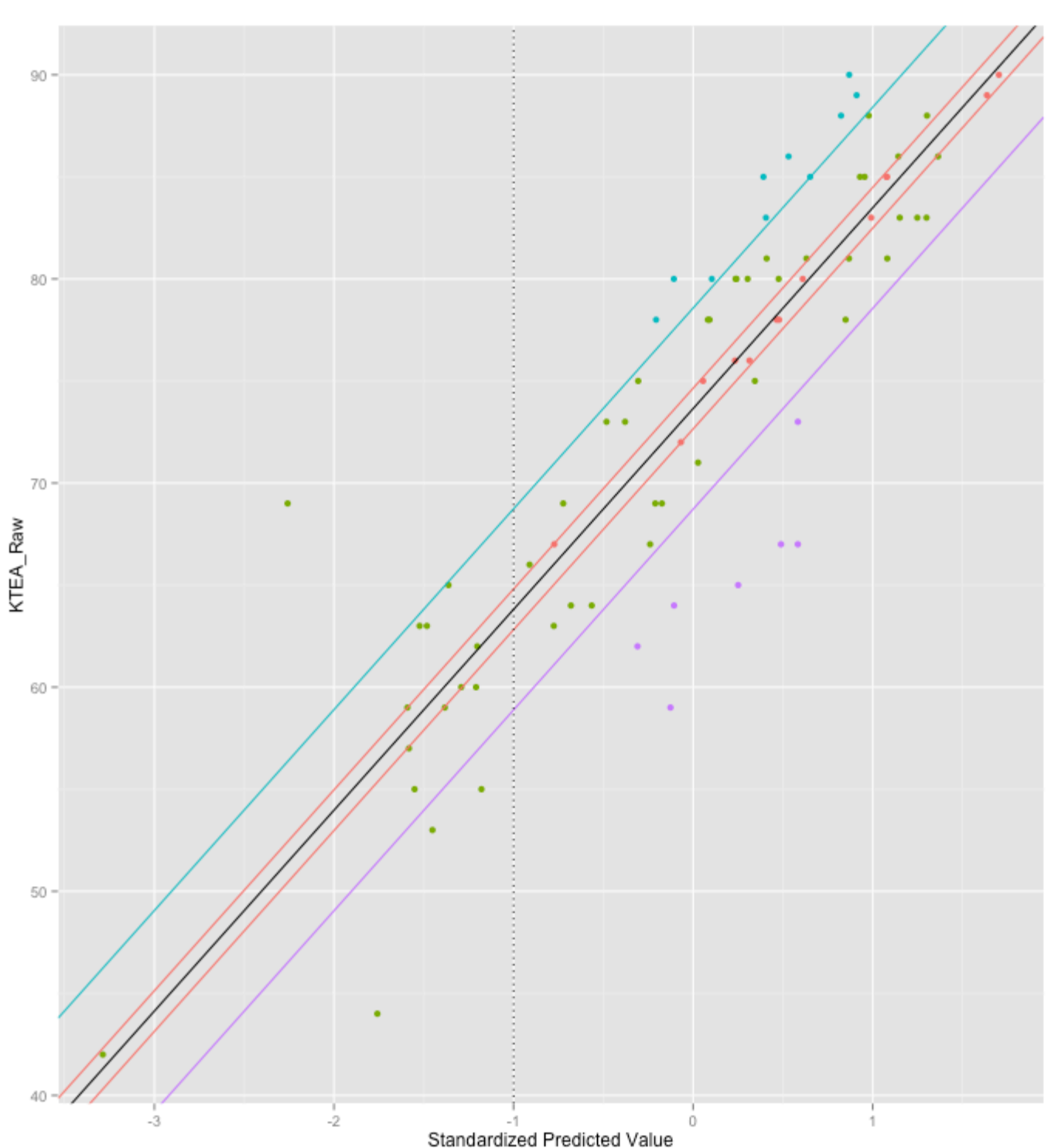
- Predict reading comprehension from other variables (age, decoding, IQ, vocabulary)
 - Compare predicted comprehension to measured comprehension
 - Unexpected poor comprehenders (UPCs)** – those below 65-80% confidence interval
 - Expected average comprehenders (EACs)** – within a 15-25% CI (serves as control group)
 - Unexpected good comprehenders (UGCs)** – above 65-80% CI
- (Li & Kirby, 2014; Tong, Deacon, & Cain, 2013; Tong, Deacon, Kirby, Cain, & Parrila, 2011)

Current Investigation:

- How does inclusion of vocabulary as a predictor change the UPC group?
- How do UPCs compare to PCs defined using a cutoff method

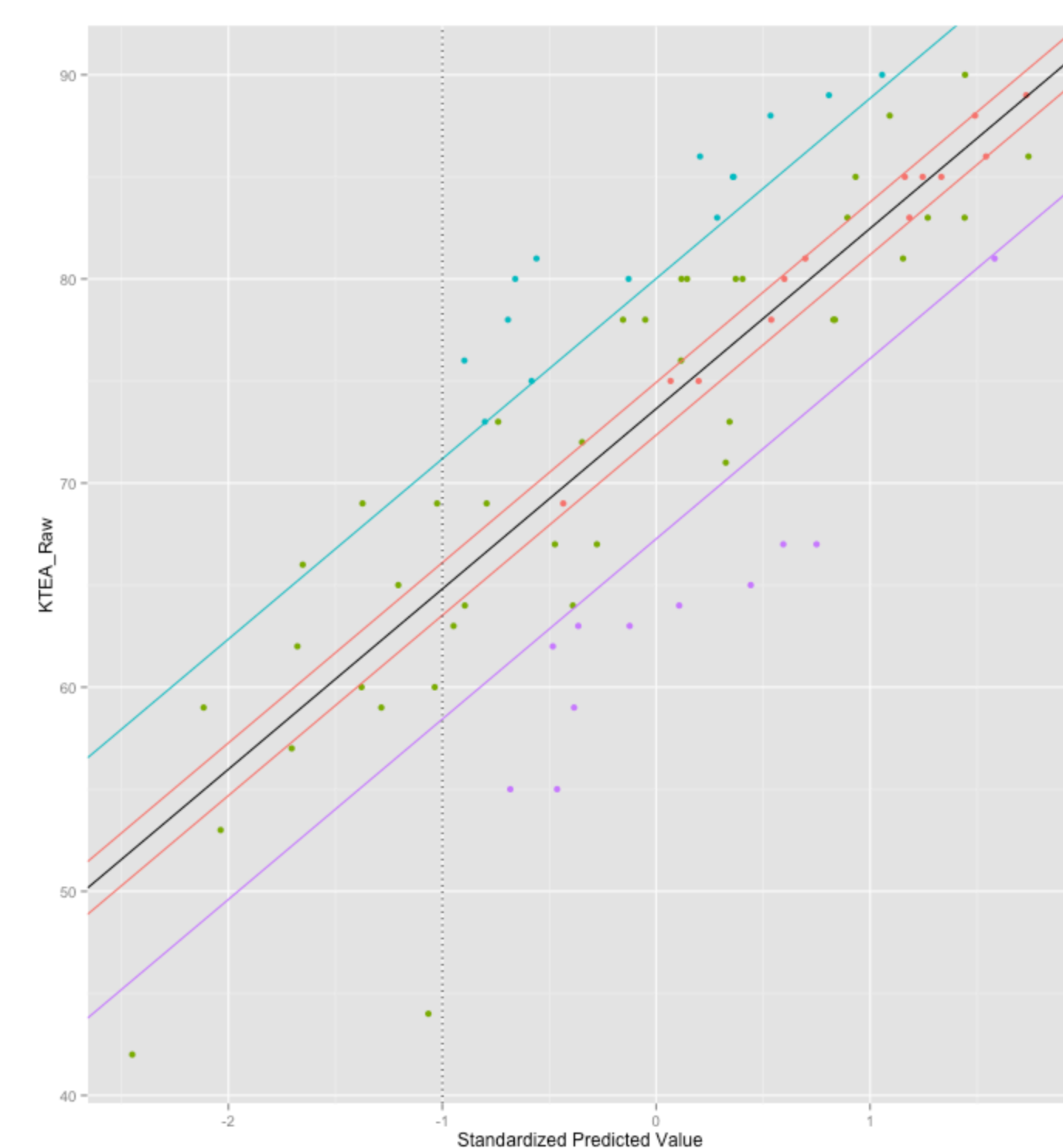
Regression Method

KTEA ~ Age*LW*WA*PIQ*RV



EAC: 13; UPC: 7; UGC: 10

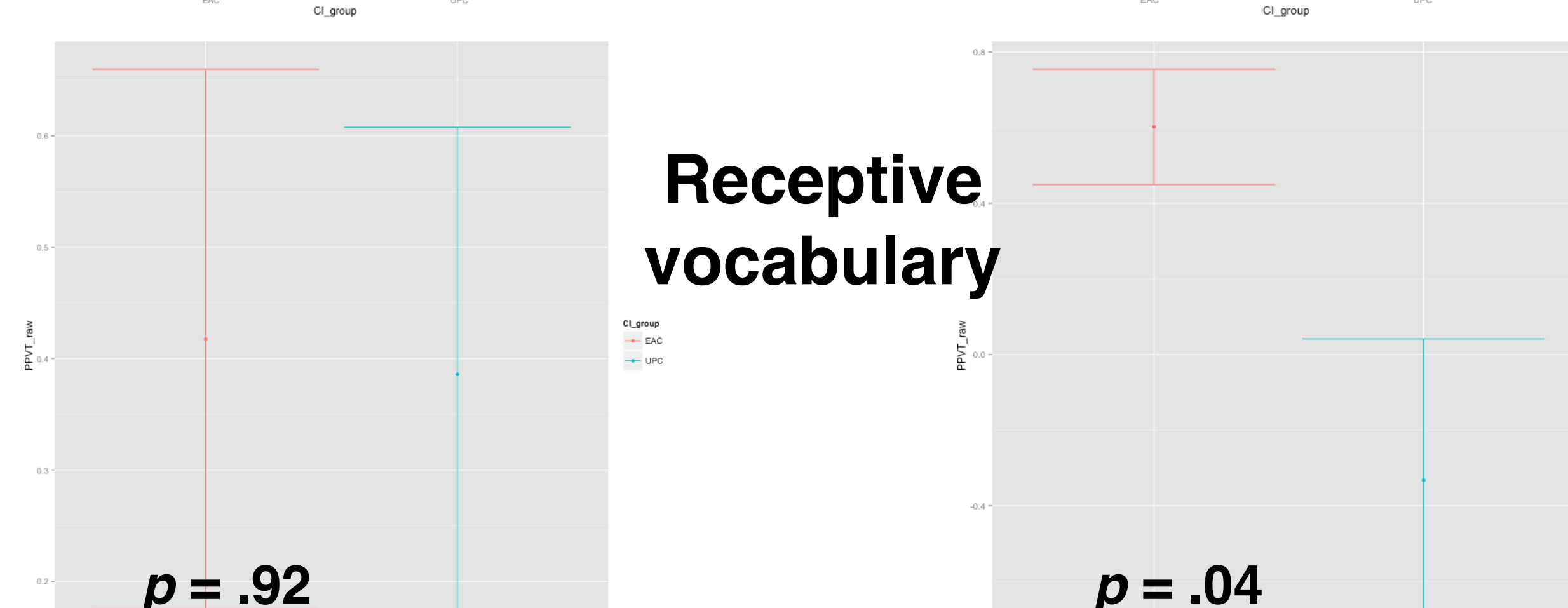
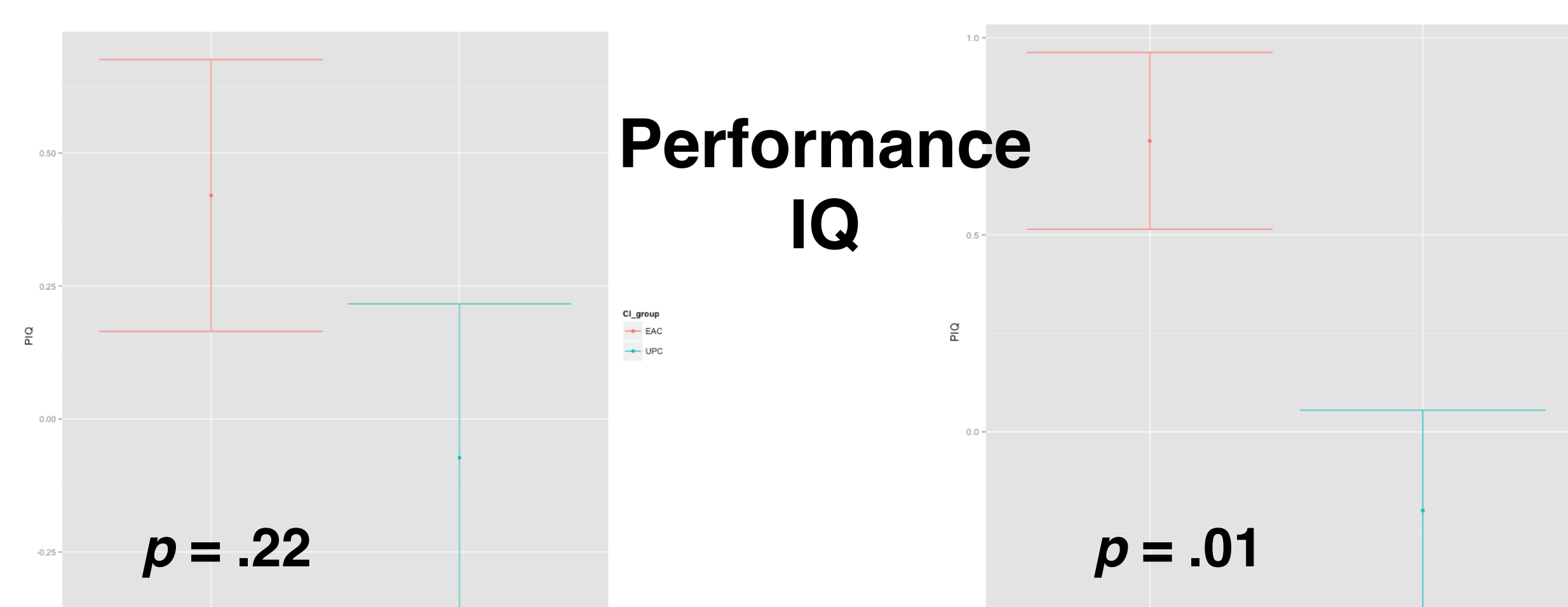
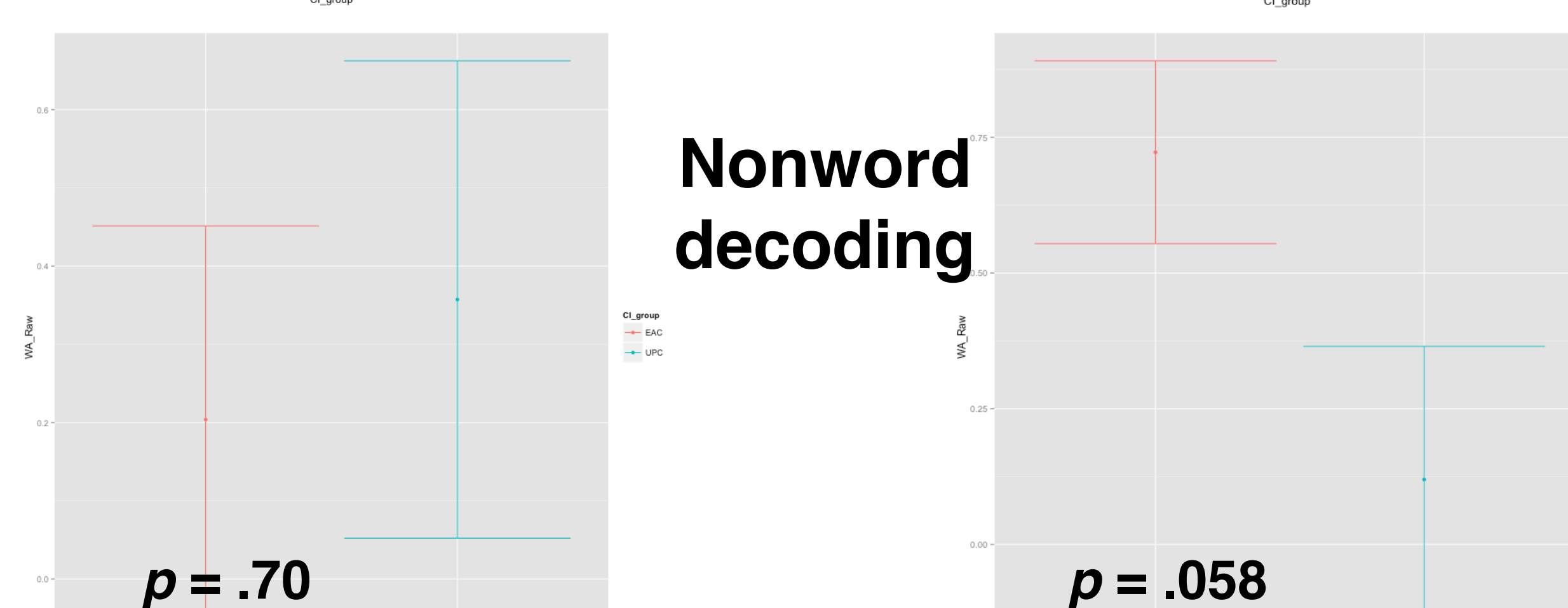
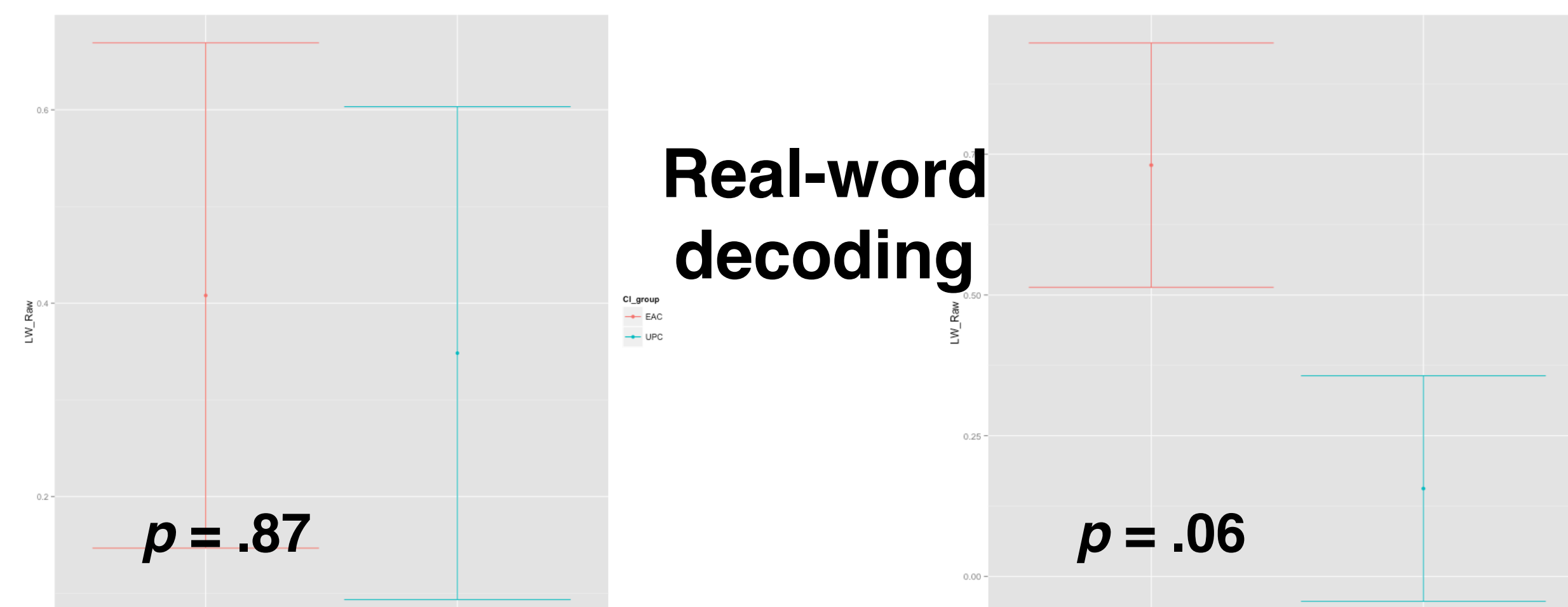
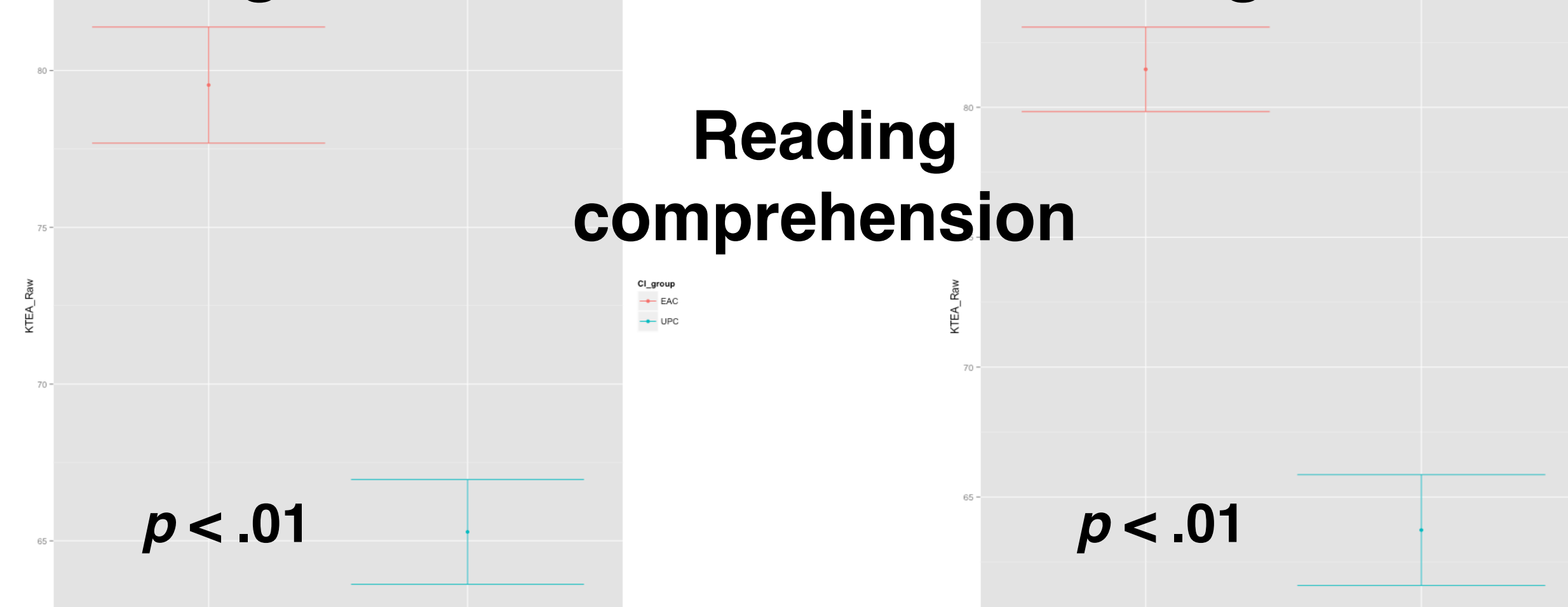
KTEA ~ Age*LW*WA*PIQ



EAC: 13; UPC: 11; UGC: 14

Comparison of Regression Type

KTEA ~ Age*LW*WA*PIQ*RV KTEA ~ Age*LW*WA*PIQ



Regression vs. Cutoff

UPCs (regression method) compared to PCs (cutoff method)

Model with vocabulary

- PCs significantly lower than UPCs:
 - Receptive vocabulary ($p = .002$)
- No significant difference between PCs and UPCs:
 - Nonword decoding
 - Reading comprehension
 - Performance IQ
 - Real-word decoding

Model without vocabulary

- No significant differences between UPCs and PCs in reading comprehension, decoding, receptive vocab, or performance IQ.

Discussion & Future Directions

- Including vocabulary in the regression model changes the composition of UPC and control groups
 - Is vocabulary a sub-skill that makes up comprehension? Should we be using it to predict comprehension?
- Parameters used in the regression model determine pattern of differences between UPCs and PCs

Future Directions

- Explore variables put into model
- Explore confidence interval/standard deviation thresholding
- Compare UPCs and PCs on additional behavioral, experimental, and neurobiological measurements not included in model

References

Keenan, J., & Meenan, C. E. (2012). Test Differences in Diagnosing Reading Comprehension Deficits. *Journal of Learning Disabilities, 47*(2), 125-135. doi:10.1177/0022219412459326

Li, M., & Kirby, J. R. (2014). Unexpected Poor Comprehenders Among Adolescent ESL Students. *Scientific Studies of Reading, 18*(2), 75-93. doi:10.1080/1088438.2013.775130

Tong, X., Deacon, S. H., & Cain, K. E. (2013). Morphological and syntactic awareness in poor comprehenders: another piece of the puzzle. *Journal of Learning Disabilities, 47*(1), 22-33. doi:10.1177/0022219413509971

Tong, X., Deacon, S. H., Kirby, J. R., Cain, K. E., & Parrila, R. (2011). Morphological awareness: A key to understanding poor reading comprehension in English. *Journal of Educational Psychology, 103*(3), 523-534. doi:10.1037/a0023495