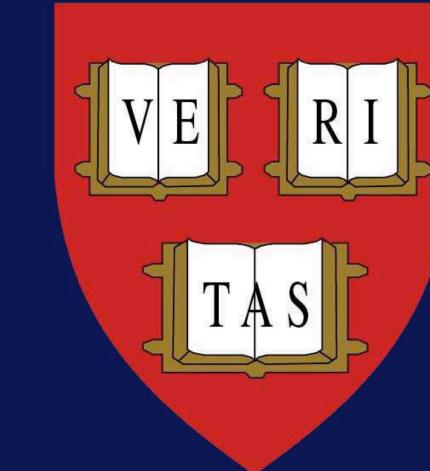


Individual Differences in Confidence Affect Judgments Made Collectively By Groups William

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Introduction

Confidence (self-estimated accuracy) has been well-studied as part of the phenomenon of overconfidence. Studies of overconfidence typically quantify the discrepancy between an individual's true accuracy and his or her confidence level. Accuracy and overconfidence vary greatly depending on the task difficulty and domain (Lichtenstein et al., 1982).

Confidence may be a relatively stable individual trait across varying contexts. Indeed, strong correlations among individuals' self-reported confidence in a wide range of tasks are taken as evidence of a general confidence trait (Blais et al., 2005).

Groups, like individuals, routinely express their degree of confidence in collective judgments. Decisions to implement highly-consequential actions might vary as a function of group confidence (Sniezek & Henry, 1989). Exploring how the confidence levels of individuals combine to determine the level of confidence of the group is crucial to better understanding the antecedents of group confidence.

Research Questions

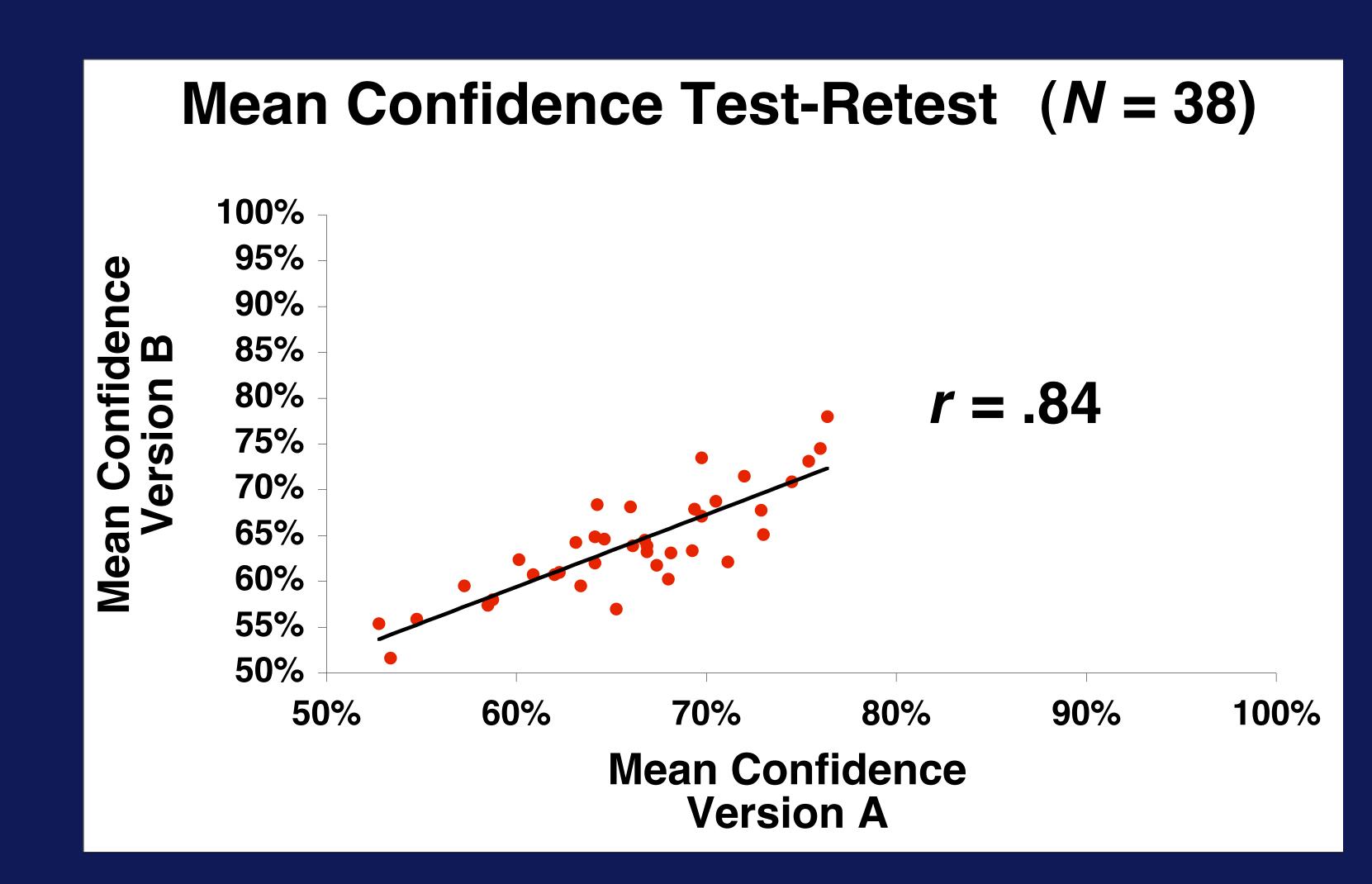
- 1. Is confidence a reliable individual trait, unrelated to accuracy and general cognitive ability?
- 2. How do the trait confidence levels of individual group members combine to affect the confidence level expressed by a collaborative dyad?

Individual Differences in Confidence

- Developed two versions of a 40-item general-knowledge true/false trivia test (A and B).
- Versions matched for accuracy and confidence, using data from 270 online participants.
- Participants provided an answer and a confidence rating for each answer on a 50%—100% scale.
- Mean confidence across the 40 items was taken as the individual's confidence score.

Test-retest (alternate forms) reliability

- 38 online participants completed both versions (between-test interval: M = 9.9, SD = 6.9 days)
- Correlation between mean confidence on test versions A and B: r = .84 (p < .001)
- Accuracy and overconfidence were *not* reliable (r = -.19 and r = .21)

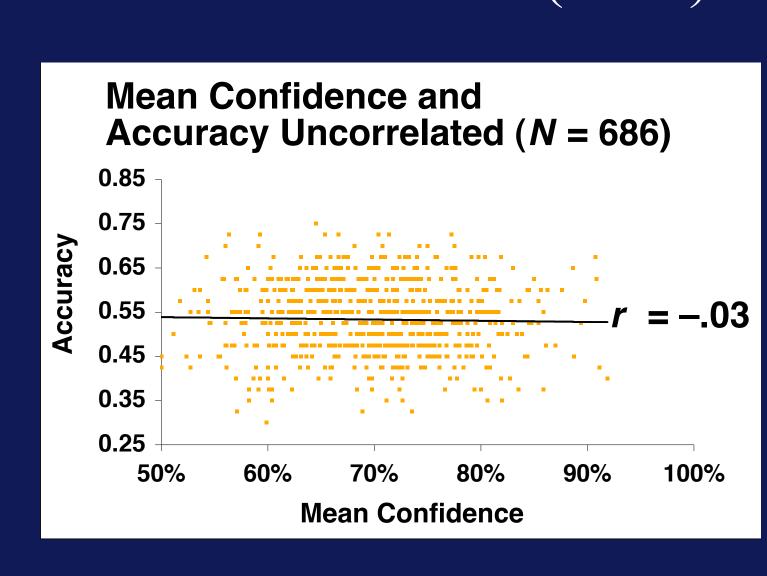


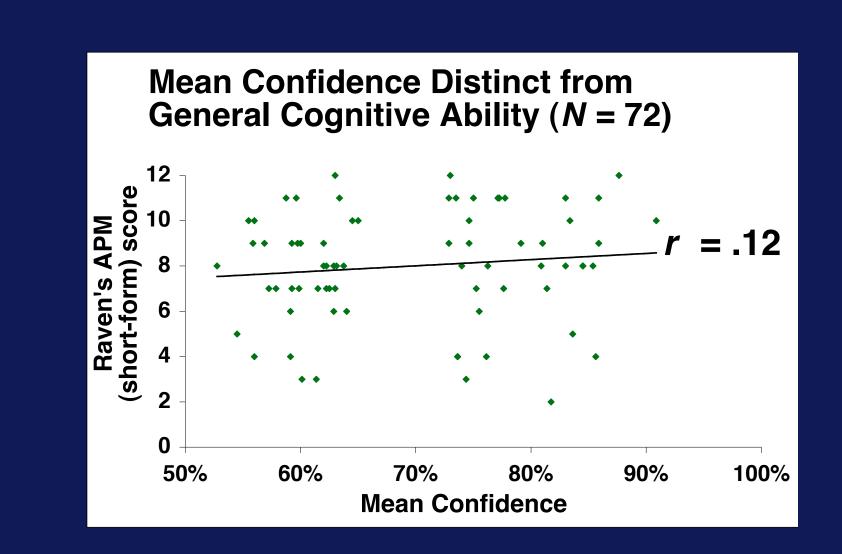
Confidence unrelated to accuracy

• Across both test versions: r = -.03 (N = 686)

Confidence distinct from general cognitive ability

• Correlation with (short) Raven's APM: r = .12 (N = 72)





Individuals substantially overconfident

• Means: confidence = 70%, accuracy = 53% (N = 686)

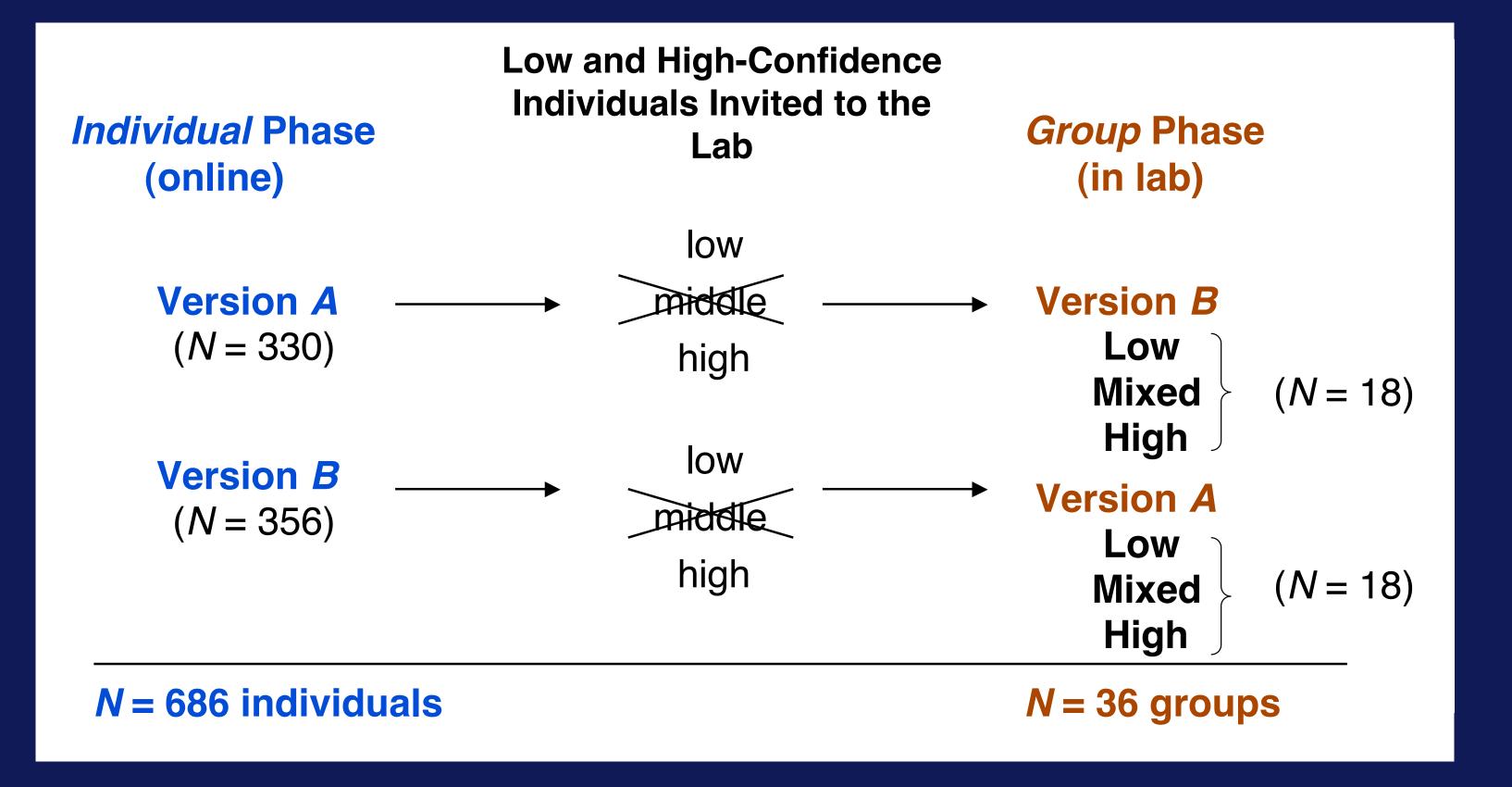
Effect of Individual Confidence on Group Confidence

- Each online participant categorized as low, middle, or high-confidence using tercile boundaries
- 72 individuals invited to the lab as 36 same-sex dyads
- Dyads collaborated on the test version they did *not* complete online, in one of three conditions:

Low: 2 low-confidence individuals

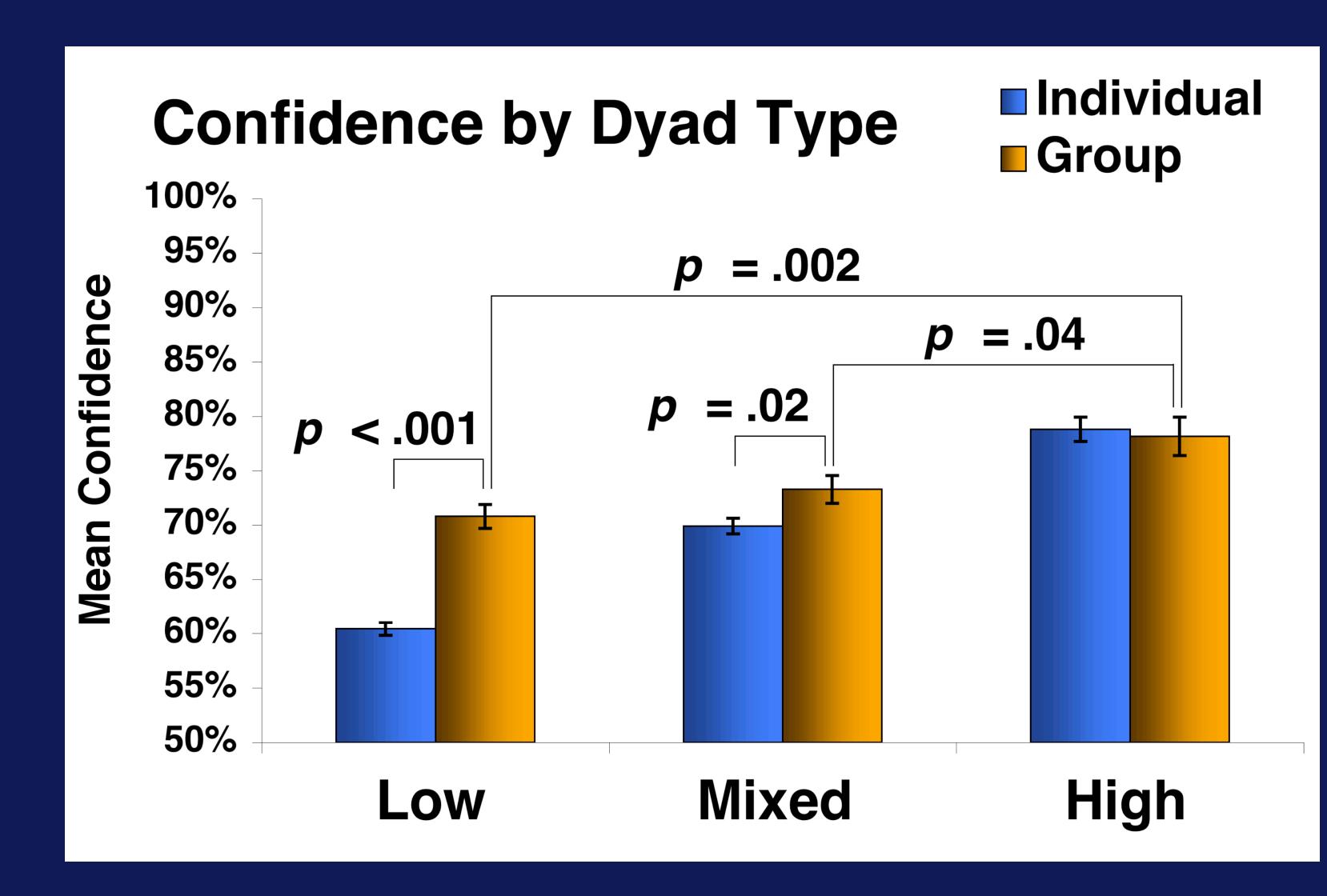
Mixed: 1 high and 1 low-confidence individual

High: 2 high-confidence individuals



Main Results

- Group confidence \rightarrow individual confidence (p < .001)
- Low-confidence groups increased most in confidence from Individual to Group context (p < .001)
- High-confidence groups had significantly higher group confidence levels than both Low (p = .002) and Mixed (p = .04); Low and Mixed did not differ significantly (p = .15)



- No significant differences in accuracy between conditions or between individuals and groups
- Mean answer decision time correlated with group accuracy (r = .34, p = .05)
- Group overconfidence observed: mean confidence = 74%, accuracy = 55% (N = 36)

Judgment Approach Style Analysis

Two distinct approaches to making a true/false judgment:

- 1. Act refers to the style of settling on a judgment (i.e., true or false) without verbally citing any judgment-relevant knowledge or experiences that could conceivably justify or lend credence to the decision.
- 2. *Analyze* refers to the style of *beginning* discussion by verbally considering judgment-relevant knowledge and experiences, arriving at a final judgment *through* the processing of information that could conceivably justify or lend credence to the decision.

We expected that the Analyze style would be positively related to group confidence and accuracy.

Two independent raters reviewed videos of each dyad, categorizing every answer as exhibiting an Act or Analyze style ($\alpha = .88$). Act and Analyze scores were the proportion of items on which the dyad took each approach.



Approach Style Results

- Analyze approach style was positively associated with group accuracy (r = .51, p = .002)
- The association between Analyze score and group confidence was marginally significant (r = .31, p = .08)

Conclusions

Confidence on our tests is an individual trait, unrelated to accuracy and distinct from general cognitive ability.

Low groups gained in confidence more than Mixed and High groups, suggesting that the overall confidence difference between groups and individuals is largely driven by the gains of low-confidence individuals in the group setting. High groups did not fall in confidence, ruling out regression to the mean as an explanation.

Mixed groups were closer in confidence to Low groups than to High groups, suggesting that in Mixed groups, the low-confidence member had a greater influence on group confidence level than the high-confidence member.

The Analyze approach was positively correlated with accuracy, suggesting that group accuracy in uncertain judgments may be improved by considering relevant knowledge and experiences before settling on a judgment.

References

Blais, A., Thompson, M.M., & Baranski, J.V. (2005). Individual differences in decision processing and confidence judgments in comparative judgment tasks: The role of cognitive styles. *Personality and Individual Differences*, 38, 1701–1713.

Lichtenstein, S., Fischoff, B., & Phillips, L.D. (1982). Calibration of probabilities: the state of the art to 1980. In D. Kahneman, P. Slovic, & A. Tversky (Eds.), *Judgment under uncertainty: Heuristics and biases* (pp. 306–334). Cambridge: Cambridge University Press.

Sniezek, J.A., & Henry, R.A. (1989). Accuracy and confidence in group judgment. *Organizational Behavior and Human Decision Processes*, 43, 1–28.

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