# The Effects of Gist Information and Scientific Quality on Damages in a Civil Trial

Kimberly S. Dellapaolera, Sarah J. Gervais, Melanie B. Fessinger, Brian H. Bornstein, & Tess M. S. Neal

Funded by NSF Grant #1733961
Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

Arizona State University

UNIVERSITY of NEBRASKA LINCOLN

# Science in the Courtroom

# Fuzzy Trace Theory

## Verbatim Traces

- Literal perceptions
- Exact words or precise numbers

## Gist Traces

- Bottom-line meaning
- Reliance on intuition
- Vague and qualitative

Reyna & Brainerd, 1995

# Current Study

# Current Study

Are jurors able to differentiate between High vs. Low quality science?

Do safeguards help jurors be better calibrated to the strength of evidence and understand the scientific evidence better?

Do individual differences affect jurors' understanding of scientific evidence?

# Design

Safeguard

| Quality of Scientific Evidence | Gist | No Gist (Control) | No Gist + Jury Instruction |
|---|---|---|---|
| **High** | High Quality, Gist Info | High Quality, No Gist Info | High Quality, No Gist Info, Jury Instructions |
| **Low** | Low Quality, Gist Info | Low Quality, No Gist Info | Low Quality, No Gist Info, Jury Instructions |

# Participants

- 469 participants (UNL students & Mturkers)
- *M* age = 26.35, range = 19-70, SD = 9.19
- 243 men (51.8%), 224 women (47.8%), 2 did not specify (0.4%)
- White, non-Hispanic (69.9%), Asian (4.7%), Black/African American (9.0%), Hispanic/Latino (9.0%), Other (7.4%)

# Individual Measures

**Cognitive Reflection Test[1]**

"A bat and a ball cost $1.10 in total. The bat costs $1.00 more than the ball. How much does the ball cost?"

**Weller's Numeracy Scale[2]**

"If the chance of getting a disease is 10%, how many people would be expected to get the disease out of 1,000?"

**Trust in Science[3]**

"Scientists use fair procedures."

1 = *Strongly Disagree,* 4 = *Strongly Agree*

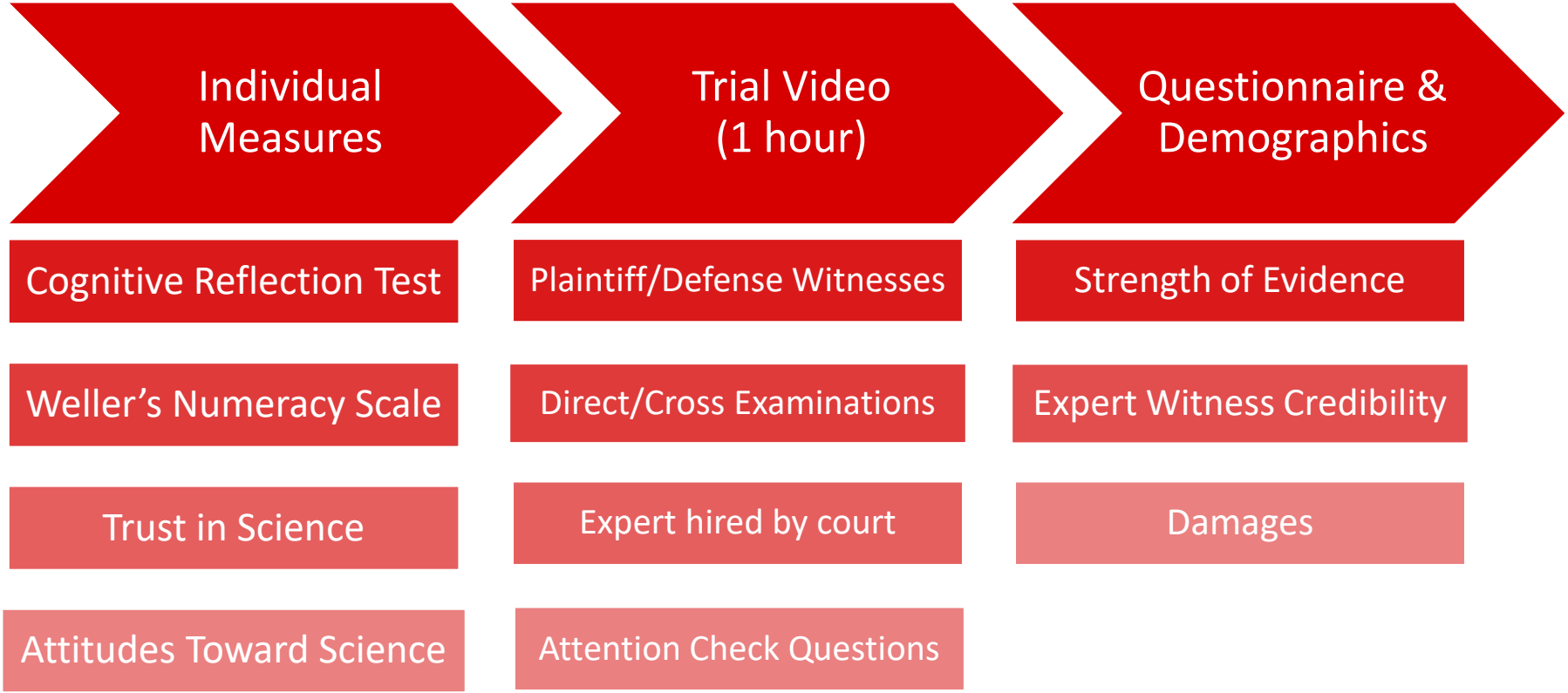
**Attitudes Toward Science[4]**

"Science makes our way of life change too fast."

1 = *Strongly Disagree,* 4 = *Strongly Agree*

1. Frederick, 2005; Toplak et al., 2014 2. Weller et al., 2012 3. PytlikZillig et al., 2016 4. National Science Board,2004; 2006

# Procedure


Individual Measures
Trial Video (1 hour)
Questionnaire & Demographics
Cognitive Reflection Test
Weller's Numeracy Scale
Trust in Science
Attitudes Toward Science
Plaintiff/Defense Witnesses
Direct/Cross Examinations
Expert hired by court
Attention Check Questions
Strength of Evidence
Expert Witness Credibility
Damages

# Dependent Variables

**Strength of Evidence**

"Please rate the strength of the scientific evidence on which Dr. Watts based her testimony."

1 = *Extremely Weak, 10 = Extremely Strong*

**Damages**

Log-transformed dollar amount

**Witness Credibility Scale**[1]

"Please rate the <u>expert</u> witness, Dr. Helen Watts."

1 = *Inarticulate,* 10 = *Well-spoken*

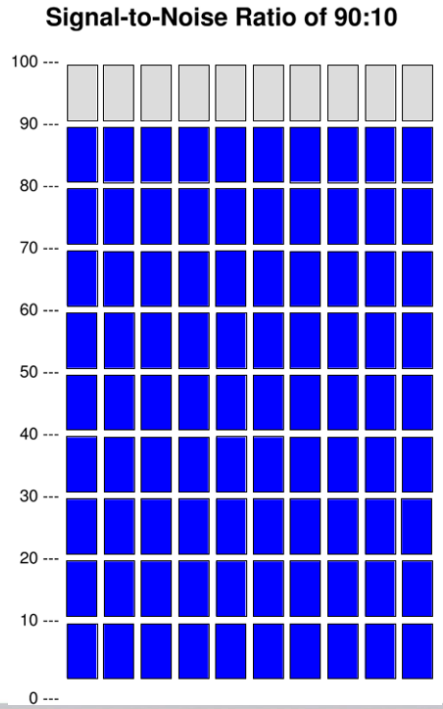
1. Brodsky et al., 2010

# Hypotheses

- H1:  Quality of Evidence
    - Jurors are able to differentiate between high and low quality evidence
- H2: Individual Differences
    - Low – cognitive reflection, numeracy, attitudes towards science, trust in science = more poorly calibrated

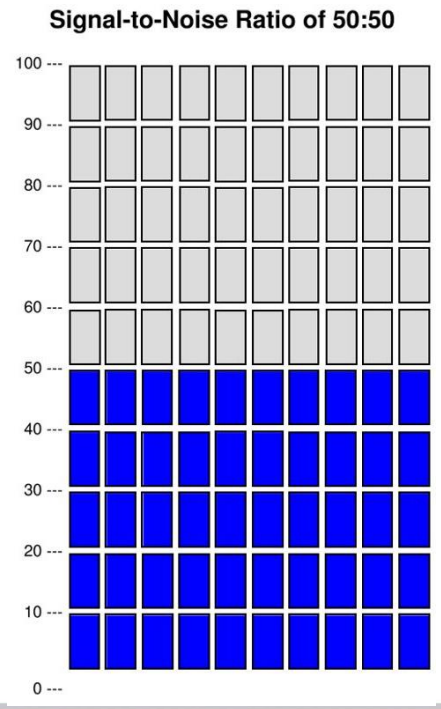
# Condition – Verbal & Visual Gist

## High




This is a fairly high signal-to-noise ratio -- about as high as it gets for these kinds of tests.

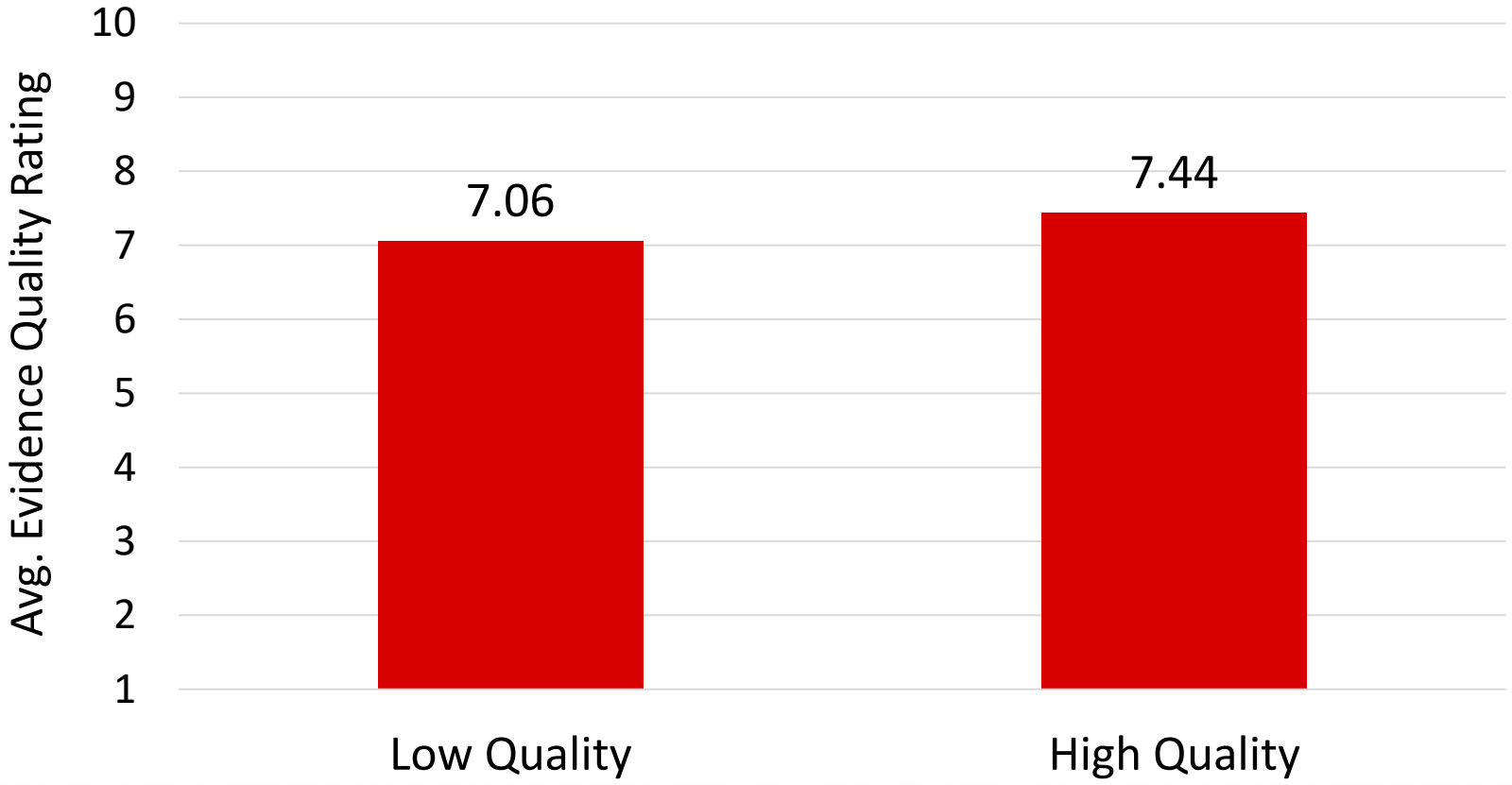
## Low




This is not a terribly high signal-to-noise ratio -- about average for these kinds of tests.

# H1:

$F(1,463) = 5.099$, $p = .024$, $\eta_p^2 = .011$



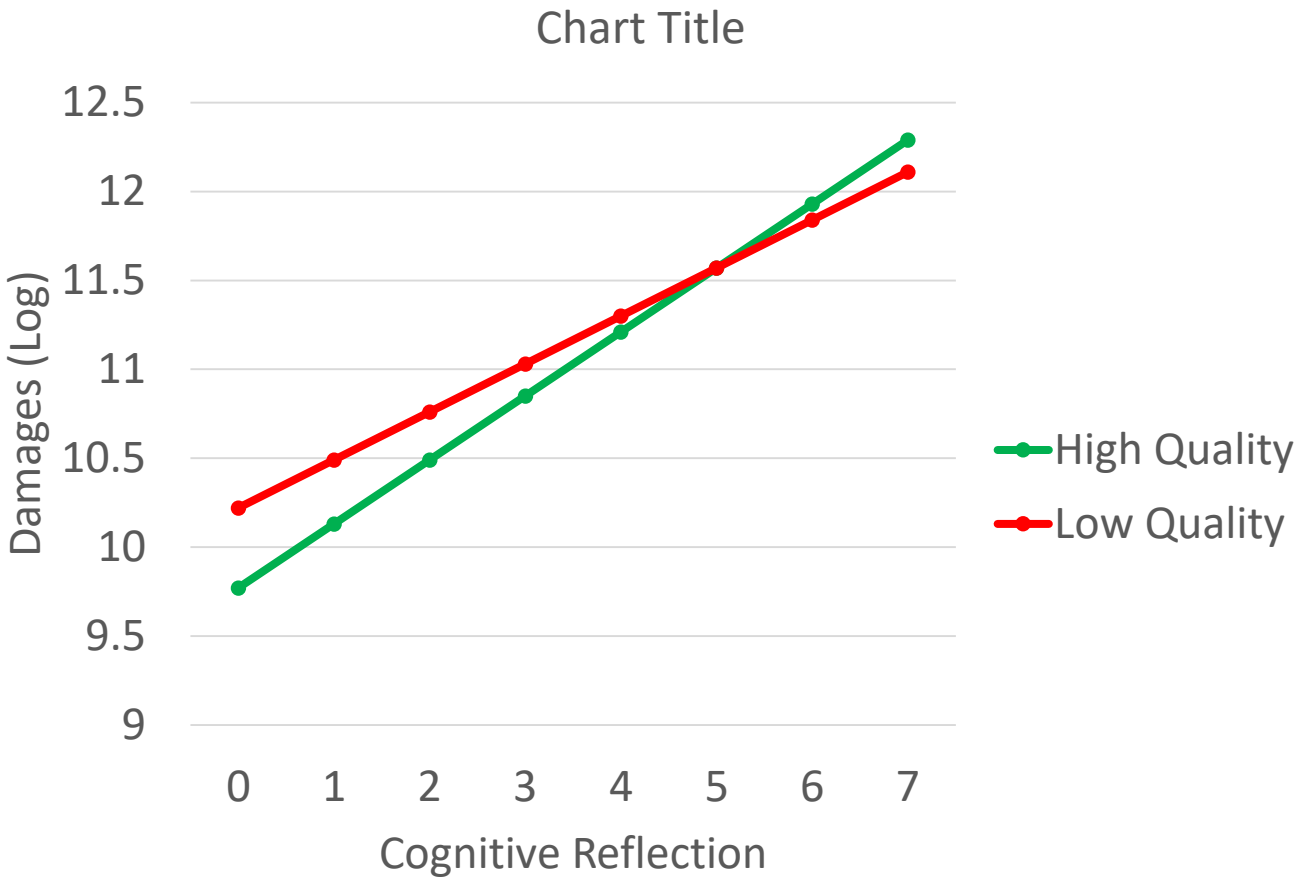


Chart Title
12.5
12
11.5
11
10.5
10
9.5
9
Damages (Log)
0
1
2
3
4
5
6
7
Cognitive Reflection
High Quality
Low Quality

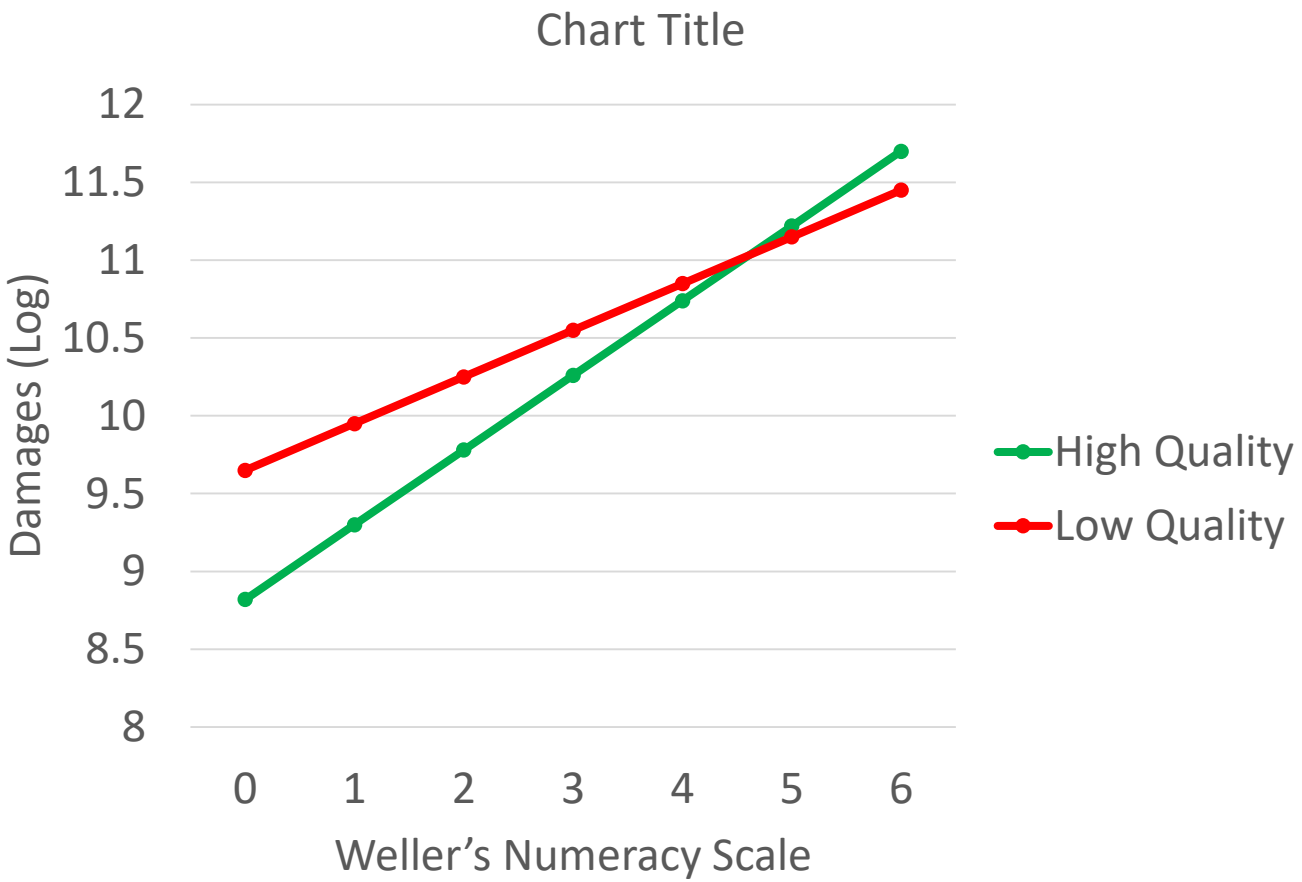


Chart Title
12
11.5
11
10.5
10
9.5
9
8.5
8
Damages (Log)
0
1
2
3
4
5
6
Weller's Numeracy Scale
High Quality
Low Quality

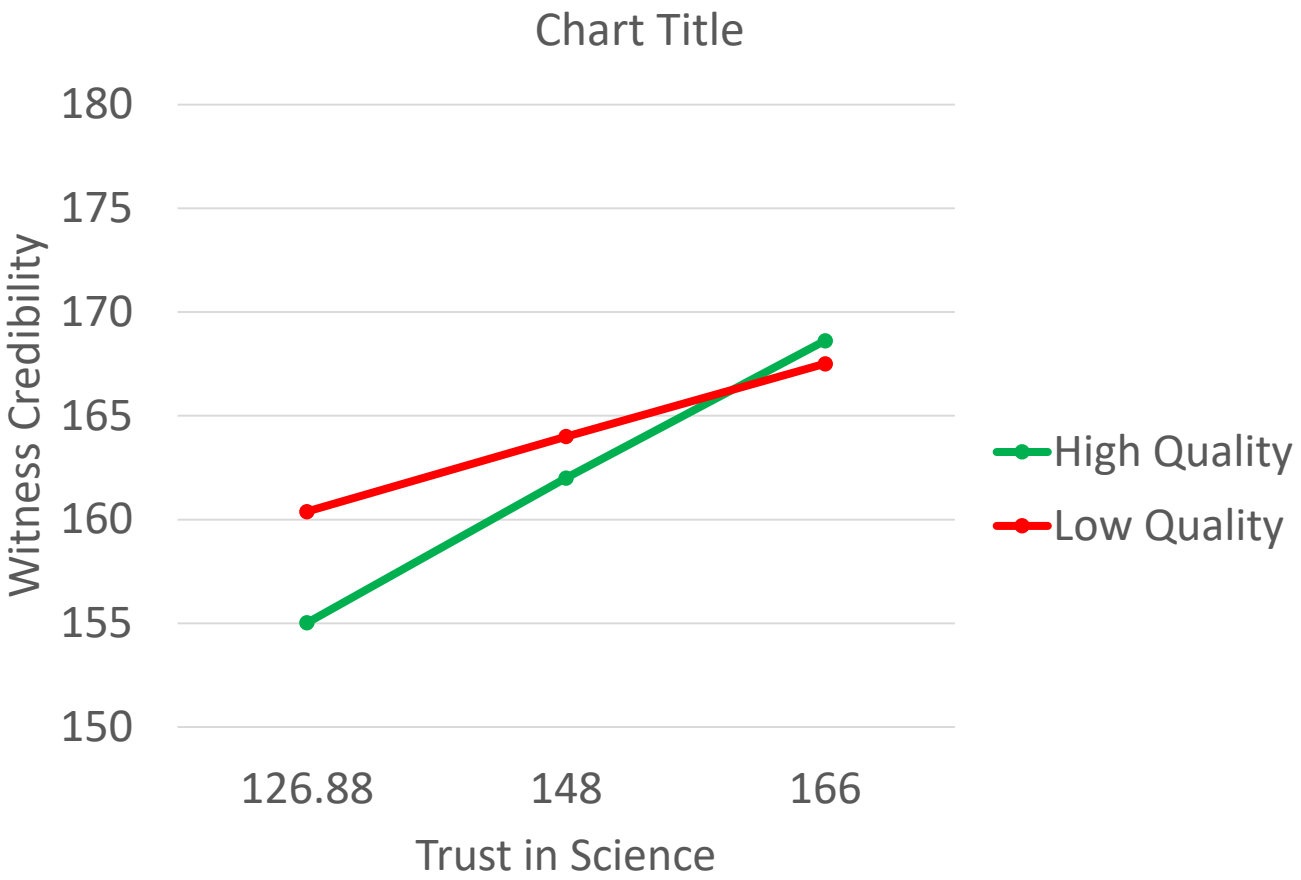


Chart Title
180
175
170
165
160
155
150
Witness Credibility
126.88
148
166
Trust in Science
High Quality
Low Quality

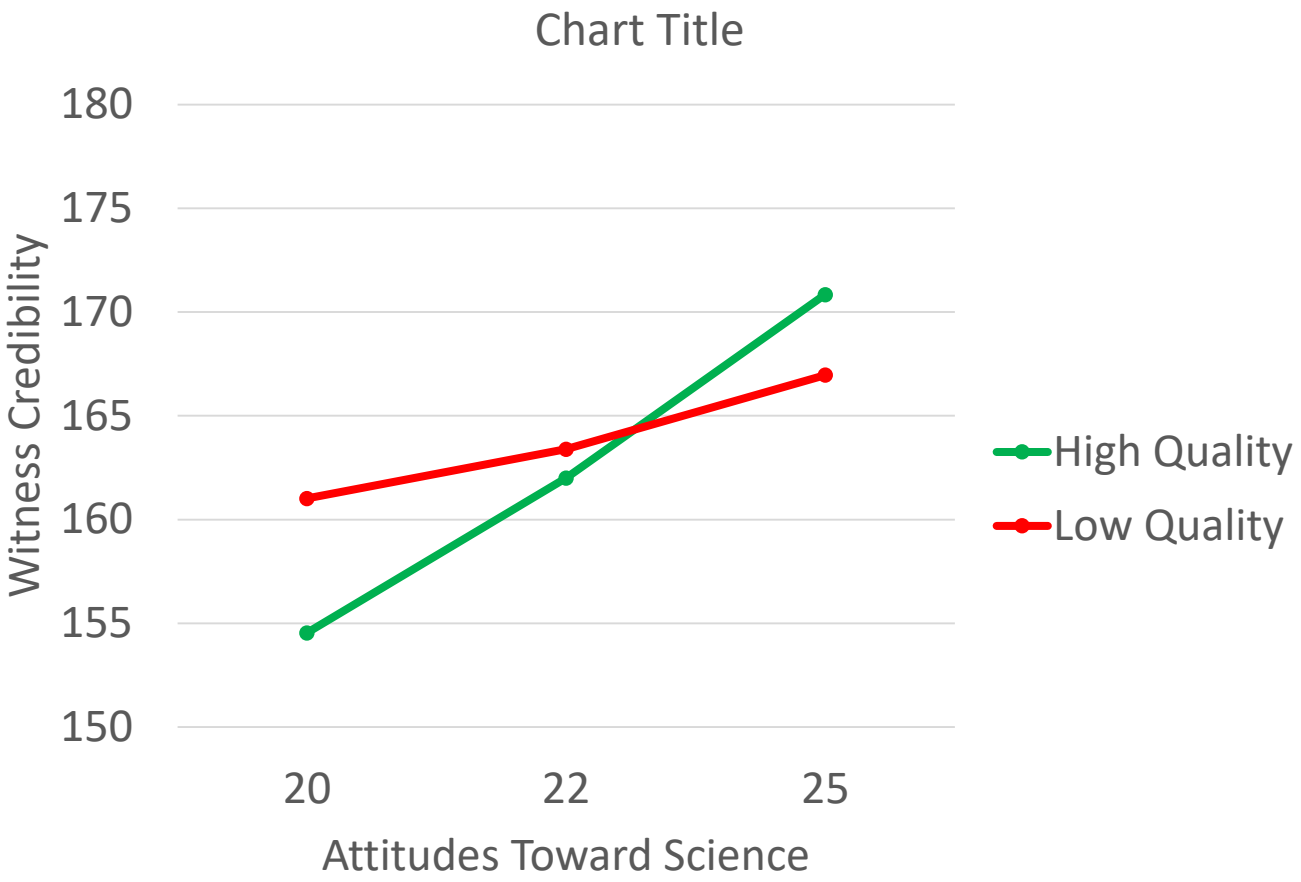


Chart Title
180
175
170
165
160
155
150
Witness Credibility
20
22
25
Attitudes Toward Science
High Quality
Low Quality

# Discussion & Future Directions

- Better scientific reasoning & cognitive skills led to higher damages and expert credibility scores, regardless of condition.
- Decision aids did not improve judgments.