



Universiteit
Leiden
The Netherlands

Escaping the room, not the bias

Investigating the False Consensus Effect through Experiential and Observational Learning in
an Educational Escape Room

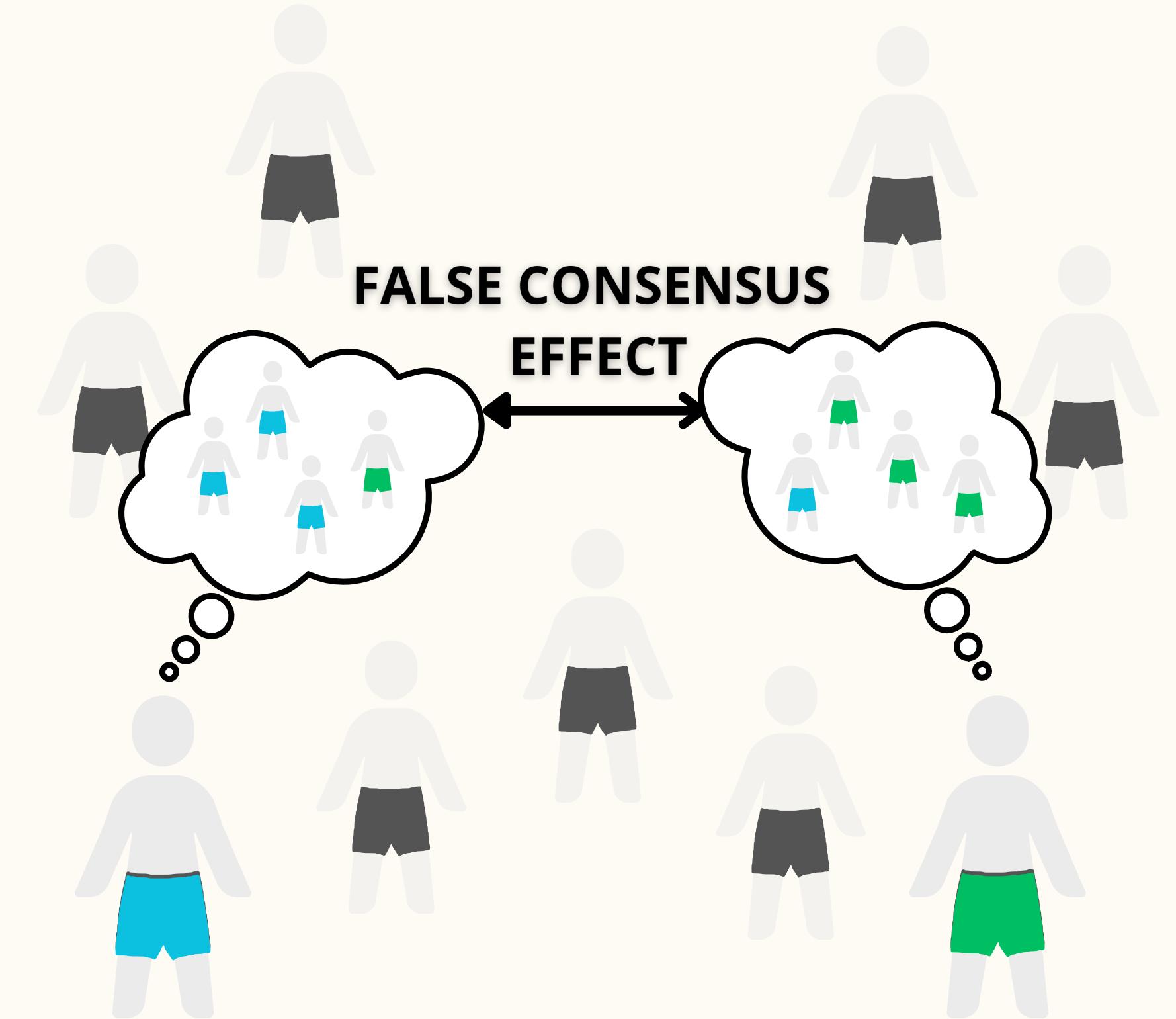
Linthe van Rooij

Master Creative Intelligence & Technology

Supervised by: Maarten Lamers, Zane Kripe

The False Consensus Effect (FCE)

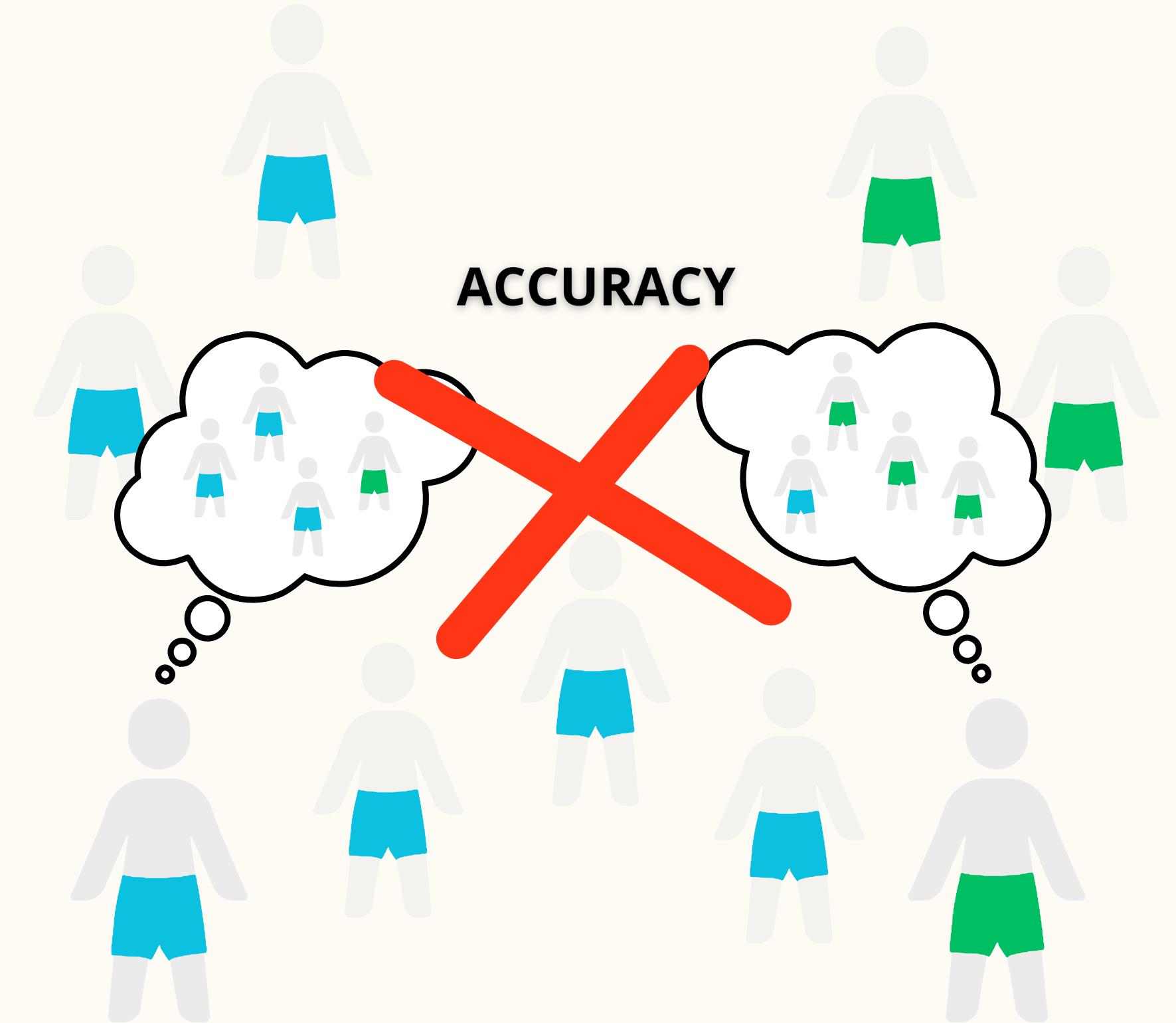
- Social egocentric bias
- Overestimation of shared beliefs



Marks & Miller, 1987; Ross et al., 1977

The False Consensus Effect (FCE)

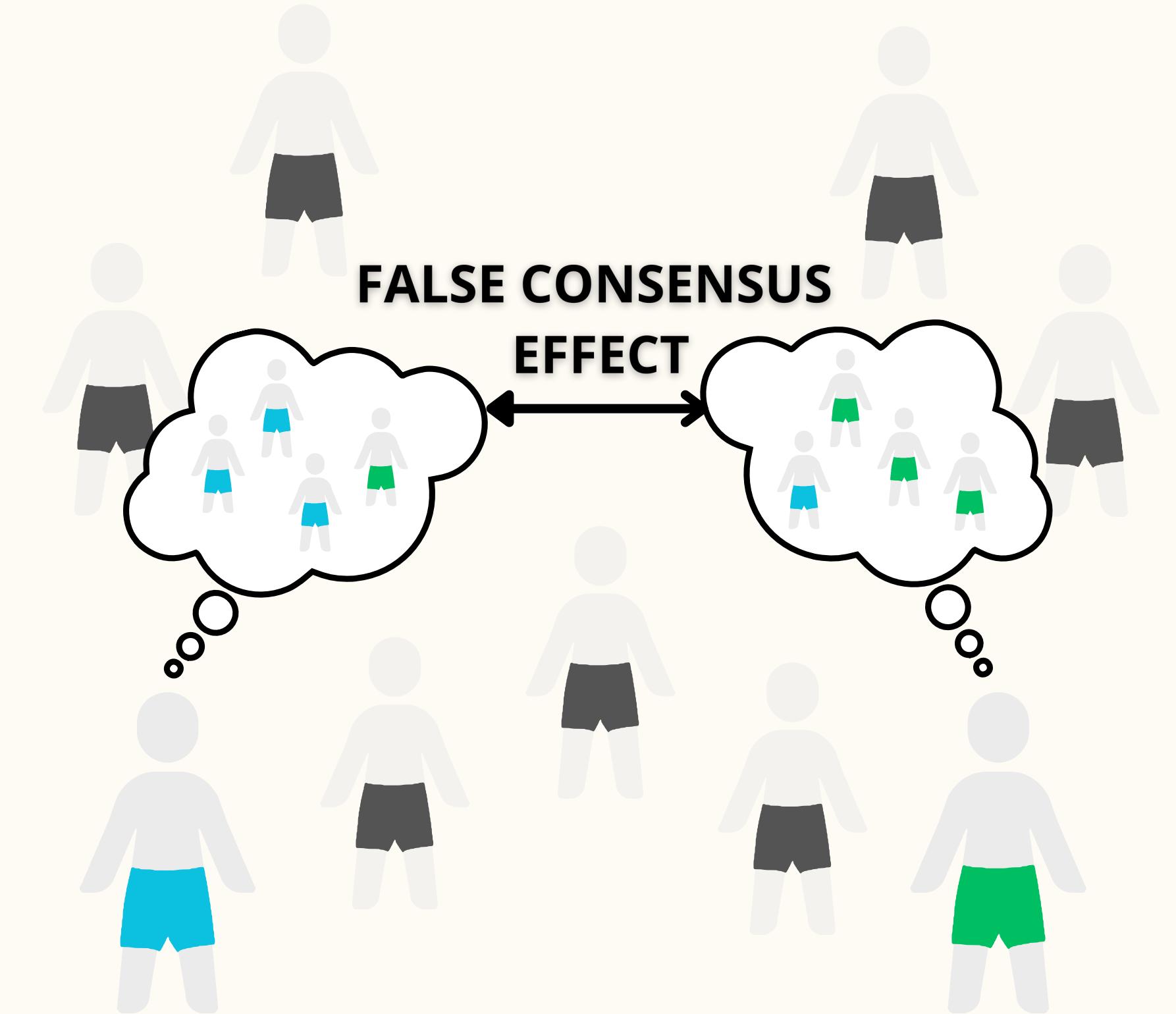
- Social egocentric bias
- Overestimation of shared beliefs



Marks & Miller, 1987; Ross et al., 1977

The False Consensus Effect (FCE)

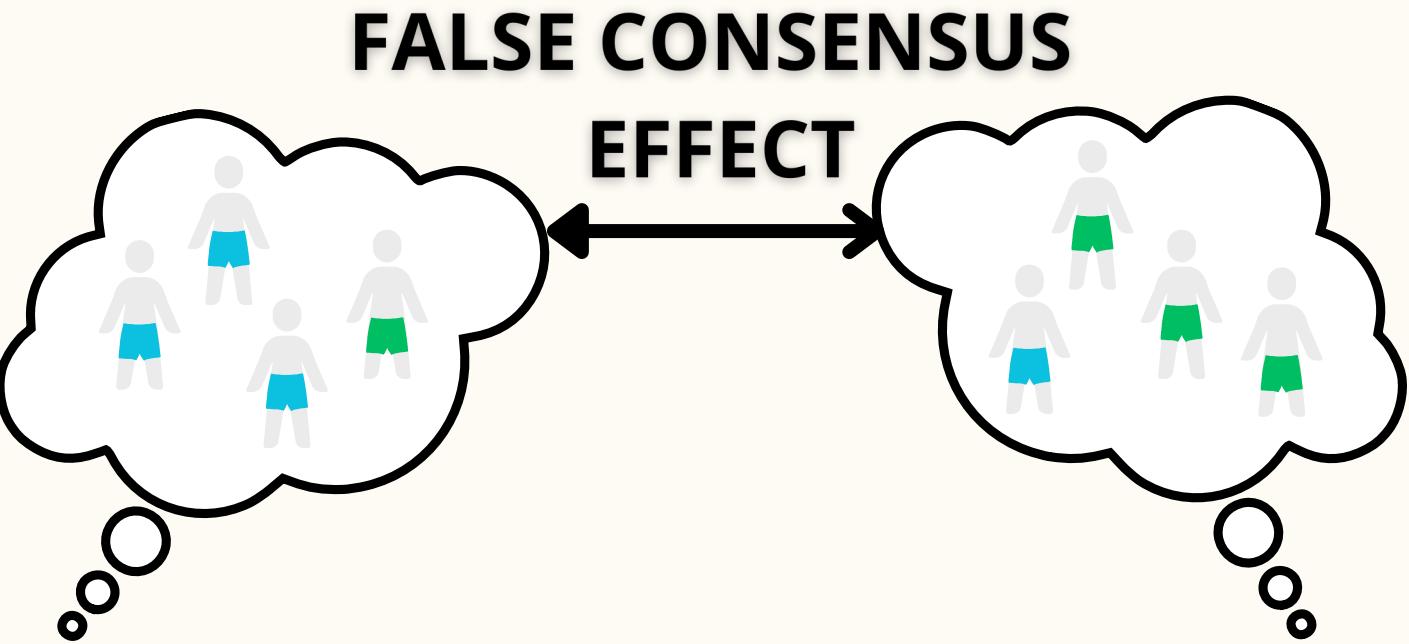
- Social egocentric bias
- Overestimation of shared beliefs



Marks & Miller, 1987; Ross et al., 1977

The False Consensus Effect (FCE)

- Consequences: misunderstanding, biased decision making, conflict, polarisation



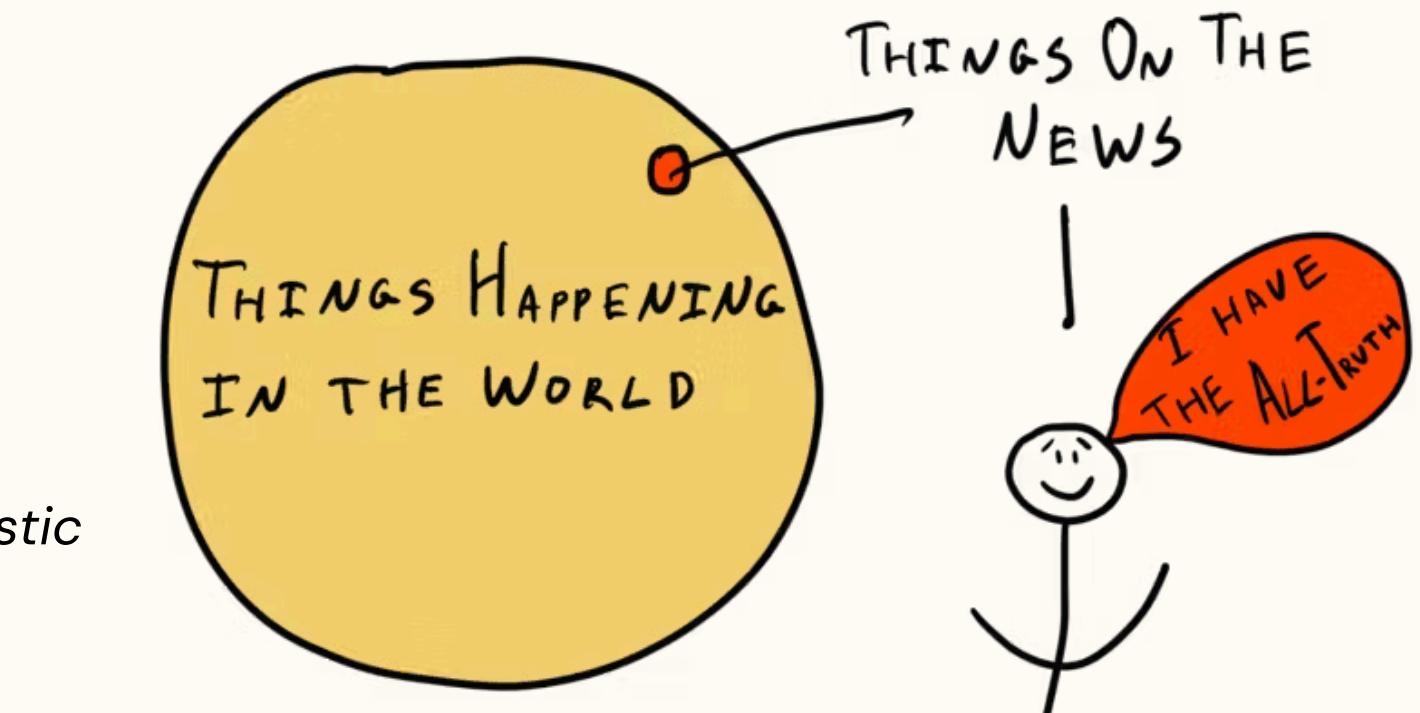
Need for reducing the FCE

The False Consensus Effect (FCE)

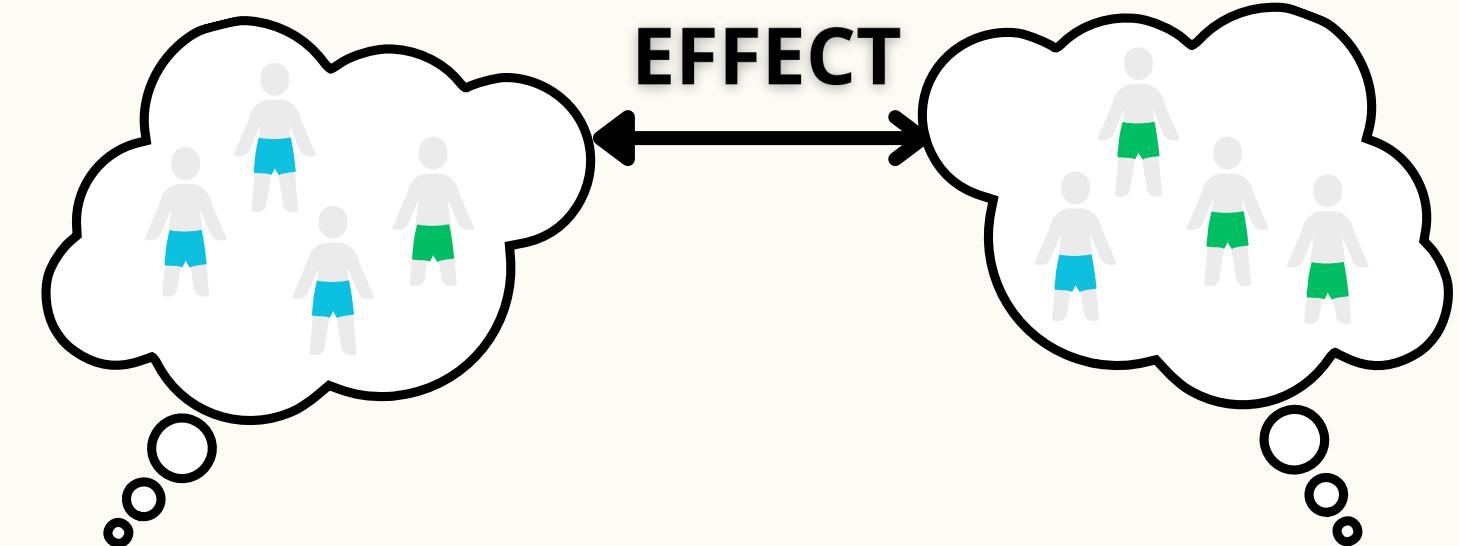
- Consequences: misunderstanding, biased decision making, conflict, polarisation
- Availability heuristics
 - The more prevalent, the more likely the view is considered.



Need for reducing the FCE



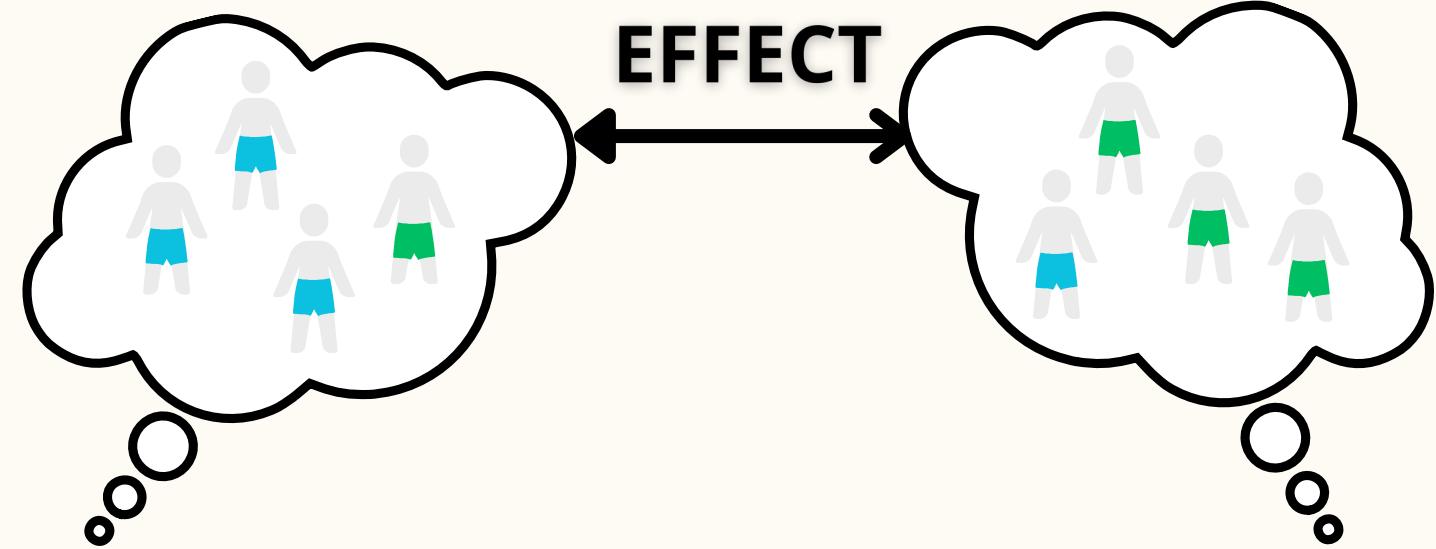
FALSE CONSENSUS EFFECT



The False Consensus Effect (FCE)

FALSE CONSENSUS

EFFECT



- Consequences: misunderstanding, biased decision making, conflict, polarisation
- Availability heuristics
 - The more prevalent, the more likely the view is considered.



Need for reducing the FCE



Increased exposure on alternative views

Exposure techniques

Passive learning techniques

Observational learning

Bandura & Walters
(1977)

Learning through observation,
watching behaviour of others

Bauman (2002)

- Watching videos



Active learning techniques

Experiential learning

Kolb (1984)

Stronger retention
Higher engagement



Learning by doing, active
experimentation and reflection

- Serious games, educational escape rooms

Reducing biases

Reducing the FCE is possible through (observational) exposure (Bauman, 2002)

Other biases (e.g., projection bias) have been reduced through active (game-based) learning (Yoon et al., 2021)

Educational escape rooms

Web-based escape room can address awareness surrounding severe mental illnesses (Rodriguez-Ferrer et al., 2002)

Escape rooms can induce attitude change towards violence compared to theoretical instructions (Özkan Sat et al., 2025)

Statement of the Problem

Lack of research done in exploring active learning methods, such as educational escape rooms, to address the FCE

This study investigates

1. Whether experiential learning and observational learning with an educational escape room can reduce the False Consensus Effect;
2. The comparison of both learning techniques;
3. How attitudes and prior engagement with the topic may influence these outcomes.

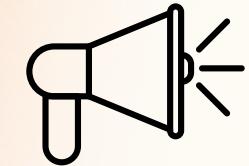
Hypothesis 1-3



**Experiential learning
in an educational
escape room reduces
the FCE.**



**Observational
learning through
watching escape
room gameplay
reduces the FCE**



**Experiential learning
reduces the
FCE more than
observational
learning.**

Hypothesis 4–5

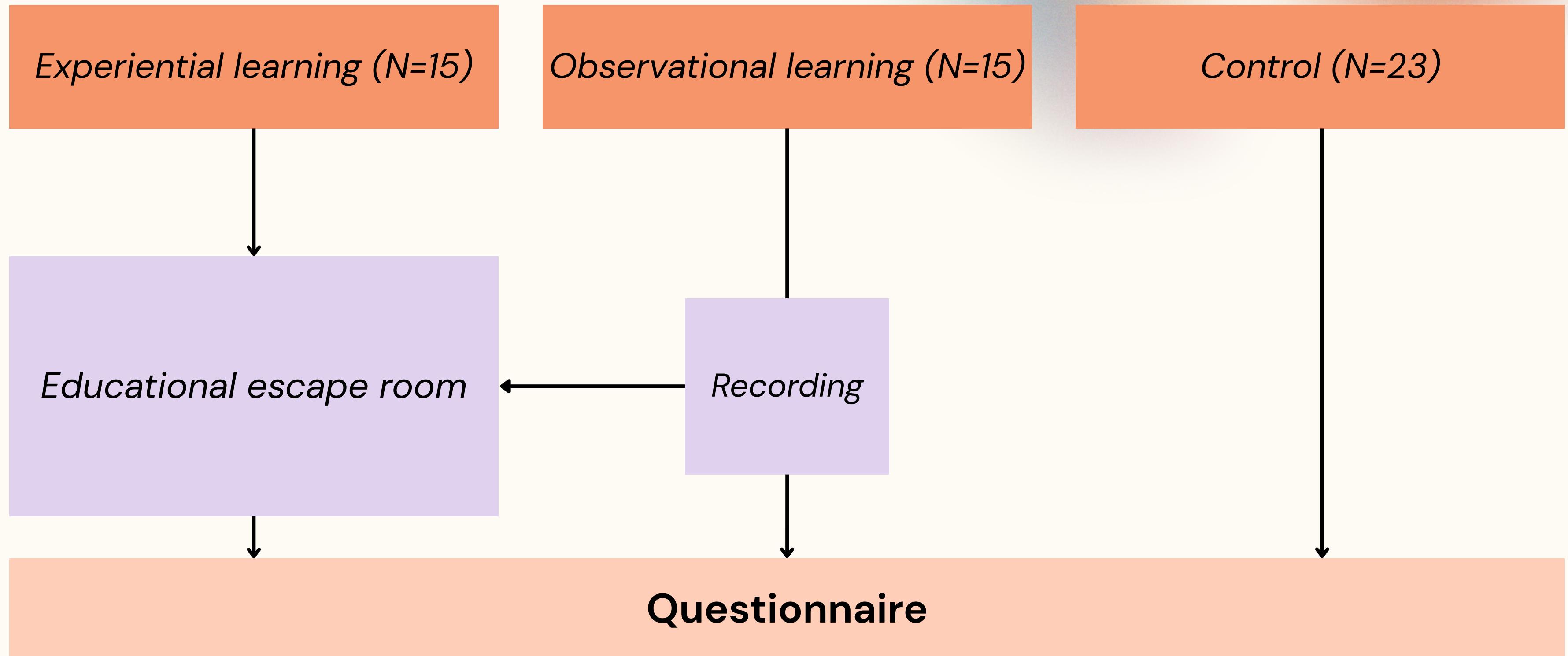


Topic attitude moderates the relationship between learning type (experiential vs. observational) and the FCE.



Prior topic engagement moderates the relationship between learning type (experiential vs. observational) and the FCE.

Experimental design



The educational escape room

“Should AI Replace Office Workers?”

The educational escape room

“Should AI Replace Office Workers?”

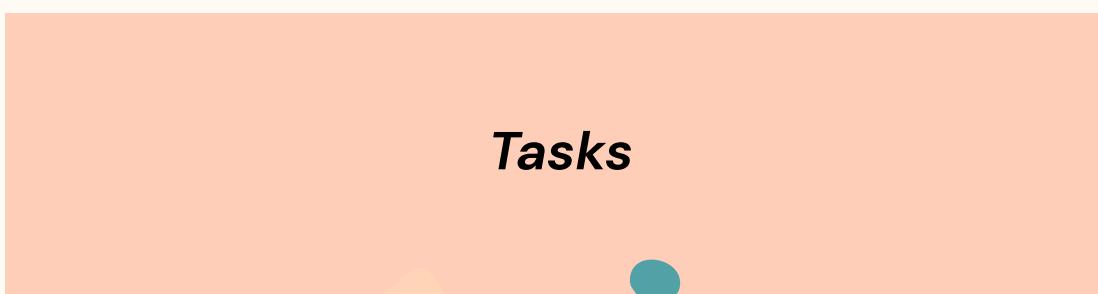
START

Costs human v.s. AI



Finances

Creativity v.s. automation

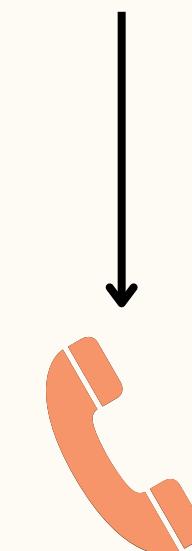
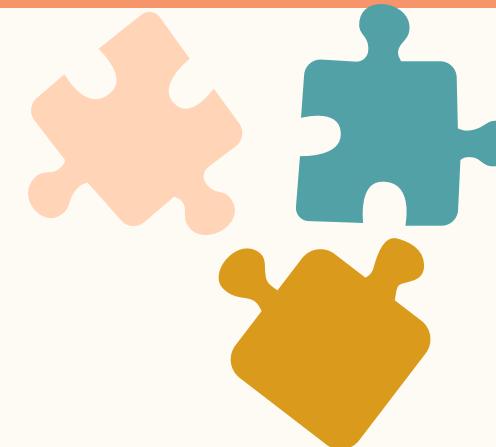


Tasks

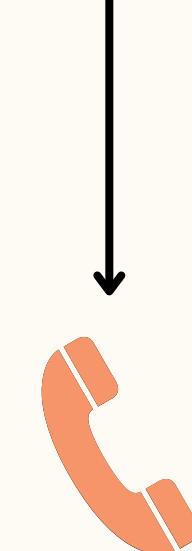
Client satisfaction



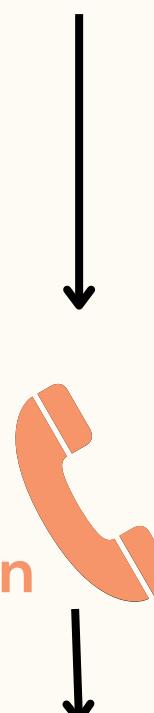
Side Effects



Reflection



Reflection

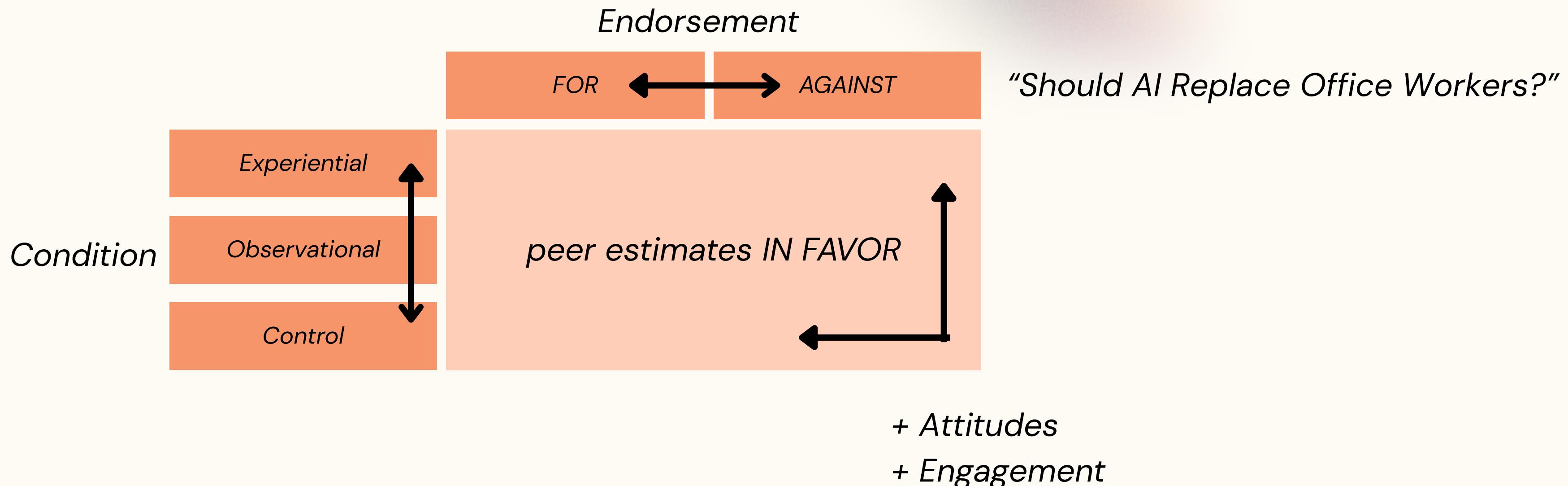
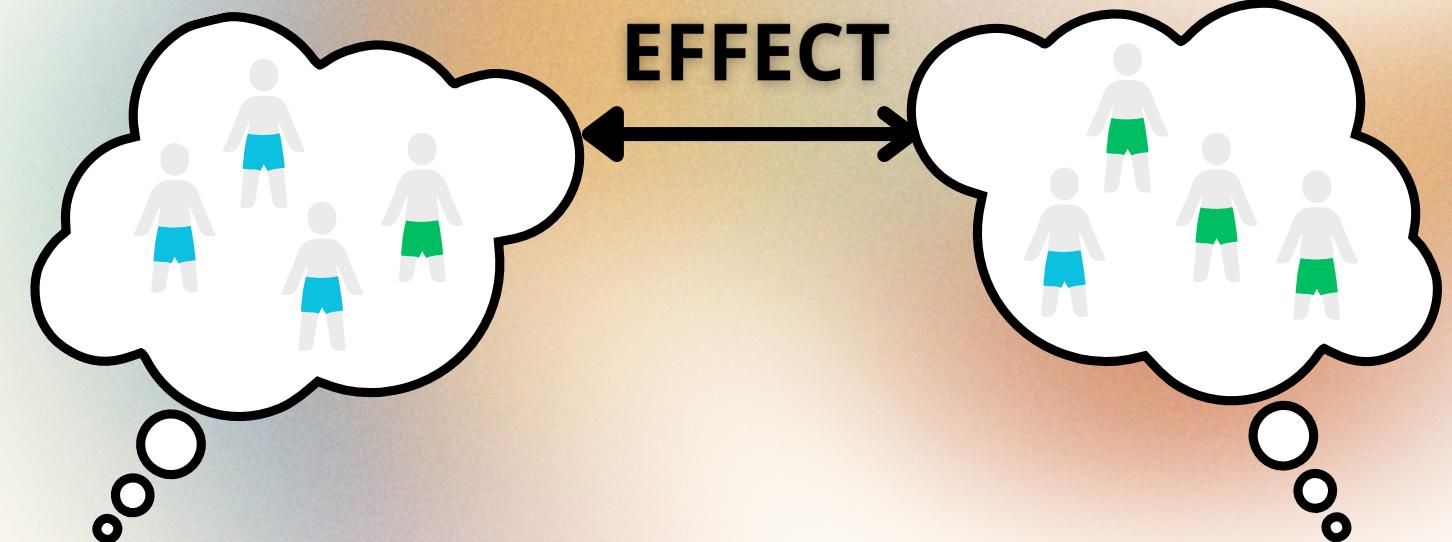


Reflection

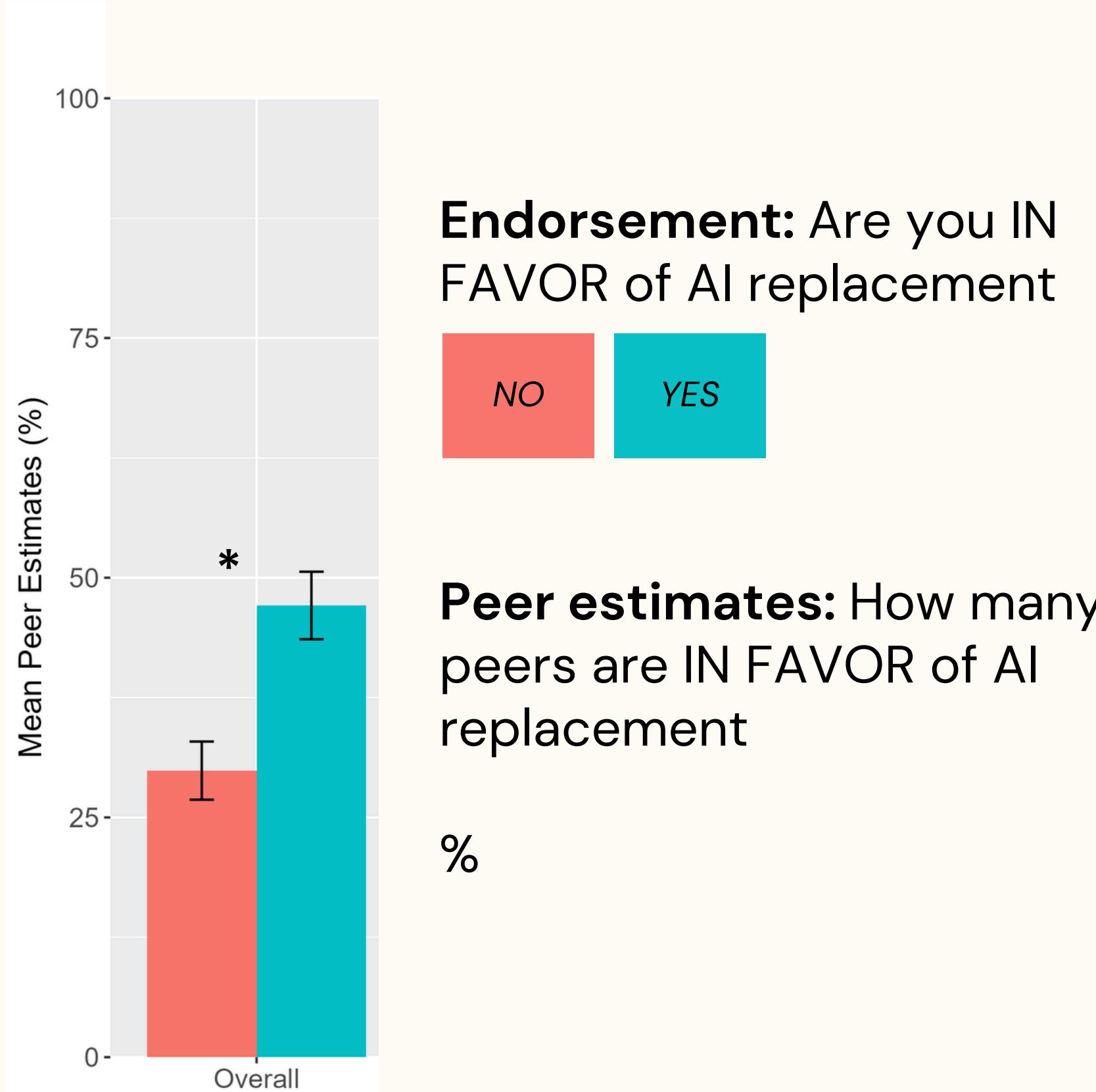
OPEN END

Data analysis

FALSE CONSENSUS
EFFECT



Results

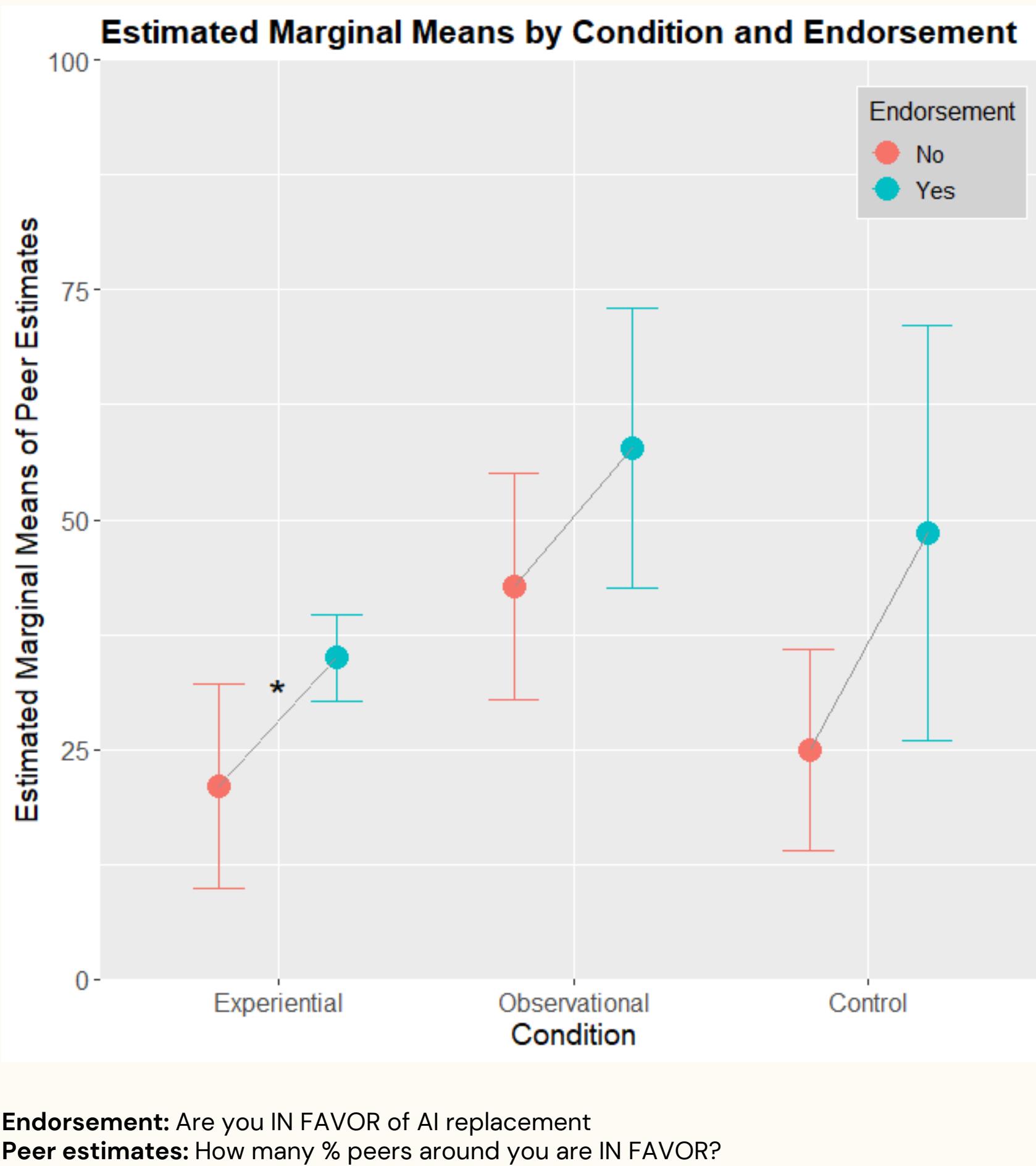


Significant difference between peer estimates of endorsement (=FCE) over whole sample.

Statement induces FCE

Results

Hypothesis 1 and 2: Experiential learning in an educational escape room and observational learning through watching escape room gameplay reduces the FCE

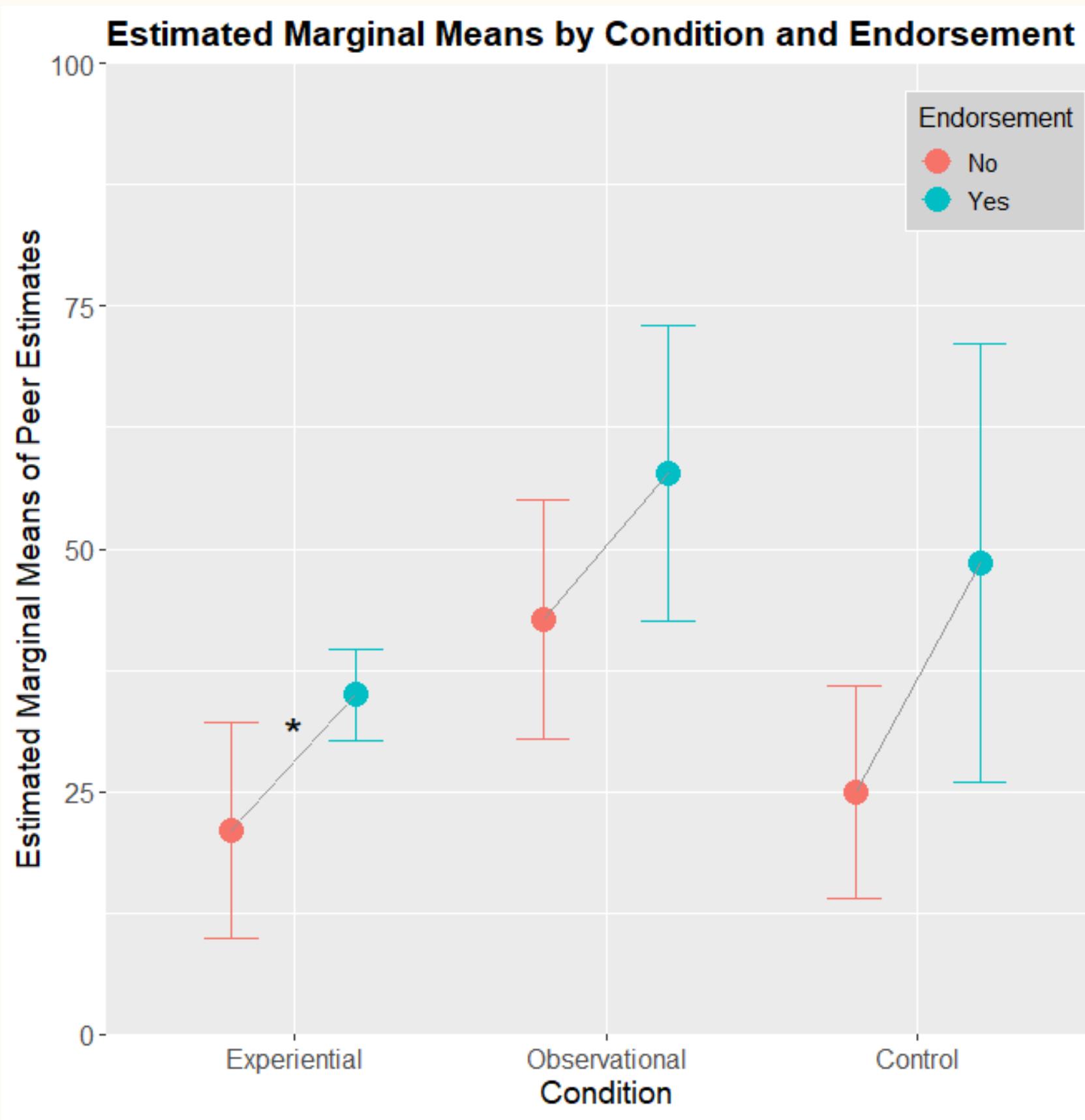


- The magnitude of FCE does not differ across conditions
- When comparing peer estimates of endorsement within the conditions:
 - Experiential learning shows FCE
 - Observational & control don't show FCE

Hypothesis 1 → rejected (seems to amplify)
Hypothesis 2 → rejected (yes, descriptively, not statistically)

Results

Hypothesis 3: Experiential learning reduces the FCE more than observational learning

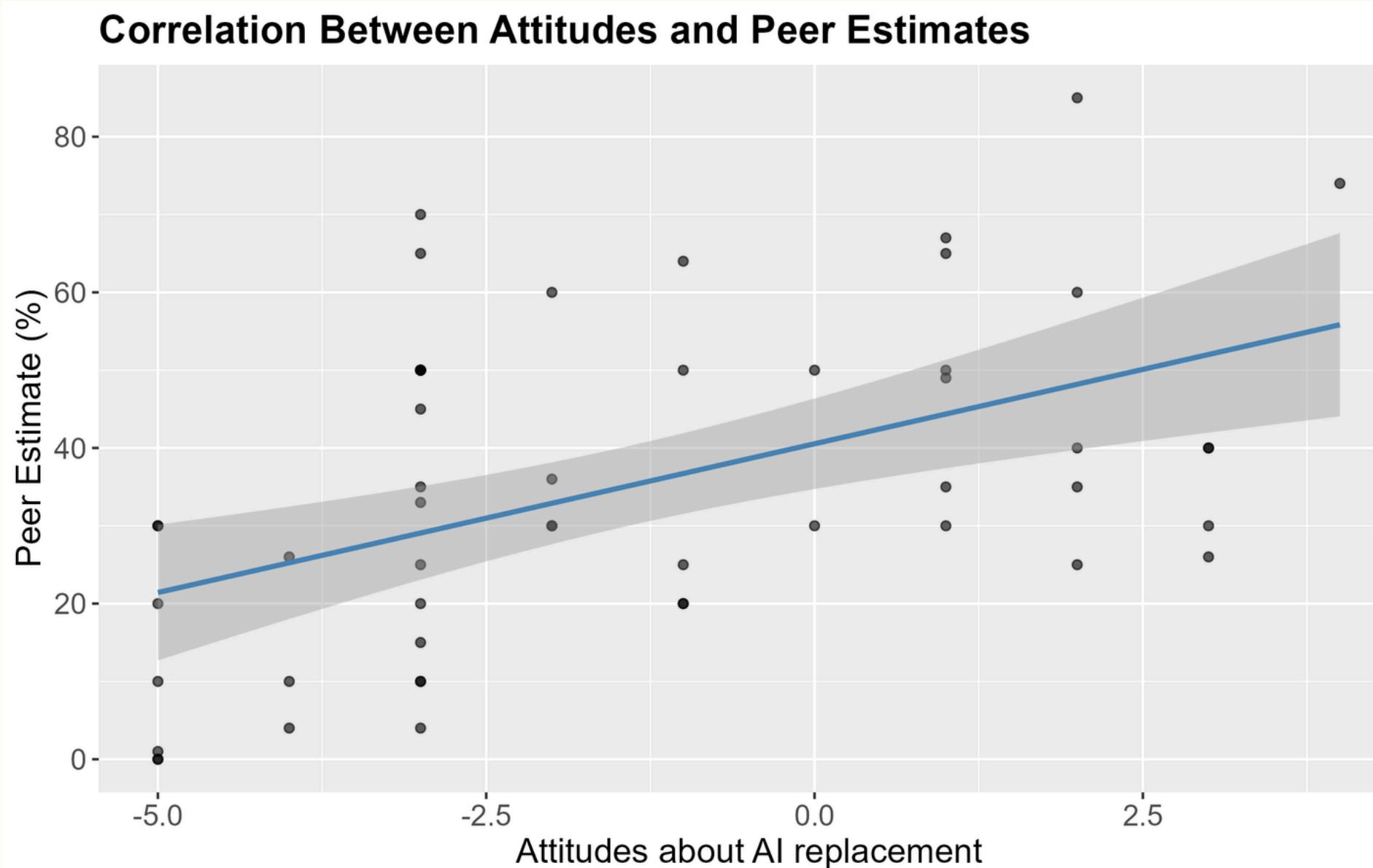


- The magnitude of FCE does not differ across conditions
- When comparing peer estimates of endorsement within the conditions:
 - Experiential learning shows FCE
 - Observational & control don't show FCE

Hypothesis 3 → rejected, seems to be inverted

Results

Hypothesis 4: Topic attitude moderates the relationship between learning type (experiential vs. observational) and the FCE



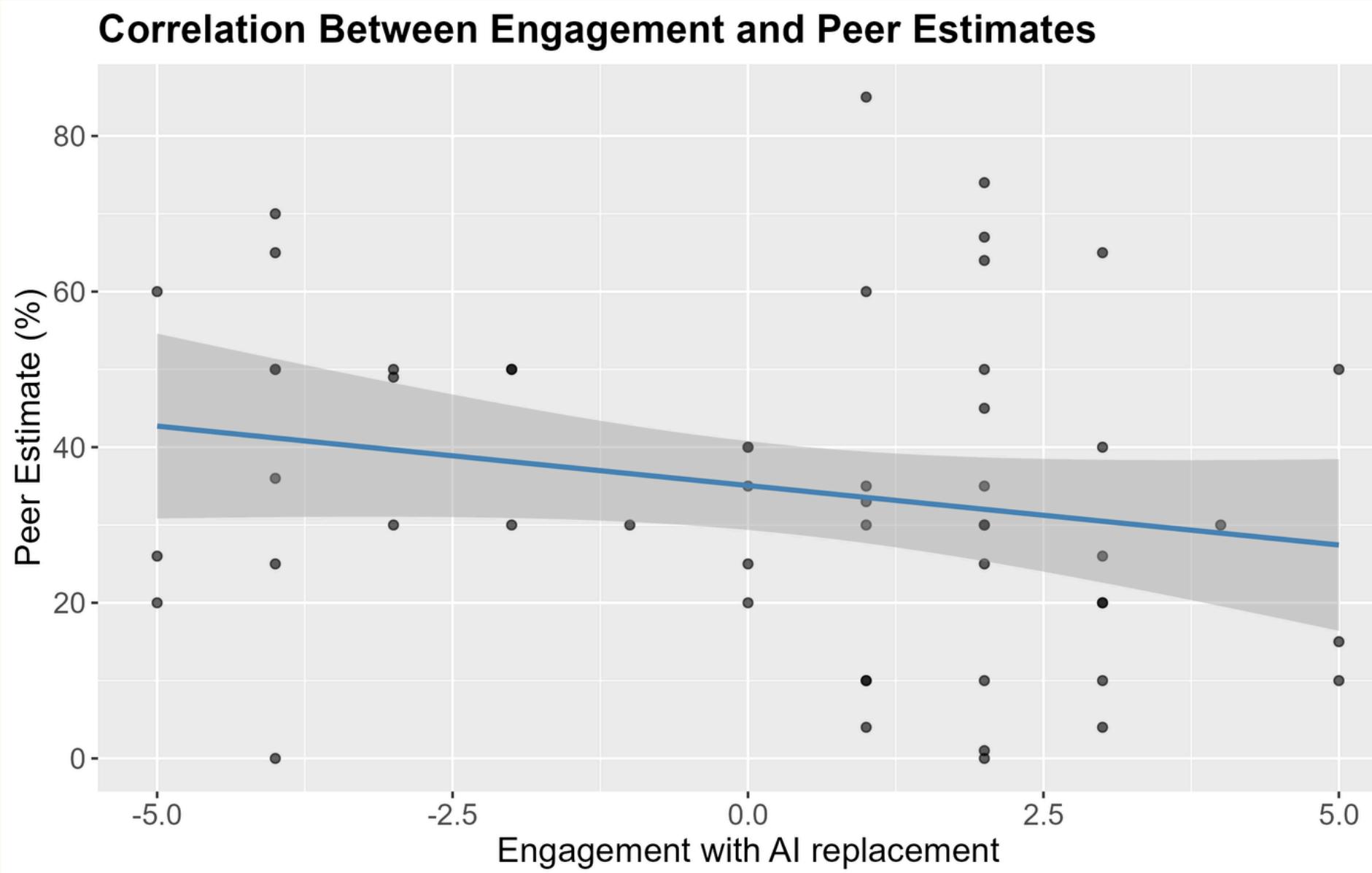
Attitudes: Strongly oppose – strongly agree (-5 – 5)

Peer estimates: How many % peers around you are IN FAVOR?

- Attitudes are positively correlated with peer estimates ($r=.48, p<0.01$)
 - The higher the attitude towards the topic, the higher the peer estimates
- Attitudes don't affect the relation between learning and FCE

Hypothesis 4 → rejected, regardless of the correlation, no moderation effect of attitudes

Results



Engagement: None at all – extremely much (-5 – 5)
Peer estimates: How many % peers around you are IN FAVOR?

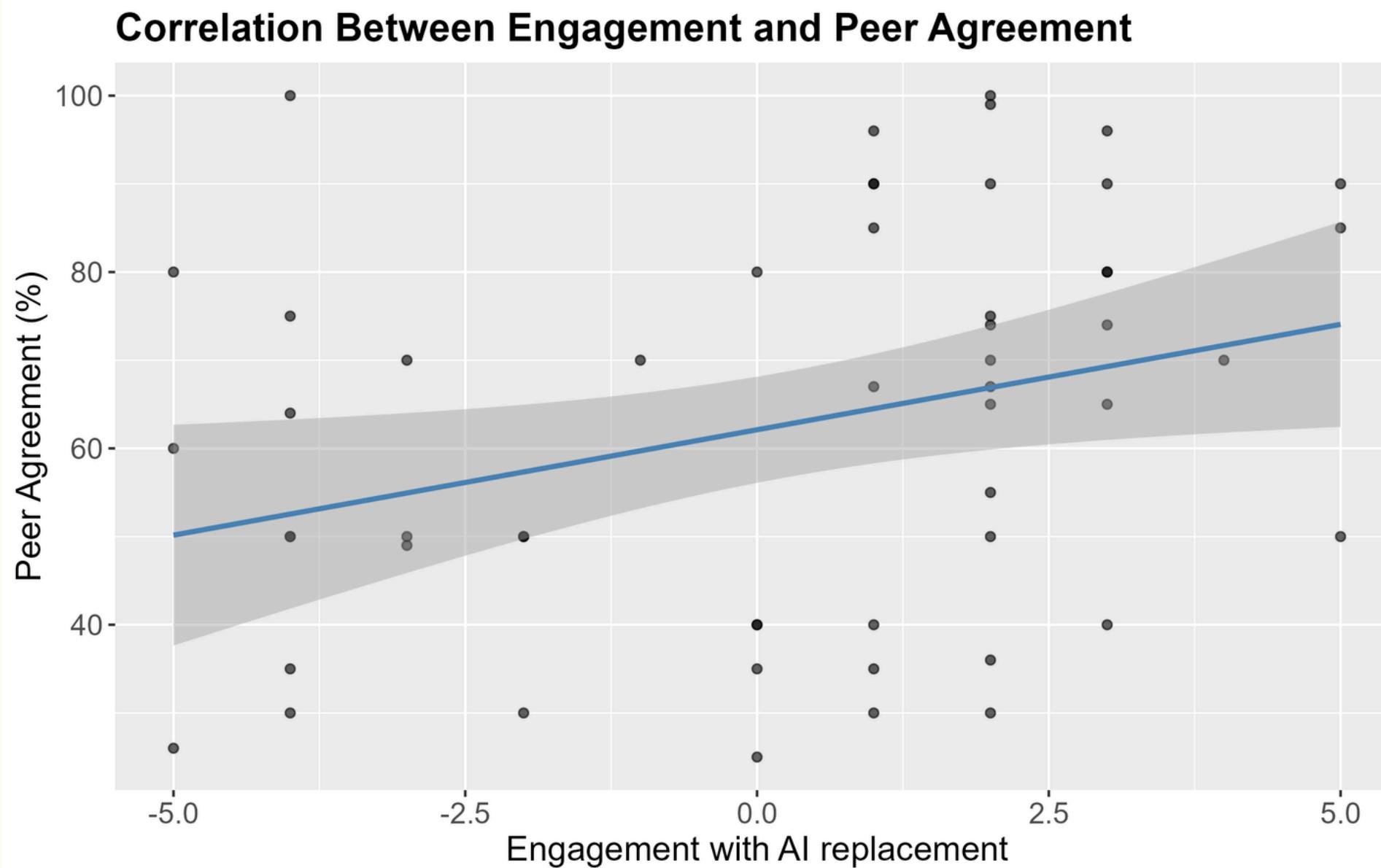
Hypothesis 5: Prior topic engagement moderates the relationship between learning and the FCE

- No significant correlation between prior engagement and peer estimates
- Prior engagement does not influence the relation between learning and FCE

Hypothesis 5 → rejected, no moderation effect of engagement

Results

Hypothesis 5: Prior topic engagement moderates the relationship between learning and the FCE



- A correlation model with engagement and peer agreement was constructed
 - Non-endorsers' peer estimates were subtracted from 100 to reflect the perceived peer agreement with the participant's own endorsement.
- The positive correlation was significant
 $r(51) = .31, p < .05$
 - More engagement with the topic creates higher peer agreement

Experiential learning

"Figuring out how to solve the puzzles, it was also interesting seeing the different areas that AI/Human employees did better (like creativity of optimisation)"

"I had a lot of fun, and I was excited that I could perform so well even though I did not expect that"

Observational learning

"yes, it was paced well so you could have time to predict the solution but not have to wait very long. the tasks were also fun."

"I was surprised that watching an escape room execution could be this entertaining"

"Watching someone make a puzzle doesn't really interest me. I've also never done a escape room myself because of lack of interest"

Results

Qualitative analysis

- **Engagement & enjoyment**
 - **high in the experiential learning condition**
 - **mixed in the observational condition**

Experiential learning

Yes, it had you figure out by yourself what the advantages and disadvantages of AI are (if the data provided is accurate of course)'

Yes, it provided arguments both in favour and against the idea.

To be honest, I was focussing more on solving the puzzles than looking at the overall theme.

Observational learning

yes, maybe a tad skewed toward ai replacement but overall balanced

I would say it well represents the current situation in general, but in some specific topics, there is still room to discuss

Results

Qualitative analysis

- **Engagement & enjoyment**
 - **high in the experiential learning condition**
 - **mixed in the observational condition**
- **Balanced perspective of the escape room content**
 - **Open ending of the escape room**
 - **Experiential learning reported a balanced perspective**
 - **Observational condition reported a balanced perspective, but slight favorability of AI**

Results

Qualitative analysis

"I think this may have made me slightly more in favor of AI replacing white collar jobs."

- **Engagement & enjoyment**
 - high in the experiential learning condition
 - mixed in the observational condition
- **Balanced perspective of the escape room content**
 - Open ending of the escape room
 - Experiential learning reported a balanced perspective
 - Observational condition reported a balanced perspective, but slight favorability of AI
- **Learning components were met (awareness of argumentation)**

Summary and Conclusion

No significant reduction could be established
between learning conditions

Presence of FCE in the
statement "Replacing
office workers with AI"
across whole sample

Type of learning
experience did not
significantly affect
the magnitude of FCE

Experiential learning
showed FCE
Observational
learning and control
did not show FCE

- *making own attitudes more salient and readily available in memory.*
- *high engagement; some participants specifically reported forgetting to pay attention to the narrative while playing.*
- *Observational learning could reduce the FCE, however control did not show FCE, so could not be established*

Summary and Conclusion

Prior engagement and attitudes do not affect the relation of learning and FCE

Significant correlation between attitudes and peer estimates:

people with more positive attitudes toward AI tend to believe that their peers are also more supportive of AI

No significant correlation between engagement and peer estimates:

Engagement with the topic does not appear to influence how much people think others support AI (peer estimates).

But engagement significantly correlates with peer agreement:

More engagement with AI replacement correlates with higher peer agreement

Limitations

Not accounted for learning preferences

- Lack of interest in the observational condition, and the level of difficulty in the experiential condition

Unintentional bias towards individuals with a “problem solving” mindset in the experiential condition

- Limiting the generalisability of the findings

Lack of in-depth follow up questions about a position (endorsement)

Lack of explanation for variability of positions and estimates

Small sample size

- Compared to other research in this area

Future research could benefit from

- Larger sample size to reduce variability in the sub groups
- Controlling for learning preferences and elaboration on endorsement
- Conducting the escape room in a group of students with opposing views to address the tendency of reinforcing one's own attitudes

**Escaped the room,
not the bias...**

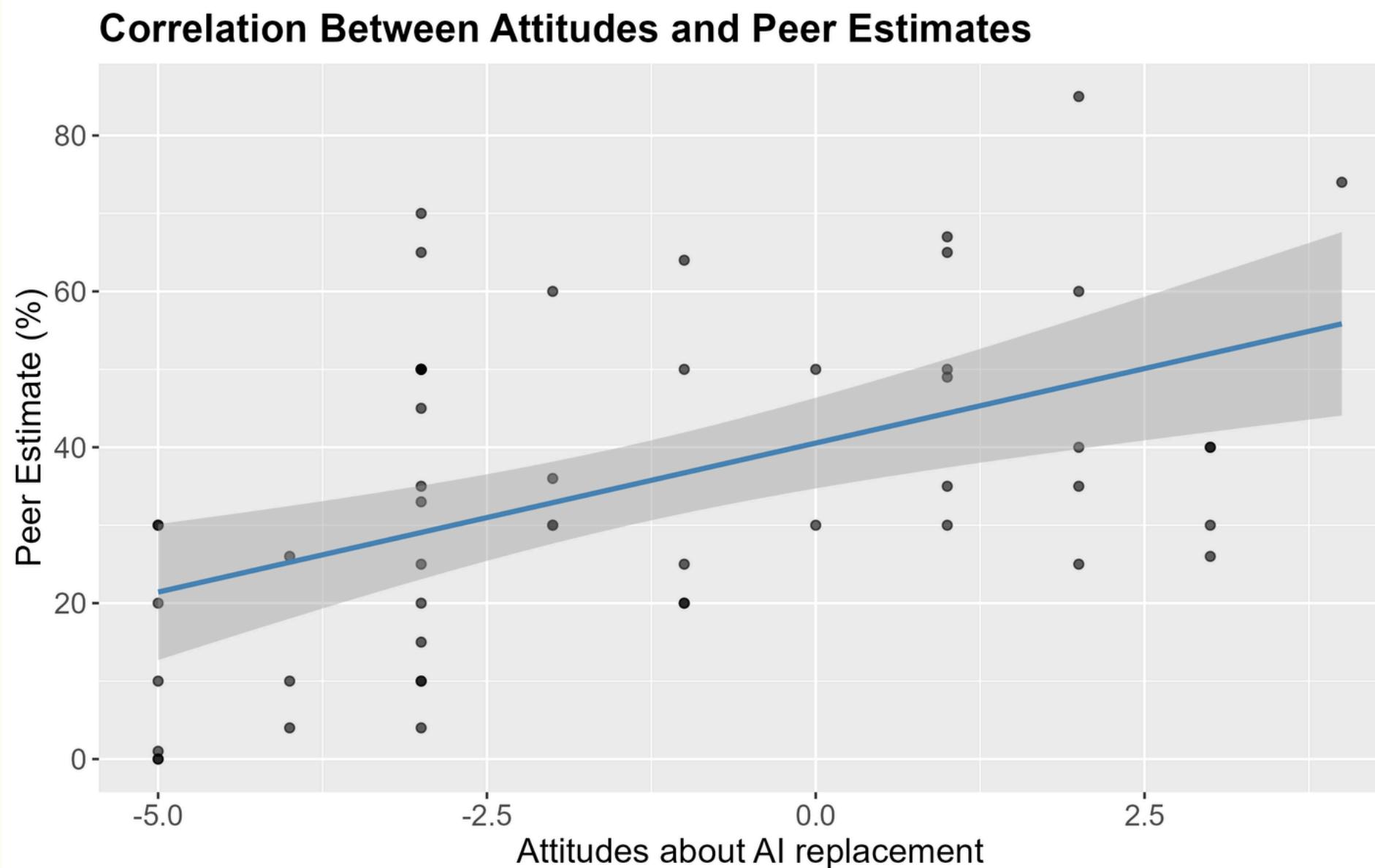
Thank you for listening!

References

- Bandura, A., & Walters, R. H. (1977). Social learning theory (Vol. 1). Prentice hall Englewood Cliffs, NJ
- Bauman, K. P., & Geher, G. (2002). We think you agree: The detrimental impact of the false consensus effect on behavior. *Current Psychology*, 21, 293–318. <https://doi.org/10.1007/S12144-002-1020-0>/METRICS
- Kolb, D. (1984). Experiential learning: Experience as the source of learning and development. Prentice hall Englewood Cliffs, NJ.
- Marks, G., & Miller, N. (1987). Ten years of research on the false-consensus effect: An empirical and theoretical review. *Psychological Bulletin*, 102. <https://doi.org/10.1037/0033-2909.102.1.72>
- Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology*, 5(2), 207–232. [https://doi.org/10.1016/0010-0285\(73\)90033-9](https://doi.org/10.1016/0010-0285(73)90033-9)
- Ross, L., Greene, D., & House, P. (1977). The “false consensus effect”: An egocentric bias in social perception and attribution processes. *Journal of Experimental Social Psychology*, 13, 279–301. [https://doi.org/10.1016/0022-1031\(77\)90049-X](https://doi.org/10.1016/0022-1031(77)90049-X)

Results

Hypothesis 4: Topic attitude moderates the relationship between learning type (experiential vs. observational) and the FCE



- Significant correlation effects of Attitudes on peer estimates $r(50) = .48, p < .001$,
- Three-way interaction (Condition, endorsement, attitudes) could not be established due to lack of variability.
- Two-way interactions were non-significant.
- Attitudes toward AI significantly predicted peer estimates, $t(45) = 2.83, p = .007$

Results

- '**I liked that the whole escaperoom fit a suitcase and a map. I also enjoyed the interactive aspects with the telephone and Ipad.**'

The puzzles were well-designed and were fun to engage with.

That it was challenging in different ways throughout

'Yess, it showed that in some instances AI can help and in some instances it does not help

More qualitative

