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## The Autonomy-Validity Dilemma in Mechanical Judgment Procedures

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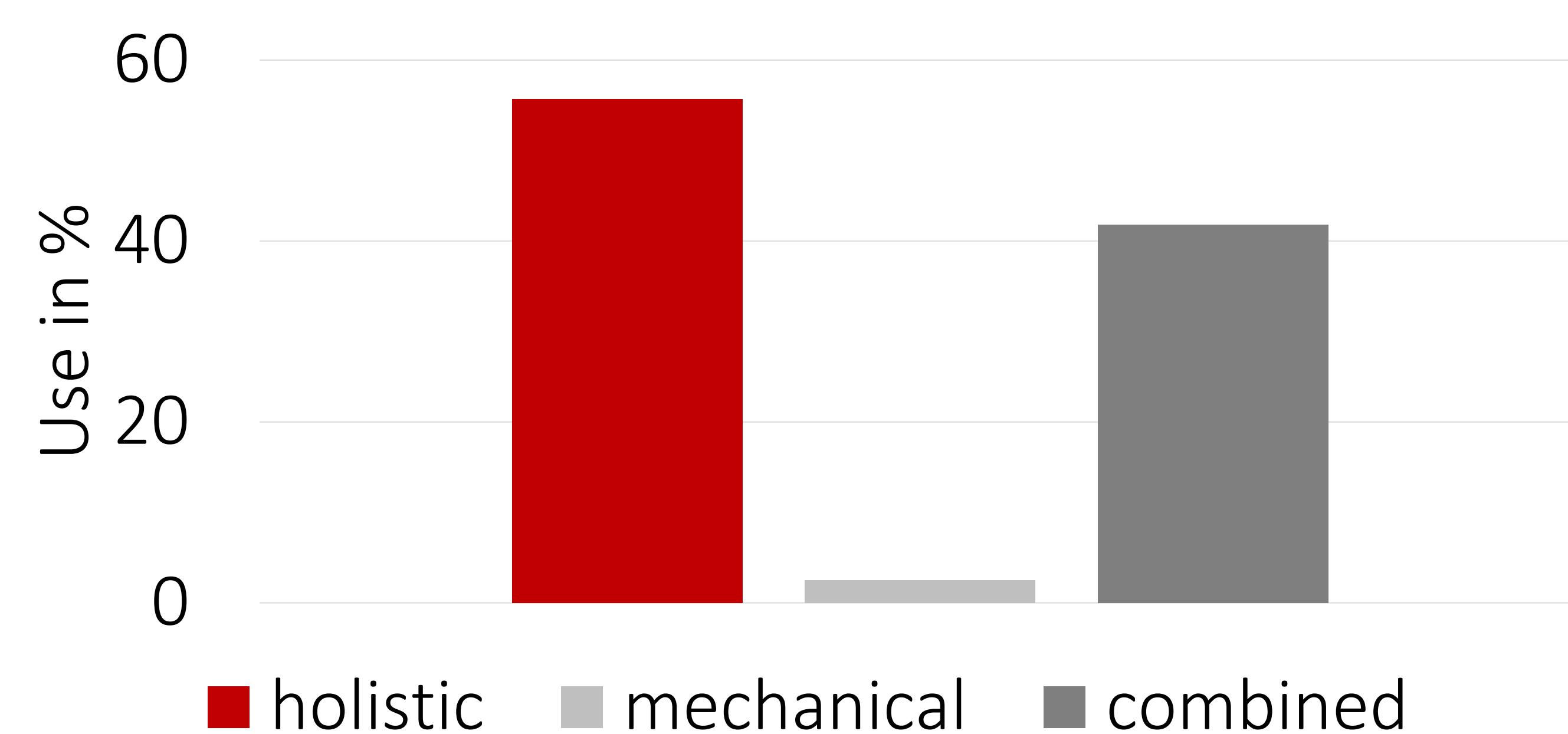
## Introduction

### Background

- In personnel- and educational selection, information from multiple assessments (e.g., test scores and interview ratings) is often used, which can be combined in two ways<sup>1,2</sup>:
  - Holistic judgment: information is subjectively combined in the mind
  - Mechanical judgment: information is combined with an explicit decision rule
    - Prediction = predictor 1 \* w1 + predictor 2 \* w2 ...
- Mechanical judgment is on average more valid than holistic judgment<sup>1,2</sup>

### The problem

Holistic judgment dominates in practice<sup>3,1</sup>



### Contribution

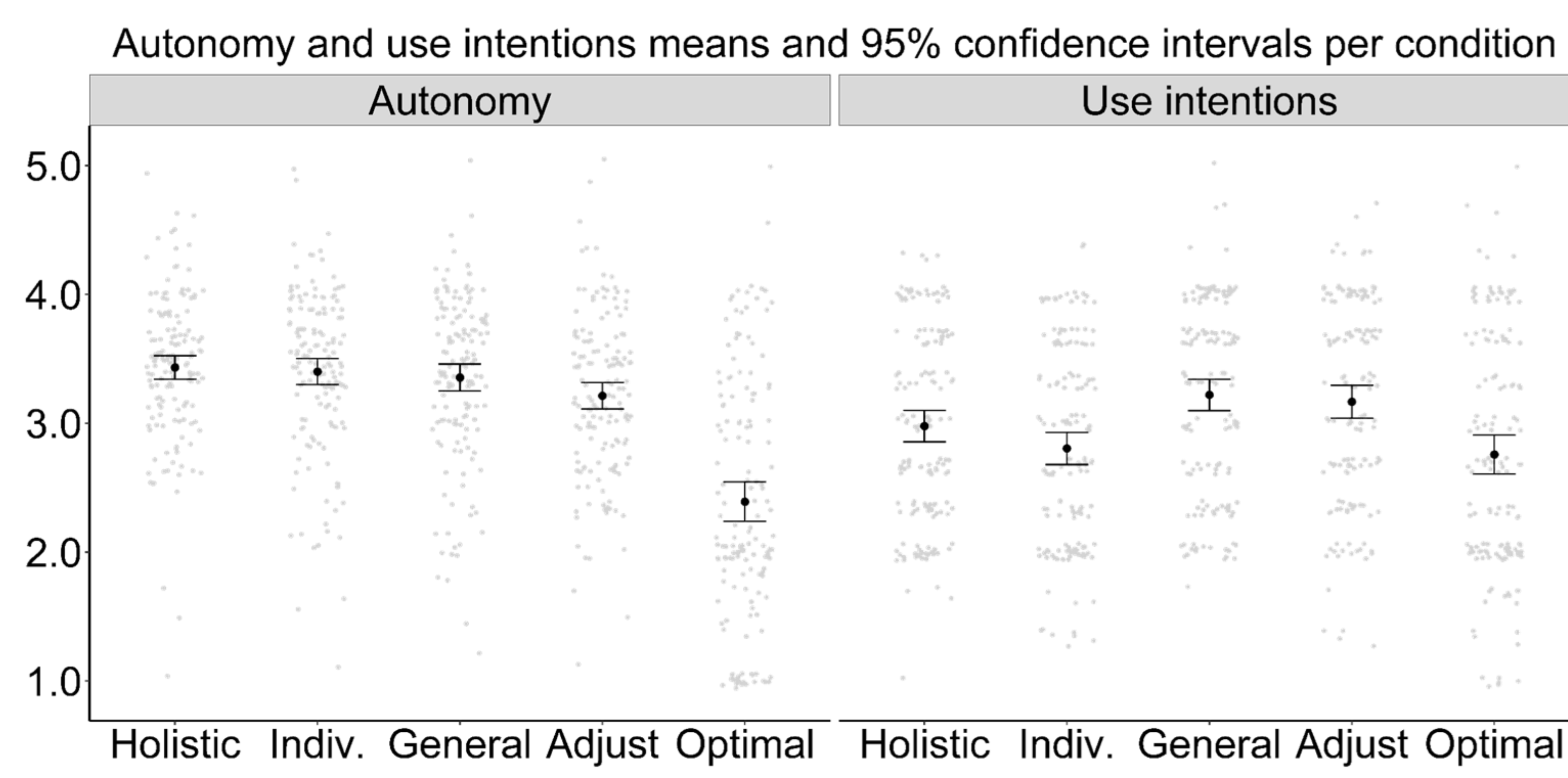
- Decision makers may use mechanical judgment more often when they retain autonomy
  - Decision makers could choose predictor weights (w1, w2)<sup>4</sup>
  - Decision makers could holistically adjust predictions<sup>5</sup>
- Research questions:
  - Do decision makers prefer autonomy-enhancing judgment procedures, compared to strictly using an optimal decision rule?
  - How does increased autonomy affect predictive validity?

## Method

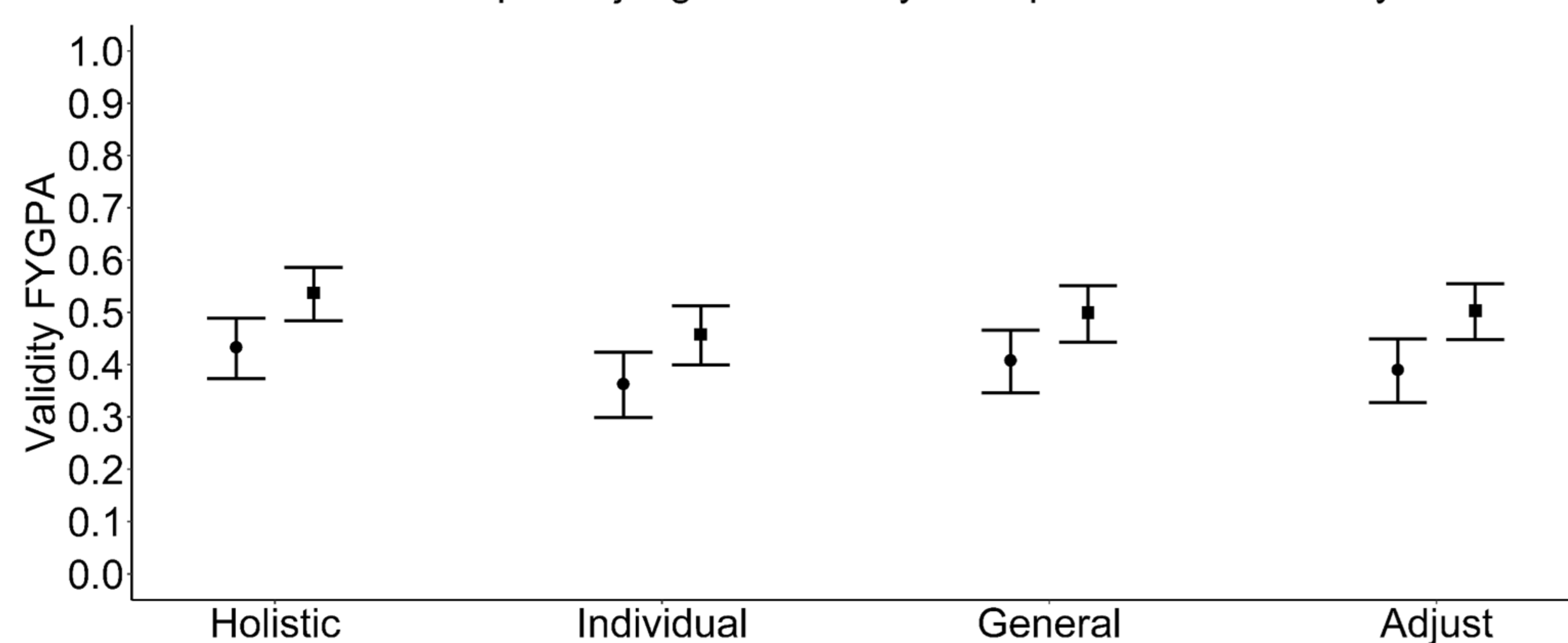
- Prediction task:** Predict first-year GPA (FYGPA) of 5 applicants using high school GPA, admission test scores, and personal statements. Participants (students) were informed of predictor validities
- Study 1 (N = 150):** within-subjects design, in which the autonomy in making predictions was varied in five conditions
  - Holistic: Predictions based on participants' subjective impression of the predictors
  - Individual: Assignment of percentage predictor weights for each of the five applicants judged
  - General: Assignment of percentage predictor weights that applied to all of the five applicants judged
  - Adjust: Participants could adjust the predictions of a statistical model as much as they wanted
  - Optimal: Participants imagined a statistical model would make predictions that they could not adjust
- Study 2 (N = 192):** mixed design
  - Same within-subjects factor as in Study 1. The "individual" condition was dropped because Study 1 results were not promising. Furthermore, participants could only restrictedly adjust model predictions in the "adjust" condition
  - Between-subjects factor: A random half of participants was not informed of predictor validities

## Results and Discussion

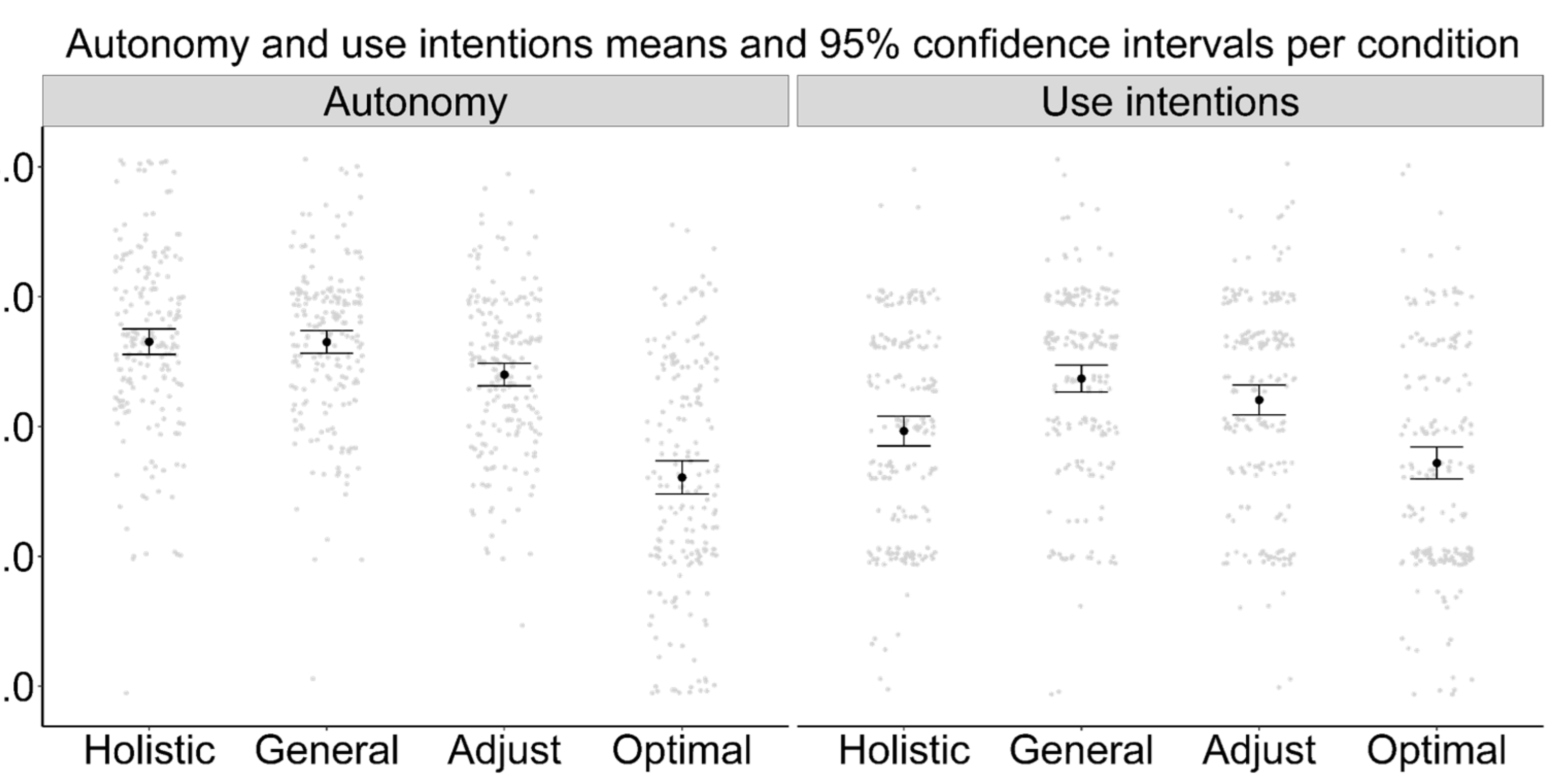
### Study 1



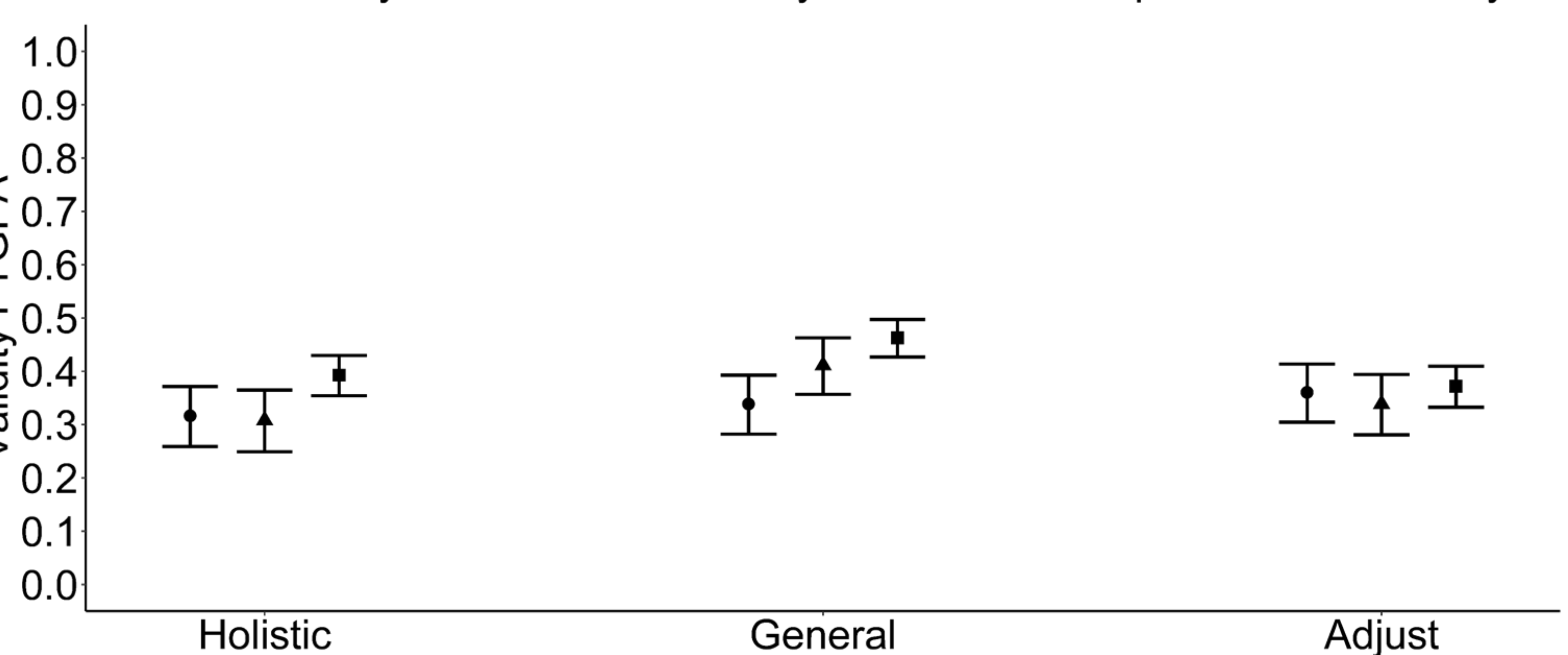
Validity coefficients and 95% confidence intervals per condition  
 • Participants' judgment validity    ■ Optimal model validity



### Study 2



Validity coefficients and 95% confidence intervals per condition  
 • No validity information    ▲ Validity information    ■ Optimal model validity



- Perceived autonomy:** was similar across conditions, but much lower in the "optimal" condition (e.g., general vs. optimal,  $d = 1.17$  and  $d = 1.35$  in Study 1 and 2, respectively)
- Use intentions:** was higher in all autonomy-enhancing conditions than in the "optimal" condition (e.g., general vs. optimal,  $d = 0.54$  and  $d = 0.81$  in Study 1 and 2, respectively)
- Predictive validity:** was similar across conditions, but optimal model predictions were always better than participants' predictions. Knowing predictor validities only slightly increased predictive validity in the "general" condition

## Conclusion

- The most promising procedure in terms of decision-makers' acceptance and validity is the use of a decision rule with self-chosen predictor weights when predictor validity information is available. Similarly, letting decision makers holistically adjust optimal model predictions seemed promising
- Yet, our results prevent a clear conclusive statement regarding a compromise between autonomy and validity

## Key references

- <sup>1</sup>Dietvorst, B. J., Simmons, J. P., & Massey, C. (2018). Overcoming algorithm aversion: People will use imperfect algorithms if they can (even slightly) modify them. *Management Science*, 64, 1155–1170. <https://doi.org/10.1287/mnsc.2016.2643>
- <sup>2</sup>Kuncel, N. R., Klieger, D. M., Connelly, B. S., & Ones, D. S. (2013). Mechanical versus clinical data combination in selection and admissions decisions: A meta-analysis. *Journal of Applied Psychology*, 98, 1060–1072. <https://doi.org/10.1037/a0034156>
- <sup>3</sup>Meehl, P. E. (1954). Empirical comparisons of clinical and actuarial prediction. In *Clinical versus statistical prediction: A theoretical analysis and a review of the evidence* (pp. 83–128). Minneapolis, MN: University of Minnesota Press. <https://doi.org/doi:10.1037/11281-008>
- <sup>4</sup>Nolan, K. P., & Highhouse, S. (2014). Need for autonomy and resistance to standardized employee selection practices. *Human Performance*, 27, 328–346. <https://doi.org/10.1080/08959285.2014.929691>
- <sup>5</sup>Ryan, A. M., & Sackett, P. R. (1987). A survey of individual assessment practices by I/O psychologists. *Personnel Psychology*, 40, 455–488. <https://doi.org/http://dx.doi.org/10.1111/j.1744-6570.1987.tb00610.x>