

DOES PARTICIPATION IN FORECASTING TOURNAMENTS PROMOTE INTELLECTUAL HUMILITY?

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References:

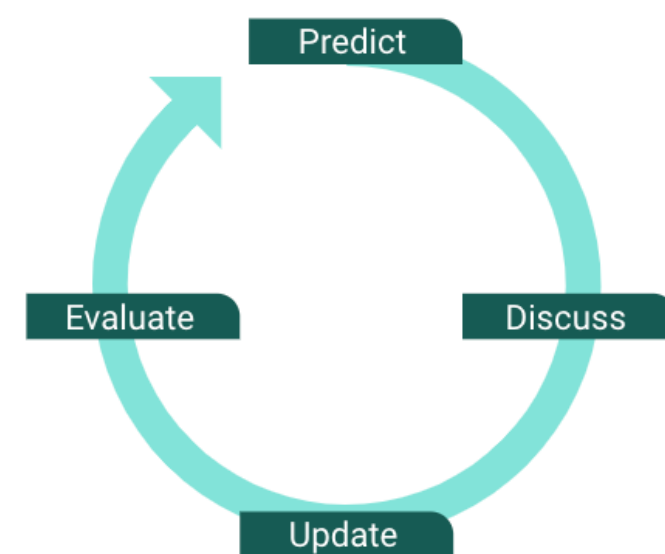
Spiegel, J. S. (2012). Open-mindedness and intellectual humility. *Theory and Research in Education*, 10(1), 27-38.

Thanks must be given to the team: Phil, Igor, Cory, Amory, Kevin... and all super forecasters.

Intellectual Humility (n.): the acceptance that you might be wrong.

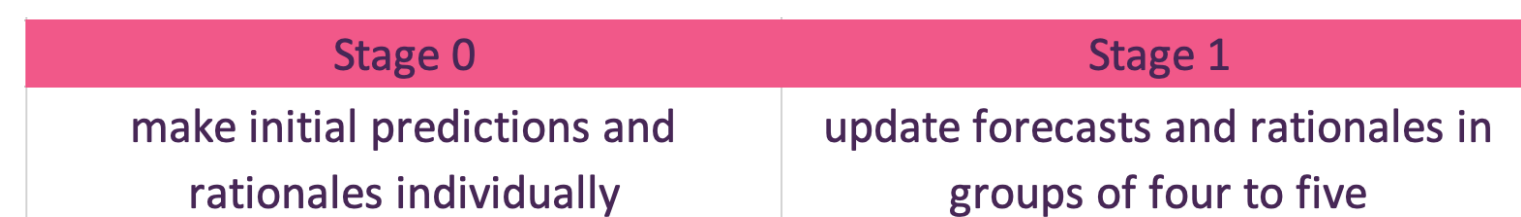
Background

- Predicting the future (accurately)...
 - is key in life: weather, stocks, bets, etc.
 - can provide a survival advantage
 - helps us embrace the good, avoid the bad
- Forecasting tournaments...
 - are a formal way of assessing predictions
 - involve making probability estimates on future outcomes
 - can involve feedback/discussion
- Intellectual humility...
 - is "an intellectual quality displayed by someone who recognizes that her belief could be wrong, so her mind is subject to change"
 - is linked to various characteristics of knowledgeability: reflective thought, need for cognition, curiosity, intellectual engagement
- Superforecasters...
 - are trained to make forecasts that are more accurate than normal people and intelligence analysts
 - possess a unique blend of traits: humility, cautiousness, open-mindedness, grit, and a mindset of growth.



Methodology

- 43 subjects participated in a forecasting tournament
 - 24 superforecasters ("Supers")
 - 19 subject matter experts ("Experts")
- Made predictions on four markers of human progress:
 - public health: infant mortality rate
 - climate: CO2 emissions
 - war and peace: non-state conflicts
 - economy: poverty rate
- Also provided textual rationales for their predictions
- Nine predictions per marker
 - one year, two years, twenty years from now
 - best, lowest, highest estimates



Measuring intellectual humility

1. Update Frequency

$$\frac{\text{number of updated predictions (Stage 1)}}{\text{number of predictions (Stage 0)}}$$

2. Coded Rationales on four dimensions of intellectual humility

- Recognition of Limits of Knowledge
- Recognition of Possibility of Change
- Recognition of Different Perspectives in the Narrative
- Integration of Perspectives/Seeking a compromise or resolution

We hypothesise that Supers will show higher levels of intellectual humility than Experts.

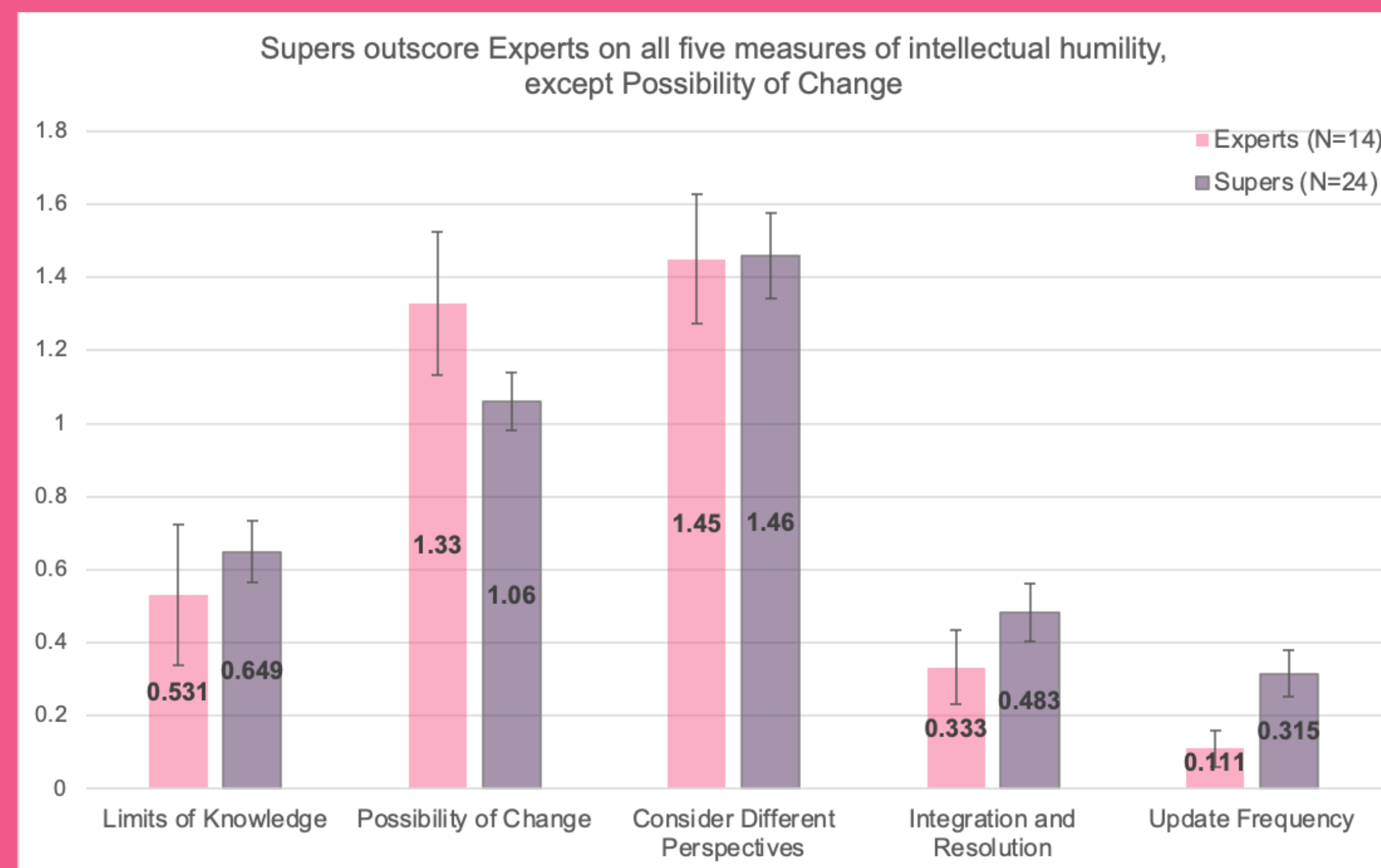
Group	Mean	SE	t	df	p	Cohen's d
Experts (N=5)	0.111	0.050	-1.699	20	0.105	-0.864
Supers (N=17)	0.315	0.063				

Table 1: Ratio of updated forecasts, by group

Measure	Experts (N=14)		Supers (N=24)		t	df	p	Cohen's d
	Mean	SE	Mean	SE				
Limits of Knowledge	0.531	0.193	0.649	0.085	-0.640	36	0.526	-0.215
Possibility of Change	1.33	0.196	1.06	0.080	1.49	36	0.146	0.500
Consider Different Perspectives	1.45	0.177	1.46	0.117	-0.38	36	0.970	-0.013
Integration and Resolution	0.333	0.102	0.483	0.079	-1.16	36	0.256	-0.389

Table 2: Results of statistical testing on ratio of updated forecasts

Table 3: Results of statistical testing on coded measures of intellectual humility in rationales



Given that Supers and Experts are both academically involved, any observed difference in intellectual humility may be attributed to participation (or lack thereof) in forecasting tournaments.

Results

- Supers (0.315 ± 0.063) updated their forecasts more than Experts (0.111 ± 0.05)
 - p-value: 0.105, Cohen's d: **-0.864 (large effect size)**
- Supers (0.483 ± 0.079) were more likely to integrate responses in search of a resolution, compared to Experts (0.333 ± 0.102)
 - p-value: 0.436, Cohen's d: **-0.271 (small effect size)**
- Experts (1.33 ± 0.196) tended to acknowledge the possibility of change in the future, more so than Supers (1.06 ± 0.080)
 - p-value: 0.203, Cohen's d: **0.447 (moderate effect size)**
- Small to no significant difference observed in the other two coded dimensions of intellectual humility (Recognition of Limits of Knowledge, Recognition of Different Perspectives in the Narrative)

Discussion

It seems that Supers and Experts differ in how they approach making predictions...

- Supers have prior experience in forecasting tournaments...
 - This could mean they are more aware of the idea that making updates to forecasts is the key to accurate predictions.
- Supers have higher levels of open-mindedness...
 - Thus they may be more willing to assess and seek a compromise with opposing viewpoints
 - They may also be more willing to leverage crowd wisdom
- Experts are proficient in their domain of knowledge...
 - They are well-versed to acknowledge the uncertainty within their field of study
 - Their relative unfamiliarity with other domains may prompt them to consider the uncertainty of future outcomes

... but future research needs to further clarify the role of forecasting tournaments in cultivating intellectual humility.

- Recruit larger sample of Supers/Experts
 - this allows us to examine whether the perceived effect size will hold in a larger population
 - can allow us to establish statistical significance
- Increase time period between Stages
 - this allows previous predictions to be less salient and removes any recency bias
 - it also allows time to gather and evaluate new information
- Condition on making predictions in forecasting tourney vs individually
 - this removes the concern over the quasi-experimental nature of the current study
 - we can establish a potential cause-and-effect between forecasting tourneys and intellectual humility