



# Eliciting and formalizing experts' knowledge about effect sizes

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## Background

### Expert's Elicitation:

- Expert's knowledge is a valuable **source of information** when data are limited or predictions are needed.
- Elicitation allows us to define expert's knowledge and uncertainty about quantities in the form of **probability distributions**.

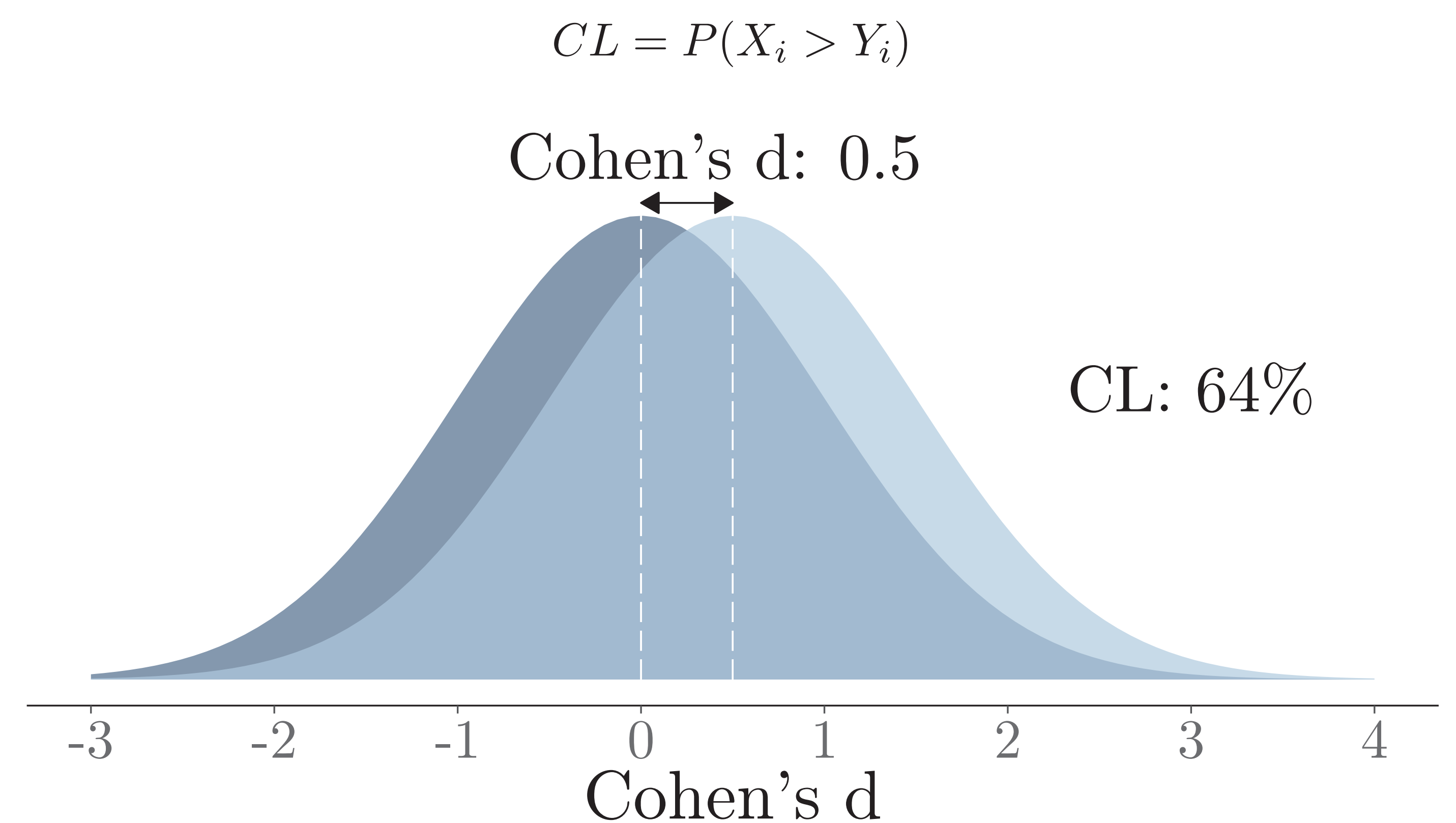
### Effect Size:

- Standardized effect sizes are commonly used to quantify and compare results, but they are **difficult to interpret** in real terms.
- Effect size such as the Cohen's d can be formulated in terms of probability using the **Common Language** that is easier to understand.

Expert's elicitation about effect sizes is useful to get estimations about reasonable dimension of effects of interest in a **power analysis** or to formalize hypothesis according to **theoretical perspectives**.

## Common Language (CL)

**Definition:** Probability that a random subject from the first population has an higher score than a random subject from the second population.



## Study Design

### Aims:

Proposing a procedure to elicit expert's knowledge referring directly to effect sizes.

### Method:

Through a Shiny-App experts express their knowledge and uncertainty about the Cohen's d between two groups using the Common Language.



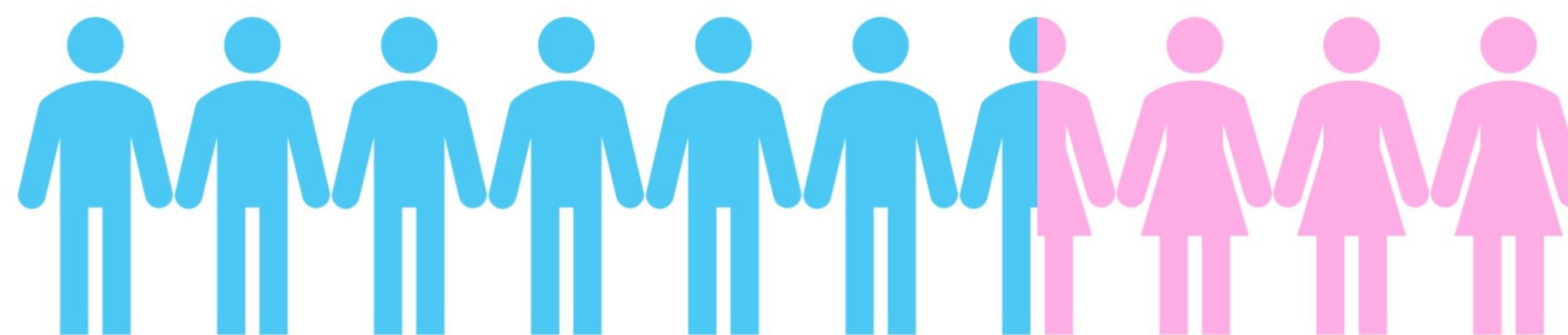
### Study example:

School teachers evaluate the average height difference between boys and girls at different ages (e.g. 8, 12, 14, and 16 years).

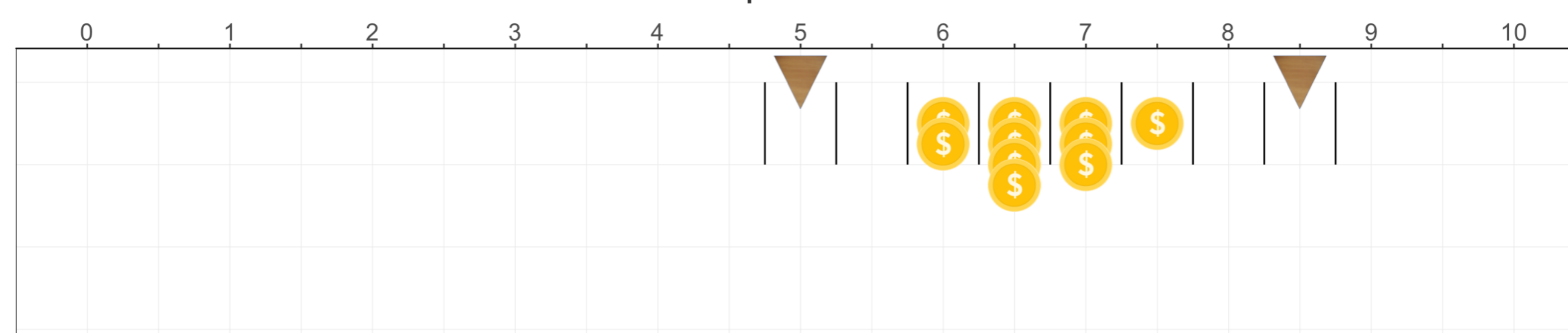
### Task:

Imagine that 10 couples are formed randomly selecting one boy and one girl of the same age.  
In how many of these 10 couples is the boy taller than the girl?

1. Indicate a **minimum number** of couples in which the boy is taller than the girl.
2. Indicate a **maximum number** of couples in which the boy is taller than the girl.
3. **Bet 10 chips** on the **most-likely values** between the minimum and the maximum.



6.5 Couples out of 10



## Open Questions - claudiozandonella@gmail.com

- How to make the task easier to understand and as clear as possible?
- Which other examples could be used to evaluate the procedure?
- Are teachers real experts on children heights? Who could be an expert?

