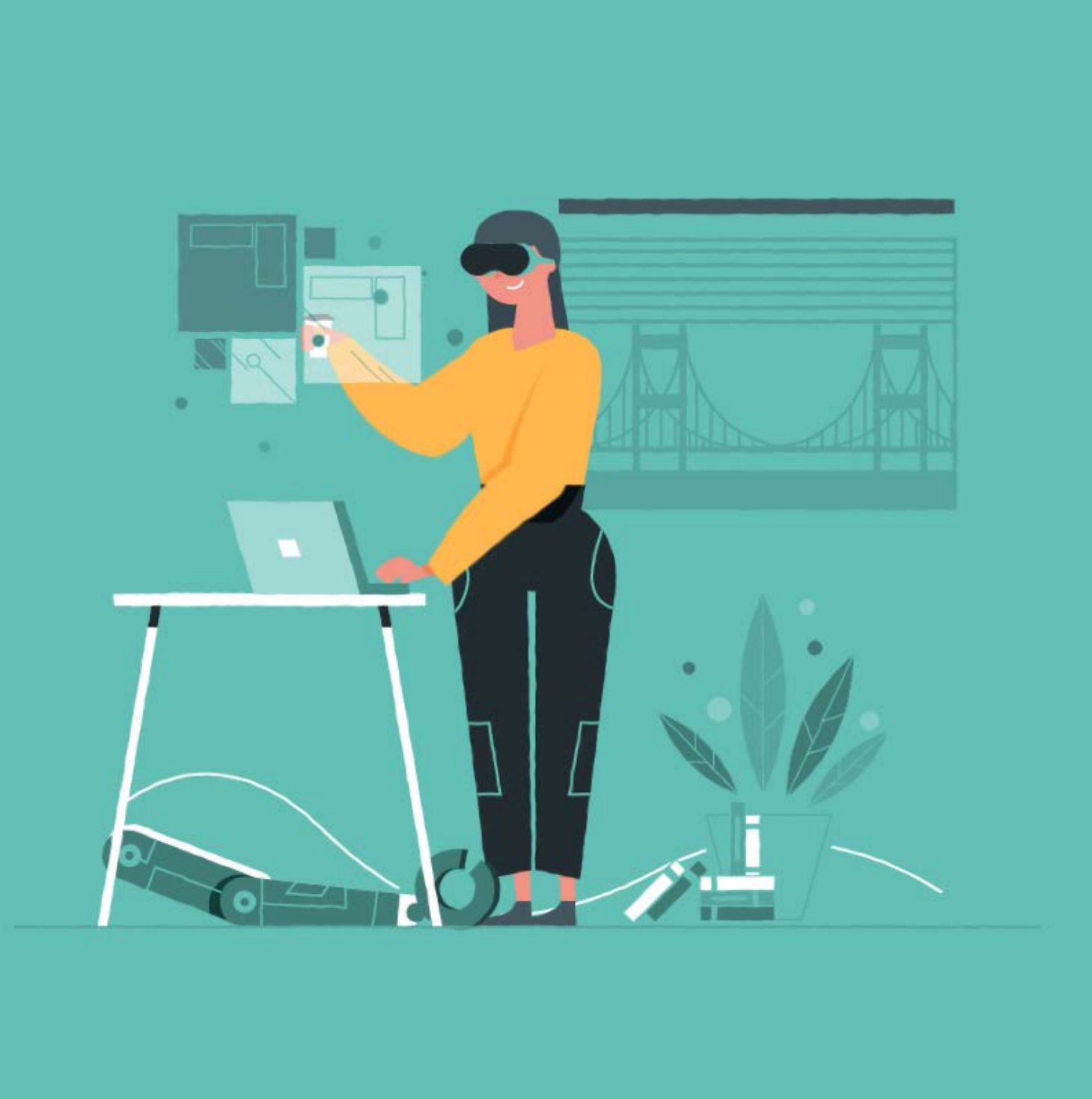# How role models are changing the face of STEM in Europe

# Scope of the research

## 12 countries
## 11,500 respondents

- ✓ UK
- ✓ France
- ✓ Germany
- ✓ Ireland
- ✓ Russia
- ✓ Poland

- ✓ Italy
- ✓ Netherlands
- ✓ Finland
- ✓ Czech Republic
- ✓ Slovakia
- ✓ Belgium

We extended the demographic of our original research beyond the 11-18 years age range (to include young women up to the age of 30) so we could understand how these crucial drivers impact girls from school, to university, to work.

We **excluded teachers & parents from our definition of 'role models'** as the results become skewed. By seeing them as primarily responsible for driving girls interest in STEM subjects underestimates the impact of other types of role models – something that become evident in the data.

# Why we are doing this?

In February 2017, our research identified the age at which girls in Europe typically lose interest in STEM subjects. While this problem still exists - so too does Microsoft's commitment to solving this challenge for the benefit of all society.

Our research produced two new insights that we wanted to explore in more detail – in November 2017, we revealed the link between *creativity* and girls in STEM. Now, our research will shine a light on the importance of *role models* in driving girls interest in STEM subjects.

Who do we mean by 'role models'? Our research names the following types of people who may have an impact on interest in STEM:
- Fictional: 'film' and 'literature'
- Non-fictional: 'real-life'
- Women working in STEM: 'researchers', 'computing', 'developers', 'inventors'.

Now that we have the data, we want to draw attention to the significance of role models in driving interest in STEM for European girls and young women, throughout their school years and beyond into their career choices.

We're not alone in this, and stand alongside public and private organisations – such as UNESCO and Accenture – in providing data around the importance of role models in STEM. For educators, policy makers, NGOs and the private sector, this data can help to validate the resourcing decisions and investments we make to help bridge the digital skills gap of the future. Our data helps to show that these investment decisions do pay off, influencing girls' interest in STEM for the better.
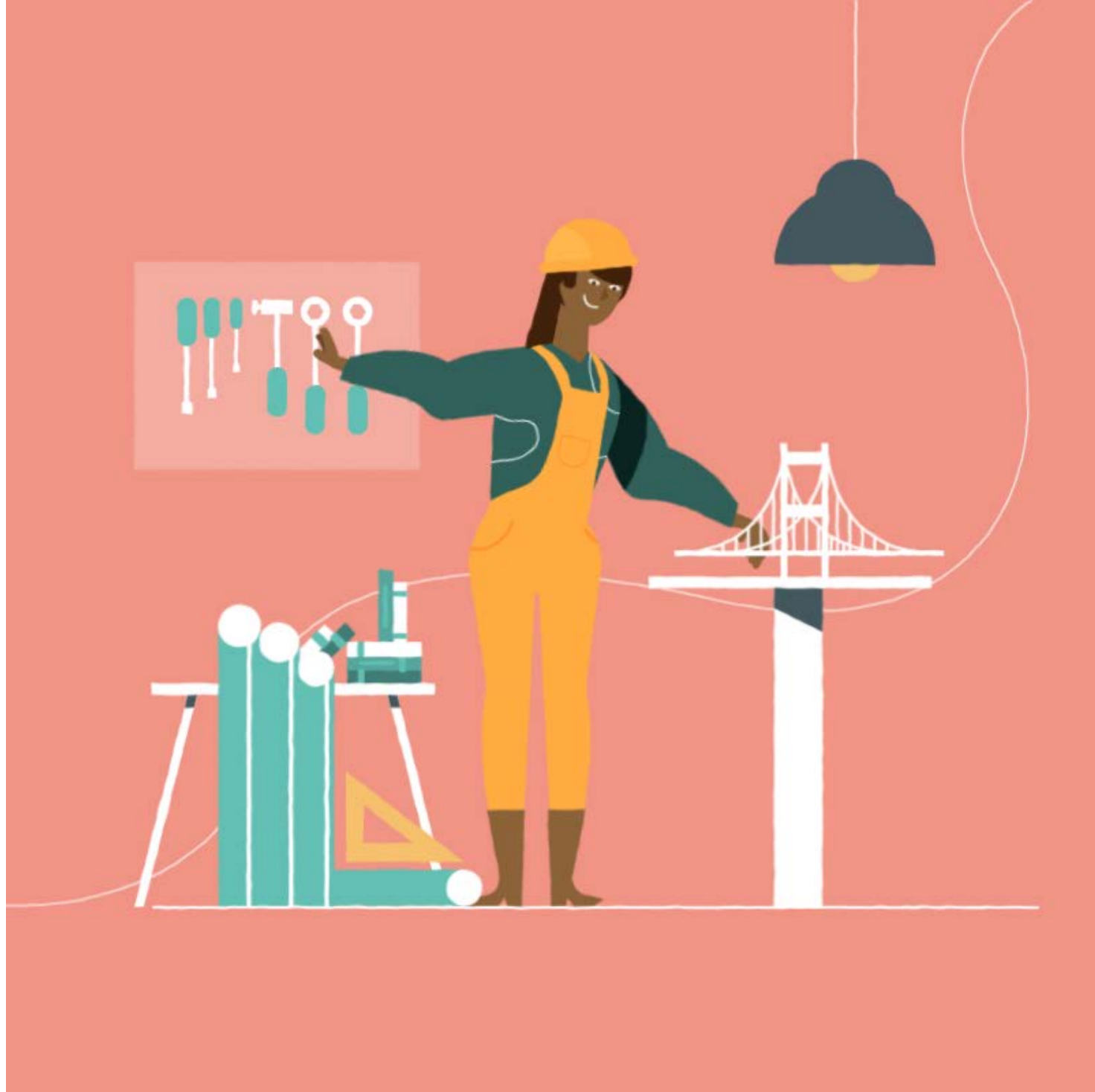
# European regional summary

**Our research demonstrates that girls are more interested in STEM subjects when they have a role model.**

- The number of girls interested in STEM almost doubles when they have role models compared to those who do not (26% of girls without a role model report an interest in STEM subjects, versus 41% with role models).
- The reverse is also true, that having a role model almost halves the number of girls reportedly not interested in STEM subjects (42% of girls without a role model report themselves less interested in STEM subjects, versus 24% of girls with a role model).

**Girls who have STEM role models report more passion for all STEM subjects. The rise in interest is not limited to a single subject.**

- On average – across Mathematics, Physics, Biology, Chemistry and Computer Science – having a STEM role model results in a further 12% increase in interest (compared to those who do not have role model, and report themselves as interested in a subject).
- Girls with role models in STEM believe in themselves: more of them evaluate themselves as higher performers across every STEM subject compared to girls without role models.

# Girls with STEM role models can imagine a career in STEM more easily than those who don't.
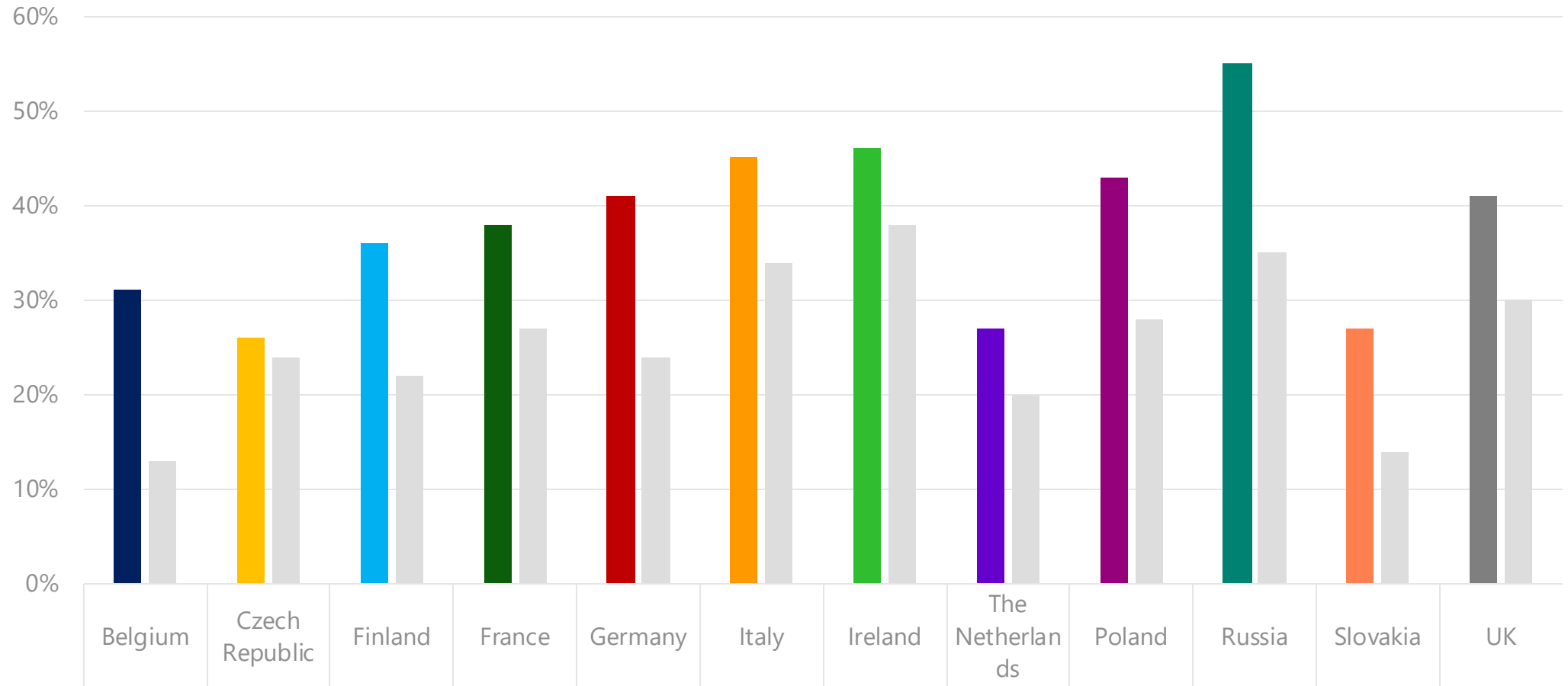
- Over half (51%) of girls with role models can imagine a future career in STEM. 15% more girls can imagine a career in STEM if they have a role model compared to those who don't.
- However, only around 1:3 (38%) of young women with a STEM role model actually work in STEM subjects, showing an 'opportunity gap' to convert the passion in the classroom into a future STEM workforce.
- It also shows that a role model is not enough to help bridge the digital skills gap, as almost half (49%) of girls who have a STEM role models still do not see themselves working in STEM.
- 'Celebrities' are considered the least influential role models to drive girls interest in STEM, whereas 'Women Working in STEM' and 'STEM institutions' are the top drivers.

# Having a role model in STEM makes girls want more encouragement, from individuals and from society.

- Girls who have STEM role models want more encouragement from their family.
- Girls who have STEM role models are more aware of male gender stereotyping in STEM by society.
- Girls who have STEM role models give more importance to peer group approval as a whole, but are less concerned by being compared to their male peers in STEM subjects than those without role models.
- In line with previous findings from our research, girls both with and without role models cite practical, hands-on experience as the biggest driver of their interest in STEM.

# Country findings

# How interesting do you consider STEM subjects to be?



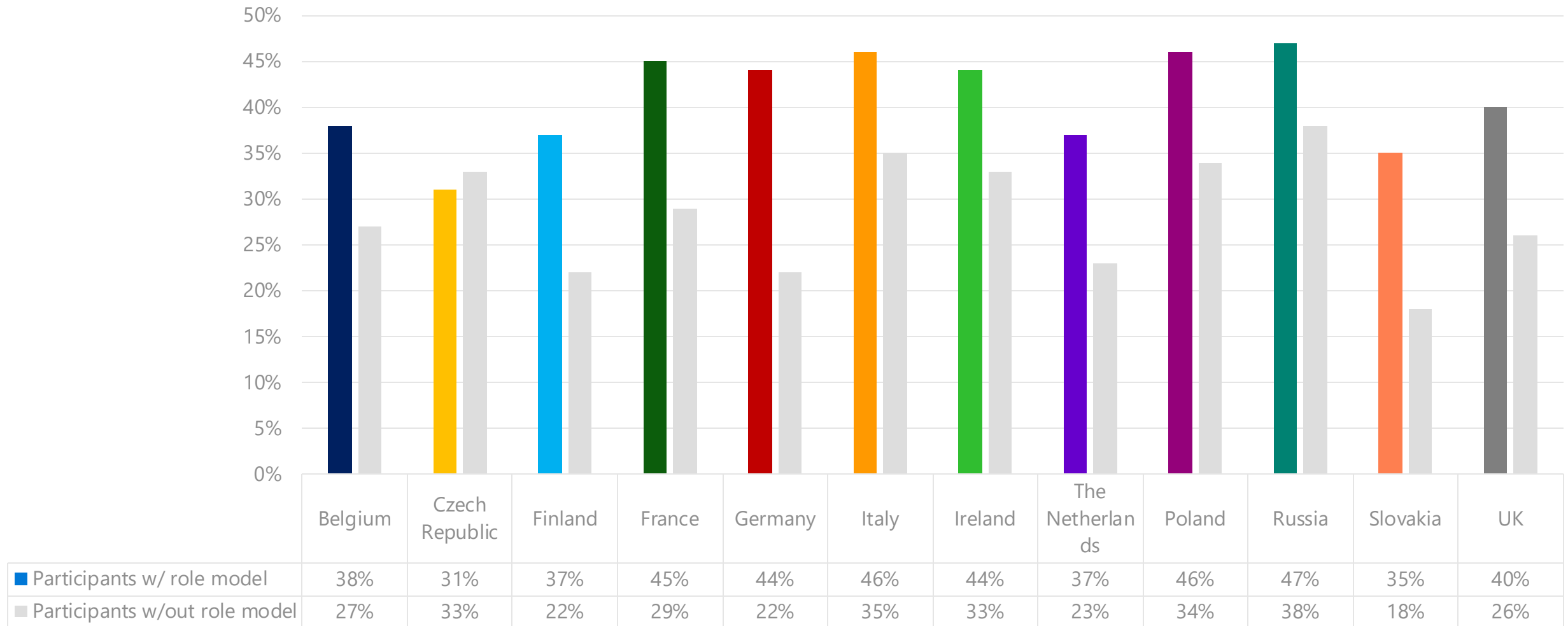| | Belgium | Czech Republic | Finland | France | Germany | Italy | Ireland | The Netherlands | Poland | Russia | Slovakia | UK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ■ Participants w/ role model | 31% | 26% | 36% | 38% | 41% | 45% | 46% | 27% | 43% | 55% | 27% | 41% |
| ■ Participants w/out role model | 13% | 24% | 22% | 27% | 24% | 34% | 38% | 20% | 28% | 35% | 14% | 30% |

**Question** How interesting do you consider STEM subjects to be?
**Base** Girls between the age 11 to 30 with/without a role model
**Parameter** Average Scores for interest in STEM with/without a role model

# School subjects – personal interest



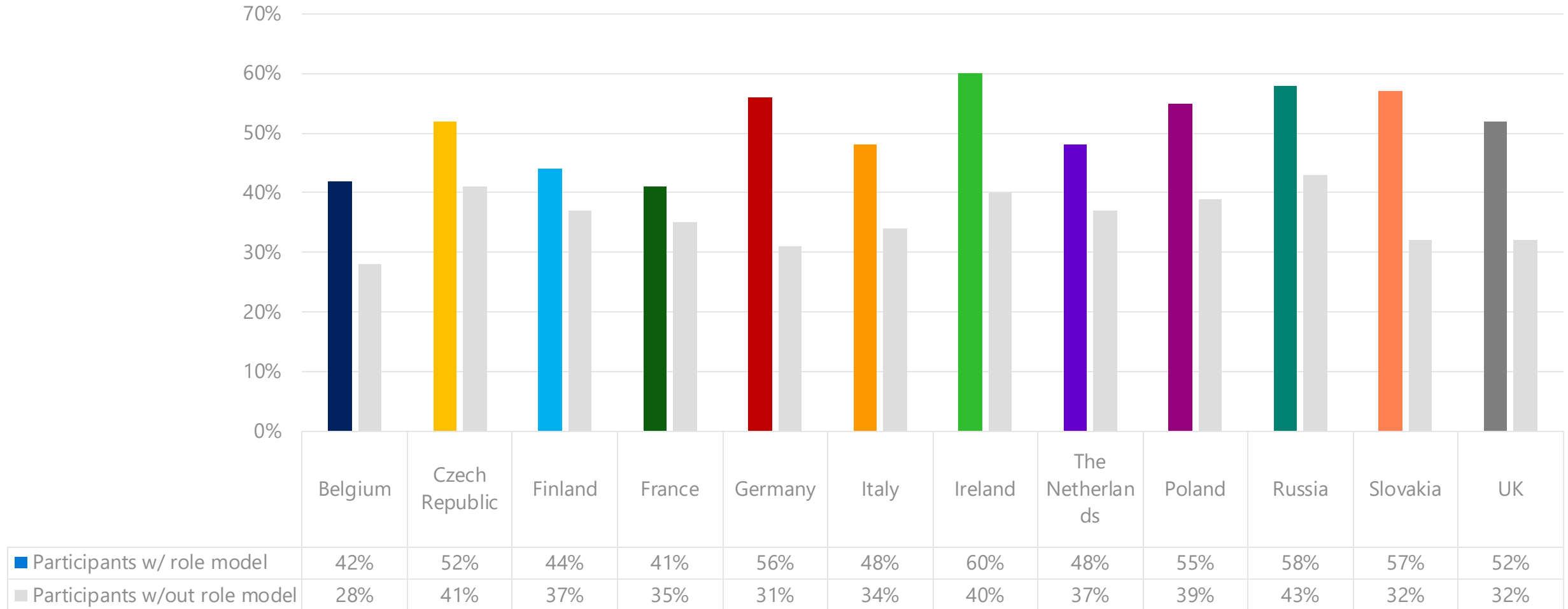| | Belgium | Czech Republic | Finland | France | Germany | Italy | Ireland | The Netherlands | Poland | Russia | Slovakia | UK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ■ Participants w/ role model | 38% | 31% | 37% | 45% | 44% | 46% | 44% | 37% | 46% | 47% | 35% | 40% |
| ■ Participants w/out role model | 27% | 33% | 22% | 29% | 22% | 35% | 33% | 23% | 34% | 38% | 18% | 26% |

**Question** Please rate all subjects according to your personal interest in school / when you were at school.
**Base** Girls between the age 11 to 30 with/without a role model
**Parameter** Average Scores for interest across STEM subjects with/without a role model

# Imagining to work in a STEM discipline



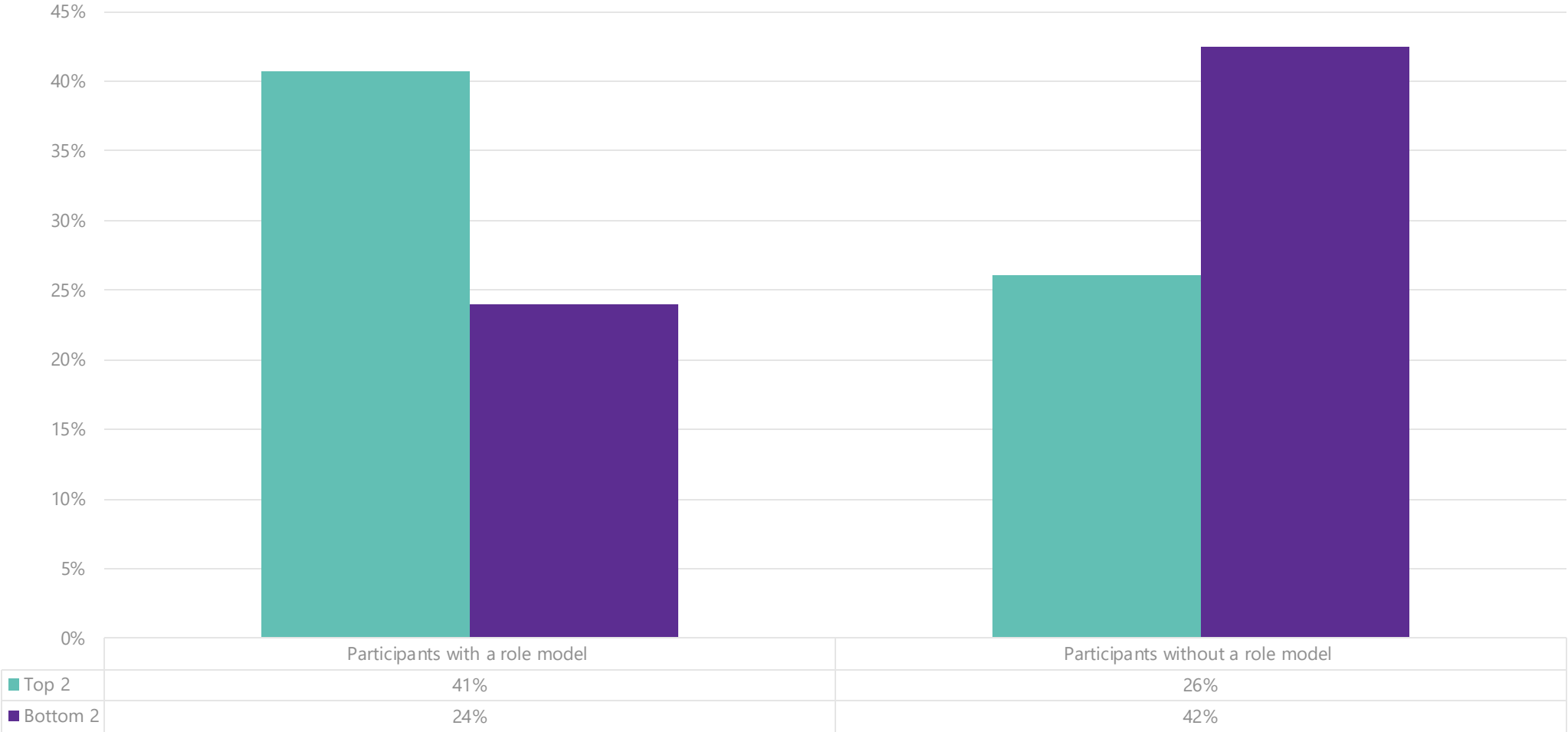| | Belgium | Czech Republic | Finland | France | Germany | Italy | Ireland | The Netherlands | Poland | Russia | Slovakia | UK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ■ Participants w/ role model | 42% | 52% | 44% | 41% | 56% | 48% | 60% | 48% | 55% | 58% | 57% | 52% |
| Participants w/out role model | 28% | 41% | 37% | 35% | 31% | 34% | 40% | 37% | 39% | 43% | 32% | 32% |

**Question** Can you imagine yourself pursuing a career in one of the STEM disciplines – that is, Science, Technology, Engineering and Mathematics?
**Base** Girls between the age 11 to 30 with/without a role model
**Parameter** Average Scores for imagining to work in STEM with/without a role model

European data

# How interesting do you consider STEM subjects to be?



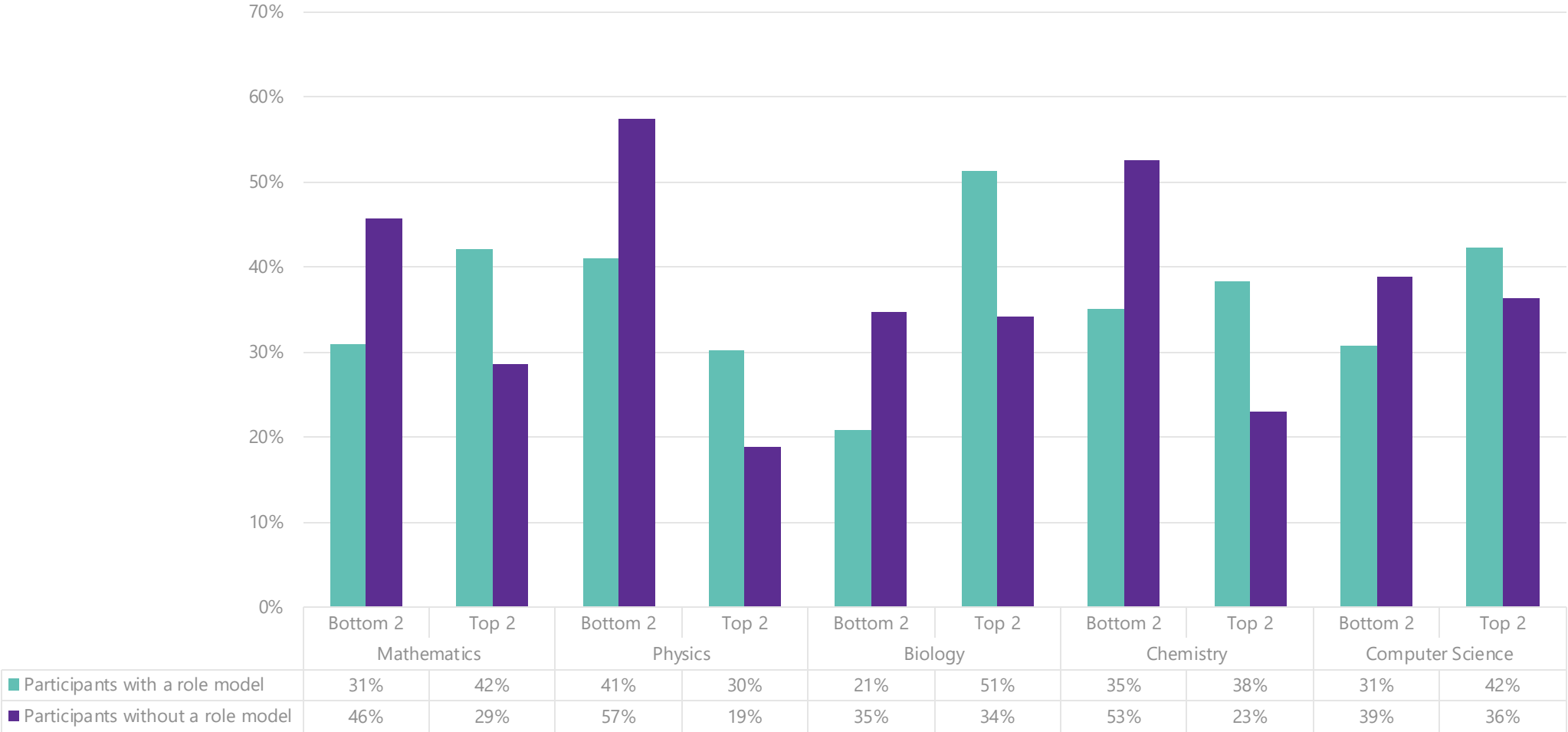| | Participants with a role model | Participants without a role model |
|---|---|---|
| ■ Top 2 | 41% | 26% |
| ■ Bottom 2 | 24% | 42% |

**Question** How interesting do you consider STEM subjects to be?
**Base** All participants with and without a role model
**Parameter** Top 2= "Very interesting" + "Extremely interesting"; Bottom 2= "Not at all interesting" + "Slightly interesting"

# School subjects – personal interest



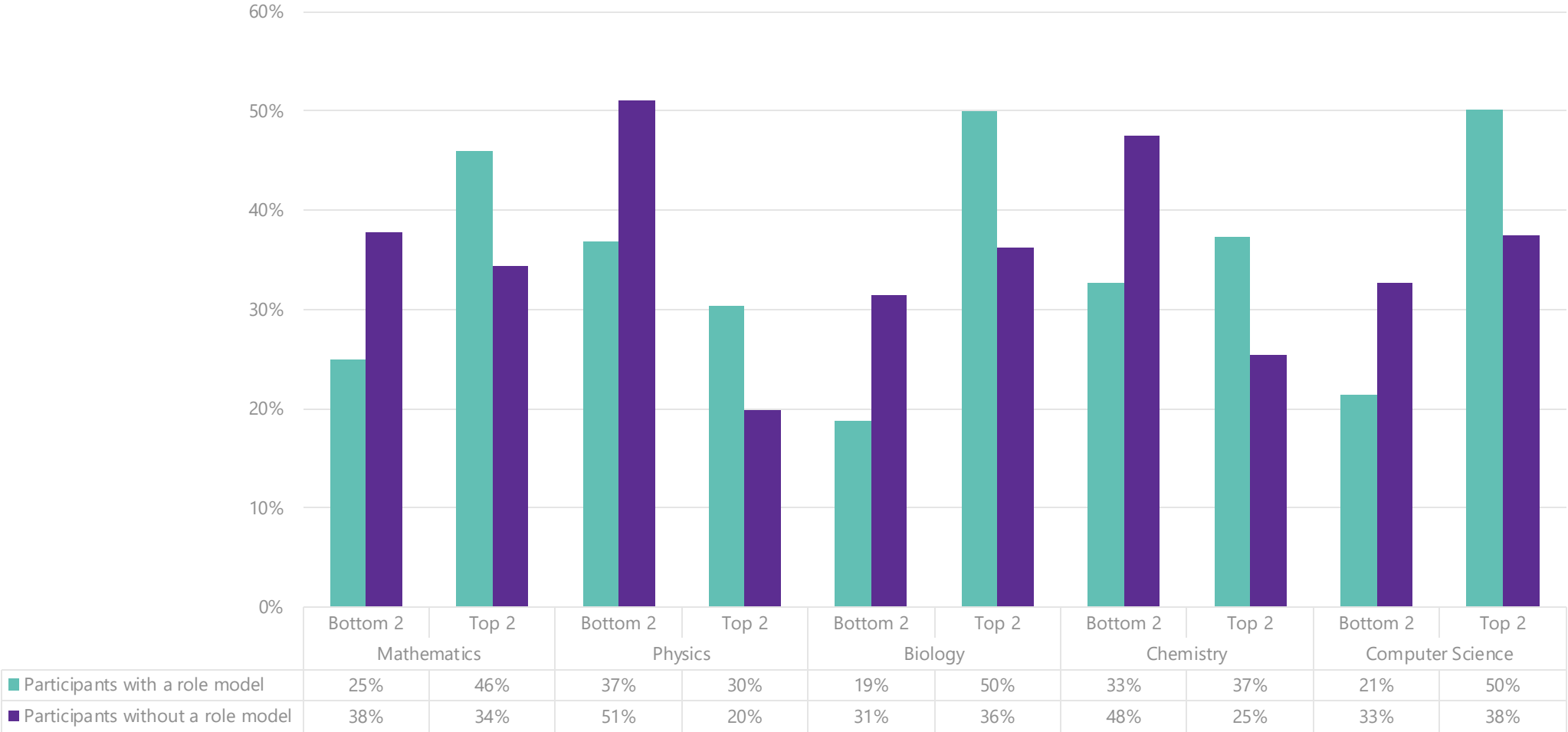| | Mathematics | | Physics | | Biology | | Chemistry | | Computer Science | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Bottom 2 | Top 2 | Bottom 2 | Top 2 | Bottom 2 | Top 2 | Bottom 2 | Top 2 | Bottom 2 | Top 2 |
| Participants with a role model | 31% | 42% | 41% | 30% | 21% | 51% | 35% | 38% | 31% | 42% |
| Participants without a role model | 46% | 29% | 57% | 19% | 35% | 34% | 53% | 23% | 39% | 36% |

**Question** Please rate all subjects according to your personal interest in school / when you were at school.
**Base** All participants with and without a role model
**Parameter** Top 2= "Very interesting" + "Extremely interesting"; Bottom 2= "Not at all interesting" + "Slightly interesting"

# School subjects – self evaluation



| | Mathematics | | Physics | | Biology | | Chemistry | | Computer Science | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Bottom 2 | Top 2 | Bottom 2 | Top 2 | Bottom 2 | Top 2 | Bottom 2 | Top 2 | Bottom 2 | Top 2 |
| Participants with a role model | 25% | 46% | 37% | 30% | 19% | 50% | 33% | 37% | 21% | 50% |
| Participants without a role model | 38% | 34% | 51% | 20% | 31% | 36% | 48% | 25% | 33% | 38% |

**Question** Below you will see the list of school subjects again. Please rate how good you think you are in each of them.
**Base** All participants with and without a role model
**Parameter** Top 2= "Very good" + "Extremely good"; Bottom 2= "Not good at all" + "Slightly good"

# Imagining to work in a STEM discipline
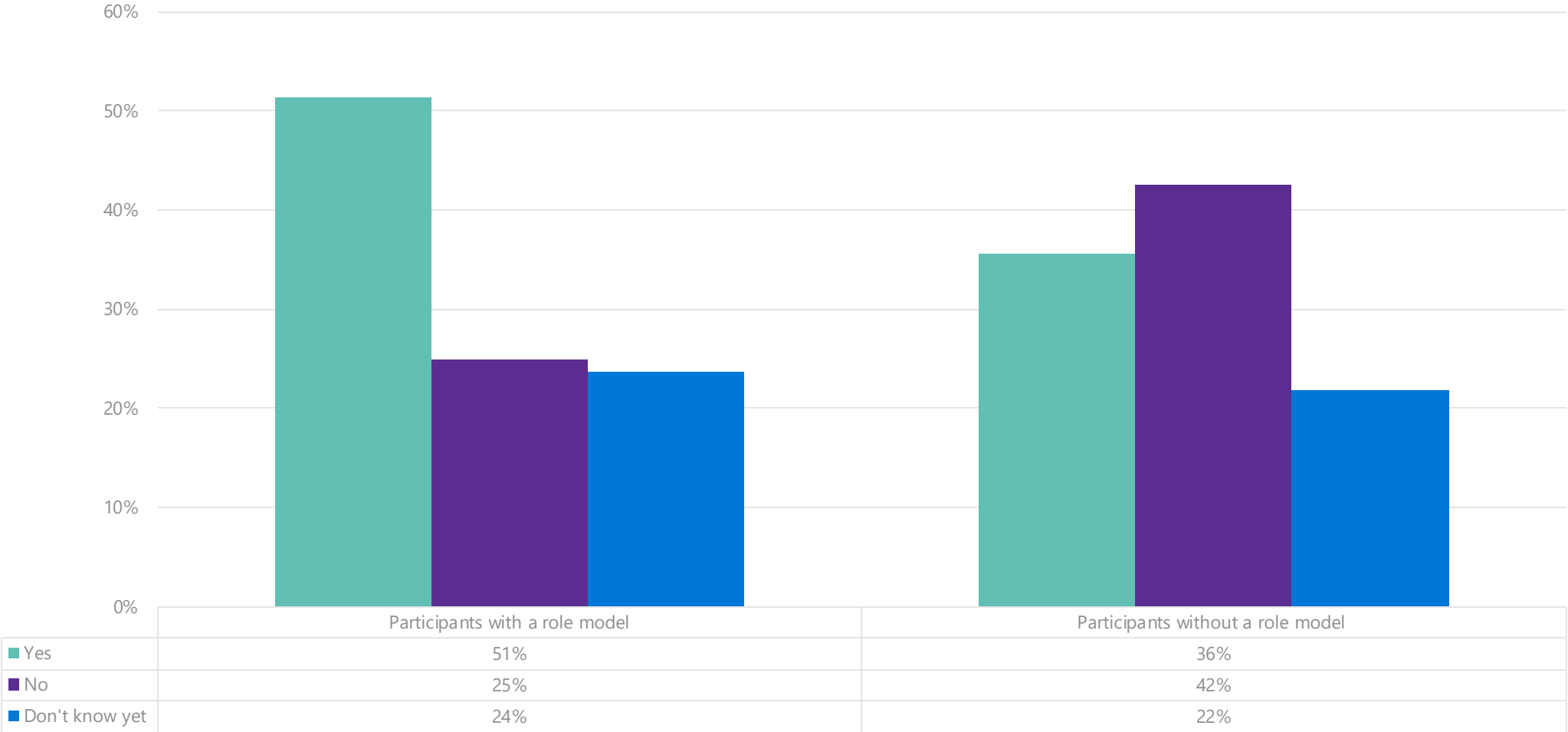


| | Participants with a role model | Participants without a role model |
|---|---|---|
| Yes | 51% | 36% |
| No | 25% | 42% |
| Don't know yet | 24% | 22% |

**Question** Can you imagine yourself pursuing a career in one of the STEM disciplines – that is, Science, Technology, Engineering and Mathematics?
**Base** All participants with and without a role model

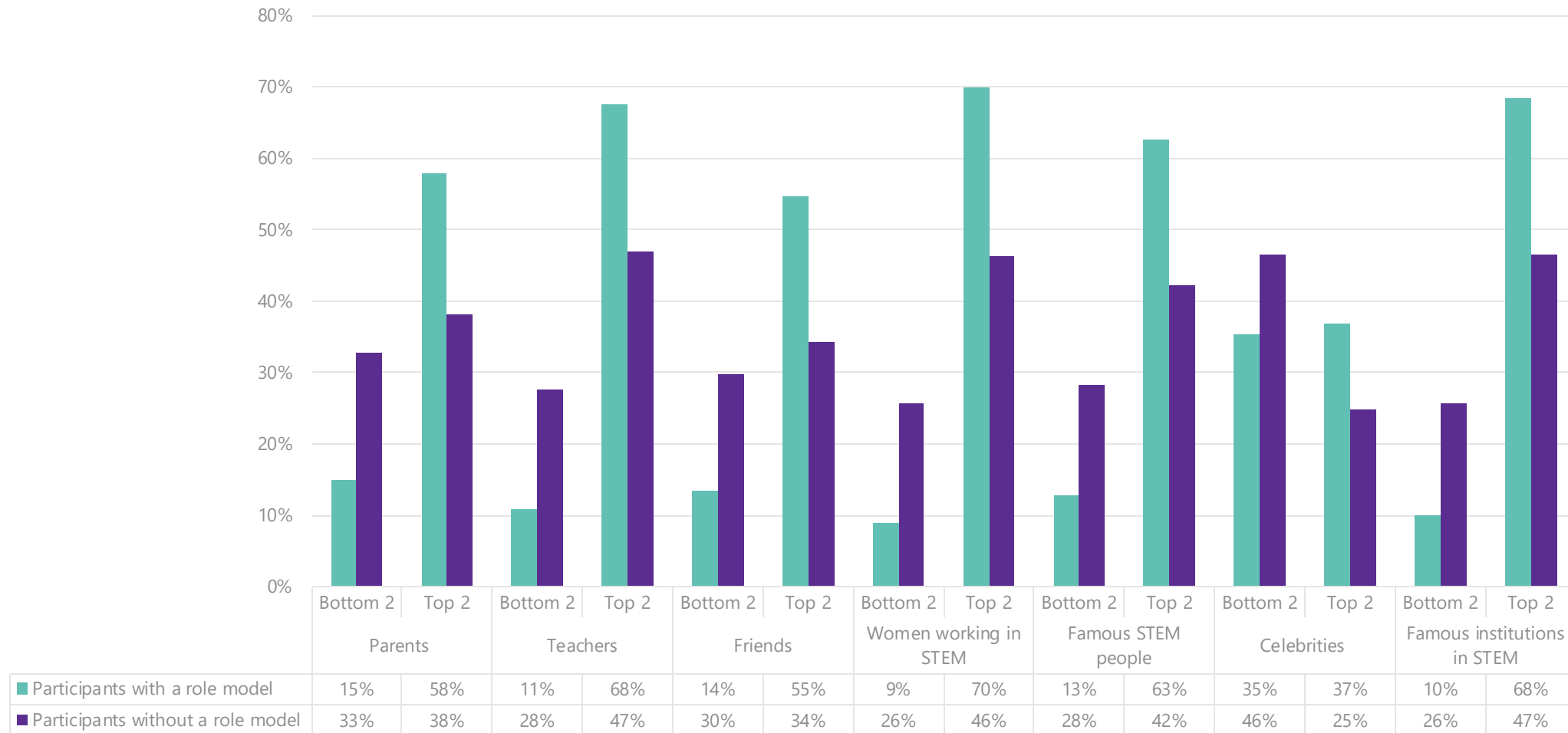# Is your current professional occupation STEM related?



| | Participants with a role model | Participants without a role model |
|---|---|---|
| ■ Yes | 38% | 28% |
| ■ No | 62% | 72% |
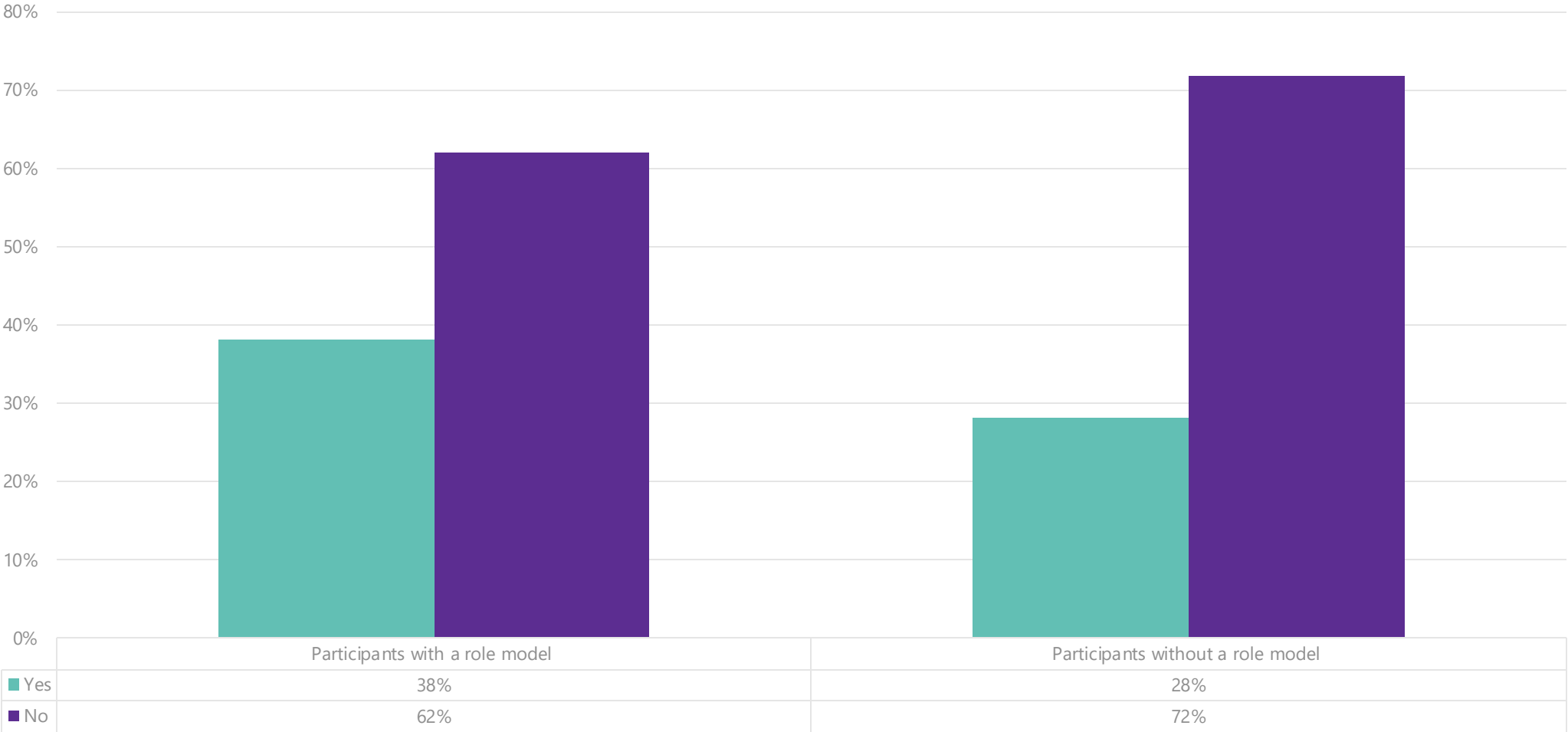
**Question** Is your current professional occupation STEM related?
**Base** All participants with and without a role model

# Desired encouragement



| | Bottom 2 | Top 2 | Bottom 2 | Top 2 | Bottom 2 | Top 2 | Bottom 2 | Top 2 | Bottom 2 | Top 2 | Bottom 2 | Top 2 | Bottom 2 | Top 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Parents | | Teachers | | Friends | | Women working in STEM | | Famous STEM people | | Celebrities | | Famous institutions in STEM | |
| Participants with a role model | 15% | 58% | 11% | 68% | 14% | 55% | 9% | 70% | 13% | 63% | 35% | 37% | 10% | 68% |
| Participants without a role model | 33% | 38% | 28% | 47% | 30% | 34% | 26% | 46% | 28% | 42% | 46% | 25% | 26% | 47% |

**Question** When you think of STEM, would you like more encouragement from the people below?
**Base** All respondents with and without a role model
**Parameter** Top 2= "Tend to agree" + "Strongly agree"; Bottom 2= "Strongly disagree" + "Tend to disagree"
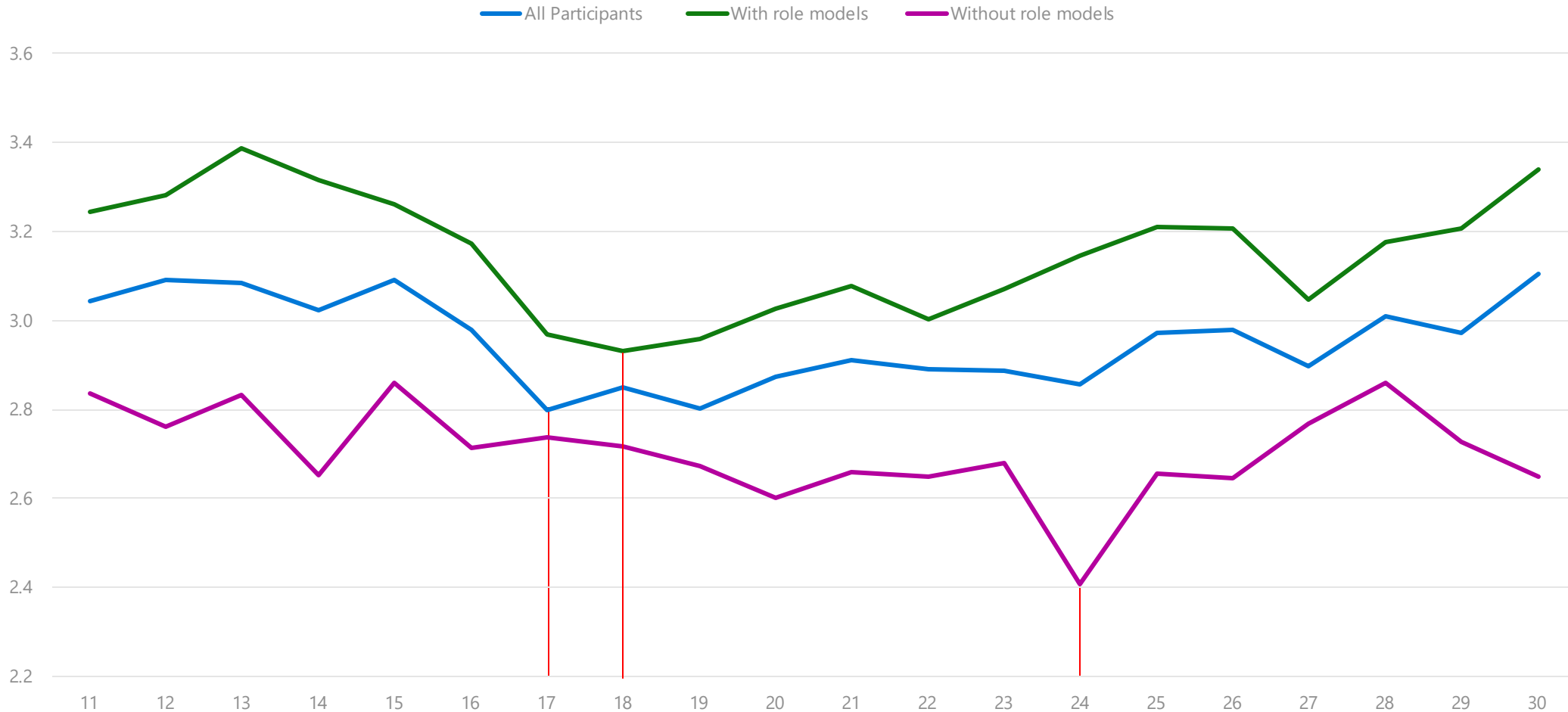
# The When: age drop-off point

# At what age did you become interested in STEM?



| Age | Without a role model | With a role model |
|---|---|---|
| | 13.4 | 13.7 |
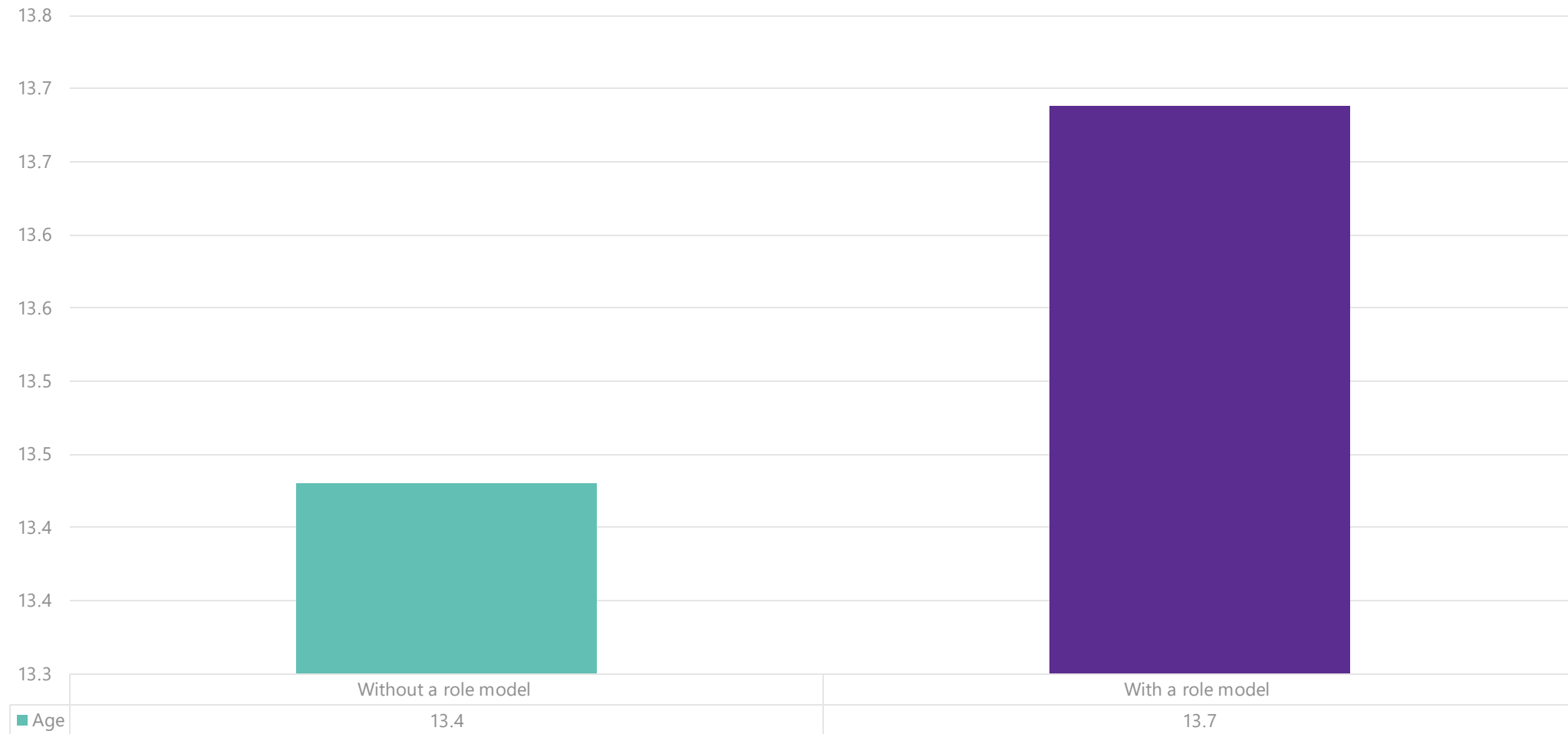
**Question** At what age did you become interested in STEM?
**Base** All respondents with and without a role model

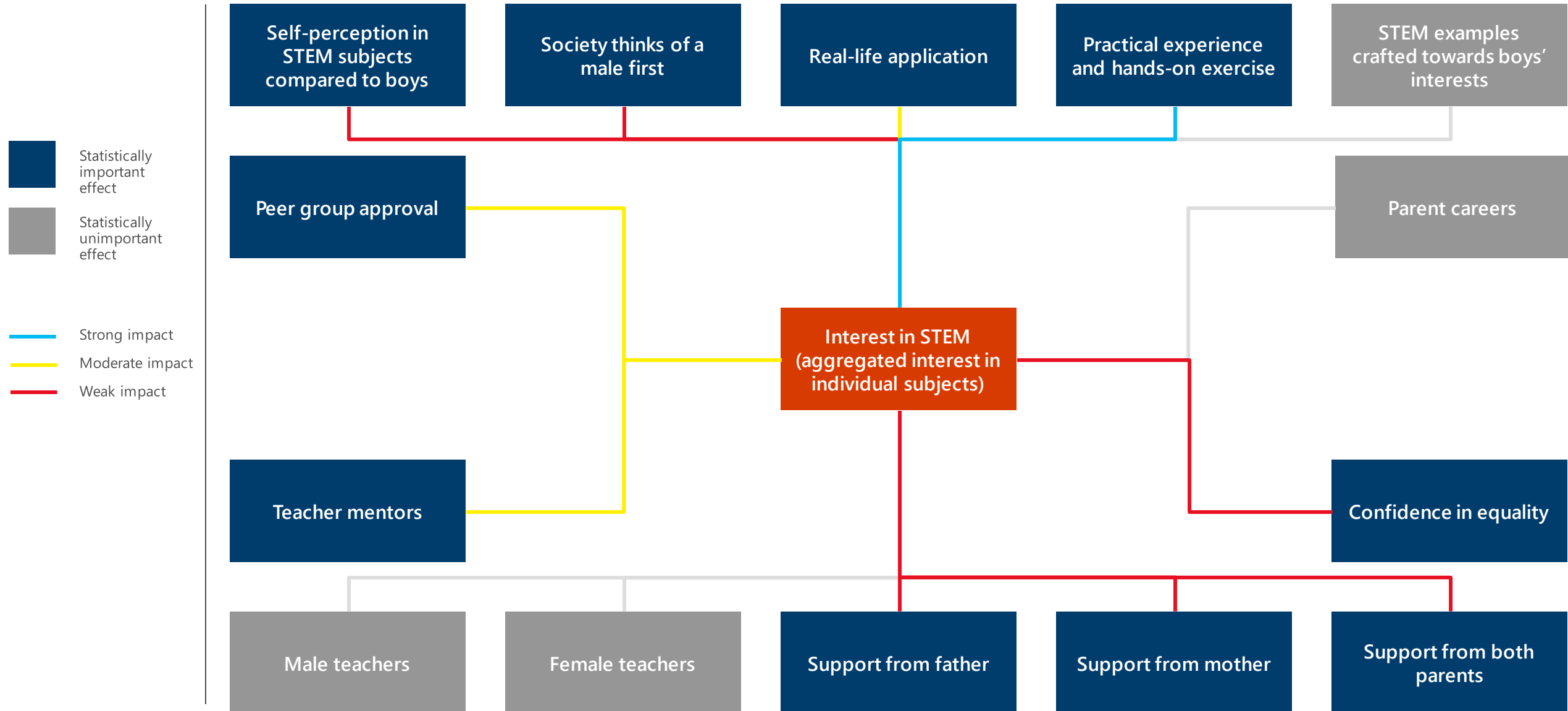# Loss of interest in STEM ('The When')



**Question** On a scale from 1 to 5, how interesting do you consider STEM subjects to be and at what age did you start feeling this way?
**Base** All participants; participants with a role model; participants without a role model; X-axis: Age in years; Y-axis: Aggregated interest in STEM
**Parameter** Mean scores

**The Why**: perception testing on STEM/science

# 'Why Model' – Participants with a role model

'Why Model' – Participants without a role model