

Does it matter if learners enjoy learning science?



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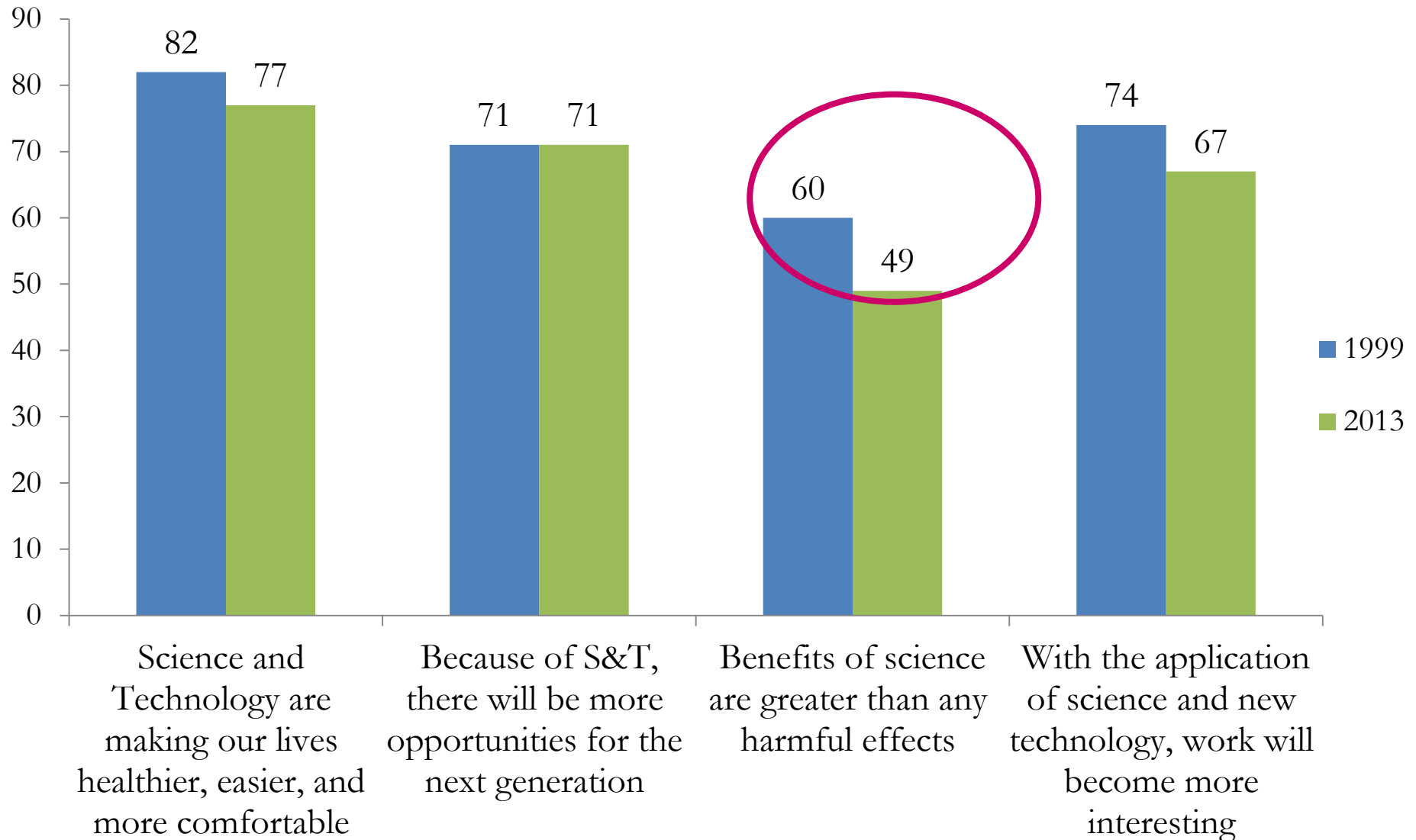
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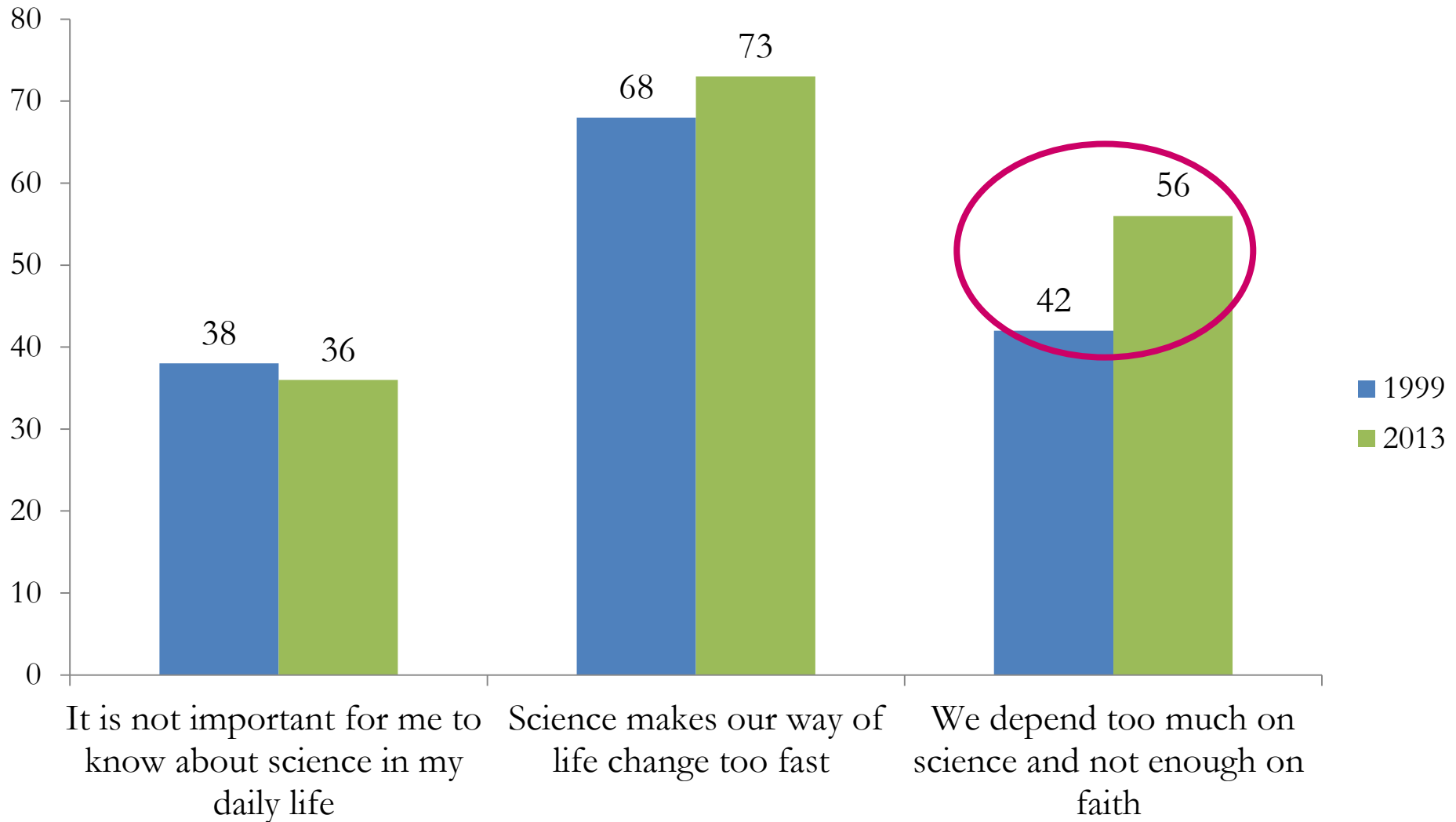
Science and society

- Science and technology permeate our everyday lives
- Medical advances, environmental sustainability, climate change have direct consequences for citizens
- Requires a scientifically engaged and literate society
- Assumption: positive relationship between scientific community and society will have benefits
- Crucial to this relationship are positive attitudes to science

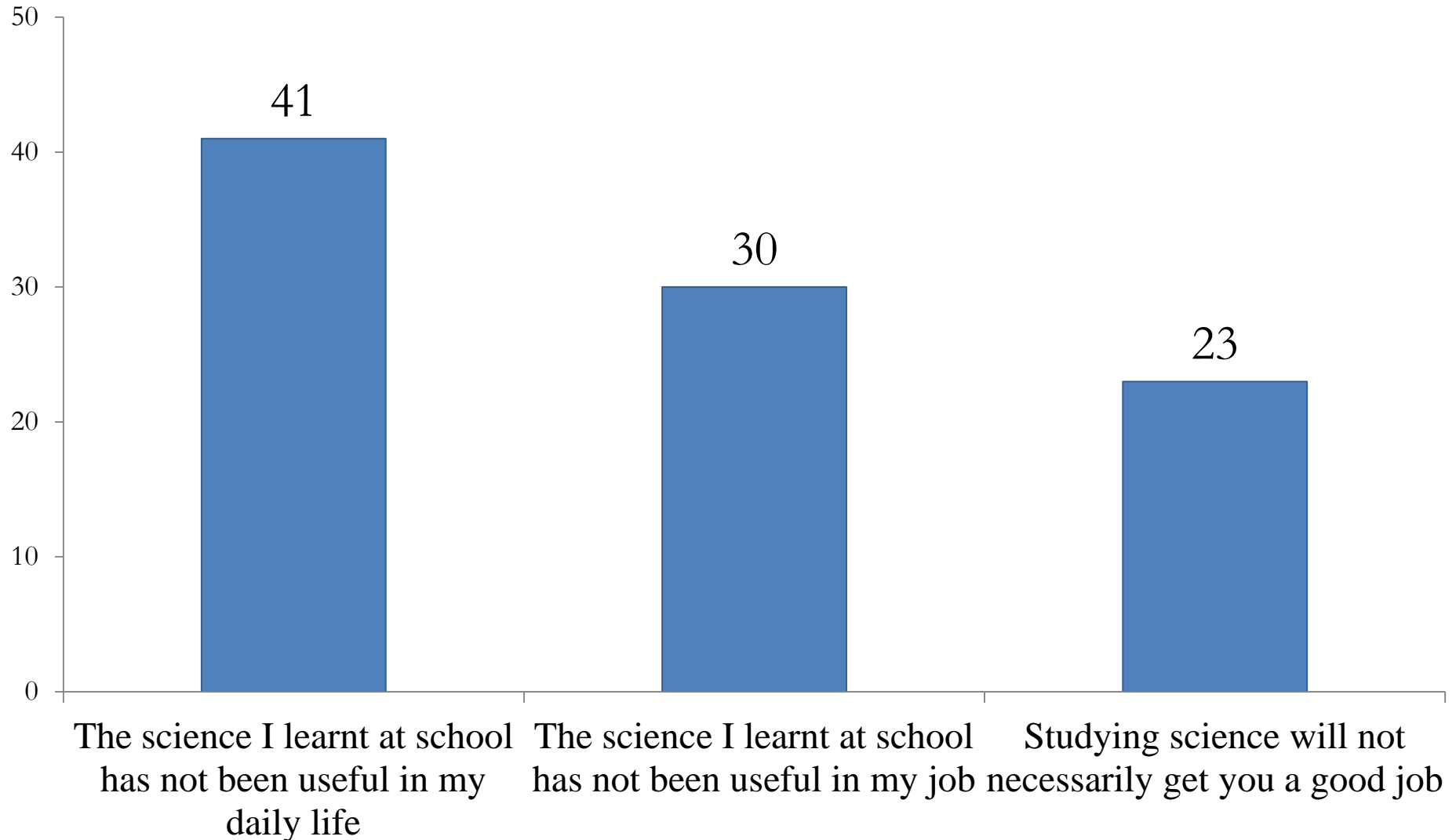
SA attitudes to the benefits of science



SA attitudes to the risks of science



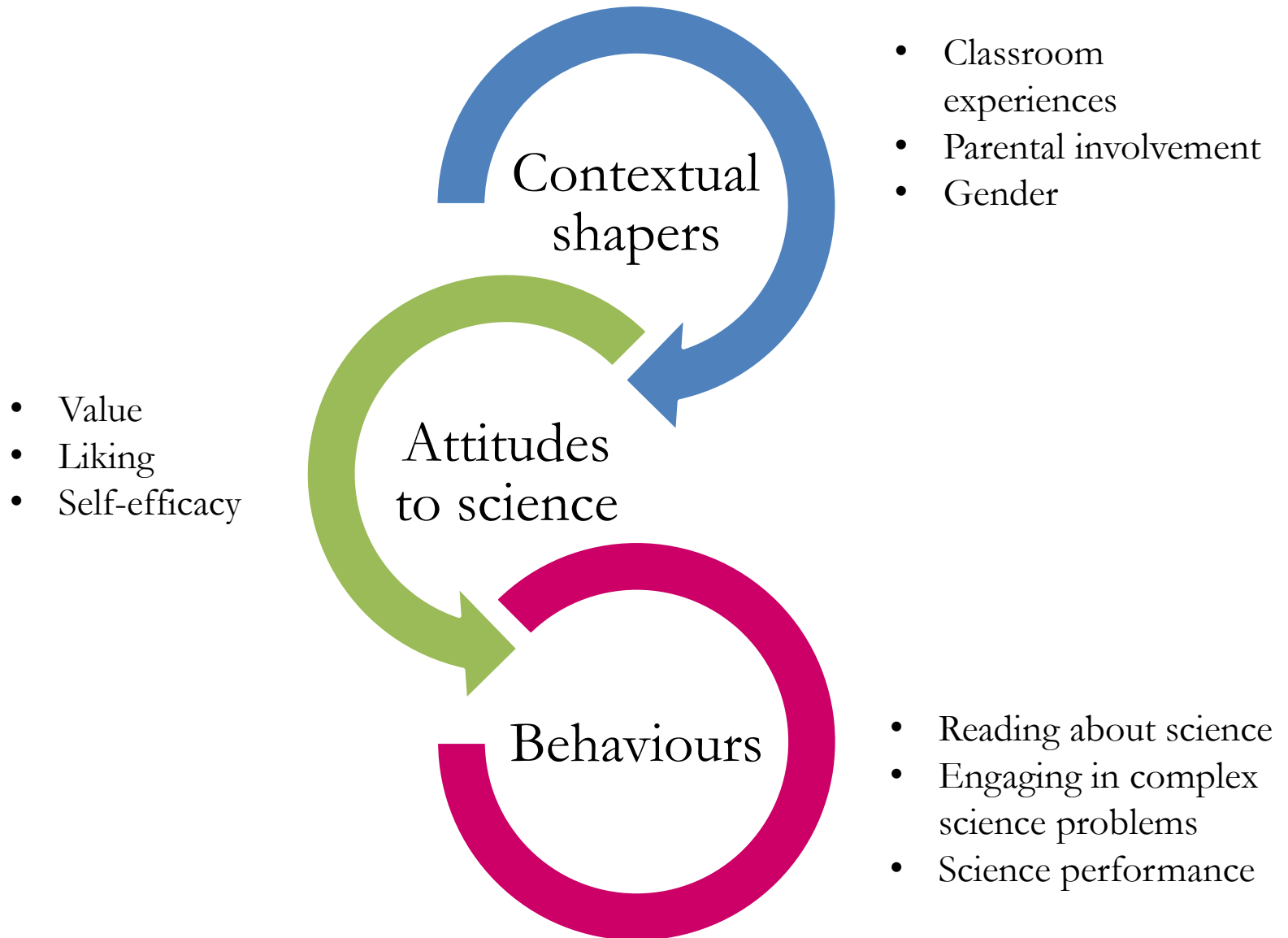
Attitudes towards school science (2013)



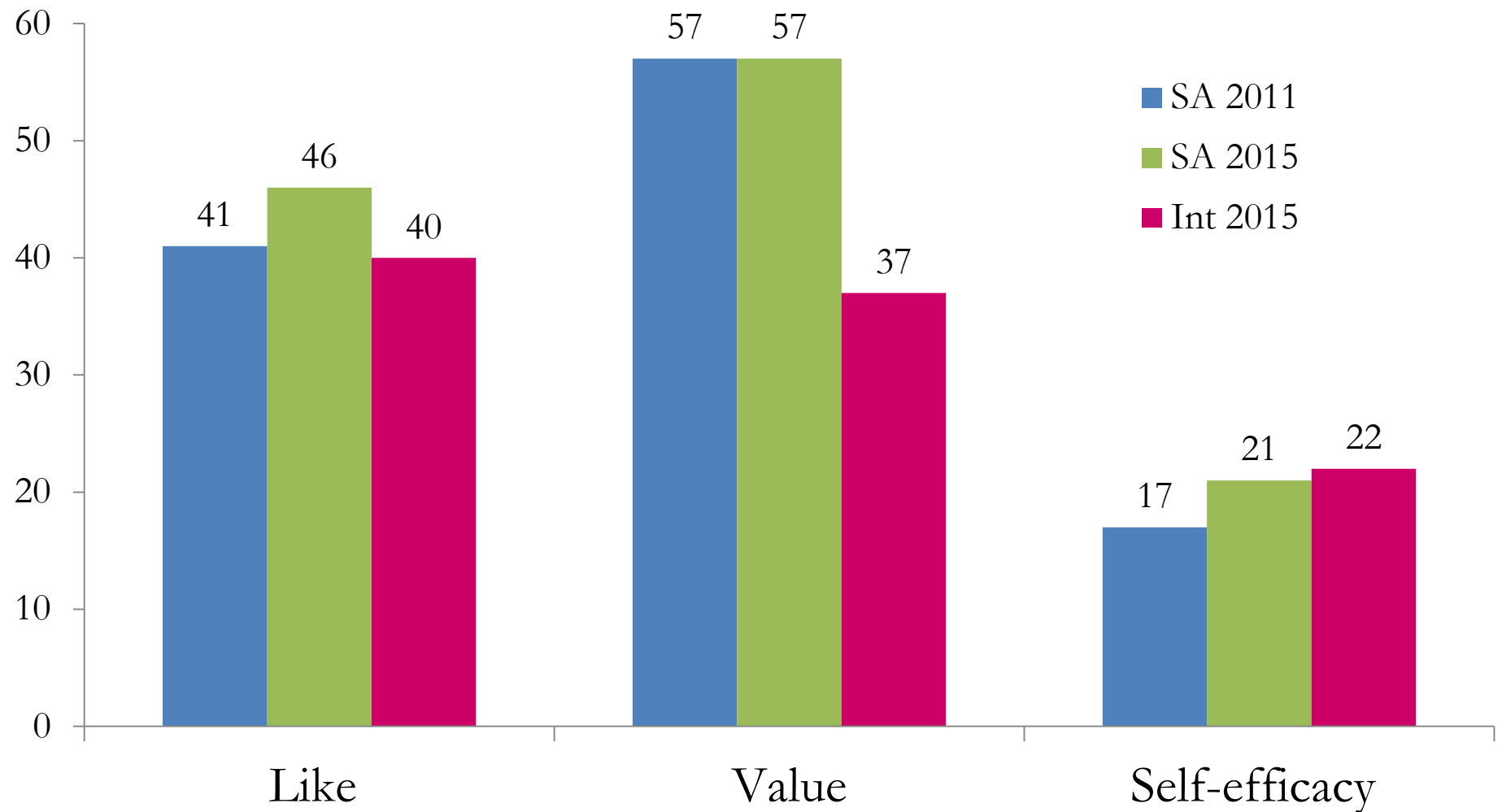
Why do learner attitudes matter?

- STEM careers for the labour market
- Indicator of scientific literacy
- Important in order to interpret achievement
- Assessment of attitudes in TIMSS

Conceptual framing



Learners exhibiting positive attitudes to science (2011, 2015)



Contextual shapers of learner attitudes to science

Classroom experiences

Parental involvement

Gender

Classroom experiences

- I know what my teacher expects me to do
- My teacher is easy to understand
- I am interested in what my teacher says
- My teacher gives me interesting things to do
- My teacher lets me show what I have learned
- My teacher tells me how to do better when I make a mistake
- My teacher listens to what I have to say

(TIMSS2015)

The 59% of learners who reported positive classroom experiences scored an average of 365 points

Positive classroom interactions are associated with positive attitudes across the measures

Parental involvement

- The importance of a supportive home environment in shaping attitudes

- Parents ask what has been learnt in school
- Parents make sure that time is set aside for homework
- Parents check if homework is done

(TIMSS 2015)

- Parental involvement is associated with positive attitudes across the measures

Gender

362
points



353
points

- In 2011, girls were less likely to value science and had lower self-efficacy beliefs than boys
- In 2015, girls had lower self-efficacy beliefs than boys

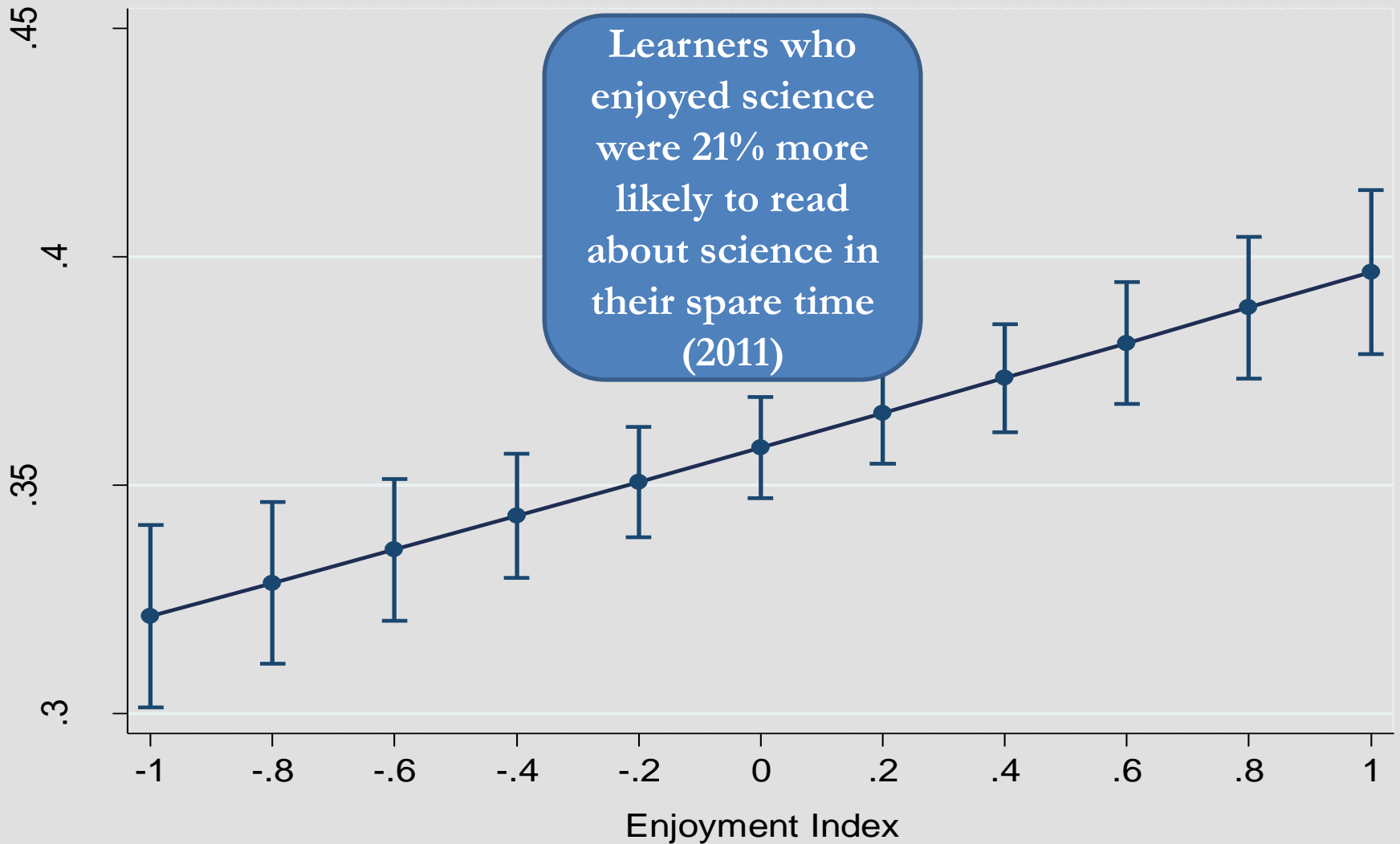
Desirable behaviours associated with positive attitudes

Reading about science

Engaging in complex science problems

Science performance

Reading science outside school and liking science (2011)



Willingness to engage in complex problems

- Learners need to be open to engage with science problems to master the subject
- The extent to which learners feel that they can solve complex scientific problems

Learners who reported high levels of *self-efficacy* were

4 X

more likely to attempt these activities

Learners who highly valued science were

2 X

more likely to attempt these activities

Attitudes and achievement

	Science Achievement (2011)	Science Achievement (2015)
Gender (Girls)	----	----
Age	----	----
Home SES	++++	++++
Enjoyment	++++	++++
Value	----	----
Self efficacy	++++	++++

Policy recommendations

- Develop communication strategies that highlight the relevance of science to our everyday lives.
- Schools should develop policies that highlight the crucial role that teachers play in shaping attitudes towards science, and ensure that techniques are employed to foster positive attitudes.
- Programmes that use female role models may encourage girls to recognise that they are capable of pursuing science careers.
- Raise awareness among parents and caregivers of the importance of engaging with students about their homework and reading about science.