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Skills shortage costing STEM sector £1.5bn

17TH MAY 2018 07:00

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- current shortfall of 173,000 skilled workers as 89% of STEM businesses struggle to recruit
- new STEM roles expected to double in next 10 years: businesses warn of economic impact if skills shortage continues



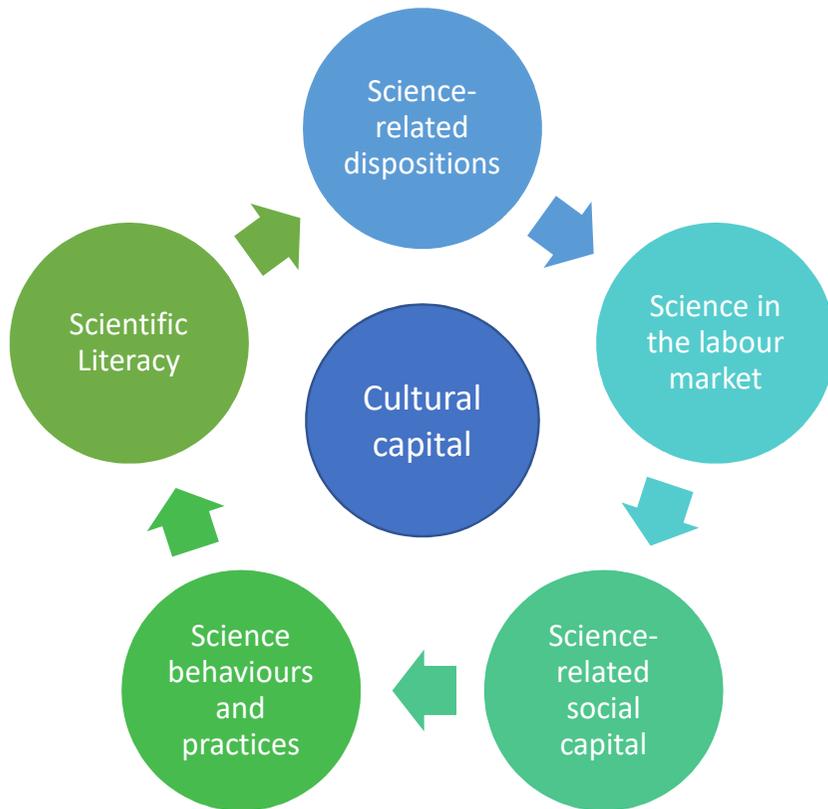
Science capital and primary school children's future science affinity

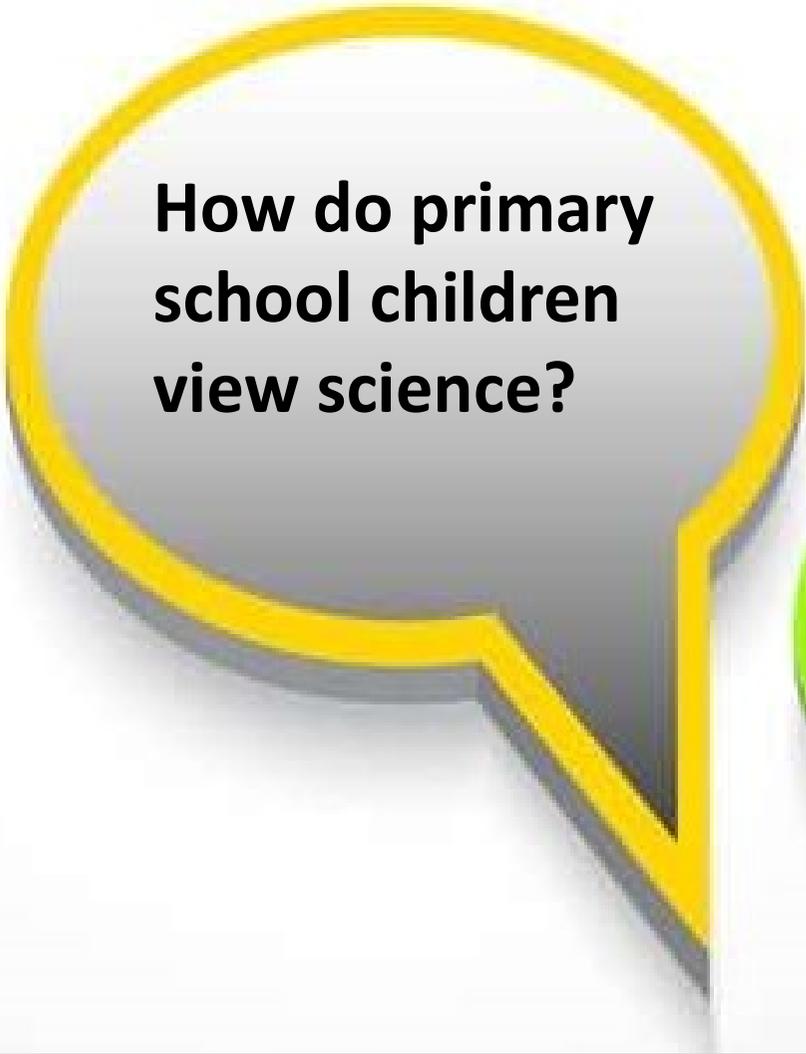
Dr Chao-Hwa (Josephine) Chen-Wilson
and
Dr Rachel Maunder

Science Capital (Archer et al., 2015)

Secondary age pupils (N=3,431) in Years 7-10

Science capital relates to higher science identity (i.e. other people think of me as a science person) and self efficacy in science as well as future science affinity





How do primary school children view science?



What predict their science affinity?

Research questions

Method

- Participants
 - 504 pupils (51.8% female)
 - Years 4-6 across 5 primary schools
 - Children's level of Science capital

	Low	Medium	High
Current study	34.9%	62.7%	2.4%
Archer et al (2015)	5%	68%	27%

- Measures
 - Modified paper version of questionnaire by Archer et al (2015)

Student science capital survey - for BP Aug 2014

This survey asks questions about you and your views about science. This is NOT a test and we want to know what you think. There are no right or wrong answers. We will not share your answers with your teachers.

Please click 'next' at the bottom of each page to continue.

Your consent for taking part in this survey...

***1. Thank you for considering taking part in this research. If you agree to take part, we want you to know that you can stop at any time. You do not need to give a reason.**

Please confirm that you understand what the research study involves by ticking each of the statements below:

- I consent to taking part in this questionnaire.
- I understand that confidentiality and anonymity will be maintained and it will not be possible to identify me in any publications.

Once you have ticked all the boxes above, please click 'next' below to begin this survey:

About you...

***2. Please enter your school name below**

***3. Which year group are you in?**

- Year 7 Year 8 Year 9 Year 10

About you...

***4. Are you a girl or a boy?**

- Girl Boy



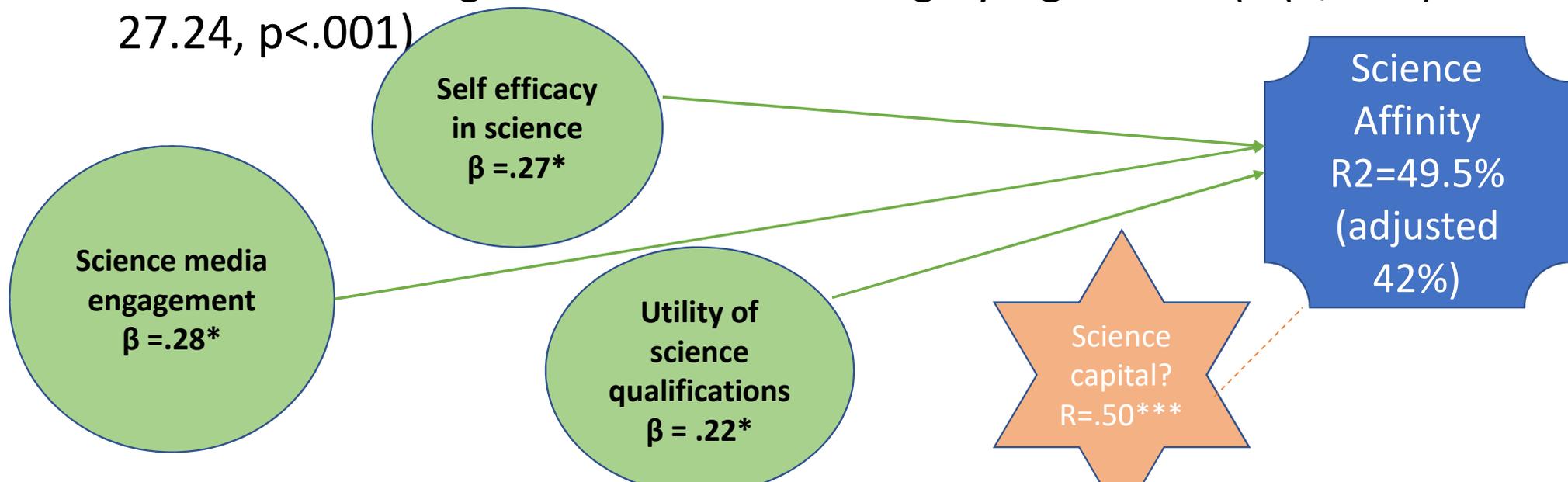
Measured sub-scales

- Future Job Science Affinity (.71)
- Valuing science and scientists (.82)
- Family attitudes (.81)
- Utility of science qualifications (.77)
- Informal science activities (.80)
- Science media engagement (.72)
- Valuing museum/museum experiences (.83)
- Science teachers and lessons (.89)
- Self-efficacy in science (.78)
- Cultural capital
- Parental education*
- Science self-perception* (.74)
- Science capital

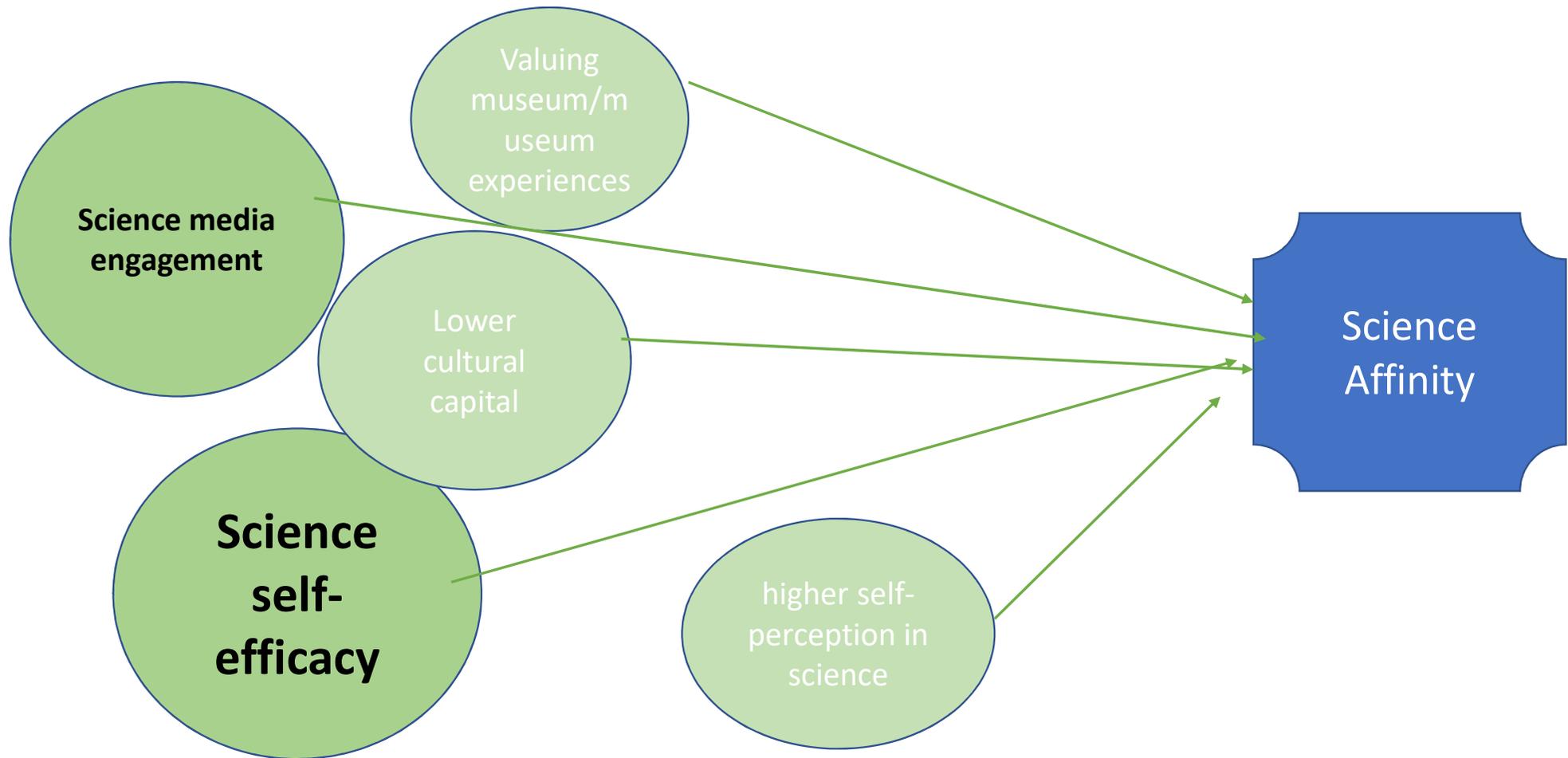
What predicted these children's future science affinity? (N=504)

All subscales significantly correlated with Science affinity in a positive direction, ranging from $r=.30^{**}$ (cultural capital) to $r=.50^{**}$ (Science capital)

The backward regression model was highly significant ($F(6, 256) = 27.24, p < .001$)



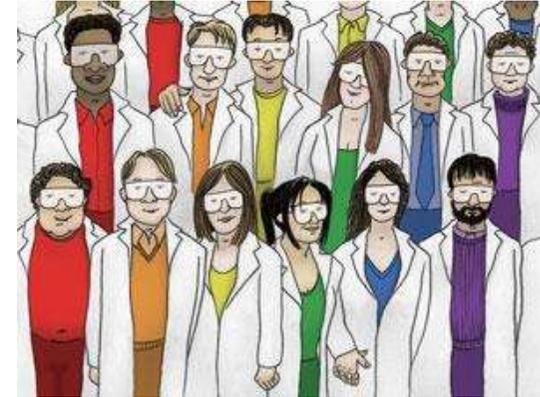
What predicted children's future science affinity? Another sample with higher SC



Children's view of science

- 3 factors identified (48.82% of the variance explained, N=479)

Conventional
(27.83%)



What is
science

utilitarian and
future oriented
(9.21%)



Inventions and
discoveries
(9.77%)



Children who said they'd like to work in a science related job in the future (N=238)

Factor Analysis of reasons: (53.74%)

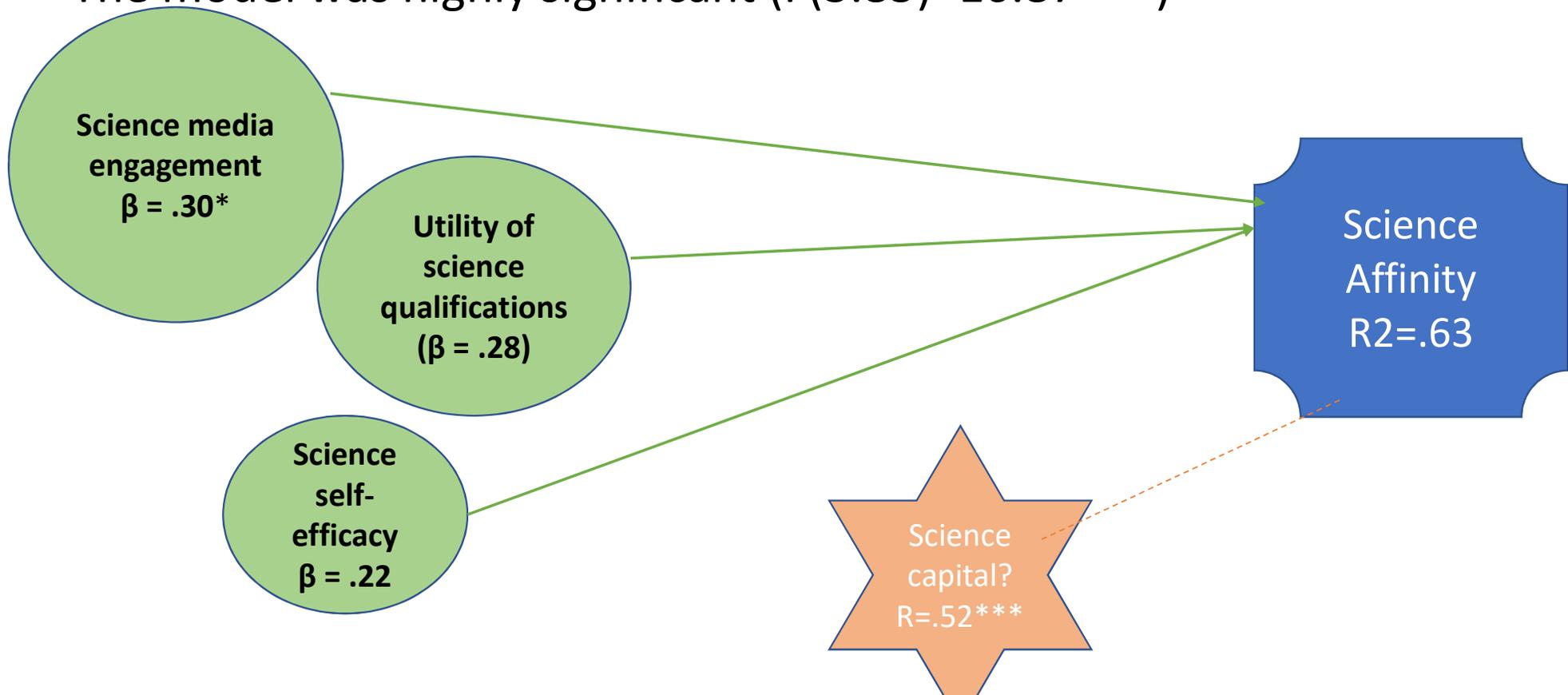
External
incentives
(29.03%)

Intrinsic
motivations
(13.59%)

Job security
and own
reasons
(11.12%)

What predicted these children's future science affinity?

The model was highly significant ($F(3.85)=16.87^{***}$)



Children who said they wouldn't like to work in a science related job in the future (N=249)

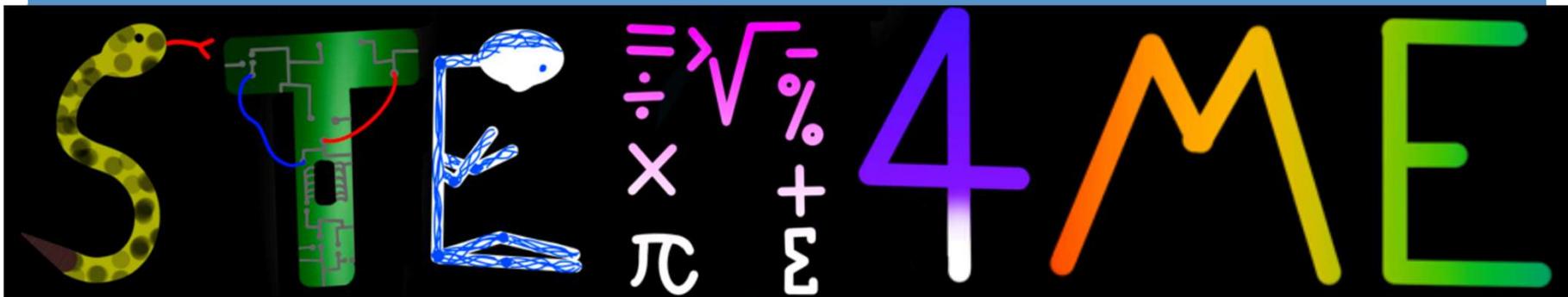
Factor Analysis on reasons (51.04%)

Science is not cool (22.26%)

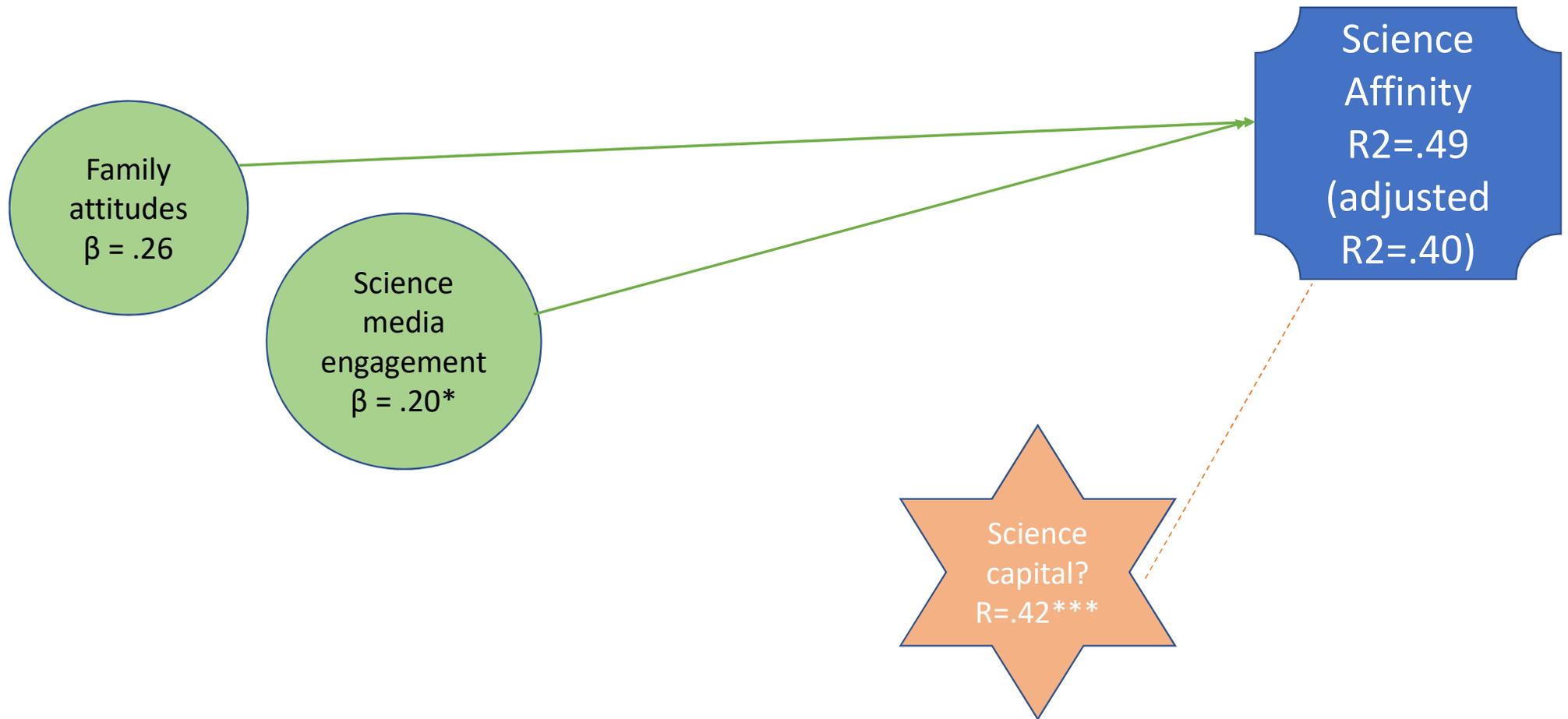
Too much effort for too little (11.74%)

Out of reach and not for me (8.68%)

Something else is just better (8.36%)



What predicted these children's future science affinity?





Discussion

- Primary school children's understanding of science still more biased towards conventional lab-based disciplines
- The reasons behind whether they would like to work in science-related job post-16 may be key to future research and should be considered in further outreach work
- The role played by different components of science capital: self efficacy in science and science media engagement
- How do we increase children's future science affinity?