



Science choice at school: Gender and the relative importance of factors students consider when selecting subjects

Tracey-Ann Palmer, Paul F. Burke and Peter Aubusson
University of Technology, Sydney, Australia



Today

Inspiration

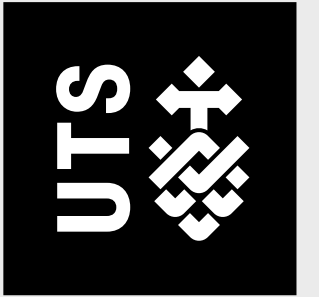
Fresh Minds for Science

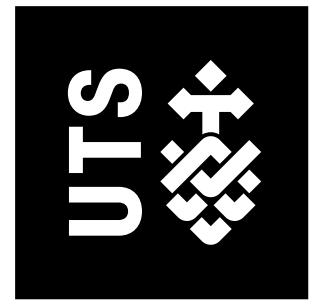
Method

General findings

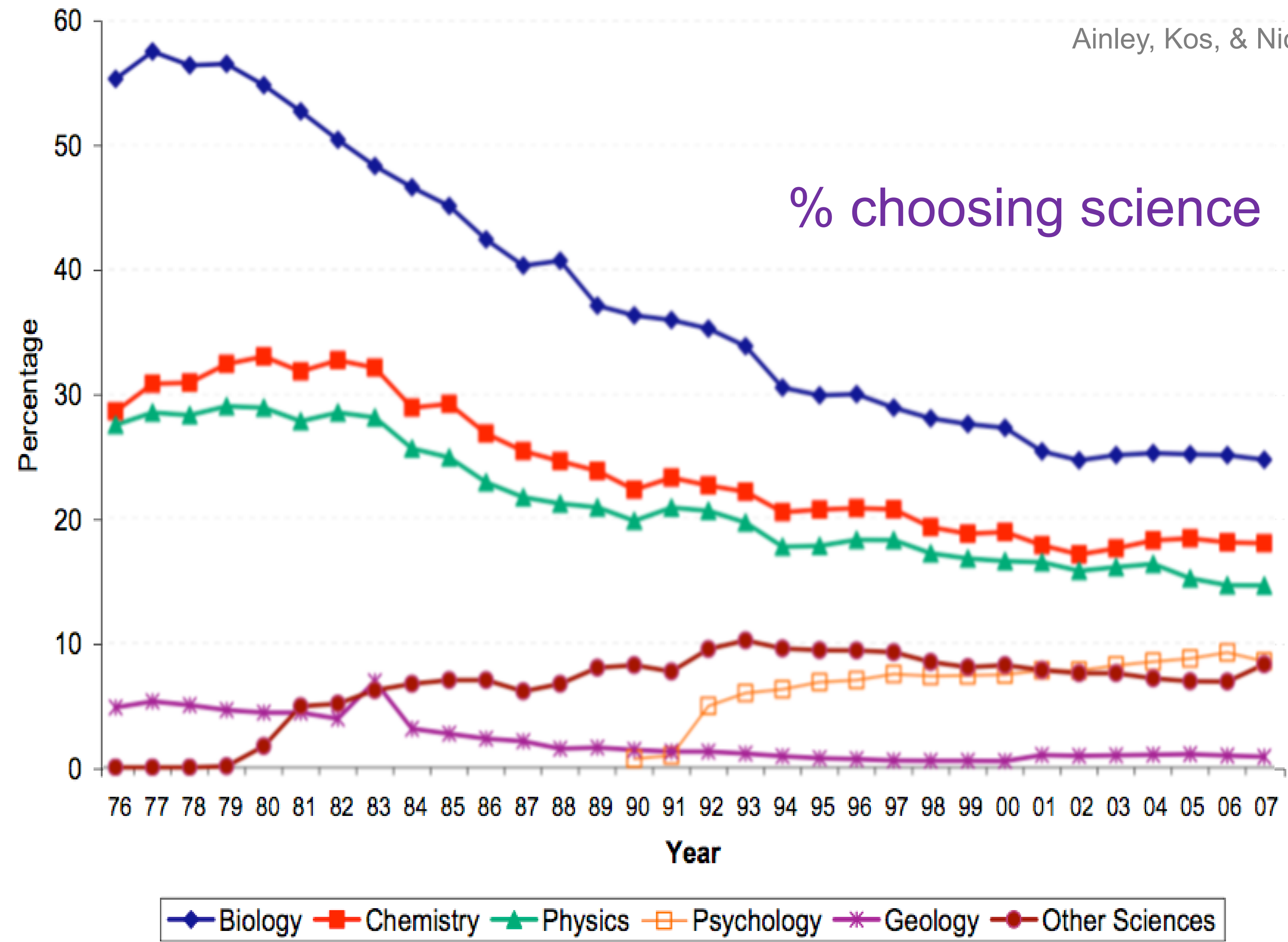
Gender

To find out more





% choosing science





IDENTITY



SOCIO-ECONOMIC STATUS

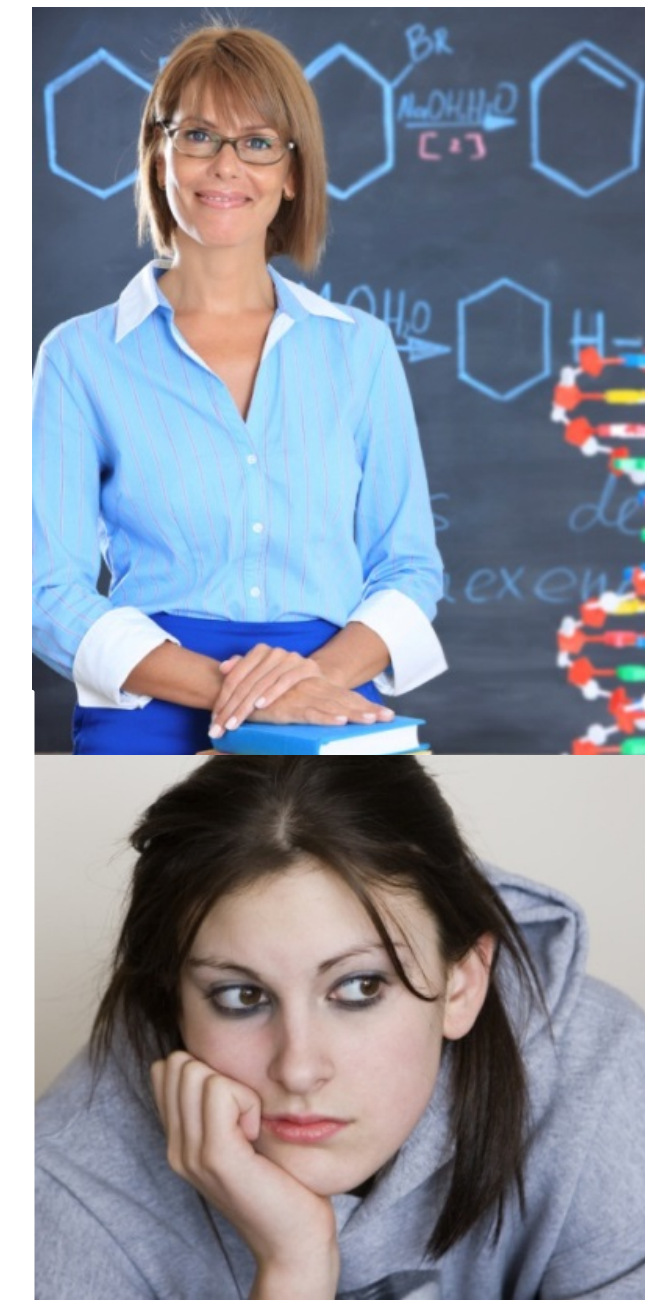


SELF EFFICACY



FUTURE NEEDS

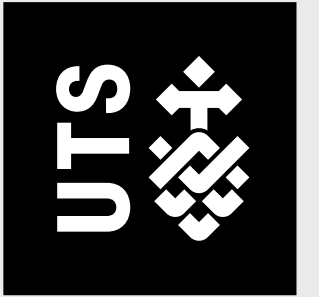
CHOICES

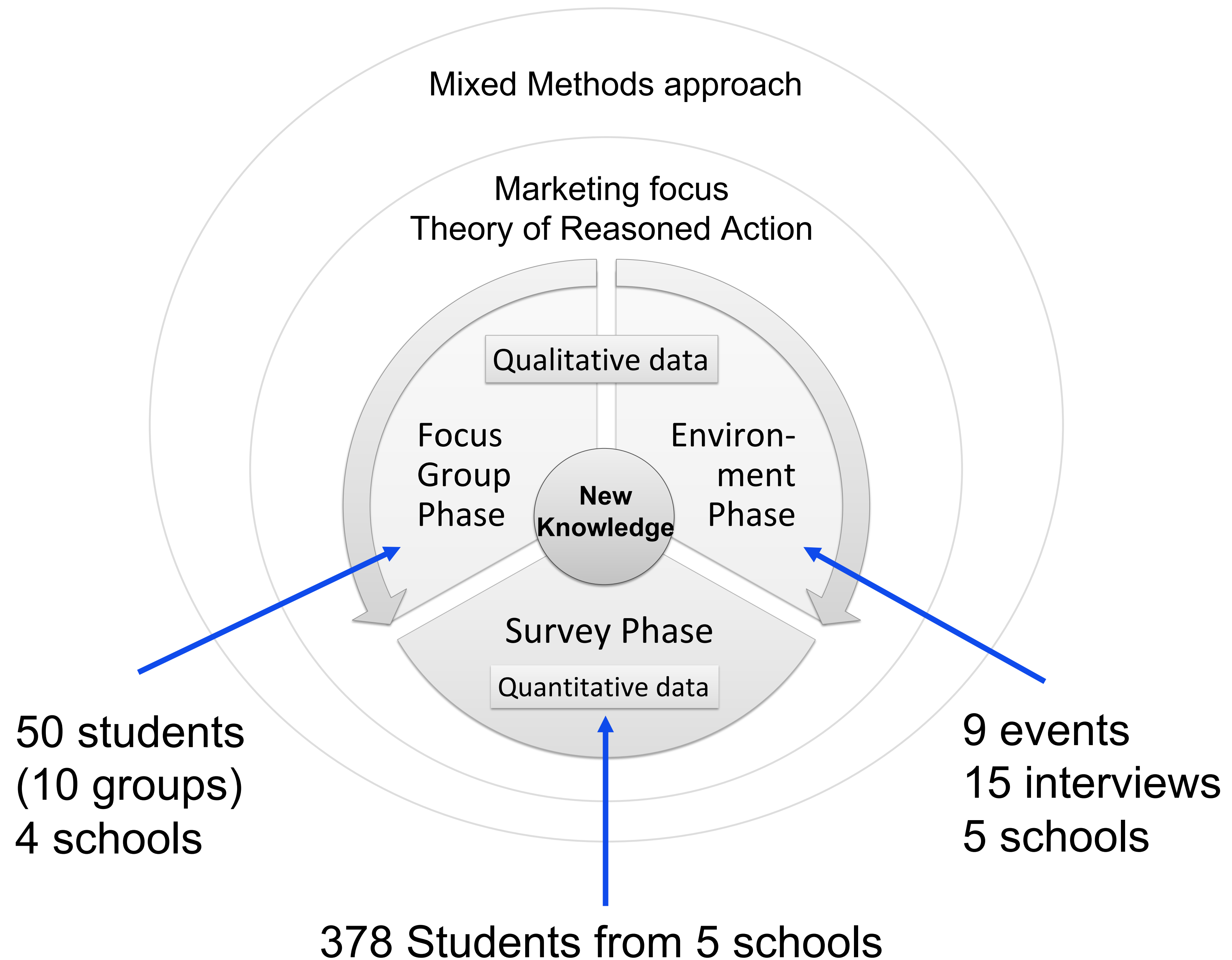


INTEREST



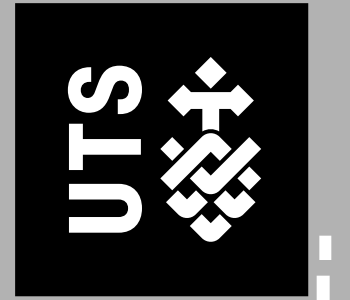
What is the relative importance of the factors that students consider in choosing their subjects for their final years of school?



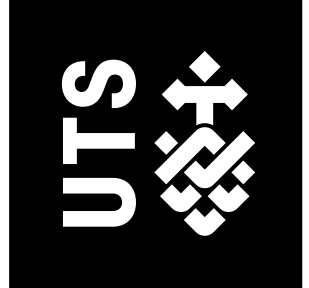
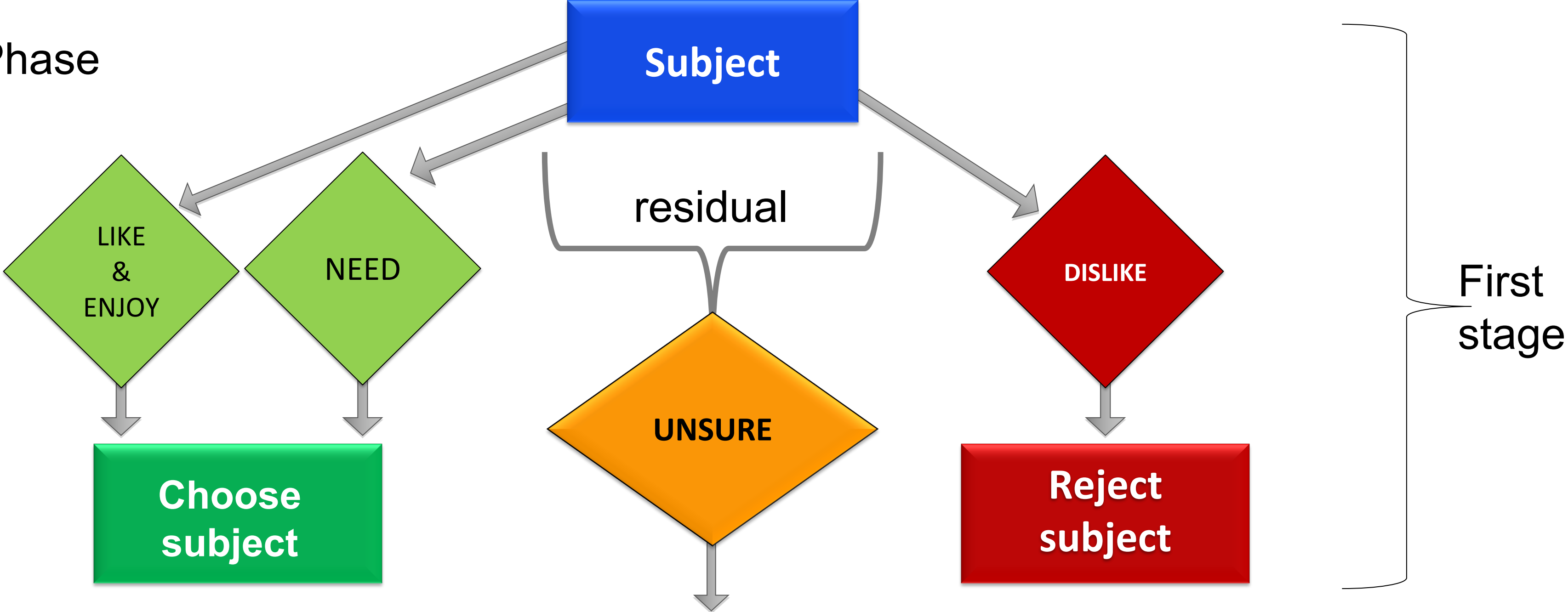


I think that there has to be a balance between what you are good at and what you love because if you choose everything that you love, you might not necessarily be doing very well and it might bring your marks down, but if you choose things that you are doing really well in, but you might not necessarily love them, you are not going to have the motivation to keep doing well.

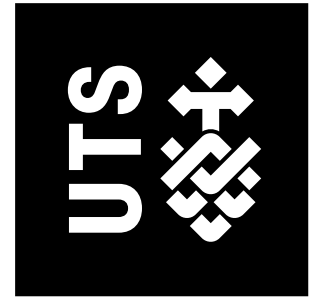
Year 10 Girl



Focus Group Phase



Focus Group Phase



7 Areas	21 Factors
Advice	Parents, peers, older peers, teacher
Engagement	Interest, enjoyment
Logistics	Units, timetable, information
Ability	Ability, ATAR, mark expectation
Subject characteristics	Assessment, classwork, difficulty
Teaching	Quality, style, like/dislike
Usefulness	Future study, personal life, career

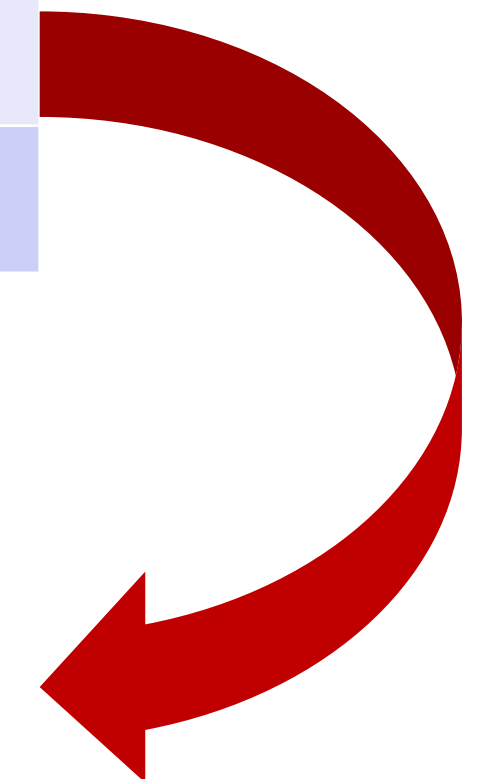


CHOOSE

- I will find the subject interesting
- I enjoyed the subject (or similar subject)
- in middle school

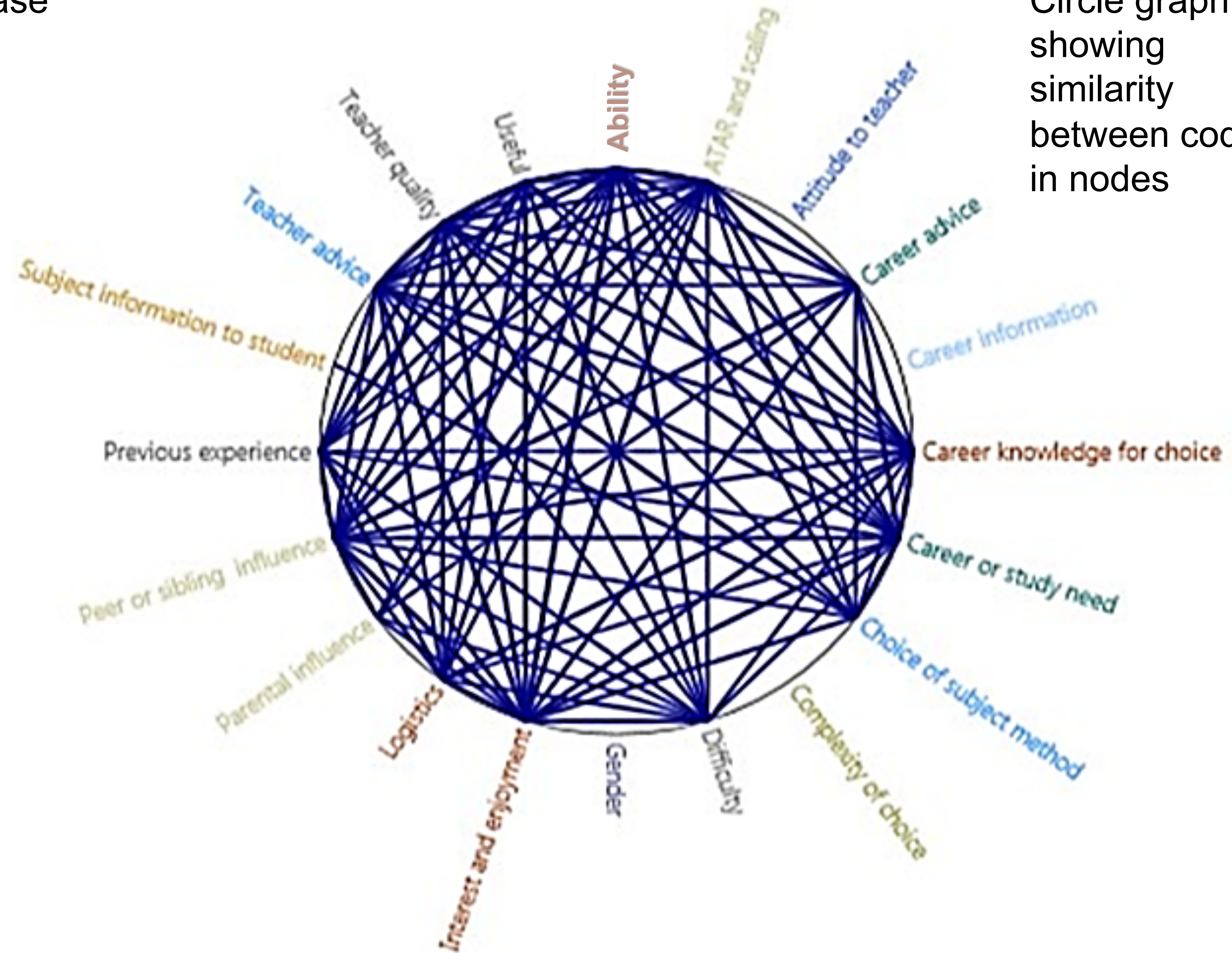
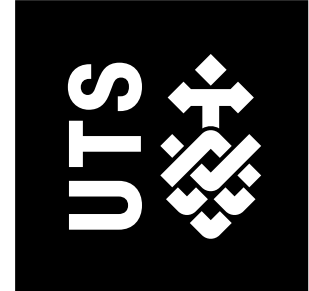
REJECT

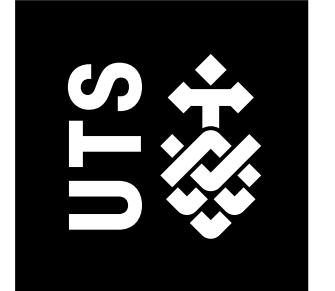
- I don't think the subject's teachers can help me get a good mark
- I do not like how the subject is taught
- I dislike a teacher or teachers I might get



Focus Group Phase

Circle graph showing similarity between coding in nodes

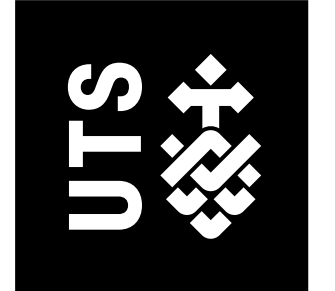




Best-Worst Scaling

A survey method where respondents choose the best and worst option from sets of factors to determine the relative importance of factors affecting a decision

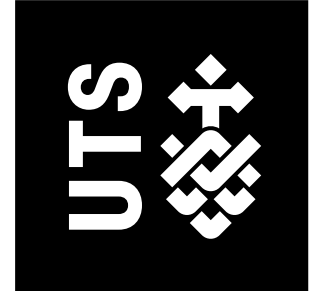
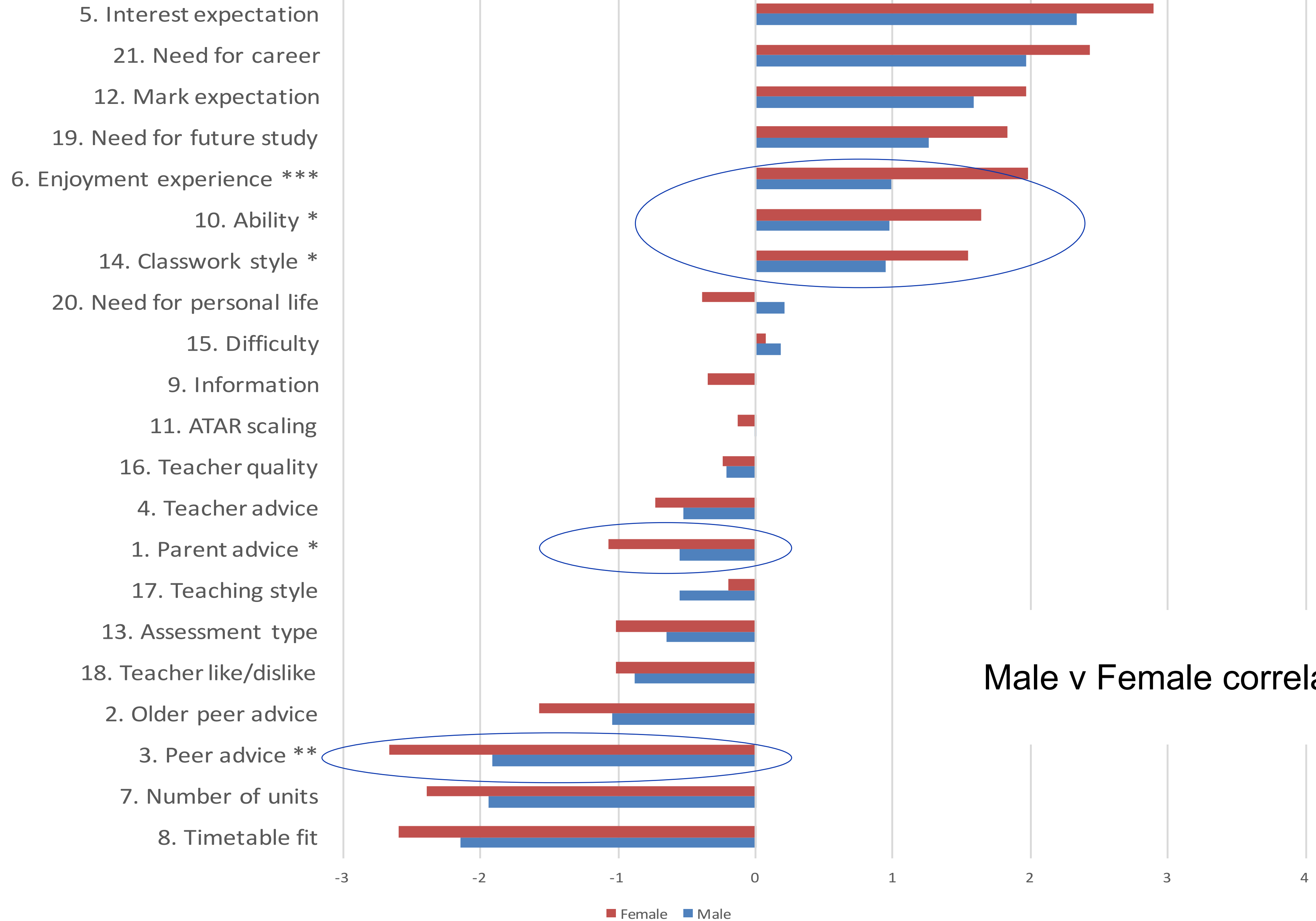
Survey Phase

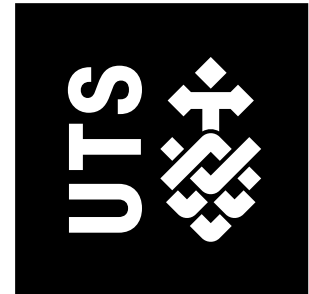


Please think about how you chose your subjects for Year 11.
For each of the sets of features below, please choose the feature that you find most important AND least important in choosing a subject to study.

Most important		Least important
<input type="radio"/>	I think the subject's teachers can help me get a good mark	<input type="radio"/>
<input type="radio"/>	My friend(s) suggested I should do the subject	<input type="radio"/>
<input checked="" type="radio"/>	I enjoyed the subject in middle school	<input type="radio"/>
<input type="radio"/>	The type of assessment fits well with assessments for my other subjects	<input checked="" type="radio"/>
<input type="radio"/>	I had plenty of information about the subject	<input type="radio"/>

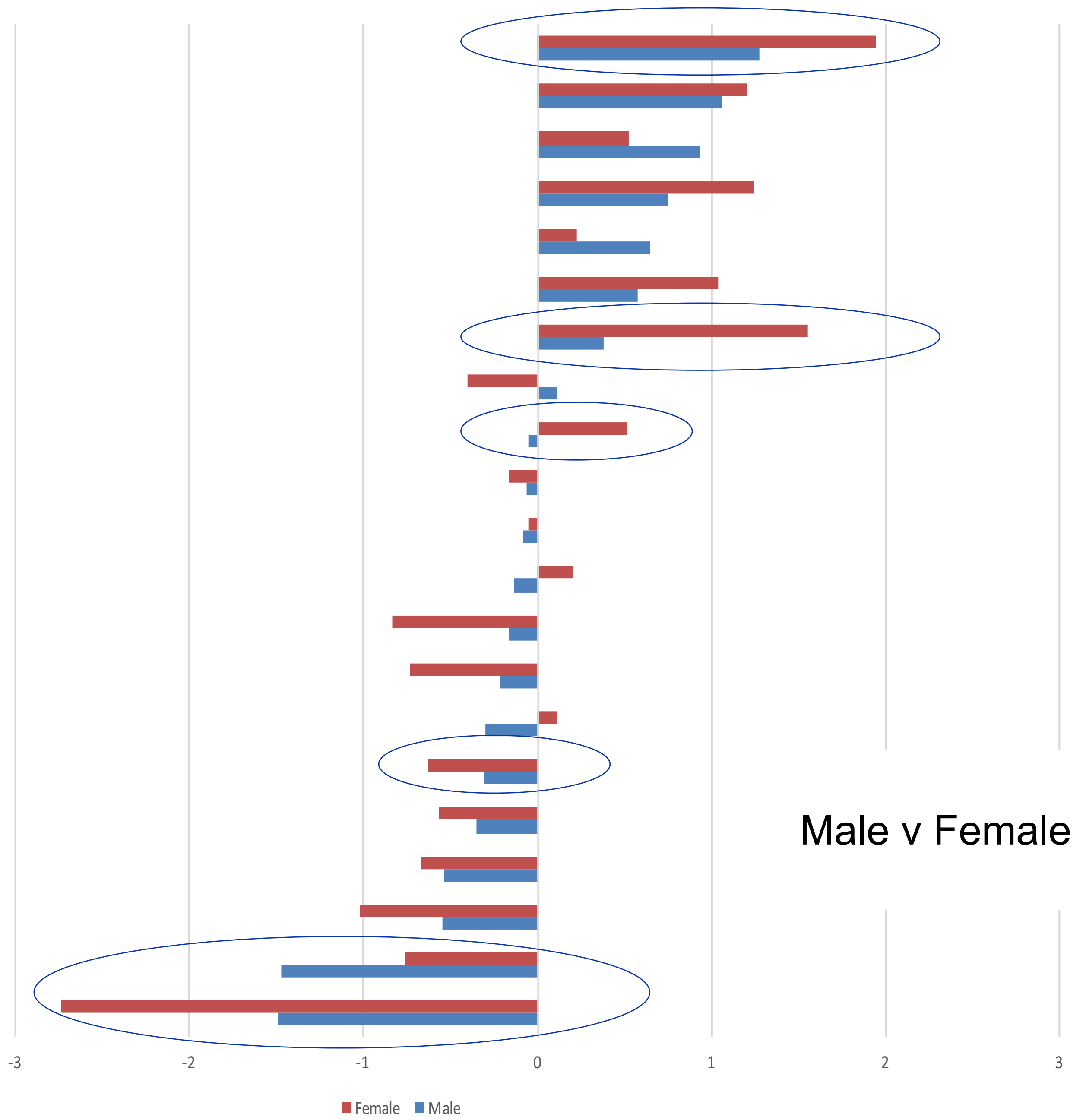
BWS Accept





BWS - Reject

- 6. Enjoyment experience *
- 5. Interest expectation
- 21. Need for career
- 12. Mark expectation
- 19. Need for future study
- 14. Classwork style
- 10. Ability ***
- 16. Teacher quality
- 15. Difficulty *
- 17. Teaching style
- 4. Teacher advice
- 11. ATAR scaling
- 1. Parent advice *
- 20. Need for personal life
- 7. Number of units
- 18. Teacher dislike *
- 9. Information
- 13. Assessment type
- 2. Older peer advice
- 8. Timetable fit *
- 3. Peer advice ***



Male v Female correlation: 0.98

Female Male

Compared to boys ...

Girls scored how much they enjoyed and were interested in a subject more highly when choosing subjects

Girls scored their ability in a subject and how difficult it is more highly when rejecting subjects

BUT

Boys and girls are more similar than different in the way they choose their subjects

Girls also seem to be in more agreement

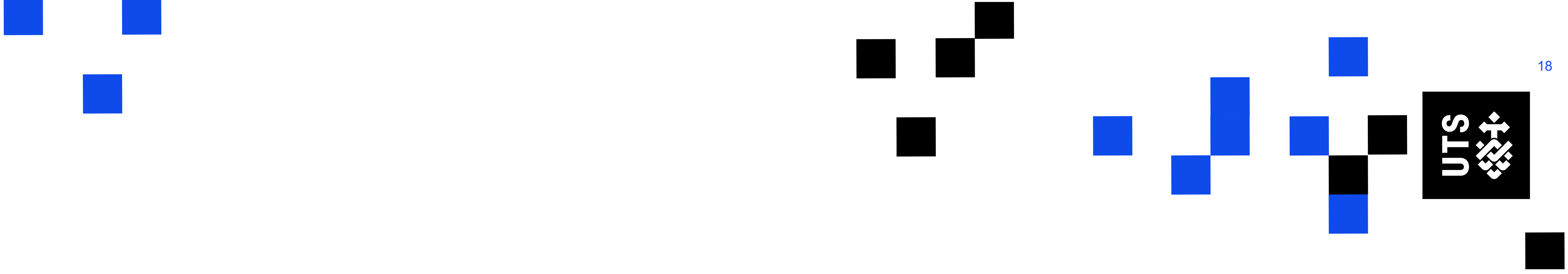


Image: <http://creativityunleashed.wikia.com/wiki/File:Boy-girl-holding-hands-ka.jpg>



Science is more work
Science is only useful for
a science career

Science may be
overpriced
and
undervalued



■ Science needs to be seen by students as:

Valuable: useful in a range of careers

Achievable: a subject that students can succeed in


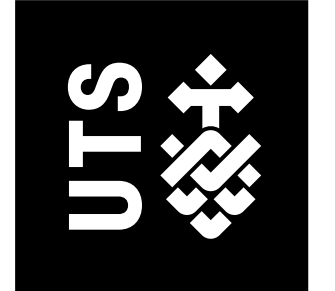
Empowering: useful in life because it teaches important skills

Some Approaches

1. Talks from successful science grads in “non-science” jobs
2. Subject selection information to stress broad use of science
3. Highlight growth areas that need science
4. Teach fun topics just prior to choice
5. No hard tests just prior to choice
6. Scaling or bonus points for university entrance



To find out more...



International Journal of Science Education

Routledge
Taylor & Francis Group

ISSN: 0950-0693 (Print) 1464-5289 (Online) Journal homepage: <http://www.tandfonline.com/loi/tsed20>

Why school students choose and reject science: a study of the factors that students consider when selecting subjects

Tracey-Ann Palmer, Paul F. Burke & Peter Aubusson

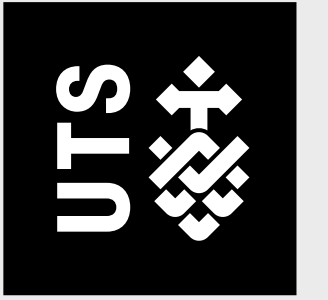
To cite this article: Tracey-Ann Palmer, Paul F. Burke & Peter Aubusson (2017): Why school students choose and reject science: a study of the factors that students consider when selecting subjects, International Journal of Science Education, DOI: [10.1080/09500693.2017.1299949](https://doi.org/10.1080/09500693.2017.1299949)

To link to this article: <http://dx.doi.org/10.1080/09500693.2017.1299949>

Contact me at Tracey-Ann.Palmer@uts.edu.au

Or at my website freshmindsforscience@weebly.com

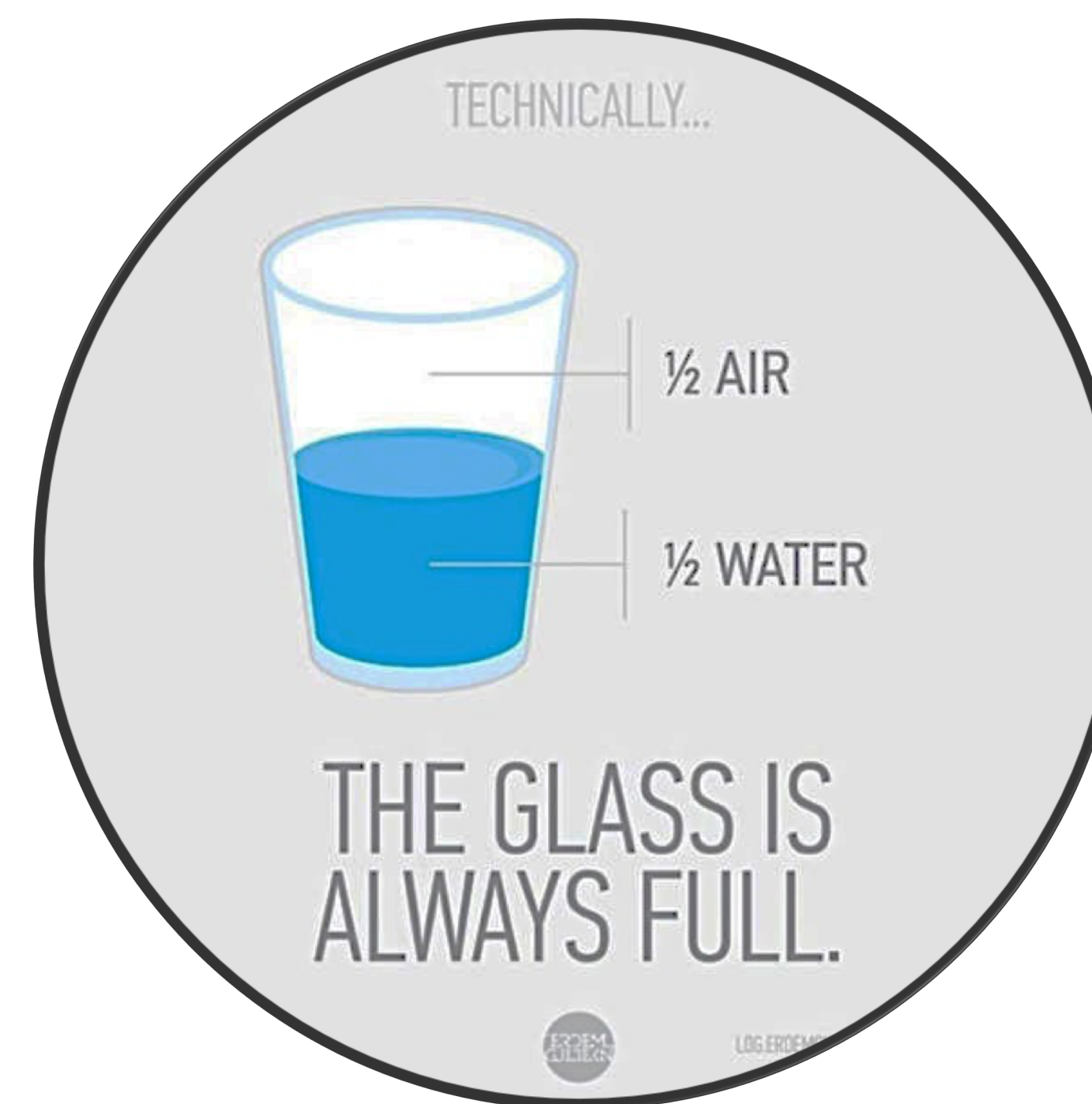
Thank you



Next

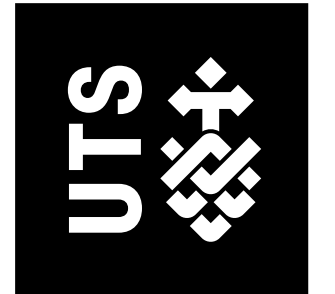
Further research is needed.....

- Do BWS but just for science
- A DCE to see how students trade-off factors



<http://www.cosmosup.com/science-can-be-funny/4/>

OVERALL



	Accept	Reject
Girls higher than boys	Interest expectation (1) Enjoyment experience (5) Ability (6) Classwork style (7)	Enjoyment experience (1) Past ability (4) Classwork style (3)
Girls lower than boys	Parent advice (15) Peer advice (20)	Parent advice (17) Peer advice (21) Disliking a teacher (15)

Top 7 factors

Accept

1. Interest expectation
2. Need for career
3. Difficulty
4. Need for future study
5. Enjoyment experience
6. Ability
7. Classwork style

Reject

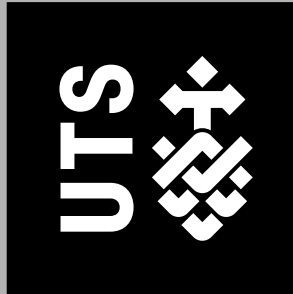
1. Enjoyment experience
2. Interest expectation
3. Difficulty
4. Ability
5. Classwork style
6. Need for career
7. Need for future study





ACCEPT

Factor	Male	Female
1. Parent advice	-0.55	-1.08
3. Peer advice	-1.91	-2.67
5. Interest expectation	2.33	2.89
6. Enjoyment experience	0.99	1.98
10. Ability	0.97	1.64
14. Classwork style	0.95	1.55



REJECT

Factor	Male	Female
1. Parent advice	-0.17	-0.84
3. Peer advice	-1.49	-2.74
6. Enjoyment experience	1.28	1.94
8. Timetable fit	-1.47	-0.76
10. Ability	0.38	1.55
15. Difficulty	-0.06	0.52
18. Teacher dislike	0.11	-0.40