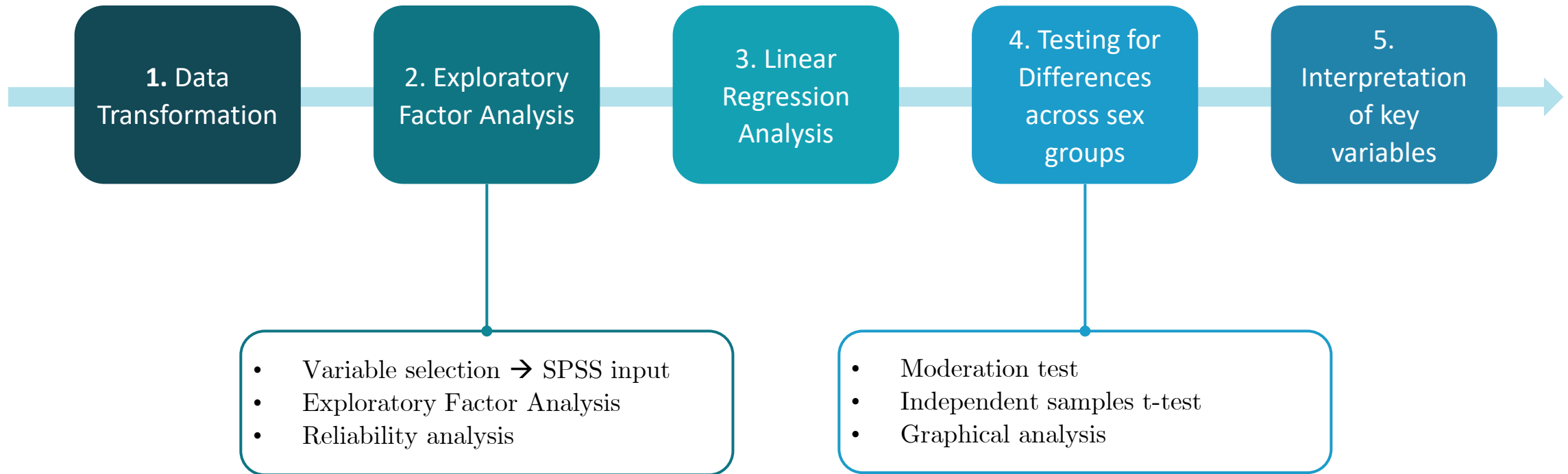


Appendices

Results analysis process



Exploratory Factor Analysis results - Survey I

Target population: High school students (+16 years)

Outcome measured: how likely a school student is to pursue a career path in engineering.

Dependent factors:

- (1) Affinity with STEM specific to Engineering career paths
- (2) Affinity with STEM specific to Science/Health career paths
- (3) Engineering Awareness.

Higher scores in all factors translate into a higher likeliness of studying engineering.

A **fourth factor** extracted did not contribute to predicting the outcome:

- (4) Interest in Social Impact

$$\text{Outcome variable} = 4.723 + (0.687 \times \text{Factor 1}) + (0.18 \times \text{Factor 2}) + (0.193 \times \text{Factor 3}) + (0.002 \times \text{Factor 4})$$

$$\text{Probability of following an Engineering Career path} = (0.687 \times \text{Affinity with Eng. career paths}) + (0.18 \times \text{Affinity with Science/Health career paths}) + (0.193 \times \text{Engineering Awareness}) + (0.002 \times \text{Social Impact Interest})$$

Exploratory Factor Analysis results - Survey II

Target population: Current engineering students

Outcome measured: Importance given to social impact opportunities in career path.

Dependent factors:

(1) Social Impact Motivation

(2) Ethical Concerns

Higher scores in all factors translate into a higher importance given to social impact.

A **third factor** extracted did not contribute to predicting the outcome:

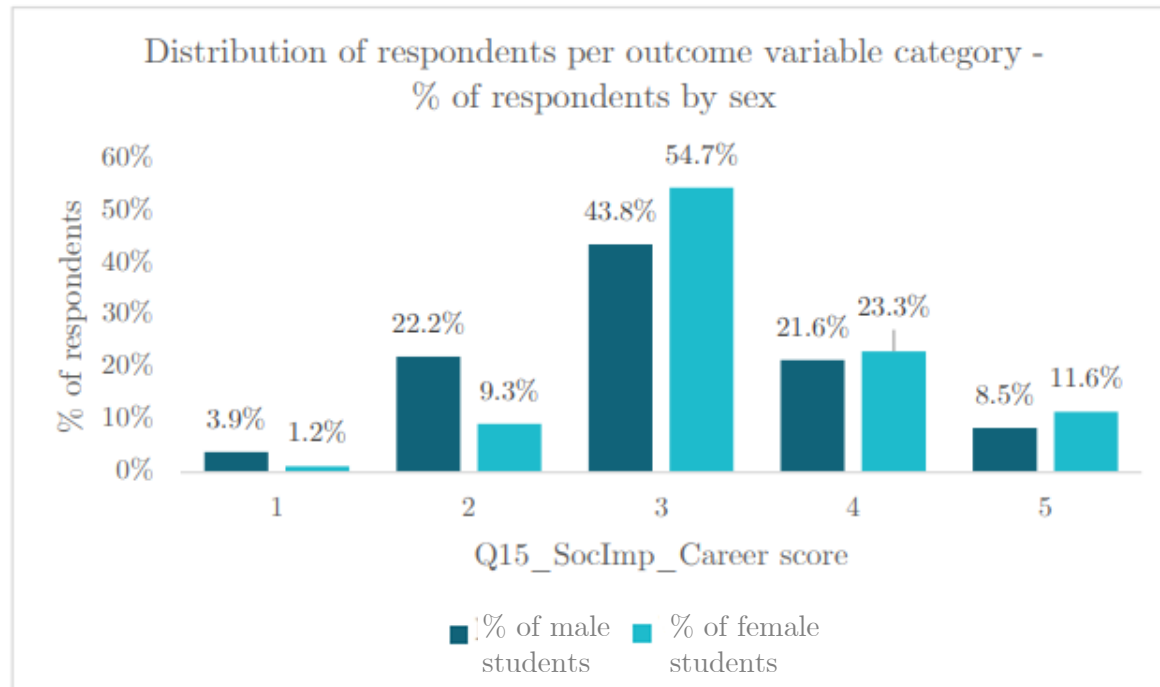
(3) Personal Interests

$$\mathbf{Outcome\ variable} = 3.18 + (0.562 \times \mathbf{Factor\ 1}) + (0.148 \times \mathbf{Factor\ 2}) + (0.087 \times \mathbf{Factor\ 3})$$

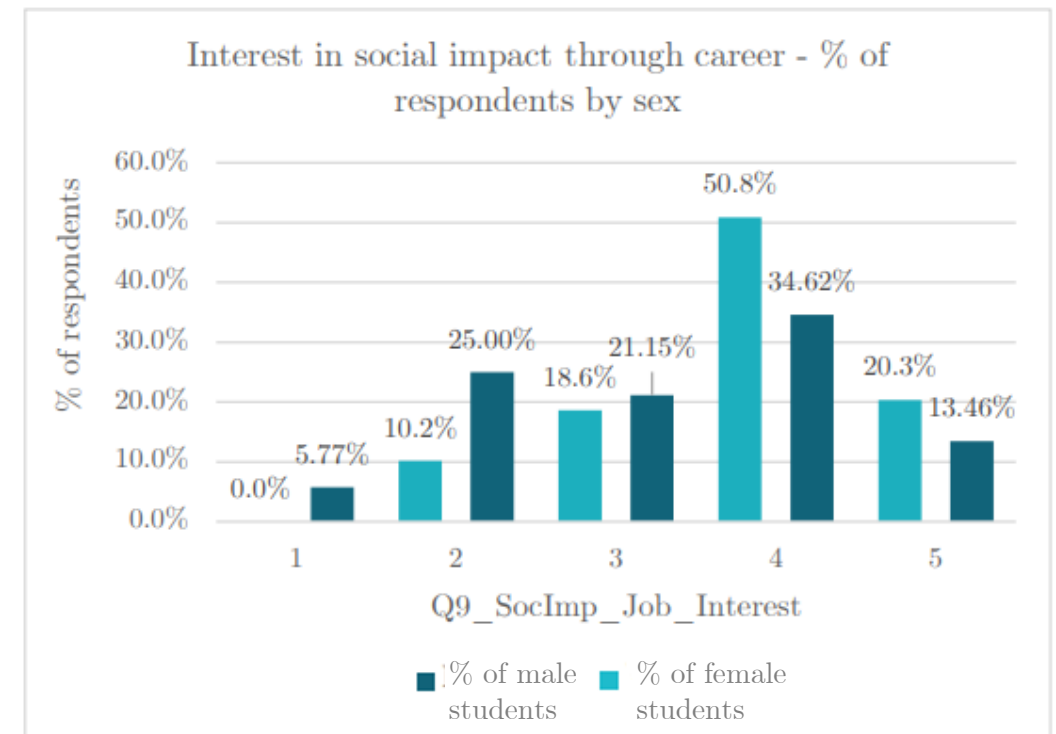
$$\text{Social Impact Importance in career} = (0.562 \times \text{Social Impact Motivation}) + (0.148 \times \text{Ethical Concerns}) + (0.087 \times \text{Personal Interests})$$

Social impact – role in female students' careers

Current Engineering Students survey



High School Students survey



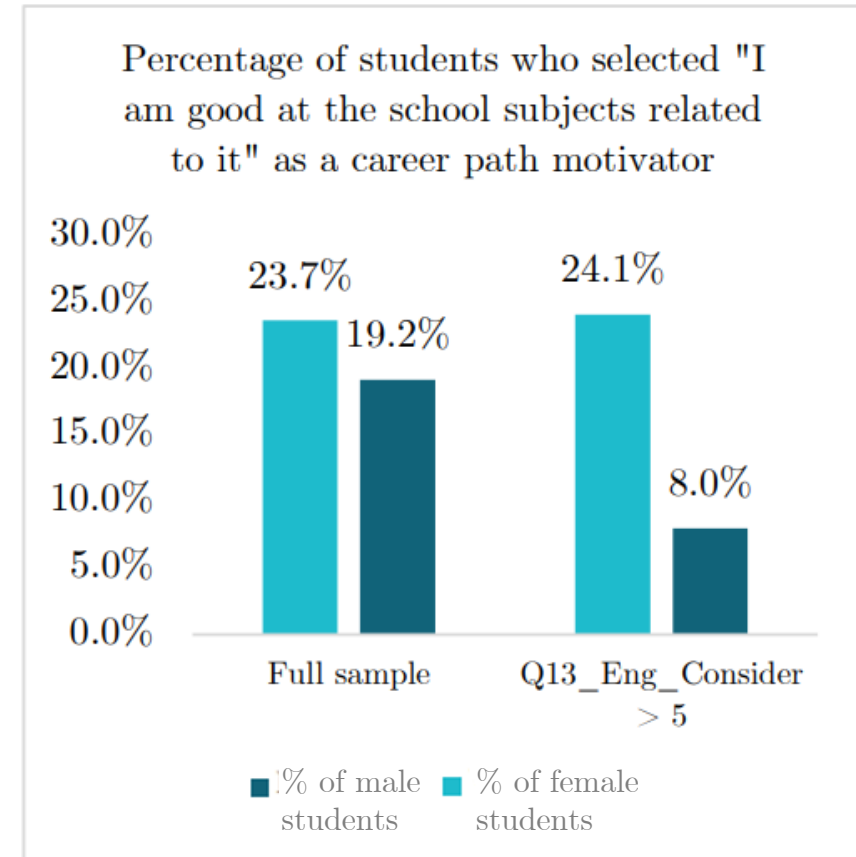
Further insights into results

Current Engineering Students survey

	Have you been involved in an Engineering project with social impact?	
	No	Yes
Female	68.4%	72.4%
Male	58.1%	68.8%

% of students interested in social impact project (academically & professionally)

High School Students survey



Survey Design I

High School
Students survey

Survey Block	Variables	OBJ1	OBJ2	OBJ3	OBJ4
Motivation (career and social impact)	Influential factors when choosing a path	X		X	X
	Involvement in volunteering	X		X	X
	Social impact importance in future job	X		X	
	Enjoyment of STEM subjects	X	X		X
Barriers to path	Setbacks which worry students in their career path decisions		X		X
Engineering Perception and Awareness	Ability to explain engineering well		X		X
	Where have you learned about engineering (sources of exposure)		X	X	X
	What do you think Engineering is like vs. what you like in a job	X	X	X	X
Informative Note	Students are informed of wide variety of roles which can conform to their answers and are shown Engineering job descriptions	*Exposure to non-stereotypical, real engineering roles in top companies			
Social Impact of Engineering	Did you know engineering has high impact in these industries (example projects given)				X
	Would you consider engineering more after seeing the social impact and variety	X		X	X
Outcome variable	Likelihood of studying engineering – how much do students consider it	X			X

Survey Design II

Current Engineering Students survey

Survey Block	Variables	OBJ1	OBJ2	OBJ3	OBJ4
Motivation for degree	Influential factors when choosing degree	X		X	X
	Involvement in Engineering extracurriculars	X		X	
	Current interest level in degree and reasons			X	X
Barriers to degree	Setbacks encountered when choosing degree		X		X
Engineering Perception and Awareness	What is the definition of engineering – Level of agreement and reasons		X		X
	Presence of social impact in engineering – rating a variety of projects	*Through this exposure students build their definition of social impact			
	Engineering social impact experience and interest in involvement	X		X	X
Professional/workplace priorities	Ranking social impact opportunities' importance with respect to other drivers (e.g., salary)	X		X	
	Willingness of working in conflictive industries (e.g., defence)	X			
	Priorities when choosing jobs (e.g., area of interest, alignment with values)	X	X	X	
Outcome variable	Social impact importance in career	X		X	X

Lit. Review

Key to figure:

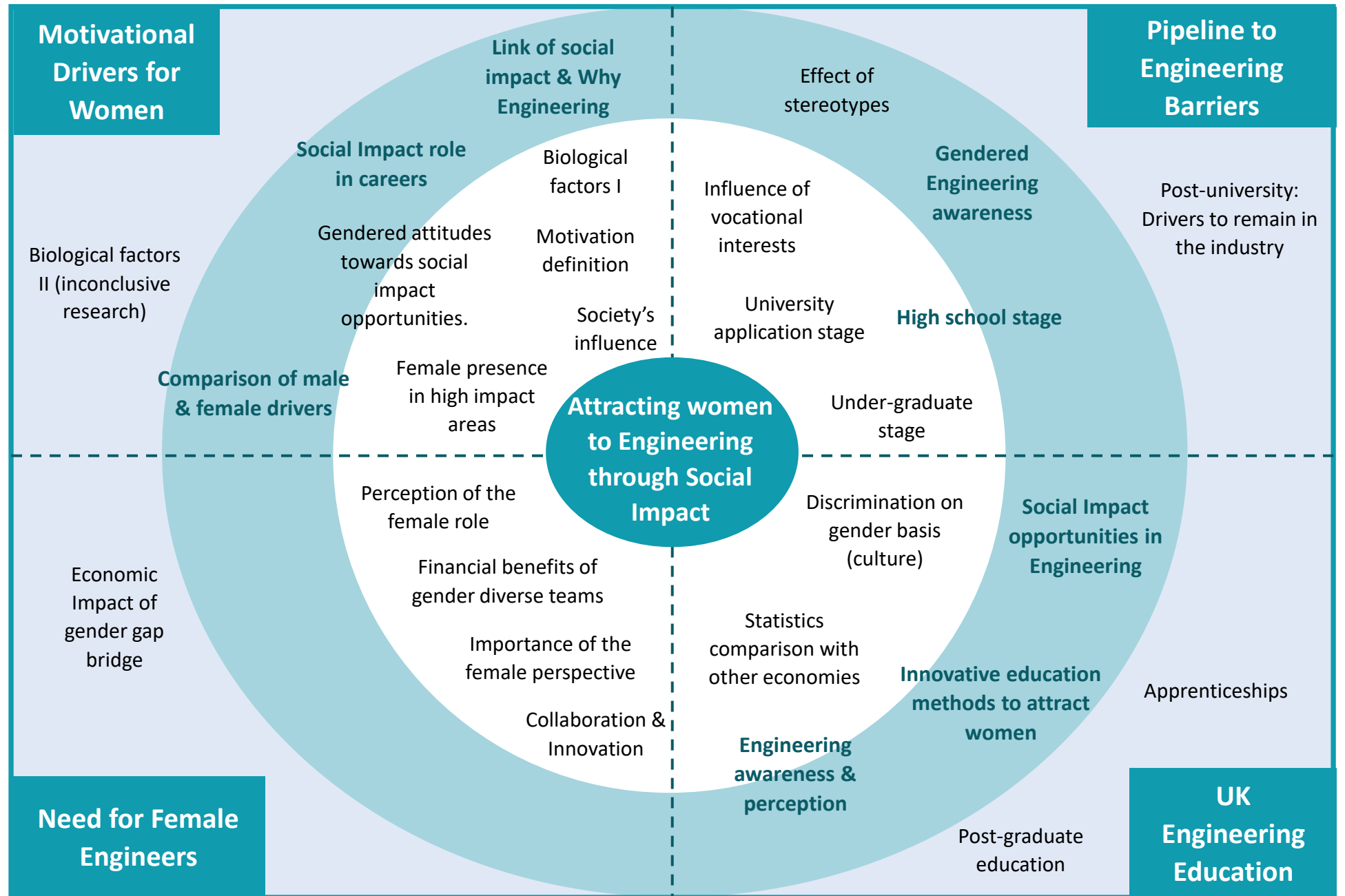
KEY AREAS

Literature reviewed and presented

Literature reviewed but not included

Main literature gaps for "Develop" stage

Most relevant areas



Education pipeline to engineering (UK)

