Who belongs in technology?

Research report

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Engineers Finland

Contents

Executive summary

- This report presents the results from the groundbreaking study by Engineers Finland on the sense of belonging in technology, pooling together responses from five surveys

- Majority of technology professionals feel like they belong in technology (up to 87 % of respondents with university degrees), and are also seen by others to belong
  - Most respondents believe people like them can succeed in tech and are confident of having the right skills. They are also proud of working in tech (up to 77 % of respondents with university degrees)
  - Respondents with university degrees tend to be more confident than those with UAS degrees, and men are somewhat more confident than women
  - Nationality, language, age, or position do not have remarkable impact on the feeling of belonging
- While the field of technology is an important reference group for the respondents, work community is the most important
  - Therefore, it is encouraging that 90 % of respondents say they can be themselves at work
- However, gender can strongly impact the feeling of belonging, particularly among those holding UAS degrees and tech students
- Compared to men, women are less convinced they belong in tech, and gender minorities (“other”) seem to struggle
- Moreover, English-speaking respondents less often feel they can be themselves at work, and have more often considered leaving tech than those speaking Finnish or Swedish
- Hence, organizations in the field of technology can still do more to improve the feeling of belonging for all tech professionals and students.

”It is nice to belong to the group, but even better to belong to a heterogenous community. There should be space for everyone, not only those who look and seem like my mirror image.”

(Female, university degree)

Introduction

Background

- Sense of belonging has emerged in international literature as a prerequisite for feeling of inclusion and an important explanation for the gender gap in technology
- Sense of belonging can be defined as “the subjective feeling of fitting in and being included as a valued and legitimate member in a particular setting” (Lewis et al. 2017, p. 421)
- Belonging in technology has not been widely studied in Finland although some research has been conducted focusing on women in engineering education
- This study was commissioned by Engineers Finland (which includes the four engineering unions operating in Finland: DIFF, IL, TEK, TFIF)
- The study was conducted by Susanna Bairoh (Research Manager, TEK) during June 2022 – February 2023.

Research objectives

- The aim of this study is to evaluate sense of belonging in the field of technology in Finland
- Research problem: Who belongs in the field of technology?
- Belonging in this study covers the sense of belonging (“I feel like I belong”) and the experience of belonging (“I am seen by others to belong”)
- The study also explores the importance of belonging (“It is important for me to belong”)
- The analysis in this report is mainly descriptive (percentages, crosstabs)
- Background variables used in this report are mainly: degree, gender, nationality, language, position, age group.

Data

Survey	Time of data gathering	Target group	Degree of respondents	Number of respondents	Response rate (%)
Labour Market Survey 2021 (TEK)	October 12 - November 7, 2021	TEK & TFIF members in working life	University: Master of Eng/Tech (or higher) or equivalent	9116	20
Labour Market Survey 2021 (IL)	October 13- November 8, 2021	IL & DIFF members in working life	UAS: Bacheler of Eng/ Tech or equivalent	8181	17
Student Survey 2022	September 14-30, 2022	TEK & TFIF student members (excl. First-year students)	University studies for Master of Eng/Tech or equivalent	1661	11
Labour Market Survey 2022 (TEK)	October 11 - November 6, 2022	TEK & TFIF members in working life	University: Master of Eng/Tech (or higher) or equivalent	9124	20
Labour Market Survey 2022 (IL)	October 12- November 8, 2022	IL & DIFF members in working life	UAS: Bacheler of Eng/ Tech or equivalent	11545	23

About Engineers Finland

- Engineers Finland is a registered association of engineering organizations operating in Finland.
  We currently represent approximately 150,000 engineers and other professionals and supervisors in technology.
- Engineers Finland was established on the 8th of May 2019.
- The purpose of Engineers Finland is to promote the common educational, industrial and labor market goals of its member organizations nationally and internationally.

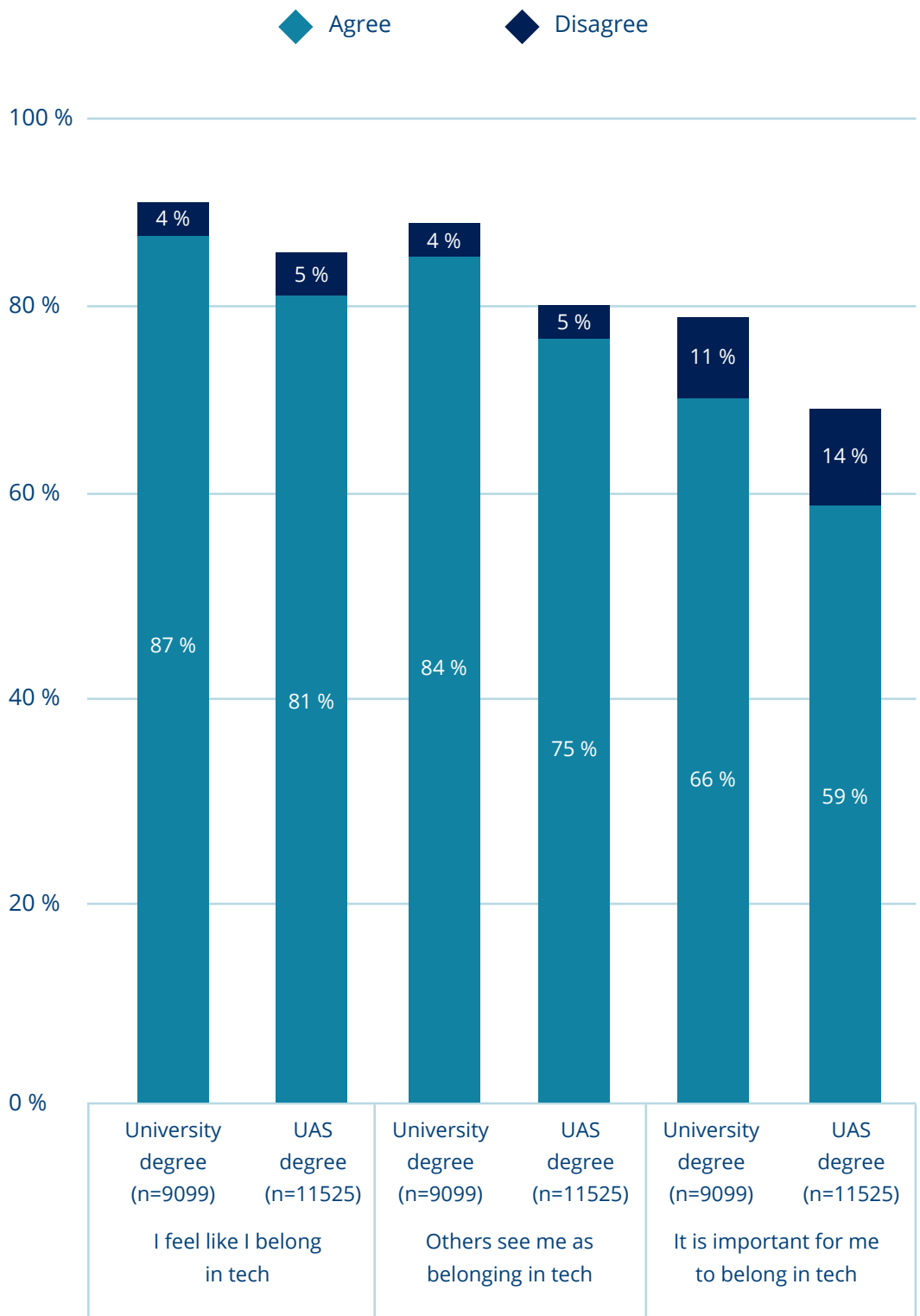
- We aim to work closely with Nordic engineering organizations on the following themes:
  - Systematic exchange of labor market and wage data
  - Support for continuous learning
  - Promoting R&D investment
  - Joint development of union membership services

- The member organizations of Engineers Finland are:
  - DIFF - Ingenjörerna i Finland
  - Union of Professional Engineers IL
  - Academic Engineers and Architects in Finland TEK
  - Tekniska Föreningen i Finland TFIF

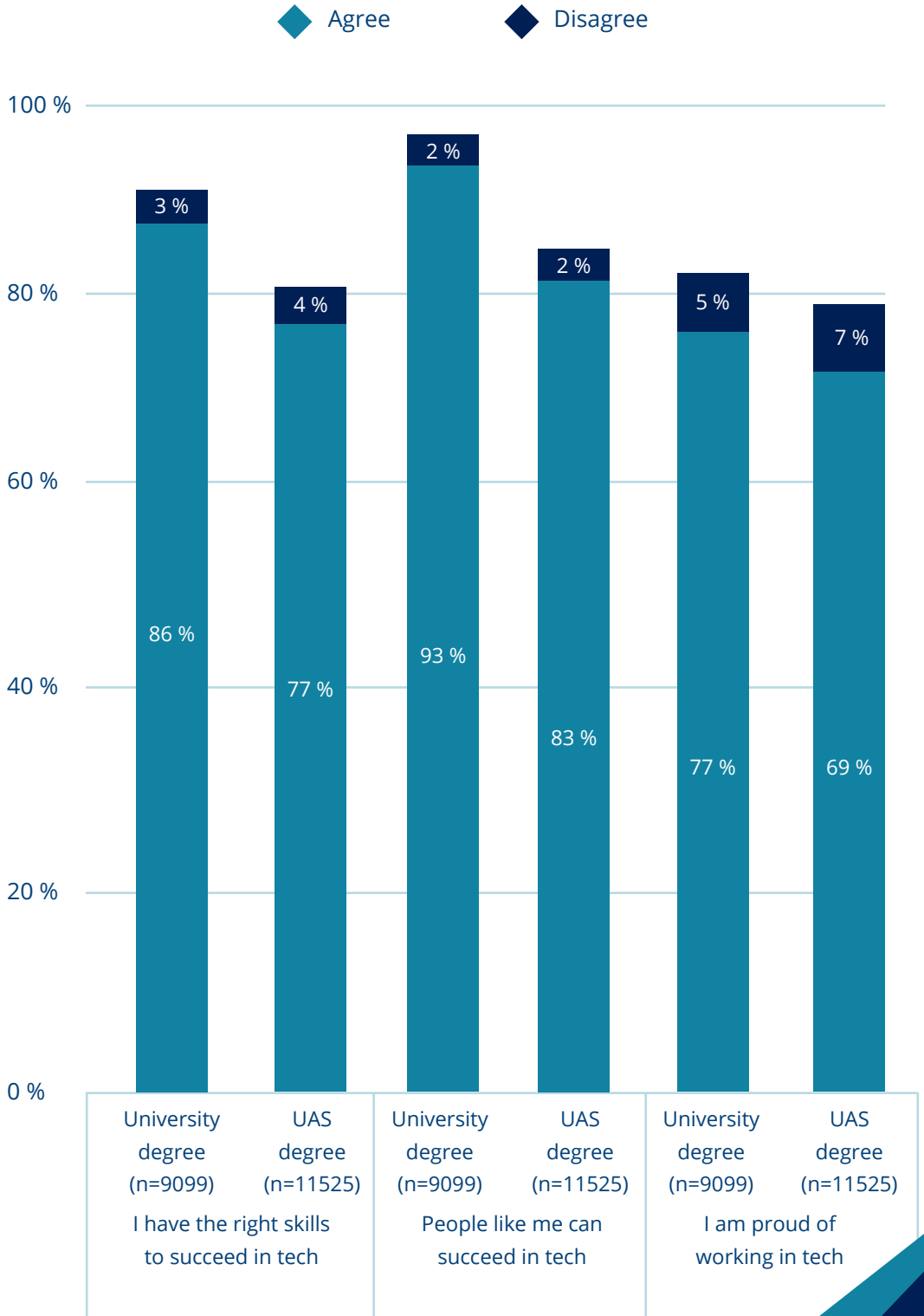
Belonging in the field of technology

Majority feel they belong

- Over 80 % of respondents feel like they belong in technology
- Majority are also seen by others to belong
- About 60 % of respondents consider it is important for them to belong in tech
- Respondents with university degrees (Master's or higher) tend to agree more with the statements than those with Bachelor's degrees (UAS).



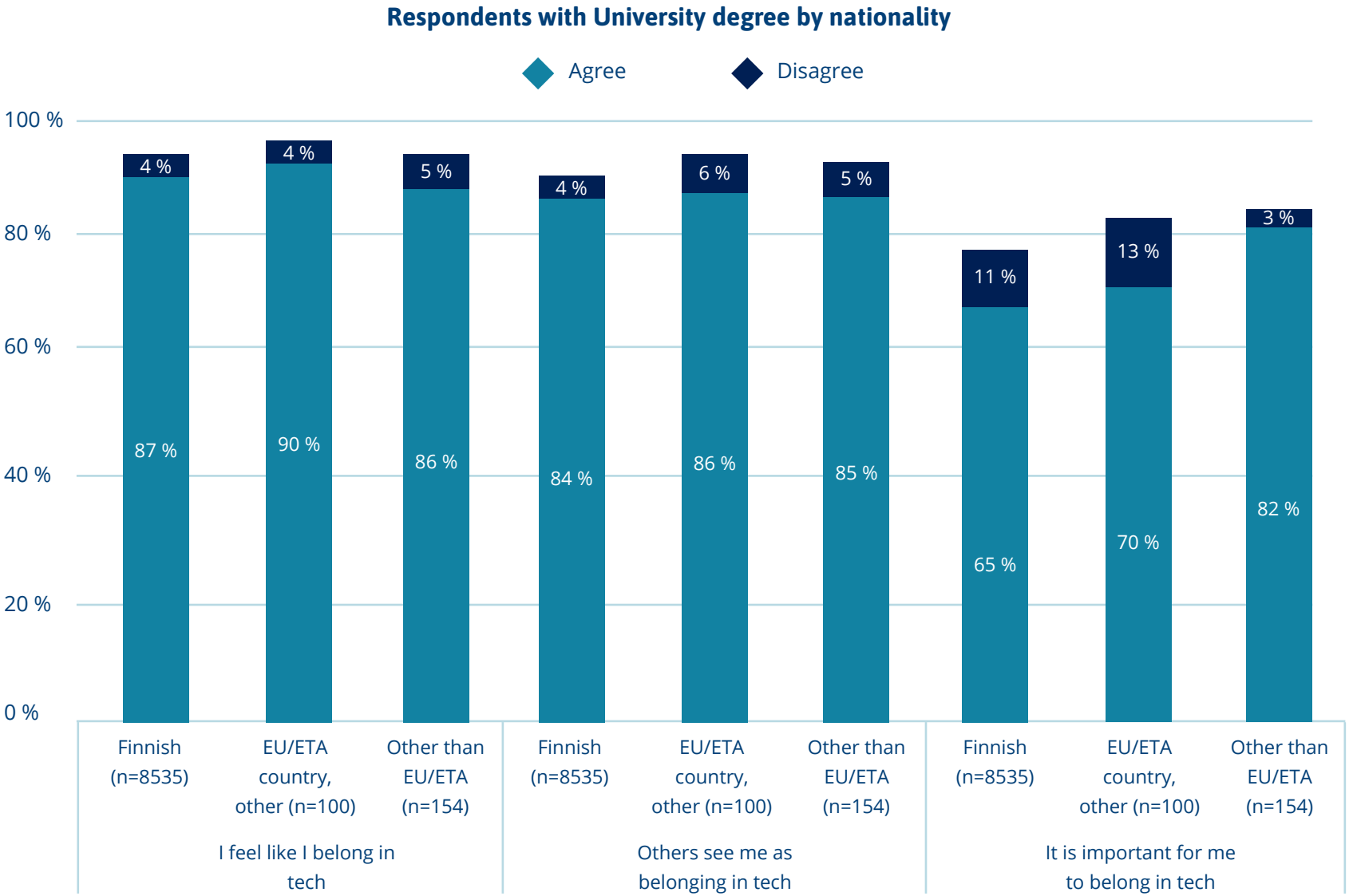
“I can succeed, I have the right skills and I am proud of working in tech”



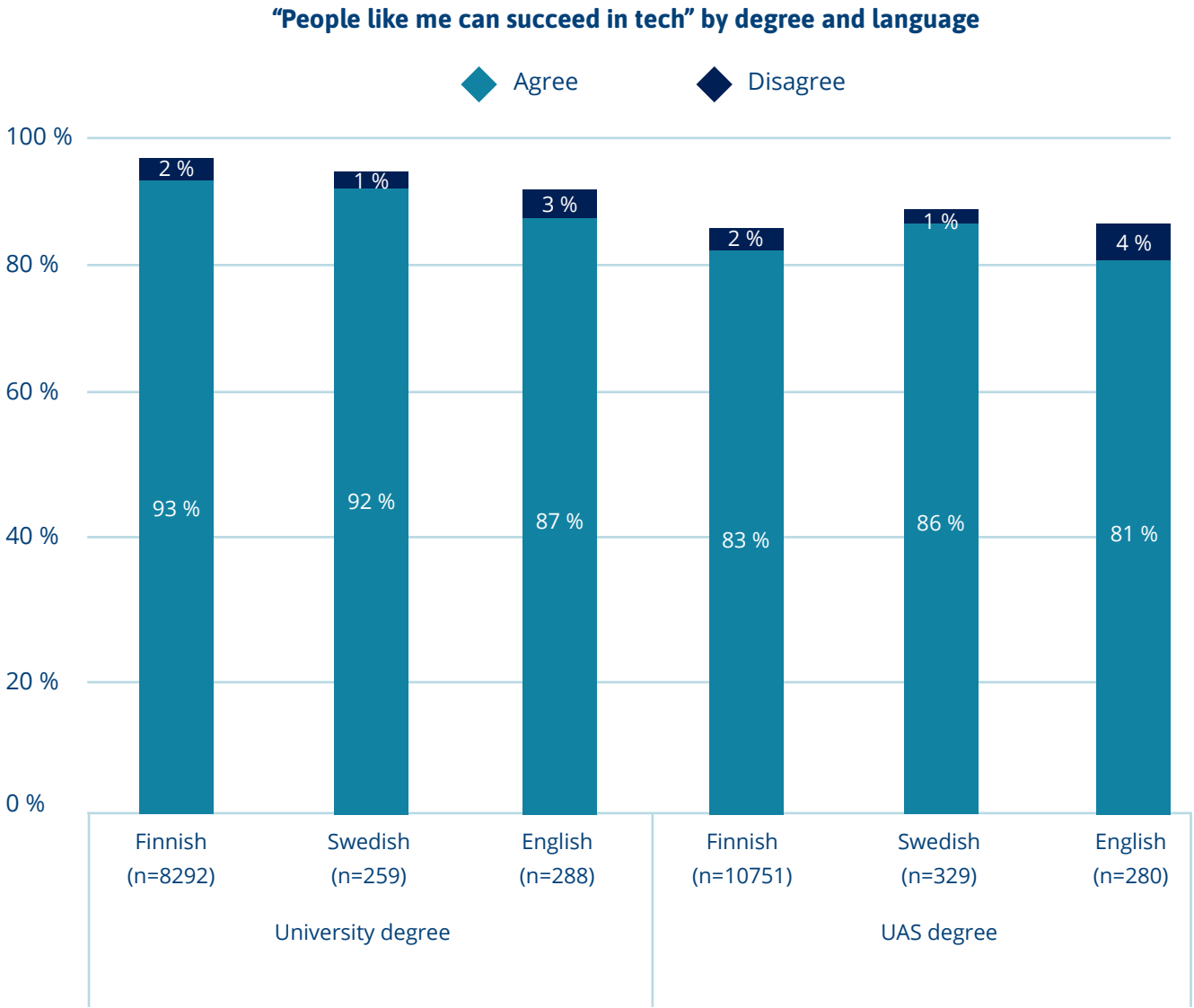
”I am really proud to be in technology. I believe that we are striving to make the world a better place.”

(Male, university degree)

Regardless of nationality, most feel they belong and are seen by others to belong



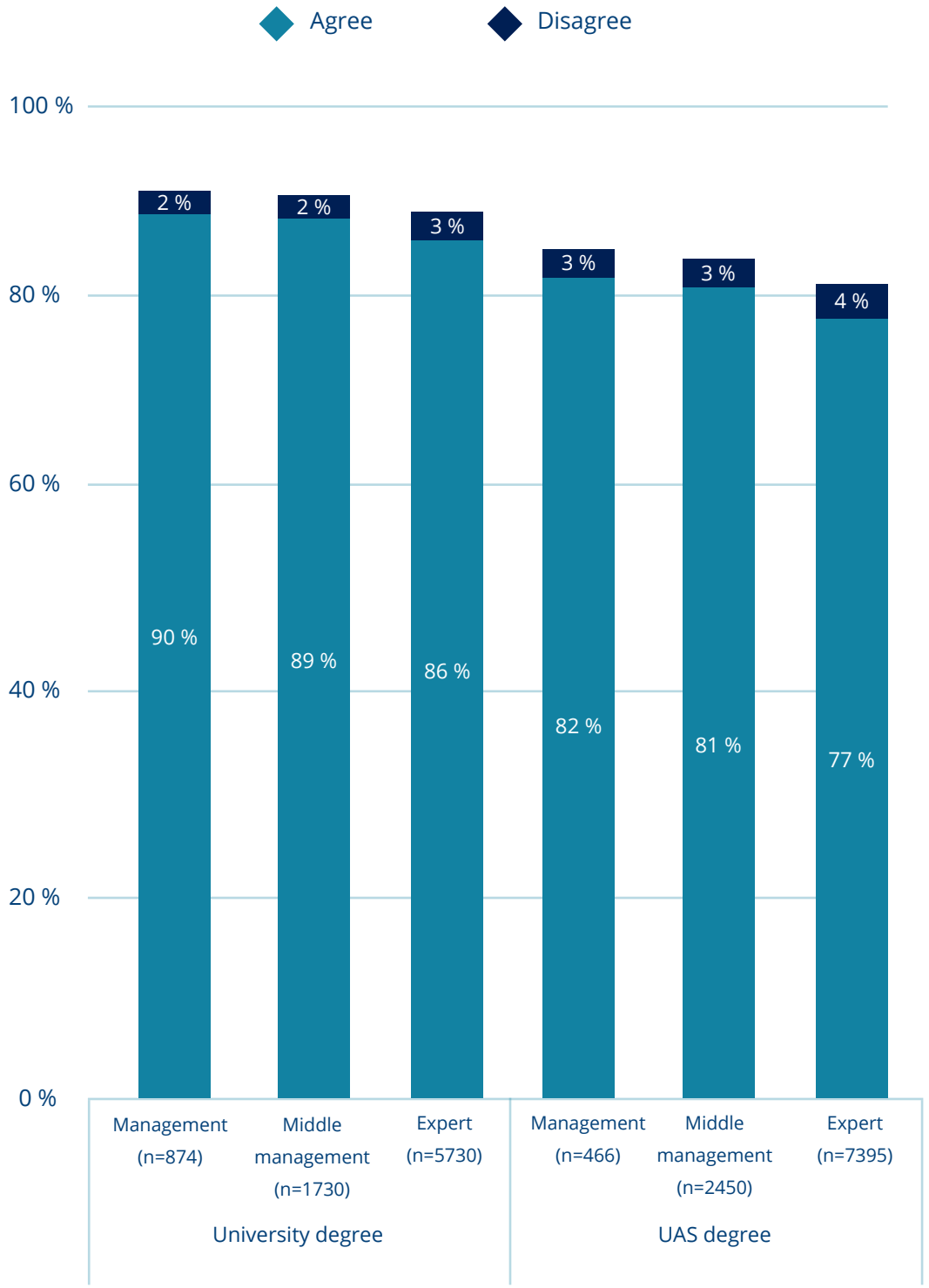
Majority think they can succeed, regardless of language



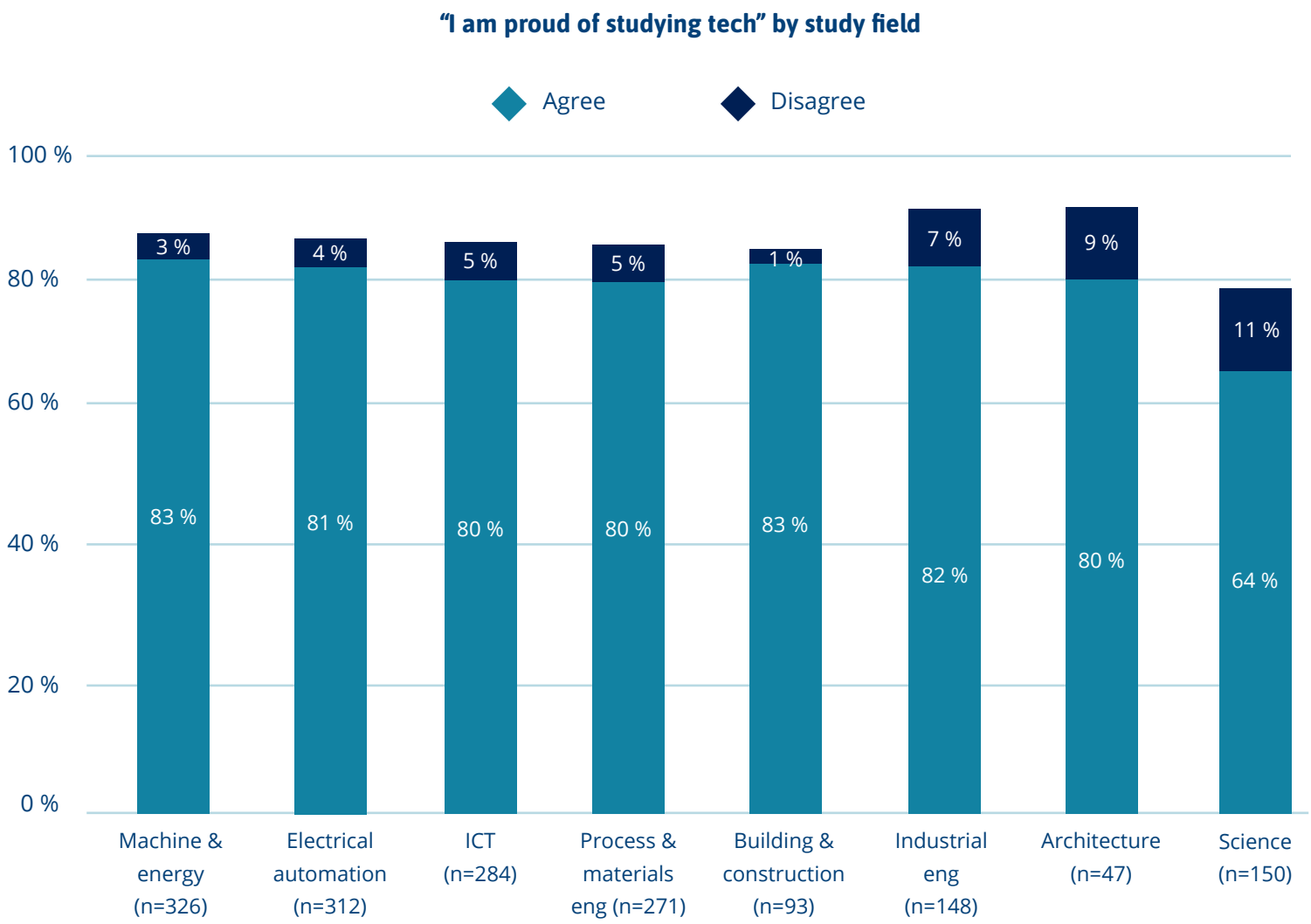
Most think they have the right skills

- Respondents with university degrees are somewhat more confident of having the right skills to succeed
- Degree seems to impact confidence in skills more than position – differences between managers and experts are fairly small.

“I have the right skills to succeed in tech” by degree and position



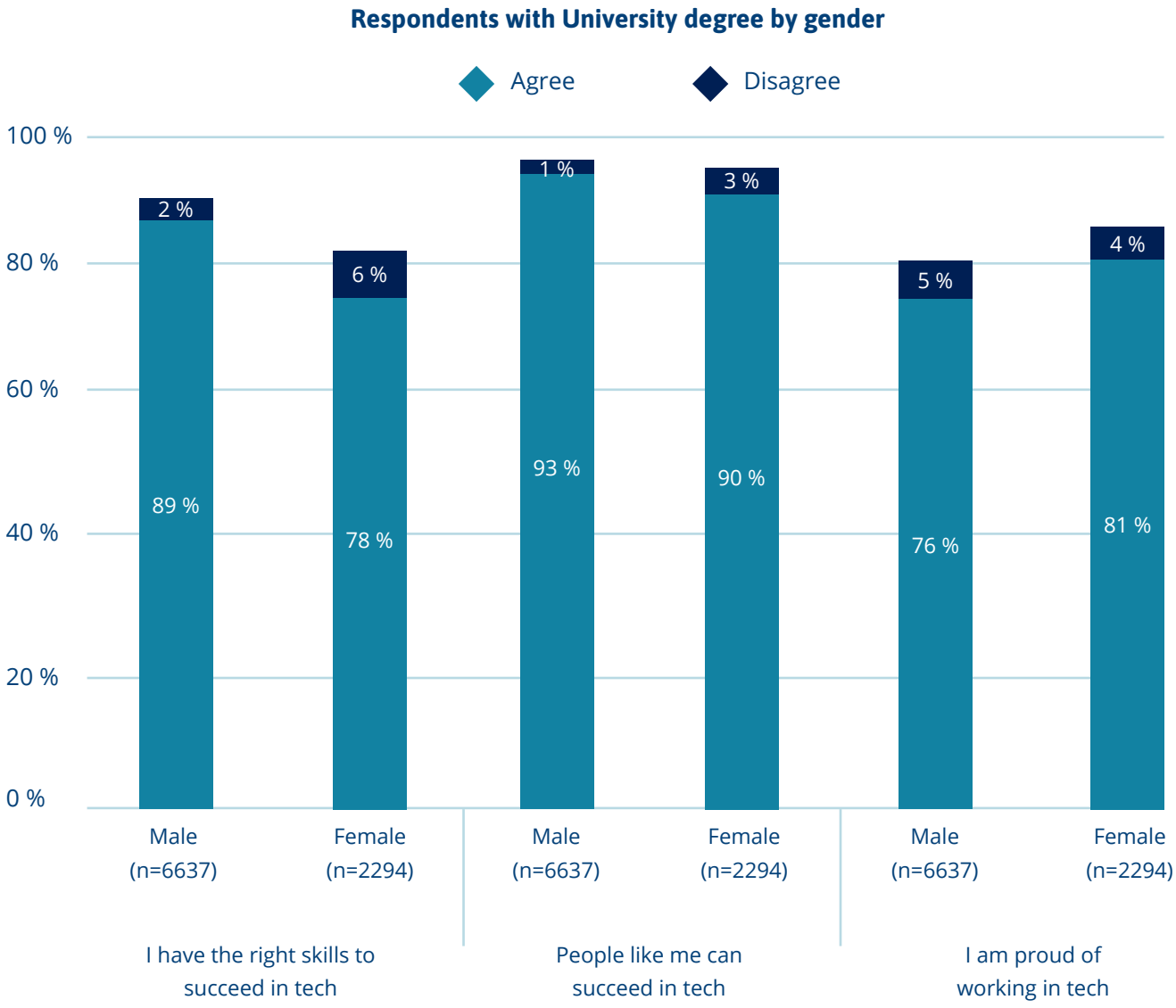
University tech students are proud of studying technology



”My relationship to the field of technology is described by my motto: Machine engineers make the world turn”.

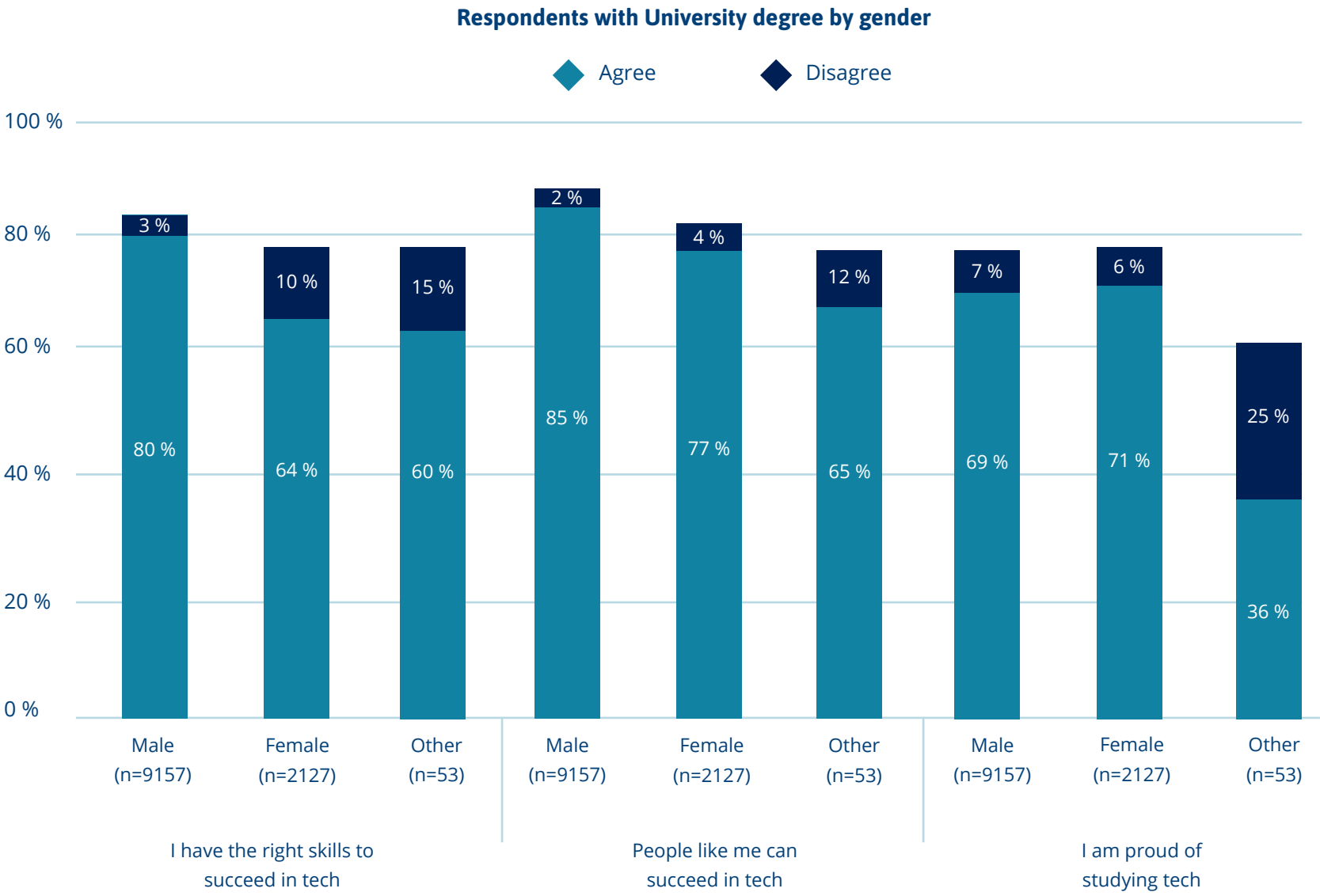
(Male, UAS degree)

Both men and women with university degrees believe they can succeed in tech

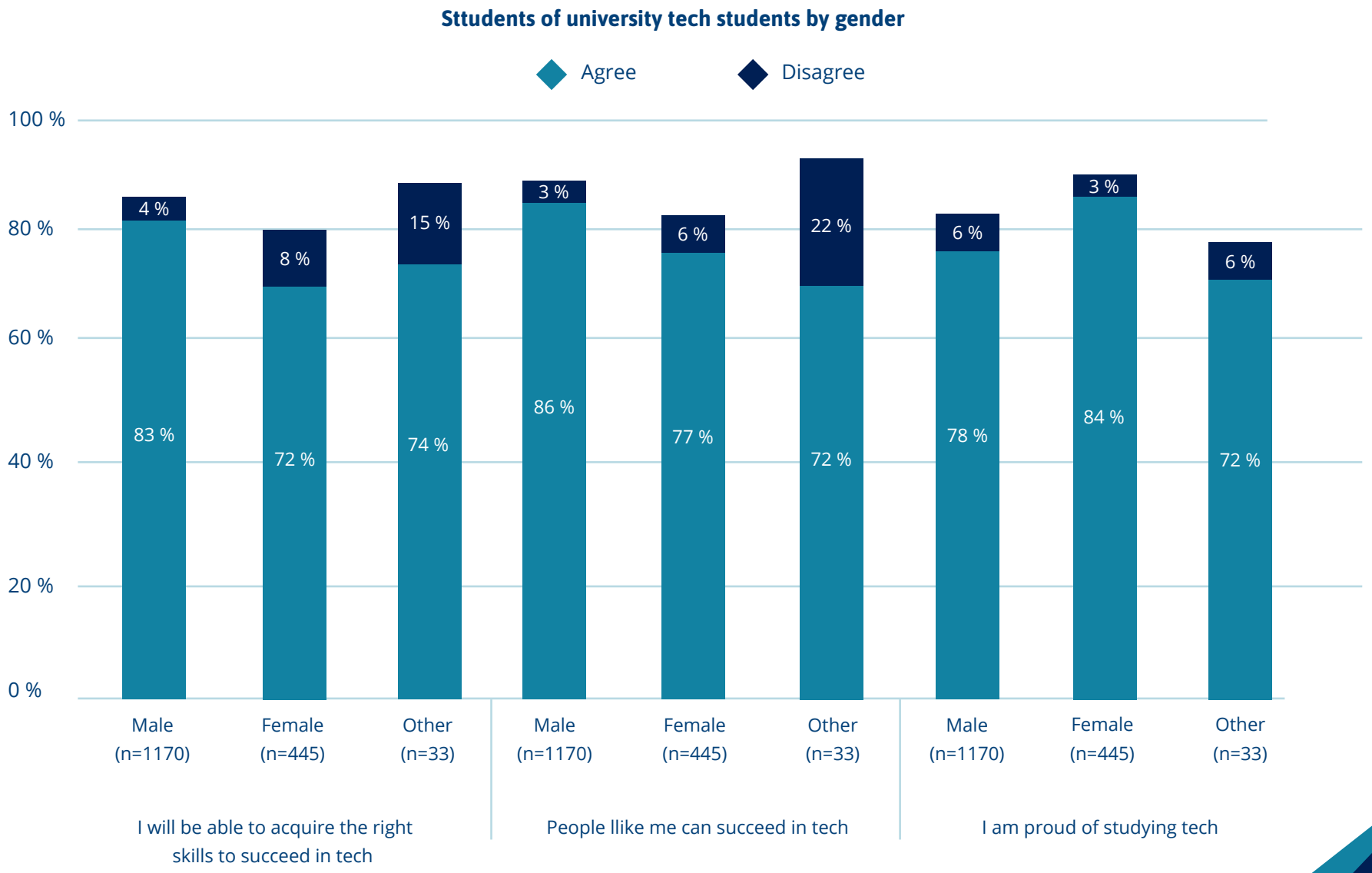


Please note:
Labour Market Surveys for respondents with university degree use personal identity code to indicate gender. Hence, it is binary (male/female).

Men with UAS degrees are also confident, women (and others) somewhat less



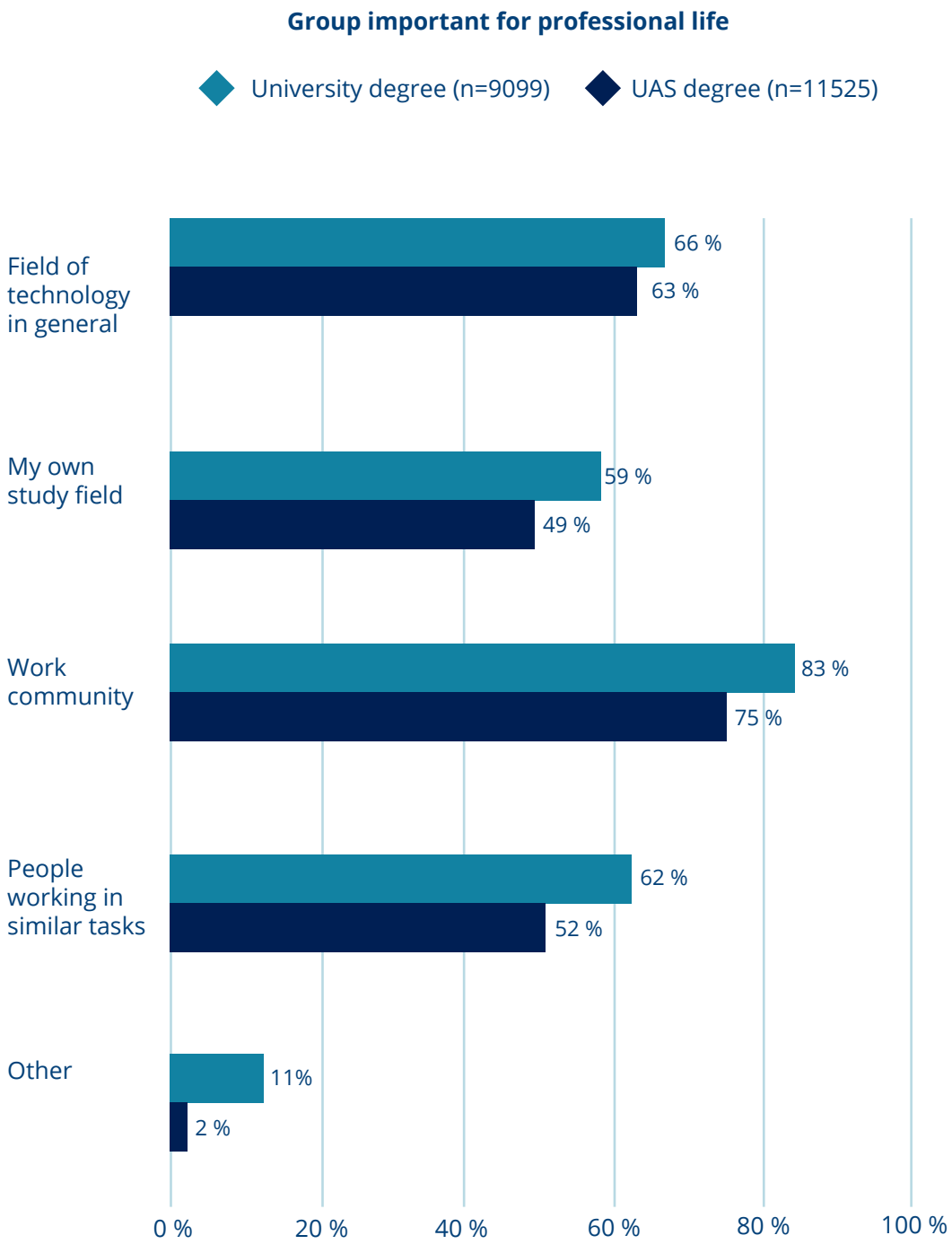
Also among university tech students, men are most confident



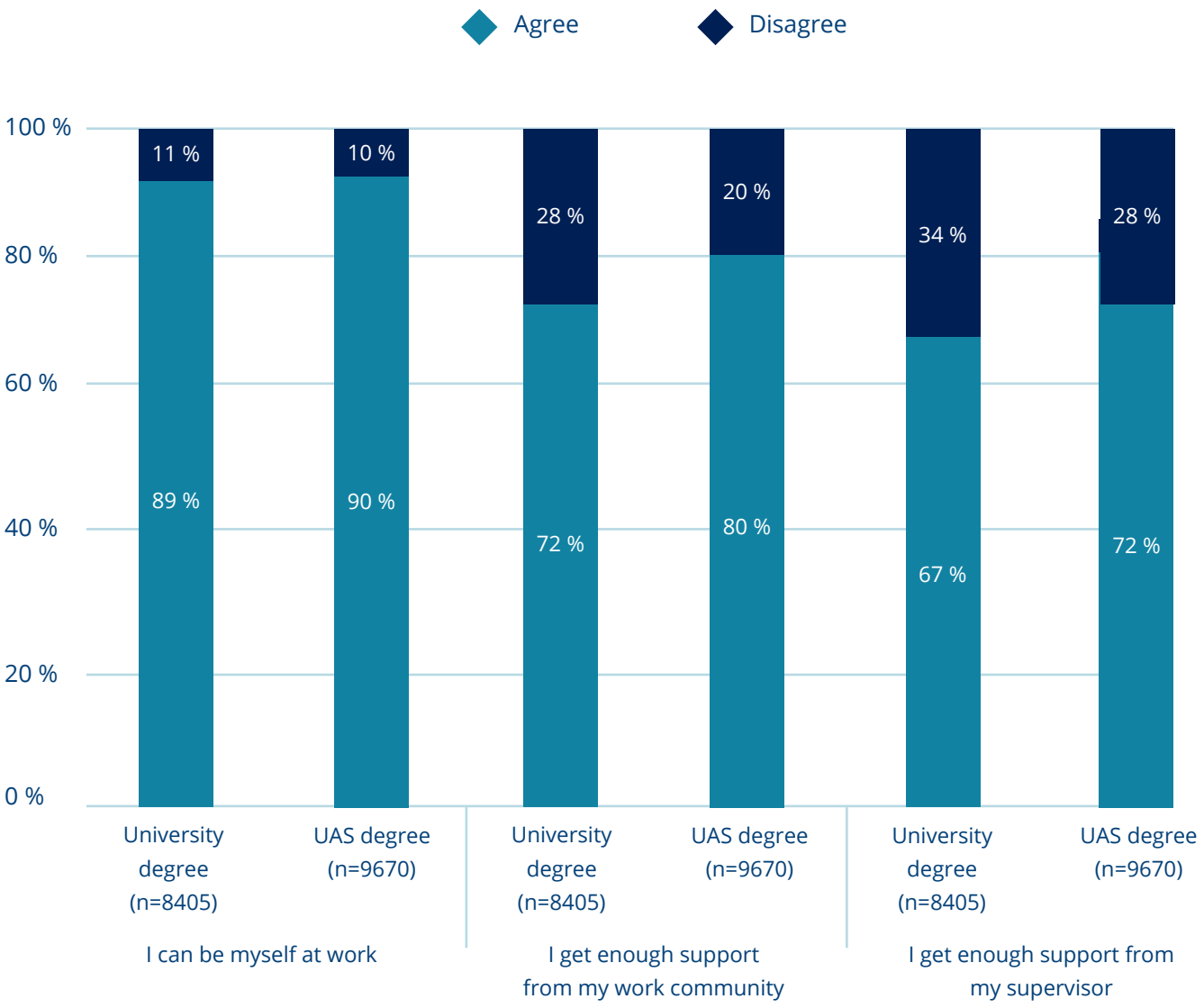
Belonging in technology workplaces

Work community most important

- Importance of named groups for respondents' professional life was rated on a scale of 1 to 5
- Graph depicts % of respondents rating these groups as important (grade 4&5)
- Work community emerges as most important, followed by technology field in general.

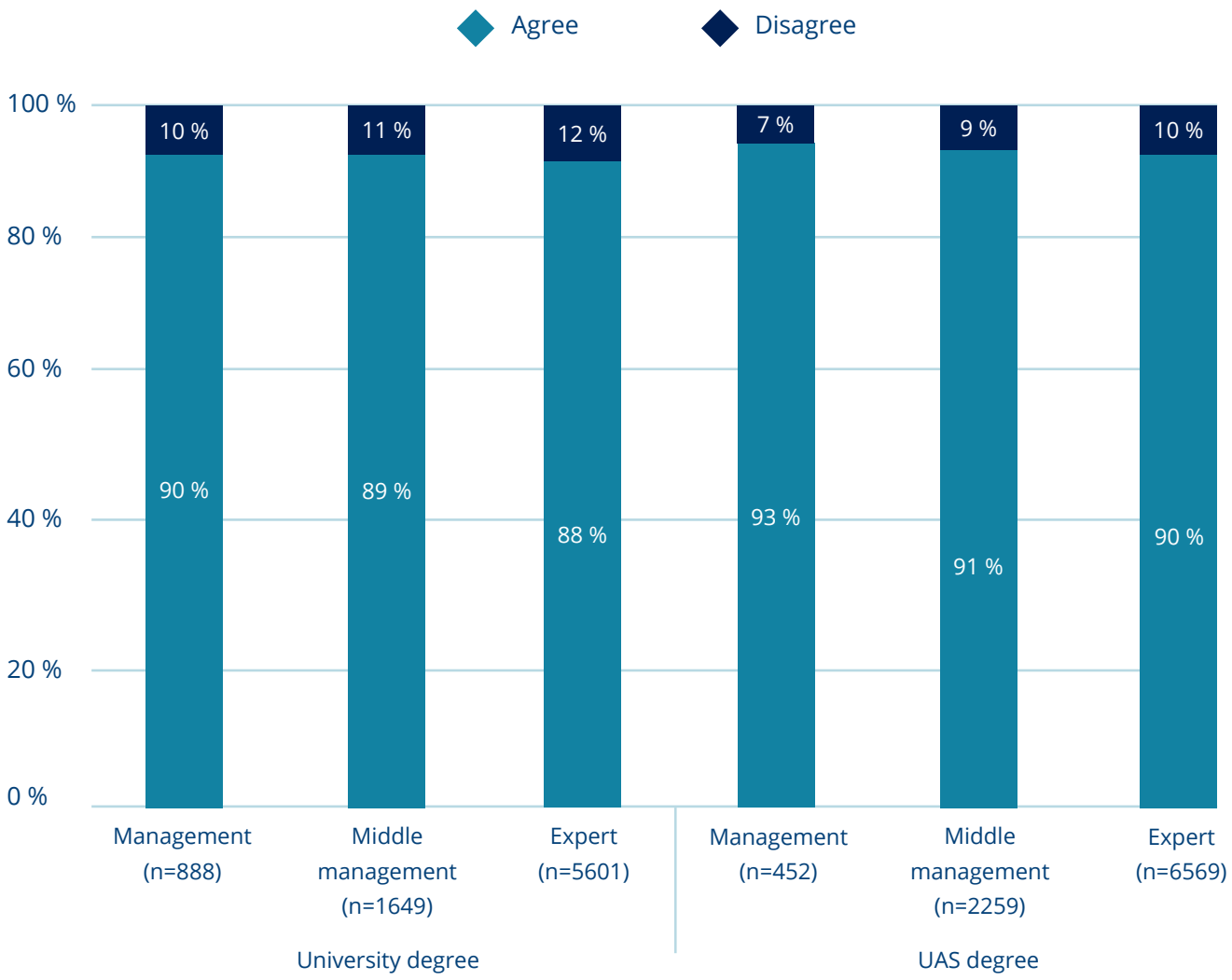


90 % say they can be themselves at work, majority also get enough support from work community



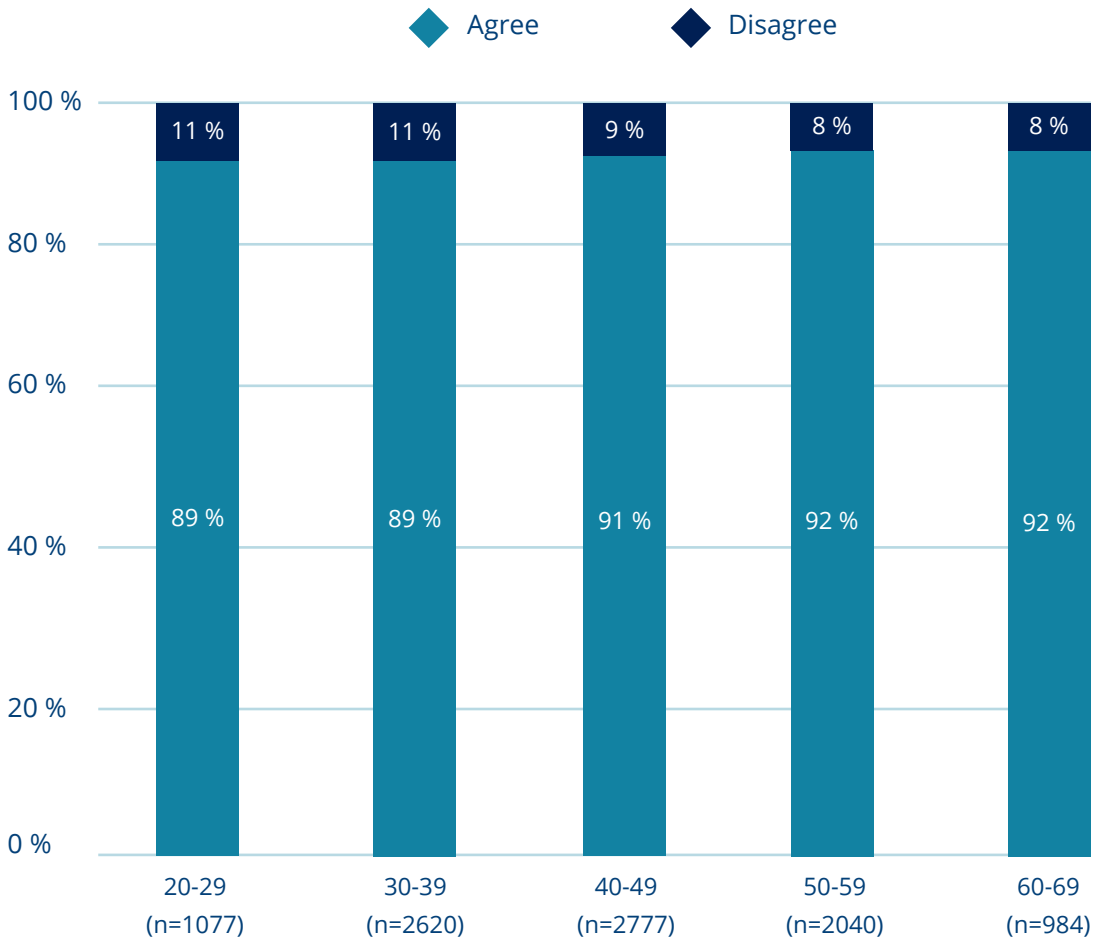
In all positions, respondents feel they can be themselves at work

"I can be myself at work", by degree and position



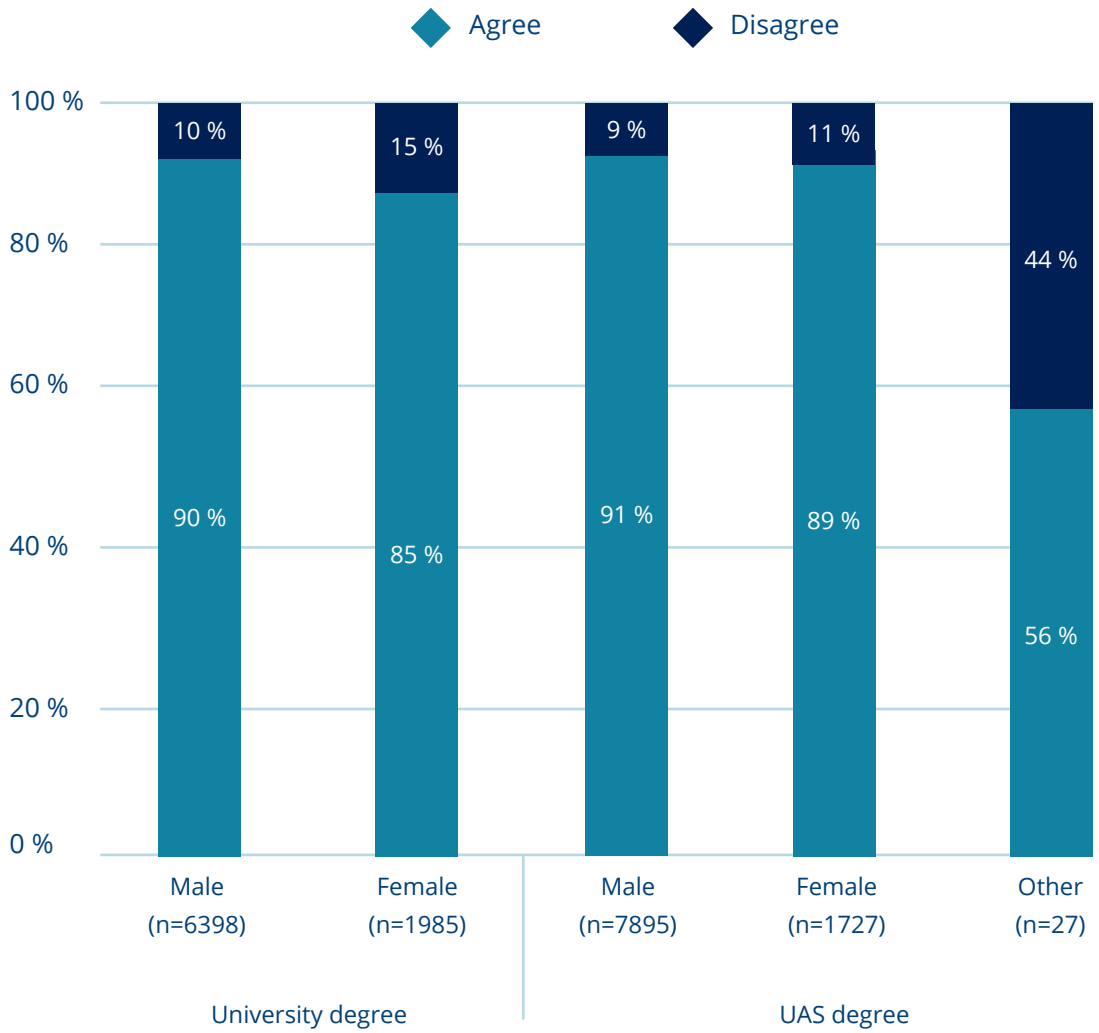
In all age groups, most respondents feel they can be themselves

"I can be myself at work", respondents with UAS degree by age group



Majority of men and women can be themselves – but not others

"I can be myself at work", by degree and gender



Who does not belong?

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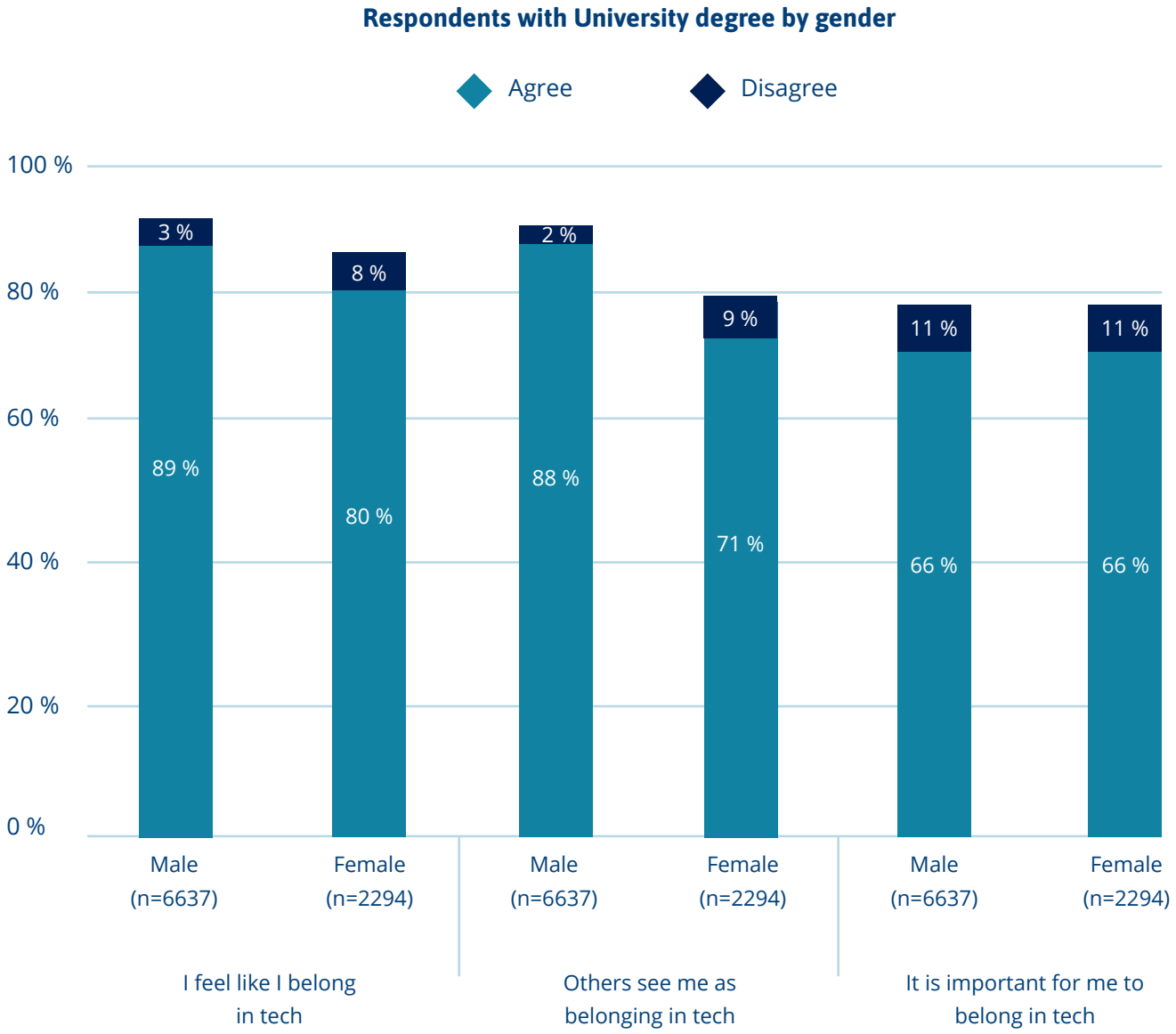
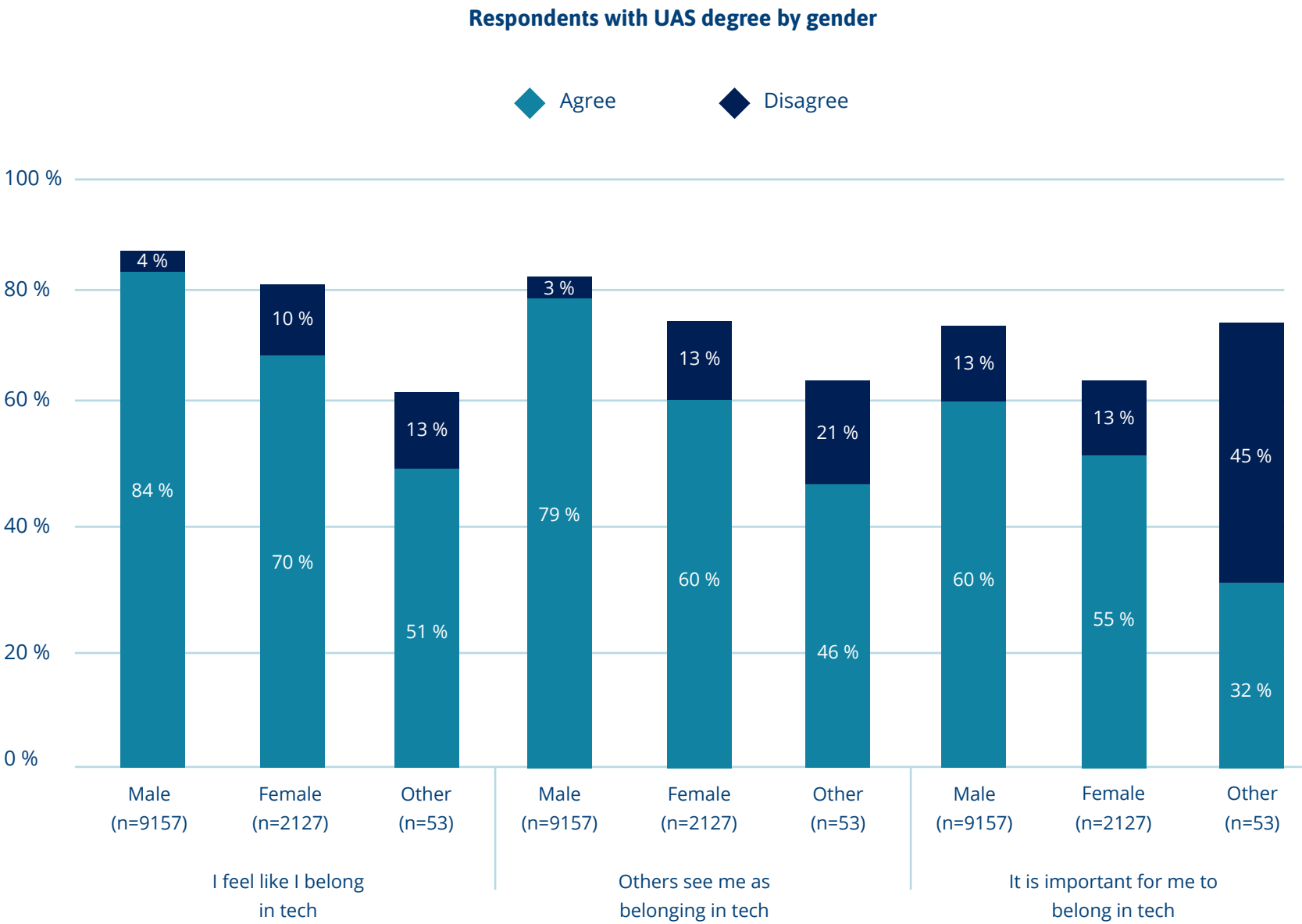
Most women with university degrees feel like they belong, but somewhat less than men



Among UAS respondents, gender strongly impacts belonging



”The only woman, again, in a team of 50 engineers”

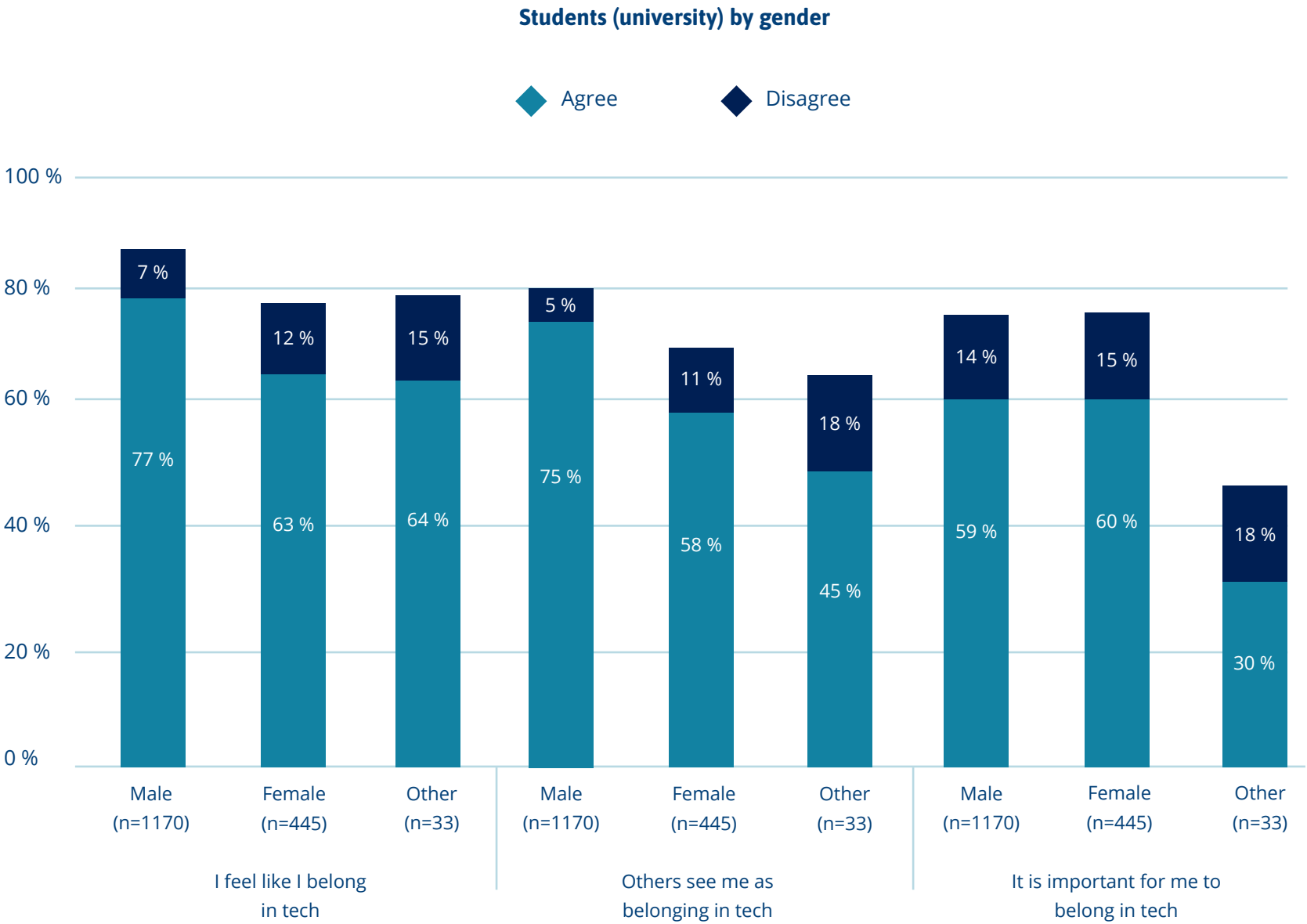
(Female, university degree)

”As a young woman in the male-dominated field of technology, it is still sometimes difficult to get heard and understood, and to be sufficiently convincing.”

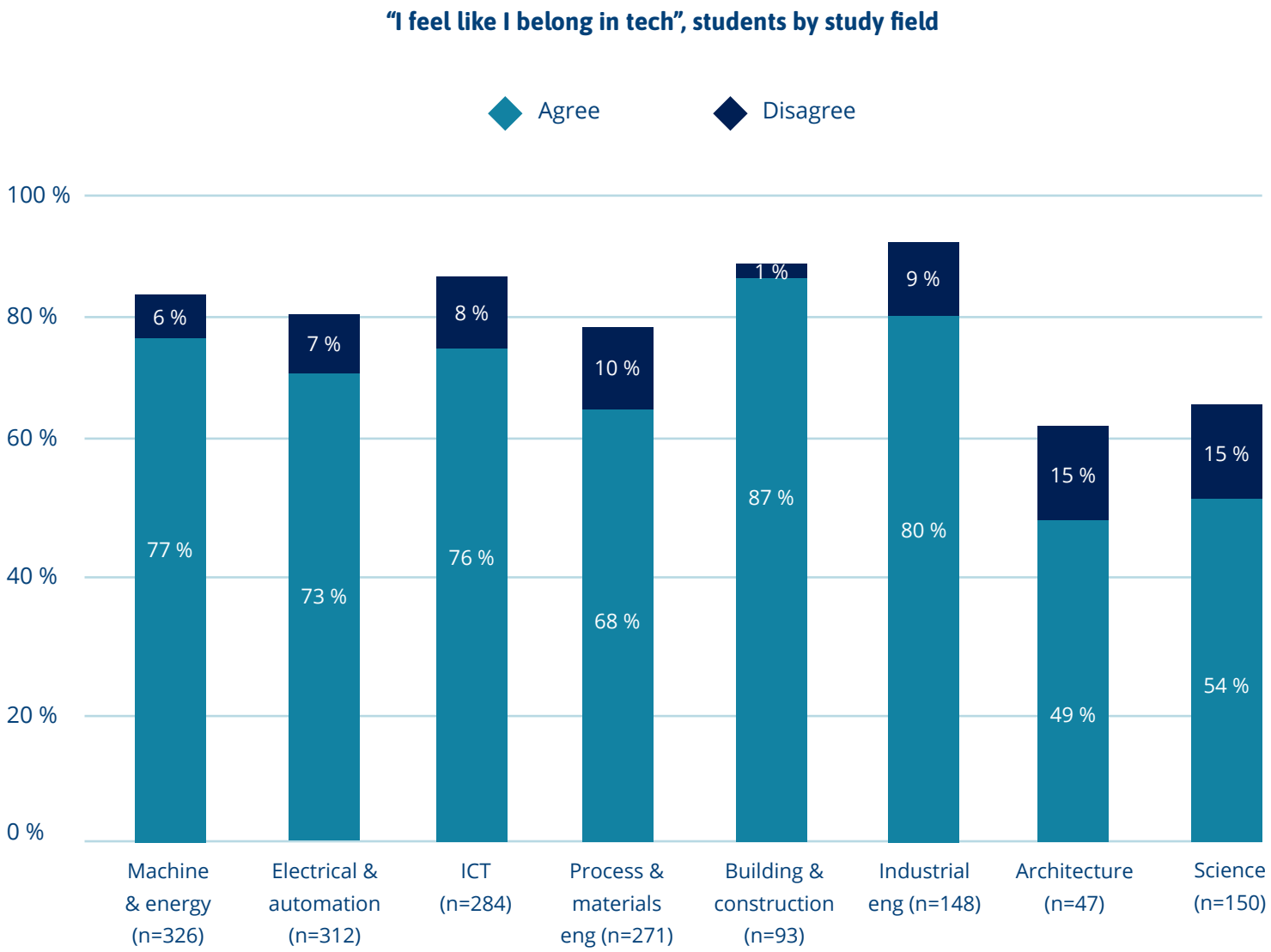
(Female, UAS degree)

◆

Gender differences in belonging are considerable also among tech students

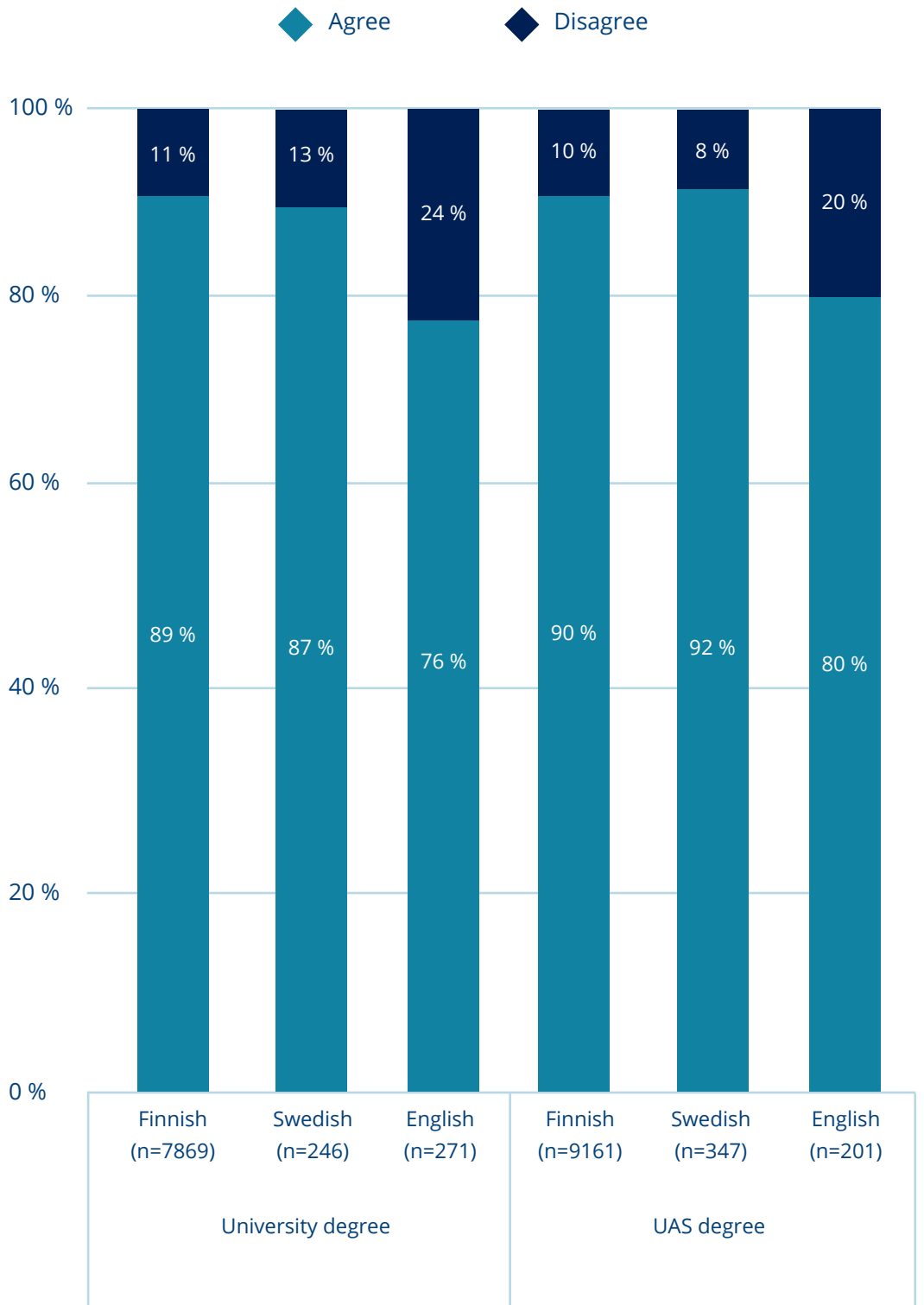


Feeling of belonging is stronger among students of “traditional” tech fields

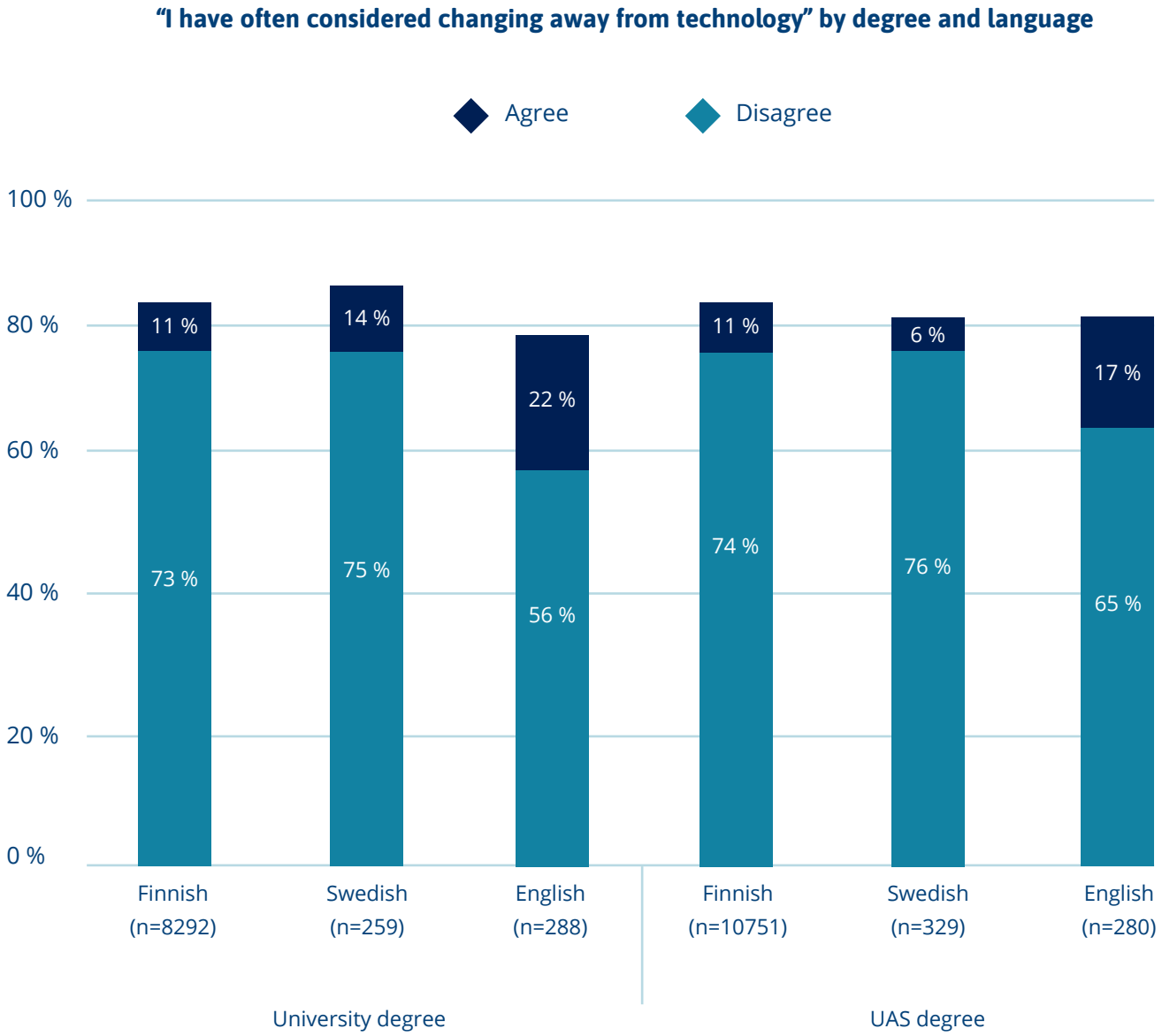


Language also matters in fitting in at work

- English-speaking respondents feel less often that they can be themselves at work
- 24 % of English-speaking respondents with university degrees report they cannot be themselves at work
- Similarly, 20 % of English-speaking respondents with UAS degrees feel they can’t be themselves.



English-speaking respondents have more often considered leaving tech



”Opportunities are so limited for people of colour and non-Finns in Finland. It’s a huge challenge to have a successful career in Finland.”

(Male, university degree)

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Annex

Scales

LMS2021 (TEK & IL)

- Items were on scale 1=strongly agree, 2=somewhat agree, 3= somewhat disagree, 4=strongly disagree, 5=don't know
- Scale was recoded into 1=agree, 2=does not agree for analysis purposes (5=missing).

LMS2022 (TEK & IL)

- Items were on scale 1=strongly disagree, 5=strongly agree
- Scale was recoded into 1=disagree, 2=does not agree or disagree, 3=agree for analysis purposes
- Percentage shares of those responding 2 are not depicted in the graphs.

Student Survey 2022 (TEK)

- Items were on scale 1=strongly disagree, 5=strongly agree
- Scale was recoded into 1=disagree, 2=does not agree or disagree, 3=agree for analysis purposes
- Percentage shares of those responding 2 are not depicted in the graphs.

References

Lewis, K. L., Stout, J. G., Finkelstein, N. D., Pollock, S. J., Miyake, A., Cohen, G. L., & Ito, T. A. (2017). Fitting in to move forward: Belonging, gender, and persistence in the physical sciences, technology, engineering, and mathematics (pSTEM). Psychology of Women Quarterly, 41, 420-436. DOI:10.1177/0361684317720186