A Survey of Attitudes to Computing at the University of the Witwatersrand

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Background

- small percentage of women in CS, both as students and academics
- USA, 1988
  - bachelors degrees – 32.5%
  - masters degrees – 26.9%
  - doctorates – 10.9%
  - academics – 7%
- UK, 1985-89, female entrants to CS courses less than 15%, this has dropped since the early 80's
- **Wits**, 1986-1992
  - approximately 25% of undergraduate classes are female
  - female persistence and success rate are similar to those for males at undergraduate level
  - 23% of Masters degrees awarded to female students
  - no clear trends

Survey

- Why are women not entering CS degrees?
- first year science students at Wits at registration
  - advantage — allowed for testing of preconceptions
  - disadvantage — reduced sample size
- investigate
  - exposure and usage
  - family role models
  - attitudes to computing
  - attitudes to CS

Analysis

- sample

	Male	Female	
Yes	51	23	74
No	111	117	228
	162	140	302

- comparison
  - MY vs FY — males doing CSI vs females doing CSI
  - MN vs FN — males not doing CSI vs females not doing CSI
  - FY vs FN — females doing CSI vs females not doing CSI
  - MY vs MN — males doing CSI vs males not doing CSI

Analysis cont.

- focus — gender differences
- statistical analysis
  - percentages — exposure, usage and role models
  - χ^2 test — attitudes
    - Agree
    - Neutral
    - Disagree
    - Don't know/Not applicable

MY vs FY

		MY	FY
Usage	yes	96%	91%
	games	33%	13%
	programming	53%	48%
	applications	35%	43%
	home computer	75%	65%
	Computer Studies	47%	57%
Role models	yes	78%	65%
	female	28%	21%
	male	53%	74%

MY vs FY

MY	–	I like playing computer games
		I like programming
		I am confident about my ability to learn about computing
		Men make good computer programmers
		Many of my close friends use computers
		I feel competent using technology
		I am doing CS because I like computer games
FY	–	Women make good computer programmers

MN vs FN

		MN	FN
Usage	yes	77%	85%
	games	36%	38%
	programming	25%	13%
	applications	40%	34%
	home computer	57%	58%
	Computer Studies	30%	28%
Role models	yes	71%	55%
	female	23%	41%
	male	53%	62%

MN vs FN

MN	–	Men make good computer programmers
		Computers are exciting
		I have had good experiences with computers
		I feel competent using technology
		I feel comfortable with computers
		I am confident about my ability to learn about computing
		I like using applications
		Men make good computer users
FN	–	Women make good computer users
		Women can succeed at CS
		Computer games are designed for men
		Computing is a male domain
		Computers are unpredicatable
		I am not interested in studying CS
		I decided not to do CS because it is male dominated

FY vs FN

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	applications	43%	34%
	home computer	65%	58%
	Computer Studies	57%	28%
Role models	yes	78%	71%
	female	21%	41%
	male	74%	62%

FY vs FN

FY	–	I like mathematics
		Computers are exciting
		I am confident about my ability to learn about computing
		I feel comfortable with computers
		I like programming
		I like using computer applications
FN	–	I like playing computer games
		Many of my close friends use computers
		CS is mainly about programming
		CS is mainly about graphics

MY vs MN

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MY vs MN

MY	–	I am confident about my ability to learn about computing Computers are exciting I have had good experiences with computers I like mathematics One has to be good at maths to be successful with computers I feel comfortable with computers I like programming I dislike computers Computers are unpredictable CS is very mathematical
MN	–	Men make good computer programmers Women make good computer programmers

Conclusions

- MY have more informal exposure and feel more comfortable
- FY have more formal exposure, are less confident than MY and have male family role models
- MY and FY both have high exposure and feel more comfortable, have done more programming and are more positive about maths
- FN have the least exposure, have a high level of game playing, have negative attitudes, have female family role models, claim lack of interest, but also display lack of knowledge about CS
- MN have low exposure and negative attitudes
- FY and FN both believe that women can succeed at CS
- FY and FN appear to be more influenced by family role models than MY and MN

Further work

- role models
- perceptions of CS