

Women's High School and University Experiences that Influence the Pursuit of Undergraduate Mathematics Degrees

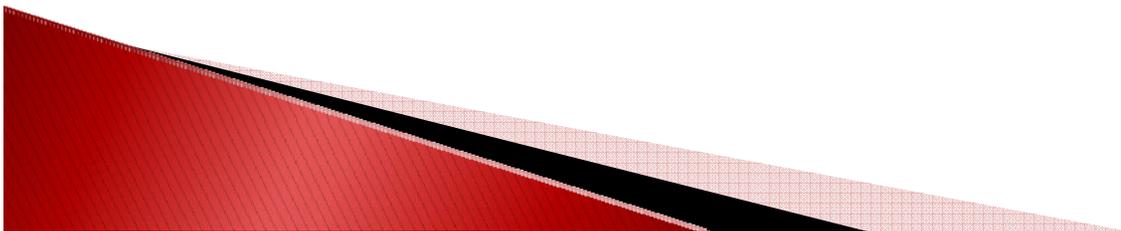


Jennifer Hall

University of Ottawa

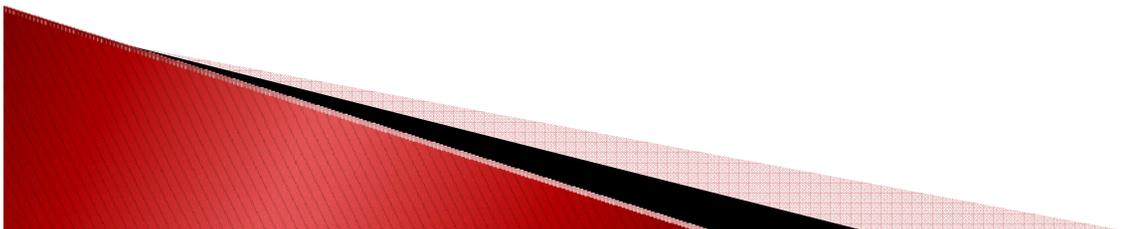
Research Question

In what ways do women who were educated in Canada and who are nearing completion of undergraduate mathematics degrees feel they have been supported and challenged in their high school and university studies?



Methodology

- ▶ Single-session individual semi-structured interviews (mean duration: 1:17:49)
- ▶ Eight main questions with follow-up questions
- ▶ Four dimensions:
 - Family
 - Peers
 - Formal Education System
 - Personal Characteristics



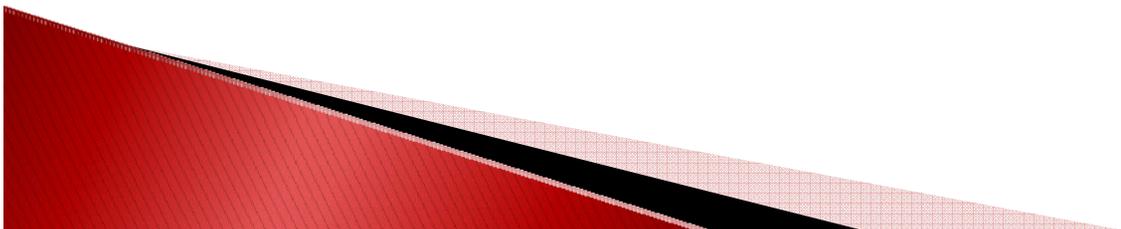
Methodology

▶ **Requirements:**

- Female
- 3rd/4th year of undergraduate mathematics degree program
- Educated in Canada for all levels

▶ **Recruitment:** Department of Mathematics and Statistics, University of Ottawa

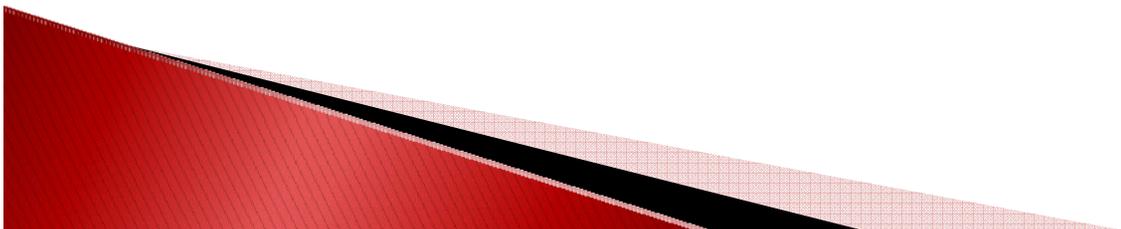
- Posters
- Emails
- Classroom presentations



Methodology

▶ Data analysis

- Verbatim transcription (174 single-spaced pages total)
- Member check – transcript or summary
- Analyzed transcripts by the four dimensions
- Extraction of relevant quotations
- Creation of ‘participant profiles’
- Analysis across participants by dimension – tables with sub-topics
- Noticed three themes that encompassed multiple dimensions



Participants



Allison: 4th year Mathematics/English (Francophone); high school Mathematics/English teacher



Brooke: 4th year Mathematics/Biology (Anglophone); forensics/intelligence



Chantal: 3rd year Mathematics (Francophone); statistics; parents from Haiti



Dana: 3rd year Mathematics/Economics (Francophone); actuarial science; parents from Morocco



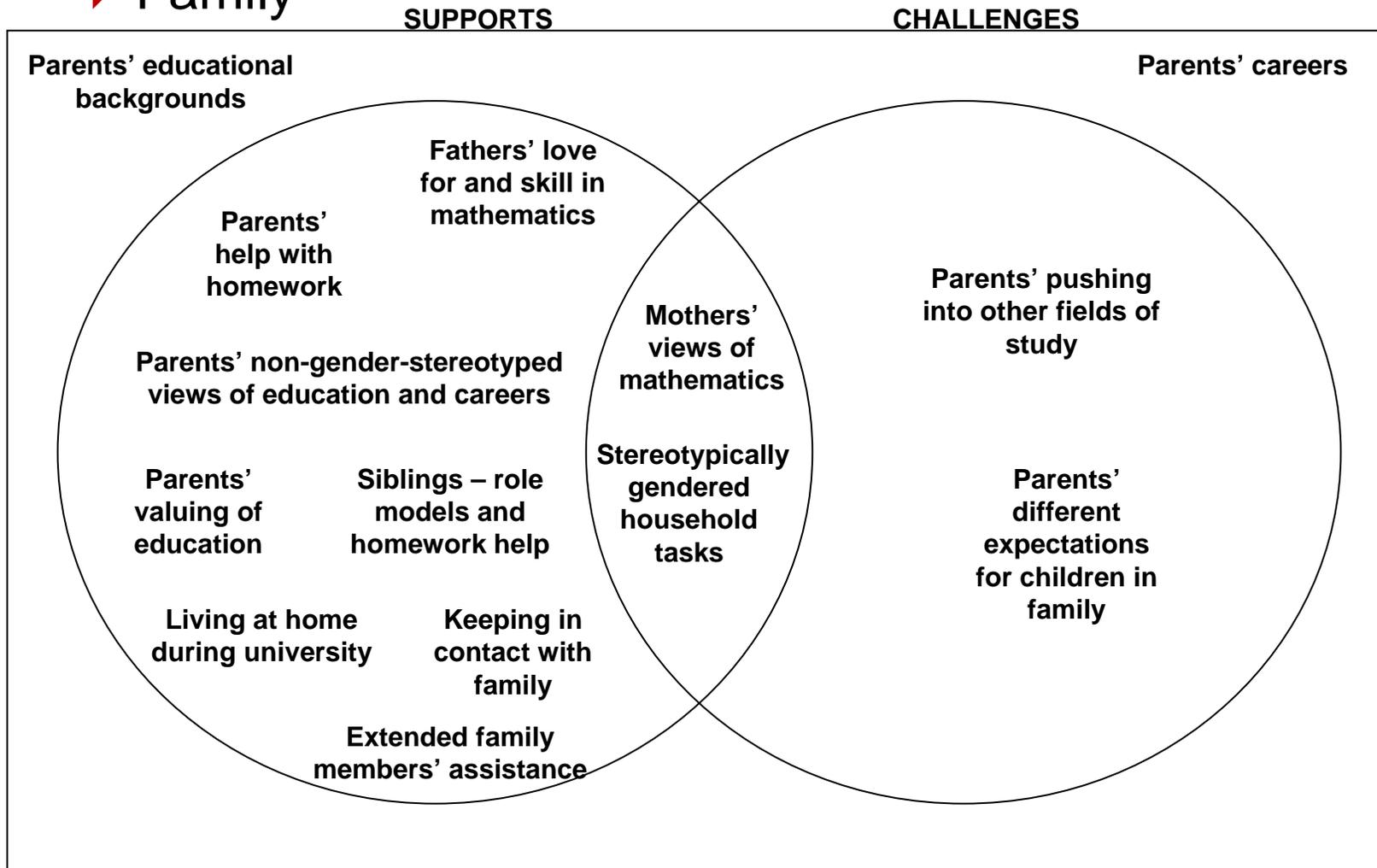
Elise: 2nd year of Master's degree Mathematics (Francophone); statistics



Felicity: 4th year Mathematics (Francophone); university mathematics professor or business world; parents from Lebanon

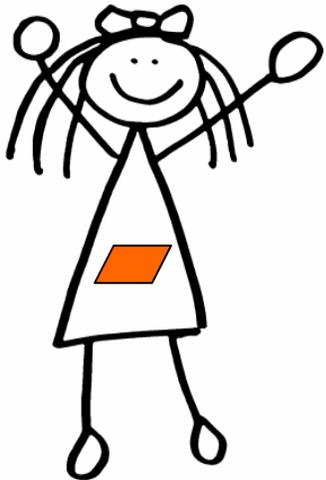
Findings by Dimension

► Family



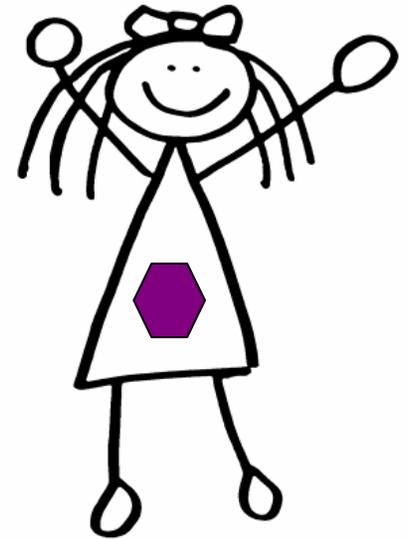
Family

My family has been pretty nurturing... pretty accommodating for anything I want.



Brooke

My dad loves math, so I get it from him... It's more of a hobby for him... He's always really interested in what I'm doing, which is nice.



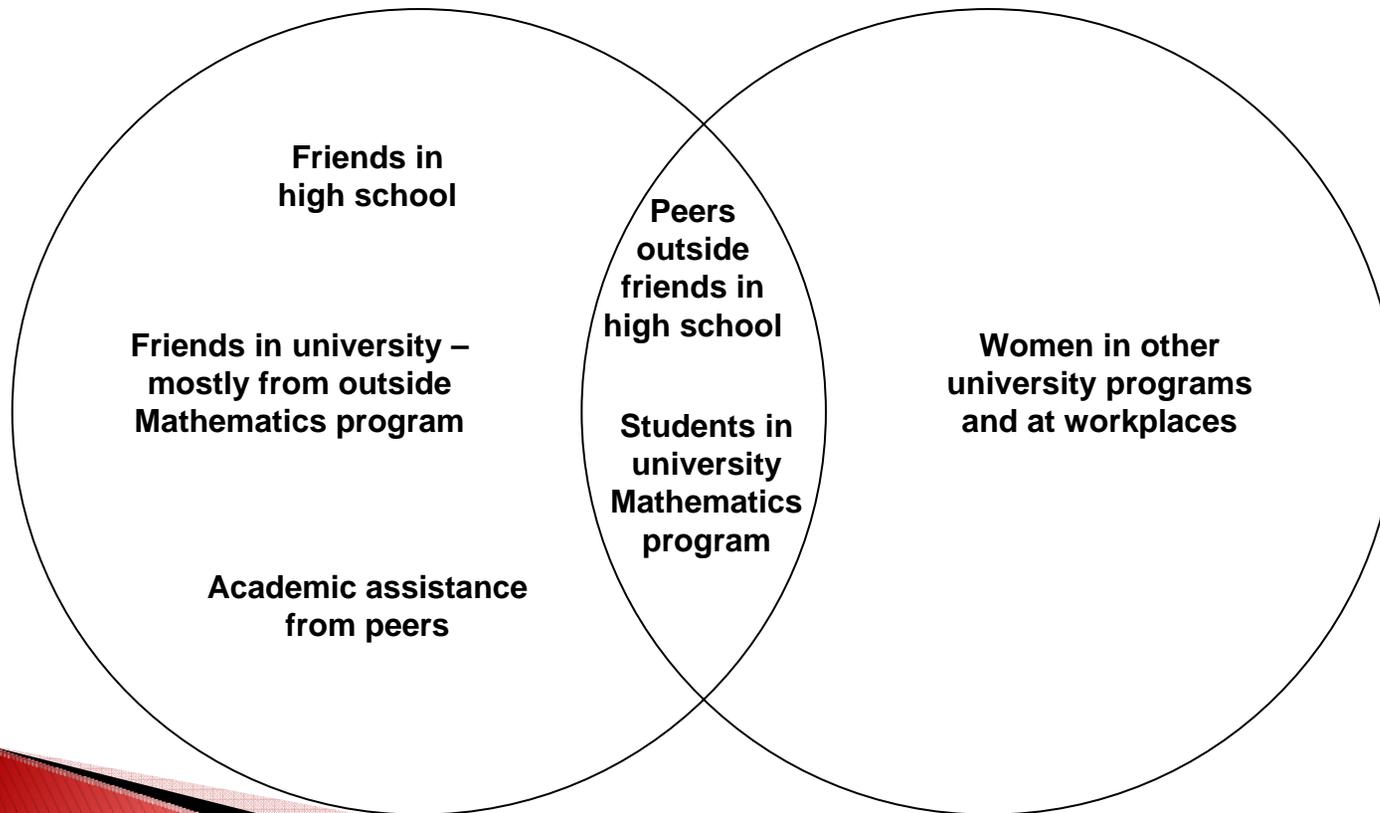
Felicity

Findings by Dimension

► Peers

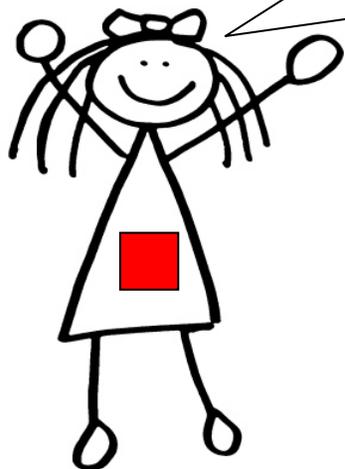
SUPPORTS

CHALLENGES

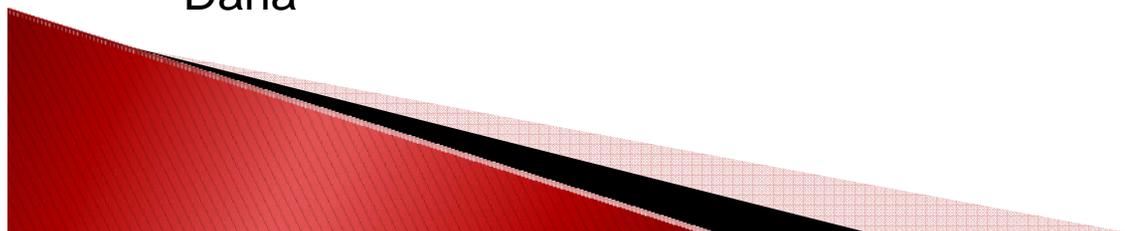


Peers

The girls in mathematics are not super-social. Quiet... but usually they're super-smart... I find that all their energy is put on that though, all of it... They won't care about anything else. They won't do anything else.

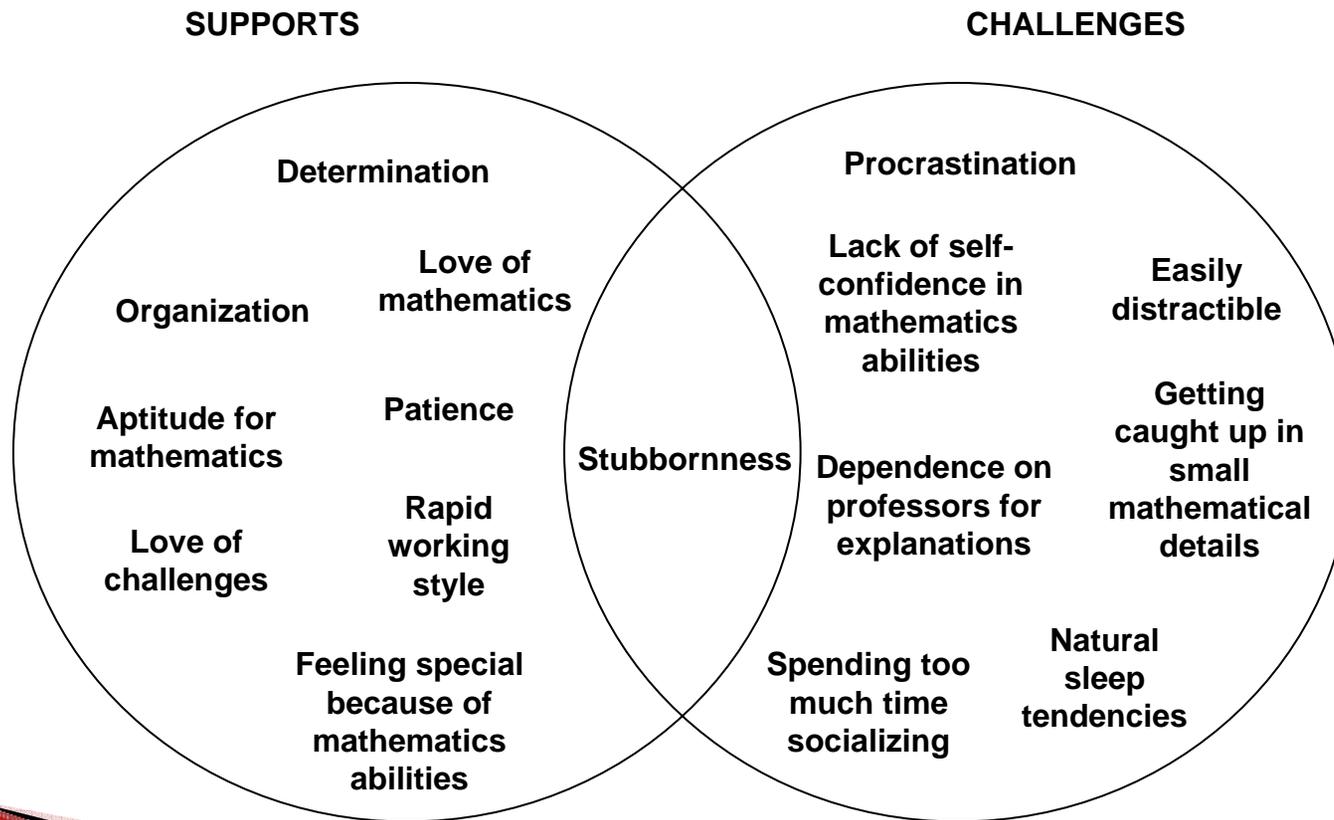


Dana

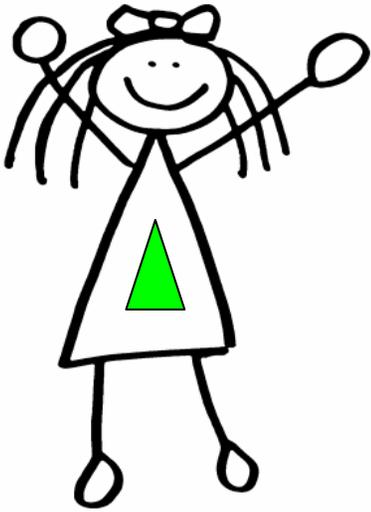


Findings by Dimension

► Personal Characteristics

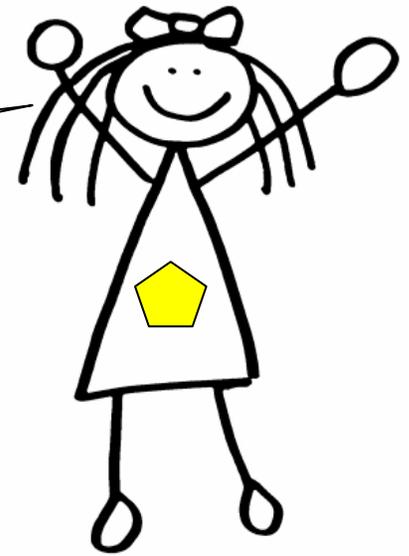


Personal Characteristics



Chantal

Not giving up even though it was hard or I didn't do as good as I thought I would, to keep going... that has helped me a lot.

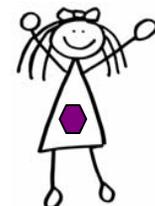
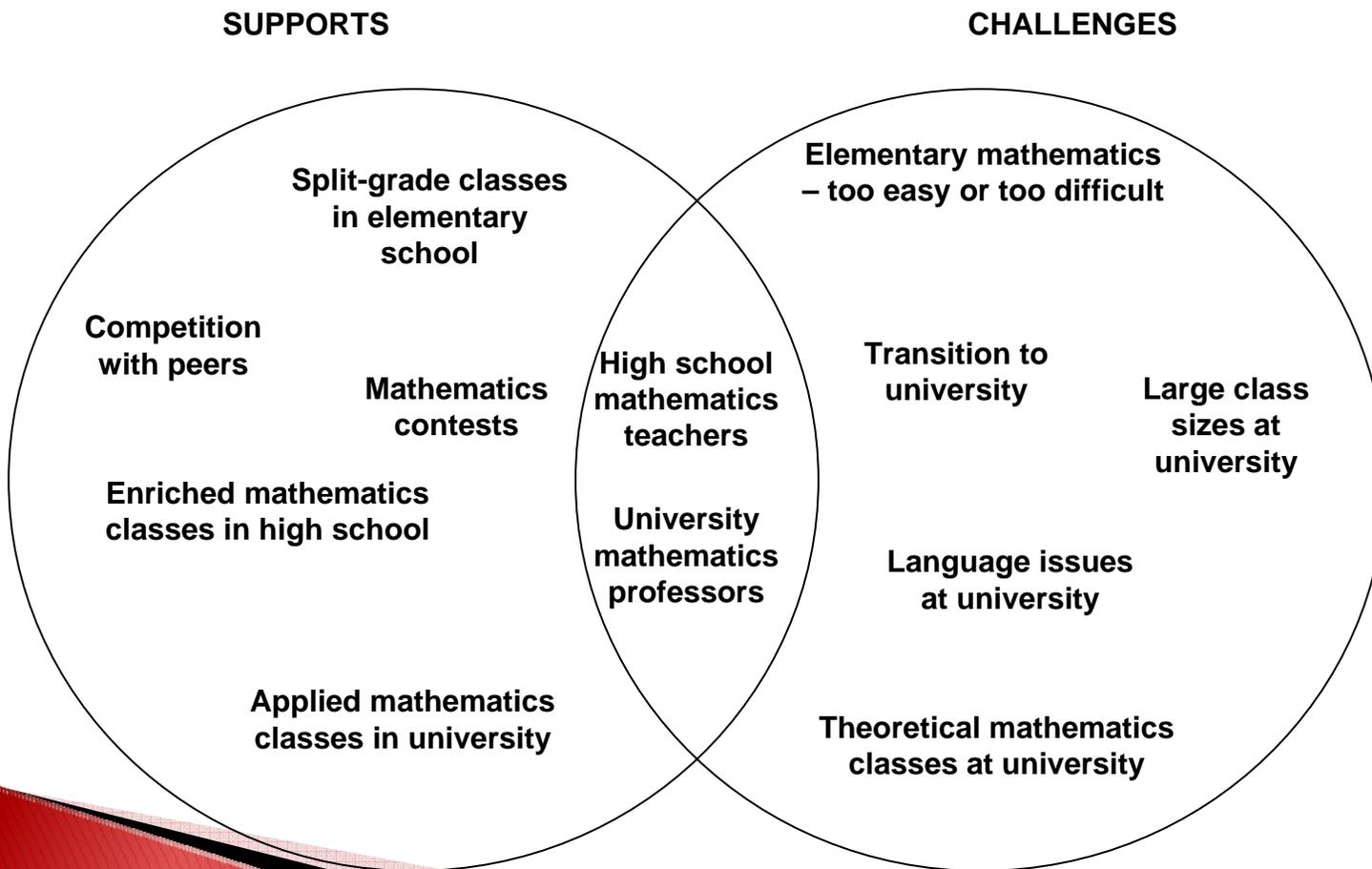


Elise

I'm scared of asking for help... I always want to understand everything right away. And when I don't, I start to feel like, 'Oh my God! Maybe I shouldn't be in math.'

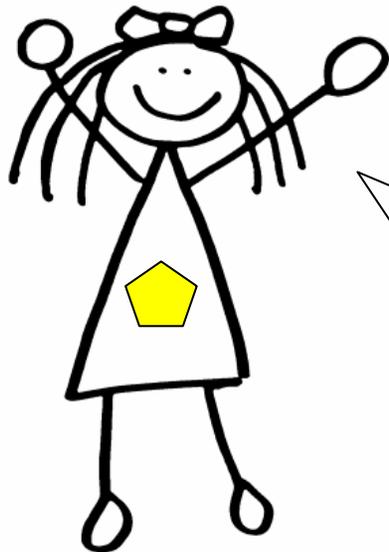
Findings by Dimension

► Formal Education System



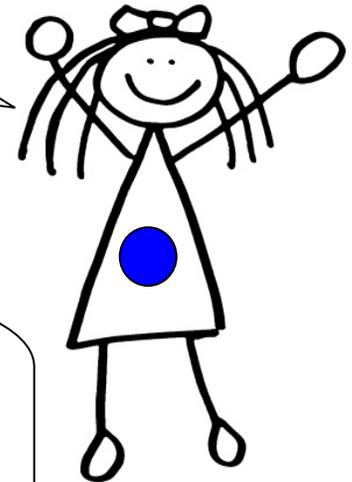
Formal Education System

When you're trying to prove stuff and theorize things about four dimensions, it's like, 'Dude – no offense, but I'm more practical; I'm more hands-on than this'. So, I mean, the number of required classes that are theoretical, it bothered me a bit.



Elise

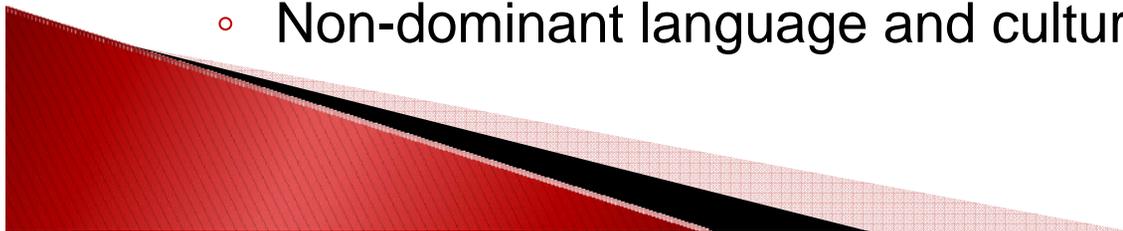
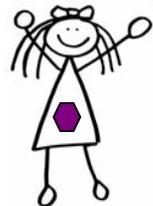
They say it's a bilingual university, but it's not. I'm really annoyed with that because I came in thinking it was bilingual so I would be fine... in Math, you can do your first two years all French... but then it's over.



Allison

Cross-Dimensional Findings

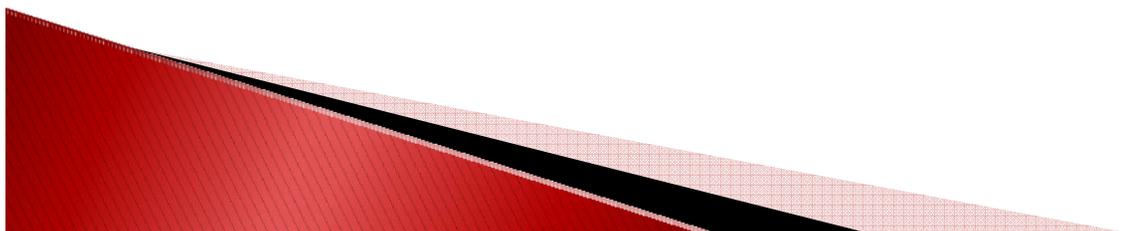
- ▶ Caring, supportive relationships
 - Family, teachers, and professors
 - Separation from females in mathematics
- ▶ Applied mathematics
 - Degree choices
 - Career aspirations
- ▶ Being Othered
 - Mathematician
 - Female – issues of femininity, ‘other’ women
 - Non-dominant language and culture



Conclusions

▶ Contributions of Study

- Provides insight into the lives of women who are 'success stories' in Canadian mathematics
- Implications for education: real-world focus, caring educators
- Raises new issues about the type of mathematics preferred by women, differences in family cultural backgrounds, and language issues at bilingual institutions



Thank You!

