

Approaches to Diversifying the Programmer Community -- The Case of the Girls Coding Day

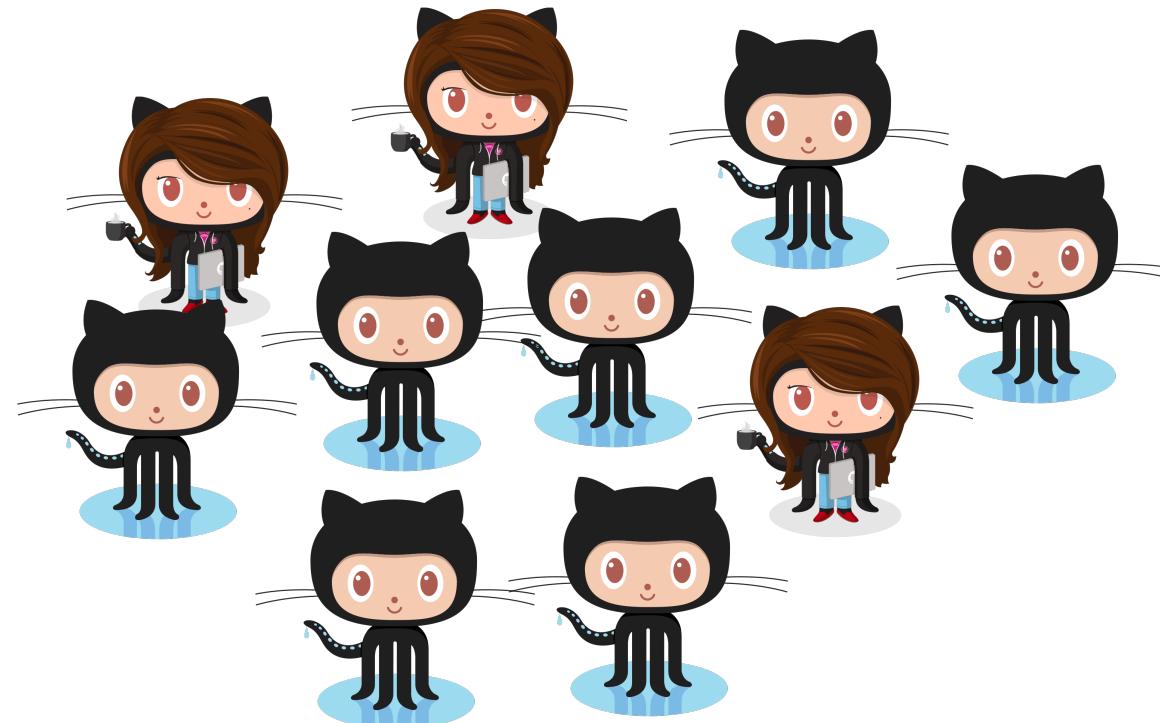


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Higher gender diversity is beneficial for software development teams



Community smell

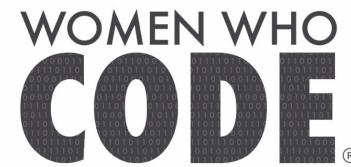
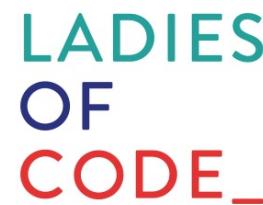


Productivity

Vasilescu et al. 2015, Catolino et al. 2020

There are female adults who want to try out programming

Coding camps that last for weeks



Pre-college

Professional

We need

A short-term event
Project-based learning
Mentoring support

Short-term events with project-based learning formats



Emphasize more on the competitive climate

Warner et al, 2017

Girls Coding Day - a one-day coding workshop that allows participants to try out programming



- Announce **projects**
- Assign participants to **mentoring groups**
- Distribute **handouts**
- Create Wechat group - encourage participants to read the **handout** and discuss online

- Participants work on individual **projects**
- **Mentors** answer questions regarding programming concepts
- **Mentors** try to solve technical problems and debug

We wanted to study if the format of Girls Coding Day is effective

RQ1. What were the participants' motivations for participating in GCD?

RQ2. How was the design of the GCD related to the participants' intention to continue learning about programming?

RQ3. How was the design of the GCD related to the participants' perception about their own coding ability?

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We organized several Girls Coding Day workshops on different topics

2017-2018

12  workshops

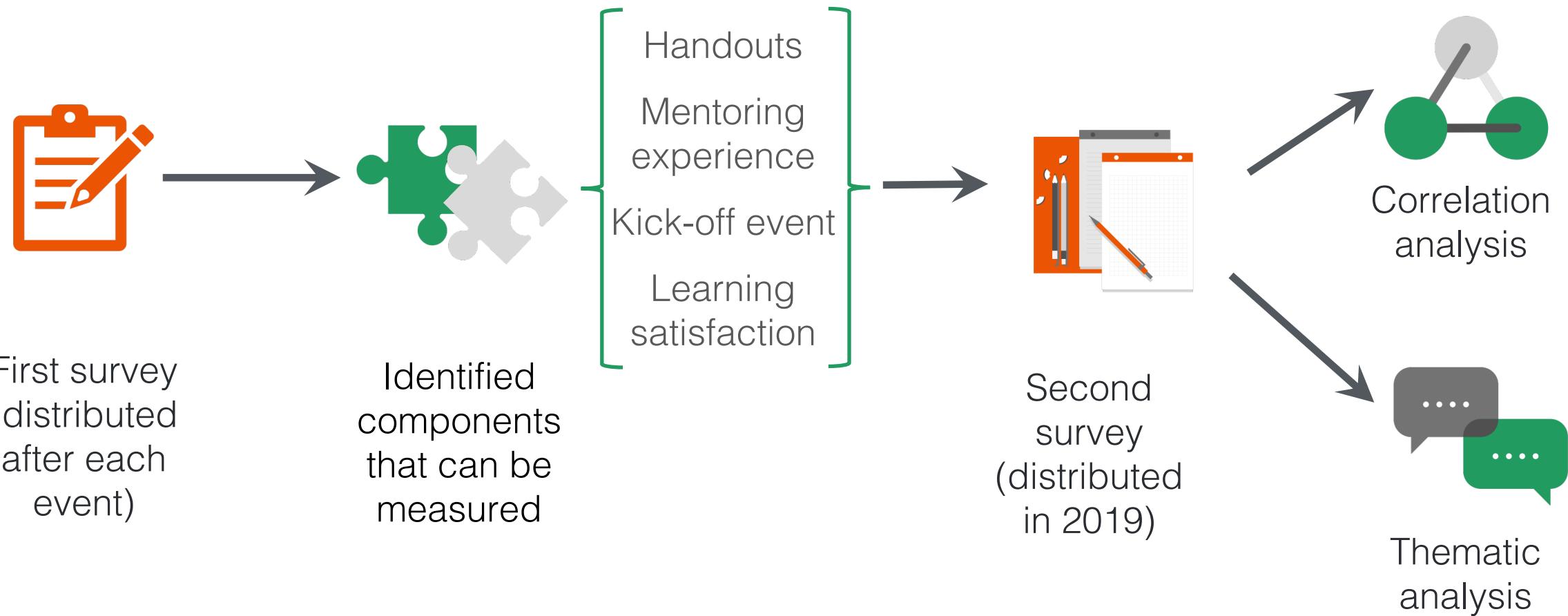
489 participants

2018-2019

17  python™ workshops

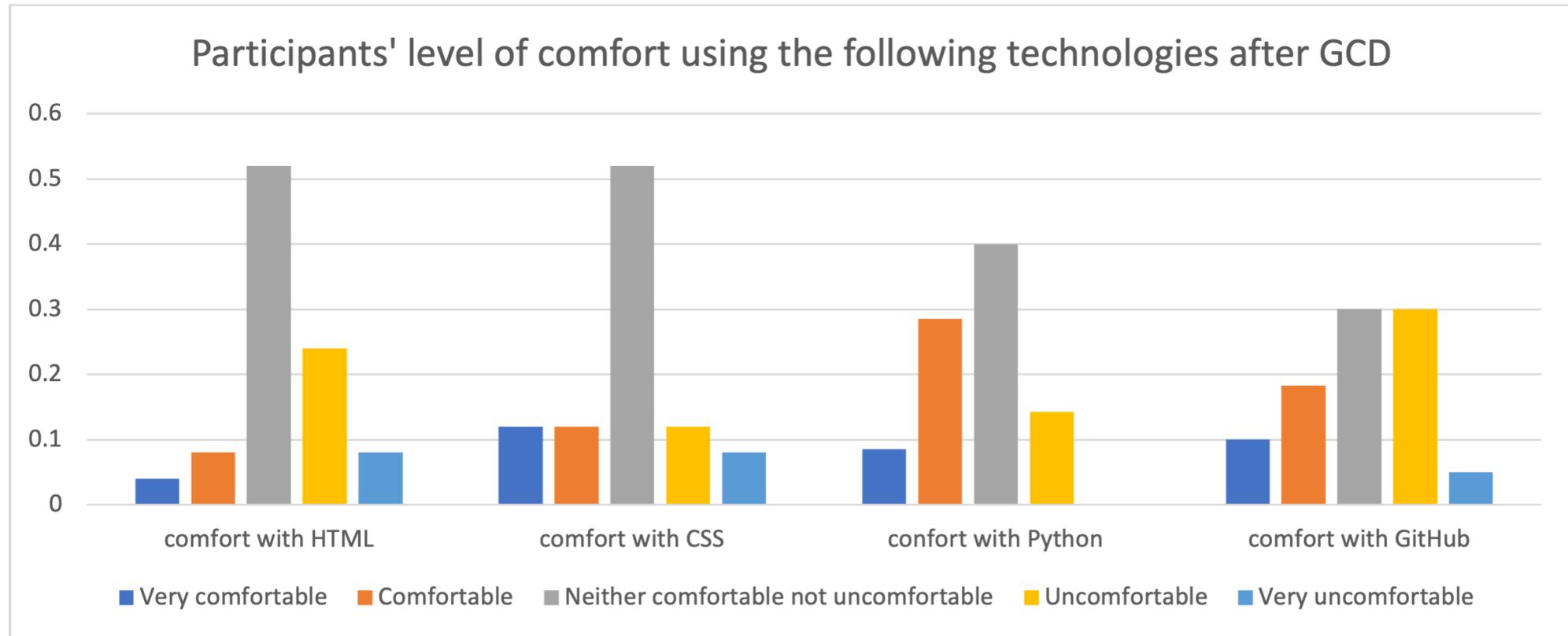
940 participants

We designed a multi-case study



Answering RQ3: participants' perception about their own coding ability?

Participants still have low perceived coding ability



Mean = 3.25

2.92

2.66

3.02

Answering RQ3: participants' perception about their own coding ability?

Satisfaction with the handout correlates with higher perceived coding ability

| | |
|-------------------|----------------------|
| | Handout satisfaction |
| Coding capability | 0.60*** |

Benefits

- It was newbie-friendly because it starts with the basics (PP2-12, PP2-15, HP2-11).
- It helped the participants prepare for the event (PP2-17, HP2-12, HP2-4).

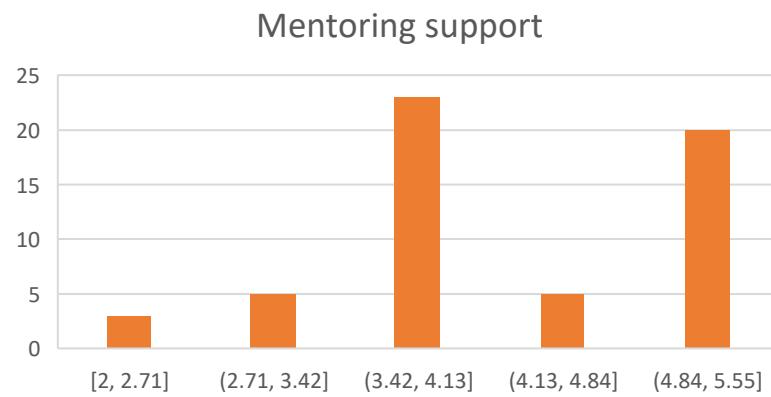
Unsatisfying aspects

- It needs to be more readable (HP2-14).
- Make it more comprehensible for “who don’t know about programming” (HP2-21).

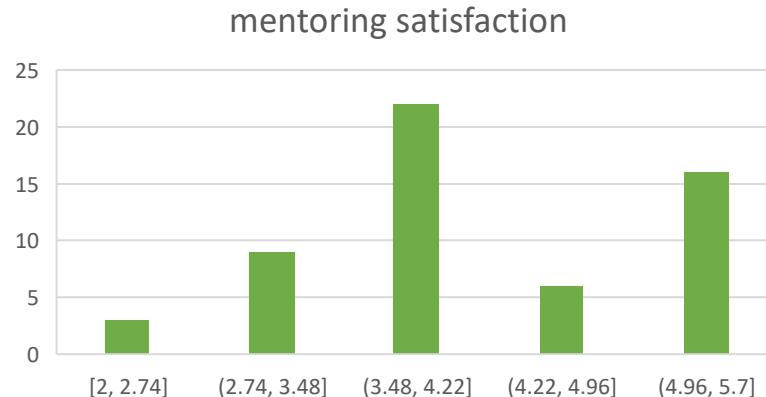


Answering RQ3: participants' perception about their own coding ability?

Mentoring experience was perceived to be the most useful by the participants



Mean=4.26, SD=0.75



Mean=4.22, SD=0.76

Benefits

- Increased learning effectiveness (HP2-7, PP2-28, PP2-3, PP2-32).
- Expanded participants' social circles (HP2-4, PP2-31, PP2-15, PP2-6).

Unsatisfying aspects

- Group assignment was arbitrary (PP2-23).
- Mentors' professionalism was unequal (PP2-29).

Answering RQ3: participants' perception about their own coding ability?

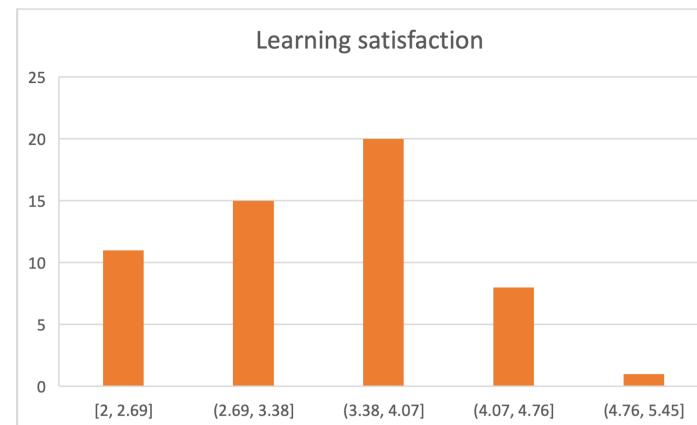
Kick-off event makes the workshop more effective

The kick-off event “avoided a large number of installation environment problems” by installing and configuring environment in advance (PP1-105).

Answering RQ3: participants' perception about their own coding ability?

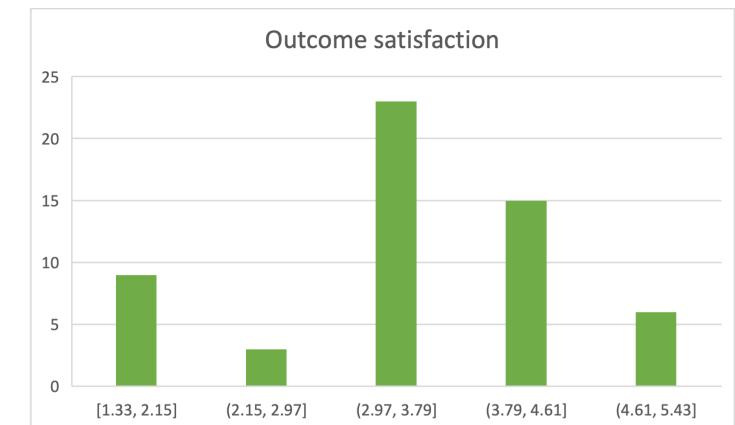
Learning satisfaction correlates with higher perceived coding ability

| | learning satisfaction | outcome satisfaction |
|-------------------|-----------------------|----------------------|
| coding capability | 0.74*** | 0.66*** |



Mean=3.53, SD=0.79

High correlation



Mean=3.49, SD=0.89

Low means

Implications: We found pros and cons of short-duration workshops

Pros:

- It was sufficient to get them interested in computer programming
- It helped them started learning programming (“brought to the gate to a new world”)
- Provide handouts before the event to allow participants to preview the materials.

Con:

- “it was haste”
- Could not cover materials in more details
- Could not cover more materials
- Lacks follow-up curriculums

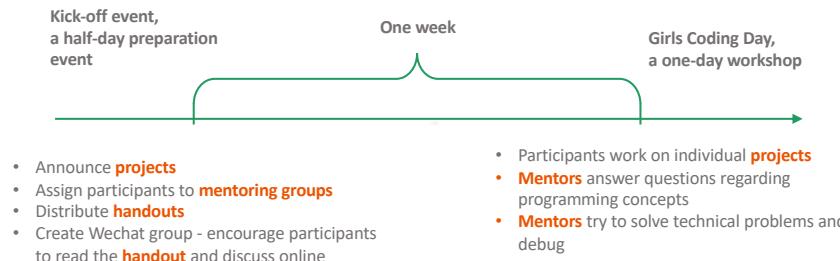


Girls Coding Day – a case study for diversifying the programmer community

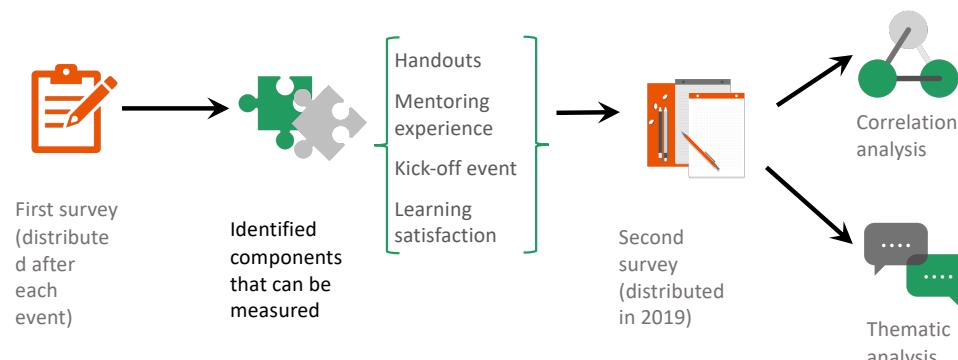
Survey instructions:

<https://github.com/sophieball/GirlsCodingDay>

Girls Coding Day - a one-day coding workshop allows participants to try out programming



We designed a multi-case study



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RQ3. How was the design of the Girls Coding Day related to the participants' **perception about their own coding ability**?

Answering RQ3: participants' perception about their own coding ability?
Participants still have low perceived coding ability

