Does technology drive social change?

Psychological, social and cultural effects
of olpc among Ethiopian children

Nina Hansen
Tom Postmes
Annemarie Bos
Annika Tovote

OLPC

- Small sturdy laptop (XO)
- Not for profit
- Launched 2005
- Price $180
- OS sugar (linux-derived)
- Software: educational (maths, reading, writing, programming, music, etc.), communication, web, games, camera

- OLPC Model:
  - Give XO to children in developing countries
  - Let things happen

- Biggest takers:
 - Peru 100,000
  - Uruguay ±150,000
  - Rwanda 50,000

one
laptop
per
child

OLPC's Stated Mission

To create educational opportunities for the world's poorest children by providing each child with a […] laptop with content and software designed for collaborative, joyful, self-empowered learning.

When children have access to this type of tool they get engaged in their own education. They learn, share, create, and collaborate. They become *connected* to each other, to the world and to a **brighter future**.
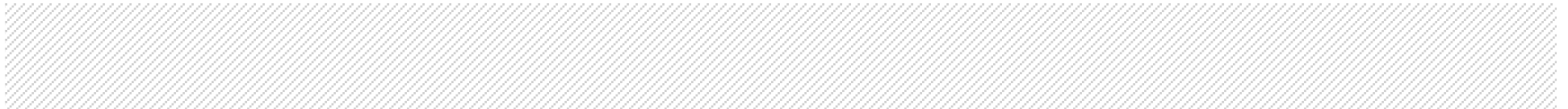
Primary effects

› Technology is designed to achieve specific educational objectives
  - Learning outcomes
  - Educational approach
› It *sometimes* achieves these objectives (e.g., Kulik, 2003)
› Need for evaluations!

Technology adoption in developed countries

› Some marked discrepancies between design intentions and uses

› Social factors more central than originally envisioned:

- Users transform and adapt technology to meet current needs (e.g., Feenberg, 1992; Fulk, 1993)

- Communication and social needs best predictors of usage (Kraut et al., 1999)

- Among children & adolescents, technologies used to express and develop social identities (Postmes & Baym, 2005).

› Thus, focus on *unintended secondary effects* of OLPC (social development, cultural change etc.).

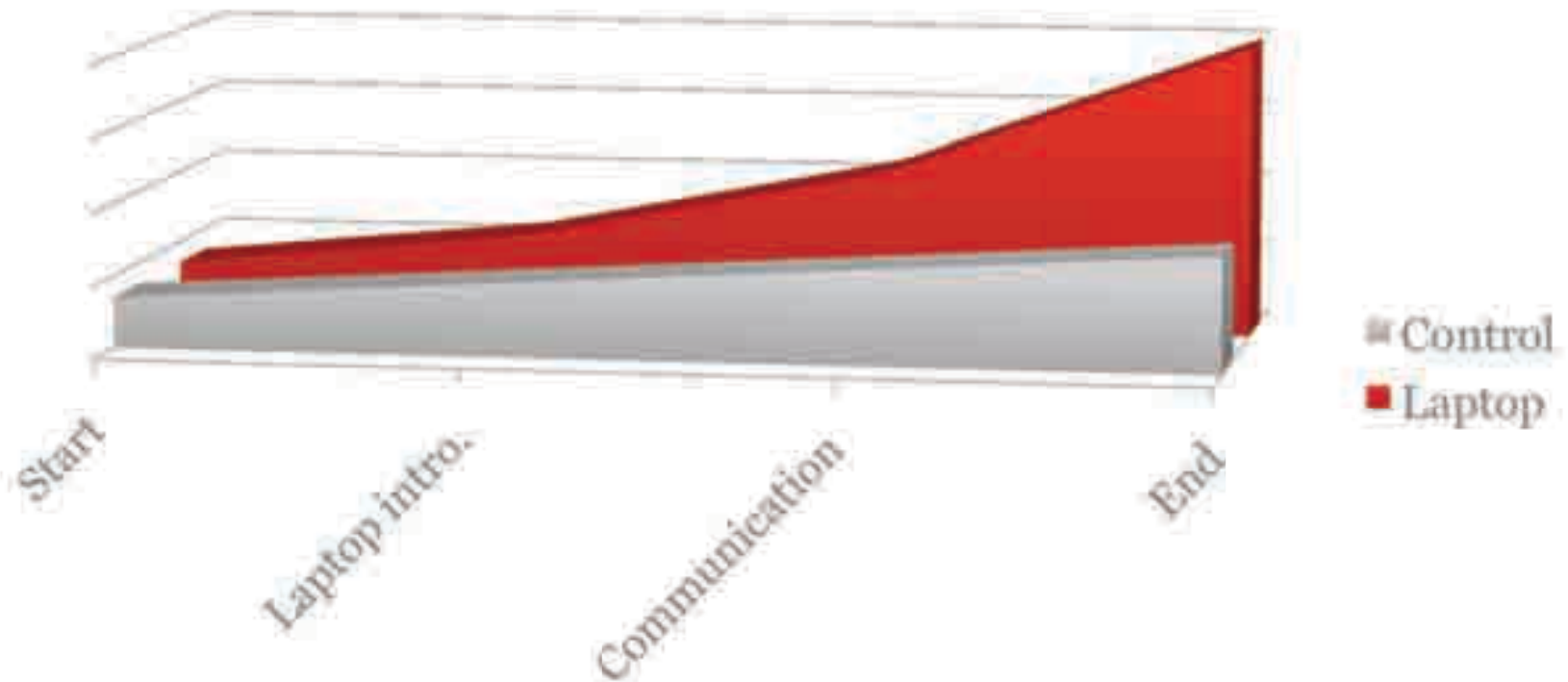# *Likely secondary effects*

› Personal, social and cultural transformation

- Psychological:
  e.g., self-efficacy, future goals and aspirations

- Social:
  e.g., social networks, capital

- Cultural:
  e.g., beliefs and practices

Expectations

Studying effects of OLPC

› 5000 laptops donated to Ethiopia

› Implemented by Engineering Capacity Building Program (intergovernmental coop Ethiopian–German govts)

› Initial introduction via 4 schools

› Strong emphasis on teacher training

› Research
  - systematically track child development for 2 years
  - grade 5 and 6

Research Design

| Events	Introduction		
	Laptop		**Schoolserver**
Research	Baseline test *Nov./Dec. '08*	Time 2 test *Jan./Feb. '09*	Time 3 test *May '09*
OLPC change		Social changes?	Social & Edu. changes
Control group		Personal growth only	Personal growth only

Study

› <u>Sample</u>:   662 children with, 582 without laptop;
1078 matched t1-t2

- <u>Gender</u>: 41 % boys, 59 % girls
- <u>Age</u>: M = 12,7 years
- <u>Grade</u>: 5th and 6th
- <u>Schools</u>: 3 schools equipped with laptops (2 in Addis, 1 countryside)
3 matched control schools (without laptops)

› <u>Variables</u>:
- *Laptop usage*
- *Psychological*: self-efficacy, self-esteem, future goals and aspirations
- *Social*: social networks, groups
- *Cultural*: cultural beliefs and practices
- *Educational*: performance, retention

First Results:
Laptop Usage

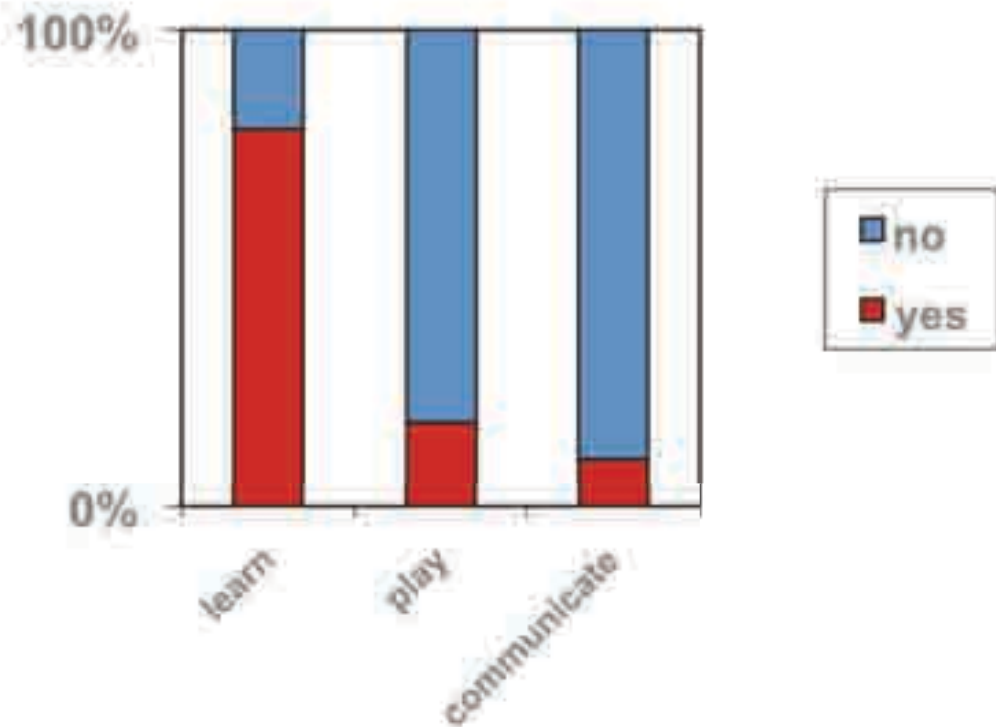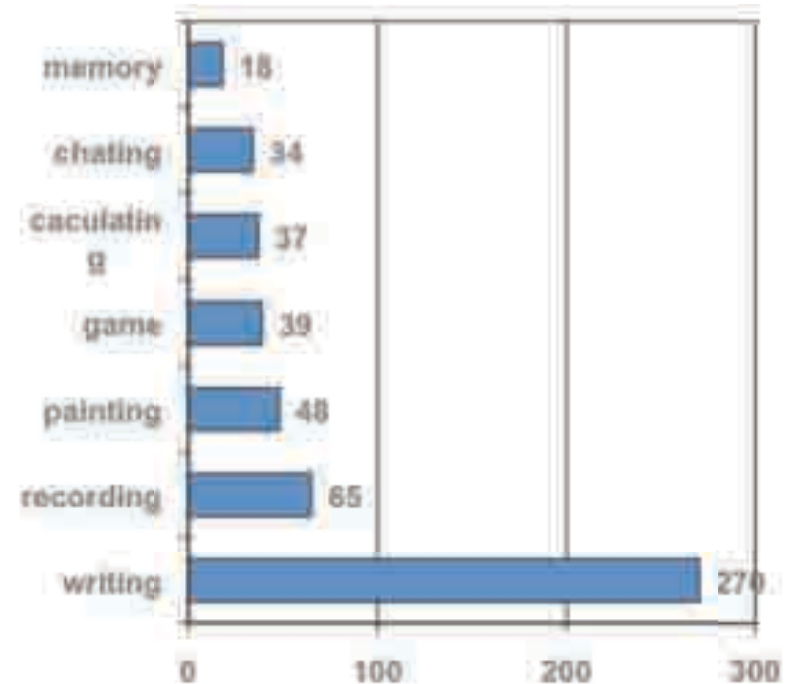# Where do they use their laptop?

at home
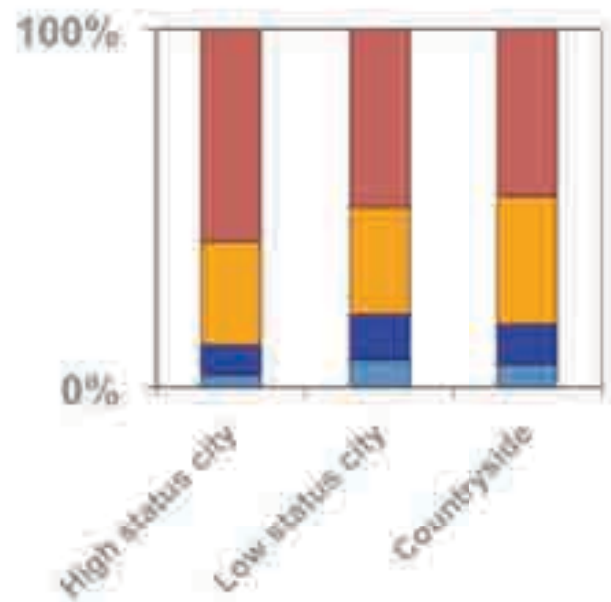
at school
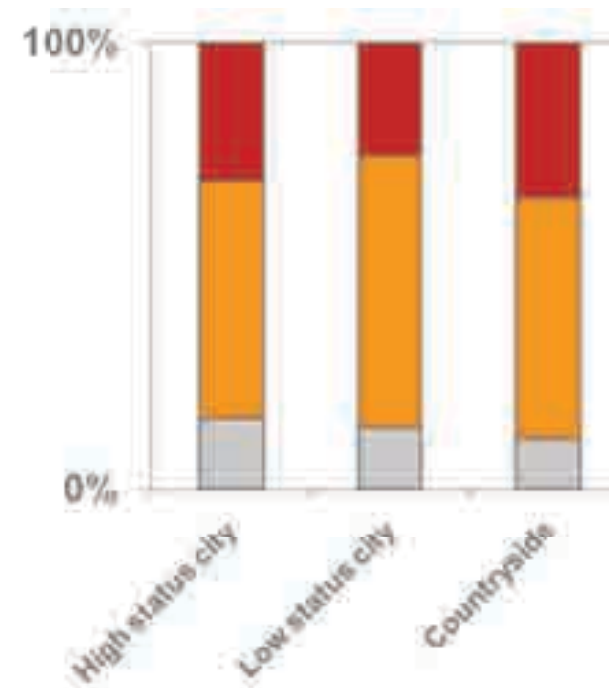
every day | often per week
a few times per month | never

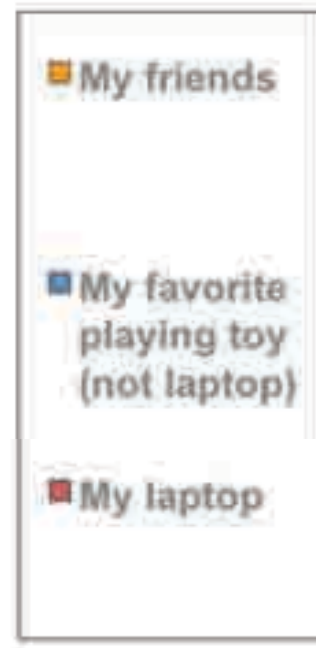never | often | very often

How do they use their laptop?

Favorite activity:
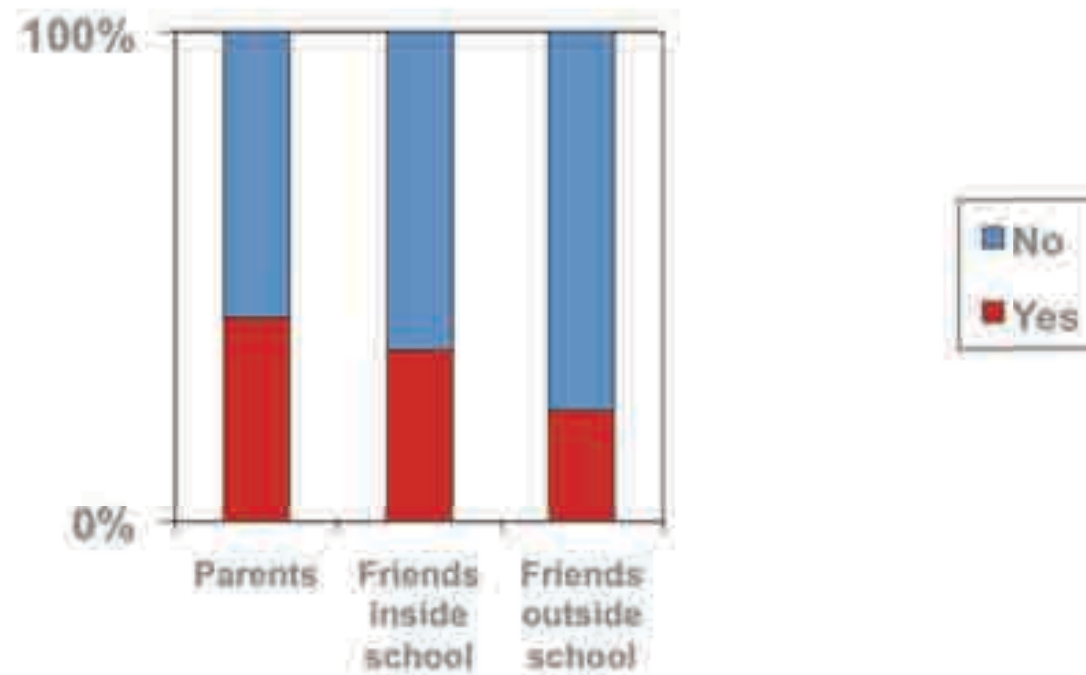
What do they do with their laptop?

What do you like to play most with?

My friends
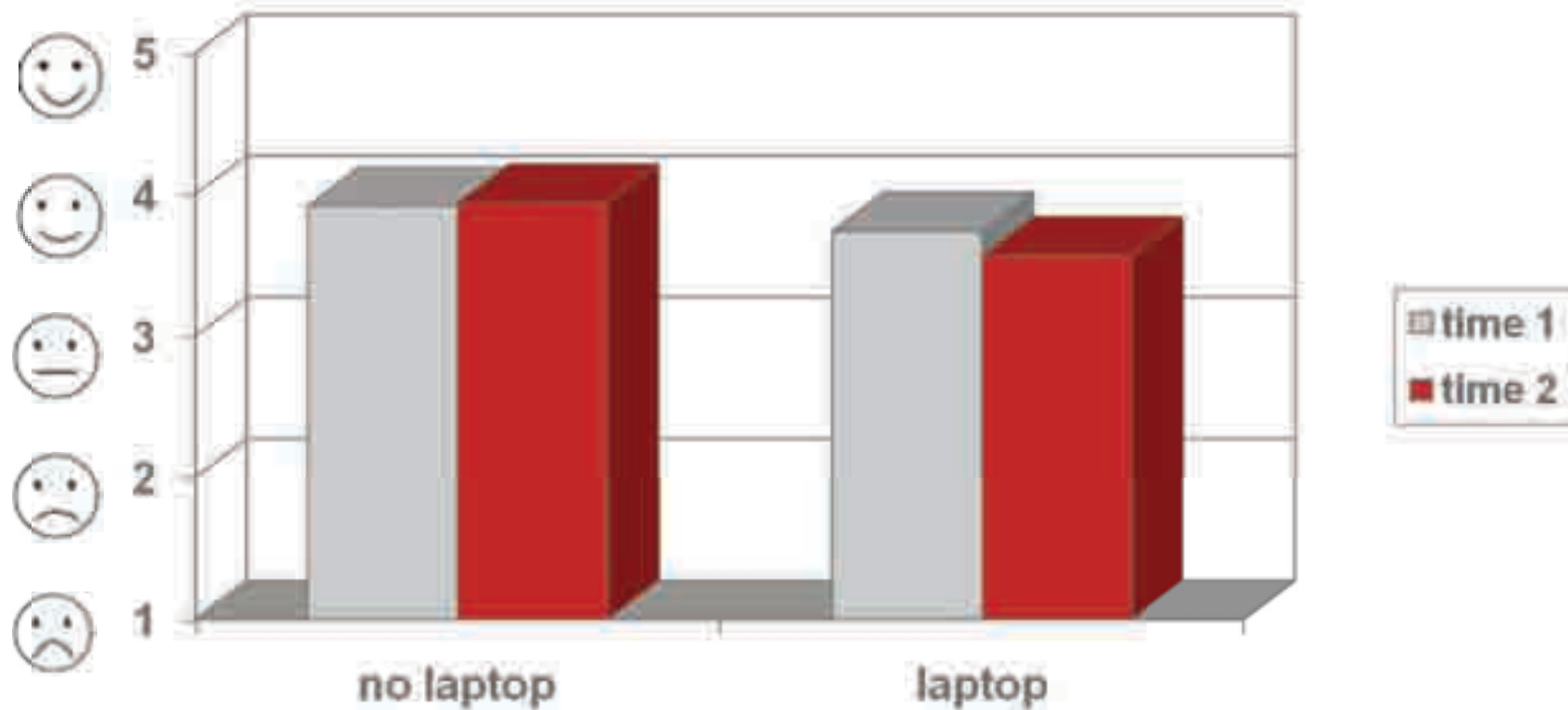
My favorite
playing toy
(not laptop)

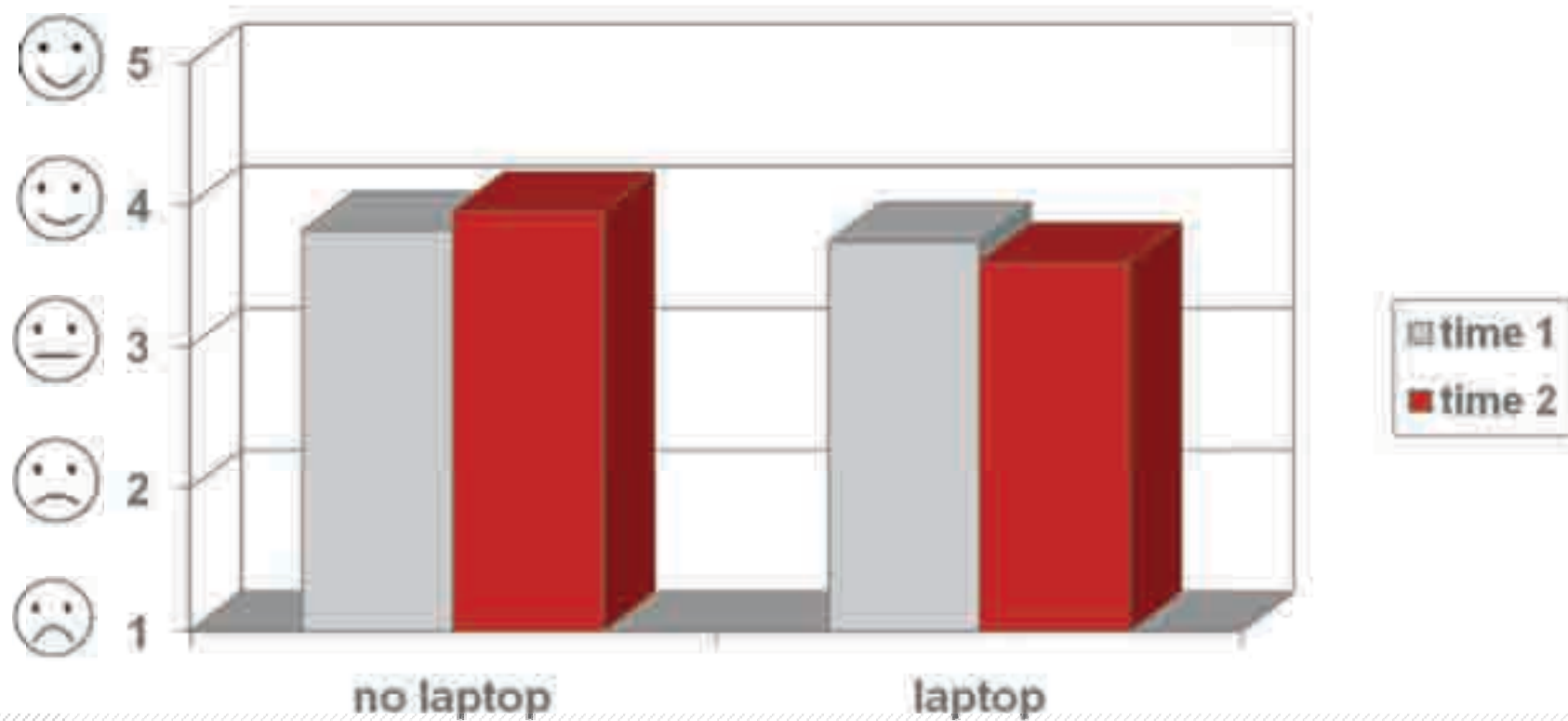My laptop

With whom do they share their laptop?
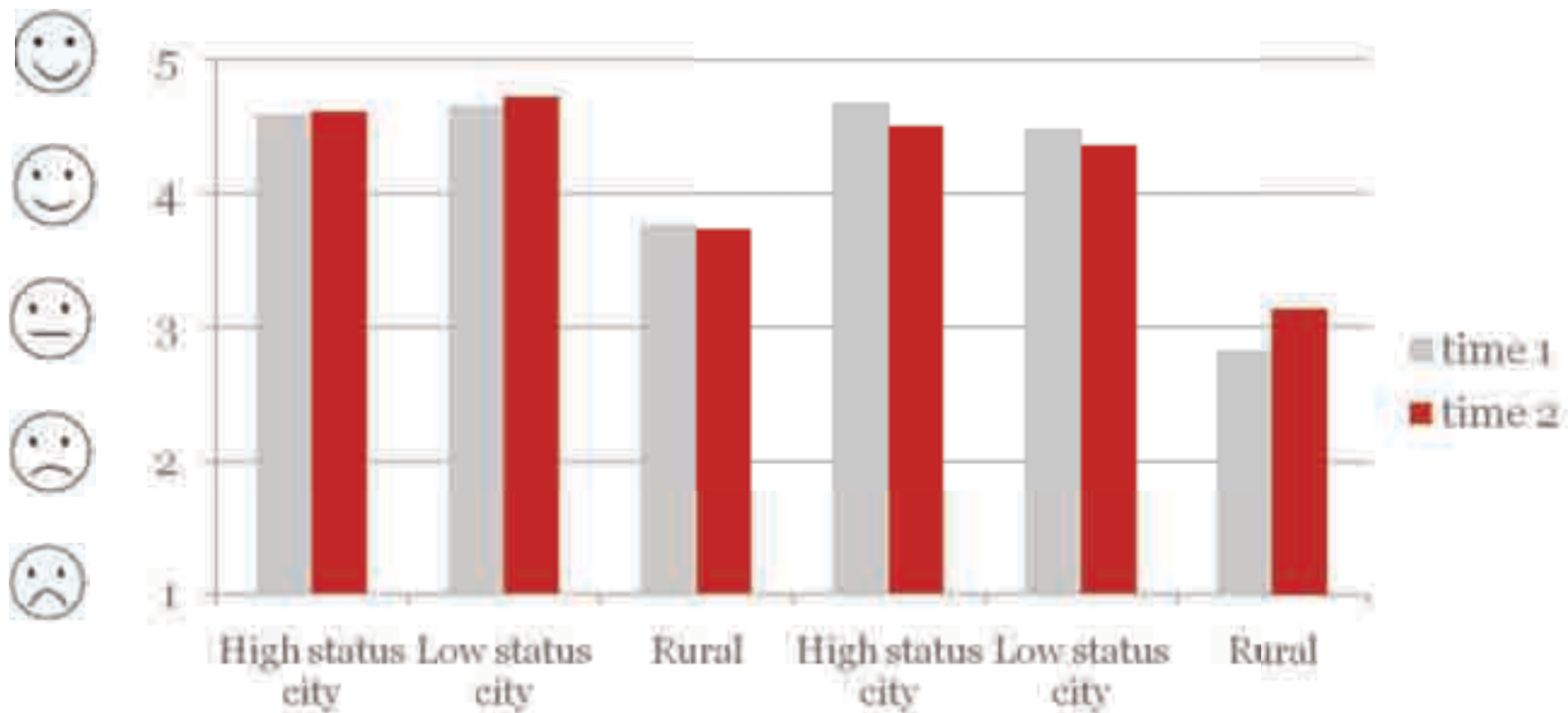
Cultural changes

Cultural value: power

$$F(1, 788) = 4.11, p < .05, \eta^2 = .01$$

Cultural value: tradition

$$F(1, 788) = 12.75, p < .001, \eta^2 = .02$$

Cult.value: equal treatment of boys and girls

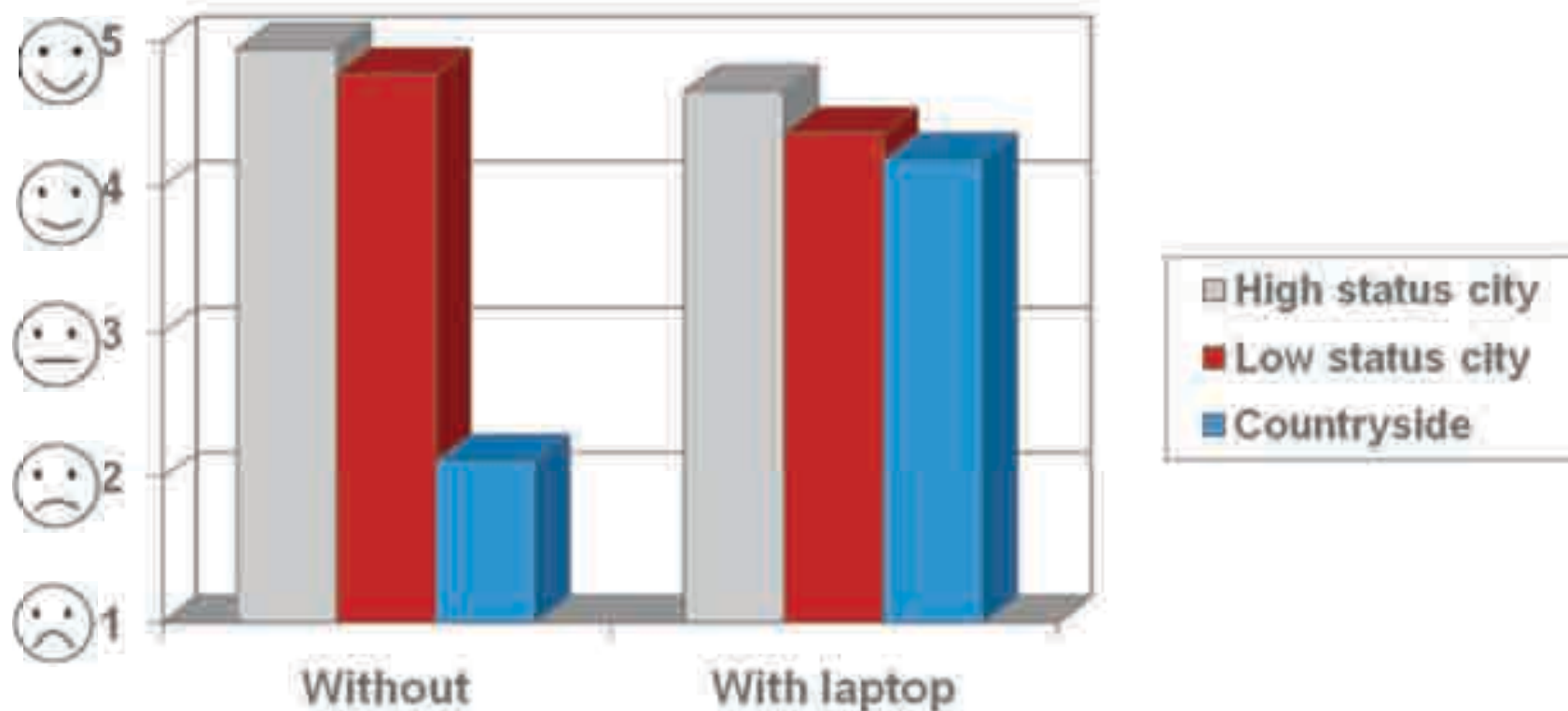$F(2, 718) = 3.02,$
$p < .05, \eta^2 = .01$

Attitudes towards education

Does a laptop increase the motivation to go to school?

$F (2, 822) = 89{,}64, p < .001, \eta^2 = .18$

Summary of first changes

Laptop usage:

› Children mainly use their laptop at home.

› A learning device! Favorite acticity is writing.

› They share it, often with parents

First social tranformation:

› Some changes in cultural values

› The laptop increases the motivation to go to school in the countryside.
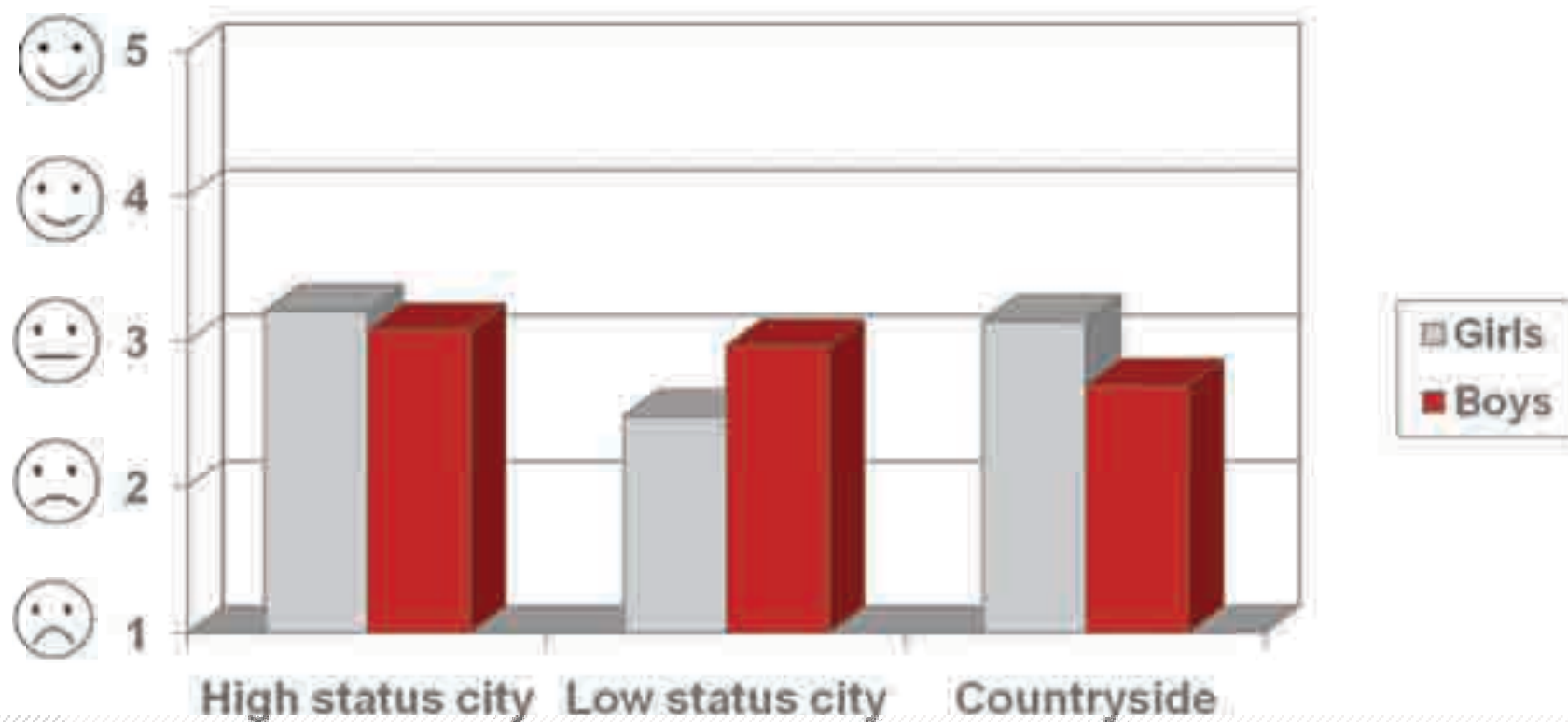
Future research activities

› Educational outcomes:

- Cognitive skills

- Educational approach (classroom interaction)

› Social outcomes:

- Social networks

- Interaction with peers and parents (sharing)

Thank you!

Thanks to:

- Annemarie Bos, K. Annika Tovote, Namkje Koudenburg, Rena Hiersemann
- Tom Snijders (University of Groningen and Oxford)

- Márton Kocsev
- Thomas Rolf
- Eskender Andualem
- and the whole on.e team

Nina Hansen n.hansen@rug.nl   Tom Postmes t.postmes@rug.nl

Are they respected by their **parents** that they have a laptop?

$$F(2, 588) = 3.47, p < .05, \eta^2 = .18$$