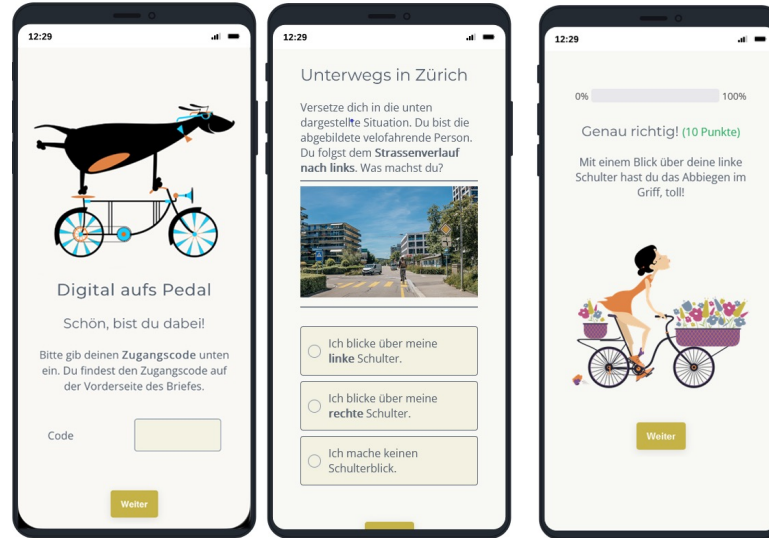


Evaluation and acceptance of an online cycling training for adults to master complex traffic situations

Michael van Eggermond, Nora Studer, Lucy Johnson, Leah Knecht, Dorothea Schaffner



Background

Materials & Methodology

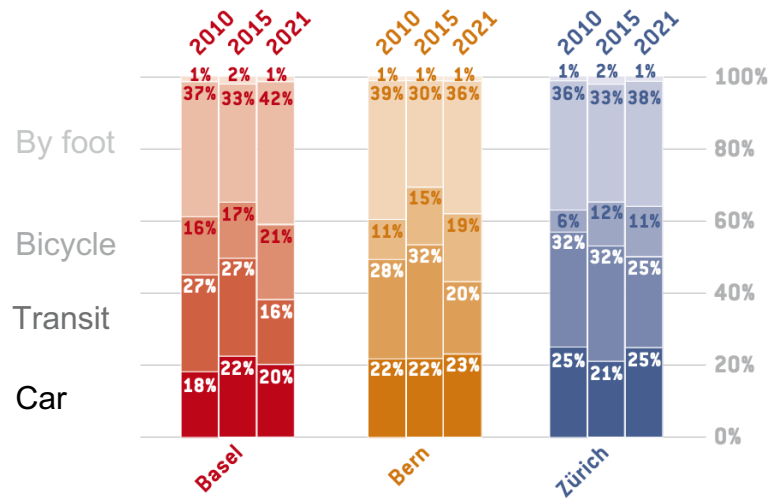
Results

Discussion & Outlook

BACKGROUND

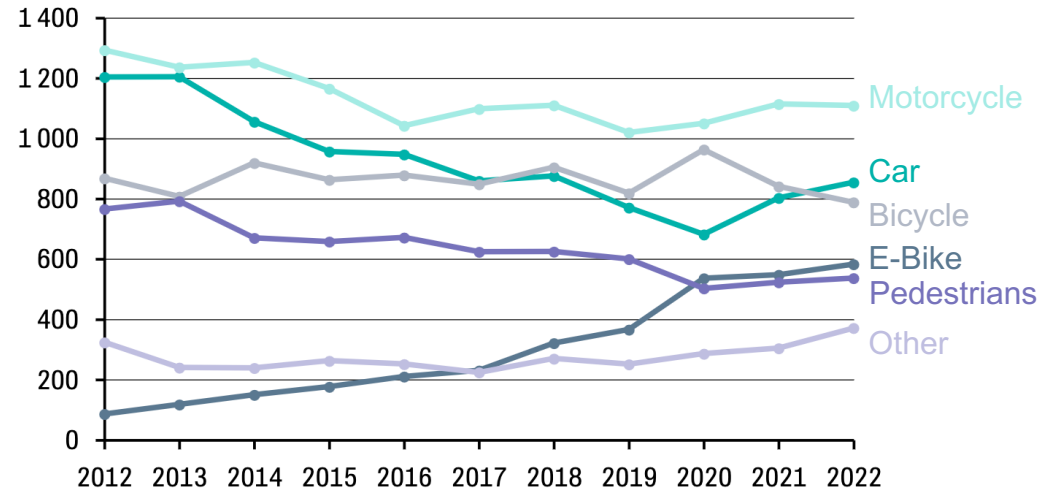
CYCLING IN SWITZERLAND

Mode share in selected cities



Städtekonferenz Mobilität, 2023

Severe accidents



BFU, 2023

BACKGROUND

CYCLING SAFETY

Cycling safety

Firstly: improving infrastructure for cyclists

But: infrastructure lags demand for cycling

Cycling requires a set of competences, including bodily fitness & rules, but also insight in recognizing traffic hazards

Existing trainings:

- Mainly focus on children / teenagers:
 - Walking to school (kindergarten onwards)
 - Cycling exam (primary schools)
 - Cycling promotion (secondary schools)
- Adult training programs:
 - Limited participation
 - Focus on specific groups (elderly, immigrants, e-bike owners)

BACKGROUND

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A training program can:

Focus less on rules & regulations

But focus on recognizing situations, anticipation of other traffic participants and forgiveness



Premise of a digital training program

Reaching a large audience

More convenient to participate

Participation regardless of location and time-of-day

What is the acceptance of a digital training program for adult cyclists?

What is the **take-up** of a digital training program?

Which are the **factors** driving a training's **acceptance**?

What is the effect of a training on cycling skills?

What is the effect on **self-assessed** cycling skills? (subjective assessment)

What is the **effect** of the training **cycling behaviour**? (objective assessment)

Background

Materials & Methodology

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Training concept

Based on the fundamentals of learning psychology:

- Feedback
- Repetition
- Comprehensibility

Variety of media (photos, sketches, videos)

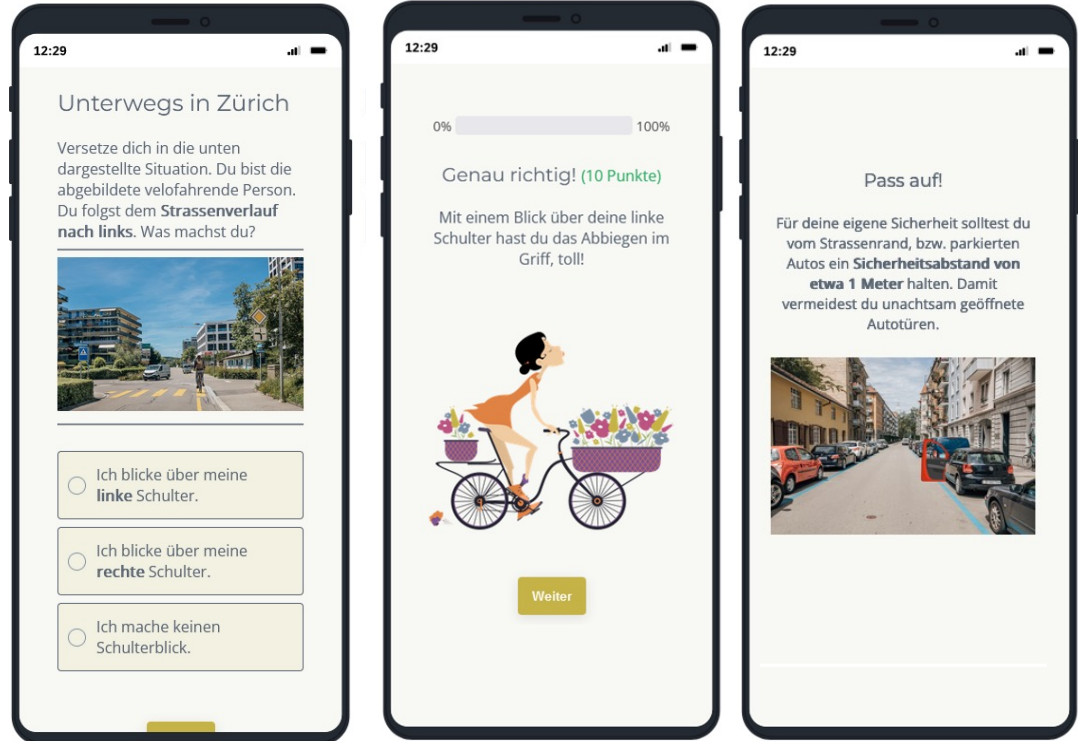
Increasing motivation for **completion of a training block** through:

- Scoring
- Motivational text

Increasing motivation for **completion of the training**:

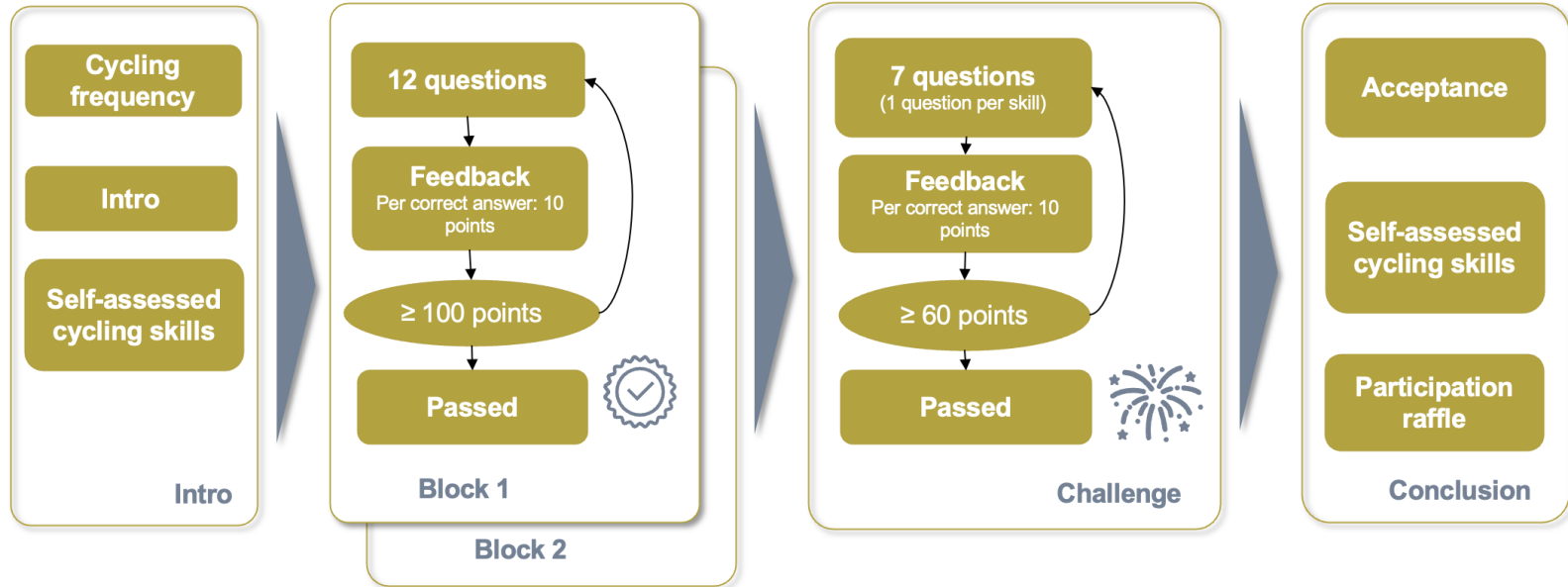
- Attractive prizes
- Ease-of-use

Example of feedback



METHODOLOGY & MATERIALS

CYCLING TRAINING PROGRAM

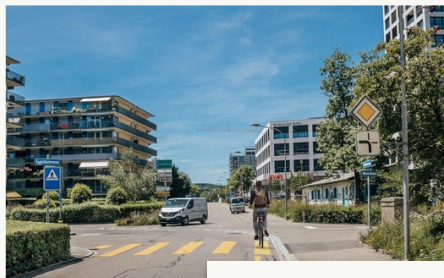


METHODOLOGY & MATERIALS

IMPRESSIONS

Unterwegs in Zürich

Versetze dich in die unten dargestellte Situation. Du bist die abgebildete velofahrende Person. Du folgst dem **Strassenverlauf nach links**. Was machst du?



Auf dem Velostreifen

Versetze dich in die unten dargestellte Situation. Du folgst dem Strassenverlauf nach links. Machst du einen **Schulterblick**?



Geradeaus

Du fährst an ein Lichtsignal. **Vor dir wartet ein Lastwagen**. Du willst der Strasse entlang geradeaus fahren. Wo ist eine sichere Warteposition?



Vorne vor dem Lastwagen

Einbahnstrasse

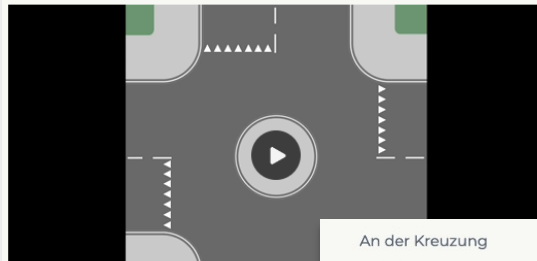
Du fährst mit dem Velo die unten dargestellte Strasse entlang. Wo fährst du?

Klicke auf die entsprechende Stelle im Bild.



Im Kreisel

Du fährst in den Kreisel und willst bei der **dritten Ausfahrt** den Kreisel verlassen. Wo fährst du im Kreisel?



An der Kreuzung

Du bist die velofahrende Person und willst geradeaus fahren. Wer geht / fährt zuerst?

Bringe die Verkehrsteilnehmenden in die richtige Reihenfolge (verschieben und an die richtige Position setzen).



Background

Materials & Methodology

Results

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RESULTS

SAMPLING & PARTICIPATION

Sample

Stratified random sample of 10'000 individuals from Zurich's population register. Strata: age and gender.

Individuals received an invitation to participate by postal mailing.

Participation

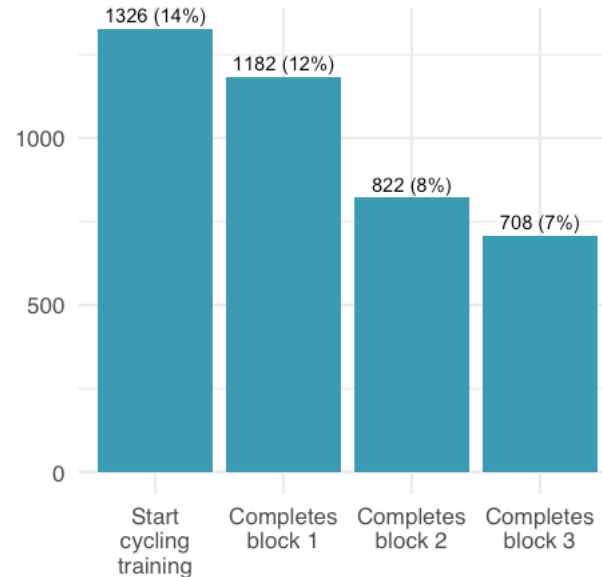
Almost **14%** of the invited individuals **started** with the training.

Over **7%** of the invited individuals **completed** the training.

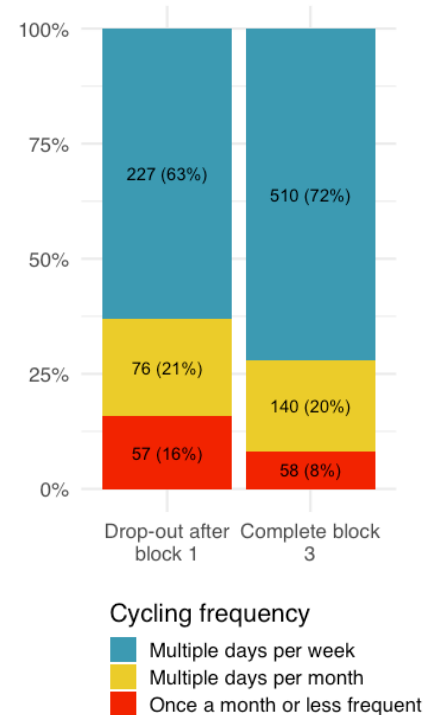
→ Retention rate of 54%.

Participants who cycle frequently, are more likely to complete the training.
No differences in gender, age between invitation and completion.

Number of participants



Cycling frequency



RESULTS

ACCEPTANCE

Extended version of the Unified Theory of Acceptance and Use of Technology (**UTAUT**)
(Venkash, Thong & Xu, 2012)

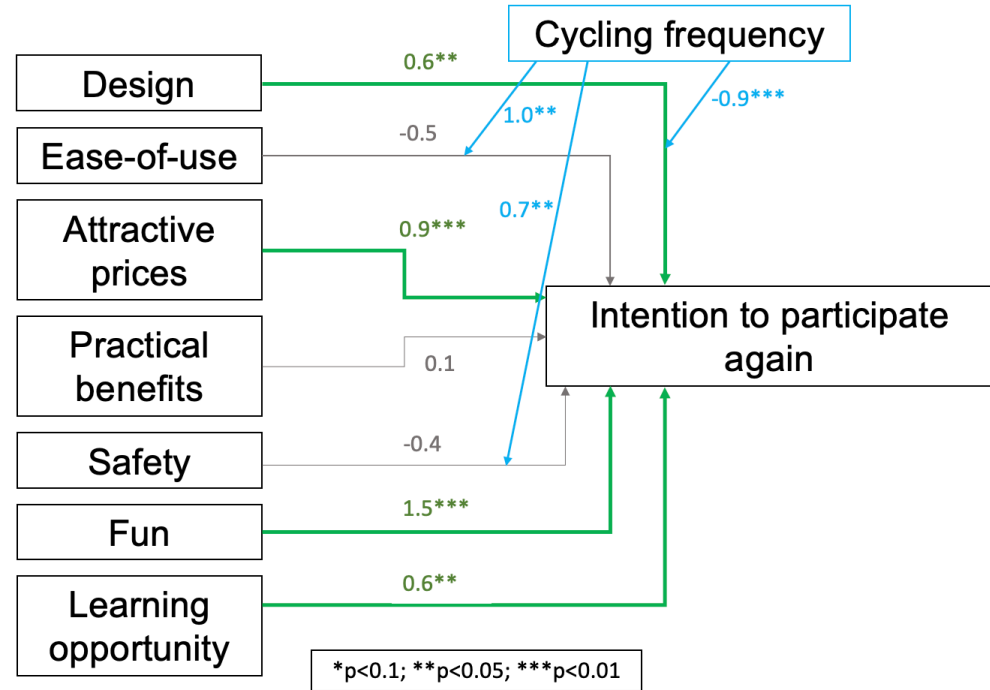
The **intention to participate again** was investigated using ordinal regression models.

Factors influencing participation intention were:

- Fun
- Attractive prices
- Design
- Learning opportunity

Regular cyclists appreciate ease-of-use and are interested in cycling safety

Irregular cyclists appreciate design



Regression analysis between acceptance factors and the intention to do the training again (n = 708, participants who completed the training)

RESULTS

SELF-ASSESSED CYCLING SKILLS

Self-assessed cycling skills

Four skills, appropriate for the skills trained in the training, were selected from the cycling skills inventory (de Winter et al, 2019)

Results

Participants with a **lower cycling frequency** asses their skills to be lower.

After the training, participants report an increase in self-assessed skills.

Participants who cycle less often report a similar level of competence **after the training** as experienced cyclists.

Most of these effects are significant, but small.

	Recognizing hazards	Know how to behave in specific situations	Feeling comfortable while cycling
Intercept	4.434 (0.028)***	4.272 (0.030)***	3.479 (0.041)***
Cycling frequency [Low]	-0.314 (0.054)***	-0.388 (0.058)***	-0.302 (0.077)***
After training	0.027 (0.032)	0.107 (0.036)**	0.146 (0.037)***
Cycling frequency [Low]: After training	0.257 (0.061)***	0.244 (0.069)***	0.392 (0.070)***
N (Anzahl Personen)	708	708	708
R2 (conditional)	0.32	0.32	0.60

Background

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DISCUSSION & OUTLOOK

DISCUSSION

Conclusion

A considerable number of urban cyclists is **willing to complete** an online cycling training.

Relatively **high rate of retention** once cyclists start with the training.

A high number of comments were positive expressing gratitude and fun of participating.

A digital training should offer **attractive prizes**, and possibly designed as a **campaign** running for a limited period.

Motivating target groups (irregular cyclists) who might benefit most from the training is difficult.

Next steps, if ...

Variations in difficulty:

participants expressed the wish to have more difficult questions / situations

(source: comments, qualitative interviews)

Change of perspective:

Other road users should also be made aware of cyclists

(source: comments, qualitative interviews)

Targeting irregular cyclists:

Marketing the program through other channels

DISCUSSION & OUTLOOK

QUESTIONS

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TODAY

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METHODOLOGY & MATERIALS

TRAINED SKILLS

Trained skills

1. Turning on main roads while having right-of-way
2. Right-of-way situation at complex junctions
3. Roundabouts
4. Recognizing priority
5. Maintaining distance from parked cars
6. Turning left
7. Coping with blind spots

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1. Turning on main roads