Intersecting mobility and physical activity: A comprehensive multi-day survey approach for assessing movement behavior in early adolescence

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Workshop 1: "Capturing walking and cycling behaviours"

WWW.YOUNG-MOBILITY.AT

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Starting point

- **WHO-recommendations** on physical activity (PA) (children & adolescents): 1hr/day of moderate-to-vigorous PA (MVPA) + strengthening exercises ≥3 days/week
- **Current exercise behavior:** <1/5 of Austrian children meet PA-recommendations. Low PA can lead to high BMI, high blood pressure and other risk factors
- **Decline active mobility:** In Austria, car-p trips among 6 to 14-year olds increased by 12%-points, walking trips decreased by 15%-points (1999 -2013/2014)

Challenges

- **Active mobility as part of physical activity:** Data on overall daily activities are needed including the information how much time children spend with PA at different levels of intensity
- **PA-recommendations**: Data from at least 7 consecutive days are required
- **Target group:** Adolescents 12 to 14; require simple, clear wording, an engaging design, and age-appropriate questions

Objectives

- To document physical activity and travel behavior of adolescents through self-reported data over 1 week
- To develop a questionnaire to capture PA during travel and at destinations including three activity intensity levels
- To evaluate active mobility's contribution to overall PA

SCAN ME

Participative development of the survey instrument

- In collaboration with 75 students aged 12 to 14 from three secondary schools in Vienna and Korneuburg, interactive workshops, feedback loops with teachers.

Examples for children's ideas and change requests (in terms of wording, order of questions, response options etc.)

- Incorporation of self-expanding drop-down list which included all addresses once entered plus keyword ("home", "grandmother")
- Trip purpose: separate category for "chill out, hang out with friends"
- Companionship: More relevant at trip-stage level, as children may leave home alone but meet friends at bus stop to continue the trip.
- "Start" and "end" → "start of trip" and "end of trip", "time" → "clock time" …
- Expanding of "rain [yes/no]" option to provide details of weather conditions.

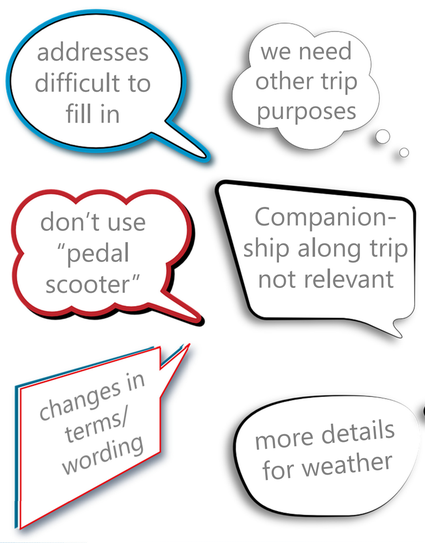

Figure 1: Workshop for the development of questionnaire

- **Measuring PA:** Different options tested. Children found it easiest to recall activities at destination by describing them & dividing duration into % across intensity levels
- **PA-intensity levels** required clear examples (f.e. homework or school in generel felt 'exhausting')
- **Feelings along the way:** Five-part scale with emoticons & numbers → only-emoticons with buzzwords (no confusion with school grades)
- **Walking:** Note added: "Please indicate all means of transportation – don't forget walking (e.g. to bus stop)"

1,234 trips
2,300 trip stages
74 children

Mobility and activity diary

Basic structure

- Final questionnaire operates across multiple levels: individual, day, trip, trip stages
- Topics: Well-being (during trip, on daily level), mobility, physical activity to be filled in on 7 days, supervision

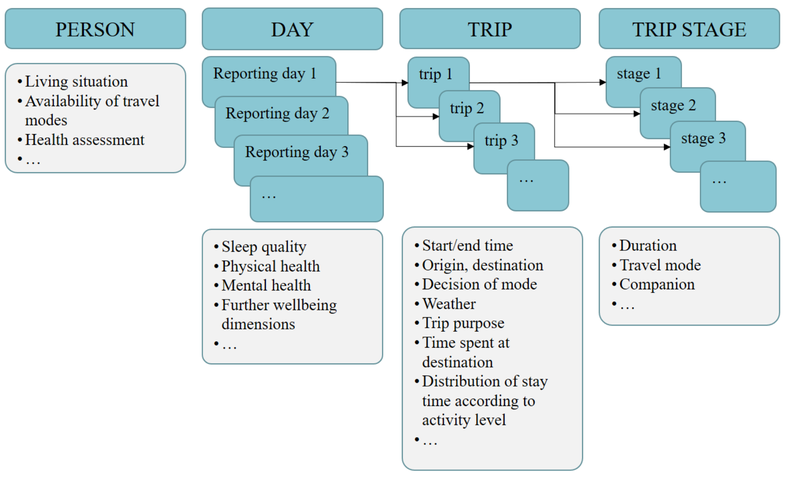

Figure 2: Different levels of questionnaire

Layout and plausibility checks

- Colored collapsible fields
- "Traffic light system" at day & trip level
- Check: total duration of trip stages = trip duration?, sum of duration at destinations = 100%?, …

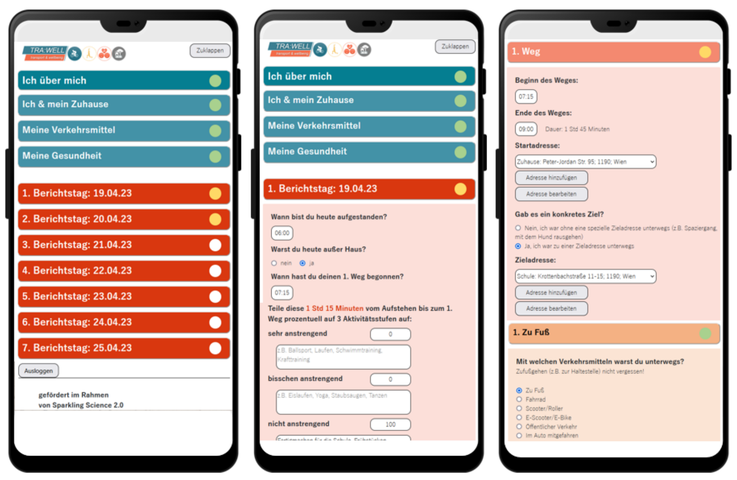

Figure 3: Examples of screenshots of the questionnaire (in German)

Results

Trip-stages as basis for modal split

- Modal split with different reference values: based on number of trips / trip stages, time shares
- Stage concept made active mobility „visible", state-ments on mobility-related health contribution possible

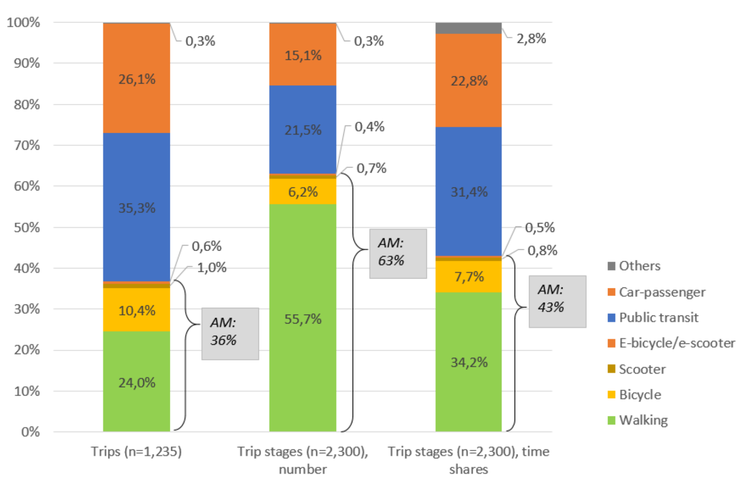

Figure 4: Modal split, different reference values, n= 74 children

Conclusions and lessons learned

- Multi-day surveys for children require careful design
- Involving children in questionnaire development ensures age-appropriate wording and scales
- Online tools with mobile-friendly designs & visual checks are effective, though children may skip rechecking entries.
- Intensive support (on-site or online) helps address missing data and ensures accuracy
- Dividing day into trips and time at destinations improves data accuracy, distinguishing between PA during travel & at destinations
- "Stage concept" effectively highlights active mobility and its role in meeting PA recommendations

For more information: see full paper

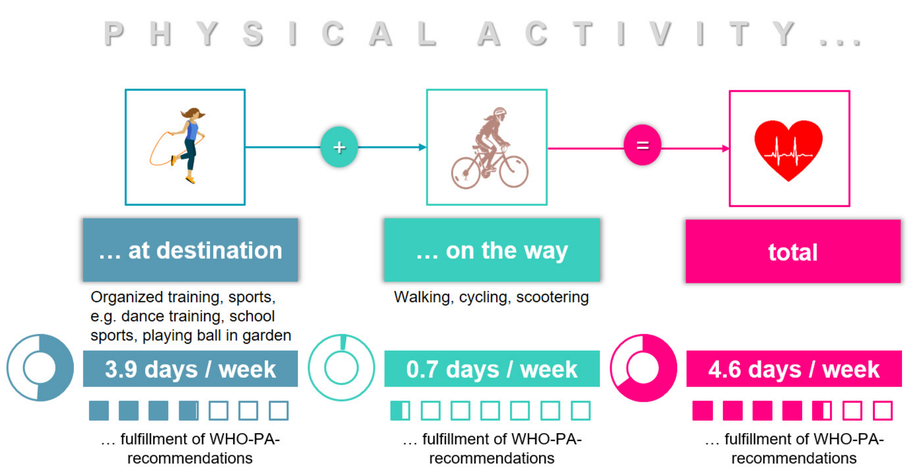

Figure 5: When factoring in destination-based PA, such as structured trainings and school sports, children met these guidelines an average of 3.9 days/week. When incorporating PA stemming from active mobility, this figure rises to 4.6 days/week. This result underscores the substantial contribution of active mobility to children's overall PA-levels

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