



COST P18
Vienna,
April 14-15,
2008



Testing Lightning Folk Beliefs in Austria

Alexander G. Keul

Environmental Psychology

Vienna University of Technology

& University of Salzburg



Testing Lightning Folk Beliefs in Austria

Making sense of atmospheric electricity
– a part of human culture

Risk assessment research – rare
„dread risks“ overestimated emotionally

Folk Beliefs, Lay Theories (non-
expert cognitions) were addressed,
but not systematically assessed

Important for **diffusion of innovation**
in public education campaigns

Testing Lightning Folk Beliefs in Austria

ALFS Austrian Lightning Folk Study 2008

- to get fresh picture of lightning Folk Beliefs
- belief review from European ethnology material
- lightning protection expert recommendations



Questionnaire Pre-Test

March 2008, mid-Austria

30 students (16 urban, av. 26 yrs)

33 lay people (17 urban, av. 44 yrs)

students 77% female, lay p. 46%

Testing Lightning Folk Beliefs in Austria

Questionnaire with 78 items

Sociodemographics (gender, age, place, education)

Weather interest, information (wish), experience

Risk-ranking 10 weather phen. (incl. thunderstorm)

Lightning fear, Lightning distance estimation

8 gen. Lightning knowledge items, 4 **Medical** items,

11 **Lightning folklore** items, folklore proneness,

15 **Lightning-protection behavior** items,

18 **Lightning-unsafe/–safe places** rating

Testing Lightning Folk Beliefs in Austria

Questionnaire items example

When in the open, are you afraid of thunderstorms, of lightning and thunder?

very yes partly less not at all

When 3 seconds pass between a lightning flash and thunder, the flash hit in kilometer(s) distance.

Someone hit by lightning is dead immediately.

yes no don't know

Testing Lightning Folk Beliefs in Austria

Short Pre-Test Review

Gender, age, education, urban/rural effects?

NO gender effect in knowledge, folk beliefs, lightning protection, risk assessment

No **age effect** in general population; younger students show higher risk scores, less folk beliefs

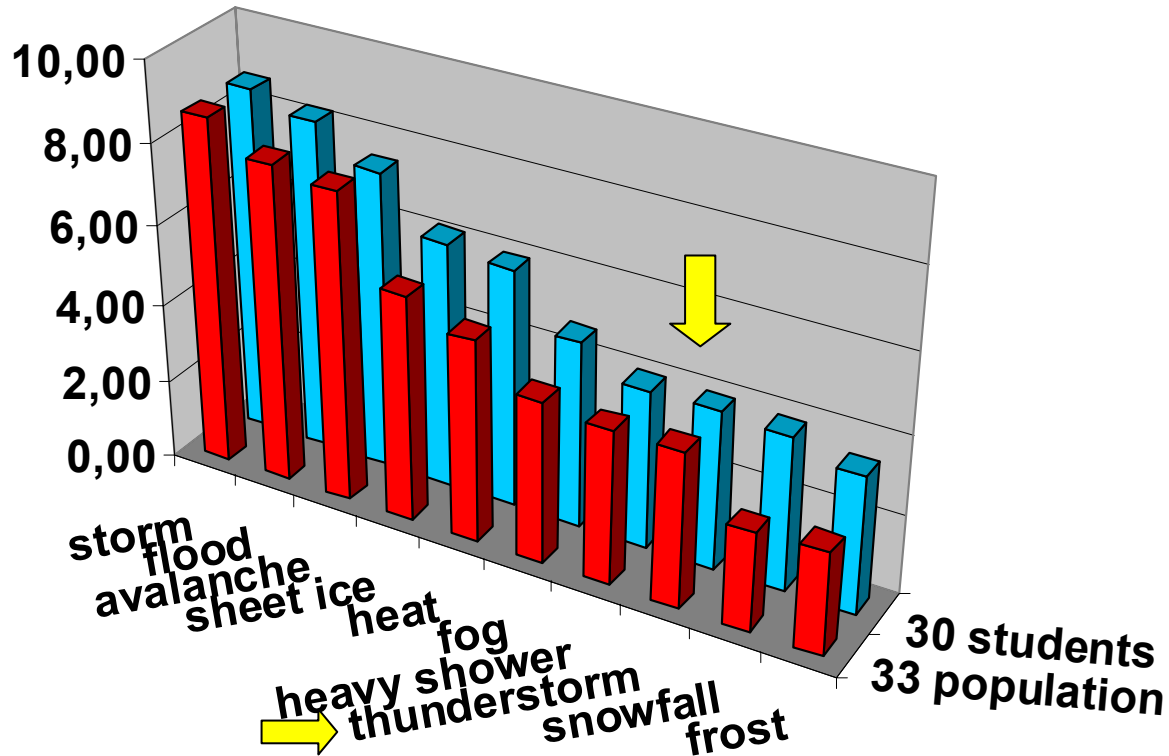
NO education effects – exception: more educated population shows better medical help score

NO urban/rural differences in knowledge/beliefs

Descriptive statistics (see following tables)

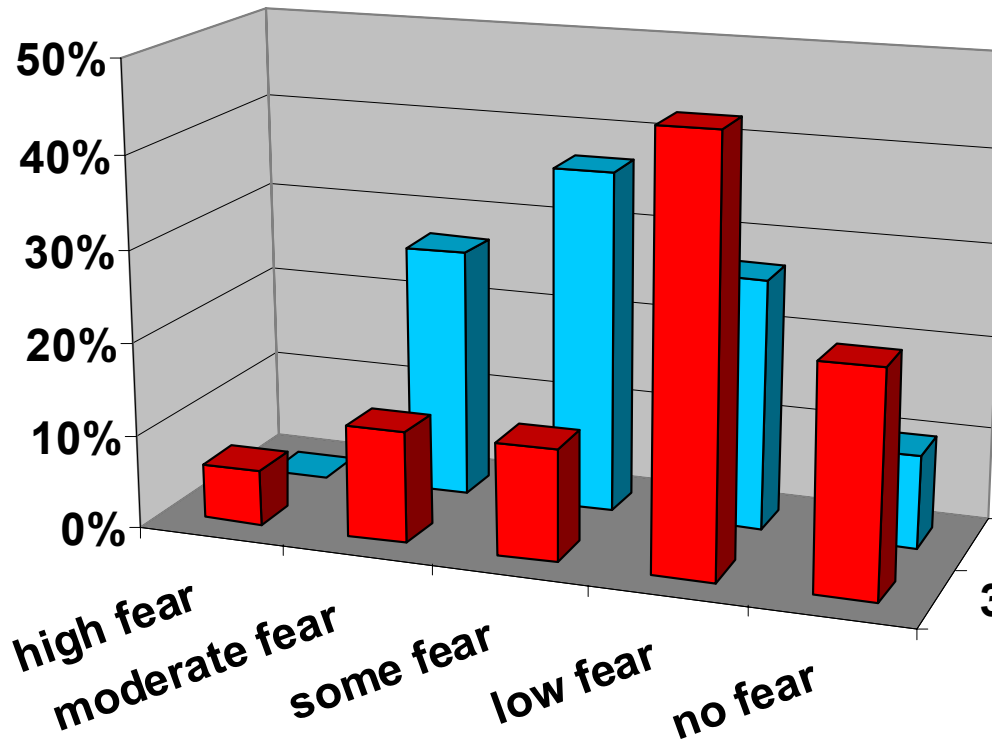
Testing Lightning Folk Beliefs in Austria

Subjective weather risk (1-10, means)



Testing Lightning Folk Beliefs in Austria

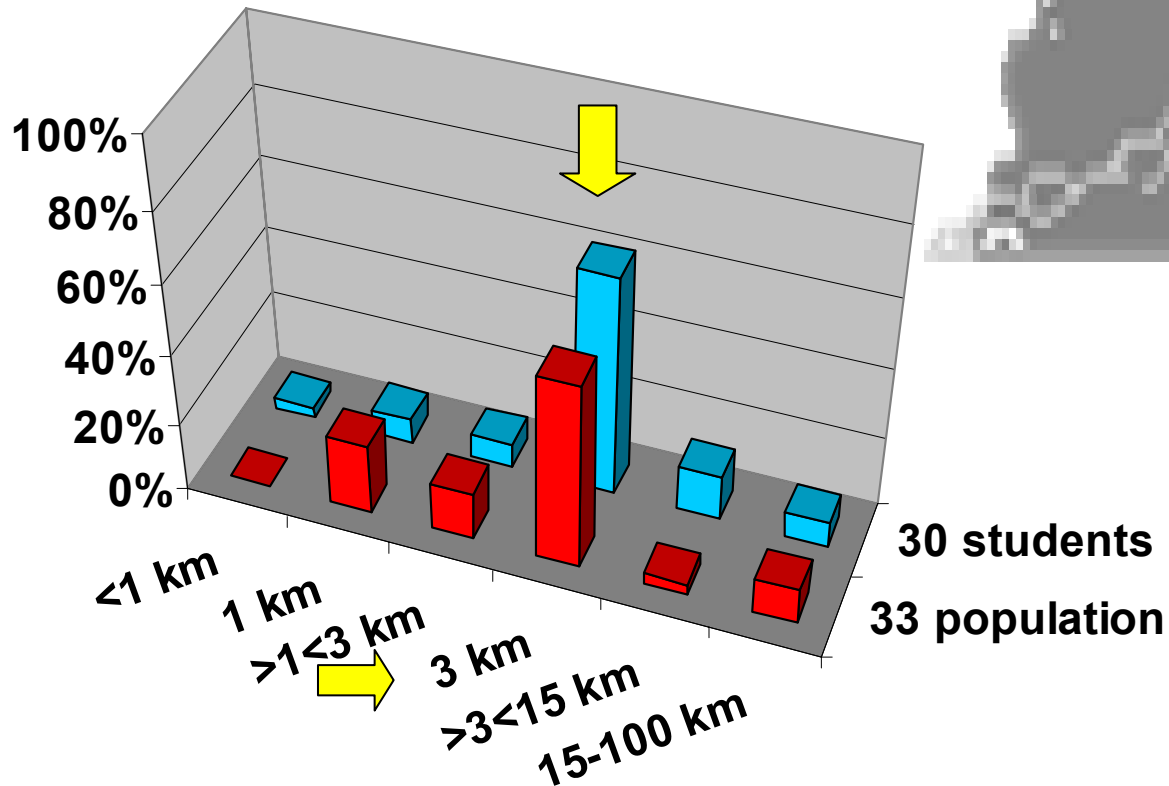
Thunderstorm self-reported fear



30 students
33 population

Testing Lightning Folk Beliefs in Austria

Lightning distance estimation



Testing Lightning Folk Beliefs in Austria

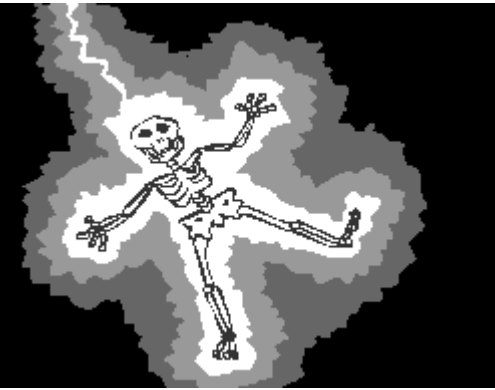
First results

Correct distance estimation? NO

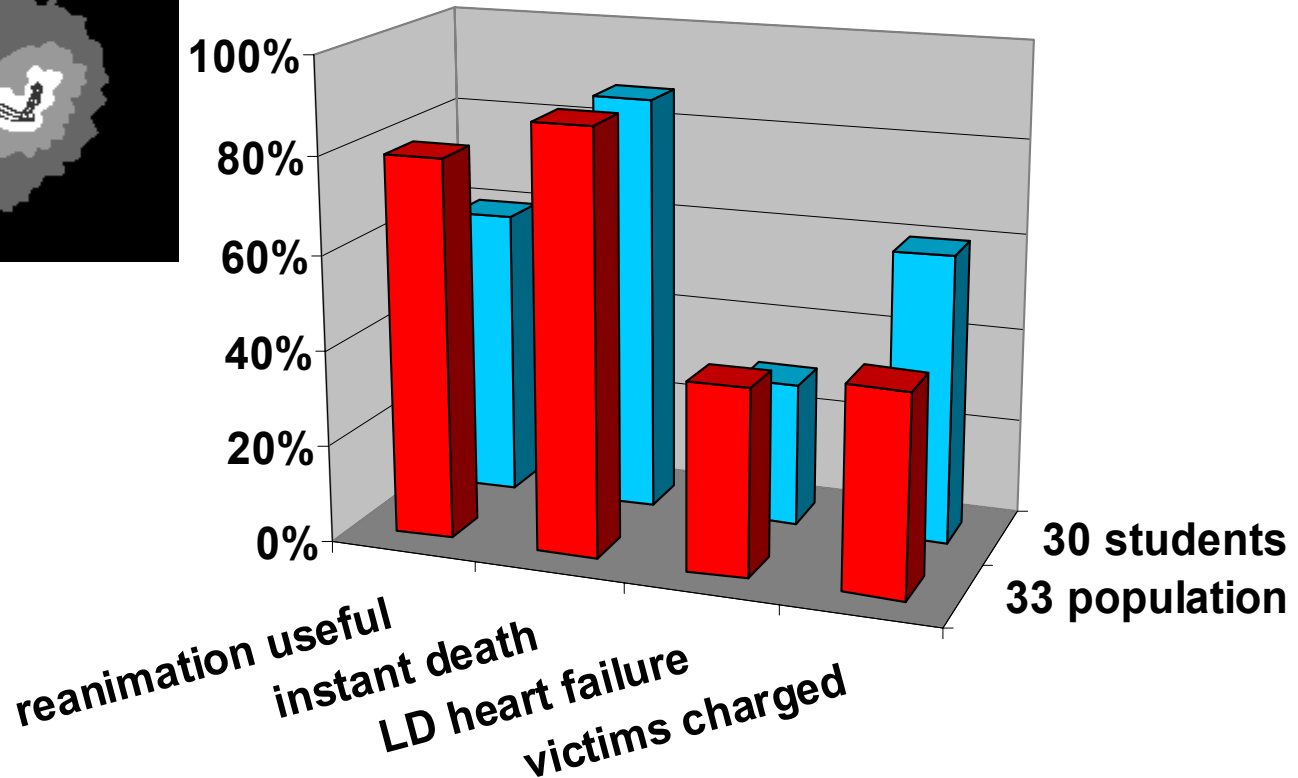
When thunder follows lightning after **3 seconds**, a range of 0.75 to 100 kilometers is guessed with a (wrong) median value of **3 kilometers**.

75% of the general population and 90% of the students **overestimate** the distance, about 10% give 5 km and more. The popular (50-60%) lay „rule of the thumb“ is „**1 km per 1 second**“

Testing Lightning Folk Beliefs in Austria



Medical competence (correct)



Testing Lightning Folk Beliefs in Austria

First results

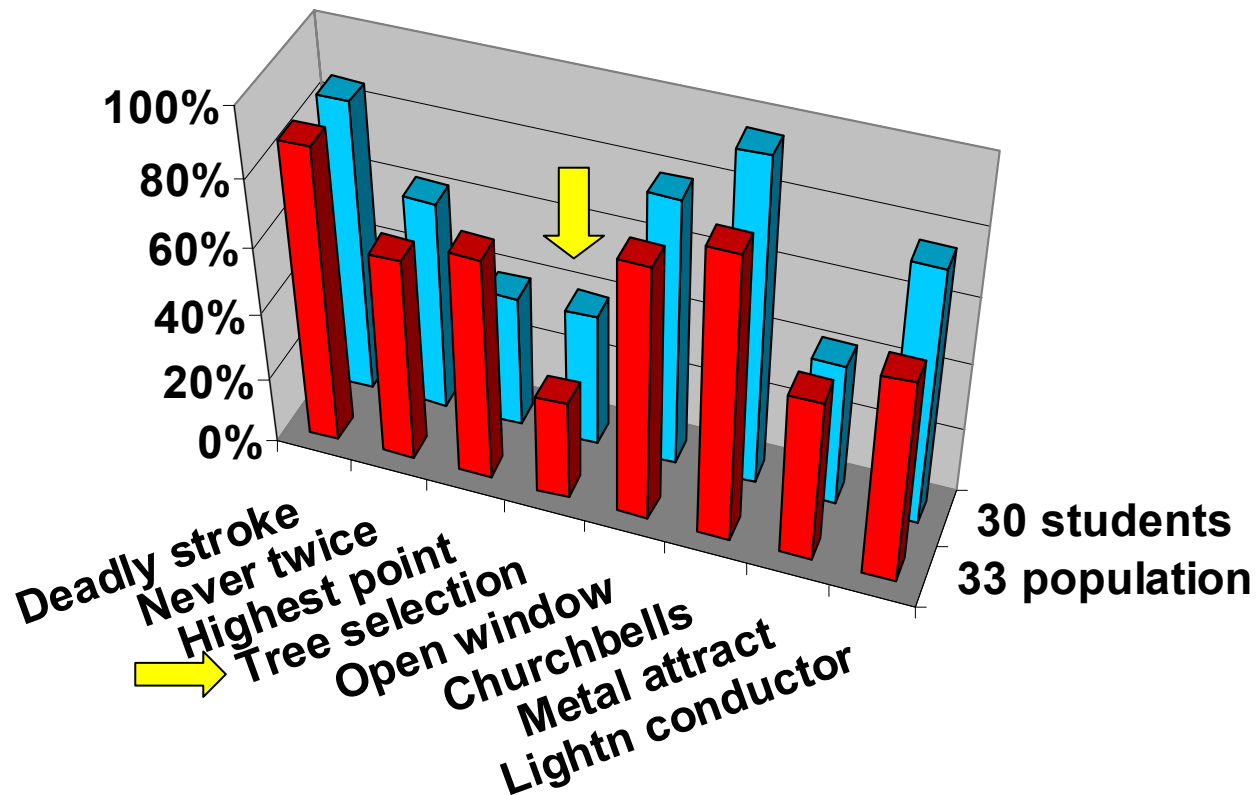
What about medical knowledge? MIXED

60-80% answer correctly that reanimation is useful for lightning victims and 87-88% that lightning does not kill immediately, but only 30-40% identify death by lightning with heart failure. 20-40% still seem to subscribe to the folk belief that lightning victims are electrically charged and dangerous.

It seems there are **first-aid obstacles** to overcome.

Testing Lightning Folk Beliefs in Austria

Folklore selection (correct)



Testing Lightning Folk Beliefs in Austria

First results

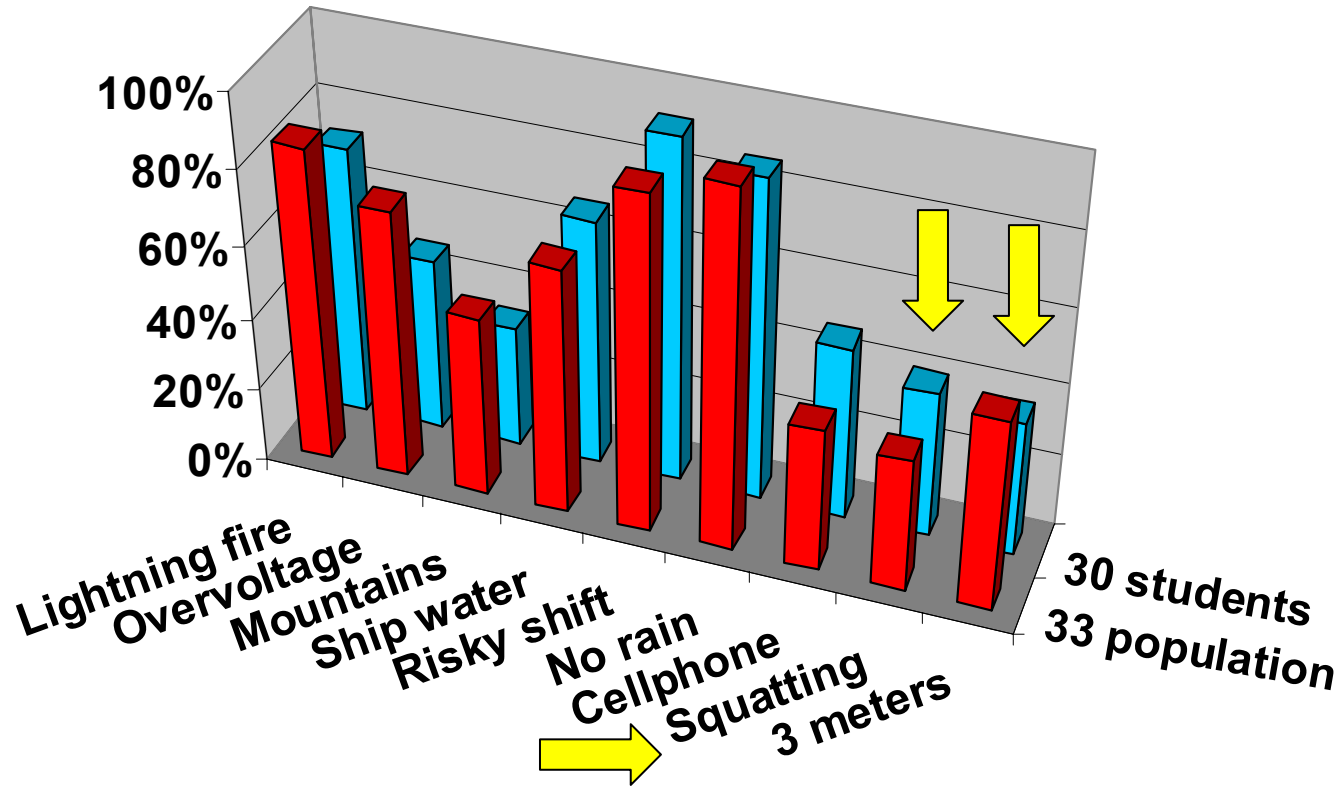
Does lightning folklore hold power? **PARTLY**

Of 10 folklore statements like „instant death“, „different tree hit rates“ or „help by churchbells“, six were refuted by over 60%, but e.g. „tree hit rates“ were assumed by 40% of the general population (only 20% of students).

When asked about **folklore-proneness**, 90 to almost 100% replied they were not.

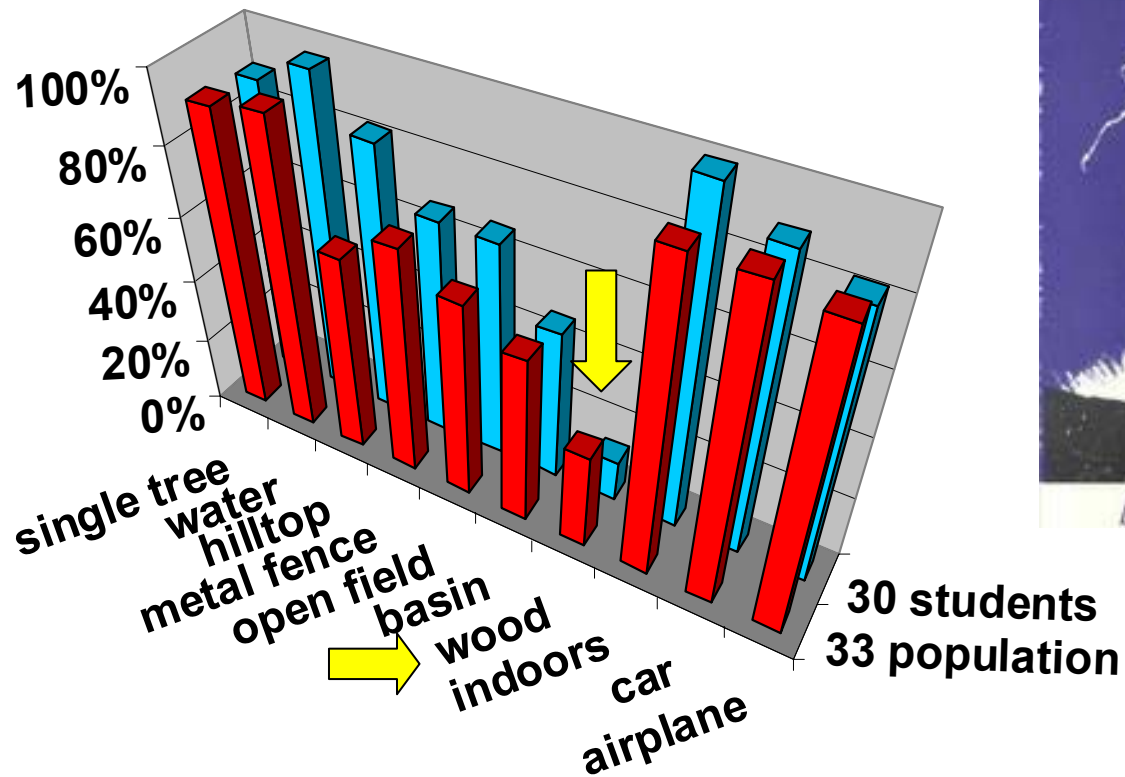
Testing Lightning Folk Beliefs in Austria

Protective behavior selection (correct)



Testing Lightning Folk Beliefs in Austria

(Un)safe places (correct)



Testing Lightning Folk Beliefs in Austria

First results

What about reported lightning safety action?

15 questions tested behavior-relevant items, two multiple choice-questions unsafe/safe places.

9 of 15 questions had over 60% correct answers, but the **safer squatting position** had only 35-40%, the safe **3-meter-distance-from-objects** 55% „yes“.

Some places (water, car) had consistent, highly correct estimates, others (wood, basin) had not.

Testing Lightning Folk Beliefs in Austria

Pre-test conclusions

- Public lightning knowledge in Austria is not bad but not excellent, protection shows „holes“
- Stereotypes (gender, age, education, rural) are of no help; students/academics not better informed
- Medical lightning information needs improvement
- Lightning folklore holds some last positions
- Key issues about lightning protection behavior (safe posture/places) reach under 50% of pop.

Testing Lightning Folk Beliefs in Austria

My thanks to students
Maria Magdalena Freller
Romana Himmelbauer
Bettina Holzer
Barbara Isak
for the pre-test data

Larger survey sample
(n=120) planned for
April/May 2008...



**THUNDERSTORM
&
LIGHTNING
SAFETY**

PARK SAFETY AND GAME CANCELLATION GUIDELINES

THUNDER or LIGHTNING--- SEEK SHELTER IMMEDIATELY

————— **REMEMBER!** —————

If you can hear thunder or see lightning (the actual strike vs "heat lightning" described below), you are close enough to the storm to be struck by lightning

Heat lightning: is actually lightning from a thunderstorm too far away for the thunder to be heard. However the storm may be moving in your direction.

- Go to a safe shelter immediately.
- Move to a sturdy building or hardtop car. Do not take shelter in small sheds, dugouts, under isolated trees, or in convertible automobiles.
- Stay away from water and water fountains.
- Telephone lines and metal pipes can conduct electricity. Use telephones only in an emergency.
- Stay away from metal constructed bleachers and chain link fences.
- If no shelter is nearby, find a low spot away from trees, fences and utility poles. Make sure the place you pick is not subject to flooding.
- If you feel your skin tingle or your hair stand on end, squat low to the ground on the ball of your feet. Place your hands on your knees with your head between them. Make yourself the smallest target possible, and minimize your contact with the ground.

THE GAME OFFICIALS HAVE FINAL SAY OVER CALLING GAMES AND SEEING THAT EVERYONE EVACUATES FIELDS UNTIL THE THREAT OF SEVERE WEATHER PASSES