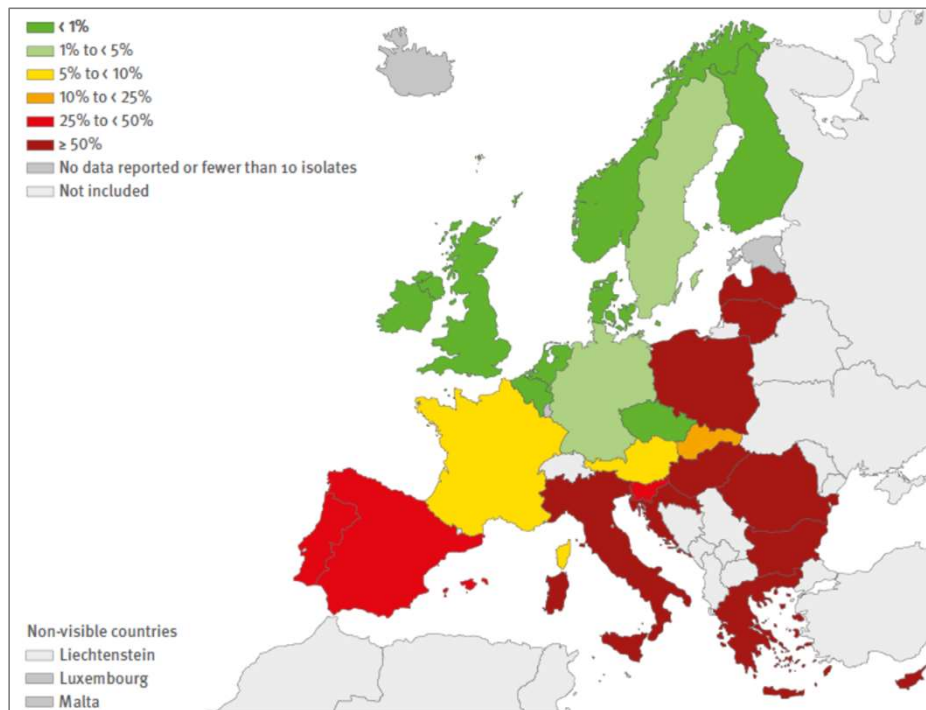


“Contradictio in opinionibus”: The Swiss public’s attitudes and beliefs about antibiotics and antibiotic resistance

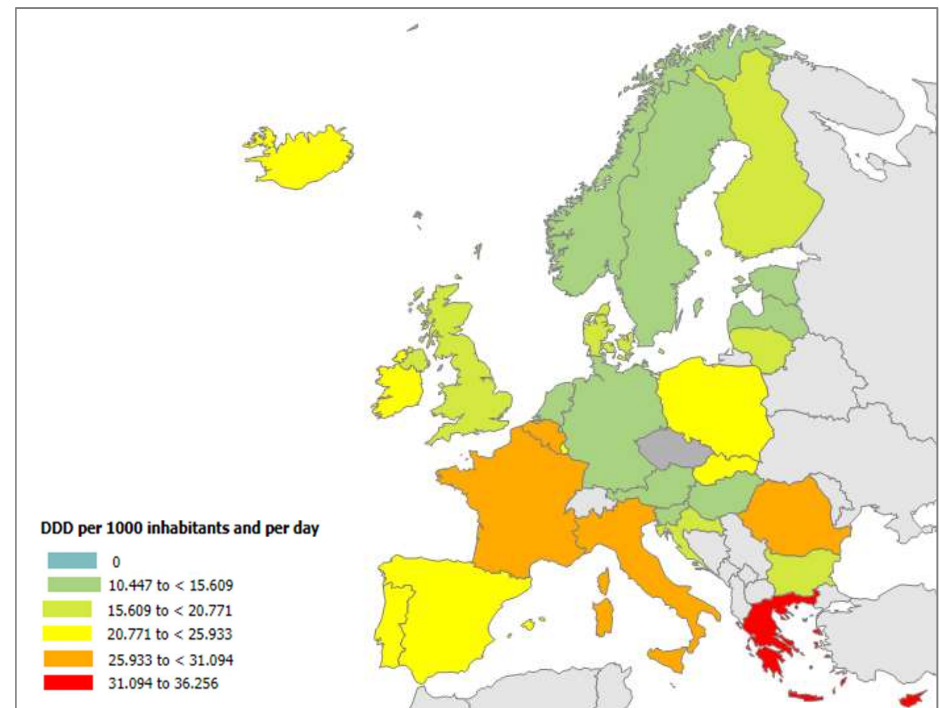
Vivianne Visschers, Vanessa Feck & Anne Herrmann



Antibiotic resistance (ABR) and antibiotic (AB) use in human medicine in Europe



Percentage of *Acinetobacter* spp. invasive isolates resistant to fluoroquinolones, aminoglycosides and carbapenems (ECDC, 2017)



Consumption of antibiotics in the primary care sector (ECDC, 2016)

How to mitigate the risks of ABR in Switzerland?

- One Health approach: human health, veterinary health, the environment, agriculture and food safety
- One of the planned measures: a public awareness campaign in Autumn 2018



- How does the public perceive AB and ABR?
- How strong is their desire for AB?
- To what extent are they willing to take preventive measures?
- Which factors predict people's desire for AB as well as their willingness to take preventive measures?
 - How important is knowledge?

Methods

Semi-structured in-depth interviews about:

- their use of AB and their preventive behaviour
- people's perceptions of AB and ABR

Using an interview guideline

$N = 10$

From German- and French-speaking regions

August – September 2017



An **online survey** to:

- investigate the perceptions of AB and knowledge about AB and ABR in detail
- quantify their relationships with the desire for AB and willingness to take preventive measures

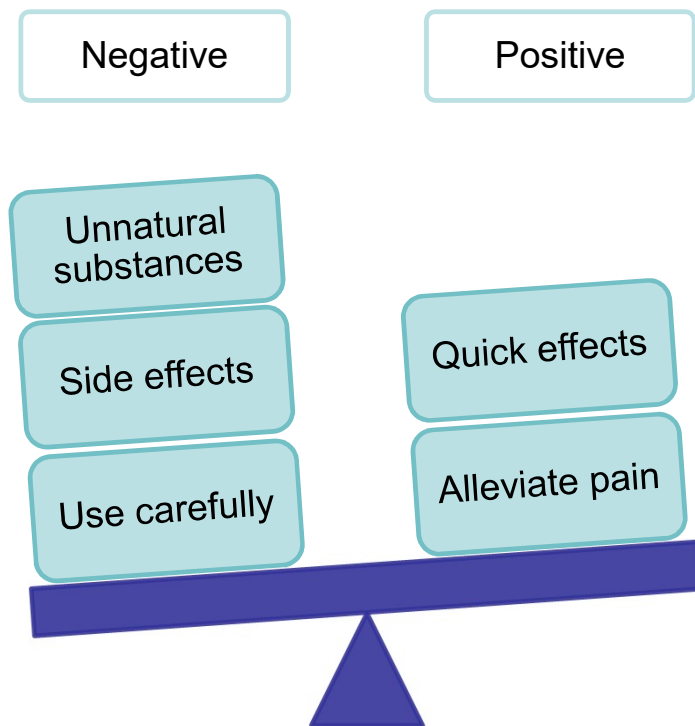
$N = 1,260$ (Internet panel)

Quotas on gender, age groups, education level & language region

25. Oktober – 9. November 2017

Duration: approx. 12 min.

Interviews – Results: Ambivalent attitudes



*«I would like to, if possible, to abstain from antibiotics, but if this is not possible, or when there's too much pain, then I don't have any objections to use it.»
(female, 39 yrs.)*

Interviews – Results: Knowledge

- Uncertainty about whether AB attack viruses and/or bacterial infections:

«Either bacteria or viruses. I always confuse them, although I should know it. For one of the two. Now, I have the feeling to say ‚bacteria‘. But I’m no longer certain.» (male, 42 yrs.)

- The term “antibiotic resistance” was familiar:

- mostly associated with antibiotic usage
- known that AB are consequently not effective

- Few knew and most were uncertain about who gets resistant to AB: bacteria or their own body:

«I only know that bacteria can develop this. I just don’t know, whether people can also get in this situation. That one would say „this person is more or less antibiotic resistant“. I think rather not. I think this refers to certain bacteria.» (female, 39 yrs.)

«My risk is really high, because when I was a child and adolescent, the doctors often gave me antibiotics as their first choice of medication. And the body, and even the bacteria, got to know these medicines and over time... even now, the body has developed a certain resistance against some medicines that I used to take but nowadays no longer can take.» (female, 37 yrs.)

Methods

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- people's perceptions of AB and ABR

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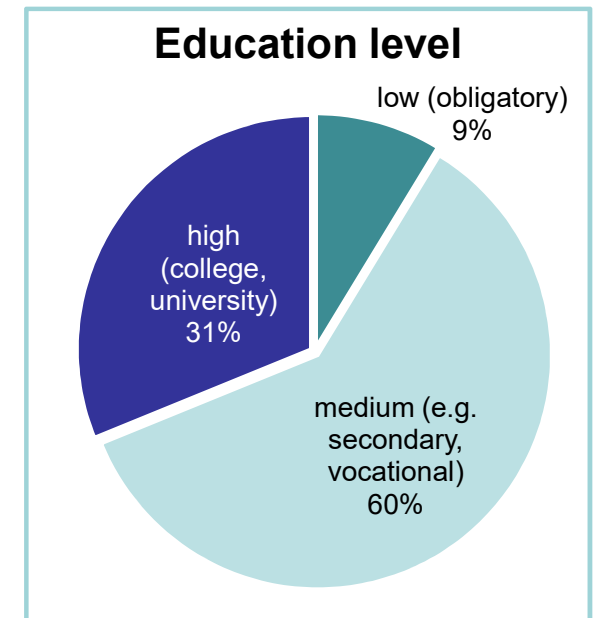
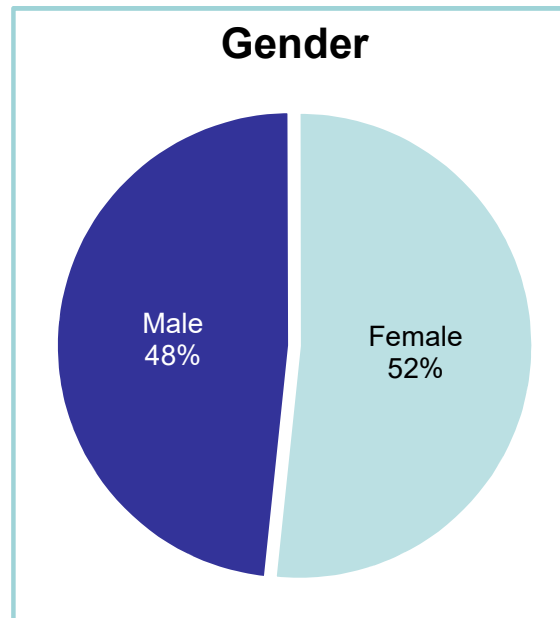
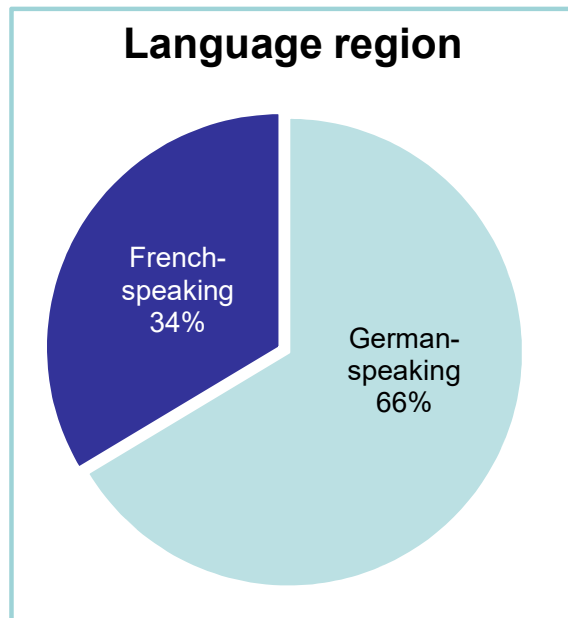
Duration: approx. 12 min.

Constructs:

- Desire for AB
 - Willingness to take preventive measures
 - Knowledge
 - Risk perception
 - Benefit perception
 - Attitude about AB
 - Social norms
- Assessed on 6-point Likert scales

Sample

- $N = 1,260$
- **Age:** $M = 46$ yrs. ($SD = 15$), Range: 14-85 yrs.





Knowledge about AB, ABR and preventive measures

- Aim: to find out whether and which types of knowledge are related to people's desire for AB and their willingness to take preventive measures
- Needed: a good knowledge scale, i.e., unambiguous, clear-cut questions with various levels of difficulty
 - Mokken scale analysis (Mokken, & Lewis, 1982; van Schuur, 2003)
- 16 items, with response options: true / false / don't know.

Subscale (a): Knowledge about AB

$H = .43$, reliability = .50, $M = 48\%$ correct		% correct	H_i
b.	If you feel better, you can reduce your antibiotic dosage.*	74.4	.43
i.	Antibiotics are effective against viruses (e.g. the flue or a cold).*	56.2	.44
p.	If the human body gets too accustomed to antibiotics, it will become resistant against them.*	13.1	.38

* False item and therefore reverse coded.

Subscale (b): Knowledge about ABR

$H = .39$, reliability = .60, $M = 64\%$ correct		% correct	H_i
a.	Antibiotic resistance means that bacteria are able to resist the effects of various antibiotics.	78.5	.45
c.	Infections with multi-resistant bacteria are difficult to treat because only few antibiotics are effective against them.	70.2	.42
f.	Antibiotic resistance can result from mutations (i.e.. spontaneous changes) in the genes of the bacteria.	59.6	.36
k.	Only the imprudent use of antibiotics (e.g. false diagnosis or inappropriate dosage) in animal husbandry is responsible for antibiotic resistances in humans.*	46.4	.33

* False item and therefore reverse coded.

Subscale (c): Knowledge about preventive measures

$H = .34$, reliability = .35, $M = 49\%$ correct		% correct	H_i
d.	Personal hygiene (e.g.. to wash your hands after a hospital visit or after contact with animals) is an effective measure against the spread and transmission of antibiotic resistances.	60.8	.34
n.	Vaccinations against viruses (e.g. against the seasonal flue) can significantly reduce the need for antibiotics among humans.	38.0	.34

Predictors of the desire for AB for myself (1)

- Five groups of predictors
- Hierarchical linear regression analysis



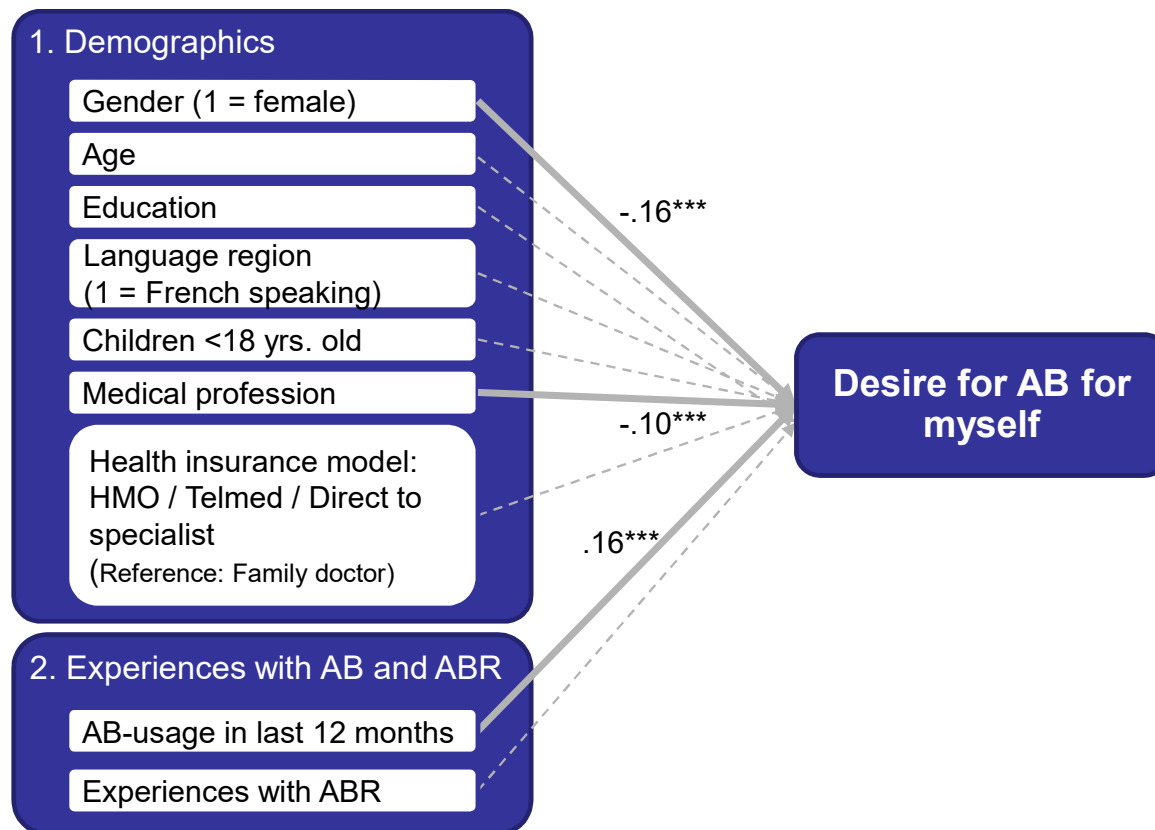
- Desire for AB for myself (3 items, Cronbach's $\alpha = 0.75$), e.g.
 - When I have a cold and I feel so bad that I visit my doctor, I expect to get an antibiotic.
 - $M = 2.17$ ($SE = .03$)

Predictors of the desire for AB for myself (2)

Model:

$R^2 = .07, p < .001$

$N = 1,226$

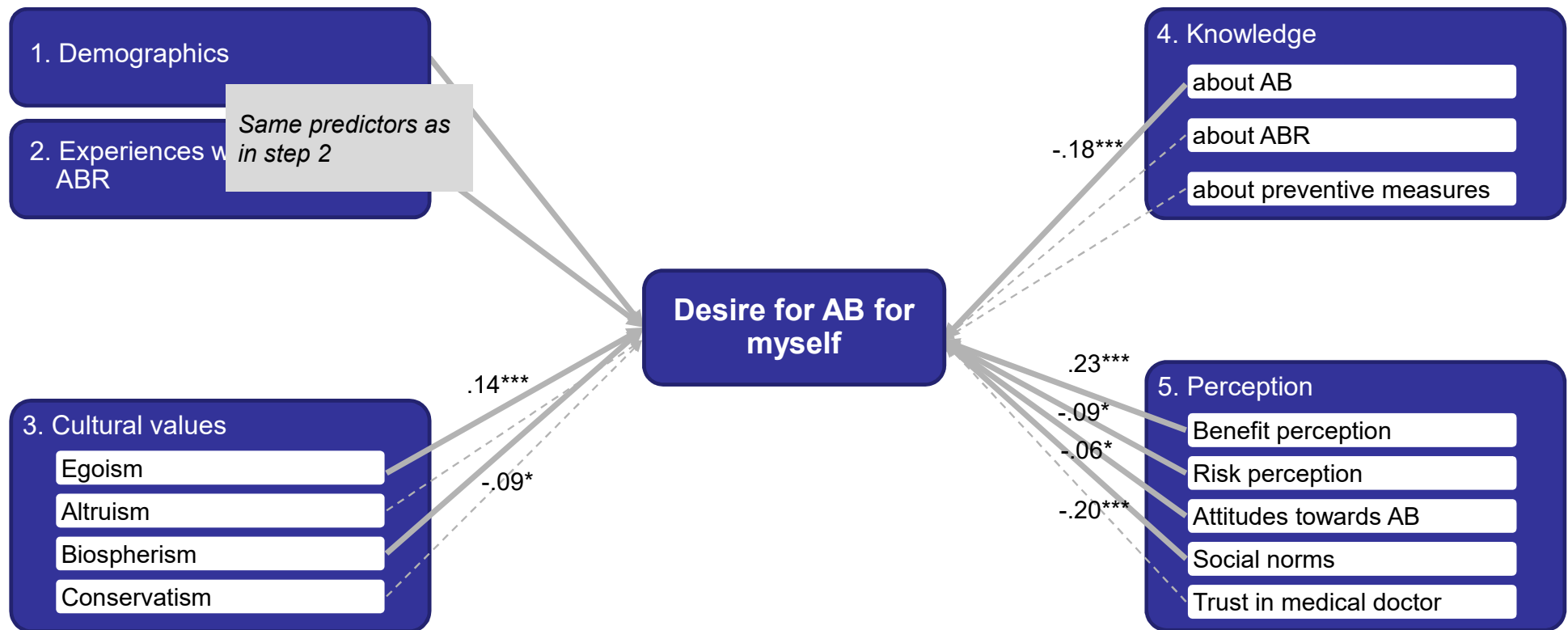


* β value with $p < .05$, ** $p < .01$, *** $p < .001$

Predictors of the desire for AB for myself (3)

Model:

$R^2 = .32$, $\Delta R^2 = .25$,
 $p < .001$, $N = 1,226$



* β value with $p < .05$, ** $p < .01$, *** $p < .001$

Predictors of the willingness to take preventive measures (1)

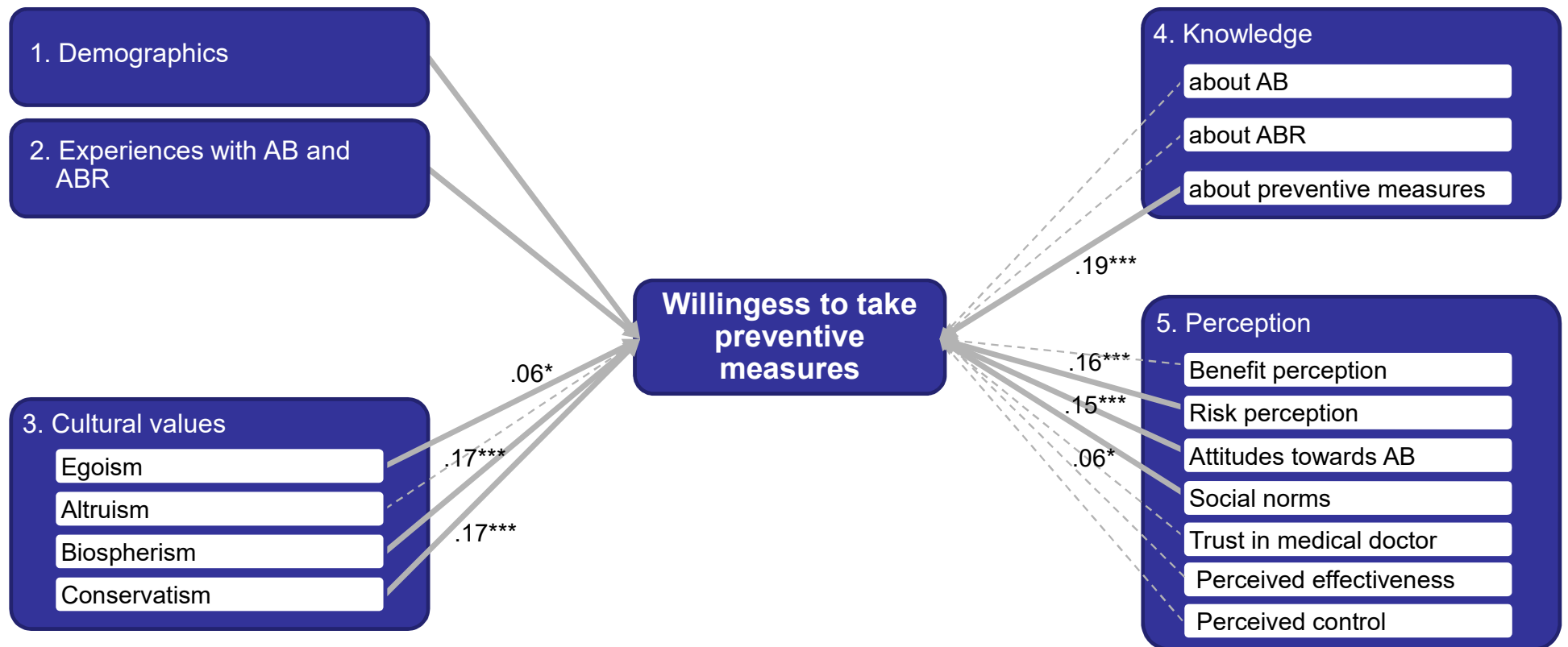


- Willingness to take preventive measures (3 items, Cronbach's $\alpha = 0.56$), e.g.
 - The next time I get a prescription for AB, I will ask my physician critical questions.
 - $M = 4.40$ ($SE = .03$)

Predictors of the willingness to take preventive measures (2)

Model:

$R^2 = .31, p < .001,$
 $N = 1,226$



* β value with $p < .05$, ** $p < .01$, *** $p < .001$



Conclusion and implications

- At first sight, opinions are contradictive (i.e. 'contradiction in opinionibus')
- But people are willing to use AB prudently and to take preventive measures.

- Personal benefits of AB are important predictor of desire for AB
 - Highlight personal benefits of using AB prudently

- Knowledge is important for people's desire for AB as well as their willingness to take preventive measures... and can be changed:
 - Address people's knowledge about AB to decrease the desire for AB
 - Address knowledge about preventive measures to increase the willingness to take preventive measures

- Cultural values affect both decisions
 - Cannot be changed
 - But can be appealed to.



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Thank you!

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