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COVID-19 Contact Tracing Technology: what went wrong?

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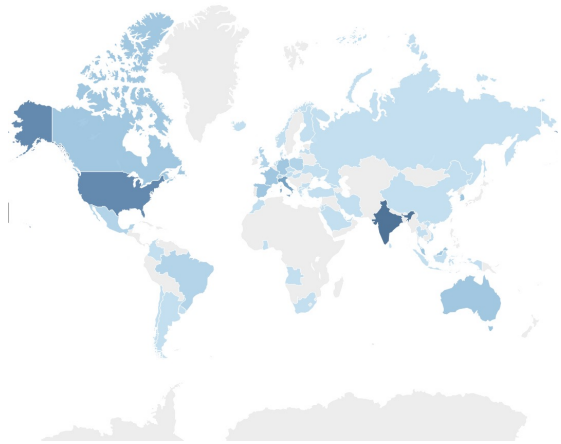
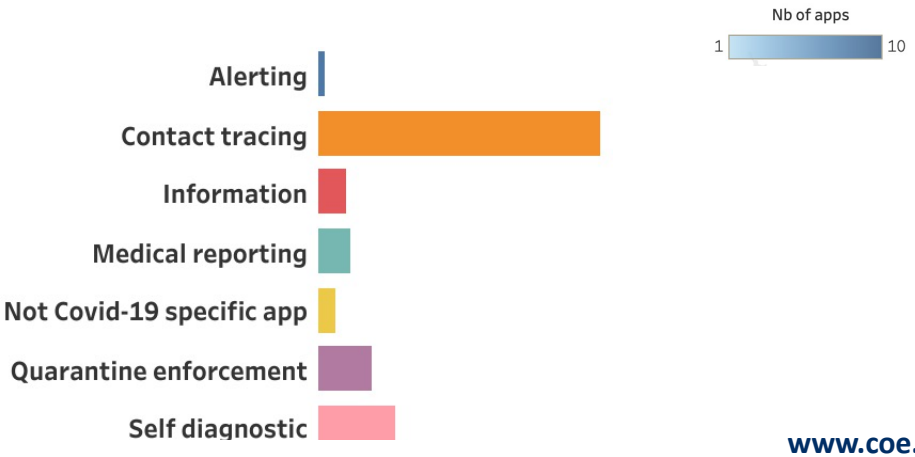
Trust and the Governance of Technology – Antwerp 17 February 2022

The good news

- CTA (contact tracing apps) rapid development
- Collaboration between major labs and tech companies
- Based on e.g., DP-3T protocol (Decentralised Privacy-Preserving Proximity Tracing)
- Exposure Notification interface (Google & Apple)
- Broad range of app functionalities
- Cross-border interoperability





The bad news

- High discrepancies between countries' uptake levels (1% to 49%)
- Reports concerning lack of warning other users when confirmed COVID-19 status
- Differences in governmental CTA introduction and support campaigns
- Ethical and legal concerns have been voiced
- Public debate on privacy protection and function creep

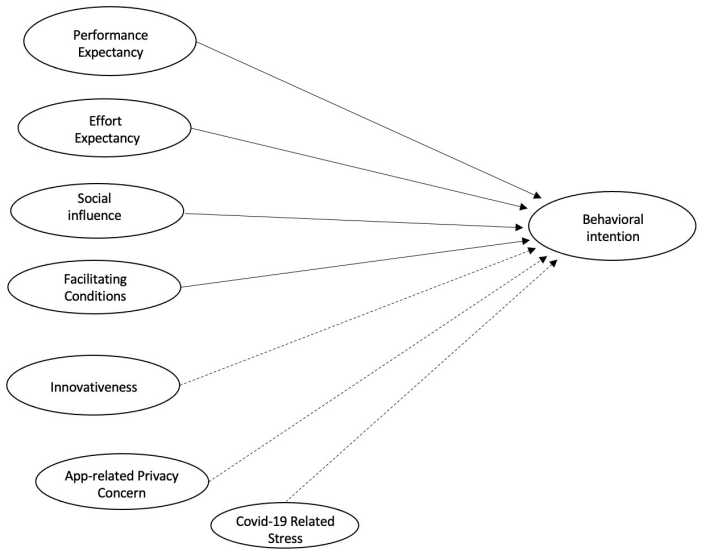
Aims

- Which factors influence CTA uptake intention?
- What are the reasons for nonuse and use discontinuation?
- Which supplementary potential functionalities are (not) supported?

Which factors influence CTA uptake intention?

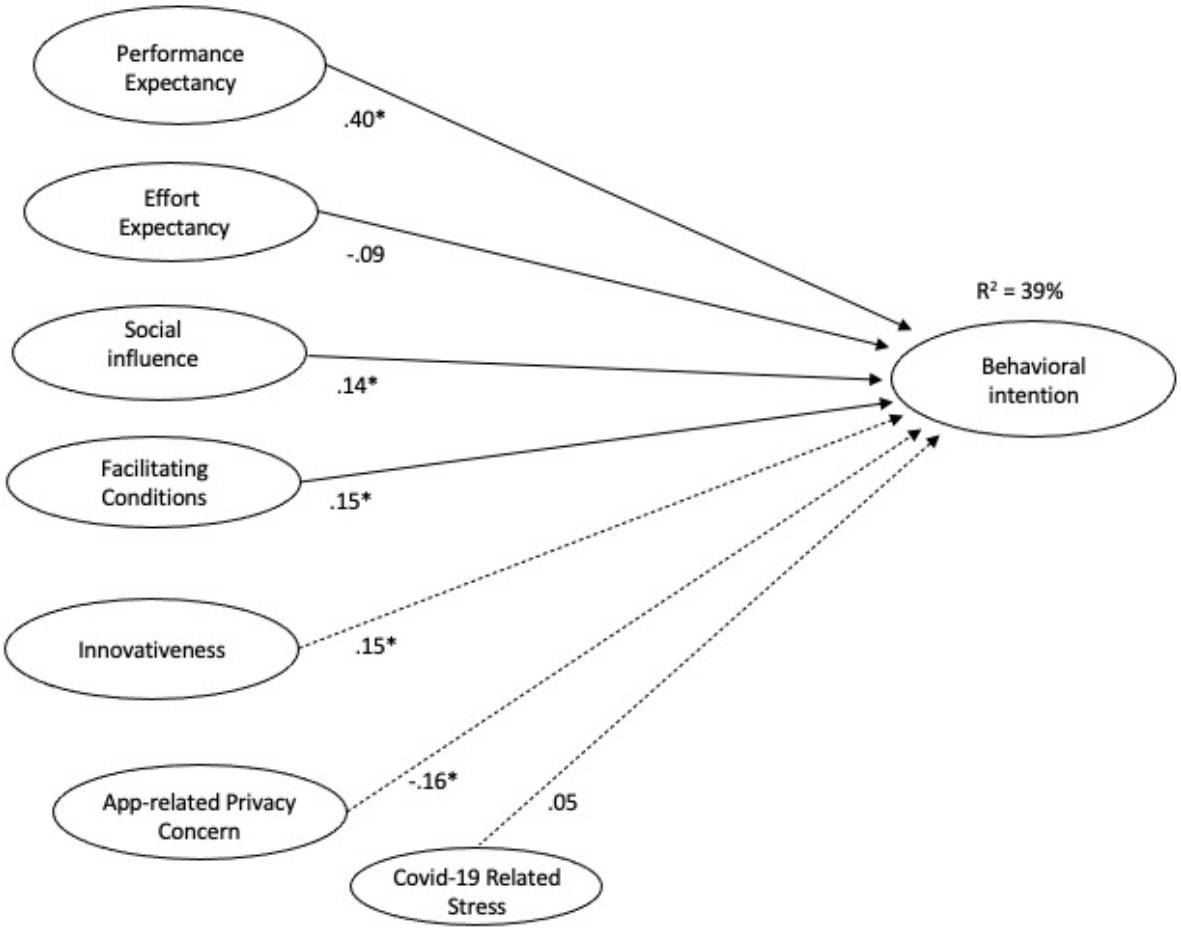
Methodology

- Theoretical model: extended UTAUT (Unified Theory of Acceptance and Use of Technology)
- Operationalization of constructs, based on CTA research and Venkatesh et al. 2003, 2012
- Gender, age, educational degree, illness
- Online survey among 1500 18 to 64 year olds (before the launch of the CTA Coronalert)
- Stratified sample (based on gender, age, employment status, educational level)
- SEM using mplus



Walrave, Waeterloos, Ponnet, 2021
MIOS UAntwerp – IMEC-MICT UGhent
https://doi.org/10.1089/cyber.2020.0483

Results



*p <.001

Recommendations

1. Focus on and visualize in communication campaigns the performance of a CTA
2. Transform the CTA into a central COVID-19 related hub with information and advice
3. Support users when confronted with a warning
4. Use tutorials, testimonials of users, include influencers and stimulate innovators to promote the CTA in their network (social influence)
5. Address app-related privacy concerns

What are the reasons for nonuse and use discontinuation?

Which supplementary potential functionalities are (not) supported?

Methodology

- Online survey among 1850 18 to 64 year olds (after the launch of the CTA Coronalert)
- Stratified sample (based on gender, age, employment status, educational level)
- Respondents received a paragraph explaining the features of the CTA (pretested)
- Operationalization of items, based on CTA research, e.g., interview studies
- Gender, age, educational degree, employment, reported health risks

Walrave, Waeterloos, Ponnet, 2022
MIOS UAntwerp – IMEC-MICT UGhent
https://publichealth.jmir.org/2022/1/e22113

Results

- In total, 35% were users of Coronalert
- 65% were nonusers
  - 82% did not install the app
  - 12% installed but never activated
  - 5% installed and deleted
- Of respondents who did not install the app, 19% could do so in the future

Results

Not installed

- Lack of advantages (31%)
- Privacy concerns (29%)
- CTA would cause stress (21%)
- Worries about use of data by the government (19%)
- Lack of trust in CTA (18%)
- Low risk of infection (14%)
- Drain the battery (10%)
- No or older smartphone (9%)
- Government detecting users' movements (8%)
- Worries about installing (6%)
- Technical issues (5%)

Not activated

- Worries about use of data by the government (35%)
- Privacy concerns (24%)
- Difficult to use the app (19%)
- Lack of advantages (19%)
- Technical problem (12%)
- Worried it would drain the battery (12%)
- CTA would cause stress (12%)
- Few advantages (11%)
- Low risk (8%)
- Government detecting users' movements (8%)
- Lack of trust in CTA (4%)

Uninstalled

- Few advantages (38%)
- Difficulties when using app (25%)
- Impression it drains the battery fast (19%)
- Worries about use of data by the government (17%)
- CTA stresses user (16%)
- Few advantages (9%)
- Lack of trust in CTA (9%)
- Technical issues (9%)
- Low risk of infection (9%)
- Privacy concerns (8%)

Results

- Differences in the impact of CTA for individuals and society:
  - Users (69%) are significantly more convinced then nonusers (33%) the CTA *diminishes the spread of COVID-19*
  - Users (63%) are more convinced then nonusers (58%) of the *speed of being informed* of a risky contact
  - Users (44%) think they will take *more precautionary measures*, than nonusers (29%)
  - Users (81%) are more convinced then nonusers (35%) of *CTA's crucial role in COVID-19 policy measures*
  - Users (59%) are more convinced that the *CTA is privacy safe*, than nonusers (52%)
  - Users (74%) are more convinced than nonusers (40%) that CTA is *more rapid than traditional contact tracing* in warning users

Results

- Potential functionalities:
  - *Information and advice*
    - Recognizing COVID-19 infection symptoms
    - Being informed about infection levels
    - Getting advice from a health professional
    - Making an appointment to get tested
  - *Control and access*
    - Integrating COVID Safe Ticket, Coronapass, to access public spaces
    - Check movements of people who have COVID-19

Results

Information & advice	nonusers	users
Questionnaire user symptoms*	41%	66%
Level of infections neighourhood*	43%	68%
General data on spread of the virus*	41%	70%
Advice on protection*	45%	71%
Appointment to get tested*	53%	81%
Contact health professional*	46%	73%

Control & access	nonusers	users
Access to an event (no risk contact)*	27%	57%
Access offices (no risk contact)*	23%	50%
Access schools (no risk contact)*	27%	55%
Control whereabouts patients*	25%	52%

*<.001

Recommendations

1. Making the key advantages of CTA clear
2. Almost a third of nonusers cannot use a CTA due to current (smart)phone
3. Address trust issues voiced in terms of government surveillance
4. Adding new useful functionalities, applying key functionalities for user profiles
5. Convince nonusers, or former users, of the app's usefulness and new options

Next steps

- In-depth interviews motives and user experiences
- CTA, privacy and trust
- Coping with CTA alerts

Thank you for your attention

Open access papers about CTA of Walrave, Waeterloos, & Ponnet
MIOS UAntwerp & IMECT-MICT UGhent

More information:

https://www.uantwerpen.be/en/staff/michel-walrave/michel-walrave/stimulating-adoption/

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Summary report (English), Research report (Dutch)

Publications in *Cyberpsychology, Behavior & Social Networking*
and in the *Journal of Medical Internet Research*