

Acceptance of digital (mental) health

**the validation of the UTAUT2 – brief
instrument**

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Digital mental health implementation

Increasing DMH evidence base

Increasing interest from clinical practice

mainly in online consultations & mobile apps (De Witte et al., 2021)

However, implementation remains challenging

and needs to be tailored to the target population

→ Relevant to assess barriers and facilitators at play in a specific context
in healthcare professionals
in patients & other end users



E-Therapy Attitudes Measure (ETAM)



The Almere Model



Modern Technologies in Psychotherapy and Counseling Scale (MTPS)

Unified Theory of Acceptance and Use of Technology (UTAUT)



System usability scale (SUS)

Wealth of models and scales for technology acceptance & experience, but each with own limitations for practice implementation

Technology Acceptance Model (TAM)



Technology Readiness index (TRI)



Unified Theory of Acceptance and Use of Technology

UTAUT (Venkatesh, Morris, Davis & Davis, 2003)

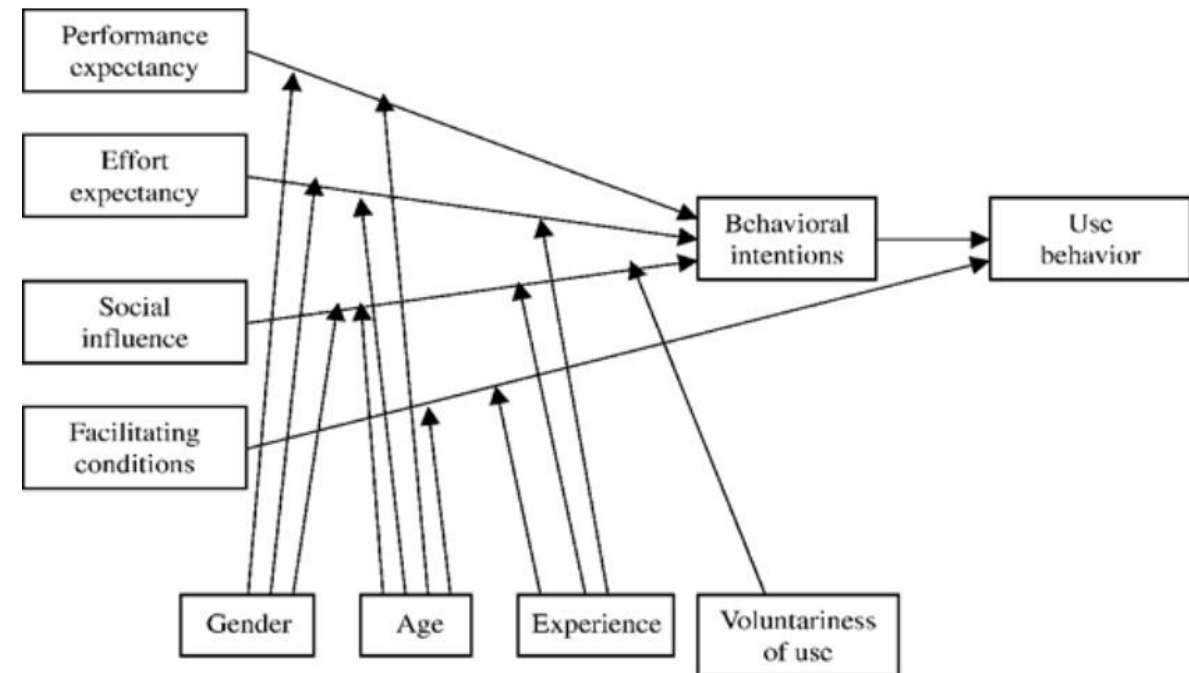
Integration of several models into one theory

Goal: help manager with the introduction of new technology at work

Model with 4 key predictors predicting behavioral intention

31-Item questionnaire with additionally

- Attitude towards technology
- Self-efficacy
- Anxiety



Unified Theory of Acceptance and Use of Technology

Adaptations towards digital health

- Internet- and Mobile-based Interventions for somatic and mental healthcare (Philippi et al., 2021)
 - Strong support for PE, EE & SI as predictive of behavioral intention (no use behavior)
 - No moderation of age, gender, experience
 - Internet anxiety was significant additional predictor & moderator
- Dutch questionnaires for DMH professionals and end users (De Witte & Van Daele, 2017)



Unified Theory of Acceptance and Use of Technology 2

UTAUT2 (Venkatesh, Thong, & Xu, 2012)

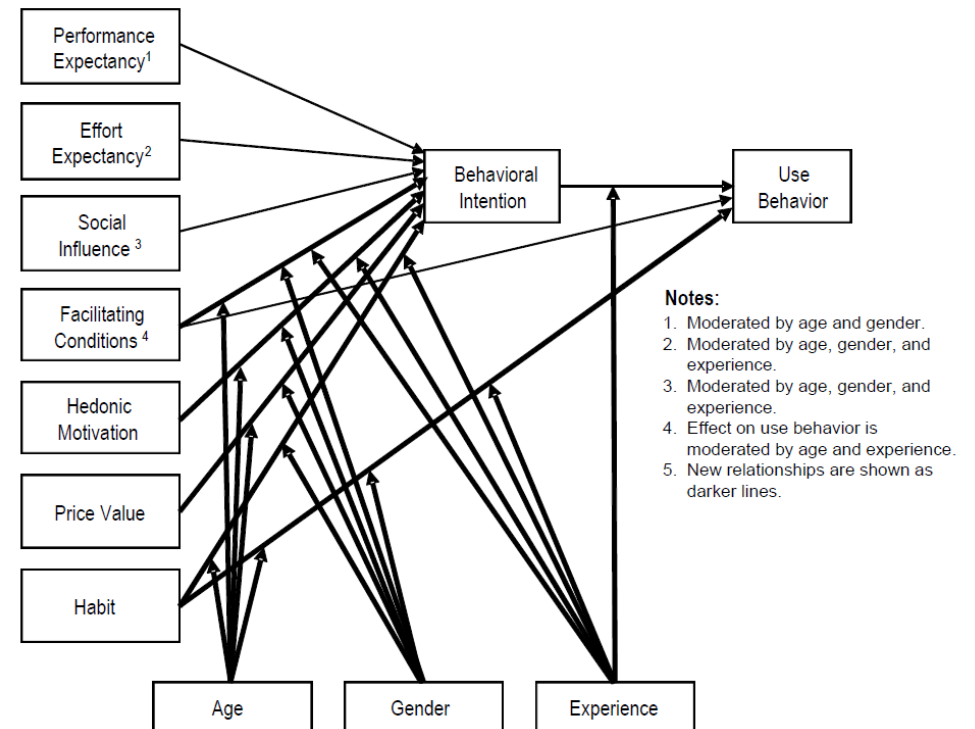
Update of the first model to assess acceptance of ICT technology in consumers

Additional factors:

- Hedonic Motivation
- Price Value
- Habit

Downsides for DMH implementation

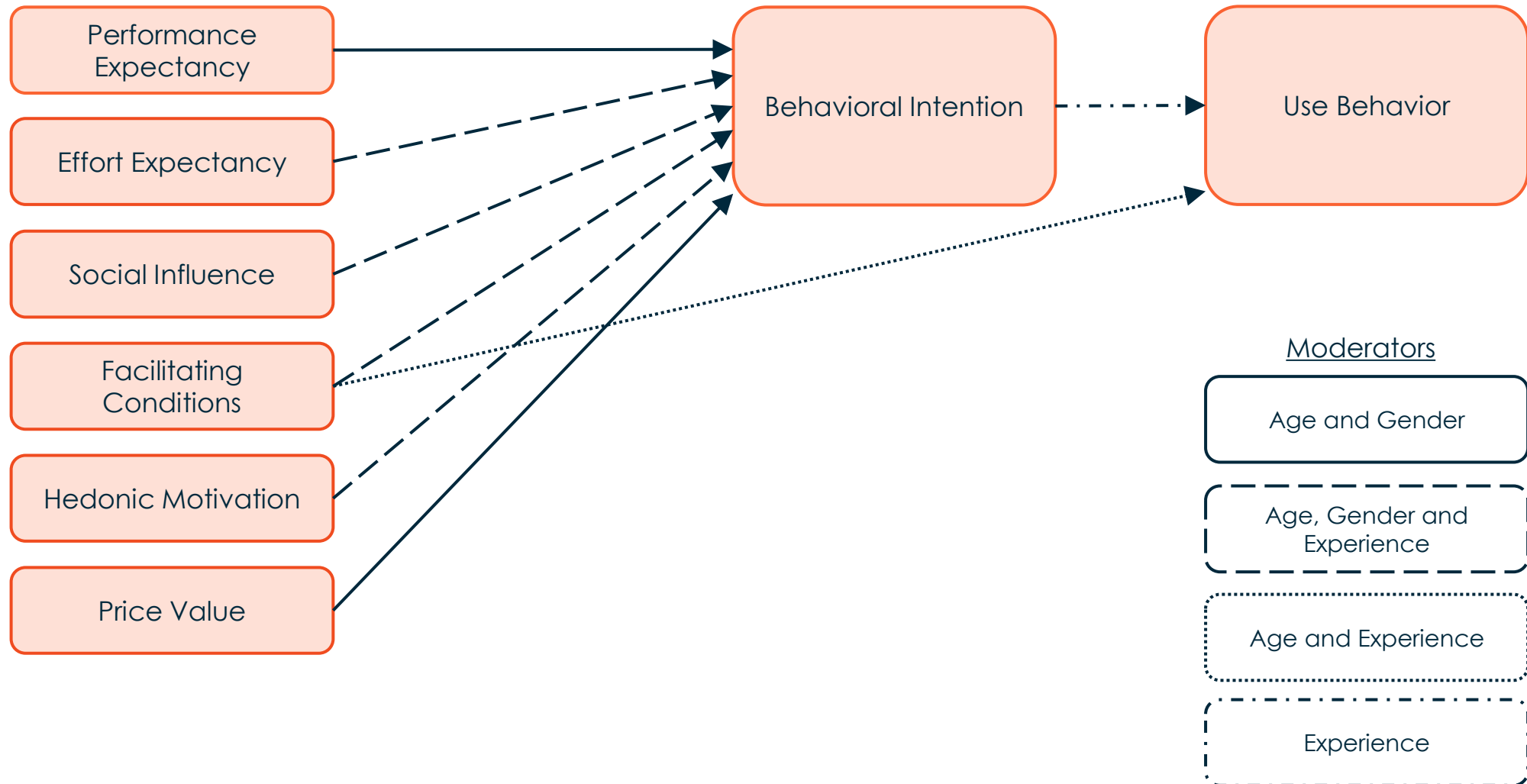
- Consumer perspective
- Item count
- Contextual differences



To develop and test
a **brief** questionnaire
on technology acceptance
applied to the **health and well-
being sector** & suitable for both
professionals and end users

Aim of the current work

The UTAUT2-brief model



The UTAUT2-brief questionnaire

Ten items in total, one item per model factor

Available in English and Dutch (back-translation)

Instruction:

This questionnaire assesses attitudes towards technology in health and welfare services. The questions below concern the following implementation of technology: [the entire and diverse range of digital interventions (e.g. smartphone applications, online self-help, online consultations, etc.)]

→ Possibility to tailor topic to application of interest.

Item		Scale
1	I would find this technology useful in supporting healthcare and wellbeing services.	Performance Expectancy
2	It would be easy for me to become skillful at using this technology.	Effort Expectancy
3	People who are important to me think that I should use this technology.	Social Influence
4	I have the resources necessary to use this technology.	Facilitating Conditions
5	Using this technology is enjoyable.	Hedonic Motivation
6	This technology is a good value for the money.	Price Value
7	If necessary, I see myself using this technology.	Behavioral intention
8	I have experience using this technology in healthcare and wellbeing services.	Moderator: experience
9	I am years old.	Moderator: age
10	<p>How do you identify? I see myself as a ...</p> <ul style="list-style-type: none"> o Man o Woman o Other, that is: o Prefer not to say 	Moderator: gender

Use behavior

Use behavior was assessed on a scale from 1 (never) to 7 (many times per day) for:

- Online consultations
- E-mail contacts with health and welfare services
- Health or wellbeing programs on a computer or website
- Health or well-being smartphone applications
- Virtual reality applications for health or wellbeing
- Social media or internet fora for health or well-being
- Wearables for health or well-being (e.g., smartwatch)



Study design

Participants (N = 300)

- General population from the UK
- M age 41.5 (SD = 15.05; Range 18-81)
- Gender 151 female, 142 male , 7 other
- 60,7% University degree

Analyses:

Variance-based structural equation modeling (SEM) using the partial least squares (PLS) path modeling method in SmartPLS.

Step 1 direct effects of factors; Step 2 inclusion of moderators (direct & indirect)

Assessment of the measurement model:

- Good validity for the Use Behavior factor
- Satisfactory common method variance (in Harman's one factor test)

Results

	R-square	R-square adjusted
Behavioral intention (without moderators)	0.475	0.464
Behavioral intention (full model)	0.574	0.496
Use behavior (without moderators)	0.092	0.086
Use behavior (full model)	0.223	0.204

Structural model evaluation:

- Moderate effect size for behavioral intention
 - Significant path coefficients: Facilitating Conditions, Hedonic Motivation, Performance Expectancy
- Low effect sizes for use behavior
 - Significant path coefficients: Behavioral Intention, Experience (indirectly), Experience*Behavioral Intention, Hedonic Motivation (outside the model)
- Better model fit when moderators are included

Conclusion

UTAUT2-brief assesses barriers for technology acceptance in health & wellbeing

Short instrument to guide implementation

Satisfactory explanatory power for behavioral intention

Limitations of the instrument

- Model is not significant for use behavior
- Not all paths are significant (to be expected in 1-item scales?)

Limitations of the study

- Applied to the broad field of DMH
- Not yet assessed in professionals
- Currently exploring the validity of the Dutch version

Beyond the study

Gap between evidence base of DMH and practice implementation

Need for tools & instruments to support tailored implementation

Aim to further assess instrument quality and make it openly available

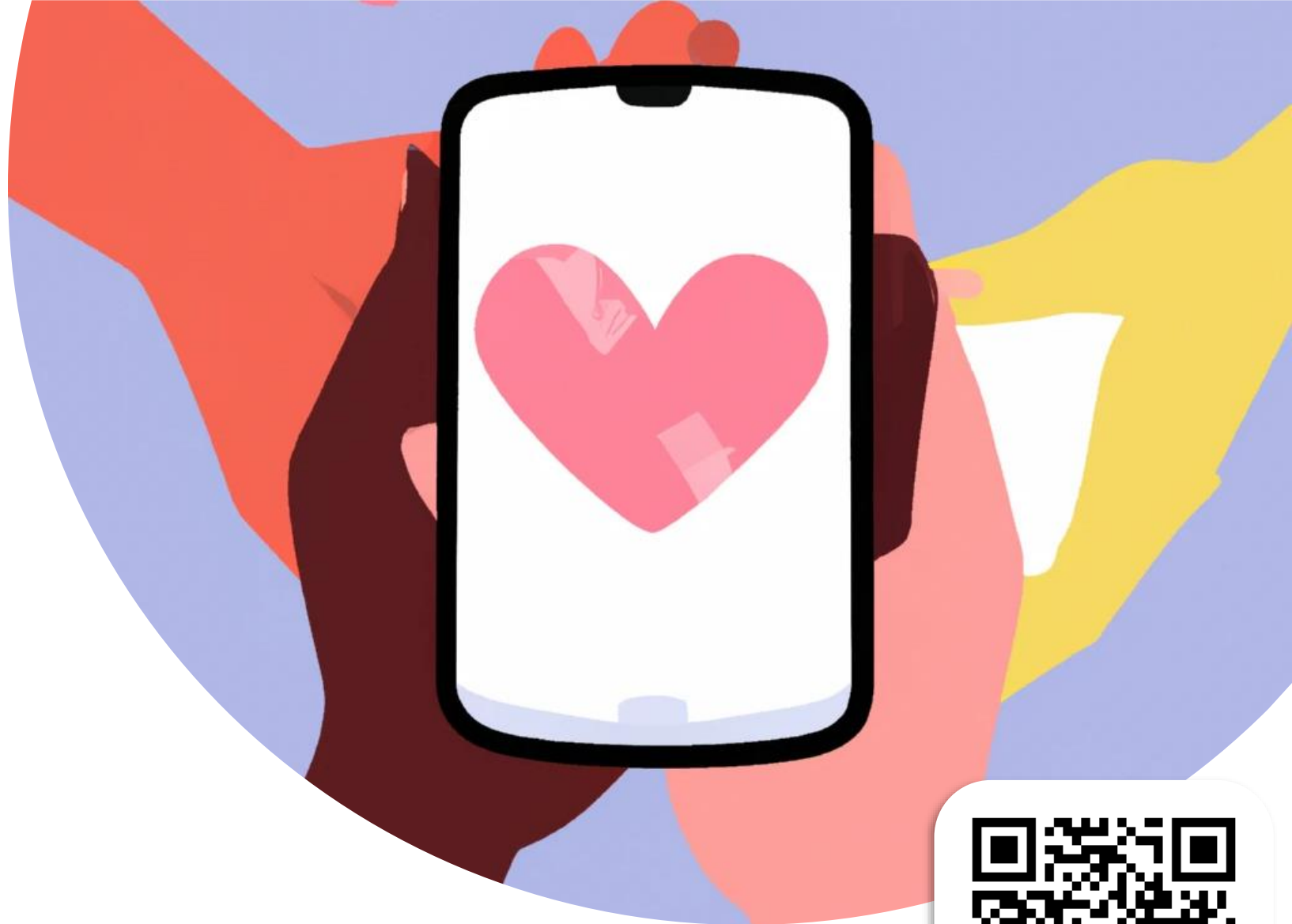


Thank you

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*All of the ESRII 2023
contributions of our team
can be found here*



References

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Assessment of the measurement model for use behavior

Indicator reliability:

How much each indicator variance is explained by its constructs

- Most indicators are bigger than .704 → good
- Frequency of VR and wearbles are bigger than .4 → can be included as the content validity of use behaviour is important (Hair et al., 2021)

Internal consistent reliability

How much the indicators measures the same construct

- $\alpha = .84 \rightarrow$ good

Convergence validity

How much the constructs converge to explain the indicators

- AVE = .522 → good

Discriminative validity

How much each construct is different from the other

- Heterotrait monotrait ratios are smaller than .70 → good

Indicator collinearity

How much the indicators are correlated

- VIFs < 5 → good