Predictors of the intention to use AI-enabled clinical decision support systems among healthcare practitioners.

A meta-analysis and narrative synthesis

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Background

- AI-enabled clinical decision support systems (AI-CDSS) to improve clinical, efficiency, economic and patient satisfaction outcomes (Bright et al., 2012)
- Fragmented theoretical foundation with several competing models to predict individual intention to use AI-CDSS
- Using the Unified Theory of Acceptance and Use of Technology (UTAUT; Venkatesh, Morris, Davis & Davis, 2003) to synthesize existing evidence

Goals

Test the applicability of the UTAUT for AI-CDSS

Extend the UTAUT model with new variables

Critical reflection of UTAUT and related models

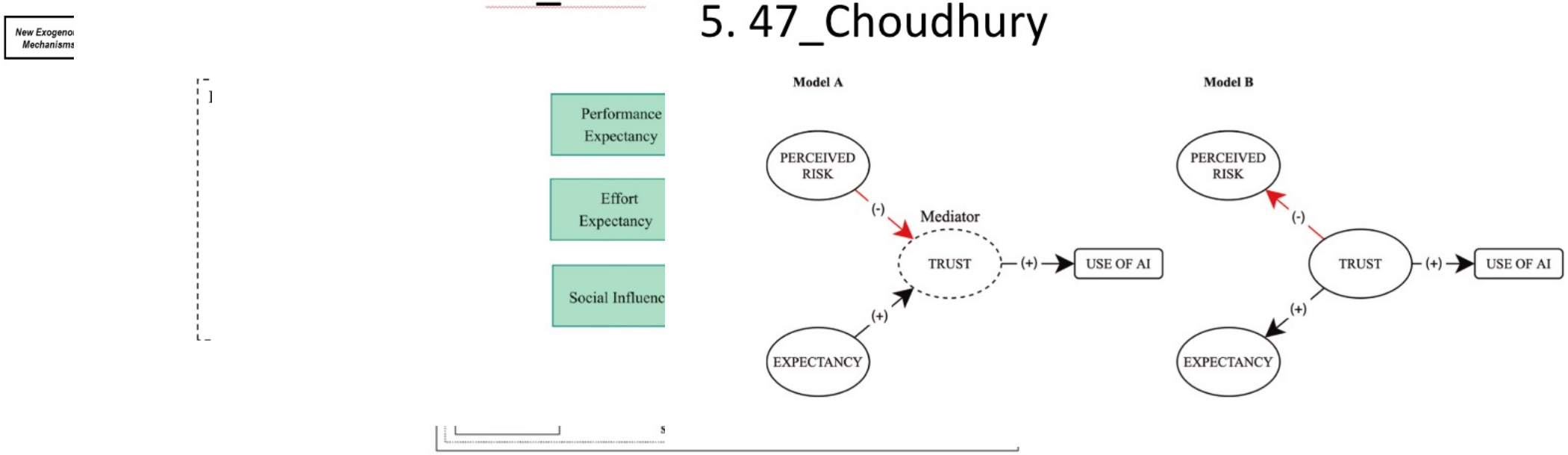
Why more parsimony?

0. Venkatesh et al 2016

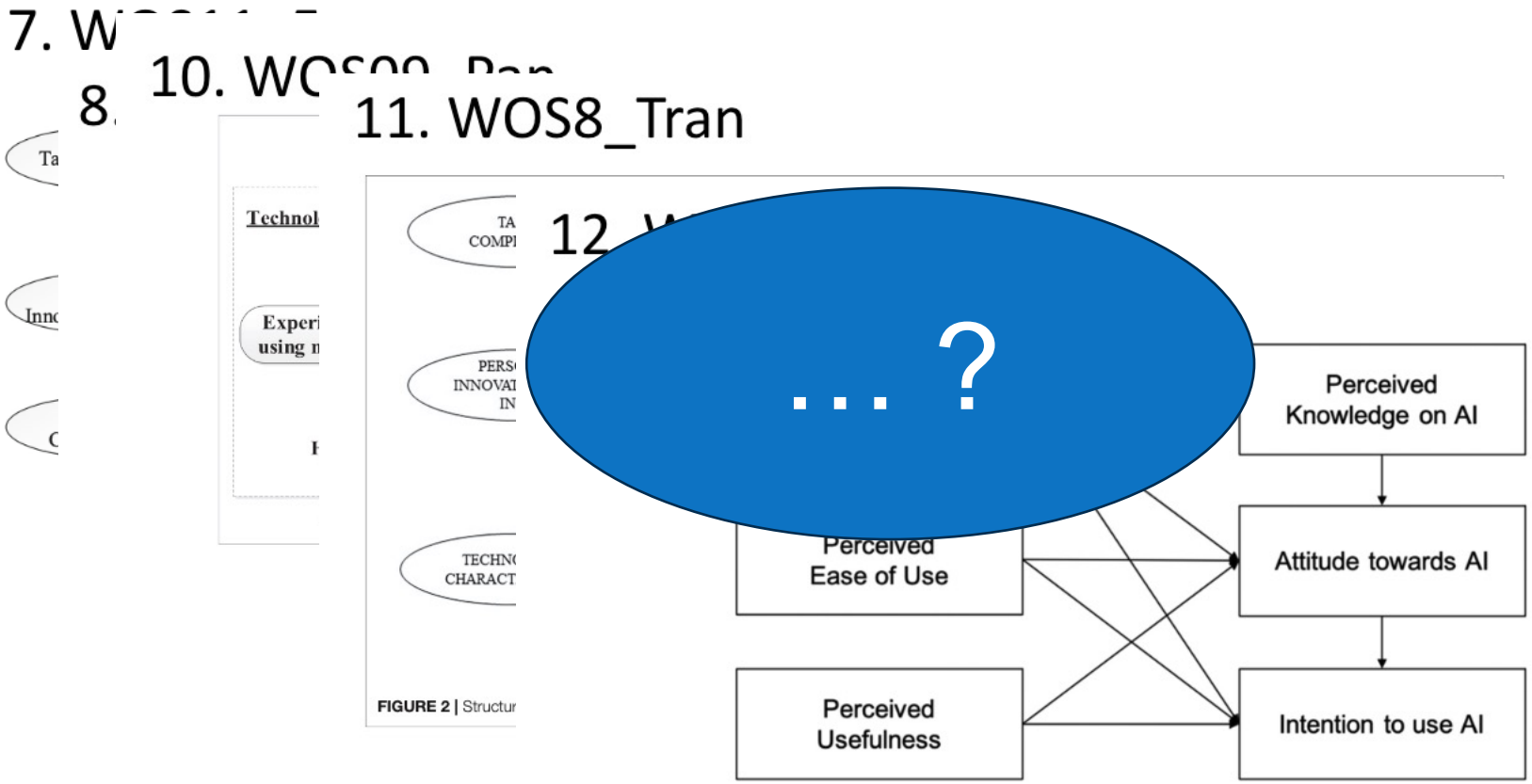
1. WC 3. WOS3 Prakash

4. 56_Zhai

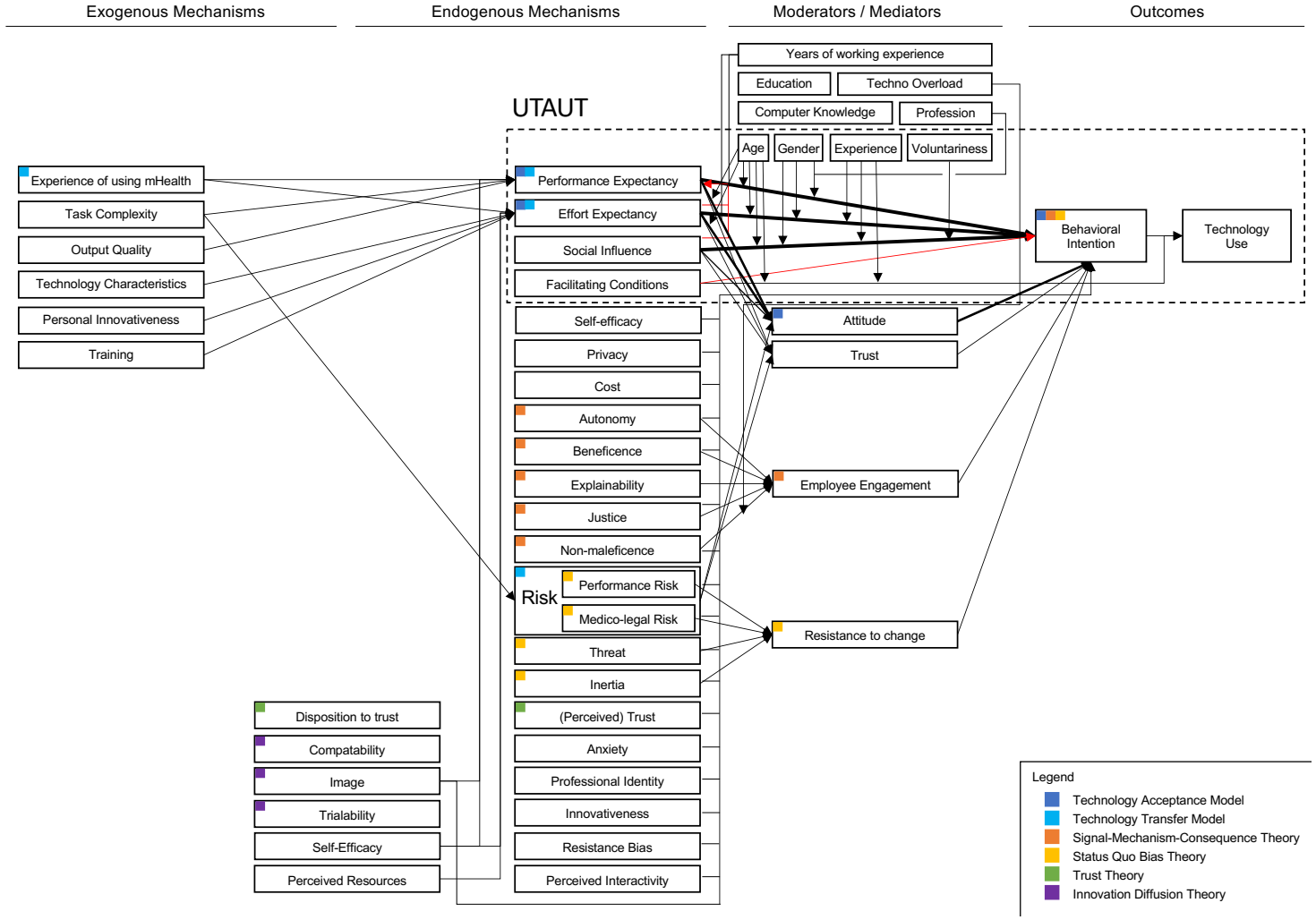
5. 47_Choudhury



Why more parsimony?



Why more parsimony?



New insight

1) Testing direct effects

Meta-analysis for relationships with n > 3 independent samples

2) Relative weights and mediation analyses

Investigating the relative contribution of predictor variables

3) Narrative review

Combining meta-analytic evidence with narrative review to develop a preliminary model of usage intention

4) An Integrated Model of Acceptance of AI-Enabled Clinical Decision Support Systems

Identification of model gaps and integration of system factors

5) Research roadmap

Roadmap for future research on the Integrated Model of Acceptance of AI-Enabled Clinical Decision Support Systems

Methods

Search Strategy

Primary literature search (November 29th, 2022)

- Electronic databases, conference proceedings, forward searches, author contacts, mailing lists
- Search terms: „healthcare“, „artificial intelligence“, „use“

Follow-up search (May 2nd, 2023)

Inclusion Criteria

1. AI-CDSS
2. Measure intention to use as defined by Venkatesh et al (2003)
3. Sample of healthcare practitioners
4. At least one predictor as well as the outcome variable
5. Unique data sets

Analysis

- Meta-analysis of direct effects and exploratory relative weights and mediation analyses
- Combination of meta-analytic results with narrative review of existing models to generate a more parsimonious model of usage intentions

Preliminary results

Articles included (n = 17) • 154 effect sizes • Total N = 3,800

Pred	k	N	mean_r	mean_rho	sd_r_c	CI_LL	CI_UL	CR_LL	CR_UL	Var_arti
PE	14	2930	0.577	0.662	0.136	0.583	0.740	0.492	0.832	0.386
EE	15	2997	0.492	0.564	0.214	0.446	0.683	0.289	0.840	0.287
SI	14	2886	0.557	0.655	0.121	0.586	0.725	0.511	0.799	0.465
FC	8	1369	0.542	0.656	0.252	0.445	0.866	0.311	1.000	0.251
ATT	9	2065	0.499	0.569	0.166	0.441	0.696	0.352	0.786	0.343
TR	8	1641	0.660	0.715	0.137	0.601	0.830	0.531	0.900	0.313
RI	6	1437	-0.162	-0.192	0.140	-0.338	-0.045	-0.367	-0.016	0.525
ANX	4	601	-0.331	-0.387	0.185	-0.682	-0.092	-0.655	-0.119	0.466
IN	3	469	0.510	0.570	0.063	0.413	0.728	0.570	0.570	1.000

PE = Performance Expectancy, EE = Effort Expectancy, SI = Social inclusion, FC = Facilitating Conditions, ATT = Attitude, TR = Trust, RI = Risk, ANX = Anxiety, IN = Innovativeness

Discussion/ questions

- Integrating meta-analytic results with narrative review for model simplification
- UTAUT as a universal theoretical framework
- Value of model adjustment/ extension in the context of acceptance of AI-CDSS
- …

Thank you

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