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Application of behavioral theories, models, and frameworks in pharmacy practice research

Univ.-Prof. Dr. Anita Weidmann

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WHAT DOES A PHARMACIST DO?

“Improvement of Life Quality”

[3 German words]

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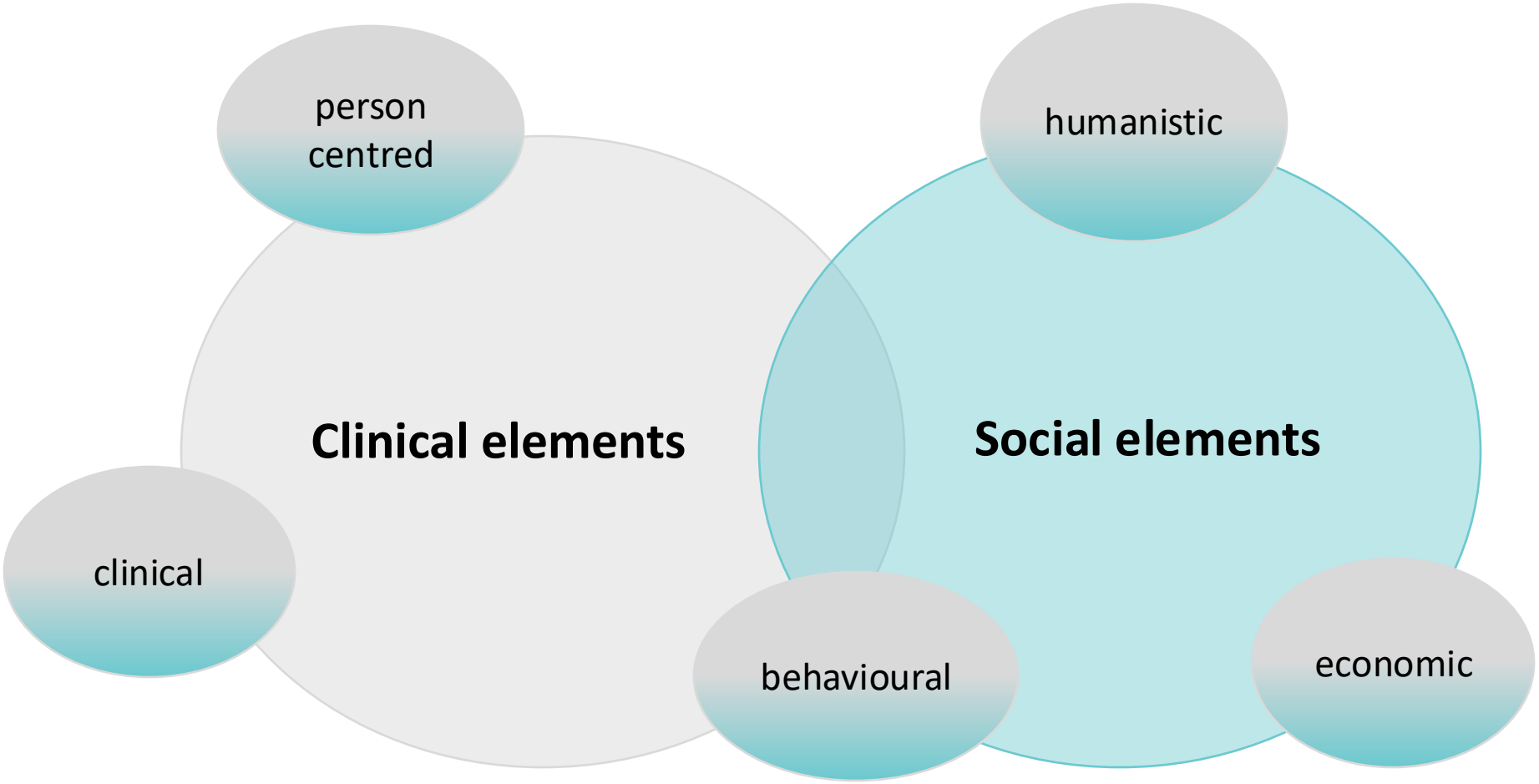
WHAT IS CLINICAL & PHARMACY PRACTICE RESEARCH?

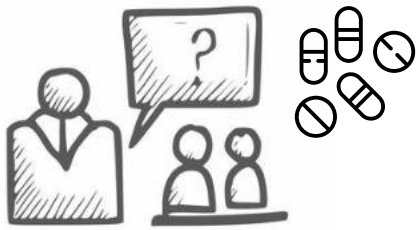
"scientific discipline that studies the **different aspects of the practice of pharmacy, and its impact on health care systems, medicine use, and patient care"**

Garcia-Cardenas V, Rossing CV, Fernandez-Llimos F, et al. Pharmacy practice research - a call to action. Res Social Adm Pharm. 2020;16(11):1602–1608. doi: 10.1016/j.sapharm.2020.07.031.

Clinical practice research



Clinical practice research



person centred

humanistic

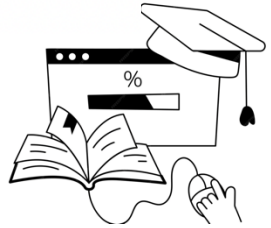
Clinical elements

Social elements

clinical

behavioural

economic



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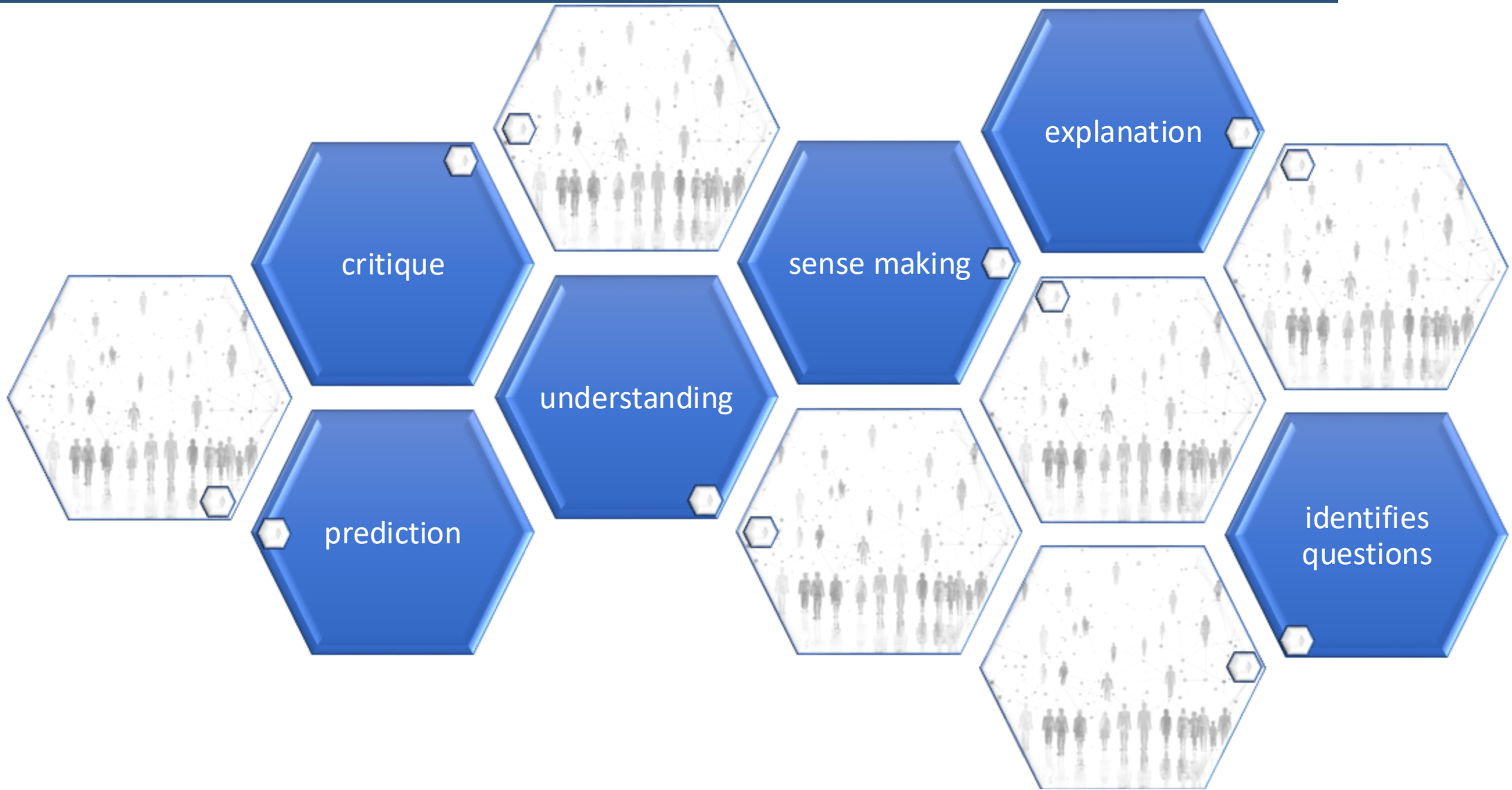
Relevance of Theory use



Theories serve different purposes

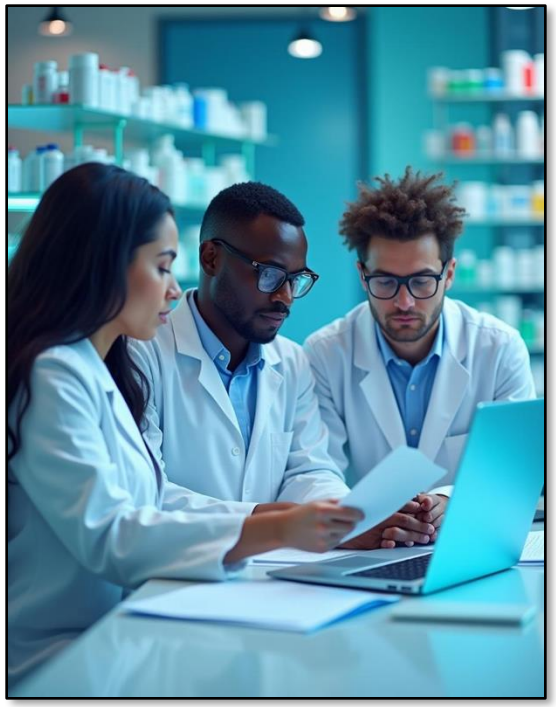
Arguments for theory-based pharmacy practice research

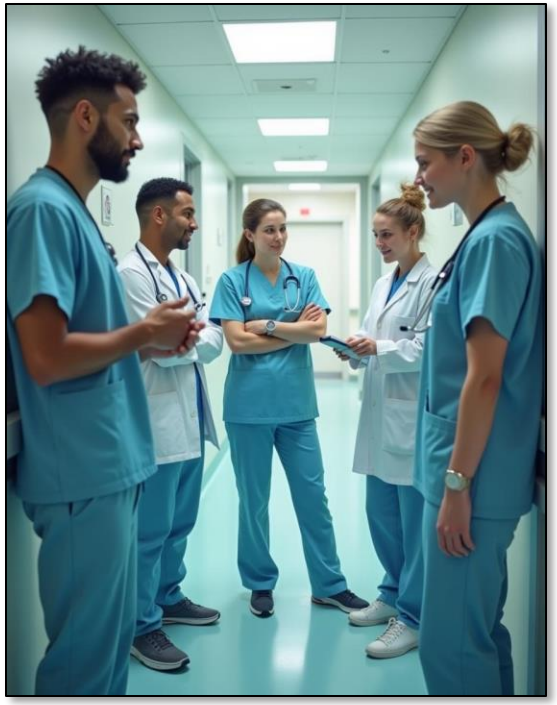
LOTTE S. NØRGAARD, JANINE M. MORGALL and PAUL BISSELL 2000

Introspection

Failing to look outward

Narrowly focused evaluations of services.





What do other healthcare professionals think about us?

Granada statements (ICPJE)

International Journal of Clinical Pharmacy (2023) 45:285–292
https://doi.org/10.1007/s11096-023-01550-8

COMMENTARY

Improving the quality of publications in and advancing the paradigms of clinical and social pharmacy practice research: the Granada Statements

Fernando Fernandez-Llimos[1] · Shane Desselle[2] · Derek Stewart[3] · Victoria Garcia-Cardenas[4] · Zaheer-Ud-Din Babar[5] · Christine Bond[6] · Ana Dago[7] · Ramune Jacobsen[8] · Lotte Stig Nørgaard[9] · Carlo Polidori[10] · Manuel Sanchez-Polo[11] · Bernardo Santos-Ramos[12] · Natalia Shcherbakova[13] · Fernanda S. Tonin[14]

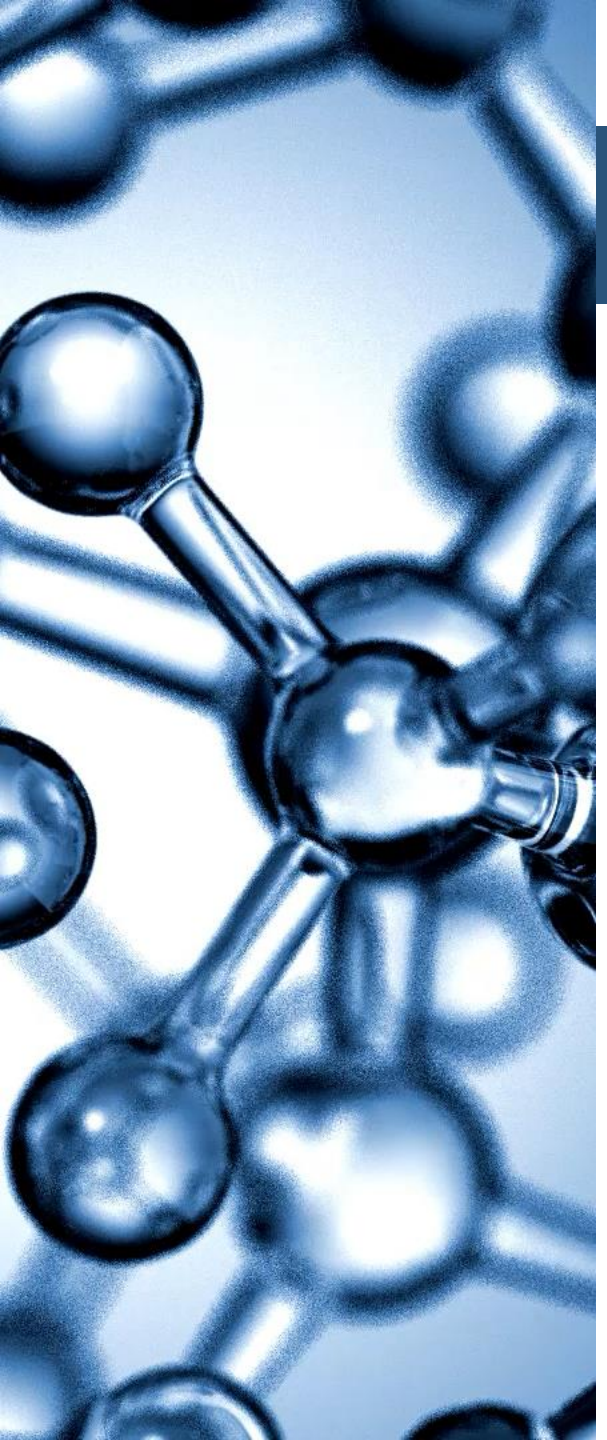
International Journal of Clinical Pharmacy (2025) 47:4–7
https://doi.org/10.1007/s11096-024-01833-8

EDITORIAL

The International Collaboration of Pharmacy Journal Editors (ICPJE) formally constituted to foster quality around clinical and social pharmacy practice research publications*

F. Alves da Costa[1] · F. Fernandez-Llimos[2] · S. Desselle[3] · I. Arnet[4] · Z. Babar[5,6] · C. Bond[7] · M. Cordina[8] · V. Garcia Cardenas[9] · M. S. El Hajj[10] · R. Jacobsen[11] · A. V. Law[12] · L. S. Nørgaard[13] · C. Polidori[14] · N. Shcherbakova[15] · D. Stewart[16,17] · F. Tonin[18] · A. E. Weidmann[19]

To identify the elements that may reinforce clinical and social pharmacy practice as a scientific discipline, improve the quality of publications and advance the paradigms of related pharmacy practice research.



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Advantages

Considering theory in research enhances

Robustness

Rigour

Relevance

Impact

- Connect pieces of research data
- Useful knowledge base for developing strategies for the future of pharmacy
- Provide a framework for understanding the current and future trends
- Identifies drivers of change
- provide a basis for new and innovative strategies for the future of pharmacy practice and the pharmacy profession

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The problem

There is a VAST number of Theories, Frameworks and models to chose from!!

Field of research

Research problem & its nature

Available theory & its nature

How others have used the theory

Criteria of a “good theory”

1. **EXPLANATORY** - providing explanations around variables ar… …ts; being testable, predictable and verifi…

2. **PLAUSIBLE** - providing meaningful exp… …stent with existing facts

3. **EXPLICIT** - summ… …anising facts

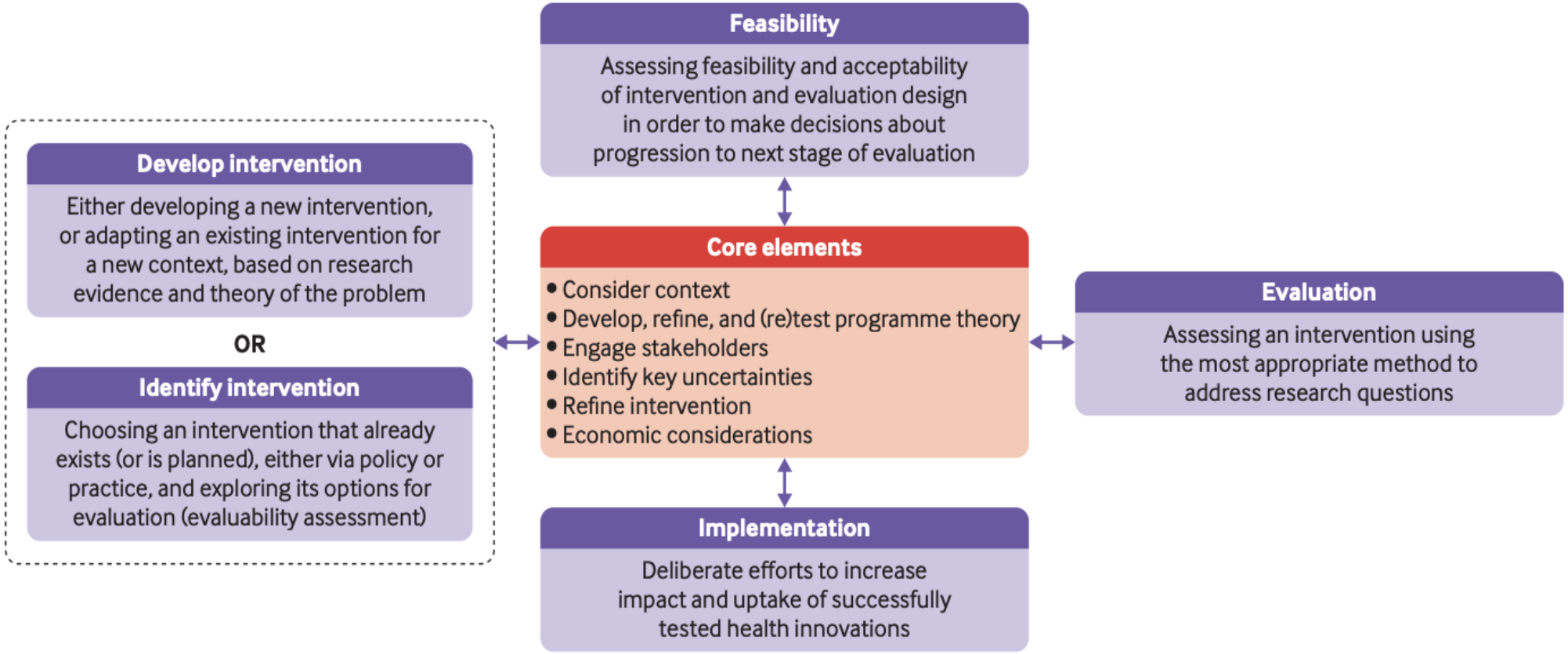
4. P… …g a few variables which are arranged simply to explain …effects

AVOID to find sth. that fits at the point of ANALYSIS.

Wacker JG. A definition of theory: research guidelines for different theory-building research methods in operations management. J Oper Manag. 1998;16:361–85.

UK MRC Framework (2021)

Researchers should **answer the questions that are most useful to decision makers rather than those that can be answered with greater certainty**



https://www.bmj.com/content/bmj/374/bmj.n2061.full.pdf

UK MRC Framework (2021)

- At each phase, six core elements should be considered to answer the following questions:
  - How does the intervention interact with its context?
  - What is the underpinning programme theory?
  - How can diverse stakeholder perspectives be included in the research?
  - What are the key uncertainties?
  - How can the intervention be refined?
  - What are the comparative resource and outcome consequences of the intervention?

The answers to these questions should be used to decide whether the research should **proceed to the next phase, return to a previous phase, repeat a phase, or stop.**

https://www.bmj.com/content/bmj/374/bmj.n2061.full.pdf

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UK MRC Framework (2021)

Reduce research waste

Maximise usefulness for decision makers

Generates knowledge that contributes to health improvement.

Strong advocacy of underpinning theory

No detailed guidance which ones to use

No one theoretical perspective is "better" than another

The theories, methodologies and methods that follow the theories all serve different purposes.

https://www.bmj.com/content/bmj/374/bmj.n2061.full.pdf

Theories, models, and frameworks explained

Many explanations - many similarities and overlapping concepts.

THEORY

"…an account of the world, which goes beyond what we can see and measure. It embraces a set of inter-related definitions and relationships that organises our concepts and understanding of the empirical world in a systematic way"

Scott, 2009

MODEL

"A complex research theory may be presented as a simplified model so "that the reader can visualize the interconnections of variables"

Creswell, 2017

FRAMEWORK

"A conceptual framework provides a set of "big" or 'Grand" concepts. Frameworks do not provide explanations; they categorise empirical phenomena"

Nilsen, 2012

Scott J, Marshall G. A dictionary of sociology. Oxford: Oxford University Press; 2009.
Nilsen P. Making sense of implementation theories, models and frameworks. Implement Sci. 2015;10:53.
Creswell J, Creswell J. Research design: qualitative, quantitative, and mixed methods approaches. USA: Sage publications; 2017.

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Types of theories, models & frameworks

BEHAVIOUR CHANGE theories, models and frameworks

Name	Description
Theory of Planned Behaviour (TPB)/ Theory of Reasoned Action (TRA) (1)	The Theory of Planned Behavior (TPB) started as the Theory of Reasoned Action in 1980 to predict an individual's intention to engage in a behavior at a specific time and place. The theory was intended to explain all behaviors over which people have the ability to exert self-control.
Theoretic Domains Framework (TDF) (2)	The Theoretical Domains Framework (TDF) is an integrative framework developed from a synthesis of psychological theories as a vehicle to help apply theoretical approaches to interventions aimed at behavior change.
The Capability Opportunity Motivation-Behaviour model (COM-B) (4)	According to the COM-B model, for a given behaviour to occur, at a given moment, one must have the capability and opportunity to engage in the behaviour, and the strength of motivation to engage in the behaviour must be greater than for any other competing behaviour.
Health Belief Model (5)	Suggests that a person's belief in a personal threat of an illness or disease together with a person's belief in the effectiveness of the recommended health behavior or action will predict the likelihood the person will adopt the behavior.
Transtheoretical Model of Behaviour change (3)	The transtheoretical model posits that health behavior change involves progress through six stages of change: precontemplation, contemplation, preparation, action, maintenance, and termination.
Andersen Behaviour Model (6)	The Andersen Model was originally proposed to present a theoretical framework to understand and explain how and why people use certain types of health services or general types of health services.

1. LaMorte WW. Behavioral change models: The theory of planned behavior. Boston University School of Public Health Available online at: https://sphweb bumc bu edu/otlt/mph-modules/sb/behavioralchangetheories/BehavioralChangeTheories3 html (accessed June 02, 2022). 2019.
2. Phillips CJ, Marshall AP, Chaves NJ, Jankelowitz SK, Lin IB, Loy CT, et al. Experiences of using the Theoretical Domains Framework across diverse clinical environments: a qualitative study. Journal of multidisciplinary healthcare. 2015:139-46.
3. Prochaska JO, Redding CA, Evers KE. The transtheoretical model and stages of change. Health behavior. 1997:97.
4. Michie S, West R, Campbell R, Brown J, Gainforth H. ABC of behaviour change theories: Silverback publishing; 2014.
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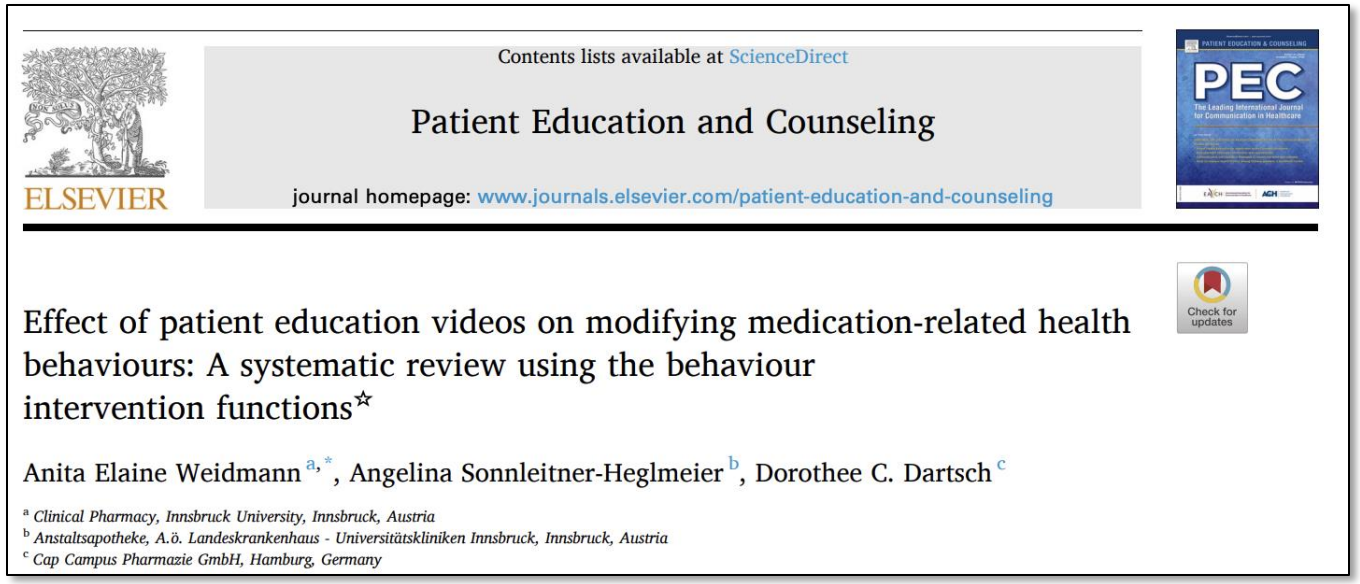
6. Andersen R, Newman JF. Societal and individual determinants of medical care utilization in the United States. The Milbank Memorial Fund Quarterly Health and Society. 1973:95-124.

The good news



Contents lists available at ScienceDirect

Patient Education and Counseling

journal homepage: www.journals.elsevier.com/patient-education-and-counseling

Effect of patient education videos on modifying medication-related health behaviours: A systematic review using the behaviour intervention functions☆

Anita Elaine Weidmann [a,*], Angelina Sonnleitner-Heglmeier [b], Dorothee C. Dartsch [c]

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[b] Anstaltsapotheke, A.ö. Landeskrankenhaus - Universitätskliniken Innsbruck, Innsbruck, Austria
[c] Cap Campus Pharmazie GmbH, Hamburg, Germany

Behaviour change theory was almost **NEVER** used to design, develop, or analyse the intervention studies.

Lit. could not report **a reliable or sustained effect of patient education videos** in modifying medication-related health behaviours.

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Types of theories, models & frameworks

IMPLEMENTATION RESEARCH theories, models and frameworks

Implementation	
Consolidation for Implementation research (CFIR) (1)	A determinant framework that describes determinants that influence implementation outcomes. It provides a pragmatic structure for **identifying potential influences on implementation** and organizing findings.
Framework for the Implementation of Services in Pharmacy (FISpH) (2)	Based on the CFIR. It is a determinant framework that describes determinants that influence implementation outcomes **specific to pharmacy services.**
Promoting Action on research Implementation in Health Services (PARIHS) (3)	This framework provides a way to **implement research/ evidence into practice.** A determinant framework that posits successful implementation (SI) as a function (f) of the nature and type of evidence (E) (including research, clinical experience, patient experience, and local information), the qualities of the context (C) of implementation (including culture, leadership, and evaluation), and the way the implementation process is facilitated(F)
Normalization Process Theory (NPT) (4)	Provides support to determine how **innovations become actual processes** in the organisation and in the delivery of healthcare. NPT is concerned with three core problems: **implementation**—the social organisation of bringing practices into action; **embedding**—the process through which practices become incorporated routinely into everyday work; and **integration**—the process by which practices are reproduced and sustained.
RE-AIM & PRISM (5)	RE-AIM a framework to guide comprehensive evaluation of interventions in terms of Reach, Effectiveness, Adoption, Implementation, and Maintenance (sustainability) PRISM helps to assess the ensure robust implementation and sustainability models e.g. representation, co-creation etc.

1.Damschroder LJ, Aron DC, Keith RE, Kirsh SR, Alexander JA, Lowery JC. Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. Implement Sci. 2009, 4:50. doi: 10.1186/1748-5908-4-50.

2. Moullin J.C., Sabater-Hernández D., Benrimoj S.I. Qualitative Study on the implementation of professional pharmacy services in Australian community pharmacies using framework analysis. BMC Health Services Research. 2016, 16:439 doi: 10.1186/s12913-016-1689-7.

3. Rycroft-Malone J, Kitson A, Harvey G, McCormack B, Seers K, Titchen A, Estabrooks C. Ingredients for change: revisiting a conceptual framework. Qual Saf Health Care. 2002, 11(2):174-80. doi: 10.1136/qhc.11.2.174.

4. May CR, Albers B, Bracher M, Finch TL, Gilbert A, Girling M, Greenwood K, MacFarlane A, Mair FS, May CM, Murray E, Potthoff S, Rapley T. Translational framework for implementation evaluation and research: a normalisation process theory coding manual for qualitative research and instrument development. Implement Sci. 2022, 17(1):19. doi: 10.1186/s13012-022-01191-x

5. Improving Public Health Relevance and Population Health impact. What are Re-Aim and PRISM. Available from: https://re-aim.org/

Types of theories, models & frameworks

COMMUNICATION RESEARCH theories, models and frameworks

Implementation	
Model of Communicative Proficiency (1)	The communicative competence model consists of four different areas: linguistic, sociolinguistic, discourse, and strategic. Respectively, these refer to grammar understanding, **cultural knowledge, conversational skills, and the ability to maintain control over language gaps**
Streets Linguistics Model of patient Participation in Care (LM) (2)	The linguistic model of patient participation in care suggests that **both patients' enabling and predisposing factors, and physicians' responses determine patients' level of participation**.
Communication Accommodation Theory (3)	The basis of the theory lies in the idea that **people adjust (or accommodate) their style of speech to one another.**
Face-Work theory (4)	Facework provides a way to **understand how and why people engage in communicative acts** that conserve what they perceive as their social identity.

1. Amiirian, S.M.R., Moqaddam, H.H., Moqaddam, Q.J., Critical Analysis of the Models of Language Proficiency with a Focus on Communicative Models. *Theory and Practice in Language Studies*. 2017, 7(5):400-407. Doi: 10.17504/tpls.0705.11 2.
2. Street, R. L. (2001). Active patients as powerful communicators.In W.P. Robinson & H. Giles (Eds.) *The new handbook of language and social psychology* (pp. 541–560). Chichester, UK: John Wiley and Sons.
3. Giles Howard, Bourhis Richard Y and Taylor DM. (1977) "Towards a Theory of Language in Ethnic Group Relations." In: Giles H (ed) *Language, ethnicity and intergroup relations*. London: Academic Press.
4. Goffman, Erving. On face-work: An analysis of ritual elements in social interaction. P*sychiatry: Journal for the Study of Interpersonal Processes. 1995,* 18, 213-231.

Types of theories, models & frameworks

OTHER theories, models and frameworks

Implementation	
Social Cognitive Theory (1-3)	Learning occurs in a social context with a dynamic and **reciprocal interaction of the person, environment, and behavior.**
Explanatory Models of Illness (4)	A set of cognitions which guide patients in **coping with, making sense of, and adapting to an illness.**
Role theory (5)	A collection of concepts and hypothetical formulations that help to **predict healthcare professionals' perception of a given role**. Among other things, role theory has been used to investigate the pharmacist's role (business, clinical, and professional) and to describe the patient's role in counselling.
Model of transformational leadership (6)	Transformational leadership theory posits that a leader works with followers to identify the changes needed, create a vision through inspiration, and execute the change with a group of highly committed followers.
PRECEDE-PROCEED theory (7)	A comprehensive structure for **assessing health needs for designing, implementing, and evaluating health promotion and other public health programs** to meet those needs
The Technology Acceptance Model (TAM) (8)	Models how users come to **accept and use a technology**.
Human Error Theory (9)	A valuable Patient Safety Theory which helps to **understand non-adherence in patients.**
Collaborative relationship model for pharmacists and physicians (10)	A useful **model to assess GP-Pharmacist Collaboration** it attempts to demonstrate **factors that influence the level of collaboration**, including participant characteristics (level of education, training experience, age), context characteristics (practice environment, type and size) and exchange characteristics (trustworthiness, relationship initiation, and role specification).

1. Bandura, A. Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review. 1977, 84*(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191
2. *Bandura, A. Social Cognitive Theory of Moass Communication. Media Psychology. 2001, **3** (3): 265–299.*
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7. RHI Hub.(2024) PRECEDE-PROCEED Model. Availble from: https://www.ruralhealthinfo.org/toolkits/health-promotion/2/theories-and-models/precede-proceed
8.Davis, F.D., Bagozzi, R.P., & Warshaw, P.R. User acceptance of computer technology: a comparison of two theoretical models. *Management Science*. 1989, 35(8), 982-1003.
9.Barber, N., Safdar, A. & Franklin, B.D. Can Human Error Theory Explain Non-adherence?. *Pharm World Sci* **27**, 300–304 (2005). https://doi.org/10.1007/s11096-005-0355-7
10. McDonough R., Doucette W. Developing Collaborative Working Relationships between Pharmacists and Physicians. (2001). https://api.semanticscholar.org/CorpusID:28094991

Which are most commonly used?

International Journal of Clinical Pharmacy (2024) 46:559–573
https://doi.org/10.1007/s11096-023-01674-x

REVIEW ARTICLE

Check for updates

Application of behavioural theories, models, and frameworks in pharmacy practice research based on published evidence: a scoping review

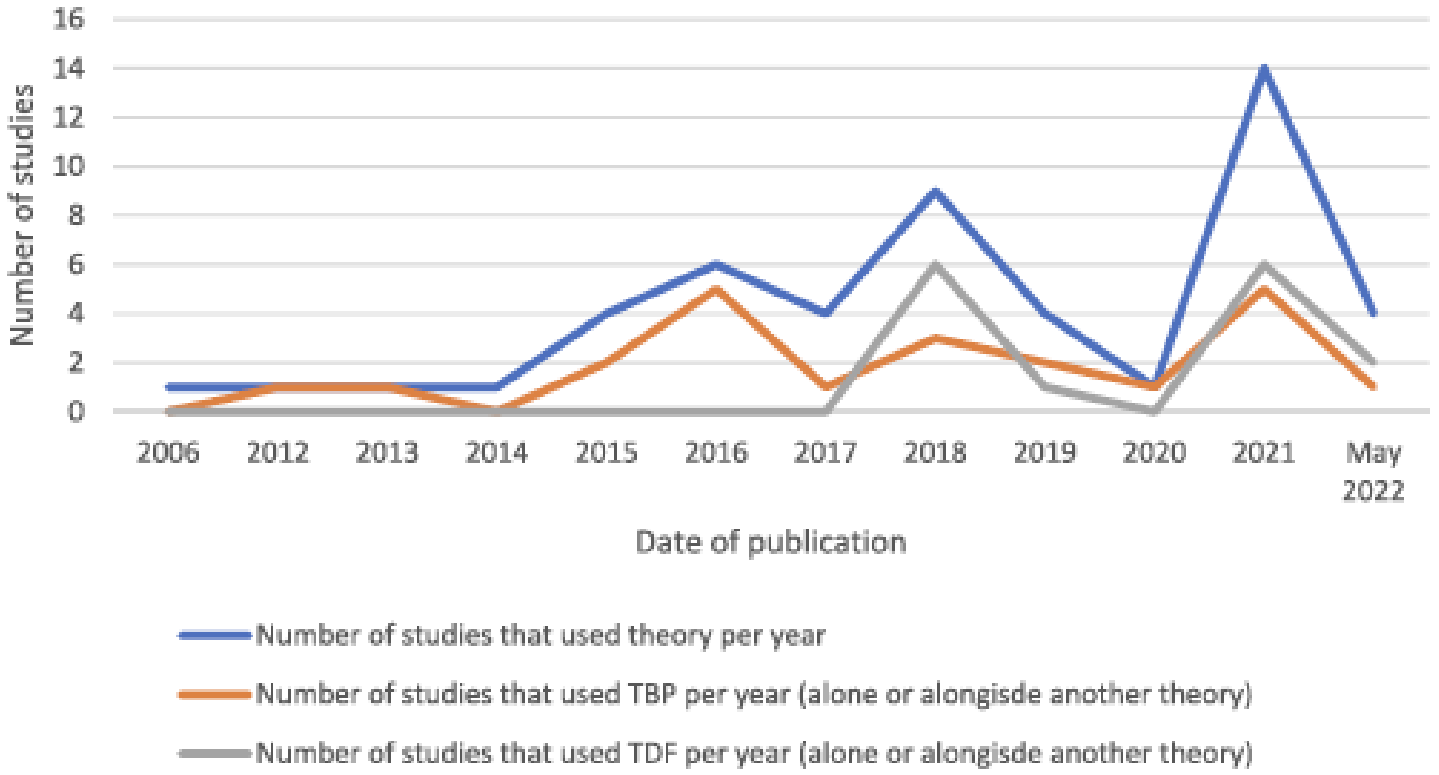
Zachariah Nazar[1] · Lina Mohammad Naseralallah[2,3] · Derek Stewart[1] · Vibhu Paudyal[4] · Laila Shafei[1] · Anita Weidmann[5]

Received: 20 August 2023 / Accepted: 16 November 2023 / Published online: 4 January 2024

33 peer-reviewed **pharmacy practice journals** indexed in PubMed since inception.

2971 search results with **50 papers** included

Which are most commonly used?



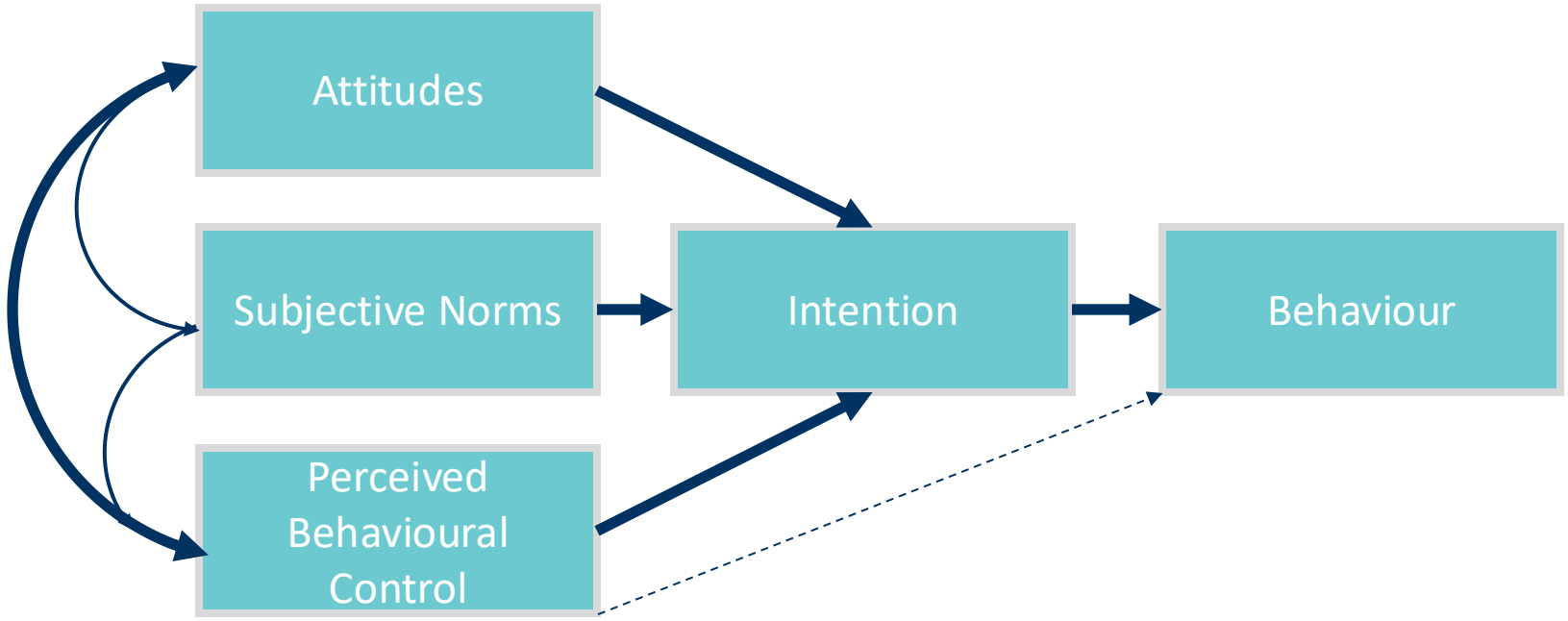
Increasing trend in publications that use theory.

Most studies from USA (n=21) & Community Pharmacies (n=30)

Single Theory use:
Theory of Planned Behaviour (TPB) (n = 18); Theoretical Domains Framework (TDF) (n = 11) [Health Belief Model n=4]

Combination of Theories used:
Theoretical Domains Framework (TDF) + Capability, Opportunity, and Motivation Behaviour (COM-B) model.

Theory of Planned Behaviour (TPB)



Behaviour is a function of three factors

1. **Attitudes**
   What do I think?
2. **Subjective Norms**
   What do others think?
3. **Perceived Behavioural Controls**
   Can I do it?

These three factors lead to an **intention** - you desire to perform the **behaviour.**

Theory of Planned Behaviour (TPB)

Advantage:

- Useful for making predictions
- Can help you identify the biggest barriers to changing behaviour

Disadvantage:

- There are situations where the model fails.
- The model doesn't include behavioural factors like emotions
- The model doesn't determine the actions to take

Key Applications in Pharmacy

Medication Adherence

Behavioural Interventions

Pharmacist Behaviour

Public Health Campaigns

Ajzen. I., The theory of planned behaviour. Organizational Behaviour and Human Decission process. 1991; 50 (2):179-211.

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Theoretical Domains Framework (TDF)

A Theoretical Framework to understand health provider behaviour

ISLAGIATT

“It seems like a good idea at the time”

[Martin Eccles, UK]

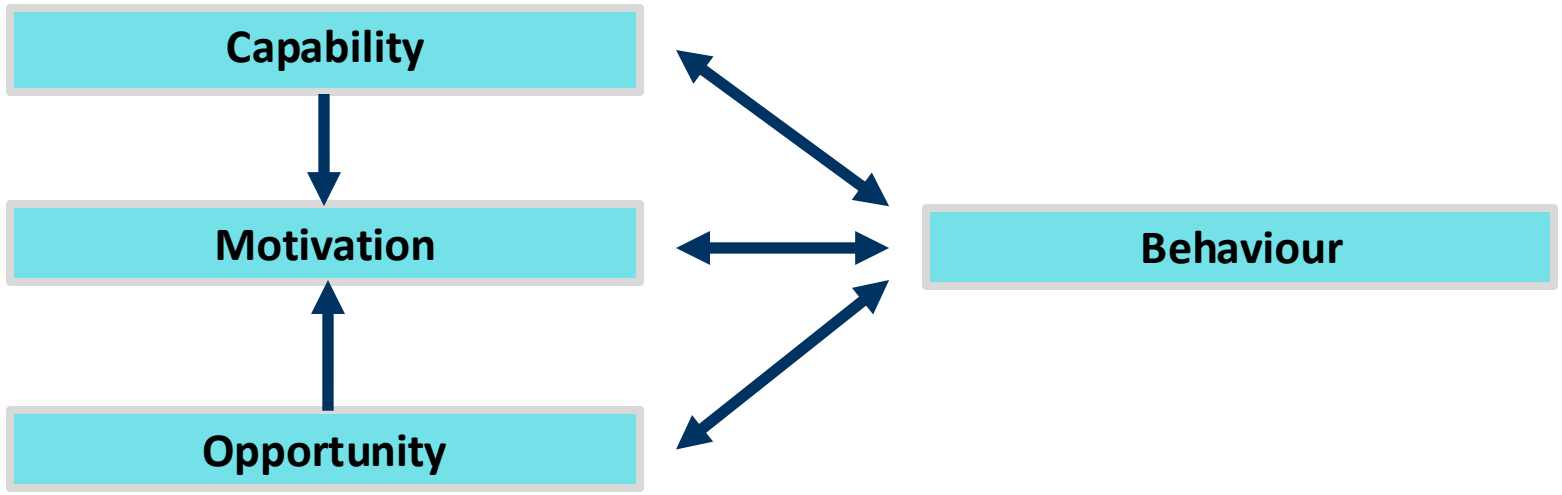
WHY are behaviours as they are?

WHAT NEEDS to CHANGE

for the desired outcome to occur ?

COM-B

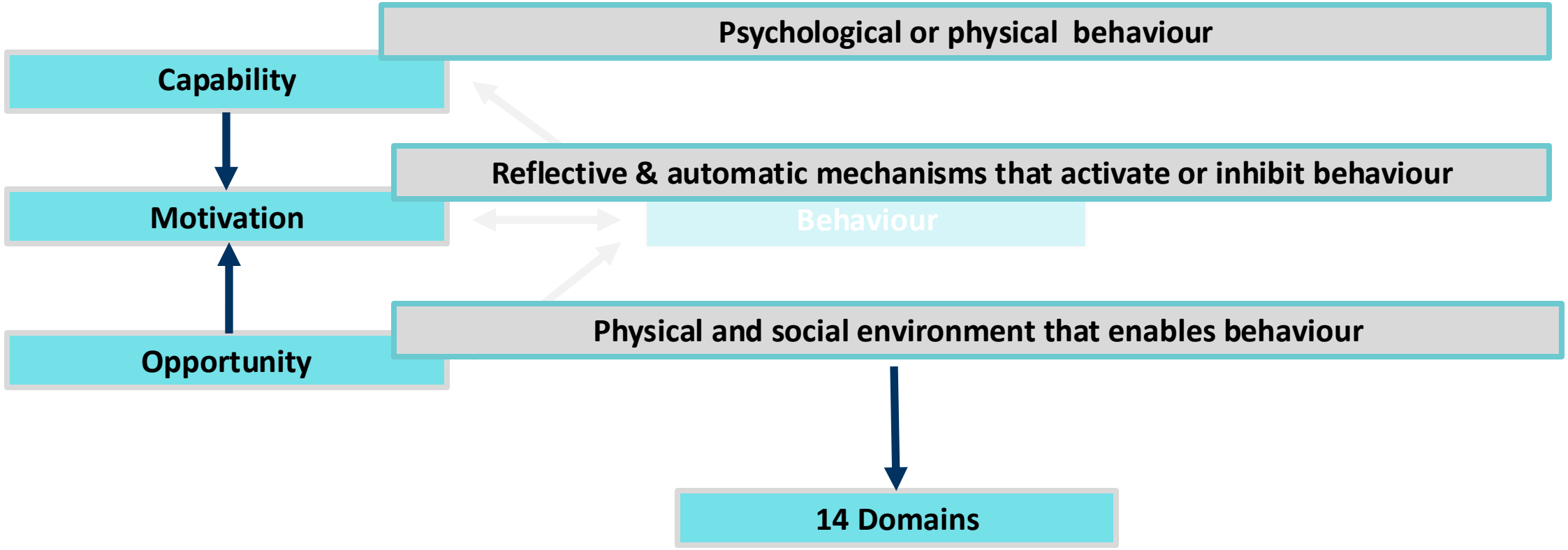
Behaviour occurs as an interaction between necessary conditions



The COM-B Models offers a more holistic approach to behaviour change compared to TPB and can be particularly useful for designing comprehensive behaviour change interventions.

COM-B

Behaviour occurs as an interaction between necessary conditions



Theoretic Domains Framework

Version 1[15]	
Domain	Constructs
Knowledge	Knowledge Knowledge about condition/scientific rationale Schemas + mindsets + illness representations Procedural knowledge
Skills	Skills Competence/ability/skill assessment Practice/skills development Interpersonal skills Coping strategies
Social/professional role and identity	Identity Professional identity/boundaries/role Group/social identity Social/group norms Alienation/organisational commitment
Beliefs about capabilities	Self-efficacy Control—of behaviour and material and Social environment Perceived competence Self-confidence/professional confidence Empowerment Self-esteem Perceived behavioural control Optimism/pessimism
Beliefs about consequences	Outcome expectancies Anticipated regret Appraisal/evaluation/review Consequents Attitudes Contingencies Reinforcement/punishment/consequences Incentives/rewards Beliefs Unrealistic optimism Salient events/sensitisation/critical incidents Characteristics of outcome expectancies—physical, social, emotional; sanctions/rewards, proximal/distal, valued/not valued, probable/improbable, salient/not salient, perceived risk/threat
Motivation and goals	Intention; stability of intention/certainty of intention Goals (autonomous, controlled) Goal target/setting Goal priority Intrinsic motivation Commitment Distal and proximal goals Transtheoretical model and stages of change

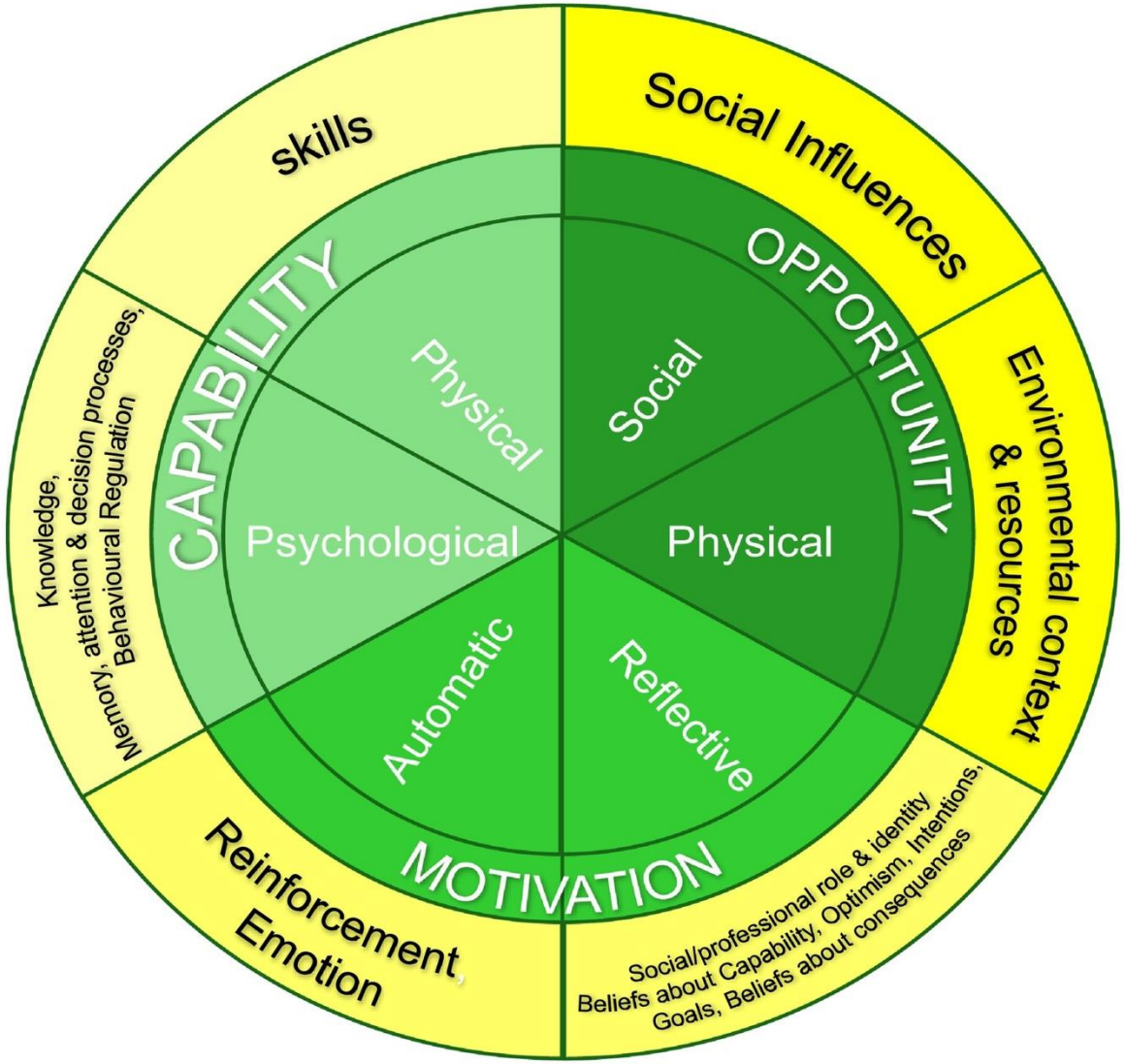
Atkins, L., Francis, J., Islam, R. *et al.* A guide to using the Theoretical Domains Framework of behaviour change to investigate implementation problems. *Implementation Sci* **12**, 77 (2017). https://doi.org/10.1186/s13012-017-0605-9

Michie, S., van Stralen, M.M. & West, R. The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implementation Sci* **6**, 42 (2011). https://doi.org/10.1186/1748-5908-6-42

TDF + COM-B

COM-B: Sources of behaviour

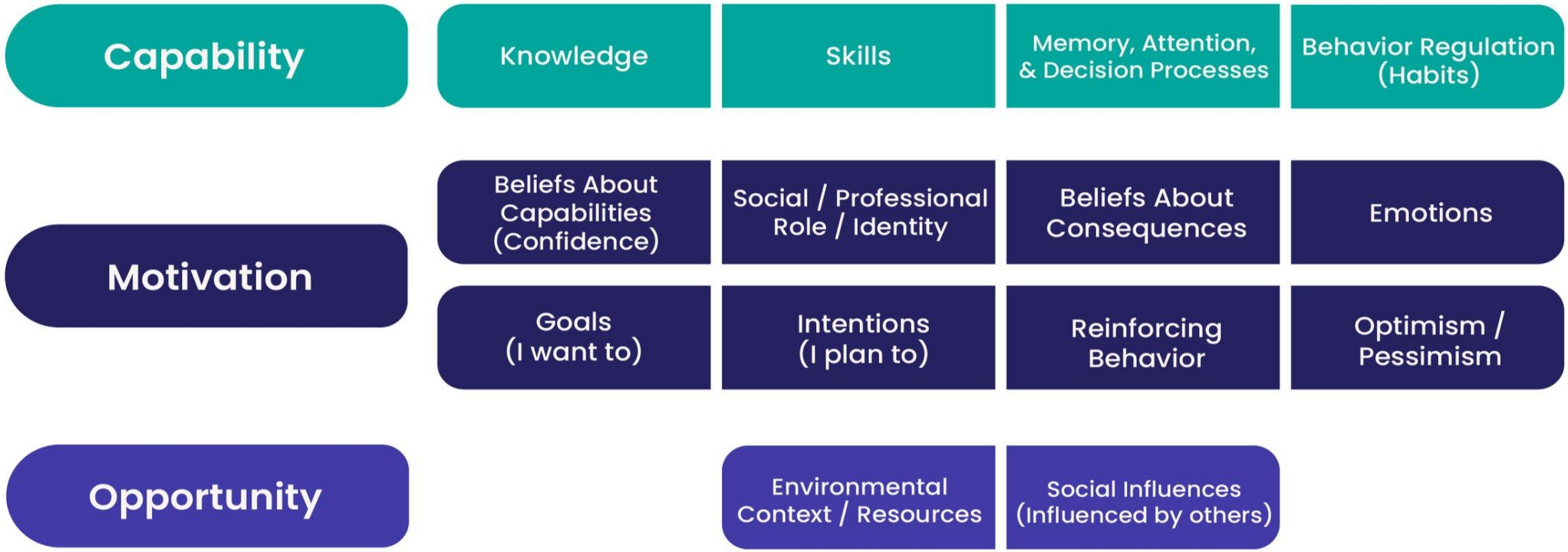
Theoretical Domains Framework (TDF)



Atkins, L., Francis, J., Islam, R. *et al.* A guide to using the Theoretical Domains Framework of behaviour change to investigate implementation problems. *Implementation Sci* **12**, 77 (2017). https://doi.org/10.1186/s13012-017-0605-9

Michie, S., van Stralen, M.M. & West, R. The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implementation Sci* **6**, 42 (2011). https://doi.org/10.1186/1748-5908-6-42

TDF + COM-B Model



The Center for Implementation

Based on Michie, van Stralen, & West (2011). Image developed by The Center for Implementation,
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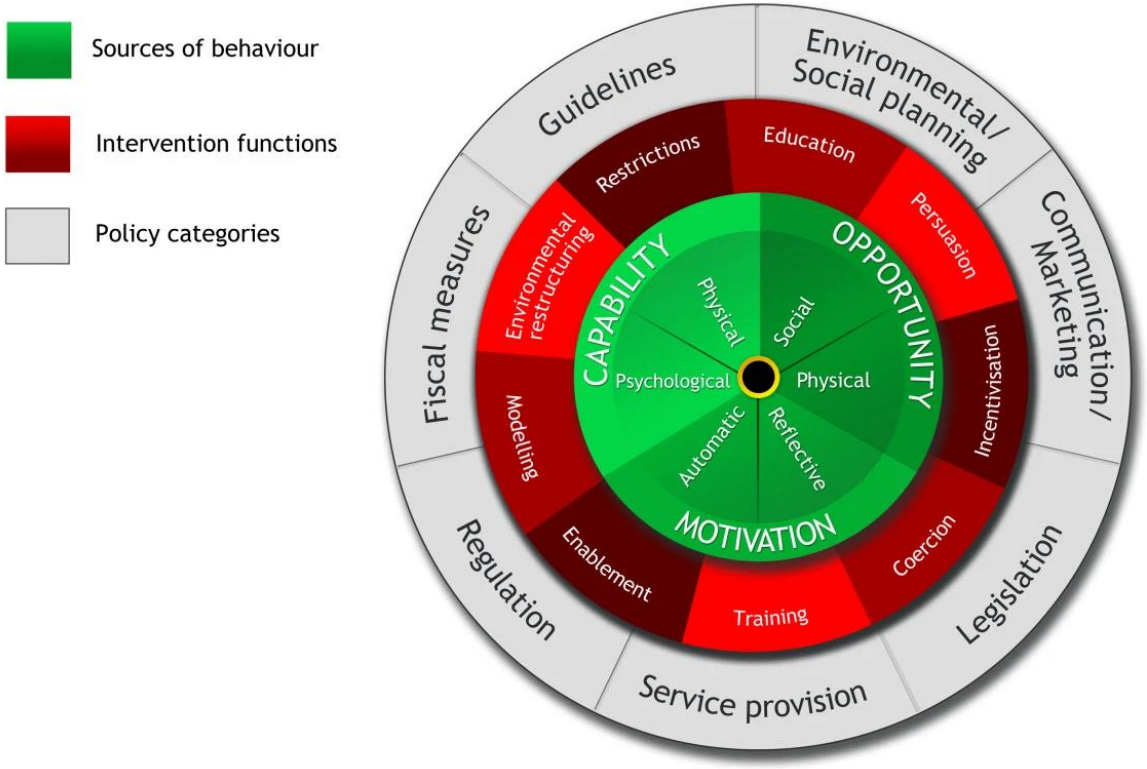
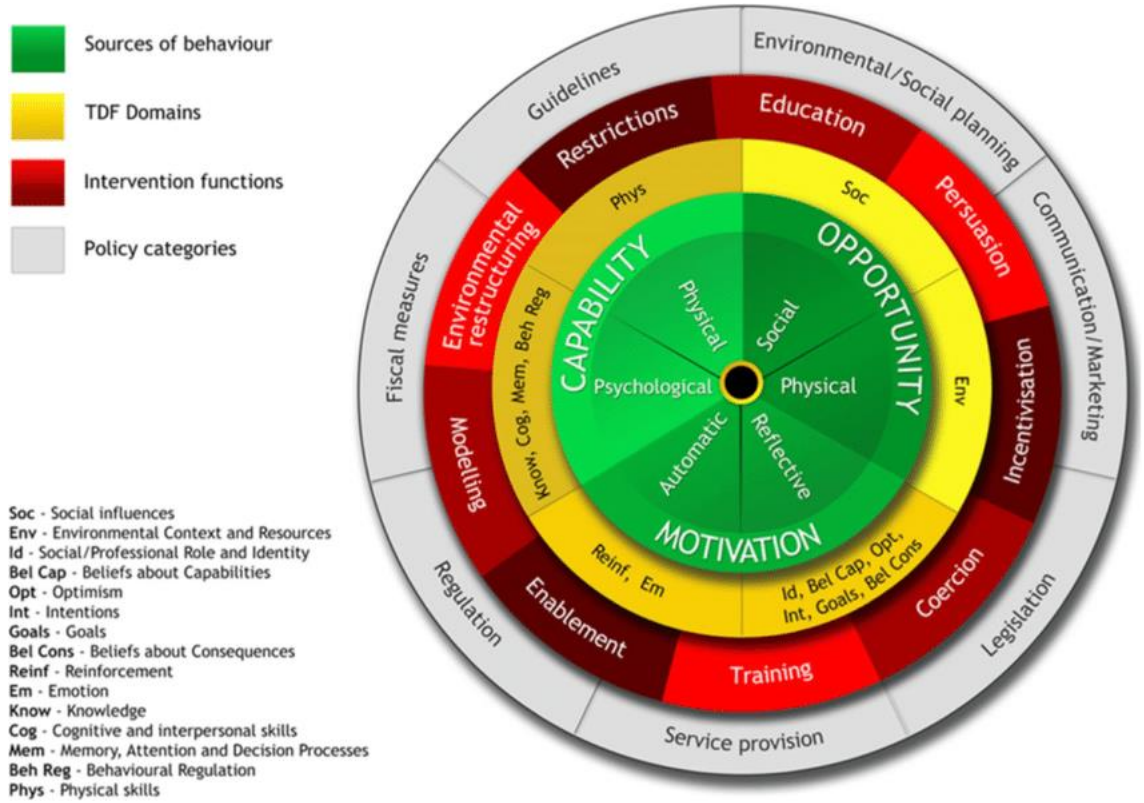
The Behaviour Change Wheel





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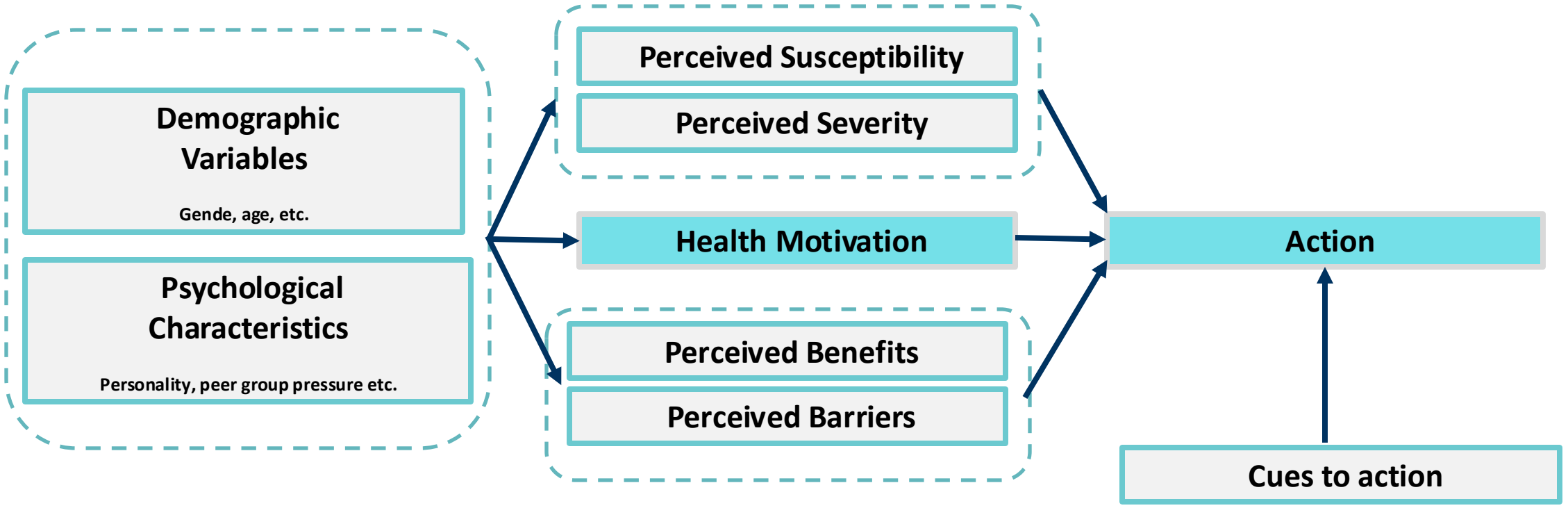
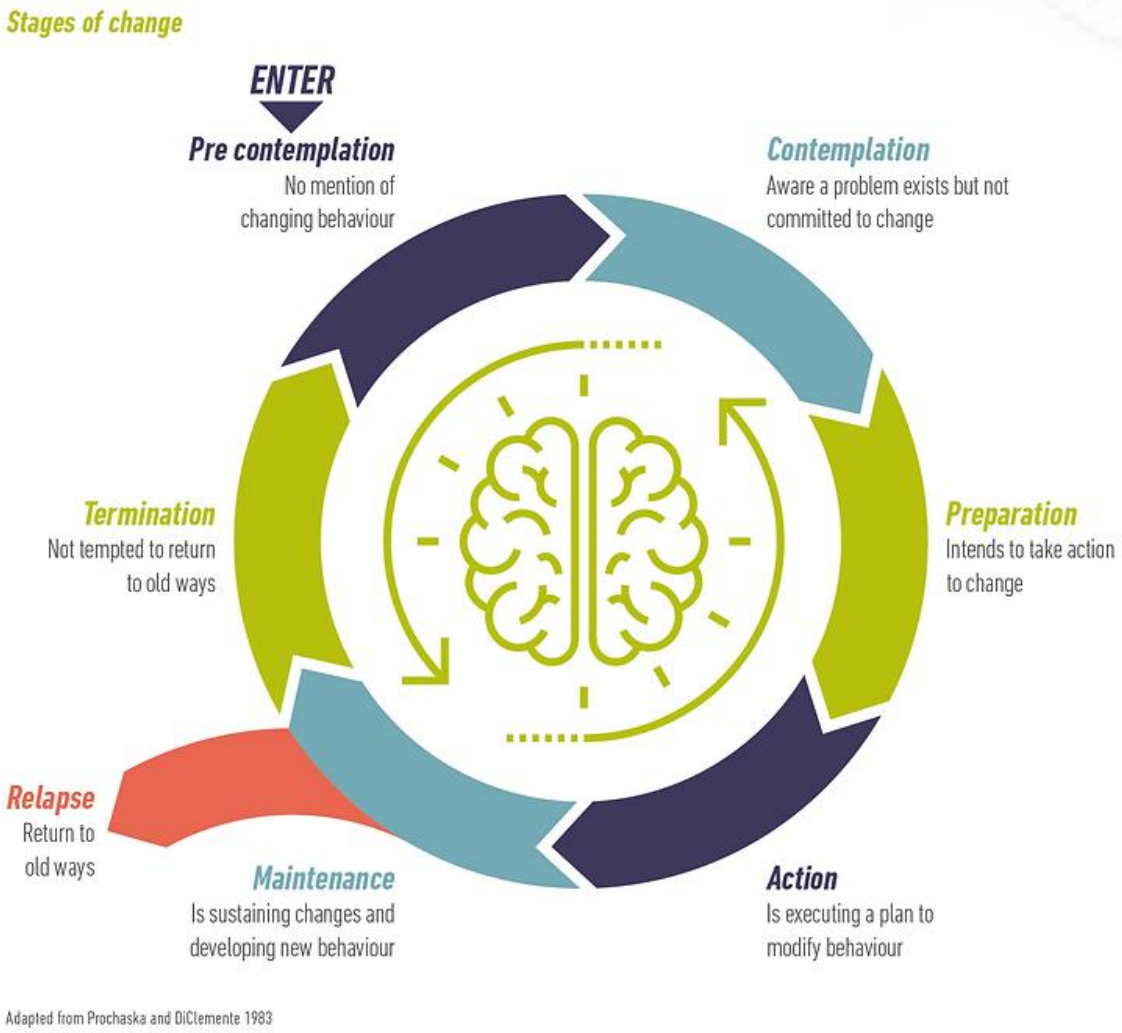
Health Belief Model



Becker, M.H., 1974. The health belief model and personal health behavior. *Health education monographs*, *2*, pp.324-473

Transtheoretical Model



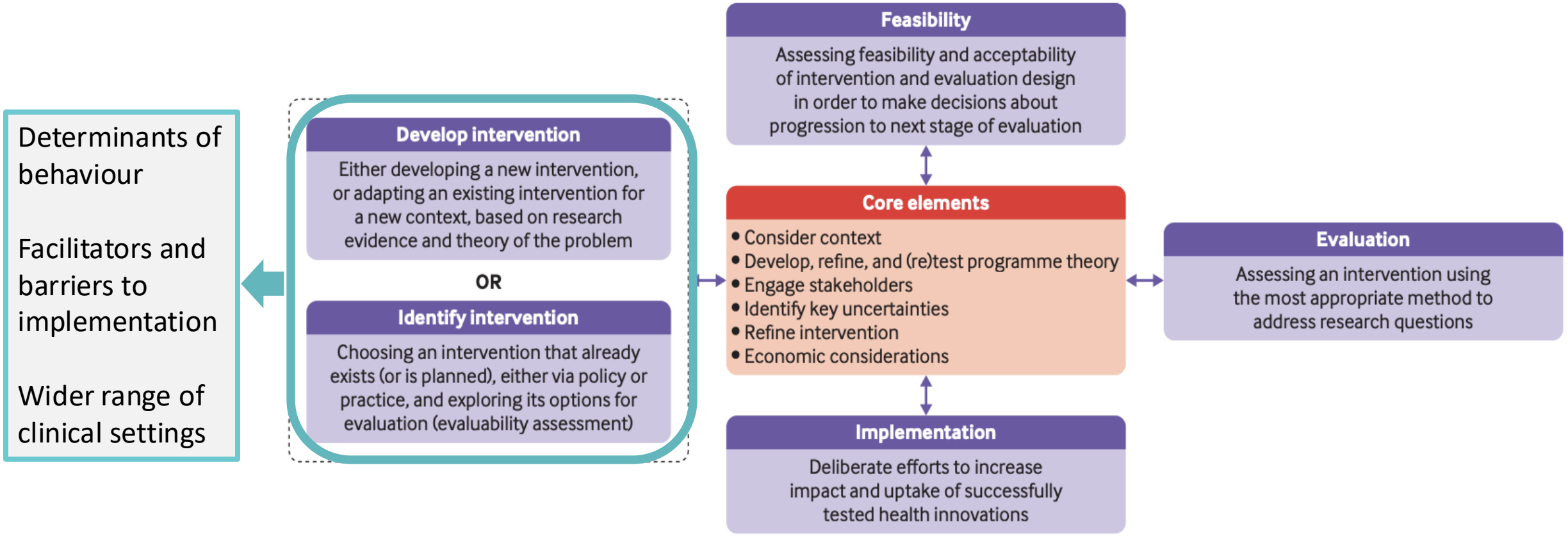
Known as Stage of Change model

It provides a framework for understanding and addressing any barriers as well as **tailoring interventions to individuals' unique preferences and readiness** to change.

A powerful tool for promoting health and wellbeing.

Prochaska JO, Velicer WF. The transtheoretical model of health behavior change. Am J Health Promot. 1997 Sep-Oct;12(1):38-48. doi: 10.4278/0890-1171-12.1.38.

UK MRC Framework (2021)



Other Findings

1. Studies published in journals OTHER than pharmacy practice journals

ALWAYS publish our best work in pharmacy journals to strengthen the discipline

2. Selecting the most appropriate model/ theory/framework remains perplexing

We need to get better at providing guidance & sharing our expertise with each other.

3. Inconsistent reporting of using theories/ models/ frameworks in pharmacy practice research

We need to establishing a specific reporting checklist

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Useful checklists

TEDieR –

http://www.tidierguide.org/

Checklist for detailed reporting of Interventions. Requires you to describe any theory used in studies when describing an intervention.

Theory Coding Sheme (TCS)

Https://doi.org/10.1097/JOM.0000000000002112

Helps the scientific community's understanding of what constitutes a theory-based intervention.

My advice

What are you hoping to achieve with your research?

Who else will be affected by this?

Who or what will need to change to make your idea happen in practice?

Which overarching theory is relevant?

Which specific model/ framework/ theory is relevant?

What aspects of your research do you need theory for?

Discuss this thoroughly in your team

No one theoretical perspective is “better” another

My personal experience

Tool development

Understand the Behaviour change related to patients/ staff

Barriers & facilitators for service implementation

Define actions for change

Concluding remarks

- Do use theory to **increase the rigour, profile, relevance and impact** of clinical pharmacy and pharmacy practice research
- Consider answering the **questions that are most useful to decision makers** rather than those that can be answered with greater certainty.
- Do **familiarise** yourself with the different theories that are most relevant to your area of research
- Discuss and **share expertise** within your team
- ALWAYS **publish your best work** in a pharmacy journal
- Use **publication checklists** to improve consistency in reporting.

- Do not simply focus on *"what other healthcare professionals think about us"*
- Do not use theory as something that fits at the point of analysis.
- Do not mix up the terminology around theory/models/ frameworks
- Do not shy away from using theory no matter how perplexing it seems
- Do not suffer in silence

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THANKS