MONASH University

Medicine, Nursing and Health Sciences

Using the Theoretical Domains Framework for informing implementation

Dr Denise O'Connor
Senior Research Fellow, NHMRC Public Health Fellow
Australasian Cochrane Centre, School of Public Health and Preventive Medicine
25 October 2012

The NEW ENGLAND JOURNAL of M

SPECIAL ARTICLE

The Quality of Health Care De in the United Sta

Elizabeth A. McGlynn, Ph.D., Steven M. Asch, M.D.,
Joan Keesey, B.A., Jennifer Hicks, M.P.H., Ph.D., A
and Eve A. Kerr, M.D., M.P

Table 3. Adherence to Quality Indicators, Overall and According to Type of Care and Function.

Variable	No. of Indicators	No. of Participants Eligible	Total No. of Times Indicator Eligibility Was Met	Percentage of Recommended Care Received (95% CI)*
Overall care	439	6712	98,649	54.9 (54.3–55.5)
Type of care				
Preventive	38	6711	55,268	54.9 (54.2–55.6)
Acute	153	2318	19,815	53.5 (52.0–55.0)
Chronic	248	3387	23,566	56.1 (55.0–57.3)
Function				
Screening	41	6711	39,486	52.2 (51.3–53.2)
Diagnosis	178	6217	29,679	55.7 (54.5–56.8)
Treatment	173	6707	23,019	57.5 (56.5–58.4)
Follow-up	47	2413	6,465	58.5 (56.6–60.4)

Table 5. Adherence to Quality Indicators, According to Condition.*

Condition	No. of Indicators	No. of Participants Eligible	Total No of Times Indicato Eligibility Was Me	Percentage of Recommended Care Received (95% CI)
Senile cataract	10	159	602	78.7 (73.3–84.2)
Breast cancer	9	192	202	75.7 (69.9–81.4)
Prenatal care	39	134	2920	73.0 (69.5–76.6)
Low back pain	6	489	3391	68.5 (66.4–70.5)
Coronary artery disease	37	410	2083	68.0 (64.2–71.8)
Hypertension	27	1973	6643	64.7 (62.6–66.7)
Congestive heart failure	36	104	1438	63.9 (55.4–72.4)
Cerebrovascular disease	10	101	210	59.1 (49.7–68.4)
Chronic obstructive pulmonary disease	20	169	1340	58.0 (51.7–64.4)
Depression	14	770	3011	57.7 (55.2–60.2)
Orthopedic conditions	10	302	590	57.2 (50.8–63.7)
Osteoarthritis	3	598	648	57.3 (53.9–60.7)
Colorectal cancer	12	231	329	53.9 (47.5–60.4)
Asthma	25	260	2332	53.5 (50.0–57.0)
Benign prostatic hyperplasia	5	138	147	53.0 (43.6–62.5)
Hyperlipidemia	7	519	643	48.6 (44.1–53.2)
Diabetes mellitus	13	488	2952	45.4 (42.7–48.3)
Headache	21	712	8125	45.2 (43.1–47.2)
Urinary tract infection	13	459	1216	40.7 (37.3–44.1)
Community-acquired pneumonia	5	144	291	39.0 (32.1–45.8)
Sexually transmitted diseases or vaginitis	26	410	2146	36.7 (33.8–39.6)
Dyspepsia and peptic ulcer disease	8	278	287	32.7 (26.4–39.1)
Atrial fibrillation	10	100	407	24.7 (18.4–30.9)
Hip fracture	9	110	167	22.8 (6.2–39.5)
Alcohol dependence	5	280	1036	10.5 (6.8–14.6)

CareTrack: assessing the appropriateness of health care delivery in Australia

William B Runciman MB BCh, FANZCA, PhD, Professor, Patient Safety and Healthcare Human Factors,[1] and President[2]
Tamara D Hunt BAppSc(Nursing), CritCareCert, Project Manager, Clinical Research[1]
Natalie A Hannaford DipAppSc(Nursing), MPH, Senior Analyst, Clinical Research[1,2]
Peter D Hibbert BAppSc(Physio), GradDipComp, GradDipEcon, Program Manager – NHMRC[3]
Johanna I Westbrook PhD, GradDipAppEpid, MHA, Director, Centre for Health Systems and Safety Research[3]
Enrico W Coiera MB BS, PhD, FACMI, Director, Centre for Health Informatics[3]
Richard O Day MD, FRACP, MB BS, Professor of Clinical Pharmacology[4]
Diane M Hindmarsh MScAgr, MBiostats, Biostatistician[3]
Elizabeth A McGlynn PhD, Director, Center for Effectiveness and Safety Research[5]
Jeffrey Braithwaite PhD, MBA, FCHSM, Professor and Foundation Director,[3] and Chairman[2]
1 University of South

4 Numbers of indicators, participants and eligible encounters, and percentage of encounters at which appropriate care was received, by condition, 2009–2010

Condition (ranked by percentage compliance)	No. of indicators	No. of participants	No. of eligible encounters*	Percentage of encounters with appropriate care (95% CI)
Coronary artery disease†‡	38	131	769	90% (85.4%–93.3%)
Dyspepsia‡	22	180	983	78% (65.8%–87.6%)
Chronic heart failure†‡	42	30	541	76% (65.1%–85.1%)
Hypertension†‡§	57	351	4700	72% (56.7%–83.6%)
Low back pain‡	10	164	6588	72% (61.4%–80.3%)
Panic disorder†	14	25	468	72% (32.5%–95.4%)
Chronic obstructive pulmonary disease	39	28	855	71% (65.8%–75.3%)
Diabetes†‡§	30	96	3993	63% (60.2%–65.6%)
Venous thromboembolism	39	485	1860	58% (53.3%–63.0%)
Osteoporosis†§	14	60	387	55% (20.8%–86.3%)
Depression†‡	19	112	756	55% (48.7%–61.5%)
Atrial fibrillation‡	18	59	242	55% (46.9%–62.8%)
Cerebrovascular accident†‡	35	19	290	53% (38.2%–67.7%)
Community-acquired pneumonia‡	33	21	294	52% (28.1%–75.8%)
Osteoarthritis†‡	21	188	3517	43% (35.8%–50.5%)
Preventive care†¶	13	665	2366	42% (31.4%–53.6%)
Surgical site infection	5	348	721	38% (27.9%–48.6%)
Asthma†‡	28	60	1674	38% (14.7%–65.4%)
Hyperlipidaemia†‡§	18	186	3021	35% (26.0%–44.3%)
Obesity†	9	67	1199	24% (21.6%–26.5%)
Antibiotic use	5	78	153	19% (0.1%–77.3%)
Alcohol dependence†‡	13	12	196	13% (1.0%–43.3%)
Total	**522**	—	**35573**	**57% (54.3%–60.1%)**

Implementation (or knowledge translation)

- Ensuring stakeholders are aware of and use research evidence to inform their health and healthcare decision-making [1]
- Ensuring research is informed by current available evidence and the experiences and information needs of stakeholders
- Stakeholders for knowledge translation include:
  - professionals (practitioners)
  - consumers (i.e. patients, family members, carers)
  - educators
  - policy makers
  - research funders
  - researchers

1. Grimshaw. *Implement Sci* 2012;7:50

"Evidence based medicine should be complemented by evidence based implementation"

Grol, *BMJ* 1997

- 235 studies
- majority of strategies observed modest effects
- the evidence-base is incomplete
- theory is needed

What is theory?

- A set of statements that organizes, predicts and explains observations, describes how phenomena relate to each other, and what can be expected under unknown conditions[1]
- Helpful in understanding how change occurs

1. Bem and Looren de Jong, 1997

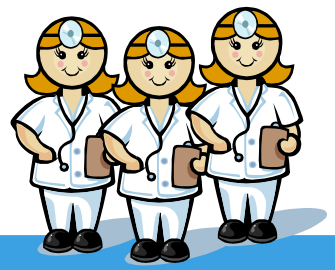
Advantages in using theory

- to inform ‘diagnostic’ assessment of barriers and enablers
- to inform the design of strategies
- to inform an evaluation framework along the causal pathway

Many theories available...

Individual

- Motivation theories
- Action theories
- Educational theories
- others...



Team

- Team effectiveness theories
- Social learning theory
- Social influence theories
- Leadership theories
- others...

Organisational

- Organisational culture
- Organisational learning
- Quality management
- Complexity theory
- others....

Health system

- Economic theories
- others....

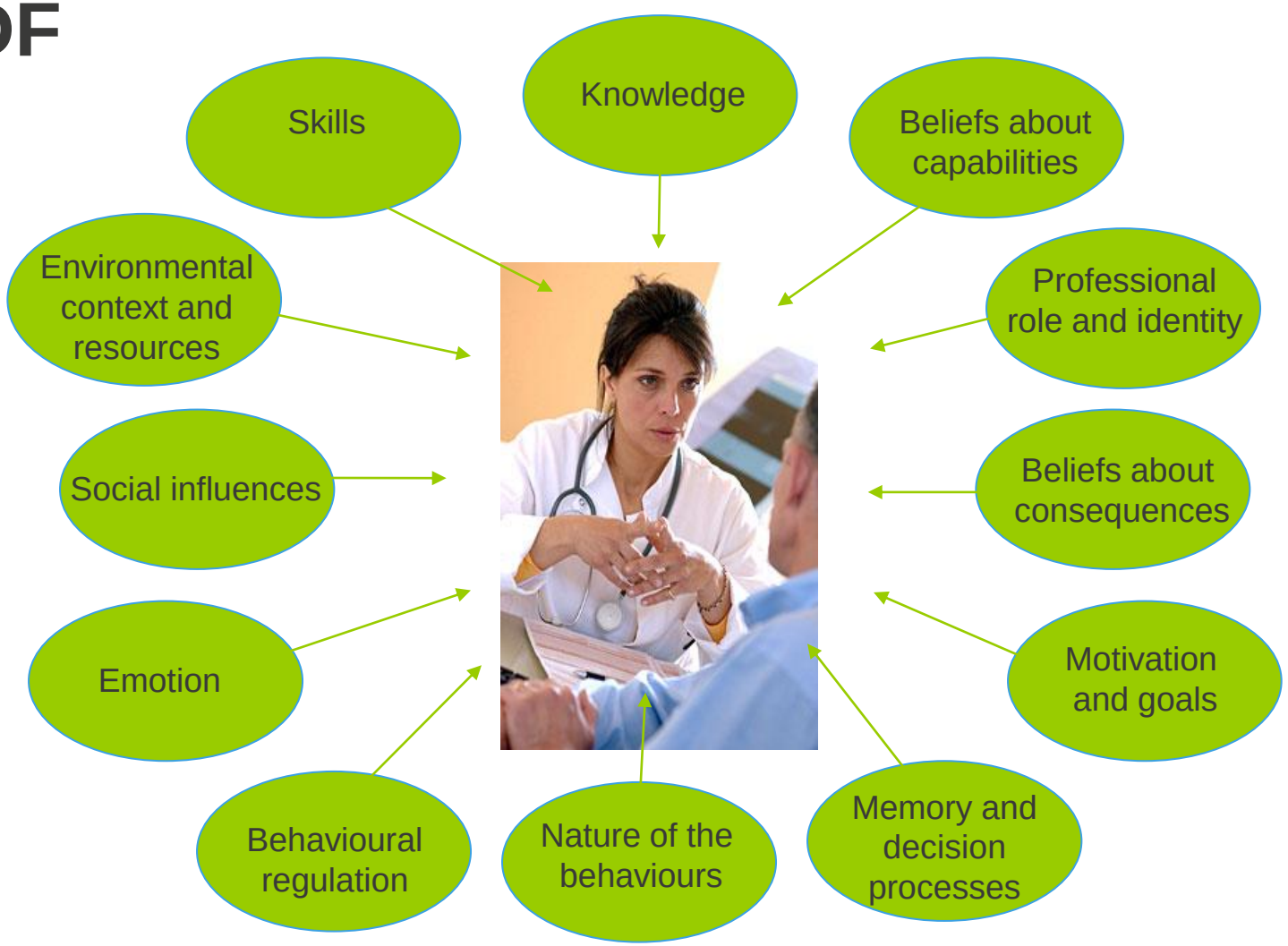
Grol, Wensing, Eccles 2005 *Improving Patient Care*

An inclusive approach to using theory

- Theoretical Domains Framework (TDF)[1]
  - integrates and simplifies theories relevant to behaviour change into a set of theoretical domains
- Developed using six stage consensus process
  - identified theories relevant to behaviour change
  - simplified theoretical constructs into overarching domains
  - evaluated importance of domains
  - conducted interdisciplinary evaluation of domains and constructs
  - validated the domain list
  - piloted interview questions relevant to domains and constructs

1. Michie et al, 2005, QSHC

TDF



Michie et al, 2005, QSHC

Validation study

- To examine optimal domain structure, content and labels
- 37 behavioural experts randomly assigned to one of two groups; sorted constructs via online task

Cane *et al. Implementation Science* 2012, **7**:37
http://www.implementationscience.com/content/7/1/37

IMPLEMENTATION SCIENCE

RESEARCH Open Access

Validation of the theoretical domains framework for use in behaviour change and implementation research

James Cane[1], Denise O'Connor[2] and Susan Michie[3*]

Abstract

Background: An integrative theoretical framework, developed for cross-disciplinary implementation and other behaviour change research, has been applied across a wide range of clinical situations. This study tests the validity of this framework.

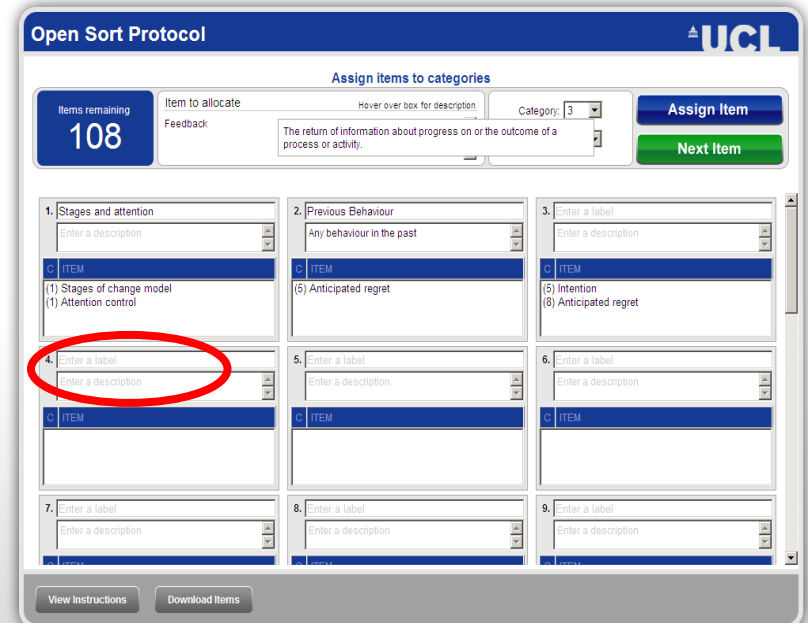
Methods: Validity was investigated by behavioural experts sorting 112 unique theoretical constructs using closed and open sort tasks. The extent of replication was tested by Discriminant Content Validation and Fuzzy Cluster Analysis.

Results: There was good support for a refinement of the framework comprising 14 domains of theoretical constructs (average silhouette value 0.29): 'Knowledge', 'Skills', 'Social/Professional Role and Identity', 'Beliefs about Capabilities', 'Optimism', 'Beliefs about Consequences', 'Reinforcement', 'Intentions', 'Goals', 'Memory, Attention and Decision Processes', 'Environmental Context and Resources', 'Social Influences', 'Emotions', and 'Behavioural Regulation'.

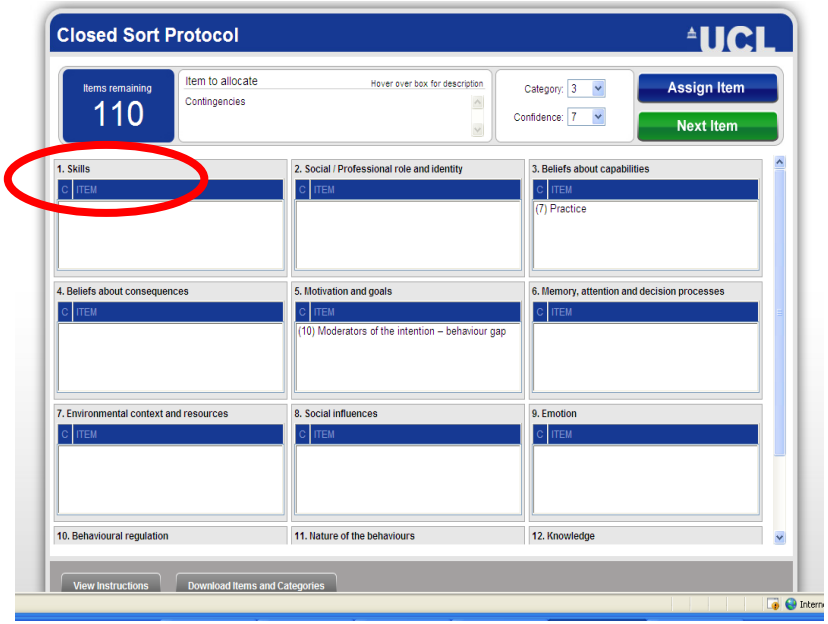
Conclusions: The refined Theoretical Domains Framework has a strengthened empirical base and provides a method for theoretically assessing implementation problems, as well as professional and other health-related behaviours as a basis for intervention development.

Keywords: Theoretical domains framework, Behaviour, Change, Implementation, Validation, Theory

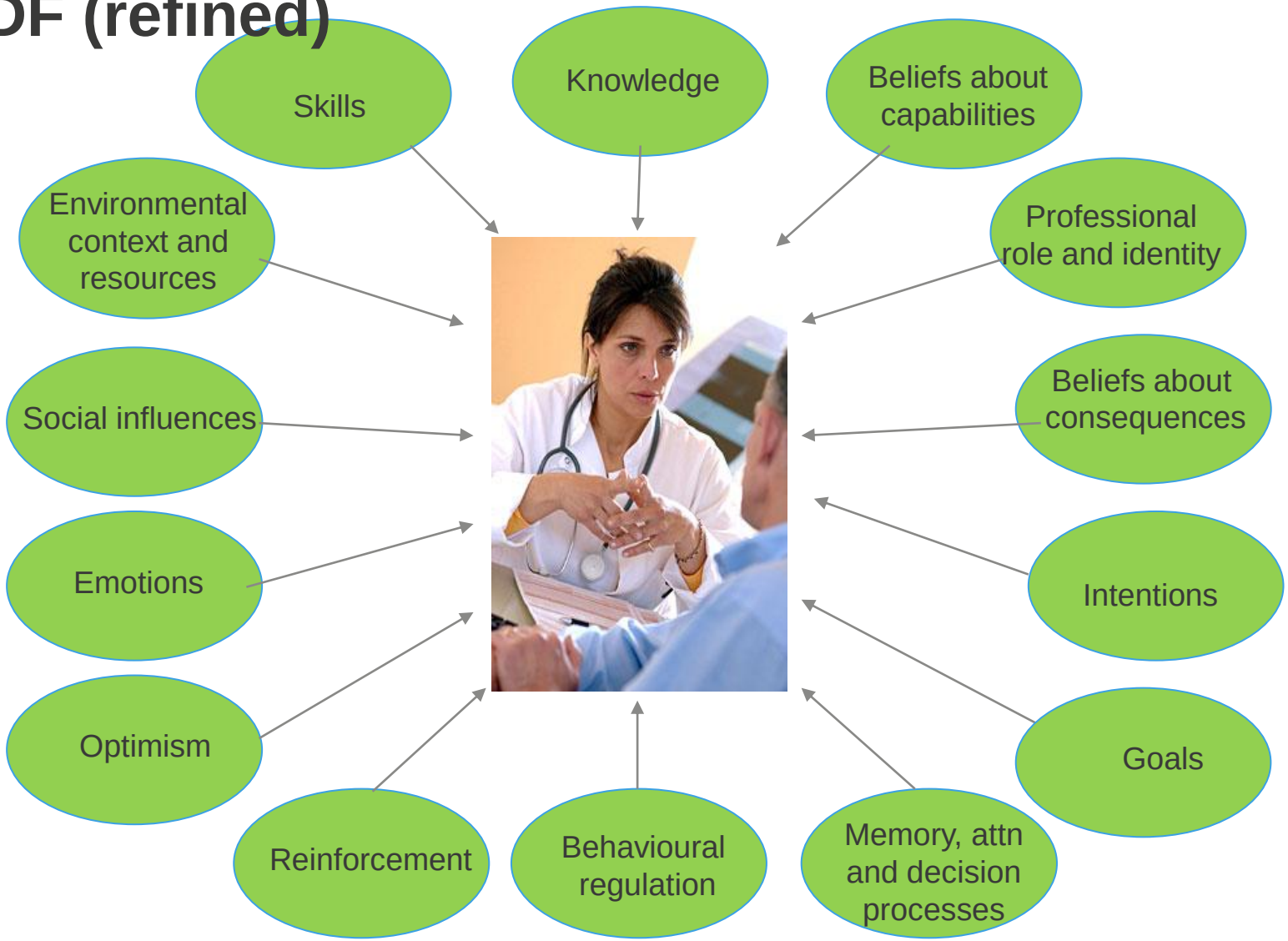
Open sort



Closed sort



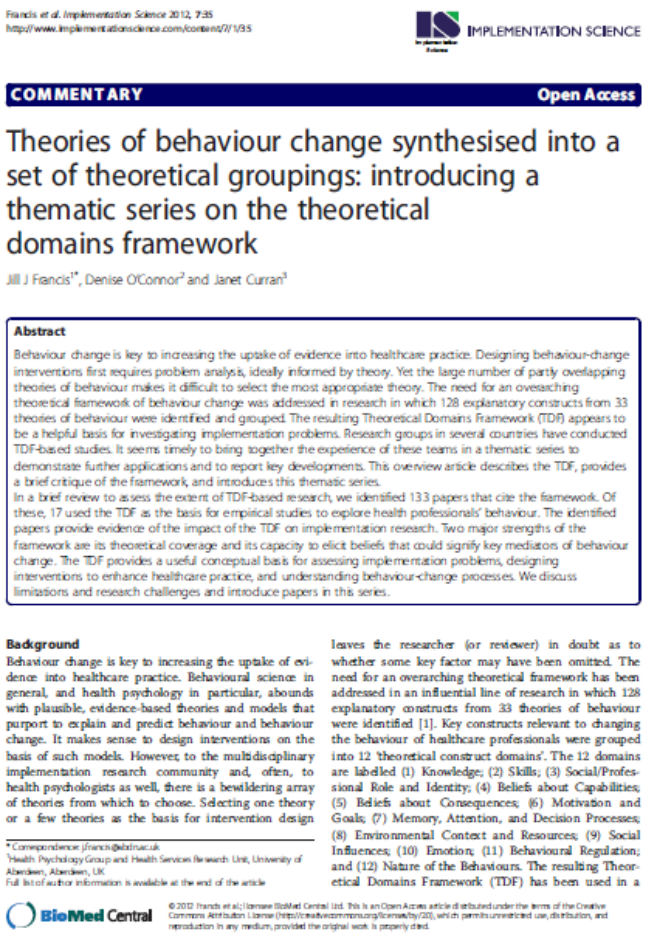
TDF (refined)



Cane et al, *Imp Sci* 2012, 7:37

Review of use

- Scoping review
  - 2005 to Nov 2011
- 133 papers (83 journals) cited TDF
- 23 papers (21 studies) had used TDF as basis for empirical study
  - e.g. problem assessment
  - intervention design
  - process evaluation alongside trial



Francis et al. Implementation Science 2012, 7:35
http://www.implementationscience.com/content/7/1/35

IMPLEMENTATION SCIENCE

COMMENTARY Open Access

Theories of behaviour change synthesised into a set of theoretical groupings: introducing a thematic series on the theoretical domains framework

Jill J Francis[1*], Denise O'Connor[2] and Janet Curran[3]

Abstract

Behaviour change is key to increasing the uptake of evidence into healthcare practice. Designing behaviour-change interventions first requires problem analysis, ideally informed by theory. Yet the large number of partly overlapping theories of behaviour makes it difficult to select the most appropriate theory. The need for an overarching theoretical framework of behaviour change was addressed in research in which 128 explanatory constructs from 33 theories of behaviour were identified and grouped. The resulting Theoretical Domains Framework (TDF) appears to be a helpful basis for investigating implementation problems. Research groups in several countries have conducted TDF-based studies. It seems timely to bring together the experience of these teams in a thematic series to demonstrate further applications and to report key developments. This overview article describes the TDF, provides a brief critique of the framework, and introduces this thematic series.

In a brief review to assess the extent of TDF-based research, we identified 133 papers that cite the framework. Of these, 17 used the TDF as the basis for empirical studies to explore health professionals' behaviour. The identified papers provide evidence of the impact of the TDF on implementation research. Two major strengths of the framework are its theoretical coverage and its capacity to elicit beliefs that could signify key mediators of behaviour change. The TDF provides a useful conceptual basis for assessing implementation problems, designing interventions to enhance healthcare practice, and understanding behaviour-change processes. We discuss limitations and research challenges and introduce papers in this series.

Background

Behaviour change is key to increasing the uptake of evidence into healthcare practice. Behavioural science in general, and health psychology in particular, abounds with plausible, evidence-based theories and models that purport to explain and predict behaviour and behaviour change. It makes sense to design interventions on the basis of such models. However, to the multidisciplinary implementation research community and, often, to health psychologists as well, there is a bewildering array of theories from which to choose. Selecting one theory or a few theories as the basis for intervention design leaves the researcher (or reviewer) in doubt as to whether some key factor may have been omitted. The need for an overarching theoretical framework has been addressed in an influential line of research in which 128 explanatory constructs from 33 theories of behaviour were identified [1]. Key constructs relevant to changing the behaviour of healthcare professionals were grouped into 12 'theoretical construct domains'. The 12 domains are labelled (1) Knowledge; (2) Skills; (3) Social/Professional Role and Identity; (4) Beliefs about Capabilities; (5) Beliefs about Consequences; (6) Motivation and Goals; (7) Memory, Attention, and Decision Processes; (8) Environmental Context and Resources; (9) Social Influences; (10) Emotion; (11) Behavioural Regulation; and (12) Nature of the Behaviours. The resulting Theoretical Domains Framework (TDF) has been used in a

* Correspondence: j.francis@abdn.ac.uk
[1]Health Psychology Group and Health Services Research Unit, University of Aberdeen, Aberdeen, UK
Full list of author information is available at the end of the article

Other frameworks, models

- PARiHS Framework: Promoting Action on Research Implementation in Health Services
- Consolidated Framework for Implementation Research (CFIR)
- Ottawa Model of Research Use (OMRU)
- Framework for Improvement (Cabana)
- Conceptual model for considering the determinants of diffusion, dissemination and sustainability of innovations in health service delivery and organisation (Greenhalgh)
- and others.....

Key messages

- TDF provides a useful conceptual framework for informing
  - assessment of implementation problems
  - design of interventions
  - understanding the mechanism of action of interventions
- Recent validation has strengthened the evidence base for the structure and content of the TDF
- Use of TDF in informing implementation is increasing; further practical guidance is needed
- Other frameworks/conceptual models available

Acknowledgements

- Susan Michie, James Cane (TDF validation study)
- Jill Francis, Janet Curran (TDF commentary)
- NHMRC: DOC is supported by a NHMRC Public Health Fellowship
- IMPLEMENT, ALIGN, IRIS, NET study investigators