ACT, Psychological Flexibility, and Treatment for chronic Pain: Is there a Role for Physiotherapy?

Professor Lance M. McCracken

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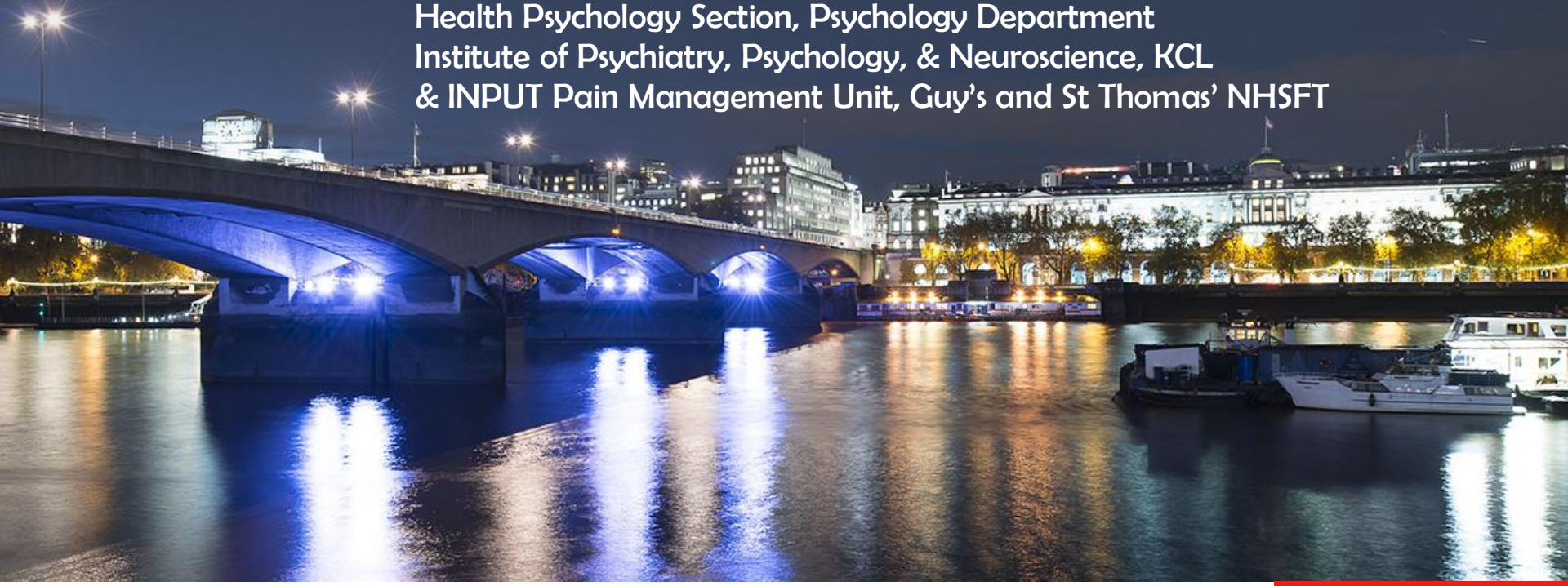

Guy's and St Thomas' NHS
NHS Foundation Trust

King's College London

Main Points of this Talk

1) Cognitive Behavioral Therapy (CBT) for chronic pain appears effective.

2) Can physiotherapist deliver CBT-informed treatment effectively?
   - *Probably, yes.*

3) Just like in CBT as delivered by psychologists there are challenges to achieving better results.
   - *A focus on processes of change, treatment matching, competency, and fidelity is needed.*

Our Focus in Pain Management 1976-2018

Presumed Processes	Examples of Target Content
Pain reduction	
Thought restructuring or suppression	Catastrophizing (pain knowledge)
Distress reduction	Depression Fear Anger
Changing beliefs	Controllability Harm Self-efficacy
Enhancing coping	(Typically focused on changing pain, emotions, or thoughts!)

Psychological therapies for the management of chronic pain (excluding headache) in adults (Review)

Williams ACDC, Eccleston C, Morley S

This is a reprint of a Cochrane review, prepared and maintained by The Cochrane Collaboration and published in *The Cochrane Library* 2012, Issue 11

http://www.thecochranelibrary.com

Results for Disability: Effect Sizes

	Post Treatment		Follow-up	
	TAU	Active	TAU	Active
Cognitive Behavior Therapy	**0.26**	**0.19**		**0.15**
Behavior Therapy				

Note: d > .20 = small, d > .5 = medium, d > .8 = large.

Summary

- “Benefits of CBT emerged almost entirely from comparisons with treatment as usual/waiting list, not with active controls.”
- “CBT
  - … has **weak** effects in improving pain...”
  - … has **small** effects on disability…”
  - … is effective in altering mood and catastrophising…”
  - … is a useful approach to the management of chronic pain.”

Group cognitive behavioural treatment for low-back pain in primary care: a randomised controlled trial and cost-effectiveness analysis

*Sarah E Lamb, Zara Hansen, Ranjit Lall, Emanuela Castelnuovo, Emma J Withers, Vivien Nichols, Rachel Potter, Martin R Underwood, on behalf of the Back Skills Training Trial investigators**

Lancet 2010; 375: 916–23

N = 701 adults with subacute or chronic low back pain recruited from primary care.

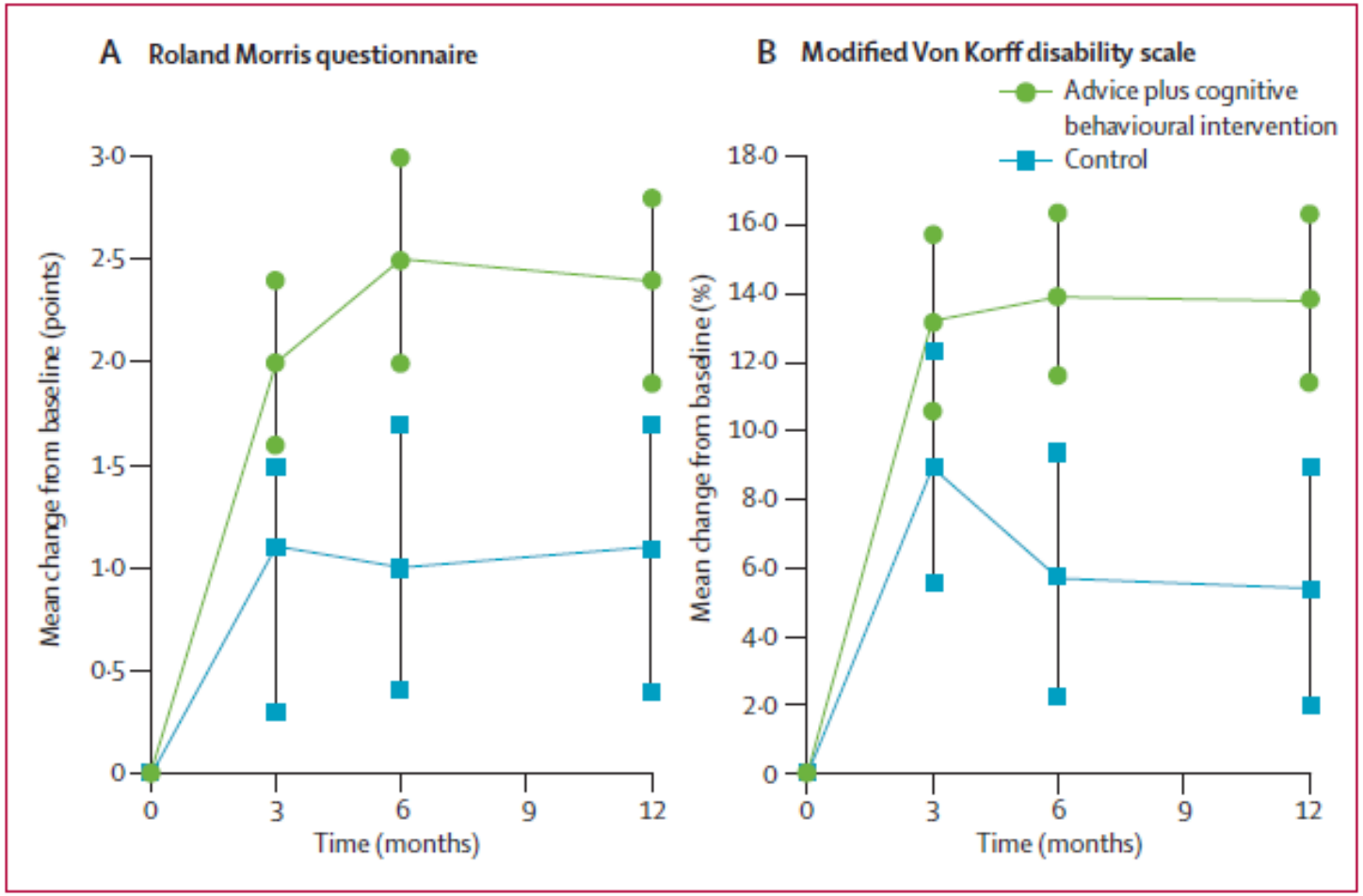

***Figure 2*: Changes in back pain disability measured with the Roland Morris questionnaire and modified Von Korff disability scale by treatment group**

Error bars represent 95% CIs. Participants in the control group were assigned to receive advice only.

PAIN® 153 (2012) 494–501

PAIN®

www.elsevier.com/locate/pain

Group cognitive behavioural interventions for low back pain in primary care: Extended follow-up of the Back Skills Training Trial (ISRCTN54717854)

Sarah E. Lamb [a,b,*], Dipesh Mistry [a], Ranjit Lall [a], Zara Hansen [a], David Evans [a], Emma J. Withers [a], Martin R. Underwood [a], On behalf of the Back Skills Training Trial Group.

[a] *Warwick Clinical Trials Unit, Warwick Medical School, University of Warwick, Coventry, UK*
[b] *Kadoorie Critical Care Research Centre, Nuffield Department of Orthopaedic Surgery, University of Oxford, Oxford, UK*

Table 2
Linear regression model analysis of clinical outcome measures for participants providing extended follow-up.[a]

Characteristic	Time, mo	BPA		BPA + CBI		Mean difference in Δ		Standardised effect size	*P*
		n (%)	Mean Δ (95% CI)	*n* (%)	Mean Δ (95% CI)	*n* (%)	Mean Δ (95% CI)		
RMQ	3	86 (75)	1.1 (0.34 to 1.92)	221 (79)	2.2 (1.72 to 2.70)	307 (78)	1.1 (0.15 to 2.02)	0.22	.023
	6	87 (76)	1.2 (0.41 to 1.94)	232 (83)	2.9 (2.38 to 3.32)	319 (81)	1.7 (0.77 to 2.57)	0.35	<.001
	12	88 (77)	1.1 (0.31 to 1.93)	229 (82)	2.6 (2.07 to 3.08)	317 (80)	1.5 (0.50 to 2.41)	0.31	.003
	Ex. follow-up	96 (84)	1.6 (0.80 to 2.48)	244 (87)	2.9 (2.38 to 3.42)	340 (86)	1.3 (0.27 to 2.26)	0.27	.013
MVK (disability)	3	89 (78)	10.7 (6.56 to 14.92)	212 (75)	13.2 (10.47 to 15.86)	301 (76)	2.5 (−2.57 to 7.42)	0.10	.340
	6	89 (78)	5.9 (1.88 to 10.00)	224 (80)	17.2 (14.65 to 19.74)	313 (79)	11.3 (6.43 to 16.08)	0.47	<.001
	12	88 (77)	6.6 (2.40 to 10.81)	221 (79)	18.0 (15.34 to 20.61)	309 (78)	11.4 (6.38 to 16.37)	0.48	<.001
	Ex. follow-up	96 (84)	11.2 (6.86 to 15.59)	239 (85)	16.7 (13.93 to 19.43)	335 (85)	5.5 (0.27 to 10.64)	0.23	.039
MVK (pain)	3	89 (78)	6.7 (2.98 to 10.51)	222 (79)	12.8 (10.46 to 15.21)	311 (79)	6.1 (1.62 to 10.57)	0.32	.008
	6	90 (79)	8.2 (4.12 to 12.27)	231 (82)	17.5 (14.97 to 20.03)	321 (81)	9.3 (4.48 to 14.13)	0.48	<.001
	12	91 (80)	8.1 (3.82 to 12.37)	236 (84)	17.5 (14.91 to 20.18)	327 (83)	9.4 (4.40 to 14.51)	0.49	<.001
	Ex. follow-up	96 (84)	12.8 (7.99 to 17.52)	246 (88)	17.4 (14.44 to 20.35)	342 (87)	4.6 (−1.00 to 10.28)	0.24	.107
EQ-5D	3	87 (76)	0.01 (−0.03 to 0.06)	220 (78)	−0.06 (−0.08 to −0.03)	307 (78)	−0.07 (−0.12 to −0.02)	−0.25	.007
	6	87 (76)	−0.03 (−0.08 to 0.02)	229 (82)	−0.05 (−0.08 to −0.03)	316 (80)	−0.02 (−0.08 to 0.03)	−0.07	.382
	12	91 (80)	−0.0003 (−0.05 to 0.05)	231 (82)	−0.06 (−0.09 to −0.03)	322 (82)	−0.06 (−0.12 to −0.01)	−0.21	.027
	Ex. follow-up	94 (83)	−0.04 (−0.09 to 0.01)	236 (84)	−0.07 (−0.10 to −0.04)	330 (84)	−0.03 (−0.08 to 0.03)	0.11	.387
Self-rated benefit[b]	3	81 (71)	2.5 (2.41 to 2.71)	218 (78)	1.8 (1.73 to 1.90)	299 (76)	0.7 (0.57 to 0.92)	…	<.001
	6	78 (68)	2.6 (2.48 to 2.77)	226 (80)	1.9 (1.84 to 2.01)	304 (77)	0.7 (0.53 to 0.87)	…	<.001
	12	82 (72)	2.6 (2.41 to 2.71)	223 (79)	1.9 (1.81 to 1.99)	305 (77)	0.7 (0.48 to 0.84)	…	<.001
	Ex. follow-up	91 (80)	2.5 (2.43 to 2.71)	244 (87)	1.9 (1.85 to 2.02)	335 (85)	0.6 (0.47 to 0.80)	…	<.001

Extended follow-up at mean 34 months.

> 80% of treatment providers in the Cognitive Behavioral Intervention groups were …

physiotherapists.

DISABILITY AND REHABILITATION, 2016
http://dx.doi.org/10.1080/09638288.2016.1236155

Taylor & Francis
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REVIEW ARTICLE

Physiotherapist-delivered cognitive-behavioural interventions are effective for low back pain, but can they be replicated in clinical practice? A systematic review

Amanda Hall[a,b], Helen Richmond[b], Bethan Copsey[b], Zara Hansen[b], Esther Williamson[b], Gillian Jones[b], Beth Fordham[b], Zafra Cooper[c] and Sarah Lamb[b]

[a]The George Institute for Global Health, Oxford Martin School, University of Oxford, Oxford, UK; [b]Nuffield Department of Orthopaedics, Rheumatology, and Musculoskeletal Sciences, University of Oxford, Oxford, UK; [c]Department of Psychiatry, University of Oxford, Oxford, UK

- **Purpose**: To determine if physiotherapist-led cognitive-behavioural (CB) interventions are effective for low back pain (LBP).
- **Method**: Randomised controlled trials (RCTs) of patients with LBP treated by physiotherapists using a CB intervention were included. Outcomes of disability, pain, and quality of life were assessed using the GRADE approach.

Disability

Pain

Quality of Life

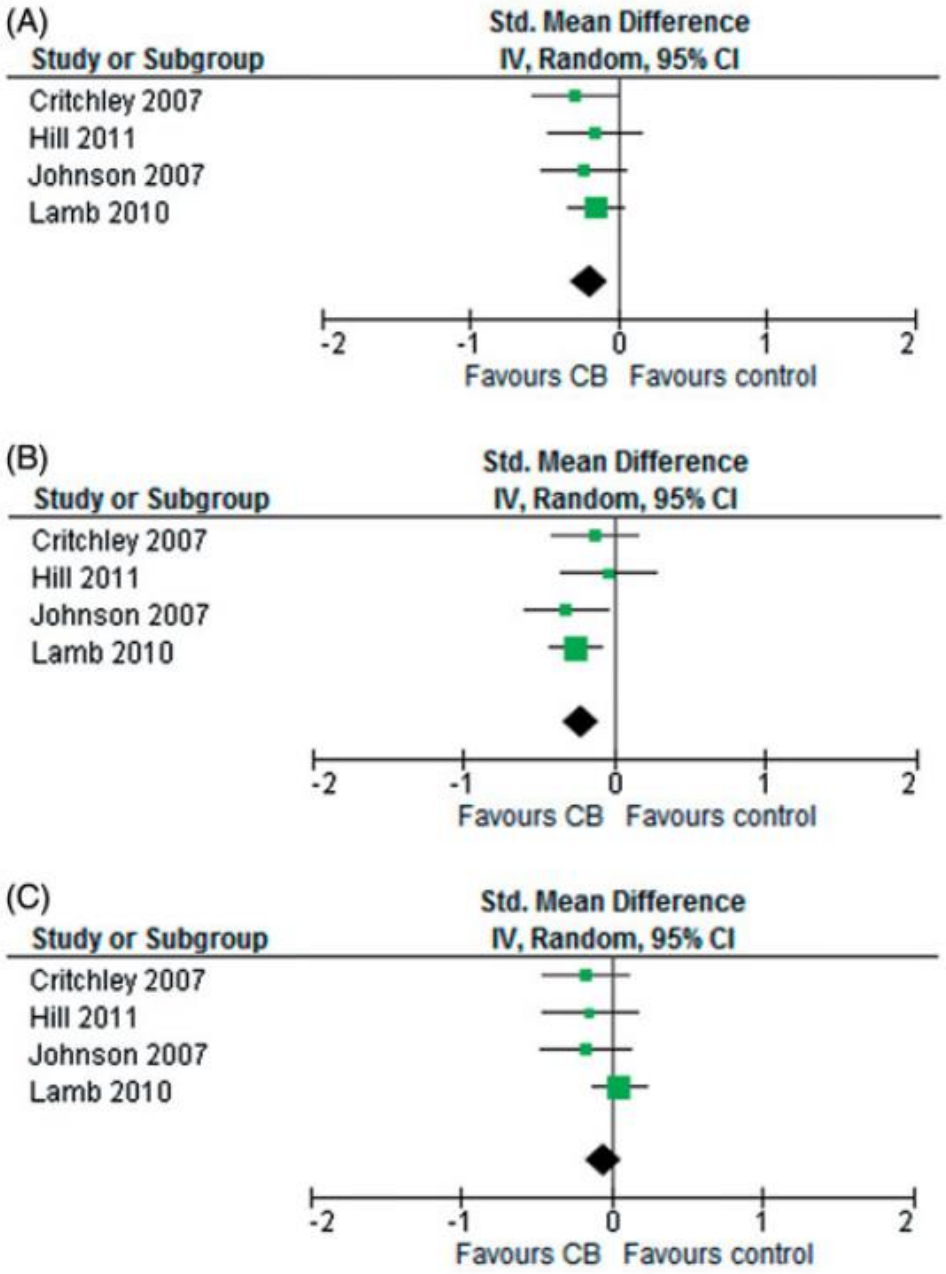

Figure 3. Forest plots for long-term (A) disability, (B) pain, and (C) quality of life.

Conclusions: With additional training, physiotherapists can deliver effective CB interventions. However, without training or resources, successful translation and implementation remains unlikely. Researchers should improve reporting of procedural information, provide relevant materials, and offer accessible provider training.

“There is no need for more general RCTs reporting group means…”

“… different types of studies and analyses are needed to identify which components of CBT work for **which type of patient** on which outcome/s, and to try to understand **why**.”

Williams et al. (2012). Cochrane Review.


IF YOU THINK
THE PROBLEM IS BAD
NOW, JUST WAIT UNTIL
I'VE SOLVED IT.
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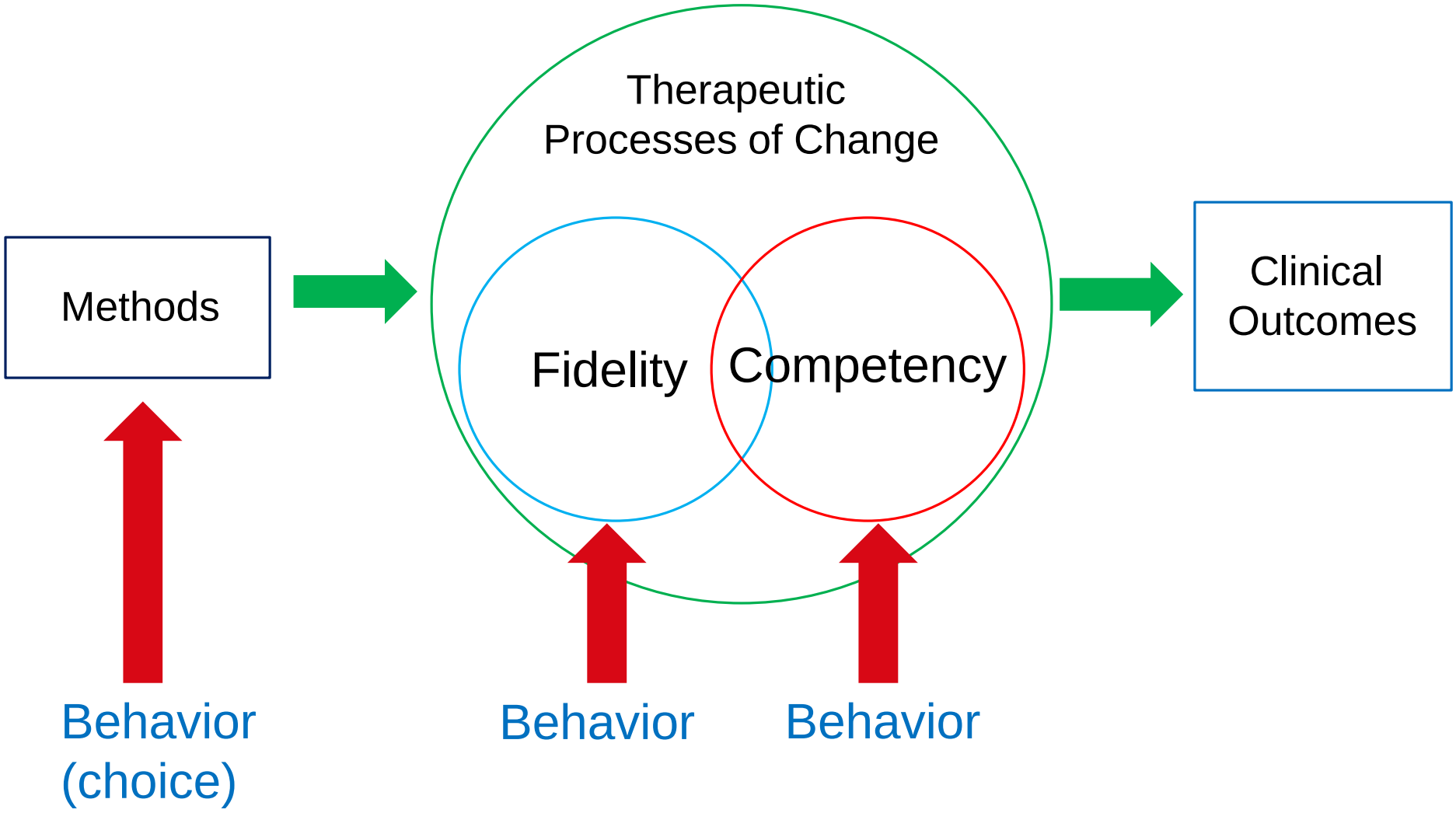
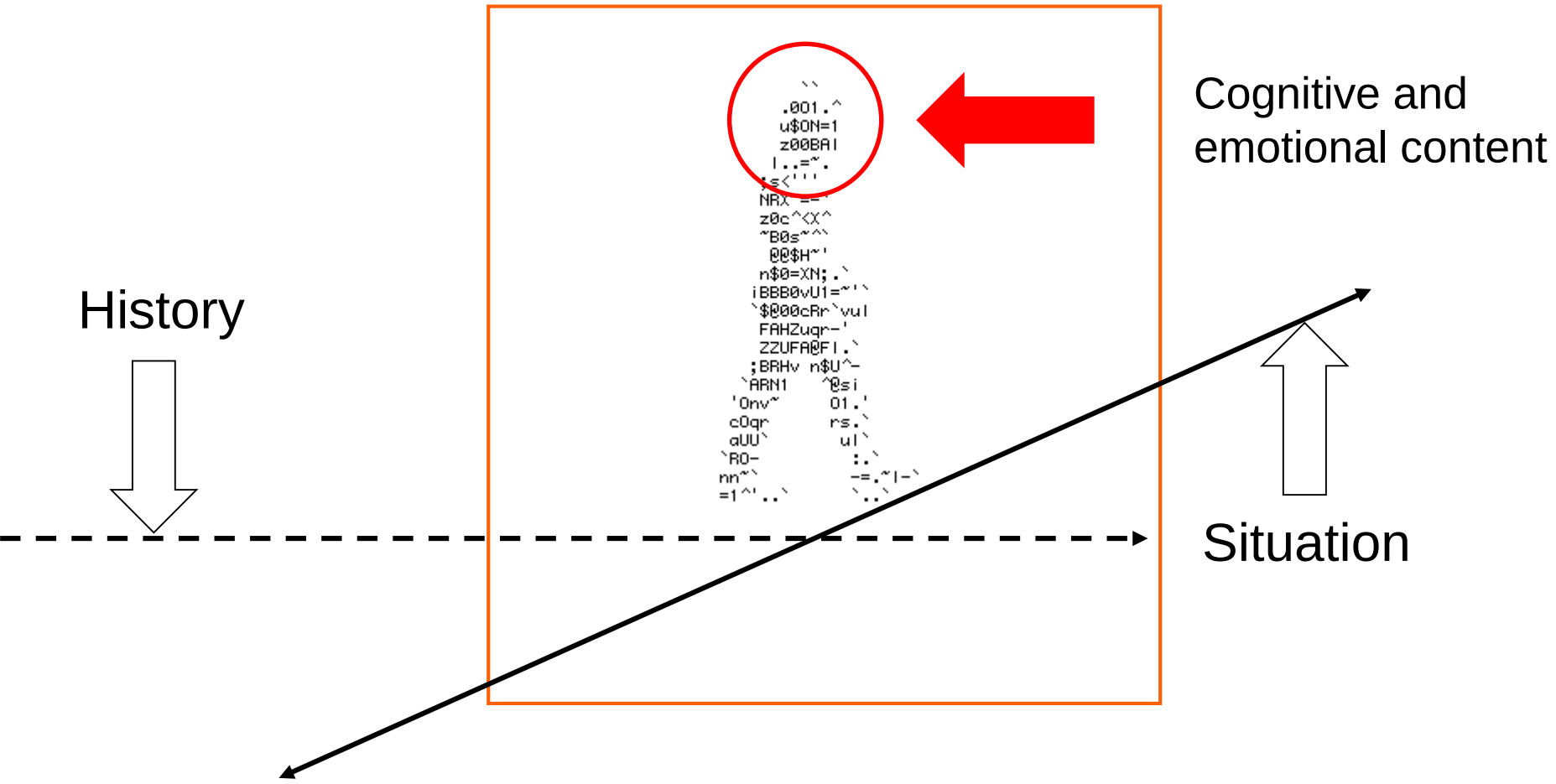
Search ID: mfln7816


24
FITNESS

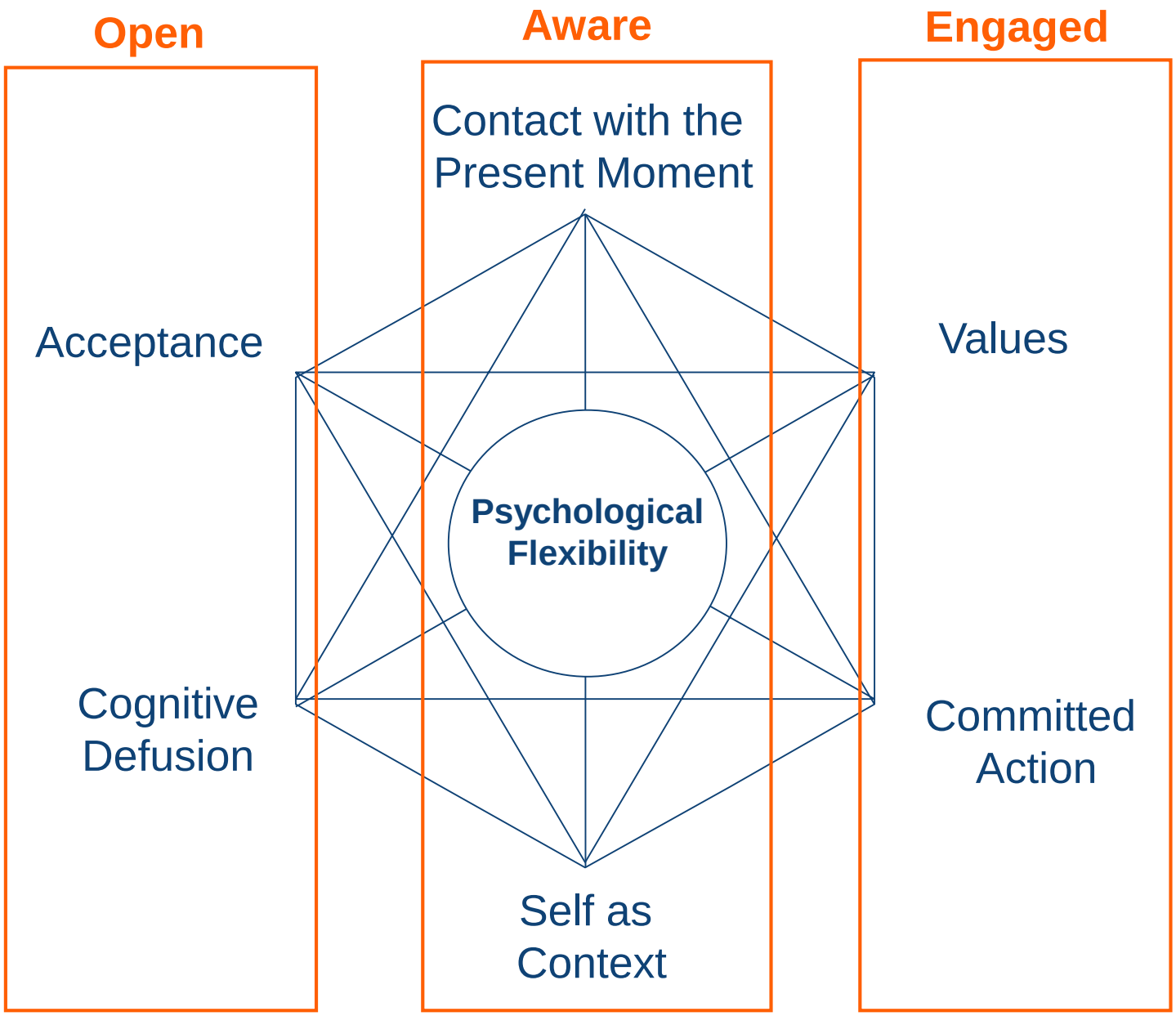
Therapist Behavior as "Mechanism" or Process



A Distinctive Perspective: Contextual



Facets of Psychological Flexibility



Psychological Flexibility: In Other Words

The ability to …

a) meet pain and discomfort without fighting it,

b) to be directly aware of the situation one is in,

c) and to take action connected to the goals one wants to reach.

ACT

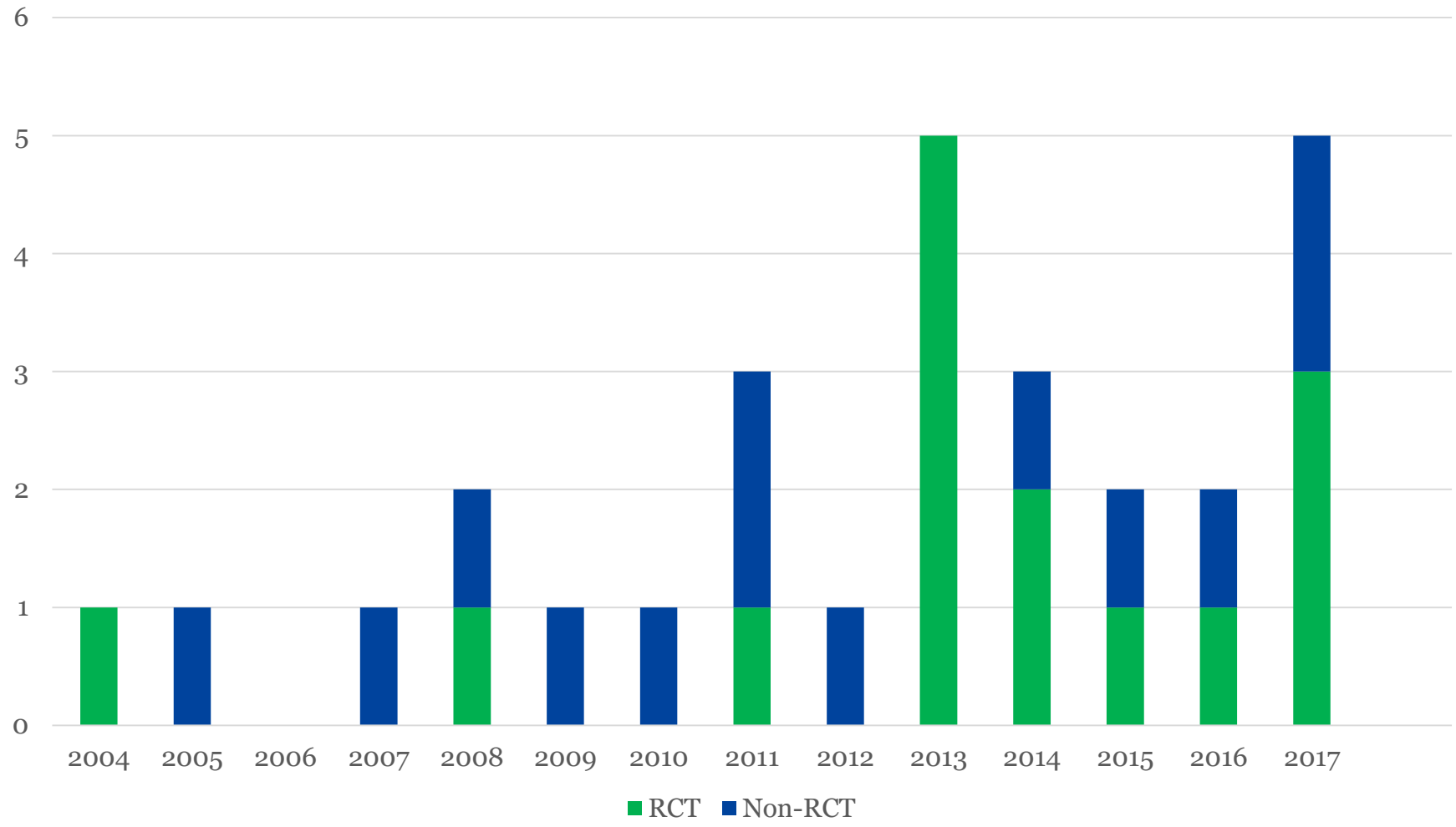
- A form of cognitive behavioral therapy with the following features:
  - Focuses on behavior change
  - Includes a primary process called psychological flexibility
  - Works both inside and outside literal language
  - Relies heavily on experiential exercises and metaphorical or paradoxical uses of language
  - Emphasizes individual analysis and relationship
  - Is emotionally intensive
  - Includes a particular therapeutic stance
  - Follows a philosophy called functional contextualism
  - Has a direct association with a program of basic behavioral science into what is called "Relational Frame Theory"

ACT for Chronic Pain (N = 29 Outcome Studies)

- Dahl et al. 2004
- McCracken et al. 2005
- McCracken et al. 2007
- Vowles & McCracken, 2008
- Wicksell et al. 2008
- Vowles et al. 2009
- Johnston et al. 2010
- Wetherell et al. 2011
- Thorsell et al. 2011
- McCracken & Gutierrez-Martinez, 2011
- McCracken & Jones, 2012
- Alonso et al., 2013
- Wicksell et al., 2013
- Burhman et al., 2013
- McCracken et al., 2013
- Steiner & Bigati, 2013
- Luciano et al., 2014
- Vowles et al., 2014
- Trompeter et al., 2014
- Alonso-Fernandez et al., 2015
- McCracken et al,, 2015
- Daly-Eichenhardt et al., 2016
- Kemani et al., 2016
- Herbert et al., 2017
- Lin et al., 2017
- Scott et al., 2017
- Yang et al., 2017
- Clarke et al., 2017
- Simister et al., 2018

Green = RCT = 17

Published Outcome Trials of ACT for Chronic Pain 2004 to 2017



COGNITIVE BEHAVIOUR THERAPY, 2016
VOL. 45, NO. 1, 5–31
http://dx.doi.org/10.1080/16506073.2015.1098724

Routledge
Taylor & Francis Group

Acceptance- and mindfulness-based interventions for the treatment of chronic pain: a meta-analytic review

M. M. Veehof[a,b], H. R. Trompetter[a], E. T. Bohlmeijer[a] and K. M. G. Schreurs[a,c]

[a]Department of Psychology, Health & Technology, University of Twente, Enschede, the Netherlands; [b]Department of Occupational Therapy, Medische Spectrum Twente, Enschede, the Netherlands; [c]Roessingh Research & Development, Enschede, the Netherlands

Summary

- 25 RCTs (9 = ACT)
- 1285 total participants

- Immediate effects:
  - Small for pain, depression, disability.
  - Medium for anxiety and pain interference
- Follow-up effects (2 to 6 months)
  - Small for pain, disability
  - Medium for depression, anxiety
  - Large for pain interference

All effects except pain increase at follow-up

- Effects for ACT > MBSR/MBCT for depression & anxiety

REVIEW ARTICLE

Acceptance and Commitment Therapy (ACT) for Chronic Pain

A Systematic Review and Meta-Analyses

Laura S. Hughes, MSc, Jodi Clark, MSc,† Janette A. Colclough, MA,‡ Elizabeth Dale,‡ and Dean McMillan, PhD§*

Clin J Pain • Volume 33, Number 6, June 2017

SUMMARY

- 11 RCTs.
- N = 863.
- Significant small to large effects favouring ACT over control conditions, including disability, anxiety, and depression (not QoL).

J Contemp Psychother
DOI 10.1007/s10879-016-9328-5

ORIGINAL PAPER

A Comprehensive Examination of Changes in Psychological Flexibility Following Acceptance and Commitment Therapy for Chronic Pain

Whitney Scott[1] · Katie E. J. Hann[1] · Lance M. McCracken[1,2]

- N = 384
- 4-week, group-based, interdisciplinary, pain management.

Correlations among changes in outcome and process measures at post treatment (N = 384)

Pre to post	Pain	SF-36 Physical	SF-36 Social	PHQ	CPAQ	CFQ	EQ
SF-36 Physical	-0.27**						
SF-36 Social	-0.17**	0.40**					
PHQ	0.25**	-0.41**	-0.53**				
CPAQ	-0.24**	0.43**	0.46**	-0.45**			
CFQ	0.05	-0.16*	-0.39**	0.46**	-0.43**		
EQ	-0.12*	0.27**	0.35**	-0.44**	0.60**	-0.66**	
CAQ	-0.06	0.27**	0.37**	-0.41**	0.53**	-0.51**	0.48**

*p < 0.05; ** p $\leq$ 0.0001

Regression Analyses of Change in Combined Measures of PF with Pain Statistically Controlled

Dependent Variable	Post Treatment: ΔR^2		Follow-up: ΔR^2	
	Pain	**Psy Flex**	Pain	**Psy Flex**
Physical functioning	.07	**.15**	.07	**.08**
Social functioning	.03	**.24**	.11	**.22**
Depression	.06	**.27**	.06	**.27**

Note: In each of the analyses change in pain is entered first and then the psychological flexibility measure were added after that. All ΔR^2 were significant, $p < .001$.

More detailed results here show a significant role for pain acceptance, cognitive fusion, and committed action.

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More detailed results here show a significant role for pain acceptance, cognitive fusion, and committed action.

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The Journal of Pain, Vol 16, No 7 (July), 2015: pp 606-615
Available online at www.jpain.org and www.sciencedirect.com

The Mediating Role of Acceptance in Multidisciplinary Cognitive-Behavioral Therapy for Chronic Pain

Sophia Åkerblom,[*,†] Sean Perrin,[†,‡] Marcelo Rivano Fischer,[*,§] and Lance M. McCracken[‡]

[*]*Department of Pain Rehabilitation, Skåne University Hospital, Lund, Sweden.*
[†]*Department of Psychology, Lund University, Lund, Sweden.*
[‡]*King's College London, Psychology Department, Health Psychology Section, London, United Kingdom.*
[§]*Department of Health Sciences, Lund University, Lund, Sweden.*

Summary

- N = 409 with chronic pain.
- 5-week CBT-based treatment.
- Outcomes: pain, pain interference, depression.
- d = .15 - .48 (post treatment and follow-up).

- In multilevel structural equation modelling:
  - *Acceptance significantly mediated improvements in pain interference and depression, beyond changes in life control, affective distress, and social support.*
  - *It was the strongest mediator in relation to pain interference*.

Behaviour Research and Therapy 74 (2015) 50–59

Contents lists available at ScienceDirect

Behaviour Research and Therapy

journal homepage: www.elsevier.com/locate/brat

Psychological flexibility and catastrophizing as associated change mechanisms during online Acceptance & Commitment Therapy for chronic pain

Hester R. Trompetter [a, *], Ernst T. Bohlmeijer [a], Jean-Paul Fox [b], Karlein M.G. Schreurs [a, c]

[a] University of Twente, Department of Psychology, Health and Technology, Postbox 217, 7500 AE, Enschede, The Netherlands
[b] University of Twente, Department of Research Methodology, Measurement and Data Analysis, Postbox 217, 7500 AE, Enschede, The Netherlands
[c] Roessingh Research and Development, Postbox 310, 7500 AH, Enschede, The Netherlands

- N = 238.
- RCT internet-based ACT vs expressive writing vs wait list.
- ACT improved interference, depression, pain.
- Psych flexibility (PF) and catastrophizing (PC) played a role.
- Role for PC indirect only and the role of PF direct and larger.

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The Journal of Pain, Vol 18, No 10 (October), 2017: pp 1153-1164
Available online at www.jpain.org and www.sciencedirect.com

Critical Reviews

Predictors of Treatment Outcome in Contextual Cognitive and Behavioral Therapies for Chronic Pain: A Systematic Review

Helen R. Gilpin,*,† Alexandra Keyes,† Daniel R. Stahl,† Riannon Greig,‡ and Lance M. McCracken*,†

**INPUT Pain Management, Guys and St Thomas NHS Foundation Trust Hospitals, London, United Kingdom.*
†Department of Psychology, Institute of Psychiatry, Psychology, and Neuroscience, King's College London, London, United Kingdom.
‡Royal Holloway, University of London, United Kingdom.

Methods and Results

- Systematic review to identify predictors of response to Contextual CBT.
- 20 studies included.
- **Substantive findings inconclusive**.
- Studies were generally heterogeneous and atheoretical in their approach.
- Considering prediction/moderation ought to include considering mediation.

- PROSPERO registration number: CRD42016038795.

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The Journal of Pain, Vol 18, No 7 (July), 2017: pp 868-880
Available online at www.jpain.org and www.sciencedirect.com

Cost-Utility of Group Acceptance and Commitment Therapy for Fibromyalgia Versus Recommended Drugs: An Economic Analysis Alongside a 6-Month Randomized Controlled Trial Conducted in Spain (EFFIGACT Study)

Juan V. Luciano,[*,†,‡] Francesco D'Amico,[†,§] Albert Feliu-Soler,[*,†,‡] Lance M. McCracken,[¶] Jaume Aguado,[||] María T. Peñarrubia-María,[†,**] Martin Knapp,[§] Antoni Serrano-Blanco,[*,†,‡‡] and Javier García-Campayo[†,††]

**Institut de Recerca Sant Joan de Déu, Esplugues de Llobregat, Spain.*
[†]Teaching, Research and Innovation Unit, Parc Sanitari Sant Joan de Déu, St. Boi de Llobregat, Spain.
[‡]Network for Prevention and Health Promotion in Primary Care (RedIAPP), Madrid, Spain.
[§]Personal Social Services Research Unit, London School of Economics and Political Science, London, United Kingdom.
[¶]Institute of Psychiatry, Psychology and Neuroscience, King's College London, and INPUT Pain Management, Guy's and St. Thomas' NHS Foundation Trust, London, United Kingdom.
[||]RTI Health Solutions, Barcelona, Spain.
***Primary Health Centre Bartomeu Fabrés Anglada, Baix Llobregat Litoral, Unitat Docent Costa de Ponent, Institut Català de la Salut, Gavà, Spain.*
[††]Department of Psychiatry, Miguel Servet Hospital, Aragon Institute of Health Sciences, Zaragoza, Spain.
[‡‡]Centre for Biomedical Research in Epidemiology and Public Health, CIBERESP, Madrid, Spain.

Summary of Study

- Aim: to analyse cost-utility of group Acceptance and Commitment Therapy (GACT) in fibromyalgia (FM) compared to pharmacological treatment (RPT) or on a waiting list (WL).
- Data from a previously published RCT.
- N = 156 people with FM (51 GACT, 52 RPT, 53 WL) randomized.
- GACT associated with less direct costs over the 6 months study period compared to both control arms (GACT €824.2 ± 1,062.7 vs. RPT €1,730.7 ± 1,656.8 vs WL €2,462.7 ± 2,822.0).
- Lower direct costs for GACT relative to RPT due to lower costs from primary care visits and FM-related medications.
- ACT appears to be a cost-effective treatment in comparison to RPT in people with FM.

BMJ Open

Physiotherapy informed by Acceptance and Commitment Therapy (PACT): protocol for a randomised controlled trial of PACT versus usual physiotherapy care for adults with chronic low back pain

Emma Godfrey,[1] Melissa Galea Holmes,[1] Vari Wileman,[1] Lance McCracken,[1] Sam Norton,[1] Rona Moss-Morris,[1] John Pallet,[2] Duncan Sanders,[3] Massimo Barcellona,[4] Duncan Critchley[5]

BMJ Open 2016;6:e011548.
doi:10.1136/bmjopen-2016011548

The PACT study

PACT NIHR RfPB funded trial

PACT TRIAL

248 participants randomised to PACT or UC

Nested qualitative Study

Process measures

Training package development

Fidelity checks

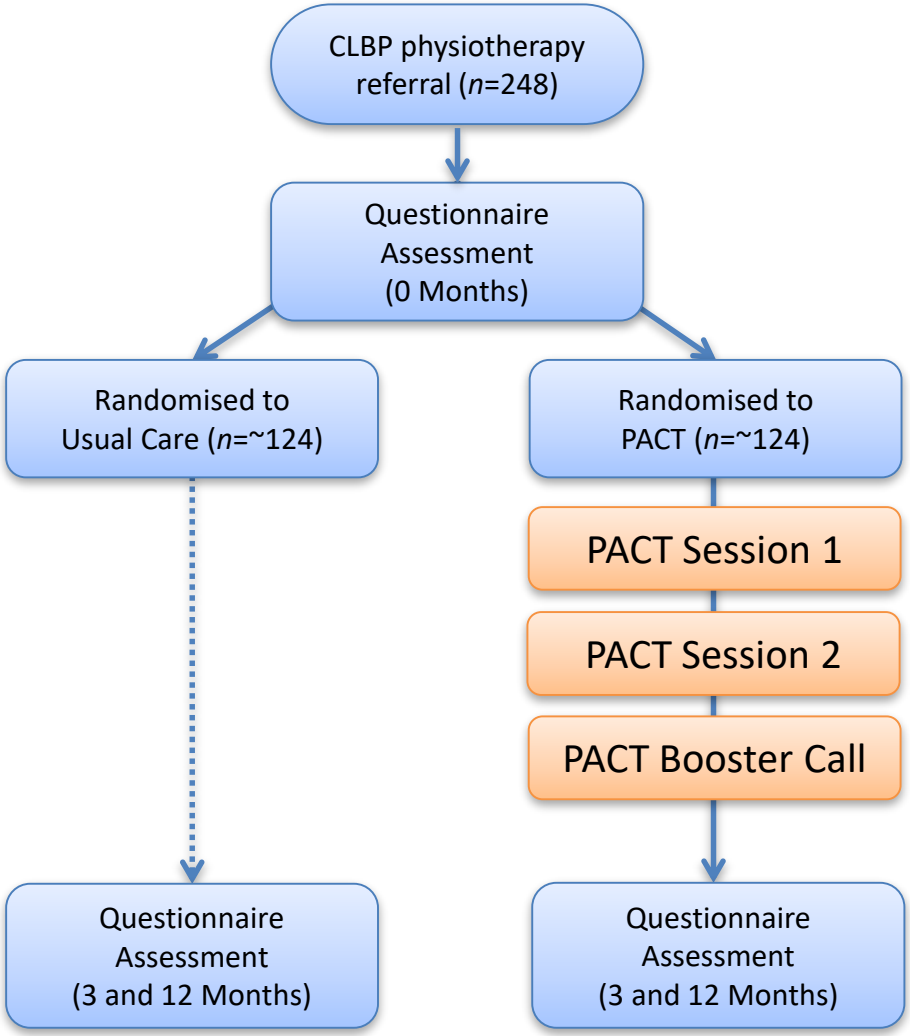
Physiotherapy informed by ACT (PACT)

- Brief physiotherapy intervention incorporating aspects of ACT, aiming to help people self-manage by improving function rather than reducing pain & uses goal setting and behavioural activation

- Two one hour sessions, one 20 min follow-up phone-call
  - **Assessment, feedback, rationale**
  - **Shifting focus** from struggle with pain
  - **Values-based goal setting** plus anticipating and addressing barriers
  - **Psychological skills and physiotherapy exercises**

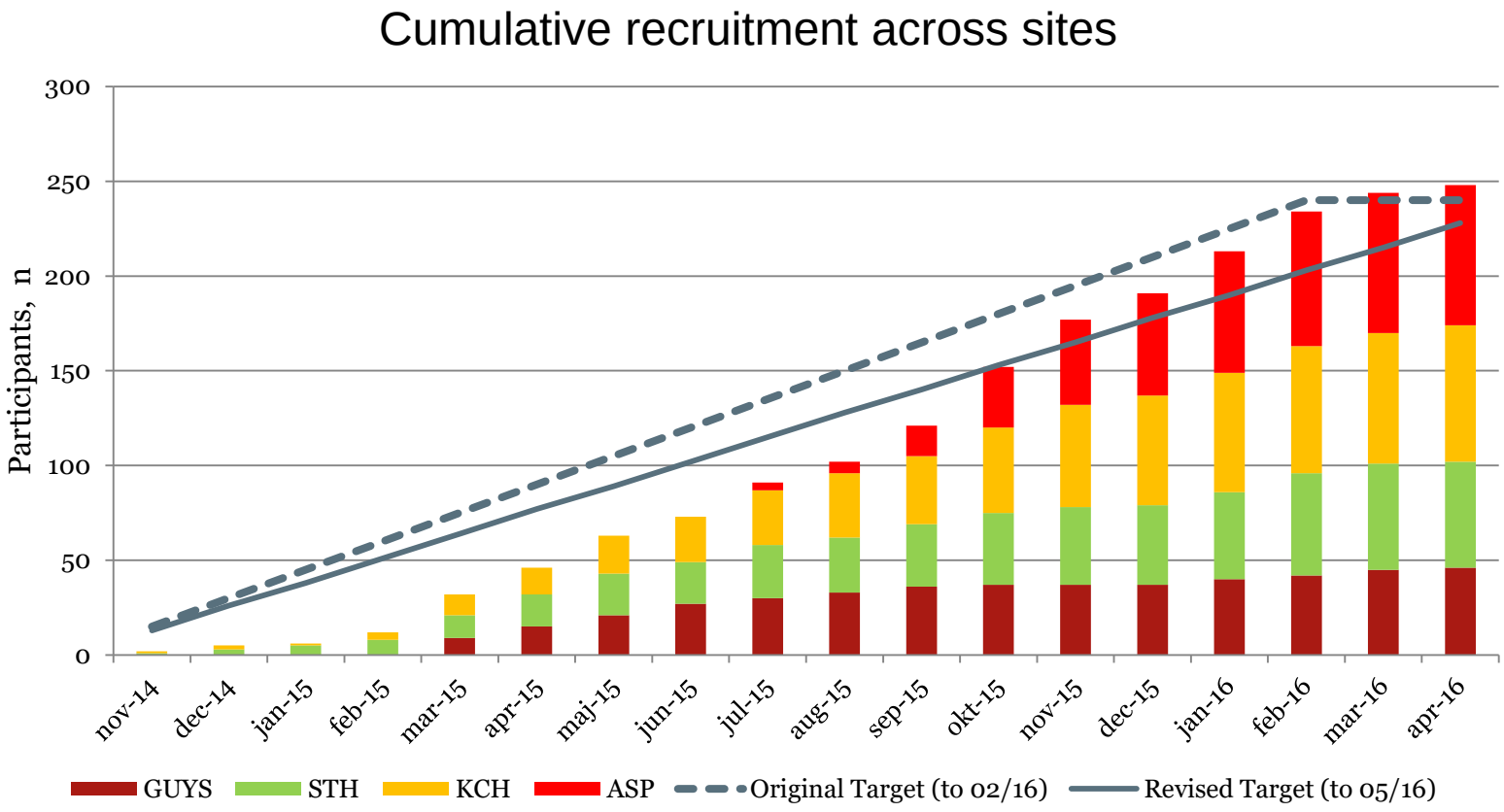
- Delivered by 8 physiotherapists (band 6-8, mean age 40, 3 male)

PACT Study Flow Diagram



Primary outcome:
Function at
3 months using
RMDQ

The PACT Study


Cumulative recruitment across sites
Participants, n
300
250
200
150
100
50
0
nov-14
dec-14
jan-15
feb-15
mar-15
apr-15
maj-15
jun-15
jul-15
aug-15
sep-15
okt-15
nov-15
dec-15
jan-16
feb-16
mar-16
apr-16
GUYS
STH
KCH
ASP
Original Target (to 02/16)
Revised Target (to 05/16)

Summary of Points Presented

1. CBT is effective for chronic pain, to a degree.
2. Physiotherapist trained in CBT can deliver a treatment that appears similarly effective.
3. At the same time, we need to improve CBT.
4. ACT is an alternative and effective form or CBT.
5. It may have advantages over conventional CBT.

Summary of PF Model

- ✓ PF is a general approach to health and wellbeing.
- ✓ ACT, a vehicle for PF, has a growing evidence base in chronic pain.
- ✓ It is PROCESS or mechanism focused: So far it appears that if you increase PF, people benefit.

- ✓ Next goal is to optimize methods to do this by…
  - ✓ Refining methods around change in PF
  - ✓ Matching people with what they need
  - ✓ Training greater competency in **whomever delivers treatment**.

Lance M. McCracken, PhD
Professor of Behavioural Medicine

Health Psychology Section,
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