Process-Based Psychological Therapy in Chronic Pain: A Steep and Thorny Path?

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Take Home Message

- Cognitive Behavioral approaches (including ACT) for chronic pain produce benefits.
- It is assumed they could do this even better.

- This may require knowledge of the following:
  - **How to Individualize.**
  - **Change processes.**
- In turn this may require more use of **idiographic** and less of nomothetic approaches.

Psychological Medicine

cambridge.org/psm

Review Article

Cite this article: Fordham B *et al* (2021). The evidence for cognitive behavioural therapy in any condition, population or context: a meta-review of systematic reviews and panoramic meta-analysis. *Psychological Medicine* 1–9. https://doi.org/10.1017/S0033291720005292

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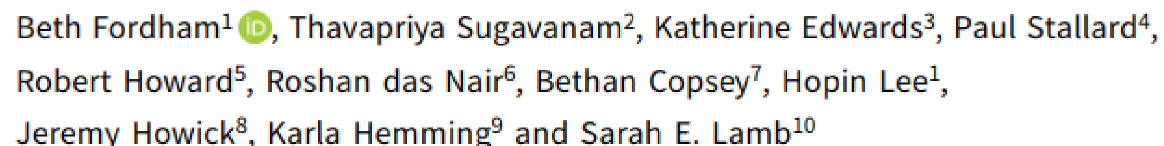
Key words:
Cognitive Behavioural Therapy; meta-review; overview; panoramic meta-analysis; systematic reviews

The evidence for cognitive behavioural therapy in any condition, population or context: a meta-review of systematic reviews and panoramic meta-analysis



Beth Fordham[1], Thavapriya Sugavanam[2], Katherine Edwards[3], Paul Stallard[4], Robert Howard[5], Roshan das Nair[6], Bethan Copsey[7], Hopin Lee[1], Jeremy Howick[8], Karla Hemming[9] and Sarah E. Lamb[10]

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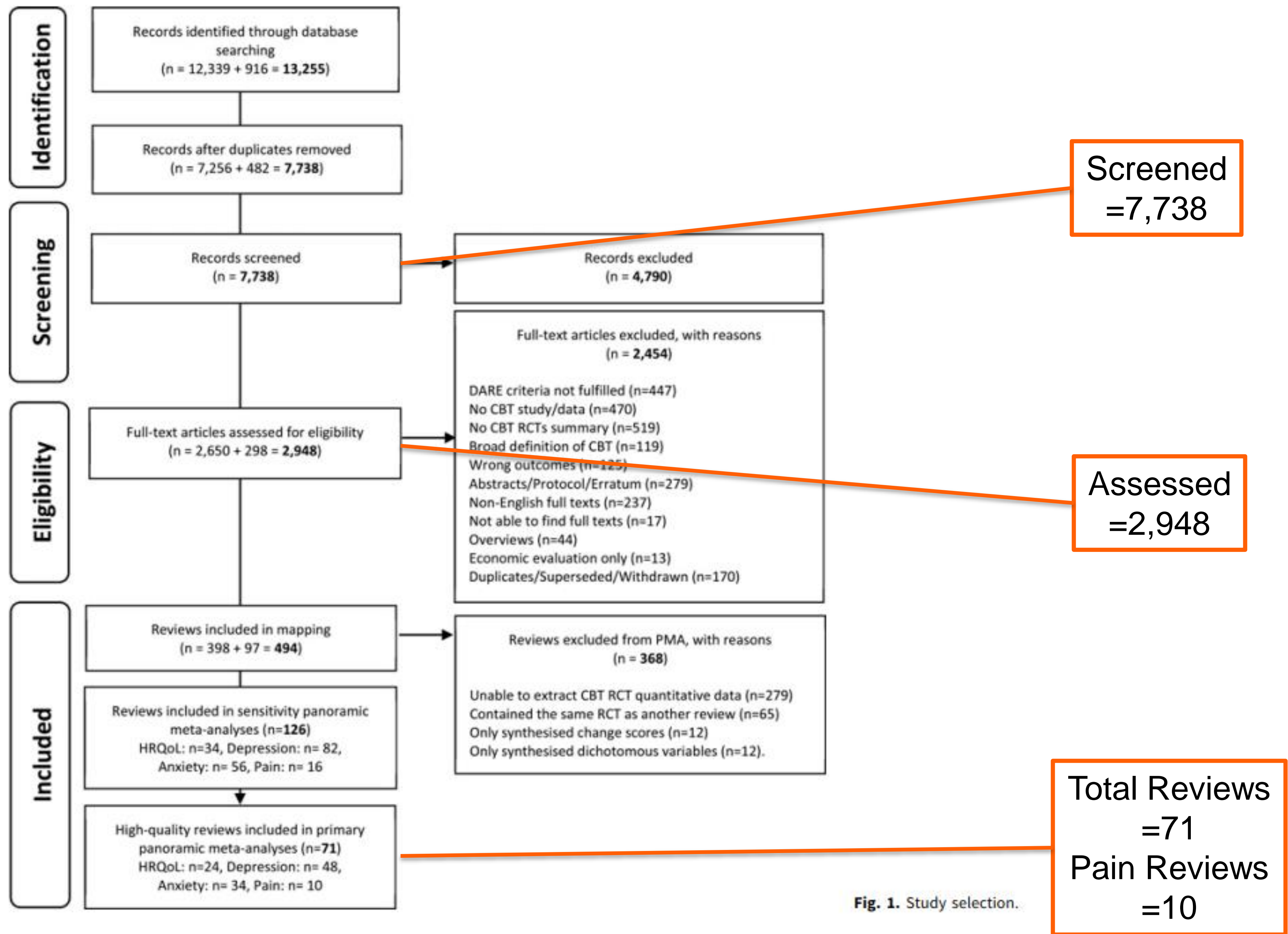


Fig. 1. Study selection.

Table 1. Sub-group analyses for HRQoL, anxiety and pain outcomes

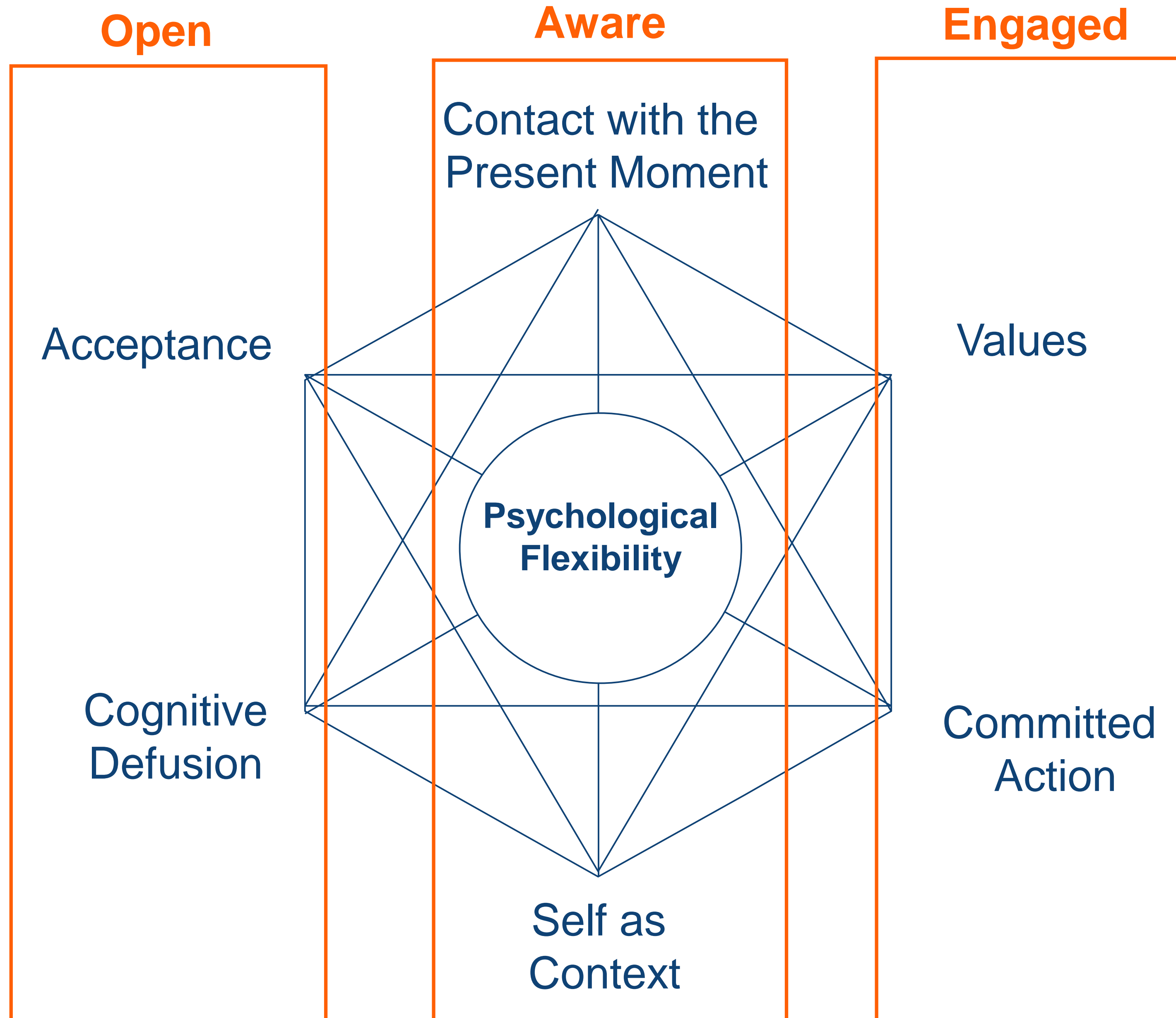
	HRQoL SMD (95% CI), I^2 across conditions [No. meta-analyses (MAs)]	Anxiety SMD (95% CI), I^2 across conditions [No. meta-analyses (MAs)]	Pain SMD (95% CI), I^2 across conditions [No. meta-analyses (MAs)]
Follow-up			
Long (≥12 months)	0.11 (0.02–0.20) $I^2 = 0\%$ (9 MAs)	0.38 (0.15–0.60), $I^2 = 65.9\%$ (10 MAs)	0.19 (0.08–0.31), $I^2 = 0\%$ (2 MAs)
Short (<12 months)	0.29 (0.17–0.42) $I^2 = 29.5\%$ (15 MAs)	0.27 (0.12–0.43), $I^2 = 59.4\%$ (26 MAs)	0.32 (0.04–0.59), $I^2 = 70.5\%$ (8 MAs)
Interaction effect	$p = 0.06$	$p = 0.48$	$p = 0.62$
Age			
<18 years	0.20 (−0.15 to 0.56) $I^2 = 0\%$ (3 MAs)	0.37 (0.12–0.62) $I^2 = 67.1\%$ (7 MAs)	Too heterogenous $I^2 = 86.5\%$ (3 MAs)
18–65 years	0.23 (0.14–0.33) $I^2 = 39.4\%$ (21 MAs)	0.32 (0.15–0.48) $I^2 = 63.6\%$ (26 MAs)	0.21 (0.12–0.31) $I^2 = 0\%$ (6 MAs)
>65 years	0.39 (−0.24 to 1.02) $I^2 =$ NA (1 MA)	0.06 (−0.30 to 0.43) $I^2 = 0\%$ (2 MAs)	No data available
Interaction effect	$p = 0.86$	$p = 0.69$	$p = 0.68$
CBT intensity			
High	0.21 (0.11–0.32) $I^2 = 0\%$ (14 MAs)	0.28 (0.15–0.42) $I^2 = 54.3\%$ (28 MAs)	0.19 (0.01–0.37) $I^2 = 17.5\%$ (5 MAs)
Low	0.23 (0.03–0.42) $I^2 = 68.1\%$ (9 MAs)	Too heterogenous $I^2 = 78.4\%$ (8 MAs)	Too heterogenous $I^2 = 84.1\%$ (4 MAs)
Interaction effect	$p = 0.99$	$p = 0.62$	$p = 0.87$
Control group			
Active	0.09 (−0.01 to 0.19) $I^2 = 0\%$ (8 MAs)	0.19 (−0.00 to 0.37) $I^2 = 48.6\%$ (14 MAs)	0.14 (−0.11 to 0.38) $I^2 = 72.8\%$ (3 MAs)
Not active	0.31 (0.18–0.45) $I^2 = 40.3\%$ (14 MAs)	0.37 (0.19–0.55) $I^2 = 64.3\%$ (20 MAs)	0.59 (0.07–1.11) $I^2 = 68.8\%$ (5 MAs)
Interaction effect	$p = 0.04$*	$p = 0.24$	$p = 0.86$

*Statistically significant interaction effect at $p = 0.05$.

Summary

- “We summarised 494 reviews (221,128 participants), representing 14/20 physical and 13/20 mental conditions (World Health Organisation’s International Classification of Diseases)….
- The effect’s associated prediction interval −0.05 to 0.50 suggested CBT will remain effective in conditions for which we do not currently have available evidence….
- While there remain some gaps in the completeness of the evidence base, we need to recognise the consistent evidence for the general benefit which CBT offers.”

Facets of Psychological Flexibility



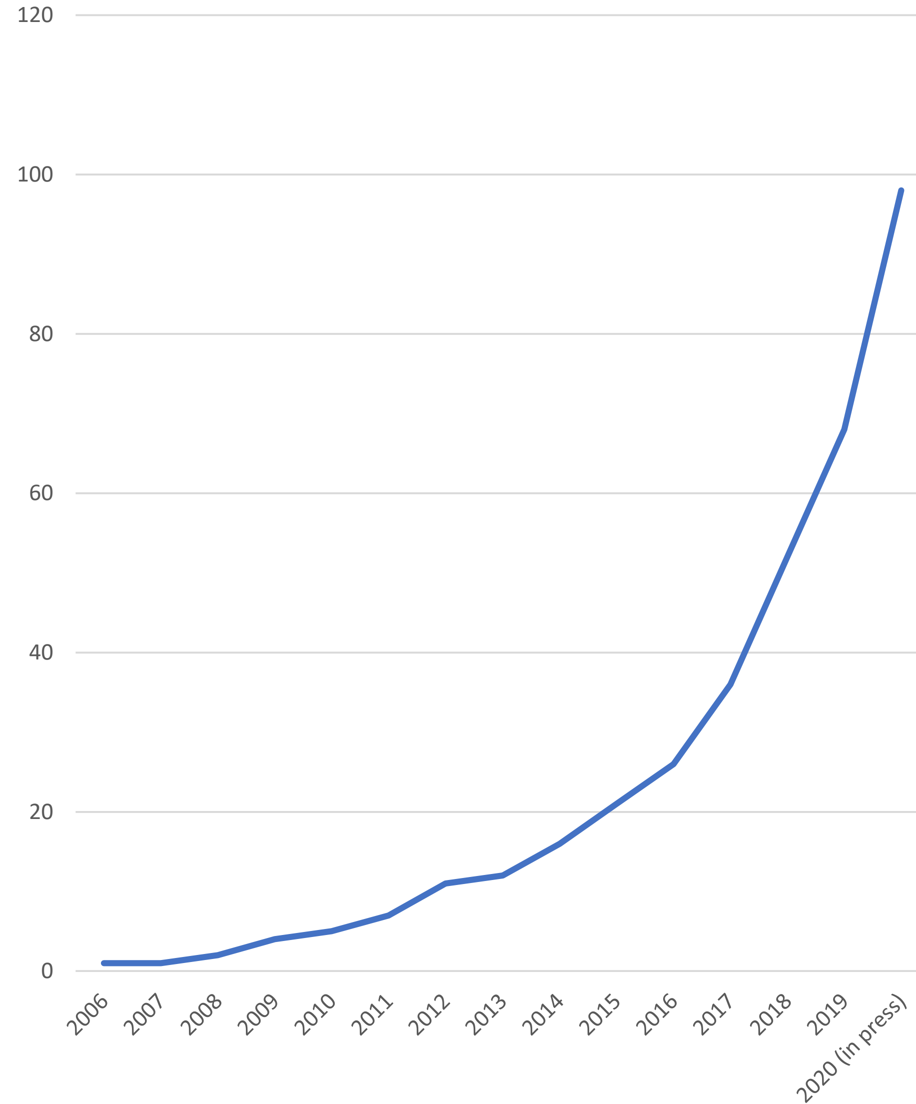
In February 2021

there were 464

published RCTs

of ACT.

https://contextualscience.org/ACT_Randomized_Controlled_Trials



ACT Meta-Analyses
120
100
80
60
40
20
0
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020 (in press)

ACT for Chronic Pain (N = 38 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
- Pincus 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
- Scott et al., 2018
- Wiklund et al., 2018
- Nazari et al., 2018
- Godfrey et al., 2020
- Taheri et al., 2020
- Kioskli et al., 2020
- Roslyakova et al., 2020
- Richardson et al., 2021

RCT = 24

Note: Many of these studies are small, preliminary, and susceptible to bias.

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§*

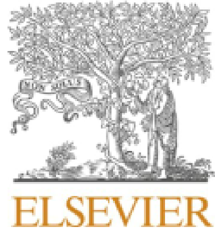
Clin J Pain • Volume 33, Number 6, June 2017

Summary from 11 RCTs (effect sizes), N = 863

Outcome	Post treatment	3 Months	6 Months
Functioning	.45*	.41*	.25
Quality of Life	.05	.26	.38
Anxiety	.57*	.32	.58
Depression	.52*	.52*	.85
Pain	.48*	.29	.31*
Acceptance	.84*	.59*	1.4*
Psychological Flexibility	.87*	.65*	.54*

Note: Some of these comparisons included few trials and relatively high heterogeneity.

Journal of Contextual Behavioral Science 18 (2020) 181–192



Contents lists available at ScienceDirect

Journal of Contextual Behavioral Science

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

Review Articles

The empirical status of acceptance and commitment therapy: A review of meta-analyses☆

Andrew T. Gloster[a,*], Noemi Walder[a], Michael E. Levin[b], Michael P. Twohig[b], Maria Karekla[c]

[a] *University of Basel, Division of Clinical Psychology and Intervention Science, Switzerland*
[b] *Utah State University, U.S.A*
[c] *University of Cyprus, Cyprus*

Method and Results

- Review of meta-analytic evidence.

- 20 meta-analyses included.
- 133 studies.
- 12,477 participants.

Effect Sizes (g): <u>**Sympton Reduction**</u> by Condition

Condition	Number of effect sizes	Range	Mean
Depression	15	.24 - .76	.33
Anxiety	11	.18 - .57	.24
Substance use	6	.40 - .45	.41
Chronic Pain	8	ns - .88	.44
Transdiagnostic	24	.17 - .96	.46

Quality of Life as outcome: (26 effect sizes), range .32 - .83, M = .48.

Cochrane Library

Trusted evidence.
Informed decisions.
Better health.

Cochrane Database of Systematic Reviews

[Intervention Review]

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

Amanda C de C Williams[1], Emma Fisher[2,3], Leslie Hearn[4], Christopher Eccleston[3]

[1]Research Department of Clinical, Educational & Health Psychology, University College London, London, UK. [2]Cochrane Pain, Palliative and Supportive Care Group, Pain Research Unit, Churchill Hospital, Oxford, UK. [3]Centre for Pain Research, University of Bath, Bath, UK. [4]Cochrane Pain, Palliative and Supportive Care Group, Pain Research Unit, Churchill Hospital, Oxford, UK

Citation: Williams AC de C, Fisher E, Hearn L, Eccleston C. Psychological therapies for the management of chronic pain (excluding headache) in adults. *Cochrane Database of Systematic Reviews* 2020, Issue 8. Art. No.: CD007407. DOI: 10.1002/14651858.CD007407.pub4.

The Context of ACT in the Cochrane Review 2020

1. Just 6 out of 23 (26%) published RCTs of ACT are included.
2. ACT is at a different stage, mainly pilot/feasibility studies, compared to CBT – in 1999 there were > 25 RCTs for CBT and 0 for ACT.
3. The requirement of at least 20 participants/arm at post treatment eliminated many ACT trials.
4. The best recent ACT RCTs are online and therefore excluded from this review of face-to-face (see Trompetter et al, Lin et al, Simister et al, Rickardsson et al.).
5. ACT trials have taken on more risky questions.

On the Other Hand…

- A Cochrane review that says “no evidence” and “very low quality evidence” for ACT for chronic pain is a great help, among the most useful things reviewers could say.
- All those who want to get grants and do studies now have the basis for doing so.

Do CBT and ACT Help People with Chronic Pain?

Yes, and…

- Some people do not benefit at all
- About half benefit significantly.

- We don't know…
  - <u>What</u> method to use and when,
  - <u>Who</u> needs what, or
  - <u>How</u> change happens?

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BASED ON TRAINING STANDARDS OF THE INTER-ORGANIZATIONAL TASK FORCE ON COGNITIVE & BEHAVIORAL PSYCHOLOGY DOCTORAL EDUCATION

PROCESS-BASED CBT

The Science *and* Core Clinical Competencies *of* Cognitive Behavioral Therapy

Edited by
STEVEN C. HAYES, PhD
STEFAN G. HOFMANN, PhD

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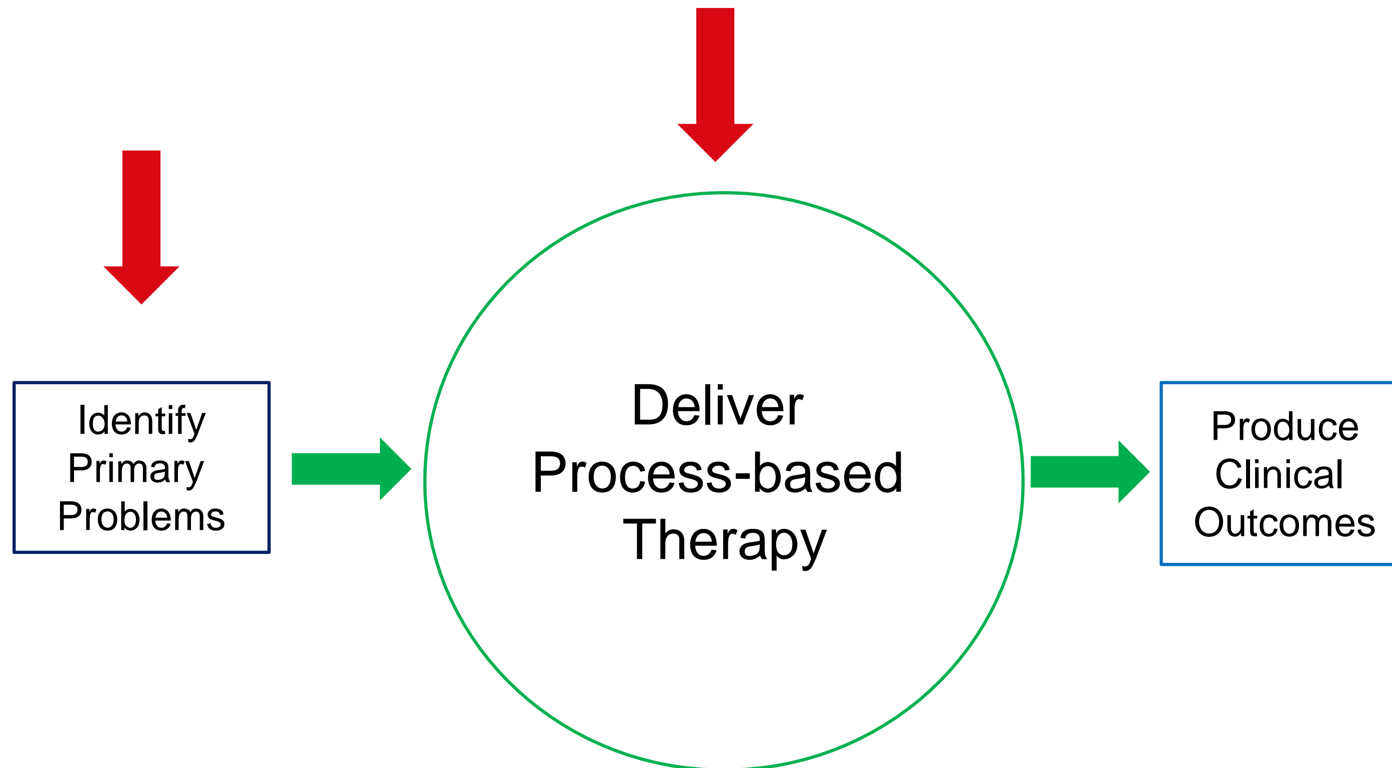
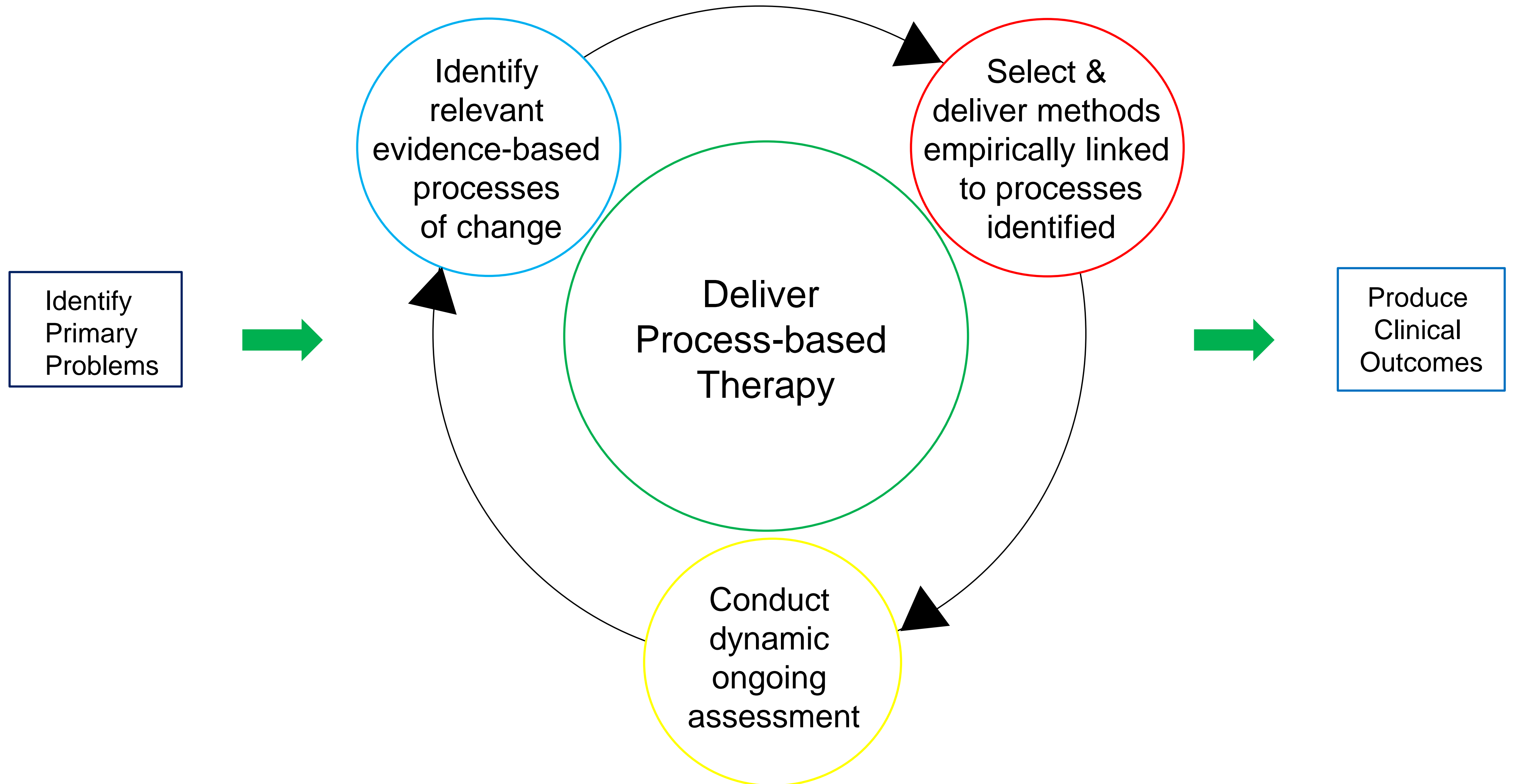
Syndromes and Protocols

Process-Based Therapy



Process-Based Therapy



How to individualize

Behaviour Research and Therapy 49 (2011) 748–755

Contents lists available at ScienceDirect

Behaviour Research and Therapy

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

Acceptance and values-based action in chronic pain: A three-year follow-up analysis of treatment effectiveness and process

Kevin E. Vowles[a,b,c,d,*], Lance M. McCracken[c,d], Jane Zhao O'Brien[c,d,e]

[a] *Interdisciplinary Musculoskeletal Pain Assessment and Community Treatment Service, Haywood Hospital, Stoke-on-Trent PCT, Burslem, Stoke-on-Trent ST2 8BY, UK*
[b] *Primary Care Sciences Research Centre, Keele University, UK*
[c] *Bath Centre for Pain Services, Royal National Hospital for Rheumatic Diseases NHS Foundation Trust, Bath, UK*
[d] *Centre for Pain Research, University of Bath, Bath, UK*
[e] *School of Psychology, University of Newcastle Upon Tyne, Newcastle Upon Tyne, UK*

N = 108. Cohort study of group interdisciplinary treatment.

Conclusion: *"… failed to identify any salient predictors of response."*

Received: 12 March 2019 | Revised: 5 August 2019 | Accepted: 30 August 2019
DOI: 10.1002/ejp.1480

ORIGINAL ARTICLE

EJP European Journal of Pain WILEY

Change in fatigue in acceptance and commitment therapy-based treatment for chronic pain and its association with enhanced psychological flexibility

Lin Yu[1] | Whitney Scott[2,3] | Lance M. McCracken[2,3,4]

N = 354. Cohort study of group-based interdisciplinary treatment.

Conclusion: *"…people with fatigue appeared to benefit from the ACT-oriented interdisciplinary treatment for chronic pain, and relatively higher levels of fatigue did not appear to impede this benefit."*

Received: 21 September 2018 | Revised: 19 December 2019 | Accepted: 31 December 2019

DOI: 10.1002/ejp.1530

ORIGINAL ARTICLE

EJP European Journal of Pain

Treatment outcomes in group-based cognitive behavioural therapy for chronic pain: An examination of PTSD symptoms

Sophia Åkerblom PhD[1,2] | Sean Perrin PhD[2] | Marcelo Rivano Fischer PhD[1,3] |
Lance M. McCracken PhD[4]

N = 159. Cohort study of interdisciplinary treatment.

Conclusion: ”Neither traumatic exposure nor baseline symptoms of PTSD predicted the treatment outcomes examined here.”

RESEARCH
EDUCATION
TREATMENT
ADVOCACY

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.

Findings

- 90 treatment outcome studies of CCBT, 20 looked at predictors or moderators.
- Overall study quality: 11 high and 9 low.

- **Generally background factors such as gender, age, education, diagnosis, or pain severity appeared non-significant.**

- Emotional distress often predicted outcome but …
  - Partly because measures frequently included.
  - The relationship to outcome was mixed, sometimes positive/sometimes negative.

European Journal of Pain 2018

Received: 9 October 2017 | Revised: 17 August 2018 | Accepted: 24 August 2018

DOI: 10.1002/ejp.1310

ORIGINAL ARTICLE

WILEY EJP European Journal of Pain

A theoretically guided approach to identifying predictors of treatment outcome in Contextual Cognitive Behavioural Therapy for chronic pain

Helen R. Gilpin[1,2] | Daniel R. Stahl[3] | Lance M. McCracken[1,2]

- N = 609.
- Adults attending residential interdisciplinary treatment based on ACT.
- Analyses focused on assessing the predictive role of psychological flexibility in relation to outcome.

Significant Findings Adjusting for All Other Predictors

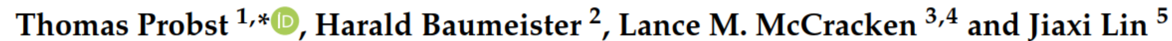
Predictor	Outcome			
	Emotional Functioning	Physical Functioning	Social Functioning	Pain
Demographic variables				
Lower Depression	+	+	+	+
Being Employed	+	+	+	+
Higher Acceptance	+			
Lower Decentering		+		+

Journal of Clinical Medicine

MDPI

Article

Baseline Psychological Inflexibility Moderates the Outcome Pain Interference in a Randomized Controlled Trial on Internet-based Acceptance and Commitment Therapy for Chronic Pain



Thomas Probst [1,*], Harald Baumeister [2], Lance M. McCracken [3,4] and Jiaxi Lin [5]

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4. INPUT Pain Management Guy's and St Thomas' NHS Foundation Trust London, London SE1 7EH, UK
5. Department of Sports and Sport Science, University of Freiburg, 79098 Freiburg, Germany; jiaxi.lin@sport.uni-freiburg.de

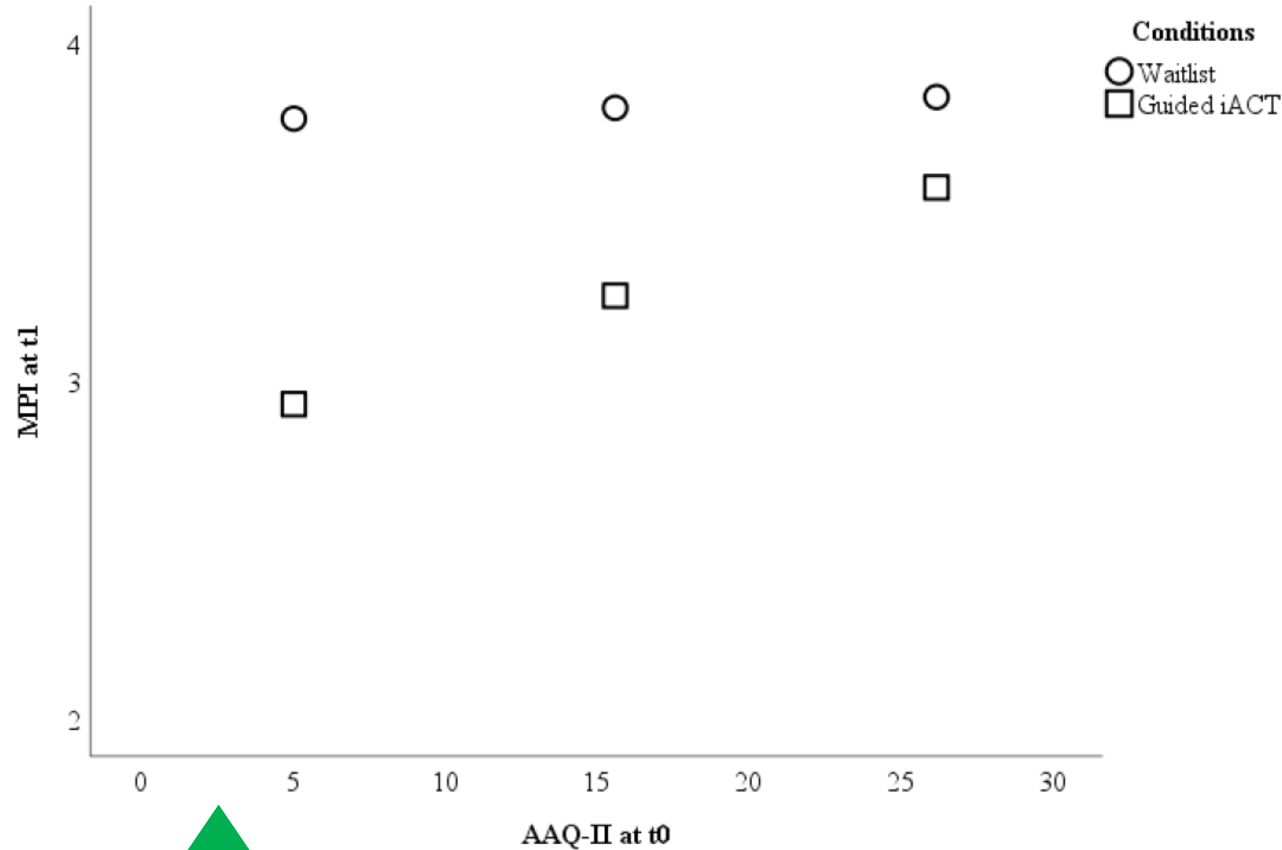
* Correspondence: thomas.probst@donau-uni.ac.at; Tel.: +43-(0)2732-893-2679

Received: 5 December 2018; Accepted: 23 December 2018; Published: 25 December 2018

N = 302. Three arms, guided online vs unguided online vs waitlist.

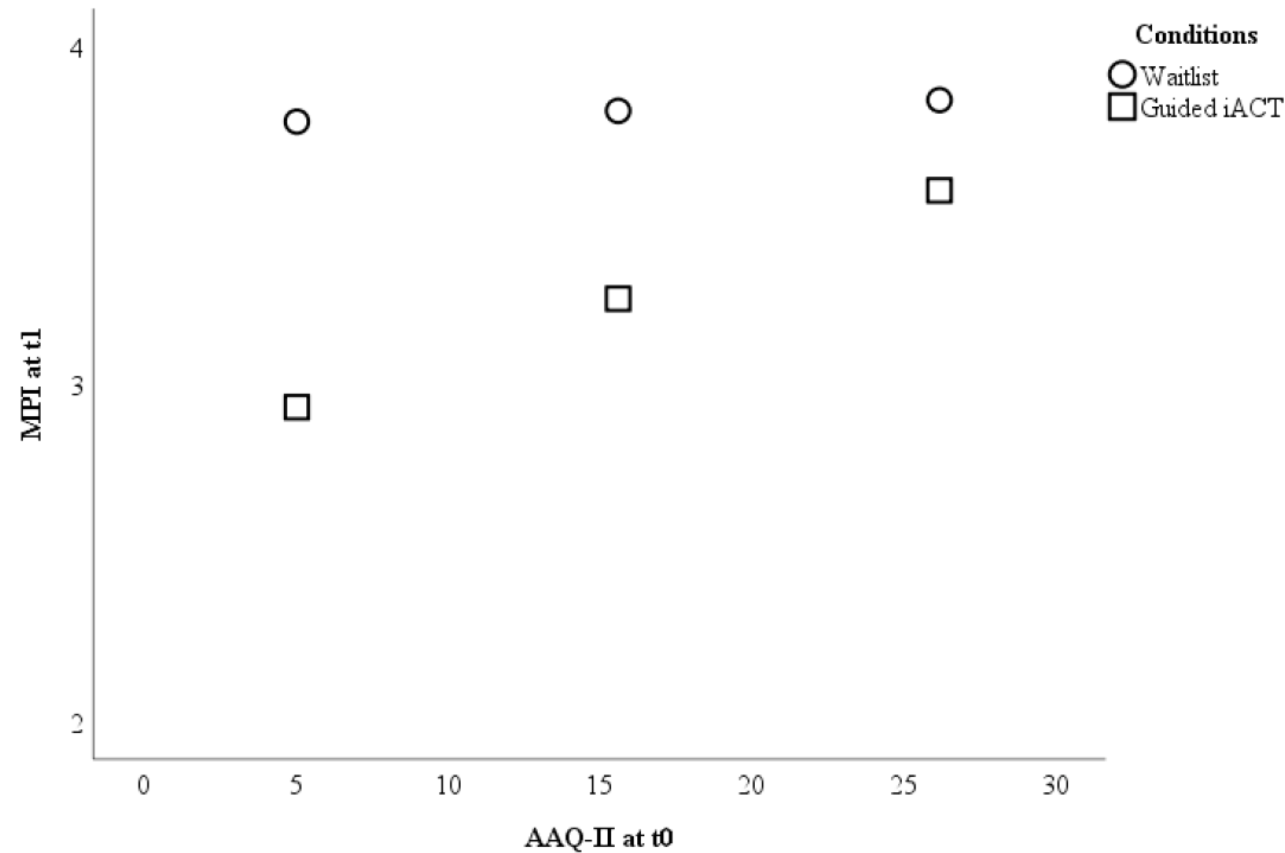
J. Clin. Med. **2019**, *8*, 24; doi:10.3390/jcm8010024

Baseline Psychological Flexibility (M ± 1 sd) as Moderator of Pain Interference at Post Treatment (9 weeks)



Lower psych inflexibility

Baseline Psychological Flexibility (M ± 1 sd) as Moderator of Pain Interference at Follow-up (6 Months)



Summary on How to Customize

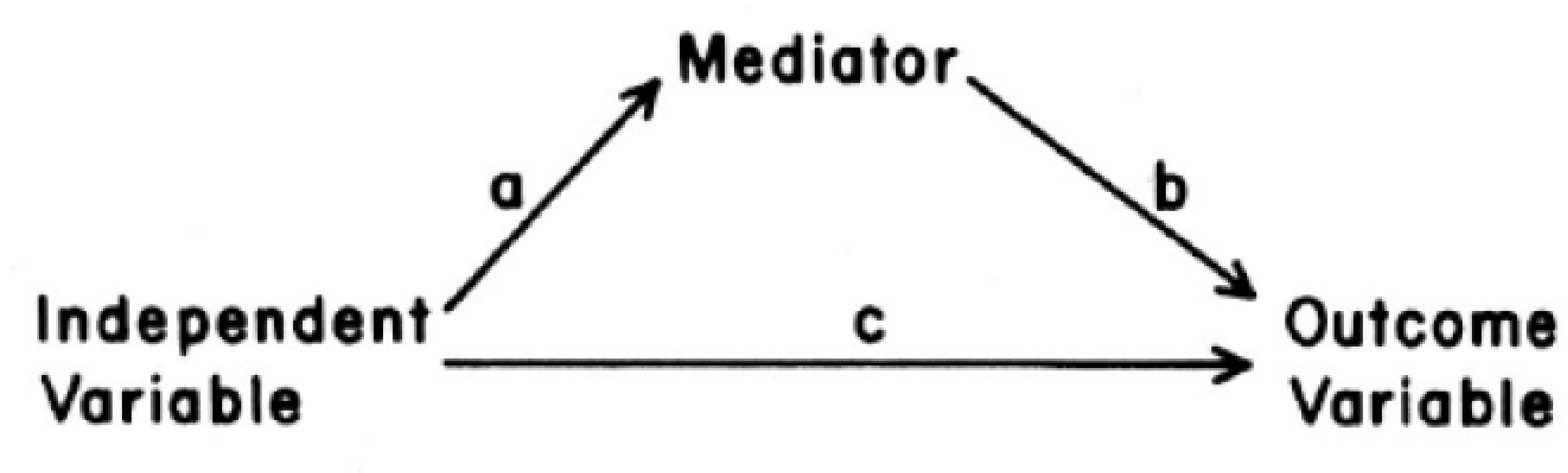
- **We don't know from evidence how to individualize!**

- Consistent evidence is that "demographic" factors do not play a role.
- Is it that everyone does equally well? (PROBABLY NOT)
- Limited evidence for the following:
  - Depression or positive emotional functioning (note: inconsistent).
  - Facets of psychological flexibility.
  - Note: the work status findings come from studies of prediction and not moderation.

- **The failure to find moderators is probably based on…**
  - **Wrong unit of analysis (protocol for person)**
  - **Group data.**
  - **Heterogeneity in population, treatment, treatment design, and measures.**
  - **Low resolution.**

Proceses of Change

Mediators, Mechanism & Processes of Change



Mediators: Evidence Summary

- Catastrophizing
- Control beliefs
- An ”action attitude”
- Self-efficacy
- Fear of pain
- Acceptance of Pain
- Psychological inflexibility

Clinical Psychology Review 76 (2020) 101824

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

Review

Beyond linear mediation: Toward a dynamic network approach to study treatment processes

Stefan G. Hofmann[a,*], Joshua E. Curtiss[a], Steven C. Hayes[b]

[a] Boston University, United States
[b] University of Nevada, Reno, United States

The four most significant problems that cannot be addressed using a classical mediational approach are:

1) Violation of the key statistical assumptions necessary to apply mediational results from groups to individuals;
2) Change may involve multiple variables extended over time;
3) Mediator, outcome, and independent variables typically are not commonly in a strict unidirectional and stable relations, but instead form bidirectional relations that often change over time;
4) Change processes are often nonlinear.

From: Hofmann, Curtiss, & Hayes (2020) Clinical Psychology Review, 76.

Lack of group-to-individual generalizability is a threat to human subjects research

Aaron J. Fisher[a,1], John D. Medaglia[b,c], and Bertus F. Jeronimus[d]

[a]Department of Psychology, University of California, Berkeley, CA 94720; [b]Department of Psychology, Drexel University, Philadelphia, PA 19104; [c]Department of Neurology, University of Pennsylvania, Philadelphia, PA 19104; and [d]Department of Developmental Psychology, Faculty of Behavioural and Social Sciences, Groningen University, 9712 TS Groningen, The Netherlands

Edited by David L. Donoho, Stanford University, Stanford, CA, and approved May 25, 2018 (received for review July 4, 2017)

Published online June 18, 2018.

E6106–E6115 | PNAS | vol. 115 | no. 27

ergodic

adjective

er·go·dic | \ (ˌ)ər-ˈgä-dik , -ˈgō- \

Definition of *ergodic*

1: of or relating to a process in which every sequence or sizable sample is equally representative of the whole (as in regard to a statistical parameter)

2: involving or relating to the probability that any state will recur *especially* **:** having zero probability that any state will never recur

"Ergodic." *Merriam-Webster.com Dictionary*, Merriam-Webster, https://www.merriam-webster.com/dictionary/ergodic. Accessed 11 Feb. 2020.

Assessment Methods in Single Case Design Studies of Psychological Treatments for Chronic Pain: A Scoping Review

Amani Lavefjord,[a] Felicia T.A. Sundström,[a] Monica Buhrman,[a] and Lance M. McCracken [a]

[a] Department of Psychology, Uppsala University, Box 1225, 751 42 Uppsala, Sweden

Overall Summary

- ✓ Psychological research into chronic pain is advancing.
- ✓ There is extensive evidence for psych treatments for chronic pain.
- ✓ There are interesting conceptual and theoretical developments:
  - ✓ “Process-based therapy,”
  - ✓ The psychological flexibility model
  - ✓ Arguments for ideographic approaches.

Why Steep and Thorny?

1. We remain preoccupied with thoughts, feelings, and self-as-agent as a focus for understanding behavior.
2. We remain in the grip of DSM-style thinking and treatment manuals.
3. We see separate therapy types as a meaningful way to organize the field and we hold allegiances to one or another.
4. We think of progress as driven by comparative trials and think less about moderation or mediation - which therapy rather than for whom and how.
5. RCTs and analyses based on aggregated group data dominate, and intensive longitudinal N = 1 data are not appreciated.

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