Cognitive Change in Cognitive Therapy: A Systematic Review

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Background

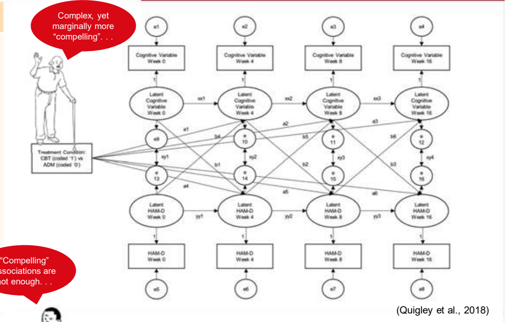
- **Cognitive Change:** The theoretical position that changing dysfunctional cognitions acts as the mechanism for reducing depressive symptoms in cognitive therapy (Beck et al., 1979).
- **How it is measured:** Disparate measurement scales (e.g., the Dysfunctional Attitude Scale or Ways of Responding) assess the constituents of the changing cognition.
- **Why is it important:** As more therapy than ever before is offered, rates of depression continue to rise (Ormel et al., 2022); understanding how a therapy works may increase effectiveness.
- **Why is it still theoretical:** There is a dearth of empirical evidence that suggests cognition plays any causal role in the syndrome of depression, yet cognitive therapy still works. . . how do we assess something we cannot see or objectively measure?
- **What has improved:** Statistical approaches; measuring assessment latencies, multiple mediators simultaneously, and increasing the statistical confidence in temporality of variables.
- **What needs to improve:** More emphasis in building descriptive, theoretical modelling; our current technology has limits (self-report); utilising a different framework may suffice.

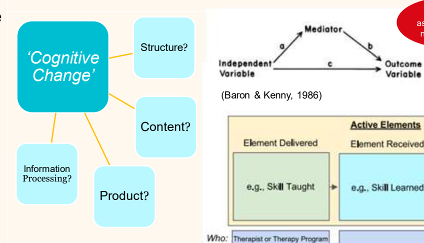
Main Review Questions

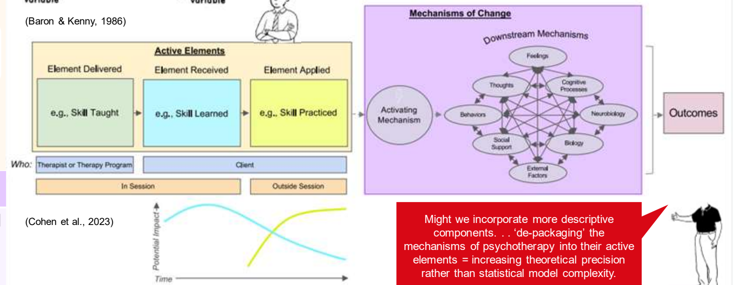
a) Does the cognitive change hypothesis have evidence as a mechanism of change for depression in cognitive therapies?

b) What are the represented constituents of the cognitive change construct, and are they attributable to treatment intentions?

c) Is cognitive change an artefact of other processes occurring during symptom reduction in cognitive therapies?







Methods

- We performed **a systematic review** following PRISMA reporting guidelines, with additional adaptations from recent reviews on **inadequate reporting standards for systematic reviews in mediation analyses** (Vo et al., 2022).
- **Six databases were searched** for studies assessing the cognitive change model of depression within an individual, in-person therapy format.
- An **evidence synthesis** compiling the **requirements and criteria for demonstrating a mechanism** from previous reviews (Kazdin, 2007; Lemmens et al., 2016).
- An **additional evidence synthesis** was conducted, using a framework for **categorising measurement scales** into their active elements in treatment (Cohen et al., 2023).

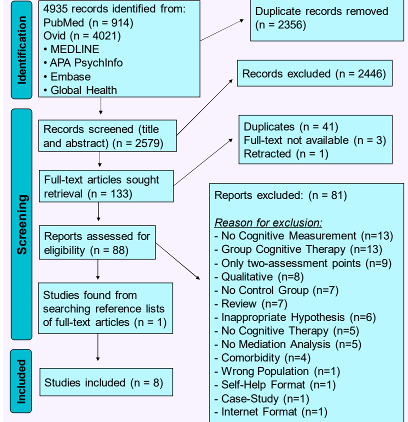
Inclusion Criteria

1) an adult sample (>18 years),
2) a diagnosis of major depressive disorder validated by a clinical interview,
3) a minimum of three assessment time points (e.g., baseline, 7th session, post-treatment),
4) a statistical mediation analysis,
5) included a manualised cognitive therapy treatment,
6) were randomised or quasi-experimental trials, and
7) had an active comparator or control group where appropriate.

Exclusion Criteria

1) were reviews of any kind,
2) were observational, qualitative, or case-study or case-control designed,
3) included treatment not conducted in-person (e.g., self-guided, telehealth, e-mail),
4) were a sample with a diagnosed comorbidity (e.g., a personality disorder, anxiety, eating disorder) specified in their primary analysis, or
5) were a sample within a special population (e.g., chronic pain, cancer, post-partum).

Fig. 1. *PRISMA Flow Chart*



Results

Study	Treatment condition(s)	Comparison Condition(s)	Mediator(s) tested	Outcome(s) tested	Assessment points (Total)	Mediation analysis	Quality assessment score
(A-Tjak et al., 2021)	CBT (39)	ACT (44)	DAS-17, EQ-D, AAQ-II	QIDS-SR	baseline, sessions 1, 6, 11, 16, post-treatment (6)	Latent growth curve modelling; Latent difference score modelling	15/16
(Bruijniks et al., 2022)	CBT (98)	IPT (102)	CCL, BADS, CCTS-SR, IPPS-SR	BDI-II	baseline, week 2, months 1 – 6 (8)	Latent change score modelling	12/16
(Lemmens et al., 2017)	CT (76), IPT (75)	WAITING-LIST (31)	DAS-A17, IIP-64, RRS-NL, SLCS-R	BDI-II	baseline, months 3, & 7 (3)	Latent difference score modelling	16/16
(Quigley et al., 2018)*	CBT (54)	ADM (50)**	DAS, CDS, ATQ-N	HAM-D	baseline, weeks 4, 8, & 16 (4)	Cross-lagged structural equation modelling	15/16
(Thiruchsel-vam et al., 2019)*	CBT (54)	ADM (50)**	DCES	HAM-D, BDI-II	baseline, weeks 4, 8, & 16 (4)	Latent growth curve modelling; Cross-lagged panel modelling	15/16
(Klug et al., 2017)	CBT (34)	PA (35), PD (31)	SASB	BDI, GSI (SCL-90-R), IIP	baseline, (CBT = every 3-months; PA & PD = every 6-months), & 1-, 2-, 3-year follow-up (***)	Multilevel growth modelling	12/16
(Crits-Christoph et al., 2017)	CT (119)	SE/DT (118)	DAS, WOR, WOR-SR, PDST	HAM-D	baseline, months 1, 2, & 5 (4)	Method adopted from Lipsitz et al., 2001	14/16
(Quilty et al., 2014)*	CBT (54)	ADM (50)**	PDST, RCST, SRET	HAM-D, BDI-II	baseline, weeks 4, 8, & 16 (4)	Method adopted from Kraemer et al., 2002	12/16

ABBREVIATIONS: *Treatment and comparison conditions*: ACT = Acceptance and Commitment Therapy; ADM = Antidepressant Medication; CBT = Cognitive Behavioral Therapy; CT = Cognitive Therapy; IPT = Interpersonal Psychotherapy; PA = Psychoanalytic Therapy; PD = Psychodynamic Therapy; SE = Supportive-Expressive Psychodynamic Therapy; *Mediators:* AAQ-II = Acceptance and Action Questionnaire; ACMTQ = Autonomous and Controlled Motivation for Treatment; ATQ-N = Automatic Thoughts Questionnaire; BADS = Behavioural Activation for Depression Scale; CCL = Cognitive Checklist; CCTS-SR = Cognitive Therapy Scale – Self Report; CDS = Cognitive Distortion Scale; DAS = Dysfunctional Attitude Scale; DAS-A17 = Dysfunctional Attitude Scale – Form A – Revised; DCES = Depression Change Expectancy Scale; EQ-D = Experiences Questionnaire – Decentering; IIP-64 = 64-item Inventory of Interpersonal Problems; IPPS-SR = Interpersonal Psychotherapy Skills Scale – Self Report; SASB = Structural Analysis of Social Behavior; PDST = Psychological Distancing Scaling Task; RCST = Redundancy Card-Sorting Taks; RRS-NL = Ruminative Response Scale; SLCS-R = The Self-Liking and Self-Competence Scale Revised; SRET = Self-Referent Encoding Task; WOR = Ways of Responding; WOR-SR = Ways of Responding Questionnaire; *Outcome*: BDI & BDI-II = Beck Depression Inventory II; GSI =Global Severity Index (Symptom Checklist 90 Revised); HAM-D = Hamilton Rating Scale for Depression (also abbreviated as HRSD); IIP = Inventory of Interpersonal Problems; QIDS-SR = Quick Inventory of Depressive Symptomatology – Self Report. *NOTES*: * = These articles included the same participants (mother data is from Quilty et al., 2014); ** = It was not specified which antidepressant medications were used in the trial – we have reason to believe they used multiple compounds with switching involved; *** = exact number of assessment points were different patient-to-patient and treatment modality.

Conclusions

- Assessing cognitive change as a generic variable is like measuring how a multivitamin affects you. . . how can we know what works if the effects are masqueraded by too much noise: Using subjective self-reports leaves a majority of the cognitive processes unexplored (Coyne & Gotlib, 1983; Merluzzi & Boltwood, 1989).
- Dysfunctional cognitions are an indisputable component of depression (Cristea et al., 2015). Despite more refined statistical approaches, it does not improve our confidence in what it is we are measuring. . . notwithstanding, improving statistical inference despite continuing to use poorly defined theoretical models only makes us more confident in what we do not know. . .
- Ultimately, the metaphoric chicken or egg trope suffices to explain the current consensus: The artefactual temporal hypothesis of causal variables influencing one coming before the other may be a categorical mistake.
- Improving psychological therapy means personalising psychotherapy; as we all know, no single hat truly fits all: Active components specify the packaged-treatment wherein between-person differences (moderators) can become effective predictors of outcomes.
- With 20 separate scales used in only eight studies, the larger picture (i.e., hundreds of process research articles) is even more difficult to synthesise. Future reviews need to increase their methodological rigour to improve interpretation.

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