TREATme: Findings from a European network on individualised psychotherapy for young people

Vera Gergov

Vice Chair of TREATme

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What is TREATme?

- TREATme = European Network on Individualized Psychotherapy Treatment of Young People with Mental Disorders

- COST Action CA16102 (31/03/2017 to 30/09/2021)
  - Final Assessment Report is published on COST website: https://www.cost.eu/actions/CA16102/

→ **Work continues as TREATme Network**

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Aims of the Network

- To establish a sustainable European multidisciplinary researcher network focusing on individualized psychotherapy for young people with mental disorders
- Review the state of the art and identify putative specific markers and mechanisms of change in different psychotherapy modalities, as well as suitable psychotherapy process and treatment measures, and study designs
- Promote collaborative funding applications and meet societal challenges connected to mental health

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Working groups

- Working Group 1: Specific Markers (Predictors/moderators)
- Working Group 2: Mechanisms of Change (Mediators)
- Working Group 3: Age Customized Process and Treatment Measures
- Working Group 4: Age customized research designs
- Working Group 5: Dissemination of Results and Communication with Stakeholders

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Dissemination channels

- TREATme website: https://www.treat-me.eu/

- TREATme Social Networks:
  - Research Gate: https://www.researchgate.net/project/European-Network-on-Individualized-Psychotherapy-Treatment-of-Young-People-with-Mental-Disorders-TREATme
  - Facebook: https://www.facebook.com/TreatMeEU
  - Twitter: https://twitter.com/TreatMeEU
  - YouTube: https://youtu.be

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Socio-demographic predictors and moderators of outcome of psychotherapeutic interventions for mental disorders in young people: a systematic review

TREATme – Working Group 1 / Stig Poulsen

9th EU-SPR Chapter Meeting

Rome, September 24, 2022

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Main objective of WG1 and overall study design

- Identify studies reporting predictors and moderators of outcome of psychotherapy for mental disorders in young people
- Systematic search for outcome studies of youth psychotherapy within specific psychiatric disorders + manual selection of studies investigating predictors and moderators

Authors (9 countries)

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Socio-demographic predictors of outcome of youth psychotherapy

- Existing systematic reviews indicate that sociodemographic variables are – in general - not significantly associated with treatment outcome and that findings are generally inconclusive (de Haan et al., 2013; Ginsburg et al., 2008; Kunas et al., 2021; Nilsen et al., 2013)
- Ethnicity is a possible exception since certain studies indicate that it would be important to adapt depression treatments to better match the needs of ethnic minorities (Nilsen et al., 2013)

Aim of the present study

- To provide an overview of the existing evidence for the predictive and moderating role of sociodemographic variables on the outcome of psychotherapy for young people across specific mental disorders
- Data derived from the database provided by the general review of predictors and moderators of outcome of youth psychotherapy

Predictors and Moderators of treatment outcome

- **Predictors of outcome:** Non-specific prognostic baseline characteristics indicating which patients are harder to treat and may require more intensive treatments, regardless of treatment approach and modality
- **Moderators of outcome: Baseline** characteristics, which have an **interactive effect with treatment condition** on treatment outcome, i.e., indicate, which particular interventions are most effective with particular subpopulations

(Kraemer, Wilson, Fairburn & Agras, 2002)

General choices for the review

- Databases
  - PubMed
  - PsycINFO
- Study types
  - All clinical trials:
    - RCT's
    - Non-randomized controlled studies
    - Observational (pre-post) studies
- Age
  - 12 to 30 (Adolescents and young adults)
- Treatments
  - Numerous types of psychotherapeutic interventions listed

Specific choices made: disorder groups

All disorder groups had a general search string (treatments + age + study type) + a disorder specific search string

- Anxiety disorders
- Depressive disorders
- Bipolar disorders
- Psychotic disorders
- Eating disorders
- Personality disorders
- Conduct disorders
- Substance use disorders
- ADHD
- Autism

Search (final update by April 22, 2021)

Diagnosis	Retrieved
Mood disorders	5741
Anxiety, OCD & trauma	3326
Substance use	2612
Conduct	1565
Psychosis	1450
Eating	1125
Personality	697
ADHD	605
Autism spectrum	464

Inclusion process

- Researchers were divided into pairs by different disorder groups and rated the papers independently
- Consensus between the researchers before proceeding to next step

Inclusion process

- **Title and abstract screening**
  - Paper included if it:

1. **Disorder:** includes patients with the specified disorder for each search (depression, anxiety etc.)
2. **Intervention:** presents a psychosocial intervention program for that disorder (depression, anxiety etc.) of any duration & orientation
3. **Study type**: presents an outcome study published in peer-reviewed journals
4. **Participants**: age range: 12 – 30 years
5. **Language:** at least title and abstract is in English

Inclusion process

- **Full-text screening**
  - Paper included if 1 – 5 is met and:
  6. **Participants' clinical status**: All participants are diagnosed with a clinical disorder or at least have a high level of symptoms on at least one relevant self-report measure (above the agreed-upon cut-off point for that measure)
  7. **Assessment points:** Pre-treatment (compulsory), Post-treatment (compulsory), and Follow-up (not compulsory).

Inclusion process

- **Identification of predictor / moderator studies**
  - Paper included if:
  8. **Predictors and/or moderators:** all relevant predictor / moderator variables are assessed before the treatment and the paper explicitly displays at least one statistical analysis concerning predictors & moderators

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Data extraction in paper with moderators / predictors

- Article information (authors, journal etc.)
- Sample information (sample size, diagnosis, age, gender etc.)
- Design (randomization?, comparison group?)
- Treatment (approach, duration)
- Predictors / moderators (variable, type of statistical analysis)
- Risk of bias assessment (e.g., did the analysis test a hypothesis specified a priori?)

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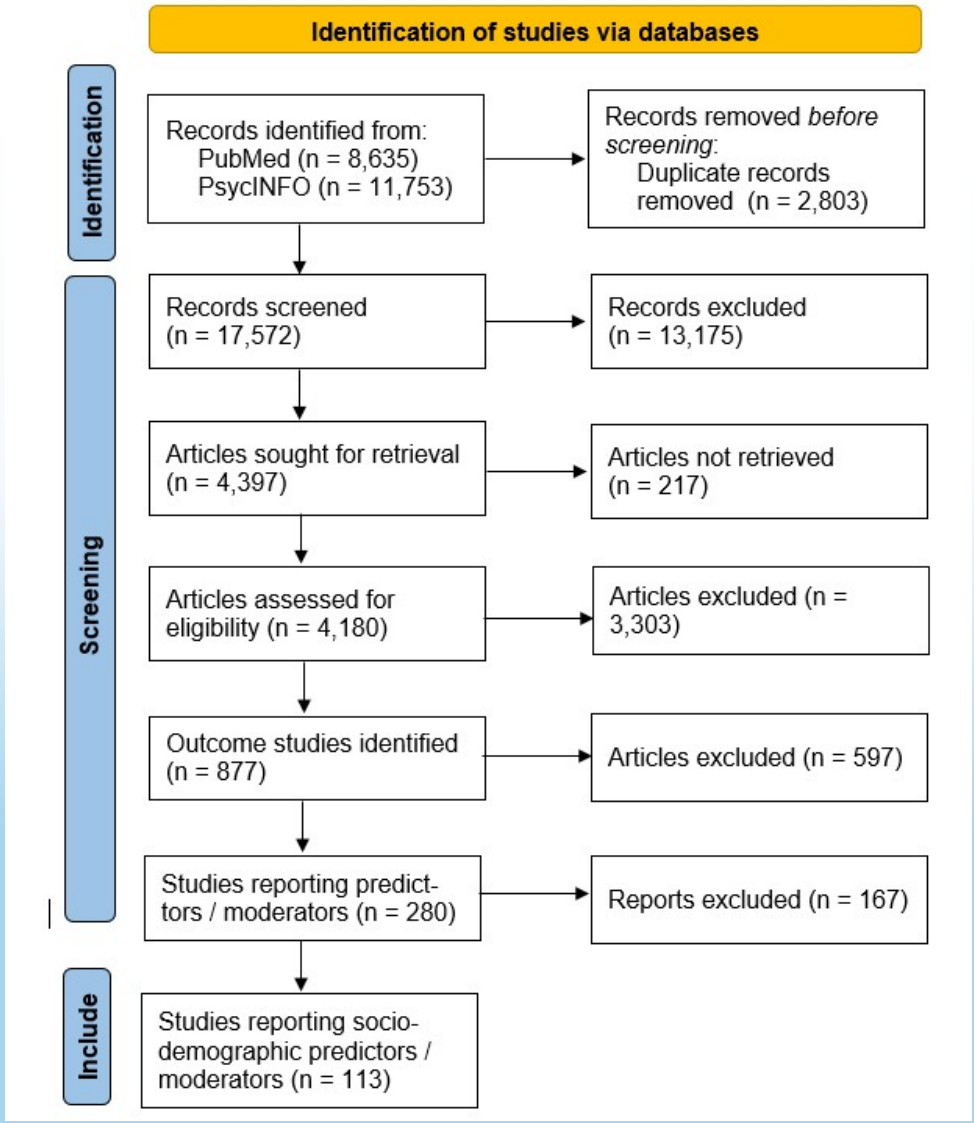
Identification of studies via databases
Identification
Records identified from:
PubMed (n = 8,635)
PsycINFO (n = 11,753)
Records removed *before screening*:
Duplicate records removed (n = 2,803)
Screening
Records screened (n = 17,572)
Records excluded (n = 13,175)
Articles sought for retrieval (n = 4,397)
Articles not retrieved (n = 217)
Articles assessed for eligibility (n = 4,180)
Articles excluded (n = 3,303)
Outcome studies identified (n = 877)
Articles excluded (n = 597)
Studies reporting predict-tors / moderators (n = 280)
Reports excluded (n = 167)
Include
Studies reporting socio-demographic predictors / moderators (n = 113)

Sociodemographic variable	Disorder group								
	MDD	Anxiety	Eating	SUD	PD	ASD	ADHD	Psychosis	Total
Age	4 / 18	0 / 5	4 / 19	7 / 25	1 / 3	1 / 2	0 / 4	0 / 1	17 / 77
Gender	4.5 / 21	0 / 5	2 / 7	6.5 / 28	-	0 /2	0 / 4	0 / 2	13 / 69
Ethnicity	6 / 15	0 / 1	0 / 6	5 / 21	1 / 1	0 / 1	0 / 1	-	12 / 46
Education	0 / 1	-	0 / 1	4 / 6	-	-	0 / 1	0 / 2	4 / 11
SES	2 / 9	0 / 2	0 / 2	2 / 2	0 / 1	-	0 / 1	0 / 1	4 / 18
Family constellation	1 / 6	-	2 / 10	0 / 4	-	-	-	0 / 1	3 / 21
Work status	-	-	-	-	-	-	-	0 / 1	0 / 1
School type	-	0 / 1	-	-	-	-	-	-	0 / 1
Accommodation status	-	-	-	2 / 3	-	-	-	-	2 / 3
Parents' age	-	-	0 / 2	-	-	-	-	-	0 / 2
Parents' education	0 / 1	0 / 1	1 / 4	1 / 1	-	-	0 / 2	-	2 / 9
History of traumatic events	4 / 7	-	-	1 / 3	1 / 1	-	-	-	6 / 11
Forensic history	-	–	-	2 / 8	-	–	–	–	2 / 8
Referral to treatment	1 / 3	0 / 1		2 / 4					3 / 8
Social support	-	-	-	1 / 1	-	-	-	-	1 / 1
Distance to treatment	-	0 / 1	-	-	-	-	-	-	0 / 1
Sociodemographic adversity	-	0 / 1	-	-	-	-	-	-	0 / 1
Sexual orientation	-	-	-	0 / 1	-	-	-	-	0 / 1
Total	22.5 / 81	0 / 18	9 / 51	33.5 / 107	3 / 6	1 / 5	0 / 13	0 / 8	69 / 289

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Results

- Overall: 113 individual studies reporting a total of 289 analyses of the relationship between a sociodemographic predictor/moderator and one or several outcome variables
- Of the 289 predictors/moderators studied, 69 were found to be significantly related to at least one outcome variable
- The most studied predictors/moderators were age, gender and ethnicity. Many predictors were studied in less than ten studies – several even only in one
- The disorder groups with most predictor / moderator studies were substance use disorders (107), mood disorders (81) and eating disorders (51).
- Several disorder groups had only few predictor / moderator studies with few significant results:
  - Within anxiety disorders, only 18 predictor / moderator analyses from 6 studies were conducted, and none of them were found significant.
  - For ADHD, 5 studies (investigating 13 predictors/moderators) were identified with no significant findings.
  - For psychosis, autism and personality disorders, only very few (< 10) predictors / moderators were studied – none were significant, except for one where age was a significant predictor of outcome for autism.

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Results

- None of the sociodemographic predictors were found clearly significant: Only about 23% of all the studies reported a significant effect for any of the tested predictors – for age the rate was 22% of the studies, for gender 19% and for ethnicity 26%.
- In most diagnosis groups, significant findings pointed in opposite directions
- In most studies with significant findings, several non-significant findings were reported as well

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Potentially consistent findings

- Across disorders:
  - Ethnicity: Mixed results, but indications that belonging to an ethnic minority group (non-white/Hispanic) may predict poorer outcomes across disorders
  - History of traumatic events: History of traumatic events (e.g. abduction, physical/sexual/emotional abuse) may predict poorer treatment outcomes
- Specifically for SUD:
  - Gender: Males may have slightly better results in psychotherapy for SUD than females
  - Education: Higher education / attending school may predict better outcomes for SUD (but not in other disorders)
  - Accommodation status: More stable accommodation may predict better outcome for SUD (only 3 studies)
  - Social support: Having a mentor predicted better outcome for SUD (only one study)

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Discussion

- Certain possible predictors found, in particular in studies of SUD (male gender, higher education, stable accommodation, social support)
- Ethnic minority status and history of trauma may predict poorer outcome across disorders
- Findings are highly tentative
- Many more non-significant than significant findings
- Many studies lack specific hypotheses about predictor-outcome relationships
- Several studies only report bivariate associations between predictors and outcome (i.e., not controlling for shared variance with other predictors)

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Limitations

- Many studies underpowered to investigate predictor and particularly moderator effects
- Findings are still preliminary
- Meta-analysis was not performed
- Subgroup-analyses of studies with higher N and adequate approaches to data analysis not yet conducted

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Mediators of outcome in youth psychotherapy:

The work of TREATMe WG2

Yianna Ioannou
(on behalf of WG2)

WG 2 Leader: Svenja Taubner
Vice-leaders: Erkki Heinonen & Sonja Protic

9TH EU SPR Chapter Meeting Rome,
Italy September 2022

TREATme WG2

19 active members from 12 countries

Svenja Taubner (Leader) **Germany**	**Erkki Heinonen (Vice-leader)** **Finland**	**Sonja Protic (Vice-leader)** **Serbia**
Asta Adler Lithuania	Andrea Saliba Malta	Patricia Moreno-Peral Spain
Catarina Pinheiro Mota Portugal	Célia Sales Portugal	Rasa Barkauskiene Lithuania
Jan Ivar Røssberg Norway	Dina Di Giacomo Italy	Stefanie Schmidt Switzerland
José Miguel Mestre Spain	Filipa Mucha Vieira Portugal	Yianna Ioannou Cyprus
Sonia Conejo-Céron Spain	Jana Volkert Germany	Tjasa Stepisnik Slovenia
Margarida Rangel Henriques Portugal		

Our objectives:

- To exchange knowledge and research experience, in order to identify putative mechanisms of change in youth psychotherapy.
- To review the evidence base available.
- To suggest what kind of research change mechanisms is needed in order to advance individualized treatment for youth.

Source: https://www.treat-me.eu/working-groups/working-group-2/

TREATme WG2

How does therapy produce change?

- Mechanisms of change define causal relationships between therapeutic change and psychological interventions; i.e. what about the therapy process leads to particular outcomes?

- Mechanisms of change are explanatory concepts about how therapy produces change, which rely on identifying specific mediators, i.e. variables that explain changes between an intervention and a therapeutic outcome statistically.

How can we assess and identify mediators?

Set of criteria proposed by Kazdin (2007):

(a) Conduct sufficiently powered randomised clinical trials.

(b) Use valid and reliable measures for mediators that are sensitive to change.

(c) Apply a process design in which changes of the mediator temporally precede changes in therapeutic outcome and the mediator variable is measured repeatedly.

(d) Compare mediators that are theory-driven with nonspecific mediators.

(e) Apply different dosages to prove that a stronger mediator-change leads to more therapeutic changes.

*Source: Kazdin, A. E. (2007). Mediators and mechanisms of change in psychotherapy research. *Annu. Rev. Clin. Psychol.*, *3*, 1-27.

Our work so far…

Taubner, S., Ioannou, Y., Saliba, A., Sales, C. M. D., Volkert, J., Protić, S., Adler, A., Barkauskiene, R., Conejo-Cerón, S., Di Giacomo, D., Mestre, J. M., Moreno-Peral, P., Mucha Vieira, F., Pinheiro Mota, C., Rangel Henriques, M., Røssberg, J. I., Stepisnik Perdih, T., Schmidt, S. J., Zetti, M., Ulberg, R., Heinonen, E. (2022). **Mediators and theories of change in psychotherapy with adolescents: a systematic review**. (under review)

Mestre, J. M., Taubner, S., Mota, C. P., Rangel Henriques, M., Saliba, A., Heinonen, E., Ramos, S., Moreno-Peral, P., Volkert, J., Adler, A., Barkauskiene, R., Conejo-Cerón, S., Di Giacomo, D., Ioannou, Y., Mucha Vieira, F., Røssberg, J. I., Sales, C. M. D., Schmidt, S. J., Stepisnik Perdih, T., Ulberg, R. and Protic´, S. (2022). **Theories of Change and Mediators of Psychotherapy Effectiveness in Adolescents With Externalising Behaviours: A Systematic Review**. Frontiers in Psychiatry, 12, 730921. doi: 10.3389/fpsyt.2021.730921

Volkert, J., Taubner, S., Barkauskiene, R., Mestre, J. M., Sales, C. M. D., Thiele, V., Saliba, A., Protic´, S., Adler, A., Conejo-Cerón, S., Di Giacomo, D., Ioannou, Y., Moreno-Peral, P., Vieira, F. M., Mota, C. P., Raleva, M., Rangel Santos Henriques, M. I., Røssberg, J. I., Schmidt, S. J., Perdih, T. S., Ulberg, R., and Heinonen, E. (2021). **Mediators and Theories of Change in Psychotherapy for Young People With Personality Disorders: A Systematic Review Protocol**. Frontiers in Psychology, 12, 703095. 10.3389/fpsyg.2021.703095

Taubner, S., Saliba, A., Heinonen, E., Protić, S., Volkert, J., Adler, A., Barkauskiene, R., Conejo Cerón, S.,Di Giacomo, D., Ioannou,Y., Mestre, J. M., Moreno-Peral, P., Mucha Vieira, F., Mota, C. P.,Raleva, M.,Rangel Santos Henriques, M. I., Røssberg, J. I., Schmidt, S. J., Stepišnik Perdih, T., Ulberg, R., Sales, C. M. D. (2021). **Mediators and theories of change in psychotherapy with adolescents: a systematic review protocol**. BMJ Open, 11, e042411. 10.1136/bmjopen-2020-042411

Conejo-Cerón, S., Taubner, S., Heinonen, E., Adler, A., Barkauskiene, R., Di Giacomo, D., Ioannou, Y., Mestre, J. M., Henriques, M. R., Mota, C. P., Protic´, S., Raleva, M., Vieira, F. M., Røssberg, J. I., Sales, C. M. D., Saliba, A., Schmidt, S.J., Perdih, T.S., Ulberg, R., Volkert, J. and Moreno-Peral, P. (2021**). Mediators in Psychological Treatments for Anxiety and Depression in Adolescents and Young People: A Protocol of a Systematic Review**. Frontiers in Psychology, 12, 708436. doi: 10.3389/fpsyg.2021.708436

Mediators and theories of change in the psychotherapy of adolescents

Aims and objectives:

1. To identify which mediators and theories of change have been studied in the psychotherapy of adolescents.
2. To identify if there are adolescence-, disorder- or treatment-specific mediators.
3. To critically evaluate the methodological approach of the current research data available on mediators in psychotherapy for adolescents and the robustness of the evidence.

Open access Protocol

BMJ Open

Mediators and theories of change in psychotherapy with adolescents: a systematic review protocol

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► Prepublication history and additional materials for this paper is available online. To view these files, please visit the journal online (http://dx.doi.org/10.1136/bmjopen-2020-042411).

ABSTRACT

Introduction Approximately 75% of mental disorders emerge before the age of 25 years but less than half receive appropriate treatment. Little is known about the mechanisms underlying the therapeutic change of adolescents in psychotherapy. The 'European Network of Individualised Psychotherapy Treatment of Young People with Mental Disorders', funded by the European Cooperation in Science and Technology, will conduct the first systematic review to summarise the existing knowledge on mediators and theories of change in psychotherapy for adolescents.

Method A systematic review will be conducted, conforming to the reporting guidelines of the Preferred

Strengths and limitations of this study

- ► Review aims at identifying underlying mechanisms of change in the process of psychotherapy for adolescents.
- ► Reviewers are from a European multidisciplinary researcher network with researchers and clinicians from 30 countries.
- ► First comprehensive overview of mediators in psychotherapy carried out with adolescents.
- ► Broad inclusion criteria increase external validity but limits the possibility of causal conclusions including non-randomised controlled trials studies, it is likely not feasible to estimate aggregated effect sizes for

Eligibility criteria for studies

Studies were included if:

- They were randomized-control trials from any georgraphical location, written in English and published from inception until March 23, 2022.
- They reported an intervention aimed at treating psychological problems of adolescents in any setting.
- They included participants with a mean age between 10-19 years.
- They assessed a mediator using a statistical test of mediation.

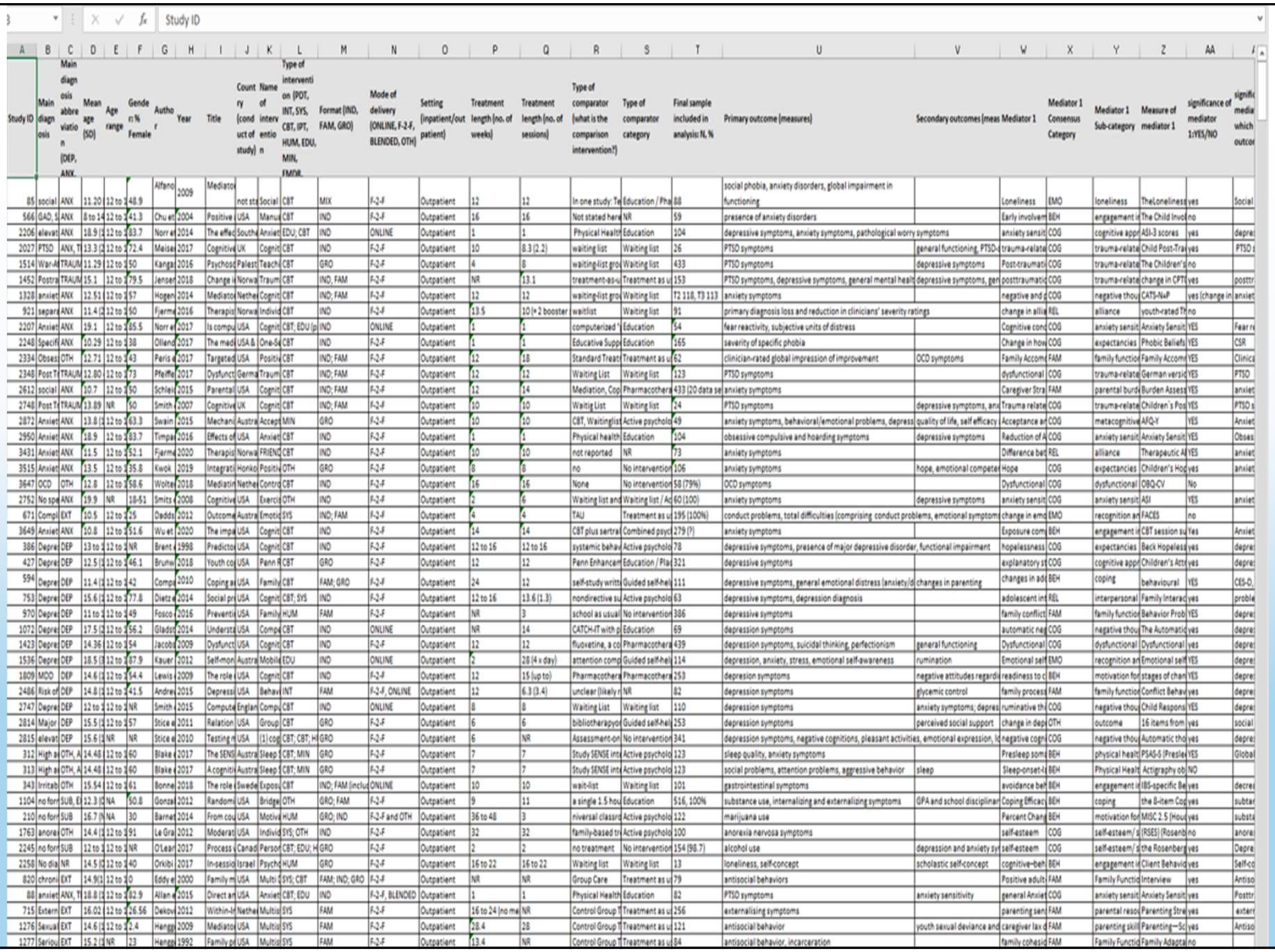
Keyword	Search term	Approx.. number of PsycINFO results
mediator	mediat* OR mediation* OR “mediating effect*” OR "indirect effect*" OR "mediator effect*" OR “mechanism of change” OR "mechanism* of chang*" OR “working mechanisms” OR "working mechanism" OR "psychotherap* mechanism*" OR “therap* mechanism*” OR "process* of therap*" OR "process* of psychotherap*" OR "psychotherap* process*" OR "therap* process*" OR “process research” OR "psychotherap* research" OR “therap* research” OR "process-outcome*" OR "psychotherap* technique*" OR "therap* technique*" OR "psychotherap* relationship*" OR "therap* relationship*" OR "therap* alliance" OR "psychotherap* alliance" OR DE "Psychotherapeutic Process" OR DE “Therapeutic Processes” OR DE “Psychotherapeutic Techniques” OR DE “Therapeutic Alliance“	290,992
sample: age groups	MA “adolescent” OR “adolescent*” OR “emerging adulthood” OR “young” OR “juvenile” OR “early adulthood” OR “young adulthood” OR “young adult” OR “young adults" OR “teen*” OR “youth*” OR “yeasty” OR “juvenil*” OR “young*” OR “subadult” OR “immature” OR “adolescen*” OR “puberty” OR “pubertal” OR “puberal” OR DE "Emerging Adulthood" OR DE "Puberty" OR DE "Adolescent Development" OR DE "Adolescent Characteristics" OR DE "Adult Development"	790,880
general string for therapy	psychotherap* OR “therap*” OR counseling OR "counselling" OR "psychological treatment*" OR "psychosocial treatment" OR "psychological intervention*" OR "psychosocial intervention*" OR psychoeducation OR "group therap*" OR "family therap*" OR “general psychiatric management” OR GPM OR MA "Mind-Body Therapies” OR "supportive psychotherapy"OR DE "Psychotherapy" OR DE "Counseling" OR DE "Psychoeducation" OR DE "Psychosocial Readjustment" OR DE "Psychotherapeutic" OR DE "Group Psychotherapy" OR DE "Family Therapy" OR DE "Creative Arts Therapy" OR DE "Mind Body Therapy" OR DE "Dance Therapy" OR DE "Art Therapy" OR DE "Play Therapy" OR DE "Supportive Psychotherapy"	823,779
well-validated therapies	“cbt” OR "cognitive therapy" OR "behavior therapies" OR "behavior therapy" OR "behavioural treatment" OR "behavioral treatment" OR "behavioral activation" OR "exposure and response prevention" OR "exposure with response prevention" OR (exposure AND "response prevention") OR REBT OR "problem solving therapy" OR "interpersonal therapy" OR "mindfulness" OR psychodynamic OR "psychodynamic therapy" OR DE psychoanalysis OR "psychoanalysis" OR "psychoanalytic" OR "mentalization based therapy" OR "mentalization based treatment" OR "MBT" OR “transference focused therapy” OR "transference focused psychotherapy" OR “metacognitive therapy" OR "metacognitive treatment" OR "Acceptance and Commitment Therapy" OR "ACT" OR "dialectical behavior therapy" OR "dialectical behaviour therapy" OR DBT OR "Schema Therapy" OR "Schema-focused Therapy" OR "Systematic Desensitization" OR "Exposure therapy" OR MA relaxation OR "relaxation" OR DE biofeedback, psychology OR ("biofeedback" AND "psychology") OR "psychology biofeedback" OR "biofeedback") OR DE hypnosis OR "hypnosis" OR "Attention bias-modification" OR DE "Cognitive Behavior Therapy" OR DE "Behavior Therapy" OR DE "Behavioral Activation System"OR DE "Exposure Therapy" OR DE "Interpersonal Psychotherapy"OR DE "Mindfulness" OR DE "Psychodynamic OR DE Psychotherapy" OR DE "Psychodynamics"OR DE "Acceptance and Commitment Therapy"OR DE "Dialectical Behavior Therapy "OR DE "Schema Therapy "OR DE "Systematic Desensitization Therapy"OR DE "Relaxation Therapy"	334,649
disorder-specific treatments	(exposure AND "response prevention") OR DE "Cognitive Behavior Therapy" OR DE"Cognitive Behaviour Therapy" OR CBT OR "cognitive therap*" OR "behavior therap*" OR "behaviour therap*" OR "behavioural treatment" OR "behavioral activation" OR "exposure and response prevention" OR "exposure with response prevention OR "Acceptance and Commitment Therapy" OR "ACT" OR "dialectical behavior therapy" OR "dialectical behaviour therapy" OR DBT OR "Schema-focused therapy" OR "schema therapy" OR DE "Cognitive Behavior Therapy" OR DE "Behavior Therapy" OR DE "Behavioral Activation System" OR DE "Exposure Therapy" OR DE "Acceptance and Commitment Therapy" OR DE "Dialectical Behavior Therapy "OR DE "Schema Therapy "	84,233
bipolar	OR “interpersonal and social rhythm therapy” OR “IPSRT” OR DE "Interpersonal Psychotherapy"	1,318
	OR “cognitive training” OR “cognitive remediation” OR DE "Brain Training"	

Screening process

- Abstracts were divided and reviewed by 10 pairs of researchers.
- The full text of the potentially eligible studies were reviewed.
- Disagreements were discussed by the pair, and a third reviewer was involved if consensus could not be reached.
- Additional quality check by fourth reviewer (by assessing the eligibility of every fifth excluded study).

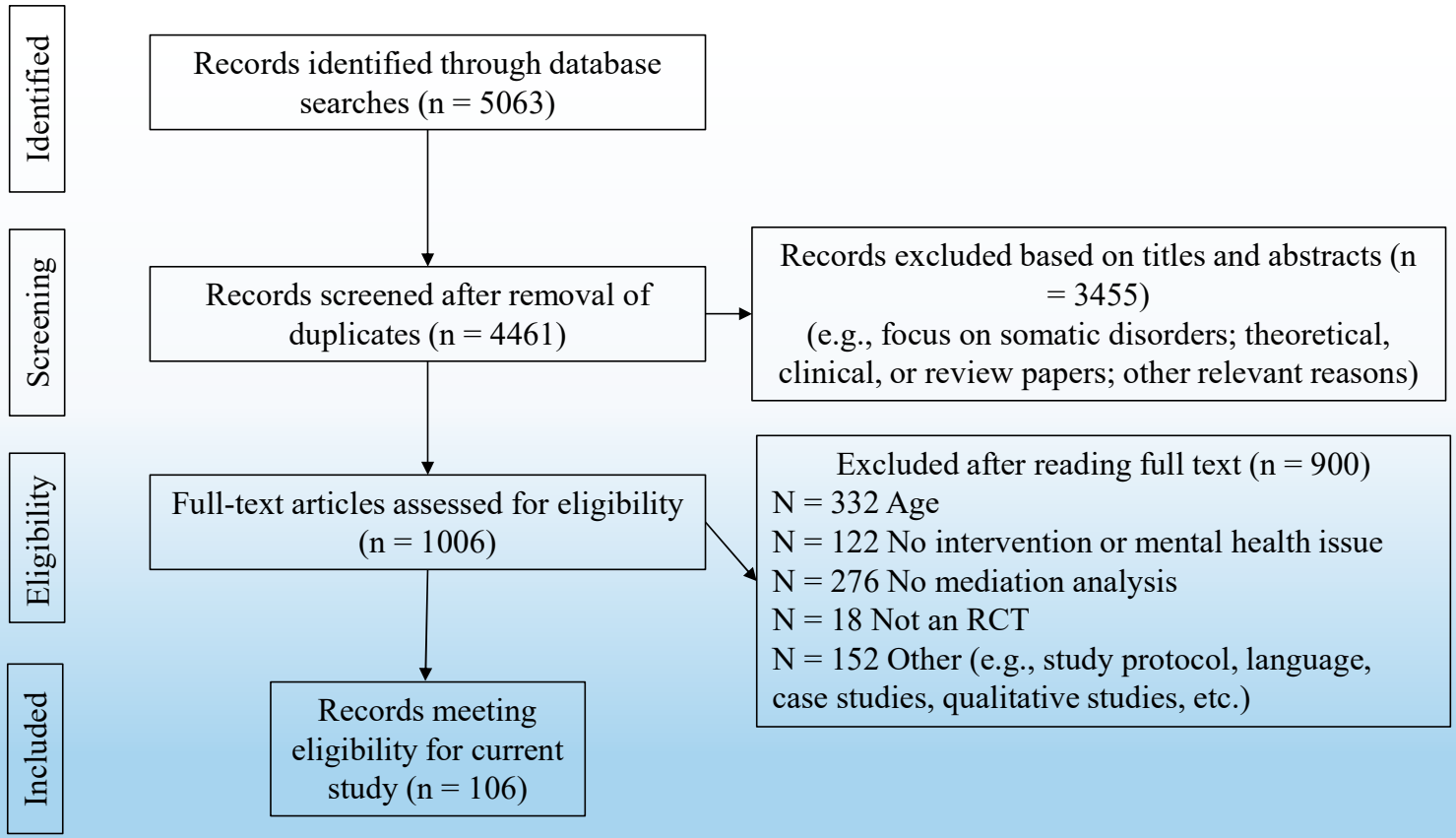
Data extraction process

- A standardised form was used to extract the information about:
  - Study setting
  - Study population and participant demographics
  - Baseline characteristics
  - Details of the intervention and control conditions
  - Study methodology
  - Outcomes
  - Times of measurement
  - Assessed mediators
  - Type of mediation analysis
  - Information for assessment of study quality
  - Information for assessment of the risk of bias (using the Mixed Methods Appraisal Tool).



Study ID

Study ID	Main diagnosis	Main diagnosis abbreviation (DEP, ANX,	Mean age (SD)	Age range	Gender % Female	Author	Year	Title	Country (conduct of study)	Name of intervention	Format (IND, FAM, GRO)	Mode of delivery (ONLINE, F-2-F, BLENDED, OTH)	Setting (inpatient/outpatient)	Treatment length (no. of weeks)	Treatment length (no. of sessions)	Type of comparator (what is the comparison intervention?)	Type of comparator category	Final sample included in analysis: N, %	Primary outcome (measures)	Secondary outcomes (meas	Mediator 1	Mediator 1 Consensus Category	Mediator 1 Sub-category	Measure of mediator 1	significance of mediator 1:YES/NO	signific media which outco
85	social	ANX	11.20	12 to 1	48.9	Alfano	2009	Mediator	not sta	Social	CBT	MIX	F-2-F	Outpatient	12	12	In one study: Te	Education / Pha	88	social phobia, anxiety disorders, global impairment in functioning		Loneliness	EMO	loneliness	TheLoneliness	yes	Social
566	GAD, S	ANX	8 to 14	12 to 1	41.3	Chu et	2004	Positive	USA	Manua	CBT	IND	F-2-F	Outpatient	16	16	Not stated here	NR	59	presence of anxiety disorders		Early involvem	BEH	engagement in	The Child Invo	no	
2206	elevat	ANX	18.9	12 to 1	83.7	Norr et	2014	The effec	South A	Anxiet	EDU; CBT	IND	ONLINE	Outpatient	1	1	Physical Health	Education	104	depressive symptoms, anxiety symptoms, pathological worry	symptoms	anxiety sensit	COG	cognitive appr	ASI-3 scores	yes	depre
2027	PTSD	ANX, TI	13.3	12 to 1	72.4	Meise	2017	Cognitive	UK	Cognit	CBT	IND	F-2-F	Outpatient	10	8.3 (2.2)	waiting list	Waiting list	26	PTSD symptoms	general functioning, PTSD-r	trauma-relate	COG	trauma-relate	Child Post-Tra	yes	PTSD s
1514	War-Af	TRAUM	11.29	12 to 1	50	Kangas	2016	Psychosc	Palest	Teach	CBT	GRO	F-2-F	Outpatient	4	8	waiting-list gro	Waiting list	433	PTSD symptoms	depressive symptoms	Post-traumati	COG	trauma-relate	The Children's	no	
1452	Postra	TRAUM	15.1	12 to 1	79.5	Jensen	2018	Change i	Norwa	Traum	CBT	IND; FAM	F-2-F	Outpatient	NR	13.1	treatment-as-u	Treatment as u	153	PTSD symptoms, depressive symptoms, general mental healt	depressive symptoms, gen	posttraumatic	COG	trauma-relate	change in CPT	yes	posttr
1328	anxiet	ANX	12.51	12 to 1	57	Hogen	2014	Mediator	Nether	Cognit	CBT	IND; FAM	F-2-F	Outpatient	12	12	waiting-list gro	Waiting list	T2 118, T3 113	anxiety symptoms		negative and p	COG	negative thou	CATS-NeP	yes (change in	anxiet
921	separa	ANX	11.4	12 to 1	60	Fjerm	2016	Therapis	Norwa	Individ	CBT	IND	F-2-F	Outpatient	13.5	10 (+ 2 booster	waitlist	Waiting list	91	primary diagnosis loss and reduction in clinicians' severity ratings		change in allia	REL	alliance	youth-rated Th	no	
2207	Anxiet	ANX	19.1	12 to 1	65.5	Norr et	2017	Is compu	USA	Cognit	CBT; EDU (p	IND	ONLINE	Outpatient	1	1	computerized "	Education	54	fear reactivity, subjective units of distress		Cognitive con	COG	anxiety sensit	Anxiety Sensit	YES	Fear re
2248	Specifi	ANX	10.29	12 to 1	38	Olland	2017	The medi	USA &	One-Se	CBT	IND	F-2-F	Outpatient	1	1	Educative Supp	Education	165	severity of specific phobia		Change in how	COG	expectancies	Phobic Beliefs	YES	CSR
2334	Obsess	OTH	12.71	12 to 1	43	Peris e	2017	Targeted	USA	Positiv	CBT	IND; FAM	F-2-F	Outpatient	12	18	Standard Treat	Treatment as u	62	clinician-rated global impression of improvement	OCD symptoms	Family Accom	FAM	family functio	Family Accom	YES	Clinica
2348	Post T	TRAUM	12.80	12 to 1	73	Pfeiffe	2017	Dysfunct	Germa	Traum	CBT	IND; FAM	F-2-F	Outpatient	12	12	Waiting List	Waiting list	123	PTSD symptoms		dysfunctional	COG	trauma-relate	German versic	YES	PTSD
2612	social	ANX	10.7	12 to 1	50	Schlei	2015	Parental	USA	Cognit	CBT	IND; FAM	F-2-F	Outpatient	12	14	Mediation, Cop	Pharmacothera	433 (20 data se	anxiety symptoms		Caregiver Stra	FAM	parental burd	Burden Assess	YES	anxiet
2748	Post T	TRAUM	13.89	NR	50	Smith	2007	Cognitive	UK	Cognit	CBT	IND; FAM	F-2-F	Outpatient	10	10	Waitig List	Waiting list	24	PTSD symptoms	depressive symptoms, ani	Trauma relate	COG	trauma-relate	Children's Pos	YES	PTSD s
2872	Anxiet	ANX	13.8	12 to 1	63.3	Swain	2015	Mechani	Austra	Accept	MIN	GRO	F-2-F	Outpatient	10	10	CBT, Waitinglis	Active psycholo	49	anxiety symptoms, behavioral/emotional problems, depress	quality of life, self efficacy	Acceptance a	COG	metacognitive	AFQ-Y	YES	Anxiet
2950	Anxiet	ANX	18.9	12 to 1	83.7	Timpa	2016	Effects of	USA	Anxiet	CBT	IND	F-2-F	Outpatient	1	1	Physical health	Education	104	obsessive compulsive and hoarding symptoms	depressive symptoms	Reduction of A	COG	anxiety sensit	Anxiety Sensit	YES	Obses
3431	Anxiet	ANX	11.5	12 to 1	52.1	Fjerm	2020	Therapis	Norwa	FRIEND	CBT	IND	F-2-F	Outpatient	10	10	not reported	NR	73	anxiety symptoms		Difference bet	REL	alliance	Therapeutic Al	YES	anxiet
3515	Anxiet	ANX	13.5	12 to 1	35.8	Kwok	2019	Integrati	Hong	Positiv	OTH	GRO	F-2-F	Outpatient	8	8	no	No intervention	106	anxiety symptoms	hope, emotional competer	Hope	COG	expectancies	Children's Hop	yes	anxiet
3647	OCD	OTH	12.8	12 to 1	58.6	Wolte	2018	Mediatin	Nether	Contro	CBT	IND	F-2-F	Outpatient	16	16	None	No intervention	58 (79%)	OCD symptoms		Dysfunctional	COG	dysfunctional	OBQ-CV	No	
2752	No spe	ANX	19.9	NR	18-61	Smits	2008	Cognitive	USA	Exerci	OTH	IND	F-2-F	Outpatient	2	6	Waiting list and	Waiting list / Ac	60 (100)	anxiety symptoms	depressive symptoms	anxiety sensit	COG	anxiety sensit	ASI	YES	anxiet
671	Compl	EXT	10.5	12 to 1	25	Dadds	2012	Outcome	Austra	Emotic	SYS	IND; FAM	F-2-F	Outpatient	4	4	TAU	Treatment as u	195 (100%)	conduct problems, total difficulties (comprising conduct problems, emotional symptoms		change in emo	EMO	recognition an	FACES	no	
3649	Anxiet	ANX	10.8	12 to 1	51.6	Wu et	2020	The impa	USA	Cognit	CBT	IND	F-2-F	Outpatient	14	14	CBT plus sertra	Combined psyc	279 (?)	anxiety symptoms		Exposure com	BEH	engagement in	CBT session su	Yes	Anxiet
386	Depre	DEP	13 to 1	12 to 1	NR	Brent	1998	Predicto	USA	Cognit	CBT	IND	F-2-F	Outpatient	12 to 16	12 to 16	systemic behav	Active psycholo	78	depressive symptoms, presence of major depressive disorder,	functional impairment	hopelessness	COG	expectancies	Beck Hopeles	yes	depre
427	Depre	DEP	12.5	12 to 1	46.1	Brunw	2018	Youth co	USA	Penn R	CBT	GRO	F-2-F	Outpatient	12	12	Penn Enhancer	Education / Pla	321	depressive symptoms		explanatory st	COG	cognitive appr	Children's Attr	yes	depre
594	Depre	DEP	11.4	12 to 1	42	Compa	2010	Coping a	USA	Family	CBT	FAM; GRO	F-2-F	Outpatient	24	12	self-study writt	Guided self-hel	111	depressive symptoms, general emotional distress (anxiety/d	changes in parenting	changes in ad	BEH	coping	behavioural	YES	CES-D,
753	Depre	DEP	15.6	12 to 1	77.8	Dietze	2014	Social pr	USA	Cognit	CBT; SYS	IND	F-2-F	Outpatient	12 to 16	13.6 (1.3)	nondirective su	Active psycholo	63	depressive symptoms, depression diagnosis		adolescent int	REL	interpersonal	Family Interac	yes	proble
970	Depre	DEP	11 to 1	12 to 1	49	Fosco	2016	Preventi	USA	Family	HUM	FAM	F-2-F	Outpatient	NR	3	school as usual	No intervention	386	depressive symptoms		family conflict	FAM	family functio	Behavior Prob	YES	depre
1072	Depre	DEP	17.5	12 to 1	56.2	Glads	2014	Understa	USA	Compa	CBT	IND	ONLINE	Outpatient	NR	14	CATCH-IT with p	Education	69	depression symptoms		automatic neg	COG	negative thou	The Automatic	yes	depre
1423	Depre	DEP	14.36	12 to 1	54	Jacobs	2009	Dysfunct	USA	Cognit	CBT	IND	F-2-F	Outpatient	12	12	fluoxetine, a co	Pharmacothera	439	depression symptoms, suicidal thinking, perfectionism	general functioning	Dysfunctional	COG	dysfunctional	Dysfunctional	yes	depre
1536	Depre	DEP	18.5	12 to 1	67.9	Kauer	2012	Self-mon	Austra	Mobile	EDU	IND	ONLINE	Outpatient	2	28 (4 x day)	attention comp	Guided self-hel	114	depression, anxiety, stress, emotional self-awareness	rumination	Emotional self	EMO	recognition an	Emotional self	YES	depre
1809	MDD	DEP	14.6	12 to 1	54.4	Lewis	2009	The role	USA	Cognit	CBT	IND	F-2-F	Outpatient	12	15 (up to)	Pharmacothera	Pharmacothera	253	depresion symptoms	negative attitudes regardi	readiness to c	BEH	motivation for	stages of chan	YES	depre
2486	Risk of	DEP	14.8	12 to 1	41.5	Andre	2015	Depressi	USA	Behavi	INT	FAM	F-2-F, ONLINE	Outpatient	12	6.3 (3.4)	unclear (likely r	NR	82	depression symptoms	glycemic control	family process	FAM	family functio	Conflict Behav	yes	depre
2747	Depre	DEP	12 to 1	12 to 1	NR	Smith	2015	Compute	Englan	Compl	CBT	IND	ONLINE	Outpatient	8	8	Waiting List	Waiting list	110	depression symptoms	anxiety symptoms; depres	ruminative th	COG	negative thou	Child Respons	YES	depre
2814	Major	DEP	15.5	12 to 1	57	Stice e	2011	Relation	USA	Group	CBT	GRO	F-2-F	Outpatient	6	6	bibliotherapy o	Guided self-hel	253	depression symptoms	perceived social support	change in dep	OTH	outcome	16 items from	yes	social
2815	elevat	DEP	15.6	12 to 1	NR	NR	Stice e	2010	Testing r	USA	(1) cog	CBT; CBT; H	GRO	F-2-F	Outpatient	6	NR	Assessment-on	No intervention	341	depression symptoms, negative cognitions, pleasant activities,	emotional expression, lo	negative cogn	COG	negative thou	Automatic tho	yes	depre
312	High ar	OTH, A	14.48	12 to 1	60	Blake	2017	The SENS	Austra	Sleep S	CBT; MIN	GRO	F-2-F	Outpatient	7	7	Study SENSE int	Active psycholo	123	sleep quality, anxiety symptoms		Presleep cogn	BEH	physical healt	PSAS-5 (Presle	YES	Global
313	High ar	OTH, A	14.48	12 to 1	60	Blake	2017	A cogniti	Austra	Sleep S	CBT; MIN	GRO	F-2-F	Outpatient	7	7	Study SENSE int	Active psycholo	123	social problems, attention problems, aggressive behavior	sleep	Sleep-onset-l	BEH	Physical Healt	Actigraphy ob	NO	
343	Irritab	OTH	15.54	12 to 1	61	Bonne	2018	The role	Swede	Expos	CBT	IND; FAM (inclu	ONLINE	Outpatient	10	10	wait-list	Waiting list	101	gastrointestinal symptoms		avoidance bel	BEH	engagement in	IBS-specific Be	yes	decre
1104	no forn	SUB, EI	12.3	0	NA	50.8	Gonza	2012	Random	USA	Bridge	OTH	GRO; FAM	F-2-F	Outpatient	9	11	a single 1.5 hou	Education	516, 100%	substance use, internalizing and externalizing symptoms	GPA and school disciplinar	Coping Efficac	BEH	coping	the B-item Co	yes	subta
210	no forn	SUB	16.7	N	NA	30	Barnet	2014	From cou	USA	Motive	HUM	GRO; IND	F-2-F and OTH	Outpatient	36 to 48	3	niversal classr	Active psycholo	122	marijuana use		Percent Chan	BEH	motivation for	MISC 2.5 (Hou	yes	substa
1763	anorex	OTH	14.4	12 to 1	91	Le Gra	2012	Moderat	USA	Individ	SYS; OTH	IND	F-2-F	Outpatient	32	32	family-based tr	Active psycholo	100	anorexia nervosa symptoms		self-esteem	COG	self-esteem/ s	(RSES) (Rosenb	no	anorex
2245	no forn	SUB	12 to 1	12 to 1	NR	O'Lear	2017	Process	Canad	Person	CBT; EDU; H	GRO	F-2-F	Outpatient	2	2	no treatment	No intervention	154 (98.7)	alcohol use	depression and anxiety sy	self-esteem	COG	self-esteem/ s	the Rosenberg	yes	Depre
2258	No dia	NR	14.5	12 to 1	40	Orkibi	2017	In-sessio	Israel	Psych	HUM	GRO	F-2-F	Outpatient	16 to 22	16 to 22	Waiting list	Waiting list	13	loneliness, self-concept	scholastic self-concept	cognitive-beh	BEH	engagement in	Client Behavio	yes	Self-co
820	chroni	EXT	14.9	12 to 1	0	Eddy e	2000	Family m	USA	Multi S	SYS; CBT	FAM; IND; GRO	F-2-F	Outpatient	NR	NR	Group Care	Treatment as u	79	antisocial behaviors		Positive adult	FAM	Family Functio	Interview	yes	Antiso
88	anxiet	ANX, TI	18.8	12 to 1	42.9	Allen e	2015	Direct an	USA	Anxiet	CBT; EDU	IND	F-2-F, BLENDED	Outpatient	1	1	Physical Health	Education	82	PTSD symptoms	anxiety sensitivity	general Anxiet	COG	anxiety sensit	Anxiety Sensit	yes	Posttr
715	Extern	EXT	16.02	12 to 1	26.56	Dekov	2012	Within-I	Nether	Multisi	SYS	FAM	F-2-F	Outpatient	16 to 24 (no ma	NR	Control Group T	Treatment as u	256	externalising symptoms		parenting sen	FAM	parental reso	Parenting Stre	yes	extern
1276	Sexual	EXT	14.6	12 to 1	2.4	Henge	2009	Mediator	USA	Multisi	SYS	FAM	F-2-F	Outpatient	28.4	28	Control Group T	Treatment as u	121	antisocial behavior	youth sexual deviance and	caregiver lax c	FAM	parenting skill	Parenting—Sc	yes	Antiso
1277	Seriou	EXT	15.2	8	NR	23	Henge	1992	Family pr	USA	Multisi	SYS	FAM	F-2-F	Outpatient	13.4	NR	Control Group T	Treatment as u	84	antisocial behavior, incarceration		family cohesi	FAM	Family Functio	Family Adapta	no	


Identified
Screening
Eligibility
Included
Records identified through database searches (n = 5063)
Records screened after removal of duplicates (n = 4461)
Records excluded based on titles and abstracts (n = 3455)
(e.g., focus on somatic disorders; theoretical, clinical, or review papers; other relevant reasons)
Full-text articles assessed for eligibility (n = 1006)
Excluded after reading full text (n = 900)
N = 332 Age
N = 122 No intervention or mental health issue
N = 276 No mediation analysis
N = 18 Not an RCT
N = 152 Other (e.g., study protocol, language, case studies, qualitative studies, etc.)
Records meeting eligibility for current study (n = 106)

What we found:

Study characteristics: Disorder type

Disorder Type	No. of studies
Substance use	25
Other (identified in 1 to 3 studies; e.g. ED, OCD, ADHD, IBS, etc.)	22
Depression	20 (1 mixed with anxiety)
Anxiety	19 (1 mixed with depression)
Externalizing d/o	14
PTSD	8

What we found:
Study characteristics: Intervention

Type of Intervention	No. of studies
Cognitive-behavioral therapies	53
Humanistic approaches	23
Systemic therapies	16
Educational therapies	14
Third-wave/mindfulness-based perspectives	5
Integrative approaches	5
Other	3
Interpersonal therapy	2
Psychodynamic therapy	1

What we found:
Study characteristics: Setting

Treatment Setting	No. of studies
Individual therapy	41
Individual therapy + family sessions	22
Individual therapy + group sessions and/ or family therapy	5
Group therapy	24
Group therapy + family and/or individual sessions	7
Family therapy	12
E-mental health	10
Inpatient treatment	0

What we found:

Study characteristics: Statistical tests of mediation

Mediation models	No. of studies
Regression model	43
Structural equation modeling	20
Hierarchical linear modeling	14
Path models	13
General linear mixed model	6
Growth curve analysis	4
Multilevel regression analysis	4
Cross lagged panel analysis	2

Qualitative content analysis of mediators
(Total number of mediation tests: 252)

Type of mediator	No. of studies
Cognitive mediators	80
Family-related mediators	54
Behavioral mediators	48
Therapy-related mediators	34
Relational mediators	23
Emotional mediators	13
Biological mediators	0

Mediator subtypes

Cognitive mediators	No. of studies (80)
Dysfunctional beliefs and attitudes	13
Negative thoughts	12
Anxiety sensitivity	11
Expectancies	11
Cognitive appraisals	10
Self-esteem/self-efficacy	7
Post-traumatic cognitions	7
Metacognitive skills	6
Problem solving	4

Mediator subtypes

Family mediators	No. of studies (52)
Family functioning	22
Parenting skills	19
Parental burden	6
Parental resources	2

Behavioral mediators	No. of studies (48)
Coping	12
Engagement in positive behaviors	8
Impulse control	8
Motivation to change	7
Engagement in therapy activities	7
Physical health behaviors	6

Mediator subtypes

Therapy-related mediators	No. of studies (34)
Outcome	12
Therapeutic alliance	10
Technique	8
Treatment duration	4

Relational mediators	No. of studies (23)
Peer influence	14
Interpersonal skills	7
Attachment	2

Emotional mediators	No. of studies (13)
Recognition and expression of emotions	7
Emotion regulation	3
Loneliness	2

What we found:
Measurement Instruments

- 181 different measures were used to assess, often the same mediators!
- Most were self-report measures.
- Only the following measures were used with some consistency:
  - Anxiety Sensitivity Index-3
  - Children's Postraumatic Cognitions Inventory
  - Symptom Checklist
  - Therapeutic Alliance Scale for Children

Interpretation of the findings…

- Narrative synthesis of the results was performed using an adaptation of the Best Evidence Synthesis Rating System (BESRS) (Moreno-Peral et al., 2020).

- We evaluated:
  - (a) whether the same mediator-construct was assessed for the same disorder category (in at least three studies)
  - (b) the statistically significant association criteria for mediation, and
  - (c) the methodological quality of each of the studies (good/ satisfactory/ unsatisfactory)

What we learned…

- Only one study fulfilled all 6 criteria outlined by Kazdin (2007) for the rigorous assessment and identification of potential mediators!
- There was no strong evidence for any mediator type in any diagnosis group.
- The evidence base for different mediator types differed notably across diagnoses.

What we learned…

- For anxiety disorders, moderate evidence emerged only for cognitive mediators (the same applied to PTSD—classified in the prior DSM-IV among the anxiety disorders).
  - BUT the majority of these studies were rated as having unsatisfactory quality and none were of good quality.
- Studies of depression showed moderate evidence for almost all mediator types, i.e., behavioral, cognitive, family, relational, and those classified as ‘therapy-related‘.
  - Each of these mediator types was supported by at least one good-quality study.

What we learned…

- For externalizing disorders, family and relational mediators were the most frequently studied—they received moderate evidence and were each supported by at least one good-quality study.
  - BUT other mediator types remained virtually unstudied.

- Several mediator types were investigated in substance abuse disorders and received moderate evidence (behavioral, cognitive, family, 'therapy-related')
  - They all had at least one good-quality or several satisfactory-quality studies.

- For almost all diagnoses, the number of studies on particular

In conclusion:

- There is little consensus on the central change mechanisms or related mediator measures between or even within different therapeutic approaches, irrespective of diagnoses.
- Within each mediator category some mediators were identified to be promising for future investigations, irrespective of diagnosis or theoretical approach:
  - Cognitive: changes in negative thoughts, dysfunctional beliefs and metacognitive skills
  - Family-related: family functioning and parenting skills
  - Behavioral: successful engagement in therapy activities, increased impulse control.
  - Relational: changes in peer influence was promising but understudied.
- **These may constitute transtheoretical and transdiagnostic candidate mediators of outcome in the psychotherapy of adolescents!**

In conclusion…

- Adolescence-specific mediators were most commonly investigated.
- The majority of studied mediators were not disorder-specific.
- There was a tendency to mainly test change mechanisms of specific theoretical models without considering other possible change theories (researcher bias).
- Almost no study fulfilled all criteria for rigorously investigating mediation and only nine were classified with an overall good study quality.
- While bearing in mind the current limitations in study designs, methodological rigor and reporting, it appears reasonable to recommend age-specific change models for the psychological treatment of adolescents.

Thank you for your attention!

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TREATme

Working alliance in youth psychotherapy research: How should we measure it?

Fredrik Falkenström / WG3

Horizon 2020

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TREATme

The working group

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- Camellia Hancheva
- Margarida Rangel
- Marcin Rzeszutek
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- Nina Petricevic
- Ela Tollkuci
- Sidse Arnfred
- Fredrik Falkenström

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TREATme

Why focus on measuremen

- Measurement may not be the ’coolest’ research
- Foundation for all quantitative research
  - —Low reliability leads to biased results
  - —Validity problems lead to wrong interpretation

"What's the opposite of 'Eureka!'?"

”Research performed with outcome measurement instruments of poor or unknown quality constitutes a waste of resources and is unethical. Unfortunately this practice is widespread.” (Mokkink et al., 2018)

Horizon 2020

Age appropriate measurement

- Adolescence a period of transition psychologically, socially, and biologically
- Mental health problems increasing
- Identity formation vs role confusion
- Cognitive development; formal operations stage
- These issues may affect measurement
  - —Reliability – i.e. we can not assume that a measure that works for adults works for adolescents
  - —What we want to measure? Different processes/outcomes may be important for adolescents compared to adults

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TREATme

The COSMIN system for evaluating the quality of measurement instruments

- **CO**nsensus-based **S**tandards for the selection of health **M**easurement **In**struments
- Developed 2016 from Delphi study among 158 experts from 21 countries
- Comprehensive system for rating risk of bias in measurement studies and quality of measurement properties of instruments
- Originally developed for rating the quality of patient-rated outcome measures (PROMs)
- ”The methodology can also be used for other types of measurement instruments /…/, but the methodology may need to be adapted for these other purposes.” (Mokken et al., 2018)

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TREATme

The COSMIN system for evaluating the quality of measurement instruments

Areas for evaluation

- Content validity
- Structural validity
- Internal consistency
- Cross-cultural validity
- Measurement invariance
- Reliability
- Measurement error
- Criterion validity
- Construct validity
- Responsiveness

- Ratings should be summarized and rated according to a modified GRADE approach

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TREATme

Content validity

Studied using qualitative research (e.g., focus groups, individual interviews)

- Asking patient about relevance
- Asking patients about comprehensiveness
- Asking patients about comprehensibility
- Asking professionals about relevance
- Asking professionals about comprehensiveness

Are we doing this when developing psychotherapy research measures?

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TREATme

Quantitative measurement properties

- Structural validity
- Internal consistency
- Cross-cultural validity/ measurement invariance
- Reliability
- Measurement error
- Criterion validity
- Construct validity
  - —Convergent validity
  - —Discriminative validity
- Responsiveness
  - —Criterion validity
  - —Convergent validity
  - —Discriminative validity

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TREATme

Aim

Review available measurement instruments for working alliance in youth psychotherapy

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TREATme

Working alliance measures for youth

- Age range: 12-19 (mean within, or age range within)
- Articles reporting any psychometric information
- Systematic search in Psychinfo, PubMed, Web of Science, and PsycArticles
- 4402 abstracts for screening (duplicates removed)
  - —Final inclusion: 7 self-report measures (11 papers) and 6 observer measures (10 papers)
  - —COSMIN rating almost finished
  - —All instruments except one developed for adults
  - —Quality of evidence in general low (e.g., content validity) to moderate (e.g., construct validity)

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TREATme

Reflections on the COSMIN system

- Not developed for psychotherapy process research
  - —Content validity of working alliance measures may not be possible to establish in the same way as e.g., measures of neck pain
- Psychotherapy researchers seldom study (or report) some psychometric information that is deemed important in COSMIN:
  - —Cross-cultural validity/measurement invariance
  - —Measurement error
  - —Responsiveness

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TREATme

Conclusions

- Psychotherapy researchers may need to do some adjustments to the COSMIN system to suit process measures
- Psychotherapy researchers should study the COSMIN system to learn more comprehensive instrument validation

Horizon 2020

Thank you for listening!

TREATme

Patient and public involvement in youth mental health research: A systematic review of impacts and practices

Julian Edbrooke-Childs
Society for Psychotherapy Research
Rome 2022

TREATme

Patient and public involvement in youth mental health research: A systematic review of impacts and practices

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Patient and public involvement in youth mental health research: A systematic review of impacts and practices

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My Story and Me: Patient and public involvement in a story-telling intervention

Edbrooke-Childs, J., Crease, M., Labno, A., Lereya, S. T., Norton, S., Ravaccia, G., Abdinasir, K., Abel, K., Brooks, H., Bhui, K., English, C., Fonagy, P., Heslin, M., Lee, H., & Stewart, J.

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My Story and Me: Patient and public involvement in a story-telling intervention

This project was funded by the National Institute for Health Research (NIHR) Public Health Research programme (NIHR135162) and will be published in full in XXX Journal; Vol. XX, No. XX. See the NIHR Journals Library website for further project information.

Key messages

- Patient and public involvement requires time, budget, training, support, and planning
- Identify what researchers and young people being involved would like from the experience, and how you can both best work together, at the outset
- Inclusive approaches to involving young people benefits collaboration and involvement of all team members

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What is Patient and Public Involvement (PPI)?

- A process in which members of the public are actively involved in the research
- "research being carried out 'with' or 'by' members of the public rather than 'to', 'about' or 'for' them." [1]
- Experts by experience: patients, service users, members of the public, caregivers, or user representatives
- Increasing recognition of PPI by journals, funders, researchers, and policy
- People affected by knowledge should be involved in creating that knowledge

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Why is Patient and Public Involvement important?

To make research more relevant [2-5] :

- Asking the right research questions
- Meaningful research methods
- Wider and more relevant view when writing up results
- Increase inclusivity and credibility when disseminating findings
- Patient-centred research: we have an ethical obligation
- Empowering for those involved and gain experience of research

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Research questions

1. What types of involvement are reported in youth mental health research?
2. What components of involvement are most frequently reported?
3. What are the barriers and facilitators to involvement?
4. What is a recent example of Patient and Public Involvement?

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Systematic review methods

- 10 databases, January 2000 - March 2020
- Updated searches in August 2022 and found 1,039 unique hits
- Included studies reporting PPI involving young people aged between 11 and 20 years with lived experience of mental health difficulties or receiving support
- Excluded studies with participatory methods where young people were not involved in the design and delivery of the research
- Findings presented today are subject to change as they do not include the updated searches

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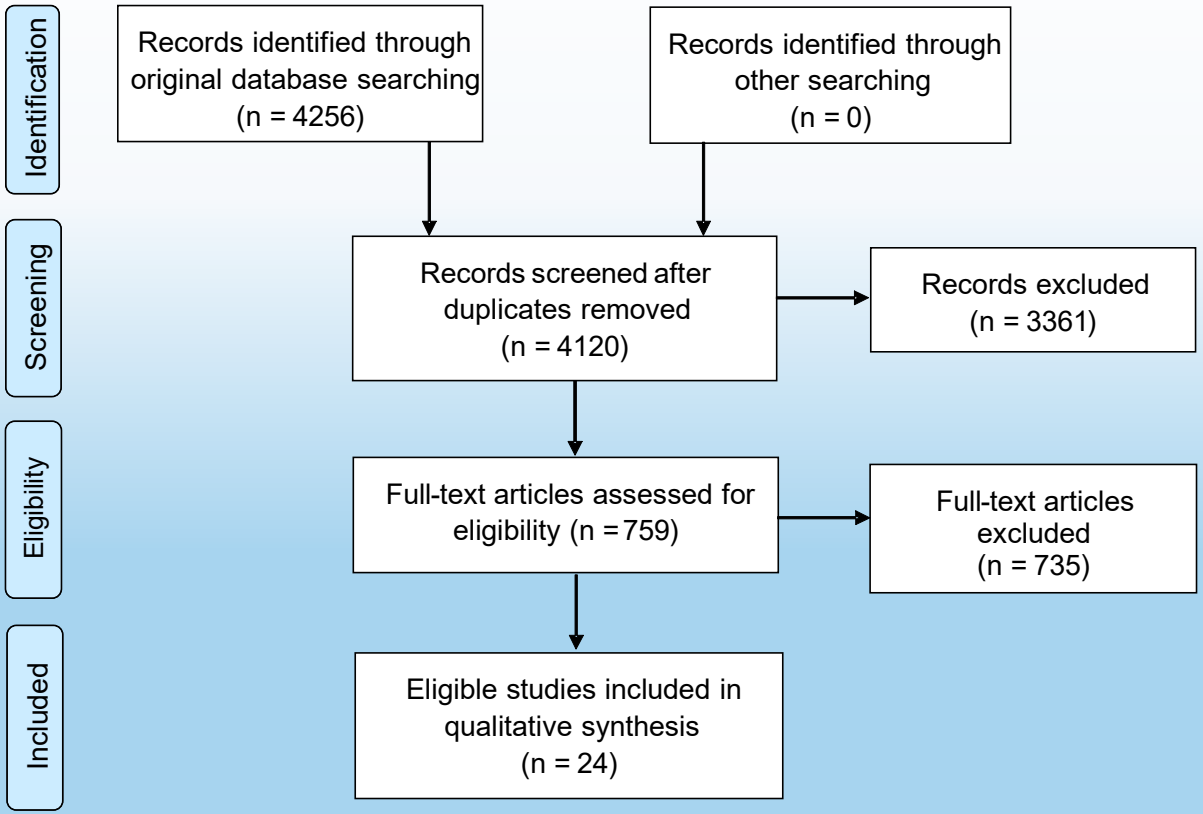
Flow chart [6]



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What types of involvement are reported in youth mental health research?

- 3/24 reported being user-lead
- 17/24 reported collaborative PPI
  - Literature reviewing, identifying the research topic and questions, recruiting participants, collecting surveys or interviews/ focus groups
- 6/24 reported consultation PPI
  - Youth researcher steering group to inform decision making on research questions, deciding data collection methods, interpreting data

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What components of involvement are most frequently reported?

- Developed 17 item reporting criteria with young people based on literature [7]
- Mean criteria met = 7, median = 6.5, 6 studies met at least 10/17
- More often reported: mentioning PPI in the title/abstract, explaining why it was important, and how and at which stage of the project it was conducted
- Less often reported: descriptions of procedural aspects, setting goals and identifying support needs, and plans to keep young people updated with the impact of their involvement
- Tension with comprehensive reporting of PPI and journal requirements

What are the barriers and facilitators to involvement?

- Respectful relationships
- Sensitive approach (e.g., balancing recruitment of specific experiences vs. requiring young people to disclose experiences)
- Clear and open communications
- Insufficient resources, including researcher training
- Flexibility of involvement so it is inclusive of different needs and commitments
- Consistency of PPI group membership

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What is a recent example of Patient and Public Involvement?

- Consultations when designing the study and applying for funding, paid peer researcher co-investigator, and young people advisory group
- Peer researcher involved from the outset
  - Core member of the research team (e.g., joined weekly meetings)
  - Attended Steering Group
  - Conducted one of the studies but involved in all three

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What was the impact of Patient and Public Involvement?

- Informed the need for the study; e.g., lack of recognition of young women's voices and stories (e.g., distress marginalized)
- Inclusive approach to the study and prioritized marginalized groups
- Improved research methods (e.g., suggested topics ahead of interviews)
- Interpreted the results of the narrative analysis
- Critically and collaboratively challenged to ensure we were amplifying the voice of participants

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What helped and hindered Patient and Public Involvement?

- Identified goals for participating and group agreement at the outset
- Feeding back impact and changes
- Sending materials in advances
- Live anonymous feedback in meetings
- More time explaining commitment at the outset for shared expectations
- Interviews were more sensitive than anticipated, so the team worked on how to manage and support involvement for all researchers
- Modelling open and transparent approach to the research

Key messages

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The child, adolescent, and family therapy research (CAFTR) specialist interest group

The **mission** of CAFTR is to support and promote research in the field of child, adolescent, and family therapy including parent-infant therapy.

The **CAFTR e-forum** (caftr@psychotherapyresearch.org) provides an online space for an exchange of ideas among members. There are over 200 members from different countries in the world.

E-forum includes the latest updates on members' research activities, discussions about research-related issues and opportunities for collaboration.

TO SIGN UP for the E-FORUM:

https://www.psychotherapyresearch.org/mpage/CAFTR-List

More information on CAFTR: https://www.psychotherapyresearch.org/page/SPRCAFTR

Questions? Please email sibel.halfon@bilgi.edu.tr or verareginaramires@gmail.com

References I

1. INVOLVE. (n.d.). What is public involvement in research? Retrieved from https://www.invo.org.uk/find-out-more/what-is-public-involvement-in-research-2/?print=print
2. Brett, J., Staniszewska, S., Mockford, C., Herron-Marx, S., Hughes, J., Tysall, C., & Suleman, R. (2014a). Mapping the impact of patient and public involvement on health and social care research: a systematic review. *Health Expect, 17*(5), 637-650. doi:10.1111/j.1369-7625.2012.00795.x
3. Brett, J., Staniszewska, S., Mockford, C., Herron-Marx, S., Hughes, J., Tysall, C., & Suleman, R. (2014b). A systematic review of the impact of patient and public involvement on service users, researchers and communities. *Patient, 7*(4), 387-395. doi:10.1007/s40271-014-0065-0
4. Delbanco, T., Berwick, D. M., Boufford, J. I., Edgman-Levitan, S., Ollenschläger, G., Plamping, D., & Rockefeller, R. G. (2001). Healthcare in a land called PeoplePower: nothing about me without me. *Health Expect, 4*(3), 144-150. doi:10.1046/j.1369-6513.2001.00145.x

References II

5. Wilson, P., Mathie, E., Keenan, J., McNeilly, E., Goodman, C., Howe, A., . . . Peckham, S. (2015). Health Services and Delivery Research. In *ReseArch with Patient and Public invOlvement: a RealisT evaluation – the RAPPORT study*. Southampton (UK): NIHR Journals Library.

6. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. PLOS Medicine 2021;18(3):e1003583. doi: 10.1371/journal.pmed.10035

7. Staniszewska, S., Brett, J., Simera, I., Seers, K., Mockford, C., Goodlad, S., . . . Tysall, C. (2017). GRIPP2 reporting checklists: tools to improve reporting of patient and public involvement in research. *BMJ, 358*, j3453. doi:10.1136/bmj.j3453