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Systematic Search Strategy and Study Flow

Identification of Studies

A scoping search was conducted using Google Scholar and DelphiS (University of Southampton online journal portal). Search results informed the identification of key search terms, which were applied to the PICOS framework (Sterne et al., 2019) (Table 1).

Using the search terms, a search of the abstracts of published studies up to 3rd March 2023 was conducted using the following online databases: PsycINFO, Education Resources Information Centre (ERIC), Scopus, and Web of Science. The grey literature was searched using the ProQuest Dissertation and Theses Global database.

Table 1

Search Terms Applied to the PICOS Framework

	Search Terms
Population (P)	child* OR "young people" OR youth OR teen* OR adolescen* OR pupil* OR student* OR "school age"
Intervention (I)	"DNA-V" OR "acceptance and commitment therapy"
Comparison (C)	-
Outcome (O)	-
Setting (S)	school* OR education OR classroom* OR "school-based"
Additional: Study type	RCT OR "randomi?ed controlled trial" OR "randomi?ed control trial" OR "randomi?ed trial" OR "cluster-random*"

Inclusion and Exclusion Criteria

Table 2 presents the inclusion and exclusion criteria used in the current review.

Table 2

Inclusion and Exclusion Criteria

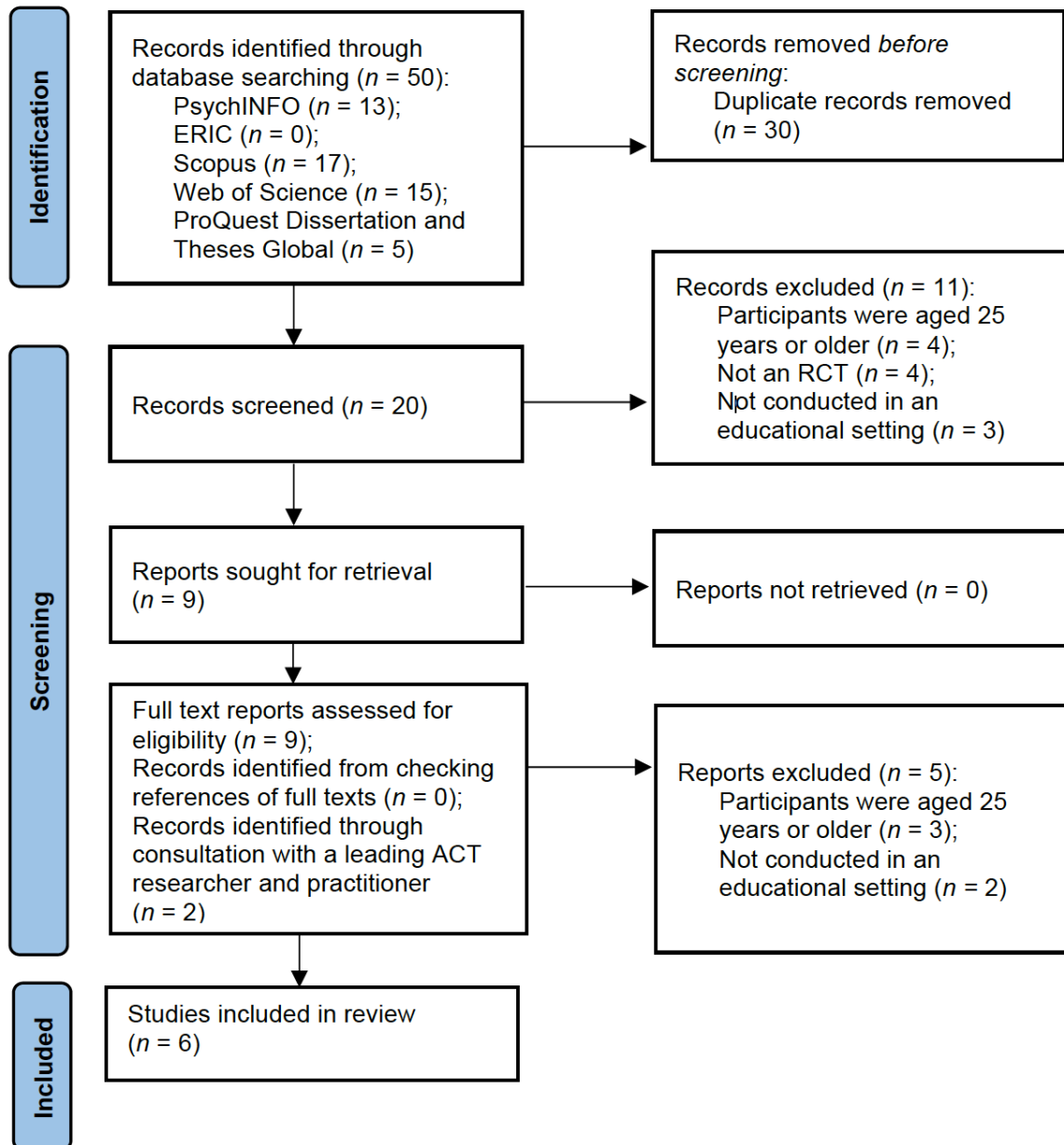
Inclusion Criteria	Exclusion Criteria
Participants aged under 25 years	Participants aged 25 years or older
Paper available in English	Review papers
Randomised controlled trial (RCT) which compared an intervention group with a control comparison group	Non-empirical papers (e.g., opinion pieces, theoretical papers, book chapters)
Assessed the efficacy of an intervention based on acceptance and commitment therapy	Not an RCT (e.g., participants were not randomised or did not include a control comparison group)
Included social, emotional, and mental health-related outcome measured in both intervention and control groups	Did not include any social, emotional, and mental health-related outcome
Research conducted in an educational setting (e.g., school, college)	Not conducted in an educational setting
Full text available	

Study Flow

Figure 1 presents the PRISMA (2020) flow diagram, which illustrates the flow of studies through the review. Using the search terms from Table 1, across all databases, 50 papers were identified, 30 of which were duplicates. Of the remaining 20 papers, 11 were excluded based on the title or abstract and the remaining nine full texts were assessed for eligibility. The reference lists of these full texts were examined for further eligible studies. A leading researcher and practitioner in the field of ACT and DNA-V was also consulted; this led to the inclusion of two additional studies. The final number of studies which met the inclusion and exclusion criteria (Table 2) and were included in the review was six.

Figure 1

PRISMA (2020) Flow Diagram



Quality Appraisal

The included six studies were appraised for their quality using adapted items from the revised Cochrane risk-of-bias tool for randomised trials (RoB 2; Sterne et al., 2019) (Appendix C).

Data Extraction Table

Study	Sample Characteristics	Design	Intervention	Control Condition(s)	SEMH-related outcomes (Measure) collected in both arms	Findings
Bernal-Manrique et al. (2020)	42 students (30 girls) from a private school in Bogota, Colombia, experiencing social difficulties and difficulties adapting to the school. Age range = 11-17 years (M = 14.52, SD = 1.67). 21 were randomised to the intervention and 21 to the waitlist control group.	RCT with simple randomisation with a 1:1 ratio	Targeted intervention (tier 2). Repetitive Negative Thinking (RNT)-focused ACT intervention: three weekly, group-based 75-minute sessions, which emphasised developing psychological flexibility and the ability to notice triggers for RNT, distance from them, and behave according to values. Intervention sessions occurred after the school day in a school classroom and were carried out in two groups of approximately 10 students. Facilitated by an adult in final year of master's degree in clinical psychology.	Waitlist control	Interpersonal problem-solving skills (Interpersonal Conflict Resolution Assessment); Emotional symptoms (Depression, Anxiety, and Stress Scales; DASS-21); Valued living (Valuing Questionnaire); RNT (Perseverative Thinking Questionnaire); Psychological inflexibility (Avoidance and Fusion Questionnaire; AFQ)	Sig. interaction effects for all outcomes; ACT students showed sig. greater improvement in interpersonal skills, overall emotional symptoms, RNT, and psychological flexibility compared to waitlist students over the course of the study.
Burckhardt et al. (2016)	267 students from years 10 and 11 in a high school in Sydney, Australia (60% male): 139 in the intervention group and 128 in the control group.	RCT with cluster randomisation: each tutorial group randomised to ACT or control.	Universal intervention (tier 1). Group-based ACT and positive psychology intervention: 16 half hour sessions spread over 3 months, with workshops mostly conducted twice a week. Intervention was delivered by a psychologist. Workshops delivered in lecture-style manner.	TAU: Usual 'pastoral care' classes aimed at assisting students to face challenges such as cyber safety, social justice, and drugs. Classes comprised 15-20 students. Length, duration, and	Depression, anxiety, and stress (DASS-21); Subjective wellbeing (Flourishing scale)	Sig. interaction effect for overall depression, anxiety, and stress: sig. greater reductions in these symptoms in the ACT compared to control group. Sig. interaction effect for wellbeing for year 10 students only: sig. greater improvements in wellbeing in the year

				total number of sessions matched intervention.		10 ACT vs. control group.
Livheim et al. (2014)	32 students (72% female) aged 14-15 years in a public high school in Sweden: 17 in the ACT group and 17 in the control group. Students scored above the 80 th percentile on scales measuring psychological problems.	RCT: for girls, simple randomisation with 1:1 allocation ratio was used and for boys, a blocked randomisation was used with 2:1 allocation ration (favouring intervention).	Targeted intervention (tier 2). Eight group sessions based on ACT, delivered over six weeks. Sessions were delivered after school and each session lasted 90 minutes. Two clinical psychology major students, with training in CBT and ACT, delivered each intervention session.	TAU: Individual counselling support by the school nurse, ranging between two and eight sessions.	Stress (Perceived Stress Scale; PSS); Anxiety (DASS-21); Depression (DASS-21); Subjective wellbeing (Satisfaction with Life Scale); Experiential avoidance and cognitive fusion (AFQ); Mindfulness (Mindful Attention Awareness Scale)	Sig. interaction effect for stress: sig. greater reduction in stress in the ACT compared to control group. No other sig. interaction effects were found for the other outcomes. Authors acknowledged that the study was underpowered.
Petersen et al. (2022)	26 US high school students (mean age = 15.7, SD = 1.6; 73% female), across two schools, with elevated anxiety: 13 in the intervention group and 13 in the control group.	RCT	Targeted intervention (tier 2). Group intervention based on DNA-V model, delivered over eight weeks. There was either one session (1 hour) delivered weekly or two sessions (each 30 mins) delivered weekly. Adaptations include not including a separate 'social view' part. Two clinical psychology doctoral students delivered each session.	Waitlist control	Anxiety (Screen for Child Anxiety and Related Disorders–Child Report); Depression (Center for Epidemiologic Studies Depression Scale; CES-D); Psychological inflexibility (AFQ); Positive mental health (Mental Health Continuum); Subjective wellbeing (Student Subjective Wellbeing Questionnaire)	Sig. interaction effect for anxiety: sig. greater reduction in anxiety in the ACT compared to control group. No other sig. interaction effects were found for the other outcomes.
Van der Gucht et al. (2017)	586 students (age range = 14-21, mean age = 17, SD = 0.66; 53%	RCT: individual classes were randomly allocated	Universal intervention (tier 1). Four weekly, 120-minute classroom ACT sessions delivered during school hours.	Usual academic curriculum	Internalising and externalising problems (Symptoms of Behavioural and Mental Problems); Quality of life (World	No interaction effects were found for any of the outcome variables – the authors concluded

	female) across 14 secondary schools in Flanders, Belgium: 288 in the intervention group and 298 in the control group.		The programme was delivered by teachers who attended two days of ACT training, facilitated by a psychologist and an educator.		Health Organisation Quality of Life questionnaire); Psychological inflexibility (AFQ)	that their study failed to show any effects of ACT.
White et al. (2022)	89 female students in grade eight (mean age = 14, SD = 0.5) from one secondary school in Australia: 48 in the intervention group and 42 in the control group.	RCT: individual classes were randomly allocated	Universal intervention (tier 1). 20-week multi-component "Health and Wellbeing for Girls" programme based on ACT and Self-Determination Theory, delivered by a member of the research team who was also a qualified teacher. Total intervention time was five hours over the 20 weeks and intervention occurred during school hours.	Control participants participated in an elective subject of their choice, which varied considerably across participants (e.g., science, creative arts). Matched for time.	Psychological health (Strengths and Difficulties Questionnaire); Psychological wellbeing (Flourishing Scale); Mindfulness (Child and Adolescent Mindfulness Measure); Self-compassion (Self-Compassion Scale); Rumination (Rumination in Adolescent Girls measure); Social health (Measure of Adolescent Connectedness)	Sig. interaction effects for social health and overall psychological health; ACT students showed sig. greater improvement in these outcomes compared to control students over the course of the study.

Quality Appraisal of Included Studies Using Adapted Items from the RoB 2 (Sterne et al., 2019)

Items	Study					
	Bernal-Manrique et al. (2020)	Burckhardt et al. (2016)	Livheim et al. (2014)	Petersen et al. (2022)	Van der Gucht et al. (2017)	White et al. (2022)
1.1 Was the allocation sequence random?	Y (1)	N (0)	Y (1)	Not reported (0)	Y (1)	Y (1)
1.2 Was the allocation sequence adequately concealed?	Y (1)	N (0)	Not reported (0)	Not reported (0)	Y (1)	Y (1)
1.3 Did baseline differences between groups suggest an issue with randomisation?	N (1)	N (1)	N (1)	N (1)	N (1)	N (1)
2.1 Were participants aware of their assigned intervention during the trial?	Y (0)	Y (0)	Y (0)	Y (0)	Y (0)	Y (0)
2.2 Were people delivering the interventions aware of participants' assigned intervention?	Y (0)	Y (0)	Y (0)	Y (0)	Y (0)	Y (0)
3.1 Were outcome data available for all/nearly all participants?	Y (1)	Y (1)	Y (1)	Y (1)	Y (1)	Y (1)
4.1 Appropriate measurement of outcomes?	Y (1)	Y (1)	Y (1)	Y (1)	Y (1)	Y (1)
4.2 Could measurement of outcomes have differed between groups?	N (1)	N (1)	N (1)	N (1)	N (1)	N (1)
5.1 Were data analysed according to a prespecified plan?	Not reported (0)	Not reported (0)	Not reported (0)	Not reported (0)	Not reported (0)	Trial registration did not pre-specify outcomes (0)
Overall risk of bias score (higher scores indicate lower risk of bias)	6/9	4/9	5/9	4/9	6/9	6/9