Introduction

In recent years, the prevalence of mental health problems among university students has become a major concern, with a consequential increased focus on how to reduce the burden on students, their families and staff (Blanco et al., 2008; Cvetkovski, Jorm, & Mackinnon, 2019). For example, a systematic review found that over 30% of students met diagnostic criteria for depression (Ibrahim, Kelly, Adams, & Glazebrook, 2013), highlighting the substantial number of students in need of mental health support and treatment. Late adolescence and early adulthood, when most people attend university, are peak times for onset of mental health disorder, with 75% of people who develop a mental disorder experiencing its onset by the age of 25 (Kessler et al., 2005). Attending university may also present an additional intellectual, social and environmental challenge, which may increase the risk of developing a mental health problem. Not only has there been an increasing number of mental health problems, with approximately five times more first year students disclosing a mental health problem between 2015/2016 than between 2006/2007 (Thorley, 2017), there have also been reports that the severity of mental health problems in student populations is increasing (Gallagher, 2012). However, it is not clear that this increasing demand from increasingly diverse student populations has been met effectively (Auerbach et al., 2016; Jaworska, De Somma, Fonseka, Heck, & MacQueen, 2016). Furthermore the evidence suggests that psychological distress does not fall below pre-entry levels at any point during university, and in fact increases as semesters progress (Bewick, Koutsopoulou, Miles, Slaa, & Barkham, 2010; Pitt, Oprescu, Tapia, & Gray, 2018).

An additional problem is that many students are reluctant to seek help: even when accessible services are available, students show low levels of help seeking (Ennis et al., 2019), contributing to a situation where only a quarter of students diagnosed with a disorder receive treatment (Eisenberg, Golberstein, & Gollust, 2007; Hunt & Eisenberg, 2010). Also of concern is that although psychological interventions are a major focus of university treatment services (Mowbray et al., 2006), drop-out rates can be as high as 67% from these interventions (Hall, Brown, & Humphries, 2018), significantly higher than levels observed in other mental health settings (Swift & Greenberg, 2012; Xiao et al., 2017).

A number of approaches have been developed to address student mental health problems, including universal interventions (Ryan, Shochet, & Stallman, 2010) which may be less stigmatising than more selective interventions for some students. However, universal interventions typically have smaller effect sizes than more targeted approaches (Cook, Mostazir, & Watkins, 2019). Moreover, even the most effective universal prevention strategies cannot support students arriving at university with a pre-existing condition, which has been estimated to be up to 80% of students who are identified as having a mental health problem (Auerbach et al., 2016). This suggests that more intensive interventions may be required. The high prevalence of comorbid substance misuse and common mental disorder may also necessitate a more holistic approach deviating from tradition universal prevention (Geisner, Varvil-Weld, Mittmann, Mallett, & Turrisi, 2015).

It has been argued that to be effective interventions need to take into account those specific aspects of student lifestyle that differ from other populations and which may limit the potential benefits of psychological treatments (Gawrysiak, Nicholas, & Hopko, 2009; McIndoo, File, Preddy, Clark, & Hopko, 2016; Michael, Huelsman, Gerard, Gilligan, & Gustafson, 2006). Any such adaptations to existing treatment should also consider the problems of uptake and retention in this population. To date few studies have fully addressed the issues of uptake and retention, developmental adaption of intervention content or mode of delivery. Indeed, in many studies psychological interventions have been convenience samples and have not been focused on the specific needs of students and other studies often included in reviews of mental health treatments for students have been dismantling studies or studies designed specifically to evaluate mechanisms of effect (e.g. Huang, Nigatu, Smail-Crevier, Zhang, & Wang, 2018). While this research is important, these studies do not directly support efforts to understand how universities can provide effective interventions to support students. Furthermore, previous reviews have mainly focused on anxiety disorders and depression (Conley, Shapiro, Kirsch, & Durlak, 2017; Cuijpers et al., 2016; Rith-Najarian, Boustani, & Chorpita, 2019), with less attention paid to other mental health disorders such as post-traumatic stress disorder (PTSD) (Read, Griffin, Wardell, & Ouimette, 2014) or eating disorders (Eisenberg, Nicklett, Roeder, & Kirz, 2011).

Provision of effective mental health support for students is a multifaceted problem in which uptake, access, attrition, treatment content and delivery, and effectiveness should be considered. This systematic review and meta-analysis seeks to expand on previous reviews and examine the efficacy of indicated and selective psychological

interventions for university students and specifically considers the evidence for adaptations to psychological interventions that could contribute to improving student mental health.

Method

This review was prospectively registered on PROSPERO (CRD42019124362) and adhered to the PRISMA guidelines (Moher, Liberati, Tetzlaff, Altman, & Group, 2009). The review followed the registered protocol with the exception of one deviation: alcohol/drug abuse interventions were included only when students are also at risk of other common mental disorders, as the literature on alcohol/drug abuse interventions has been extensively summarised in recent years (Appiah-Brempong, Okyere, Owusu-Addo, & Cross, 2014; Bridges & Sharma, 2015; Carey, Scott-Sheldon, Garey, Elliott, & Carey, 2016; Gulliver et al., 2015; Samson & Tanner-Smith, 2015).

Search strategy and selection criteria

The search strategy implemented a combination of keyword and subject heading search across MEDLINE (January 1st 1946-November 1st 2018), PsychINFO (January 1st 1806-November 1st 2018), CENTRAL (All years- November 2nd 2018), EMBASE (January 1st 1974-November 2nd 2018) and ERIC (January 1st 1981-November 20th 2018). This search was supplemented with an update search on the 22nd July 2019. The full search strategy is available in Appendix 1. The search strategy was accompanied by a reference search of relevant reviews, which retrieved an additional 10 studies.

We included published studies meeting the following criteria:

Participants: University students (age range 17-26) who have an established mental health condition, meet criteria on a validated symptom measure, or are at risk of having a mental health condition (subthreshold symptoms or belonging to a group considered to have a higher chance of incidence).
Intervention: Psychological interventions which aim to reduce symptoms of common mental disorders (anxiety disorders, depressive disorders, eating disorders, PTSD) and self-harm (including suicidal behaviour and thoughts).
Control: One or more interventions compared to a control consisting of another active intervention, an attentional control, treatment as usual (TAU), waitlist or no intervention.
Outcomes: Symptom severity measured on a validated scale at a minimum of one time point post-treatment
Study design: Randomised controlled trials (RCTs)

We excluded non-English language studies, studies with less than ten participants in each arm, dissertations, conference abstracts and study protocols, universal prevention interventions (those not focused on at-risk groups) and interventions to reduce smoking, drug or alcohol consumption. We also excluded interventions to improve assertiveness or body image or stress levels unless this symptom was targeted as a direct means of treating a mental health problem. Exercise or sleep interventions, and interventions for specific phobias or test anxiety (covered in detail elsewhere (Huntley, 2019)) were also excluded, as were intervention development trials targeting mechanisms of treatment without the explicit aim of treating the identified problem.

In line with the Institute of Medicine Framework (1994), we considered indicated interventions to be those that identify individuals with detectable signs or symptoms of a disorder and selective interventions as those that identify specific sub-populations whose risk of disorder is significantly higher than that of the average for the population of concern. For studies targeting eating disorders, we required a diagnosis or risk of developing the disorder to be obtained using an objective measure, so that body image concerns alone as a trial entry criteria were considered insufficient to warrant inclusion in the review.

One reviewer (PB) independently screened all titles and abstracts identified and excluded studies that did not meet inclusion criteria. Full-text articles were subsequently reviewed. A second reviewer (LA) reviewed 10% of all references at each stage. Disagreement between reviewers was approximately 8%, and all disagreements and unclear cases were resolved through referral to and discussion with a senior reviewer (SP). The search and screening process is depicted in Figure 1.

FIGURE 1

Data Extraction

One reviewer (PB) extracted the data using an Excel-based form and a second reviewer (LA) validated 10% for accuracy with a high level of agreement found. Data extracted included: demographic and clinical characteristics of the sample; programme type (selective or indicated); intervention content including category of intervention (attention training, cognitive and behavioural therapies, mindfulness/meditation, positive psychology, psychoeducation, social support, social skills training , relaxation, or other), mode of delivery, transdiagnostic or disorder focused intervention, group or individual format, duration and intensity; intervention provider (professional or paraprofessional); and methodological characteristics which informed the quality assessment. Primary outcomes (symptom severity measured on a validated scale), and secondary outcomes (wellbeing/quality of life measured on a validated scale, academic outcomes, and attrition from trial at end of treatment) were also extracted and where more than one measure of symptom severity was provided, those measures rated by a clinician were favoured over self-rated scales.

We recorded whether interventions had been adapted for students. Studies were coded into three categories: *convenience sample interventions* were those who did not aim to examine effects specific to students but instead used students as a convenient way of recruiting participants; *student-focused interventions* discussed the problem of the disorder in question within student populations in the abstract or introduction and explicitly aimed to examine the interventions efficacy in this population; *student adapted interventions* were also explicitly aimed at the student population but also adapted the delivery or content intention to address student-specific issues regarding efficacy or access to, engagement with or uptake of treatment.

Where insufficient data was reported, study authors were contacted for the required information. Two authors (Haddock, Weiler, Trump, & Henry, 2017; Stallman, Kavanagh, Arklay, & Bennett-Levy, 2016) were contacted with one author (Haddock et al., 2017) provided additional data to allow inclusion. The other paper was excluded from the meta-analysis.

Quality Assessment

One reviewer (PB) assessed the methodological quality of included studies using the Cochrane Risk of Bias tool, this was validated by a second reviewer (LA), with disagreements discussed and consensus reached. Selection, performance, detection, attrition, and reporting bias were considered to be of unclear, low or high risk for each study.

Data analysis

We calculated effect size statistics as the standard mean difference (SMD) using the metafor package in R (Viechtbauer, 2010). The positive bias in the standardized mean difference is automatically corrected for within this package, yielding Hedges g (Hedges, 1981). Hedges g pools variances and standardizes outcomes across studies which allows for comparison among disparate outcome measures. Measures of attrition used dichotomous data and were calculated as odds ratios (OR). Calculations used a random-effects model. This assumes that analysed studies represent a random sample of effect sizes, facilitating generalizability (Borenstein, Hedges, Higgins, & Rothstein, 2009), and was considered appropriate for examining studies from a range of countries with differing inclusion specifications. Heterogeneity was calculated using I^2. A value of 0% represents no observed heterogeneity and 25%, 50%, or 75% tentatively signifies low, moderate, or high heterogeneity between studies, respectively (Higgins, Thompson, Deeks, & Altman, 2003). Data for each diagnostic group were grouped into selective or indicated interventions, which also included treatment interventions. We combined indicated and treatment interventions because in most cases the population included looked to be similar: cut off scores for inclusion varied and tended to be comparable to indicated prevention cut offs, and indicated treatment symptom requirements did not always state an upper limit, meaning both sub and above threshold participants were included. Active (active intervention, attentional control, TAU) and waitlist (waitlist or no intervention) controls were also analysed separately. Outcomes were grouped into categories according to time point post-intervention they were analysed: End of treatment (EOT), 1-3 months, 4-6 months, 7-12 months, and 13-24 months follow-up. We conducted analyses on any category with at least two interventions. Where studies did not report outcomes at EOT, but provided a follow-up of 1 month or less from EOT, this was taken as the EOT measure. We considered a $p<.05$ to be statistically significant and used the conventional values of effect size for SMD (Cohen, 1962): an effect size of 0.2 signifies a small, 0.5 a moderate, and 0.8 a large effect. Where studies targeted co-existing disorders, measures of each were extracted and analysed within their respective categories.

Meta-regressions were conducted on the combined sample of all studies as a preliminary exploration of potential patterns in the data regarding adaption. In model 1, we examined whether adaption was associated with increased intervention effects. Additional models explored whether adaption was a significant predictor when controlling for diagnosis, control type and programme type (indicated or selective) (model 2), followed by the further inclusion of other intervention variables (delivery format, transdiagnostic or disorder specific intervention, individual or group format, number of sessions, treatment provider, study quality) as covariates (model 3) and then the further inclusion of age and gender as covariates (model 4). We also considered whether the other variables included in the models were associated with efficacy in supplementary analyses. We were unable to examine student status (first year undergraduate, general undergraduate, postgraduate) of the sample, as it was poorly reported across studies.

Effects for each outcome were assessed for the degree of publication bias by visual examination of the funnel plot.

Results

The search returned 9097 studies from which 423 potentially relevant full-text articles were identified. The update search returned 621 studies from which an additional 28 full- text articles were identified. A further 10 studies were also included from reference searches. In total, 84 studies met inclusion criteria (See Figure 1). Overall, 7158 participants were included in the base-case meta-analysis, with an additional 302 participants added in a sensitivity analysis which included studies of poor methodological quality. Within included studies, 94 interventions were compared to a control. Indicated prevention or treatment interventions made up 73 of the 84 studies: studies targeted anxiety disorders (K=20), depression (K=30), both anxiety disorders and depression (K=9), eating disorders (K=10), and PTSD (K=4). There were 11 selective interventions included: these targeted anxiety disorders (K=3), depression (K=1) and both anxiety disorders and depression (K=7). Studies targeting anxiety included those with a focus on social anxiety (K=12), panic disorder (K=1) and anxiety (generalized or nonspecific)(K=25). The average number of sessions offered in the experimental arm was 7.88 and studies were from a variety of countries, though most were conducted in the US (K=40)

Interventions were predominantly cognitive and behavioural therapies (K=57). Other interventions were relaxation (K=6), social skills training (K=2), attention training (K=1), social support (K=3), mindfulness and meditation (K=10), psychoeducation (K=7), positive psychology (K=1), multimodal interventions (K=2) and other (poetry therapy, expressive writing, music therapy) (K=5). The majority of interventions were delivered face-to-face (K=66), while others were via computer (K=23) and reading materials (K=5). An individual format was used by 45 interventions, with 49 interventions using a group format. Twenty-eight interventions involved guided or unguided self-help. Study characteristics are reported in Table 1, and further characteristics and references of all studies are reported in Appendix 2.

TABLE 1: Study Characteristics [end of document]

The quality of included studies was generally low and no studies were considered low risk of bias across all domains. Thirty-one studies reported adequate random sequence generation, and 19 reported allocation concealment. Participant blinding was rarely achieved (K=5 reported some attempt to mask assigned study arm) though in psychological interventions this is very challenging . Most studies reported only self-report outcomes (K=74), which meant few studies reported adequate blinding of outcome assessment. Attrition bias was seen in 13 studies. Selective reporting was difficult to establish in most studies (K=75), since protocols were not published (See Figure 2). Funnel plots were visually examined to explore publication bias (See Appendix 3): and demonstrated relatively little publication bias in estimates of effect. Heterogeneity across analyses ranged from low to high despite efforts to separate differential designs and populations.

FIGURE 2: ROB Summary

Sensitivity Analyses.

Seven studies (Ezegbe et al., 2019; Guo et al., 2017; Noormohamadi, Arefi, Afshaini, & Kakabaraee, 2019; Rezvan, Baghban, Bahrami, & Abedi, 2008; Robatmili et al., 2015; Saravanan, Alias, & Mohamad, 2017; Zemestani, Davoodi, Honarmand, Zargar, & Ottaviani, 2016) demonstrated extremely large effect sizes (Hedges' g >2). Upon further examination of their methods it was identified that reductions in scores on symptom measures

were extreme compared to other RCTs (e.g. reporting zero change in control arms, or reporting improvements in symptoms to levels above that of healthy populations) when compared to similar interventions, and so studies were excluded from the main analysis. A sensitivity analysis was conducted in which these studies were retained. Removal of these studies reduced effect sizes from large to medium in some analyses (Appendix 4).

Symptom Severity

Table 2 presents results of all meta-analyses for the efficacy of interventions in reducing symptom severity. Table 3 displays the results of sub-group analyses by intervention type.

Table 2: Meta-analysis at all time-points

Disorder	Intervention Type	Control Type	Timepoint	K (Number of comparisons)	Hedges' g (95% CI)	p	I^2
All	Indicated	Active	End of treatment	24 (27)	0.26 (0.13, 0.39)	<.001	37.68%
			1-3 month FU	6 (6)	0.16 (-0.01, 0.33)	.063	7.11%
			4-6 month FU	2 (3)	-0.08 (-0.34, 0.19)	.584	0%
			7-12 month FU	2 (3)	0.01 (-0.25, 0.26)	.961	0%
		Waitlist/no intervention	End of treatment	41 (54)	0.78 (0.65, 0.91)	<.001	56.29%
			1-3 month FU	13 (17)	0.64 (0.43, 0.84)	<.001	24.72%
			4-6 month FU	7 (9)	0.44 (0.25, 0.63)	<.001	39.72%
			7-12 month FU	4 (4)	0.27 (0.06, 0.47)	.012	15.78%
	Selective	Active	End of treatment	5 (8)	0.18 (-0.20, 0.56)	.350	70.57%
			1-3 month FU	2 (3)	0.15 (0.18, 0.84)	.002	0%
			4-6 month FU	2 (2)	0.29 (-0.47, 1.06)	.451	81.21%
			7-12 month FU	2 (3)	0.31 (-0.02, 0.64)	.069	0%
		Waitlist/no intervention	End of treatment	5 (9)	0.39 (0.14, 0.65)	.003	0%
Anxiety	Indicated	Active	End of Treatment	8 (8)	0.26 (-0.07, 0.58)	.124	47.03%
		Waitlist/No Treatment	End of Treatment	17 (21)	0.73 (0.55, 0.90)	<.001	37.25%
			1-3 month FU	4 (5)	0.90 (0.58, 1.23)	<.001	0%
			4-6 month FU	2 (2)	0.33 (0.02, 0.64)	.037	0%
	Selective	Active	End of Treatment	4 (4)	0.19 (-0.32, 0.70)	.733	78.89%
		Waitlist/No Treatment	End of Treatment	5 (5)	0.33 (0.06, 0.61)	.016	19.85%
Depression	Indicated	Active	End of Treatment	12 (13)	0.30 (0.14, 0.47)	<.001	38.18%
			1-3 month FU	4 (4)	0.20 (0.00, 0.40)	.046	0%
			4-6 month FU	2 (3)	-0.08 (-0.34, 0.19)	.584	0%
			7-12 month FU	2 (3)	0.01 (-0.24, 0.26)	.961	0.00%
		Waitlist/No Treatment	End of Treatment	21 (26)	0.87 (0.67, 1.07)	<.001	66.52%
			1-3 month FU	7 (9)	0.66 (0.44, 0.87)	<.001	2.82%
			4-6 month FU	5 (7)	0.49 (0.24, 0.74)	.001	53.70%
			7-12 month FU	2 (2)	0.11 (-0.12, 0.35)	.348	0.00%
	Selective	Active	End of Treatment	4 (4)	0.17 (-0.33, 0.68)	.509	80.63%
		Waitlist/No Treatment	End of Treatment	4 (4)	0.51 (0.18, 0.83)	.003	25.72%
Eating Disorders	Indicated	Active	End of Treatment	3 (3)	0.21 (-0.25, 0.66)	.378	54.22%
		Waitlist/No Treatment	End of Treatment	6 (6)	0.64 (0.17, 1.11)	.008	79.08%
			1-3 month FU	3 (3)	0.53 (-0.26, 1.31)	.187	79.20%

			7-12 month FU	2 (2)	0.45 (0.17, 0.72)	.001	0%
PTSD	Indicated	Active	End of Treatment	3 (3)	0.06 (-0.26, 0.39)	.706	29.55%

Table 3: Components analysis

Disorder		Control Type	Intervention	K (Number of comparisons)	Hedges' g (95% CI)	p	I^2
All	Indicated	Active	All interventions	24 (27)	0.26 (0.13, 0.39)	<.001	37.68%
			Cognitive and behavioural	14 (16)	0.28 (0.08, 0.48)	.005	53.99%
			Mindfulness/Meditation	2 (2)	0.36 (-0.29, 1.01)	.276	36.14%
			Psychoeducation	5 (5)	0.18 (-0.00, 0.37)	.050	9.72%
			Multimodal	1 (2)	0.37 (-0.09, 0.84)	.116	0%
		Waitlist/No intervention	All interventions	41 (54)	0.78 (0.65, 0.91)	<.001	56.29%
			Cognitive and behavioural	29 (34)	0.66 (0.53, 0.80)	<.001	45.57%
			Mindfulness/Meditation	4 (7)	0.77 (0.48, 1.06)	<.001	0%
			Relaxation	4 (4)	1.23 (0.66, 1.81)	<.001	69.22%
			Social Support	3 (4)	0.50 (0.08, 0.92)	.020	31.98%
			Other	3 (4)	1.22 (0.53, 1.91)	.001	58.86%
	Selective	Active	All interventions	5 (8)	0.18 (-0.20, 0.56)	.350	70.57%
			Cognitive and behavioural	1 (2)	0.20 (-0.46, 0.87)	.547	49.28%
			Psychoeducation	1 (2)	0.39 (-0.04, 0.81)	.073	0%
			Social skills training	1 (2)	-0.11 (-0.56, 0.33)	.614	0%
		Waitlist/no intervention	All interventions	5 (9)	0.39 (0.14, 0.65)	.003	0%
			Cognitive and behavioural	2 (4)	0.22 (-0.12, 0.56)	.208	0%
			Mindfulness/Meditation	2 (4)	0.58 (0.13, 1.04)	.012	0%
Anxiety	Indicated	Active	All Strategies	8 (8)	0.26 (-0.07, 0.58)	.124	47.03%
			Cognitive and behavioural	5(5)	0.24 (-0.26, 0.73)	.345	64.35%
			Mindfulness/Meditation	2 (2)	0.36 (-0.29, 1.01)	.276	36.14%
		Waitlist/No intervention	All Strategies	17 (21)	0.73 (0.55, 0.90)	<.001	37.25%
			Cognitive and behavioural	10 (11)	0.62 (0.37, 0.87)	<.001	42.50%
			Relaxation	3 (3)	1.02 (0.44, 1.61)	.001	61.28%
			Social Support	2 (2)	0.83 (0.38, 1.27)	<.001	0%
			Mindfulness/Meditation	3 (4)	0.71 (0.40, 1.02)	<.001	0%
	Selective	Active	All Strategies	4 (4)	0.19 (-0.32, 0.70)	.733	78.89%
		Waitlist/No intervention	All Strategies	5 (5)	0.33 (0.06, 0.61)	.016	19.85%
			Cognitive and behavioural	2 (2)	0.07 (-0.28, 0.41)	.711	0%
			Mindfulness/Meditation	2 (2)	0.50 (0.04, 0.96)	.033	0%
Depression	Indicated	Active	All Strategies	12 (13)	0.30 (0.14, 0.47)	<.001	38.18%
			Cognitive and behavioural	7 (8)	0.35 (0.08, 0.61)	.010	54.08%
			Psychoeducation	3 (3)	0.19 (-0.03, 0.41)	.098	19.52%
		Waitlist/No intervention	All Strategies	21 (26)	0.87 (0.67, 1.07)	<.001	66.52%
			Cognitive and behavioural	15 (16)	0.71 (0.53, 0.88)	<.001	42.08%
			Social Support	2 (2)	0.22 (-0.18, 0.62)	.278	0%
			Mindfulness/Meditation	2 (3)	1.02 (0.47, 1.56)	<.001	28.49%

	Selective	Waitlist/No intervention	All strategies	4 (4)	0.51 (0.18, 0.83)	.003	25.72%
			Cognitive and behavioural	2 (2)	0.38 (-0.22, 0.98)	0.213	65.81%
			Mindfulness/Meditation	2 (2)	0.70 (0.23, 1.16)	.003	0%
Eating Disorders	Indicated	Active	All Strategies	3 (3)	0.21 (-0.25, 0.66)	.378	54.22%
			Cognitive and behavioural	2 (2)	0.39 (-0.01, 0.79)	.057	30.63%
		Waitlist/No intervention	All Strategies	6 (6)	0.64 (0.17, 1.11)	.008	79.08%

Anxiety disorders.

Indicated interventions

Indicated interventions with active controls included cognitive and behavioural (K=5), mindfulness/meditation (K=2) and multimodal (K=1, individual counselling) interventions. Indicated interventions for anxiety had no effect on symptom severity reduction at EOT (K=8, g=0.26, 95%CI:-0.07,0.58, p=.124) compared to active controls, and a medium effect (K=21, g=0.73, 95%CI:0.55,0.90, p<.001) compared to waitlist controls. Sufficient data for follow-up analysis was available only for waitlist comparisons. Effects improved at 1-3 months (K=5, g=0.90, 95%CI:0.58,1.23, p<.001), and a small effect was found at 4-6 months (K=2, g= 0.33, 95%CI:0.02,0.64, p=.037), though the latter analysis had only two interventions. Sub-group analyses found that no individual intervention produced significant improvements in symptoms. Figure 3A shows effect sizes for indicated interventions for anxiety at EOT with active controls.

FIGURE 3A

Indicated interventions with waitlist controls had cognitive and behavioural (K=11), relaxation (K=3), social support (K=2), mindfulness/meditation (K=4) and other interventions (music therapy, K=1). Relaxation (g=1.02, 95%CI:0.44,1.61, p=.001) and social support (g=0.83, 95%CI:0.38,1.27, p<.001) showed large effects on symptom severity while cognitive and behavioural (g=0.62, 95%CI:0.37,0.87, p<.001) and mindfulness/meditation interventions (g=0.71, 95% CI: 0.40, 1.02, p<.001) showed medium effects (Table 3). Figure 3B displays the effect sizes at EOT for indicated interventions for anxiety with waitlist controls/no intervention.

FIGURE 3B

Selective Interventions.

Selective interventions with active controls were cognitive and behavioural (K=1), psychoeducation (K=1), social skills training (K=1) and relaxation (K=1). Meta-analysis was not possible, the only intervention producing significant effects was the relaxation intervention (g=1.00, 95%CI:0.47,1.52)(Kanji, White, & Ernst, 2006). Interventions with waitlist controls were cognitive and behavioural (K=2), mindfulness/meditation (K=2) and relaxation (K=1). Selective interventions did not show significant improvements compared to active controls (K=3, g=-0.05, 95%CI:-0.31,0.21, p=.703) although did show a small effect compared to waitlist controls (K=5, g= 0.33, 95%CI:0.06,0.61, p=.016) (Table 2). When analysed separately at EOT, mindfulness/meditation approaches had significant effects on symptom severity (g=0.50, 95%CI:0.04,0.96, p=.033), although cognitive and behavioural approaches did not demonstrate significant treatment effects. The mobile narrative relaxation program also showed significant improvements in symptom severity (Grassi, Gaggioli, & Riva, 2009).

Depression.

Indicated interventions.

Interventions with active controls were cognitive and behavioural (K=8), psychoeducation (K=3), multimodal (K=1, individual counselling) and social skills training (K=1). Indicated interventions for depression had a small effect on symptom severity reduction at EOT (K=13, g=0.30, 95%CI:0.14,0.47, p<.001) when compared to active controls, and a large effect (K=26, g=0.87, 95%CI:0.67,1.07, p<.001) when compared to waitlist. At follow-up, active control comparisons showed a small effect at 1-3 months (K=4, g=0.2, 95%CI:0.00,0.40, p=.046), and no significant effect at 4-6 months (K=3, g=-0.08, 95%CI:-0.34,0.19, p=.584) or 7-12 months (K=3, g=0.01, 95%CI:-0.24,0.26, p=.961). Compared to waitlist, a significant medium effect was retained at 1-3 months (K=9, g=0.66, 95%CI:0.44,0.87, p<.001), and a small effect was found at 4-6 months (K= 7, g= 0.49, %CI:0.24,0.74, p<.001). There was no significant effect on symptom severity at 7-12 months (K=2, g=0.11, 95%CI:-0.12,0.35, p=.348). Sub-group analyses at EOT showed that only cognitive and behavioural therapies had a significant effect on

symptom severity (g=0.35, 95%CI:0.08,0.61, p=.010). Figure 4A shows the effect sizes for interventions for depression at end of treatment with active controls.

FIGURE 4A

Studies with waitlist controls were attention training (K=1), cognitive and behavioural (K=16), mindfulness/meditation (K=3), relaxation (K=1), social support (K=2) and other (K=2 music therapy, K=1 poetry therapy). Sub-group analyses showed that cognitive and behavioural therapies (K=16, g=0.71, 95%CI:0.53,0.88, p<.001) and mindfulness/meditation (K=3, g=1.02, 95%CI:0.47,1.56, p<.001) significantly improved symptoms of depression. Social support did not produce significant improvements (p=.278). Figure 4B shows the effect sizes for interventions for depression at EOT with waitlist controls.

FIGURE 4B

Selective Interventions.

Selective interventions with active controls were cognitive and behavioural (K=1), psychoeducation (K=1), social skills training (K=1) and other (expressive writing, K=1). Selective interventions did not show improvements when compared to active controls (K=4, g=0.17, 95%CI:-0.33,0.68, p=.509) but showed medium effects when compared to waitlist (K=4, g=0.51, 95%CI:0.18,0.83, p=.003). No subgroup analyses of intervention approach could be conducted, however, no intervention individually produced significant reductions in depressive symptoms. Interventions with waitlist controls were cognitive and behavioural (K=2) and mindfulness/meditation (K=2). Mindfulness/meditation showed significant effects on symptom severity (g=0.70, 95%CI:0.23,1.16, p=.003), although cognitive and behavioural therapies did not.

Eating disorders.

Indicated interventions for eating disorders had no significant effect on symptom severity reduction at end of treatment (K=3, g=0.21, 95%CI:-0.25,0.66, p=.378) compared to active controls. However, when compared to waitlist, a medium effect (K=6, g=0.64, 95%CI:0.17,1.11, p=.008) was demonstrated. At follow-up, waitlist comparisons displayed no significant effect at 1-3 months (K=3, g=0.53, 95%CI:-0.26,1.31, p=.187), although had a small effect at 7-12 months (K=2, g= 0.45, 95%CI:0.17,0.72, p=.001). No selective interventions targeting eating disorders met our PICOs criteria for inclusion.

Interventions with active controls used cognitive and behavioural therapies (K=3) and psychoeducation (K=1). Cognitive and behavioural therapies did not produce significant improvements at end of treatment (g=0.39, 95%CI:-0.01,0.79, p=.057). All interventions with waitlist comparisons were cognitive and behavioural.

PTSD.

Indicated interventions for PTSD had no significant effect on symptom severity reduction at end of treatment (K=3, g=0.06, 95%CI:-0.26,0.39, p=.706) compared to active controls. One study with waitlist control was included and found significant large reductions in PTSD symptoms at end of treatment (g=0.92, 95%CI:0.09,1.74). No follow-up data or selective interventions targeting PTSD were available.

Interventions for PTSD with active comparisons were cognitive and behavioural (K=1), psychoeducation (K=1) and other (expressive writing, K=1). The single waitlist comparison intervention used cognitive and behavioural techniques.

Self-harm and Suicidal ideation

No interventions for suicidal ideation or self-harm met criteria for inclusion in the review.

Meta-regression: Adaption

Meta-regression models were run to examine the association of adaption with efficacy of intervention, unadjusted and adjusted for disorder and intervention factors, as well as age and gender. Table 4 shows the results of all four models.

Table 4: Meta-regression of adaption.

Model	K	Variable	Beta	95% CI	p-value
1	98	Adapted intervention	-0.3	-0.56, -0.04	0.025*
2	98	Adapted intervention	-0.25	-0.51, -0.00	0.046*
		Diagnosis			
		(Anxiety, Depression)	-0.03	-0.32, 0.25	0.836
		(Depression)	0.05	-0.19, 0.30	0.654
		(ED)	-0.11	-0.44, 0.23	0.532
		(PTSD)	-0.21	-0.67, 0.24	0.355
		Waitlist/No intervention	0.46	0.28, 0.65	<.001*
		Selective Intervention	-0.19	-0.49, 0.12	0.224
3	98	Adapted intervention	-0.3	-0.63, 0.03	0.079
		Diagnosis			
		(Anxiety, Depression)	-0.15	-0.56, 0.26	0.474
		(Depression)	-0.06	-0.36, 0.23	0.679
		(ED)	0.07	-0.33, 0.47	0.739
		(PTSD)	-0.1	-0.69, 0.48	0.727
		Waitlist/No intervention	0.33	0.10, 0.56	0.005*
		Selective Intervention	-0.31	-0.67, 0.05	0.092
		Face-to-face	0.29	-0.03, 0.61	0.078
		Transdiagnostic	0.42	0.12, 0.73	0.007*
		Individual Format	0.15	-0.10, 0.40	0.235
		Number of sessions	0.02	-0.00, 0.05	0.106
		Treatment provider	-0.2	-0.47, 0.08	0.163
		High study quality	0.09	-0.19, 0.37	0.519
4	60	Adapted intervention	-0.28	-0.62, 0.06	0.103
		Diagnosis			
		(Anxiety, Depression)	-0.13	-0.60, 0.33	0.572
		(Depression)	0.2	-0.17, 0.57	0.284
		(ED)	0.08	-0.42, 0.58	0.749
		(PTSD)	0.02	-0.56, 0.59	0.954
		Waitlist/No intervention	0.39	0.16, 0.61	0.001*
		Selective Intervention	-0.52	-0.91, -0.13	0.010*
		Delivered face-to-face	0.11	-0.26, 0.47	0.57
		Transdiagnostic	0.67	0.29, 1.04	0.001*
		Individual Format	0.09	-0.18, 0.36	0.498
		Number of sessions	0.01	-0.03, 0.05	0.715
		Treatment provider	-0.12	-0.46, 0.22	0.490
		High study quality	0.09	-0.23, 0.40	0.591
		Age	0.01	-0.08, 0.09	0.902
		Gender	0	-0.00, 0.01	0.422

Note. *=p<.05

[a] reference category for diagnosis=anxiety

In model 1, studies with adapted interventions were significantly associated with less improvement in symptom severity (β=-0.3, 95%CI:-0.56,-0.04, p=.025) compared to studies with non-adapted interventions. This remained a significant predictor of less improvement when controlling for diagnosis, control type and programme type (β=-

0.25, 95%CI:-0.51,-0.00, p=.046). In model 3, when also controlling for intervention characteristics, adaption retained a coefficient of similar magnitude to the other models but it was no longer significant (β=-0.3, 95%CI:-0.63,0.03, p=.079). Studies which were transdiagnostic (β=0.41, 95%CI:0.12,0.73, p=.007) were associated with more improvement at EOT. When also controlling for age and gender, adaption continued to have no significant association with treatment outcome, while transdiagnostic interventions (β=0.67, 95%CI:0.29,1.04, p=.001) remained a significant predictor of improvement. Selective interventions were also associated with significantly smaller effects compared to indicated interventions (β =-0.52, 95%CI:-0.91,-0.13, p=.010) in model 4 only. We also examined other potential predictors of intervention efficacy which are presented in full in Appendix 5. Controlling for disorder, control type and risk status of participants, interventions offering more sessions and transdiagnostic interventions were positively associated with improvement.

Wellbeing Outcomes

Eighteen studies reported wellbeing outcomes. Indicated interventions showed no improvements in wellbeing compared to active controls (K=5, g=0.25, 95%CI:-0.01,0.51, p=.060) but showed small benefits compared to waitlist (K=10, g=0.45, 95%CI:0.21,0.70, p<.001). Selective interventions also did not improve wellbeing (waitlist controls: K=4, g=0.33, 95%CI:-0.05,0.72, p=.092). Full results of analyses of wellbeing outcomes are available in Appendix 6.

Attrition

Attrition data was available for 66 interventions. Table 4 shows the overall OR of dropout in the treatment compared to the control arm.

Table 5: Attrition

Disorder	Control Type	K	OR (95% CI)	p	I^2
All	Active	29	1.26 (0.85, 1.85)	0.249	34.93%
	Waitlist	37	1.40 (1.12, 1.74)	0.003*	0.40%
Anxiety	Active	6	2.23 (0.91, 5.50)	0.080	0.00%
	Waitlist	9	1.80 (01.08, 3.00)	0.024*	25.387%
Depression	Active	11	2.12 (1.19, 3.77)	0.011*	0.68%
	Waitlist	12	1.89 (1.03, 3.46)	0.039*	3.49%
Anxiety and Depression	Active	6	0.53 (0.19, 1.53)	0.243	71.95%
	Waitlist	9	1.02 (0.66, 1.58)	0.930	0.00%
ED	Active	4	1.09 (0.66, 1.80)	0.729	0.00%
	Waitlist	6	1.31 (0.81, 2.14)	0.271	14.32%
PTSD	(All)	3	1.53 (0.73, 3.22)	0.262	0.00%

Participants were significantly more likely to drop out of the intervention rather than the waitlist arm (15.18% intervention vs 11.02% control, K=37, OR=1.40, 95% CI: 1.12, 1.74, p=.003), but were not more likely to drop out compared to active controls (12.91% intervention arm vs 11.60% control, K=29, OR=1.26, 95% CI: 0.85, 1.85, p=.249). Interventions for students with symptoms of depression were particularly prone to increased rates of drop-out (active: OR=2.12, 95%CI:1.19, 3.77, p=.011, waitlist: OR=1.89, 95%CI: 1.19, 3.77, p=.039).

Post-hoc meta-regression analyses showed that adapting interventions for students did not reach significance in ameliorating drop out. (Meta-regression analyses are available in Appendix 7).

Academic Outcomes

One study (Daley, Bloom, Deffenbacher, & Stewart, 1983) reported the impact of interventions on academic outcomes. This study found no significant effect of small group anxiety management training on improving grade point average.

Discussion

This review expands on previous research on the efficacy of psychological interventions for students with or at risk of developing common mental health problems. We identified important benefits of psychological treatment

for depression, anxiety disorders and eating disorders, with some evidence of effects remaining at follow-up. Compared to active controls (alternative interventions, TAU, or attentional controls) interventions were less effective, with only depressive symptoms showing small improvements. There were a limited number of interventions for PTSD, and no studies met inclusion criteria for self-harm or suicidal ideation. This aligns with a wider picture with data on effective interventions for suicidal ideation being limited across all young people (Robinson, Hetrick, & Martin, 2011). This is disappointing, since PTSD, suicidal ideation and self-harm are becoming increasingly common in student populations (Heath, Toste, Nedecheva, & Charlebois, 2008; Horgan, Kelly, Goodwin, & Behan, 2018; Read et al., 2014). Undertaking studies in these areas should be considered a research priority.

Selective prevention interventions focused on anxiety and depressive disorders. These showed some benefits against waitlist, suggesting potential utility as an option for students (Ryan et al., 2010) possibly as part of a stepped care approach which appears to be an effective model for the delivery of psychological interventions in general adult populations with common mental health disorders (Clark et al., 2018). Although, this review did not consider the broader organisational context in which services are delivered future research should explore the role of service and organisational changes in improving metal health outcomes for students.

Cognitive and behavioural approaches were the most commonly investigated interventions, and were efficacious across anxiety disorders, depression and eating disorders. Mindfulness and meditation interventions also showed efficacy in treating symptoms of anxiety and depression in both selective and indicated interventions compared to waitlist. In addition, we found some evidence that increasing the number of treatment sessions improved outcomes, again in line with findings in adult populations (Clark et al., 2018). In meta-regressions, adopting a transdiagnostic approach was associated with greater symptom improvements. It is noteworthy that transdiagnostic approaches to treatment provision, with 44 interventions, comprised the majority of the studies in this review. This approach may lend itself to adaptation to the university environment, where subthreshold comorbid problems are common (Levin et al., 2014). It may also have other benefits as the training required to develop effective therapists may be reduced (Marchette & Weisz, 2017).

Attrition was not as high as in previous reports of university based treatments (Swift & Greenberg, 2012; Xiao et al., 2017), but that may be a consequence of the additional support and follow up associated with clinical trials. However, it remains unclear whether the cause of high attrition in student populations lies in poorer motivation, fear of stigma of attending treatment, limited improvement or aspects of the experience of care. Therefore, research should continue to focus efforts on reducing attrition with an emphasis on involving students in the design of interventions.

Only 13 of the 84 studies included in this review were specifically adapted for students. However, we found that adapted interventions did not produce superior outcomes (in most cases fairing worse than non-adapted interventions), or reduce attrition. While this seems counter-intuitive, it is possible that current intervention designs are not be fully encompassing what students need from mental health support. Some interventions adapted their content to suit specific student experiences (Coughlin & Kalodner, 2006; Franko et al., 2005; Geisner et al., 2015; Hamdan-Mansour, 2009; McIndoo et al., 2016; Räsänen, Lappalainen, Muotka, Tolvanen, & Lappalainen, 2016; Taylor et al., 2016). Of these efficacy was most common in those basing adaptions on empirical evidence and offering more sessions (Hamdan-Mansour, 2009; Taylor et al., 2016). Other studies altered delivery style (Bentley et al., 2018; Cook et al., 2019; Fitzpatrick, Darcy, & Vierhile, 2017; Franko et al., 2005; Levin, Haeger, Pierce, & Twohig, 2017). Of these the main adaption tended to be making interventions shorter or web-based (Bentley et al., 2018; Franko et al., 2005; Levin et al., 2017). However there was no suggestion of greater improvement in those that did reduce treatment length. The fidelity of interventions was rarely considered, making it difficult to establish whether all aspects of adaptation were utilised and it was not possible to ascertain whether shortening intervention protocols resulted in removal of key contributing therapeutic elements. Individual studies that directly address student motivation may be better placed to prevent drop-out, leading in turn to greater benefits. (Gulliver, Griffiths, & Christensen, 2010; Quinn, Wilson, MacIntyre, & Tinklin, 2009).

Limitations

The review is limited by its inclusion only of published data and English language studies meaning that some important emerging data could have been ignored. Studies included in this review also presented a number of limitations. Many were characterised by a high risk of bias, possibly reflecting the use of students as an easily accessible sample for preliminary studies. As such, our analyses took an exploratory approach, with inferences of

our findings remaining tentative. Furthermore, studies did not stratify results by ethnicity and few stratified by gender, which prevents an understanding of the potential role of these variables on intervention efficacy. It is possible that specific groups of students are more likely to benefit from specific treatments, and future research should explore avenues for personalising treatment based on patient characteristics. Since university is now attended by a large proportion of Black, Asian and Minority Ethnic (BAME) individuals, consideration of individual groups and their needs warrants further investigation, particularly given continuing disparities in attainment (Amos & Doku, 2020; Office for Students, 2018). Our aim to explore adaption of interventions was also hindered by a lack of explicit descriptions of the interventions. This makes it difficult to explain results suggesting that some adaption negatively impacted outcomes. Furthermore, only one study considered mental health problems alongside comorbid alcohol problems (Geisner et al., 2015) which is of concern given the increased alcohol and drug consumption reported in this population (Prosser, Gee, & Jones, 2018). Finally, given the prevalence of self-harm and suicidal attempts (Taub & Thompson, 2013), the lack of available studies is this area is also a limitation.

Conclusions

This review demonstrated that outcomes for students offered indicated psychological intervention may be as efficacious as interventions provided for adults, although treatments are not being fully optimised for the student population. Selective prevention interventions also show some benefit in reducing sub-threshold symptoms of anxiety disorders and depression compared to waitlist controls, suggesting potential for the development of a stepped care approach involving selective intervention as a preliminary approach. At present, the evidence is strongest for cognitive and behavioural therapies although research into other therapeutic strategies is limited. Considerable uncertainty about the best way to provide interventions for students remains. Adaption of interventions based on a better understanding of the mechanism underlying students' mental health problems, perhaps using transdiagnostic approaches, is a potentially promising avenue for future research and development.

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References

Amos, V., & Doku, A. (2020). Black, Asian and minority ethnic student attainment at UK Universities: Closing the Gap. In: UUK/NUS Report. https://www. universitiesuk. ac. uk/policy-and-analysis ….

Appiah-Brempong, E., Okyere, P., Owusu-Addo, E., & Cross, R. (2014). Motivational interviewing interventions and alcohol abuse among college students: a systematic review. *American Journal of Health Promotion, 29*(1), e32-42.

Auerbach, R. P., Alonso, J., Axinn, W. G., Cuijpers, P., Ebert, D. D., Green, J. G., . . . Mortier, P. (2016). Mental disorders among college students in the World Health Organization world mental health surveys. *Psychological medicine, 46*(14), 2955-2970.

Bentley, K. H., Boettcher, H., Bullis, J. R., Carl, J. R., Conklin, L. R., Sauer-Zavala, S., . . . Barlow, D. H. (2018). Development of a Single-Session, Transdiagnostic Preventive Intervention for Young Adults at Risk for Emotional Disorders. *Behavior Modification, 42*(5), 781-805. doi:https://dx.doi.org/10.1177/0145445517734354

Bewick, B., Koutsopoulou, G., Miles, J., Slaa, E., & Barkham, M. (2010). Changes in undergraduate students' psychological well-being as they progress through university. *Studies in Higher Education, 35*(6), 633-645.

Blanco, C., Okuda, M., Wright, C., Hasin, D. S., Grant, B. F., Liu, S.-M., & Olfson, M. (2008). Mental health of college students and their non–college-attending peers: results from the national epidemiologic study on alcohol and related conditions. *Archives of general psychiatry, 65*(12), 1429-1437.

Borenstein, M., Hedges, L. V., Higgins, J., & Rothstein, H. R. (2009). *Introduction to Meta-analysis.*: Wiley Online Library.

Bridges, L. S., & Sharma, M. (2015). A Systematic Review of Interventions Aimed at Reducing Binge Drinking among College Students. *Journal of Alcohol and Drug Education, 59*(3), 25-47.

Carey, K. B., Scott-Sheldon, L. A., Garey, L., Elliott, J. C., & Carey, M. P. (2016). Alcohol interventions for mandated college students: A meta-analytic review. *Journal of Consulting & Clinical Psychology, 84*(7), 619-632.

Clark, D. M., Canvin, L., Green, J., Layard, R., Pilling, S., & Janecka, M. J. T. L. (2018). Transparency about the outcomes of mental health services (IAPT approach): an analysis of public data. *391*(10121), 679-686.

Cohen, J. (1962). The statistical power of abnormal-social psychological research: a review. *The Journal of Abnormal and Social Psychology, 65*(3), 145.

Conley, C. S., Shapiro, J. B., Kirsch, A. C., & Durlak, J. A. (2017). A meta-analysis of indicated mental health prevention programs for at-risk higher education students. *Journal of Counseling Psychology, 64*(2), 121-140.

Cook, L., Mostazir, M., & Watkins, E. (2019). Reducing Stress and Preventing Depression (RESPOND): Randomized Controlled Trial of Web-Based Rumination-Focused Cognitive Behavioral Therapy for High-Ruminating University Students. *Journal of Medical Internet Research, 21*(5), e11349.

Coughlin, J. W., & Kalodner, C. (2006). Media literacy as a prevention intervention for college women at low- or high-risk for eating disorders. *Body image, 3*(1), 35-43.

Cuijpers, P., Cristea, I. A., Ebert, D. D., Koot, H. M., Auerbach, R. P., Bruffaerts, R., & Kessler, R. C. (2016). Psychological Treatment of Depression in College Students: A Meta-Analysis. *Depression and Anxiety, 33*(5), 400-414.

Cvetkovski, S., Jorm, A. F., & Mackinnon, A. J. (2019). An analysis of the mental health trajectories of university students compared to their community peers using a national longitudinal survey. *Studies in Higher Education, 44*(1), 185-200.

Daley, P. C., Bloom, L. J., Deffenbacher, J. L., & Stewart, R. (1983). Treatment effectiveness of anxiety management training in small and large group formats. *Journal of Counseling Psychology, 30*(1), 104.

Eisenberg, D., Golberstein, E., & Gollust, S. E. (2007). Help-seeking and access to mental health care in a university student population. *Medical Care, 45*(7), 594-601.

Eisenberg, D., Nicklett, E. J., Roeder, K., & Kirz, N. E. (2011). Eating Disorder Symptoms Among College Students: Prevalence, Persistence, Correlates, and Treatment-Seeking. *Journal of American College Health, 59*(8), 700-707. doi:10.1080/07448481.2010.546461

Ennis, E., McLafferty, M., Murray, E., Lapsley, C., Bjourson, T., Armour, C., . . . O'Neill, S. (2019). Readiness to change and barriers to treatment seeking in college students with a mental disorder. *Journal of affective disorders, 252*, 428-434.

Ezegbe, B. N., Eseadi, C., Ede, M. O., Igbo, J. N., Anyanwu, J. I., Ede, K. R., . . . Ozoemena, L. C. (2019). Impacts of cognitive-behavioral intervention on anxiety and depression among social science education students: A randomized controlled trial. *Medicine, 98*(15), e14935. doi:https://dx.doi.org/10.1097/MD.0000000000014935

Fitzpatrick, K. K., Darcy, A., & Vierhile, M. (2017). Delivering cognitive behavior therapy to young adults with symptoms of depression and anxiety using a fully automated conversational agent (Woebot): a randomized controlled trial. *JMIR mental health, 4*(2), e19.

Franko, D. L., Mintz, L. B., Villapiano, M., Green, T. C., Mainelli, D., Folensbee, L., . . . et al. (2005). Food, mood, and attitude: reducing risk for eating disorders in college women. *Health psychology, 24*(6), 567-578. doi:10.1037/0278-6133.24.6.567

Gallagher, R. P. (2012). Thirty Years of the National Survey of Counseling Center Directors: A Personal Account. *Journal of College Student Psychotherapy, 26*(3), 172-184. doi:10.1080/87568225.2012.685852

Gawrysiak, M., Nicholas, C., & Hopko, D. R. (2009). Behavioral activation for moderately depressed university students: randomized controlled trial. *Journal of Counseling Psychology, 56*(3), 468-475.

Geisner, I. M., Varvil-Weld, L., Mittmann, A. J., Mallett, K., & Turrisi, R. (2015). Brief web-based intervention for college students with comorbid risky alcohol use and depressed mood: Does it work and for whom? *Addictive Behaviors, 42*, 36-43.

Grassi, A., Gaggioli, A., & Riva, G. (2009). The green valley: The use of mobile narratives for reducing stress in commuters. *Cyberpsychology and Behavior, 12*(2), 155-161.

Gulliver, A., Farrer, L., Chan, J. K., Tait, R. J., Bennett, K., Calear, A. L., . . . practice, c. (2015). Technology-based interventions for tobacco and other drug use in university and college students: a systematic review and meta-analysis. *Addiction science clinical practice, 10*(1), 5.

Gulliver, A., Griffiths, K. M., & Christensen, H. (2010). Perceived barriers and facilitators to mental health help-seeking in young people: a systematic review. *BMC Psychiatry, 10*(1), 113.

Guo, Y. F., Zhang, X., Plummer, V., Lam, L., Cross, W., & Zhang, J. P. (2017). Positive psychotherapy for depression and self-efficacy in undergraduate nursing students: A randomized, controlled trial. *International journal of mental health nursing, 26*(4), 375-383.

Haddock, S. A., Weiler, L. M., Trump, L. J., & Henry, K. L. (2017). The Efficacy of Internal Family Systems Therapy in the Treatment of Depression Among Female College Students: A Pilot Study. *Journal of marital and family therapy, 43*(1), 131-144.

Hall, S. B., Brown, N. W., & Humphries, J. R. (2018). Premature termination from outpatient psychotherapy in a university-based counseling center. *Counseling Outcome Research and Evaluation, 9*(1), 28-41.

Hamdan-Mansour, A. (2009). Effectiveness of cognitive-behavioral intervention on depressive symptomatology, stress and coping strategies among jordanian university students. *European Psychiatry, 1)*, S706.

Heath, N., Toste, J., Nedecheva, T., & Charlebois, A. J. J. o. M. H. C. (2008). An examination of nonsuicidal self-injury among college students. *Journal of Mental Health Counceling, 30*(2), 137-156.

Hedges, L. V. (1981). Distribution theory for Glass's estimator of effect size and related estimators. *journal of Educational Statistics, 6*(2), 107-128.

Higgins, J. P., Thompson, S. G., Deeks, J. J., & Altman, D. G. (2003). Measuring inconsistency in meta-analyses. *BMJ, 327*(7414), 557-560.

Horgan, A., Kelly, P., Goodwin, J., & Behan, L. (2018). Depressive symptoms and suicidal ideation among Irish undergraduate college students. *Issues in mental health nursing, 39*(7), 575-584.

Huang, J., Nigatu, Y. T., Smail-Crevier, R., Zhang, X., & Wang, J. (2018). Interventions for common mental health problems among university and college students: A systematic review and meta-analysis of randomized controlled trials. *Journal of psychiatric research, 107*, 1-10.

Hunt, J., & Eisenberg, D. J. J. o. a. h. (2010). Mental health problems and help-seeking behavior among college students. *46*(1), 3-10.

Huntley, C. (2019). The efficacy of interventions for test-anxious university students: A meta-analysis of randomized controlled trials. *Journal of anxiety disorders*.

Ibrahim, A. K., Kelly, S. J., Adams, C. E., & Glazebrook, C. (2013). A systematic review of studies of depression prevalence in university students. *Journal of psychiatric research, 47*(3), 391-400.

Jaworska, N., De Somma, E., Fonseka, B., Heck, E., & MacQueen, G. M. (2016). Mental health services for students at postsecondary institutions: A national survey. *The Canadian Journal of Psychiatry, 61*(12), 766-775.

Kanji, N., White, A., & Ernst, E. (2006). Autogenic training to reduce anxiety in nursing students: Randomized controlled trial. *Journal of Advanced Nursing, 53*(6), 729-735.

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of general psychiatry, 62*(6), 593-602.

Levin, M. E., Haeger, J. A., Pierce, B. G., & Twohig, M. P. (2017). Web-based acceptance and commitment therapy for mental health problems in college students: A randomized controlled trial. *Behavior Modification, 41*(1), 141-162.

Levin, M. E., MacLane, C., Daflos, S., Seeley, J. R., Hayes, S. C., Biglan, A., & Pistorello, J. (2014). Examining psychological inflexibility as a transdiagnostic process across psychological disorders. *Journal of Contextual Behavioral Science, 3*(3), 155-163.

Marchette, L. K., & Weisz, J. (2017). Practitioner Review: Empirical evolution of youth psychotherapy toward transdiagnostic approaches. *Journal of Child Psychology and Psychiatry, 58*(9), 970-984.

McIndoo, C., File, A., Preddy, T., Clark, C., & Hopko, D. (2016). Mindfulness-based therapy and behavioral activation: A randomized controlled trial with depressed college students. *Behaviour Research and Therapy, 77*, 118-128. doi:http://dx.doi.org/10.1016/j.brat.2015.12.012

Michael, K. D., Huelsman, T. J., Gerard, C., Gilligan, T. M., & Gustafson, M. R. (2006). Depression Among College Students: Trends in Prevalence and Treatment Seeking. *Counseling Clinical Psychology Journal, 3*(2).

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & Group, P. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS medicine, 6*(7), e1000097.

Mowbray, C. T., Mandiberg, J. M., Stein, C. H., Kopels, S., Curlin, C., Megivern, D., . . . Lett, R. (2006). Campus mental health services: Recommendations for change. *American Journal of Orthopsychiatry, 76*(2), 226-237.

Noormohamadi, S. M., Arefi, M., Afshaini, K., & Kakabaraee, K. (2019). The effect of rational-emotive behavior therapy on anxiety and resilience in students. *International Journal of Adolescent Medicine and Health.* doi:http://dx.doi.org/10.1515/ijamh-2019-0099

Office for Students. (2018). Topic Briefing: Black and minority ethnic (BAME) students.

Pitt, A., Oprescu, F., Tapia, G., & Gray, M. (2018). An exploratory study of students' weekly stress levels and sources of stress during the semester. *Active Learning in Higher Education, 19*(1), 61-75.

Prosser, T., Gee, K. A., & Jones, F. (2018). A Meta-Analysis of Effectiveness of E-Interventions to Reduce Alcohol Consumption in College and University Students. *Journal of American College Health, 66*(4), 292-301.

Quinn, N., Wilson, A., MacIntyre, G., & Tinklin, T. (2009). 'People look at you differently': Students' experience of mental health support within higher education. *British Journal of Guidance Counselling, 37*(4), 405-418.

Räsänen, P., Lappalainen, P., Muotka, J., Tolvanen, A., & Lappalainen, R. (2016). An online guided ACT intervention for enhancing the psychological wellbeing of university students: A randomized controlled clinical trial. *Behaviour Research and Therapy, 78*, 30-42.

Read, J. P., Griffin, M. J., Wardell, J. D., & Ouimette, P. (2014). Coping, PTSD symptoms, and alcohol involvement in trauma-exposed college students in the first three years of college. *Psychology of addictive behaviours, 28*(4), 1052.

Rezvan, S., Baghban, I., Bahrami, F., & Abedi, M. (2008). A comparison of cognitive-behavior therapy with interpersonal and cognitive behavior therapy in the treatment of generalized anxiety disorder. *Counselling Psychology Quarterly, 21*(4), 309-321. doi:http://dx.doi.org/10.1080/09515070802602096

Rith-Najarian, L. R., Boustani, M. M., & Chorpita, B. F. (2019). A systematic review of prevention programs targeting depression, anxiety, and stress in university students. *Journal of affective disorders*.

Robatmili, S., Sohrabi, F., Shahrak, M. A., Talepasand, S., Nokani, M., & Hasani, M. (2015). The Effect of Group Logotherapy on Meaning in Life and Depression Levels of Iranian Students. *International Journal for the Advancement of Counselling, 37*(1), 54-62.

Robinson, J., Hetrick, S. E., & Martin, C. (2011). Preventing suicide in young people: systematic review. *Australian and New Zealand journal of psychiatry, 45*(1), 3-26.

Ryan, M. L., Shochet, I. M., & Stallman, H. M. (2010). Universal online interventions might engage psychologically distressed university students who are unlikely to seek formal help. *Advances in mental health, 9*(1), 73-83.

Samson, J. E., & Tanner-Smith, E. E. (2015). Single-session alcohol interventions for heavy drinking college students: A systematic review and meta-analysis. *Journal of Studies on Alcohol and Drugs, 76*(4), 530-543. doi:http://dx.doi.org/10.15288/jsad.2015.76.530

Saravanan, C., Alias, A., & Mohamad, M. (2017). The effects of brief individual cognitive behavioural therapy for depression and homesickness among international students in Malaysia. *Journal of affective disorders, 220*, 108-116.

Stallman, H. M., Kavanagh, D. J., Arklay, A. R., & Bennett-Levy, J. (2016). Randomised control trial of a low-intensity cognitive-behaviour therapy intervention to improve mental health in university students. *Australian Psychologist, 51*(2), 145-153. doi:http://dx.doi.org/10.1111/ap.12113

Swift, J. K., & Greenberg, R. P. (2012). Premature discontinuation in adult psychotherapy: A meta-analysis. *Journal of consulting and clinical psychology, 80*(4), 547.

Taub, D. J., & Thompson, J. (2013). College student suicide. *New directions for student services, 2013*(141), 5-14.

Taylor, C., Kass, A. E., Trockel, M., Cunning, D., Weisman, H., Bailey, J., . . . Wilfley, D. E. (2016). Reducing eating disorder onset in a very high risk sample with significant comorbid depression: A randomized controlled trial. *Journal of consulting and clinical psychology, 84*(5), 402-414. doi:http://dx.doi.org/10.1037/ccp0000077

Thorley, C. (2017). *Not by degrees: Improving student mental health in the UK's universities.* . Retrieved from Institute for Public Policy Research:

Viechtbauer, W. (2010). Conducting meta-analyses in R with the metafor package. *36*(3), 1-48.

Xiao, H., Castonguay, L. G., Janis, R. A., Youn, S. J., Hayes, J. A., & Locke, B. D. (2017). Therapist effects on dropout from a college counseling center practice research network. *Journal of Counseling Psychology, 64*(4), 424.

Zemestani, M., Davoodi, I., Honarmand, M. M., Zargar, Y., & Ottaviani, C. (2016). Comparative effects of group metacognitive therapy versus behavioural activation in moderately depressed students. *Journal of Mental Health, 25*(6), 479-485.

Table 1: Intervention characteristics

Study ID	Intervention	Comparison	Intervention Strategy	Self Help (guided/unguided)	Length	Intensity (High/Low)	Format, Delivery	Student adaption	Disorder adaption	Treatment provider	Study level effect size: Hedges' g/OR (95% CI)
Generalised Anxiety, Selective											
Grassi 2009	Mobile Narrative	No intervention	Relaxation	Self-help (guided)	2 sessions 2 days	Low	Individual, Computer	Convenience sample	Transdiagnostic - universal therapeutic	Paraprofessional	N: 120 Symptom severity: *End of treatment:* 0.71 (0.18, 1.23)
Kanji 2006	Autogenic Training	Active	Relaxation		60 minute sessions 8 sessions 8 weeks	Low	Group, Face to face	Student focused	Focused	Paraprofessional	N: 93 Symptom severity: *End of treatment:*1.00 (0.47, 1.52) *3 Months:*0.36 (-0.14, 0.86) *6 Months:*0.70 (0.18, 1.21) *12 Months:* 0.48 (-0.03, 0.98) Attrition: 2.10 (0.66, 6.65)
Noormohamadi 2019	Rational Emotive Behaviour Therapy	Waitlist	Cognitive and behavioural therapies		9 sessions 9 weeks	Low	Individual, Face to face	Convenience sample	Focused	NR	N: 30 Symptom severity: *End of treatment:* 3.15 (2.05, 4.25) Attrition: 0.51 (0.01, 27.69)
Generalised Anxiety, Indicated											
Call 2014	Yoga	No intervention	Mindfulness/meditation		45 minute sessions 3 sessions 3 weeks	Low	Group, Face to face	Student focused	Transdiagnostic - modular	NR	N: 47 Symptom severity: *End of treatment:*0.57 (0.07, 1.08) Wellbeing: *End of treatment:* 0.26 (-0.24, 0.75) Attrition: 3.67 (1.10, 12.27)
Daley 1983	Small Group Anxiety Management Training	Waitlist	Relaxation		60 minute sessions 7 sessions 7 weeks	Low	Group, Face to face	Convenience sample	Focused	Paraprofessional	N: 45 Symptom severity: *End of treatment:* 1.00 (0.38, 1.63) *2 Months:* 0.66 (0.06, 1.27) Academic Outcomes: *2 Months:*-0.25 (-0.84, 0.34)

Study ID	Intervention	Comparison	Intervention Strategy	Self Help (guided/unguided)	Length	Intensity (High/Low)	Format, Delivery	Student adaption	Disorder adaption	Treatment provider	Study level effect size: Hedges' g/OR (95% CI)
Delgado 2010	Mindfulness	Active	Mindfulness/meditation		60 minute sessions 10 sessions 5 weeks	Low	Group, Face to face	Convenience sample	Transdiagnostic - universal therapeutic	NR	N: 32 Symptom severity: *End of treatment:* 0.05 (-0.64, 0.75)
Hutchings 1980	Anxiety Management Training	Attentional control	Relaxation		75 minute sessions 6 sessions 6 weeks	Low	Group, Face to face	Convenience sample	Focused	Paraprofessional	N: 24 Symptom severity: *End of treatment:* 0.44 (-0.31, 1.19) Attrition: 1.00 (0.01, 53.89)
Kenardy 2003	Online Anxiety Prevention	Waitlist	Cognitive and behavioural therapies	Self help (unguided)	5 sessions 1 week	Low	Individual, Computer	Convenience sample	Focused	Paraprofessional	N: 74 Symptom severity: *End of treatment:* 0.30 (-0.16, 0.76) *6 Months:* 0.35 (-0.27, 0.96) Attrition: 3.08 (0.58, 16.26)
LaFreniere 2016	Worry Outcome Journal	Attentional control	Cognitive and behavioural therapies	Self-help (guided)	10 sessions 1 week	Low	Individual, Journal	Convenience sample	Focused	Paraprofessional	N: 51 Symptom severity: *End of treatment:*0.19 (-0.36, 0.75) Attrition: 2.29 (0.09, 58.86)
Rezvan 2008	Cognitive Behavioural Therapy	No intervention	Cognitive and behavioural therapies		90 minute sessions 8 sessions 8 weeks	High	Group, Face to face	Convenience sample	Transdiagnostic - shared mechanism	Professional	N: Symptom severity: *End of treatment:*2.93 (1.56, 4.30) *12 Months:*2.43 (1.17, 3.69) Wellbeing: *End of treatment:* 2.62 (1.32, 3.92) *12 Months:* 2.32 (1.08, 3.56) Attrition: 1.00 (0.02, 54.47)
	Cognitive Behavioural Therapy + Interpersonal Psychotherapy	No intervention	Multimodal		90 minute sessions 8 sessions 8 weeks	High	Group, Face to face	Convenience sample	Transdiagnostic - shared mechanism	Professional	N: Symptom severity: *End of treatment:* 2.76 (1.43, 4.09) *12 Months:* 3.52 (2.01, 5.03) Wellbeing: *End of treatment:* 2.22 (1.00, 3.44) *12 Months:* 3.30 (1.84, 4.75) Attrition: 1.00 (0.02, 54.47)
Richards 2016	Calming Anxiety I-CBT	Waitlist	Cognitive and behavioural therapies	Self help (guided)	6 sessions 6 weeks	Low	Individual, Computer	Student focused	Focused	Paraprofessional	N: 137 Symptom severity: *End of treatment:*0.32 (-0.01, 0.66) Attrition:

Study ID	Intervention	Comparison	Intervention Strategy	Self Help (guided/unguided)	Length	Intensity (High/Low)	Format, Delivery	Student adaption	Disorder adaption	Treatment provider	Study level effect size: Hedges' g/OR (95% CI)
											0.71 (0.29, 1.69)
Torabizadeh 2016	Muscle relaxation	No intervention	Relaxation		5 sessions 1 week	Low	Group, Face to face	Student focused	Transdiagnostic -universal therapeutic	Paraprofessional	N: 75 Symptom severity: *End of treatment:*1.49 (0.96, 2.03)
	Group counselling	No intervention	Social support		5 sessions 1 week	Low	Group, Face to face	Student focused	Transdiagnostic -universal therapeutic	Paraprofessional	N: 75 Symptom severity: *End of treatment:*0.81 (0.31, 1.30)
Social Anxiety, Indicated											
Akillas 1995	Symptom Prescription and Reframing	Waitlist	Cognitive and behavioural therapies		50 minute sessions 3 sessions 3 weeks	Low	Individual, Face to face	Convenience sample	Transdiagnostic -universal therapeutic	Paraprofessional	N: 27 Symptom severity: *End of treatment:* 1.23 (0.48, 1.99) *1 Month:* 1.32 (0.55, 2.08)
Beard 2008	Interpretation Modification Program	Attentional Control	Cognitive and behavioural therapies	Self-help (guided)	8 sessions 4 weeks	Low	Individual, Computer	Convenience sample	Focused	Paraprofessional	N: 27 Symptom severity: *End of treatment:* 0.84 (0.05, 1.63) Attrition: 1.07 (0.02, 58.03)
Bjornsson 2011	Group cognitive behavioural therapy	Active	Cognitive and behavioural therapies		120 minute sessions 8 sessions 8 weeks	Low	Group, Face to face	Convenience sample	Focused	Professional	N: 41 Symptom severity: *End of treatment:*-0.54 (-1.17, 0.09) Attrition: 6.47 (0.69, 60.68)
Lee 2013	Imagery Rescripting and Cognitive Restructuring	Attentional Control	Cognitive and behavioural therapies		120 minute sessions 3 sessions 3 weeks	High	Individual, Face to face	Convenience sample	Transdiagnostic -shared mechanism	Paraprofessional	N: 22 Symptom severity: *End of treatment:* 0.99 (0.10, 1.87) Attrition: 0.78 (0.01, 42.55)
McCall 2018	Overcome Social Anxiety	Waitlist	Cognitive and behavioural therapies	Self help (guided)	7 sessions	Low	Individual, Computer	Student focused	Focused	Paraprofessional	N: 101 Symptom Severity: *End of treatment:* 0.84 (0.33, 1.34) Attrition: 1.63 (0.72, 3.72)

Study ID	Intervention	Comparison	Intervention Strategy	Self Help (guided/unguided)	Length	Intensity (High/Low)	Format, Delivery	Student adaption	Disorder adaption	Treatment provider	Study level effect size: Hedges' g/OR (95% CI)
Roushani 2016	Unified Transdiagnostic Intervention	No intervention	Cognitive and behavioural therapies		90 minute sessions 8 sessions 8 weeks	Low	Group, Face to face	Convenience sample	Transdiagnostic -shared mechanism	Professional	N: 29 Symptom severity: *End of treatment:* 0.81 (0.05, 1.57) Attrition: 2.14 (017, 26.33)
Schelver 1983	Self Administered Cognitive Therapy	Attentional Control	Cognitive and behavioural therapies	Self help (unguided)	NR	Low	Individual, Reading material	Convenience sample	Transdiagnostic -universal therapeutic	Paraprofessional	N: 23 Symptom severity: *End of treatment:* 1.02 (0.15, 1.89) Attrition: 1.45 (0.26, 8.01)
Stefan 2018	Mindfulness Based Stress Reduction Intervention	Waitlist	Mindfulness/meditation		6 sessions 6 weeks	Low	Group, Face to face	Student focused	Transdiagnostic -universal therapeutic	Professional	N: 71 Symptom severity: *End of treatment:* 0.92 (0.32, 1.53) Attrition: 1.39 (0.52, 3.70)
Vestre 1986	Therapist Administered Rational Emotive Therapy	No intervention	Cognitive and behavioural therapies		60 minute sessions 5 sessions 5 weeks	Low	Group, Face to face	Convenience sample	Transdiagnostic -universal therapeutic	Professional	N: 27 Symptom severity: *End of treatment:* 0.76 (-0.05, 1.57) Attrition: 3.35 (0.32, 35.37)
	Self Administered Rational Emotive Therapy	No intervention	Cognitive and behavioural therapies	Self help (unguided)	5 weeks	Low	Individual, Reading material	Convenience sample	Transdiagnostic -universal therapeutic	Paraprofessional	N: 29 Symptom severity: *End of treatment:* 0.10 (-0.66, 0.87) Attrition: 1.00 (0.06, 17.18)
Ye 2017	Mindfulness based stress reduction	Treatment as usual	Mindfulness/meditation		8 sessions 8 weeks	Low	Group, Face to face	Convenience sample	Transdiagnostic -universal therapeutic	NR	N: 27 Symptom severity: *End of treatment:* 0.72 (-0.06, 1.50) Attrition: 0.93 (0.02, 50.30)
Anxiety- Panic, Indicated											
Gardenswartz 2001	Panic Prevention Workshop	Waitlist	Psychoeducation		300 minute session 1 session	Low	Group, Face to face	Convenience sample	Focused	Paraprofessional	N: 121 Symptom severity: *6 Months:*0.33 (-0.03, 0.69) Attrition: 16.25 (2.02, 130.41)
Depression, Selective											

Study ID	Intervention	Comparison	Intervention Strategy	Self Help (guided/unguided)	Length	Intensity (High/Low)	Format, Delivery	Student adaption	Disorder adaption	Treatment provider	Study level effect size: Hedges' g/OR (95% CI)
Gortner 2006	Expressive Writing	Attentional Control	Other: Expressive writing	Self Help (guided)	20 minute sessions 3 sessions 1 week	Low	Individual, Face to face	Convenience sample	Focused	Paraprofessional	N: 90 Symptom severity: *End of treatment:* -0.47 (-0.89, -0.04) 6 *Months:* -0.08 (-0.50, 0.34) Attrition: 0.24 (0.01, 6.01)
Depression, Indicated											
Armento 2012	Behavioural Activation and Religious Behaviours	Active	Cognitive and behavioural therapies		120 minute session 1 session 3 weeks	Low	Individual, Face to face	Student focused	Focused	Professional	N: 50 Symptom severity: *End of treatment:* 0.33 (-0.23, 0.89) *1 Month:* 0.34 (-0.23, 0.91) Wellbeing: *End of treatment:* 0.25 (-0.30, 0.81) *1 Month:* 0.47 (-0.10, 1.05) Attrition: 1.0 (0.02, 52.37)
Chen 2015	Music Therapy	No intervention	Other: music therapy		40 minute sessions 20 sessions 10 weeks	Low	Group, Face to face	Convenience sample	Transdiagnostic -universal therapeutic	NR	N: 71 Symptom severity: *End of treatment:* 1.89 (1.32, 2.45) Attrition: 24.43 (1.37, 435.93)
Conoley 1985	Reframing	No intervention	Cognitive and behavioural therapies		30 minute sessions 2 sessions 1 week	Low	Group, Face to face	Convenience sample	Transdiagnostic -modular	NR	N: 38 Symptom severity: *End of treatment:* 0.79 (0.13, 1.45) Wellbeing: *End of treatment:* 0.32 (-0.32, 0.96)
Cook 2019	Rumination-focused Cognitive Behavioural Therapy	Treatment as usual	Cognitive and behavioural therapies	Self-help (guided)	60 minute sessions 6 sessions 6 weeks	Low	Individual, Computer	Student adapted-delivery	Focused	Paraprofessional	N: 159 Symptom severity: *End of treatment: -0.02 (-0.29, 0.33)* *3 Months*: 0.35 (0.03, 0.66) *12 Months:*0.07 (-0.25, 0.38) Attrition: 2.60 (1.06, 6.36)
Cui 2016	Group Cognitive Behavioural Therapy	Waitlist	Cognitive and behavioural therapies		8 sessions 8 weeks	Low	Group, Face to face	Student focused	Focused	Paraprofessional	N: 90 Symptom severity: *End of treatment:* 0.49 (0.05, 0.94) 6 *Months:* 0.60 (0.15, 1.05) Attrition: 1.94 (0.61, 6.18)

Study ID	Intervention	Comparison	Intervention Strategy	Self Help (guided/unguided)	Length	Intensity (High/Low)	Format, Delivery	Student adaption	Disorder adaption	Treatment provider	Study level effect size: Hedges' g/OR (95% CI)
	Support Group	Waitlist	Social Support		8 sessions 8 weeks	Low	Group, Face to face	Student focused	Focused	Paraprofessional	N: 90 Symptom severity: *End of treatment:* 0.13 (-0.31, 0.57) 6 *Months:* 0.55 (0.10, 1.00) Attrition: 1.69 (0.52, 5.51)
Gawrysiak 2009	Behavioural Activation	No intervention	Cognitive and behavioural therapies		90 minute session 1 sessions 3 weeks	Low	Individual Face to face	Student focused	Transdiagnostic -shared mechanism	Paraprofessional	N: 30 Symptom severity: *End of treatment:* 1.66 (0.83, 2.49)
Geisner 2006	Brief Mailed Intervention	Attentional Control	Psychoeducation	Self-help (guided)	1 session 4 weeks	Low	Individual, Computer	Student focused	Focused	NR	N: 177 Symptom severity: *End of treatment:* 0.07 (-0.22, 0.36)
Geisner 2015	Brief Mailed Intervention	Attentional Control	Psychoeducation	Self-help (guided)	1 session 4 weeks	Low	Individual, Computer	Student adapted-content	Focused	NR	N: 169 Symptom severity: *End of treatment:* 0.15 (-0.15, 0.45) Attrition: 3.04 (0.12, 75.58)
Guo 2017	Positive Psychotherapy	Attentional Control	Positive psychology		90 minute sessions 8 sessions 10 weeks	Low	Group, Face to face	Student focused	Transdiagnostic -shared mechanism	Paraprofessional	N: 76 Symptom severity: *End of treatment:* 2.45 (1.86, 3.05) *3 Months:* 2.33 (1.74, 2.91) 6 *Months:* 5.69 (4.68, 6.70) Attrition: 9.88 (1.18, 82.95)
Haddock 2017	Internal Family Systems Therapy	Treatment as usual	Social skills training		50 minute sessions 16 sessions 16 weeks	High	Individual Face to face	Student focused	Focused	Professional	N: 37 Symptom severity: *End of treatment:* 0.42 (-0.24, 1.09) Attrition: 9.74 (0.50, 190.81)
Hamamci 2006	Psychodrama integrated with Cognitive Behaviour Therapy	No intervention	Cognitive and behavioural therapies		180 minute sessions 11 sessions 11 weeks	High	Group, Face to face	Convenience sample	Transdiagnostic -universal therapeutic	Professional	N: 16 Symptom severity: *End of treatment:* 1.44 (0.31, 2.57) 6 *Months:* 0.67 (-0.37, 1.70)
	Group cognitive behavioural therapy	No intervention	Cognitive and behavioural therapies		90 minute sessions 11 sessions 11 weeks	High	Group, Face to face	Convenience sample	Transdiagnostic -universal therapeutic	Professional	N: 16 Symptom severity: *End of treatment:* 1.42 (0.30, 2.55) 6 *Months:* 0.49 (-0.53, 1.52)

Study ID	Intervention	Comparison	Intervention Strategy	Self Help (guided/unguided)	Length	Intensity (High/Low)	Format, Delivery	Student adaption	Disorder adaption	Treatment provider	Study level effect size: Hedges' g/OR (95% CI)
Hamdan-Mansour 2009	Modified "Teaching Kids to Cope"	No intervention	Cognitive and behavioural therapies		45 minute sessions 10 sessions 10 weeks	Low	Group, Face to face	Student adapted-content	Transdiagnostic -modular	Professional	N: 84 Symptom severity: *End of treatment:* 0.63 (0.19, 1.07) 3 *Months:* 0.52 (0.09, 0.96) Attrition: 0.09 (0.00, 1.75)
Khumar 1993	Shavsana Yoga	Waitlist	Relaxation	Self-help (guided)	30 minute sessions 30 sessions 4 weeks	Low	Individual, Face to face	Student focused	Transdiagnostic -universal therapeutic	Paraprofessional	N: 50 Symptom severity: *End of treatment:* 1.92 (1.25, 2.59)
McIndoo 2016	Behavioural activation	Waitlist	Cognitive and behavioural therapies		60 minute sessions 4 sessions 4 weeks	Low	Individual Face to face	Student adapted-content	Transdiagnostic -universal therapeutic	Professional	N: 23 Symptom severity: *End of treatment:* 1.05 (0.11, 1.98) 1 *Month:* 0.97 (0.04, 1.90) Attrition: 0.87 (0.05, 15.28)
	Mindfulness	Waitlist	Mindfulness/meditation		60 minute sessions 4 sessions 4 weeks	Low	Individual Face to face	Student adapted-content	Transdiagnostic -universal therapeutic	Professional	N: 27 Symptom severity: *End of treatment:* 0.69 (-0.19, 1.57) 1 *Month:* 0.40 (-0.47, 1.26) Attrition: 1.44 (0.12, 17.67)
Mohammadi 2011	Poetry Therapy	Waitlist	Other: Poetry therapy		90 minute sessions 7 sessions 7 weeks	Low	Group, Face to face	Convenience sample	Transdiagnostic -universal therapeutic	Professional	N: 28 Symptom severity: *End of treatment:* 1.30 (0.49, 2.12)
Moldovan 2013	Bibliotherapy	No intervention	Cognitive and behavioural therapies	Self help (guided)	4 weeks	Low	Individual, Reading material	Convenience sample	Focused	Paraprofessional	N: 41 Symptom severity: *End of treatment:* 0.59 (-0.03, 1.22) *3 Months:* 0.38 (-0.28, 1.04) Attrition: 0.71 (0.14, 3.60)
Pace 1993	Cognitive Behavioural Therapy	Waitlist	Cognitive and behavioural therapies		45 minute sessions 7 sessions 7 weeks	Low	Individual, Face to face	Convenience sample	Focused	Paraprofessional	N: 74 Symptom severity: *End of treatment:* 0.74 (0.26, 1.22) *1 Month:* 0.43 (-0.04, 0.89) Attrition: 1.39 (0.19, 10.39)
Peden 2000	Group Cognitive Behavioural Therapy	No intervention	Cognitive and behavioural therapies		6 weeks	Low	Group, Face to face	Convenience sample	Focused	NR	N: 92 Symptom severity: *End of treatment:* 0.79 (0.36, 1.21) *18 Months:* 0.67 (0.25, 1.09)

Study ID	Intervention	Comparison	Intervention Strategy	Self Help (guided/unguided)	Length	Intensity (High/Low)	Format, Delivery	Student adaption	Disorder adaption	Treatment provider	Study level effect size: Hedges' g/OR (95% CI)
Phimarn 2015	Individual Councelling	Active	Psychoeducation		60 minute sessions 4 sessions 16 weeks	Low	Individual, Face to face	Student focused	Focused	Paraprofessional	N: 68 Symptom severity: *End of treatment:* 0.0.52 (0.04, 1.00) Wellbeing: *End of treatment:* 0.03 (-0.44, 0.51) Attrition: 1.00 (0.13, 78.54)
Robatmili 2015	Logotherapy	No intervention	Cognitive and behavioural therapies		60 minute sessions 10 sessions 10 weeks	Low	Group, Face to face	Student focused	Transdiagnostic -modular	NR	N: 74 Symptom severity: *End of treatment:* 3.41 (2.04, 4.79) *1 Month:* 4.49 (2.85, 6.14) Wellbeing: *End of treatment*: 1.39 (0.41, 2.36) *1 Month:* 2.23 (1.11, 3.34)
Rohde 2014	Cognitive Behavioural Therapy	Attentional Control	Cognitive and behavioural therapies		60 minute sessions 6 sessions 6 weeks	Low	Group, Face to face	Student focused	Focused	Paraprofessional	N: 44 Symptom severity: *End of treatment:*-0.09 (-0.70, 0.52) *6 Months:* 0.03 (-0.58, 0.64) *12 Months:*-0.27 (-0.88, 0.34) Wellbeing: *End of treatment*: 0.22 (-0.38, 0.83) *6 Months:* 0.40 (-0.21, 1.02) *12 Months:* 0.38 (-0.24, 0.99) Attrition: 0.58 (0.10, 3.44)
	Bibliotherapy	Attentional Control	Cognitive and behavioural therapies	Self-help (guided)	6 weeks	Low	Individual, Reading material	Student focused	Focused	Paraprofessional	N: 39 Symptom severity: *End of treatment:* 0.12 (-0.51, 0.76) *6 Months:*-0.08 (-0.71, 0.55) *12 Months:* 0.06 (-0.57, 0.69) Wellbeing: *End of treatment*: 0.61 (-0.04, 1.26) *6 Months:* 0.33 (-0.30, 0.97) *12 Months:* 0.24 (-0.40, 0.87) Attrition: 0.35 (0.04, 3.32)

Study ID	Intervention	Comparison	Intervention Strategy	Self Help (guided/unguided)	Length	Intensity (High/Low)	Format, Delivery	Student adaption	Disorder adaption	Treatment provider	Study level effect size: Hedges' g/OR (95% CI)
Rohde 2016	Cognitive Behavioural Therapy + Cognitive Dissonance	Attentional Control	Cognitive and behavioural therapies		60 minute sessions 6 sessions 6 weeks	Low	Group, Face to face	Student focused	Transdiagnostic -universal therapeutic	Professional	N: 59 Symptom severity: *End of treatment:* 0.61 (0.09, 1.13) *3 Months:* 0.12 (-0.39, 0.63) Attrition: 5.94 (0.27, 129.33)
Sadeghi 2016	Group Cognitive Behavioural Therapy	Attentional Control	Cognitive and behavioural therapies		12 sessions 9 weeks	Low	Group, Face to face	Convenience sample	Focused	NR	N: 30 Symptom severity: *End of treatment:* 1.37 (0.58, 2.17)
Saravanan 2017	Cognitive Behavioural Therapy	Attentional Control	Cognitive and behavioural therapies		60 minute sessions 7 sessions 8 weeks	Low	Individual, Face to face	Student adapted-delivery	Focused	Professional	N: 41 Symptom severity: *End of treatment:* 4.67 (3.49, 5.86) Attrition: 5.77 (0.26, 127.60)
Seligman 1999	Depression Prevention Workshop	No intervention	Cognitive and behavioural therapies		120 minute sessions 8 sessions 8 weeks	Low	Group, Face to face	Convenience sample	Transdiagnostic -universal therapeutic	Professional	N: 225 Symptom severity: *End of treatment:* 0.31 (0.04, 0.57) *6 Months:* 0.04 (-0.22, 0.30) *12 Months:* 0.08 (-0.18, 0.34) *18 Months:* 0.14 (-0.13, 0.41) Attrition: 1.12 (0.02, 57.05)
Seligman 2007	Depression Prevention Workshop	No intervention	Cognitive and behavioural therapies		120 minute sessions 8 sessions 8 weeks	Low	Group, Face to face	Convenience sample	Transdiagnostic -universal therapeutic	Professional	N: 227 Symptom severity: *End of treatment:* 0.65 (0.38, 0.92) *6 Months:* 0.63 (0.35, 0.90) Wellbeing: *End of treatment*: 0.25 (-0.01, 0.51) *6 Months:* 0.31 (0.04, 0.57) Attrition: 6.74 (1.46, 31.10)
Vasquez 2012	Cogntiive Behavioural Therapy	Active	Cognitive and behavioural therapies		90 minute sessions 8 sessions 8 weeks	Low	Group, Face to face	Student focused	Focused	Paraprofessional	N: 133 Symptom severity: *End of treatment:* 0.54 (0.20, 0.89) *3Months:* 0.02 (-0.32, 0.36) *6 Months:*-0.11 (-0.45, 0.23) Attrition: 2.35 (0.44, 12.55)

Study ID	Intervention	Comparison	Intervention Strategy	Self Help (guided/unguided)	Length	Intensity (High/Low)	Format, Delivery	Student adaption	Disorder adaption	Treatment provider	Study level effect size: Hedges' g/OR (95% CI)
Yang 2015	Attention Bias Modification	No intervention	Attention training	Self-help (guided)	8 sessions 2 weeks	Low	Individual, Computer	Convenience sample	Focused	Paraprofessional	N: 50 Symptom severity: *End of treatment:* 1.29 (0.68, 1.90) *3 Months:* 0.70 (0.13, 1.27) *7 Months:* 0.26 (-0.30, 0.82) Attrition: 0.85 (0.02, 44.76)
Yang 2018	Comprehensive Self Control Training	No intervention	Cognitive and behavioural therapies		90 minute sessions 8 sessions 8 weeks	Low	Group, Face to face	Convenience sample	Focused	Professional	N: 67 Symptom severity: *End of treatment:* 0.80 (0.30, 1.29) *4 Months:* 0.74 (0.24, 1.24) Attrition: 2.73 (0.50, 15.10)
Zemestani 2016	Metacognitive Therapy	No intervention	Mindfulness/meditation		90 minute sessions 8 sessions 8 weeks	Low	Group, Face to face	Convenience sample	Focused	Paraprofessional	N: 23 Symptom severity: *End of treatment:* 5.22 (3.48, 6.95) *3 Months:* 4.28 (2.77, 5.78) Attrition: 1.00 (0.06, 17.62)
	Behavioural Activation	No intervention	Cognitive and behavioural therapies		90 minute sessions 8 sessions 8 weeks	Low	Group, Face to face	Convenience sample	Focused	Paraprofessional	N: 23 Symptom severity: *End of treatment:* 5.78 (3.90, 7.65) *3 Months:* 4.01 (2.57, 5.45) Attrition: 2.15 (0.17, 26.67)
Anxiety and Depression, Selective											
Braithwaite 2009	Relationship-focused preventative intervention	Attentional control	Social skills training		7 sessions	Low	Individual, Computer	Convenience sample	Transdiagnostic -universal therapeutic	Paraprofessional	N: 77 Symptom Severity *End of treatment:* Anxiety: -0.24 (-0.69, 0.21) Depression:0.01 (-0.44, 0.45) *9 Months:* Anxiety: 0.16 (-0.29, 0.61) Depression: 0.21 (-0.24, 0.65) Attrition: 0.33 (0.08, 1.36)

Study ID	Intervention	Comparison	Intervention Strategy	Self Help (guided/unguided)	Length	Intensity (High/Low)	Format, Delivery	Student adaption	Disorder adaption	Treatment provider	Study level effect size: Hedges' g/OR (95% CI)
Fitzpatrick 2017	"Woebot" online support	Attentional control	Cognitive and behavioural therapies	Self-help (guided)	14 sessions 2 weeks	Low	Individual, Computer	Student adapted-delivery	Transdiagnostic -universal therapeutic	Paraprofessional	N: 70 Symptom severity: *End of treatment:* Depression: 0.55 (0.08, 1.03) Anxiety: -0.13 (-0.60, 0.34) Attrition: 4.55 (1.14, 18.09)
Kang 2009	Mindfulness Stress Coping Program	No intervention	Mindfulness/meditation		120 minute sessions 8 sessions 8 weeks	Low	Group, Face to face	Student focused	Transdiagnostic -universal therapeutic	NR	N: 32 Symptom Severity: *End of treatment:* Anxiety: 0.49 (-0.21, 1.20) Depression: 0.69 (-0.03, 1.40) Wellbeing: *End of treatment:* 0.63 (-0.08, 1.34) Attrition: 0.73 (0.16, 3.45)
Levin 2017	Acceptance and Commitment Therapy	Waitlist	Cognitive and behavioural therapies	Self help (guided)	6 sessions 4 weeks	Low	Individual, Computer	Student adapted-delivery	Transdiagnostic -shared mechanism	Paraprofessional	N: 62 Symptom severity: *End of treatment:* Depression: 0.07 (-0.43, 0.57) Anxiety: 0.15 (-0.35, 0.65) Wellbeing: *End of treatment:*-0.01 (-0.51, 0.49) Attrition: 0.83 (0.28, 2.44)
Rasanen 2016	Acceptance and Commitment Therapy	Waitlist	Cognitive and behavioural therapies	Self help (guided)	15 sessions 5 weeks	Low	Individual, Computer	Student adapted-content	Transdiagnostic -shared mechanism	Paraprofessional	N: 68 Symptom severity: *End of treatment:* Depression: 0.68 (0.19, 1.17) Anxiety:-0.01 (-0.49, 0.47) Wellbeing: *End of treatment:* 0.22 (-0.26, 0.69) Attrition: 10.83 (0.56, 209.49)

Study ID	Intervention	Comparison	Intervention Strategy	Self Help (guided/unguided)	Length	Intensity (High/Low)	Format, Delivery	Student adaption	Disorder adaption	Treatment provider	Study level effect size: Hedges' g/OR (95% CI)
Song 2015	Mindfulness-based Stress Reduction	Waitlist	Mindfulness/meditation		120 minute sessions 8 sessions 8 weeks	Low	Group, Face to face	Student focused	Transdiagnostic-shared mechanism	Professional	N: 50 Symptom Severity: *End of treatment:* Anxiety: 0.50 (-0.10, 1.10) Depression: 0.70 (0.09, 1.31) Wellbeing: *End of treatment:*0.85 (0.23, 1.47) Attrition: 2.19 (0.36, 13.22)
Xu 2019	Wellbeing Therapy	Attentional Control	Psychoeducation		120 minute sessions 5 sessions 5 weeks	Low	Group, Face to face	Student focused	Transdiagnostic-shared mechanism	Professional	N: 101 Symptom severity: *End of treatment:* Depression: 0.60 (0.17, 1.04) Anxiety: 0.19 (-0.24, 0.61) *3 months:* Depression: 0.81 (0.37, 1.25) Anxiety: 0.45 (0.03, 0.88) Wellbeing: *End of treatment:*0.57 (0.14, 1.00) *3 Months:* 0.67 (0.23, 1.10) Attrition: 4.51 (1.18, 17.32)
Anxiety and Depression, Indicated											
Bentley 2018	Universal Transdiagnostic Intervention	No intervention	Cognitive and behavioural therapies		120 minute sessions 1 session 1 week	Low	Group, Face to face	Student adapted-delivery	Transdiagnostic-shared mechanism	Professional	N: 138 Symptom severity: *End of treatment:* Depression: 0.31 (-0.16, 0.78) Anxiety: 0.19 (-0.28, 0.65) Wellbeing: *End of treatment:* 0.53 (0.06, 1.01) Attrition: 0.89 (0.46, 1.73)
Ellis 2011	Online Cognitive Behavioural Therapy	No intervention	Cognitive and behavioural therapies	Self help (unguided)	60 minute sessions 3 sessions 3 weeks	Low	Individual, Computer	Student focused	Transdiagnostic-shared mechanism	Paraprofessional	N: 20 Symptom severity: *End of treatment:* Depression: 0.44 (-0.49, 1.37) Anxiety: 0.95 (-0.01, 1.92)

Study ID	Intervention	Comparison	Intervention Strategy	Self Help (guided/unguided)	Length	Intensity (High/Low)	Format, Delivery	Student adaption	Disorder adaption	Treatment provider	Study level effect size: Hedges' g/OR (95% CI)
	Online Peer Support	No intervention	Social Support	Self help (unguided)	60 minute sessions 3 sessions 3 weeks	Low	Group, Computer	Student focused	Transdiagnostic -shared mechanism	Paraprofessional	N: 20 Symptom severity: *End of treatment:* Depression: 0.62 (-0.32, 1.56) Anxiety: 0.90 (-0.06, 1.86)
Ezegbe 2019	Cognitive Behavioural Therapy	Waitlist	Cognitive and behavioural therapies		120 minute sessions 8 sessions 8 weeks	Low	Group, Face to face	Student focused	Focused	Paraprofessional	N: 55 Symptom severity: *End of treatment:* Depression: 4.08 (3.16, 5.01) Anxiety: 2.27 (1.59, 2.94) Attrition: 0.96 (0.02, 50.36)
Falsafi 2016	Yoga	No intervention	Mindfulness/meditation		75 minute sessions 8 sessions 8 weeks	Low	Group, Face to face	Student focused	Transdiagnostic -universal therapeutic	Professional	N: 35 Symptom severity: *End of treatment:* Depression: 1.56 (0.77, 2.35) Anxiety: 0.68 (-0.04, 1.40) *3 Months:* Depression: 1.36 (0.59, 2.13) Anxiety: 0.75 (0.03, 1.47) Wellbeing: *End of treatment:* 0.70 (-0.02, 1.41) *3 Months:* 0.79 (0.07, 1.52) Attrition: *:* 1.00 (0.30, 3.31)
	Mindfulness	No intervention	Mindfulness/meditation		75 minute sessions 8 sessions 8 weeks	Low	Group, Face to face	Student focused	Transdiagnostic -universal therapeutic	Professional	N: 33 Symptom severity: *End of treatment:* Depression: 0.77 (0.04, 1.50) Anxiety: 0.72 (-0.01, 1.45) *3 Months:* Depression: 1.24 (0.47, 2.01) Anxiety: 0.90 (0.16, 1.64) Wellbeing: End of treatment: 0.55 (-0.17, 1.27) 3 Months: 0.77 (0.04, 1.50) Attrition: 1.41 (0.45, 4.45)

Study ID	Intervention	Comparison	Intervention Strategy	Self Help (guided/unguided)	Length	Intensity (High/Low)	Format, Delivery	Student adaption	Disorder adaption	Treatment provider	Study level effect size: Hedges' g/OR (95% CI)
Fawcett 2019	Individual Counselling	Active	Multimodal		60 minute sessions 6 sessions 6 weeks	High	Individual, Face to face	Student focused	Transdiagnostic -universal therapeutic	Professional	N:41 Symptom severity: *End of treatment:* Depression: 0.47 (-0.19, 1.13) Anxiety: 0.28 (-0.38, 0.93) Attrition: 0.09 (0.00, 1.95)
Sethi 2010	Face to face cognitive behavioural therapy	No intervention	Cognitive and behavioural therapies		3 sessions 3 weeks	Low	Individual, Face to face	Student focused	Transdiagnostic -universal therapeutic	Professional	N: 20 Symptom Severity *End of treatment:* Depression: 1.94 (0.88, 3.01) Anxiety: 1.58 (0.58, 2.59)
Stallman 2016[a]	Cognitive Behavioural Therapy	No intervention	Cognitive and behavioural therapies		6 sessions	Low	Individual, Face to face	Student focused	Transdiagnostic -universal therapeutic	Professional	N: 107 Attrition: 1.19 (0.50, 2.85)
Uliaszek 2016	Dialectical Behaviour Therapy	Active	Cognitive and behavioural therapies		120 minute sessions 12 sessions 12 weeks	High	Group, Face to face	Student focused	Transdiagnostic -modular	NR	N: 54 Symptom severity: *End of treatment:* Depression: 0.23 (-0.31, 0.76) Anxiety: 0.03 (-0.51, 0.56) Wellbeing: *End of treatment:* 0.35 (-0.18, 0.89) Attrition: 0.21 (0.06, 0.72)
Wu 2002	Music Therapy	No intervention	Other: Music therapy		120 minute sessions 10 sessions 10 weeks	Low	Group, Face to face	Student focused	Transdiagnostic -modular	NR	N: 24 Symptom severity: *End of treatment:* Depression: 0.29 (-0.51, 1.10) Anxiety: 0.95 (0.11, 1.79) 2 *Months:* Depression: 0.63 (-0.19, 1.45) Anxiety: 1.09 (0.23, 1.95) Wellbeing: *End of treatment:*-0.23 (-1.03, 0.57) *2 Months:*-0.14 (-0.94, 0.66) Attrition: 1.00 (0.12, 8.31)

Study ID	Intervention	Comparison	Intervention Strategy	Self Help (guided/unguided)	Length	Intensity (High/Low)	Format, Delivery	Student adaption	Disorder adaption	Treatment provider	Study level effect size: Hedges' g/OR (95% CI)
Eating Disorders, Indicated											
Coughlin 2006	Media Literacy	Treatment as usual	Psychoeducation		90 minute sessions 2 sessions 4 weeks	Low	Group, Face to face	Student adapted-content	Focused	Paraprofessional	N: 35 Symptom severity: *End of treatment:* -0.20 (-0.87, 0.46) Attrition: 0.87 (0.42, 1.79)
Diaz-Ferrer 2017	Pure Exposure	Active	Cognitive and behavioural therapies		45 minute sessions 6 sessions 3 weeks	Low	Individual, Face to face	Convenience sample	Focused	Professional	N: 35 Symptom severity: *End of treatment:* 0.07 (-0.60, 0.73) Attrition: 3.17 (0.12, 83.17)
Franko 2005	Food Mood and Attitude Prevention Program	Attentional Control	Cognitive and behavioural therapies	Self help (guided)	60 minute sessions 2 sessions 2 weeks	Low	Individual, Face to face	Student adapted-delivery, content	Focused	Paraprofessional	N: 112 Symptom severity: *3 Months:* -0.07 (-0.73, 0.60) Attrition: 1.00 (0.14, 7.22)
Kaminski 1996	Group Intervention for Bulimia	No intervention	Cognitive and behavioural therapies		90 minute sessions 8 sessions 8 weeks	Low	Group, Face to face	Student focused	Focused	Paraprofessional	N: 25 Symptom severity: *End of treatment:* 1.85 (0.92, 2.79) *3 Months:* 1.56 (0.66, 2.45) Wellbeing: *End of treatment*: 1.57 (0.68, 2.47) *3 Months:* 1.49 (0.60, 2.38) Attrition: 3.25 (0.30, 35.66)
Kass 2014	Student Bodies with Guided Discussion	Active	Cognitive and behavioural therapies	Self help (guided)	8 sessions 8 weeks	Low	Group, Computer	Student focused	Focused	Paraprofessional	N: 111 Symptom severity: *End of treatment:* 0.52 (0.19, 0.84) Attrition: 1.39 (0.67, 2.87)
Sanchez-Ortiz 2011	Internet Cognitive Behavioural Therapy	Waitlist	Cognitive and behavioural therapies	Self help (guided)	45 minute sessions 8 sessions 12 weeks	Low	Individual, Computer	Student focused	Transdiagnostic -universal therapeutic	Professional	N: 76 Symptom severity: *End of treatment:* 1.22 (0.73, 1.71) Wellbeing: *End of treatment*: 0.89 (0.42, 1.36) Attrition: 0.51 (0.18, 1.43)
Taylor 2006	Internet Student Bodies	Waitlist	Cognitive and behavioural therapies	Self help (guided)	8 sessions 8 weeks	Low	Individual, Computer	Student focused	Focused	Professional	N: 29 Symptom severity: *End of treatment:* 0.57 (-0.21, 1.35) *12 Months:* 0.47 (-0.30, 1.25) Attrition: 1.89 (1.07, 3.33)

Study ID	Intervention	Comparison	Intervention Strategy	Self Help (guided/unguided)	Length	Intensity (High/Low)	Format, Delivery	Student adaption	Disorder adaption	Treatment provider	Study level effect size: Hedges' g/OR (95% CI)
Taylor 2016	Image and Mood	Waitlist	Cognitive and behavioural therapies	Self help (guided)	10 sessions 10 weeks	Low	Individual, Computer	Student adapted-content	Focused	NR	N: 185 Symptom severity: *End of treatment:* 0.52 (0.23, 0.82) *12 Months:* 0.44 (0.15, 0.73) *24 Months:* 0.34 (0.05, 0.63) Attrition: 1.37 (0.63, 2.96)
Zabinski 2001	Student Bodies	Waitlist	Cognitive and behavioural therapies	Self help (guided)	8 sessions 8 weeks	Low	Individual, Computer	Student focused	Focused	Paraprofessional	N: 56 Symptom severity: *End of treatment:*-0.20 (-0.72, 0.33) 2.5 *Months:*-0.09 (0.61, 0.44) Attrition: 0.32 (0.01, 8.23)
Zabinski 2004	Synchronious support group	Waitlist	Cognitive and behavioural therapies	Self help (guided)	60 minute sessions	Low	Group, Computer	Student focused	Focused	NR	N: 60 Symptom severity: *End of treatment:*0.24 (-0.26, 0.75) 2.5 *Months*:0.36 (-0.15, 0.87) Wellbeing: *End of treatment*: 0.14 (-0.37, 0.65) *2.5 Months:*0.52 (0.00, 1.03) Attrition: 3.10 (0.12, 79.23)
PTSD, Indicated											
Allan 2015	Anxiety Sensitivity Education and Reduction Training (ASERT) program	Attentional control	Psychoeducation		50 minute session 1 session	Low	Individual, Face to face	Convenience sample	Focused	Professional	N: 82 Symptom Severity: *End of treatment:* 0.36 (-0.07, 0.80)
Lange 2001	Interapy	Waitlist	Cognitive and behavioural therapies		45 minute sessions 10 sessions 5 weeks	Low	Individual, Computer	Convenience sample	Focused	NR	N: 25 Symptom Severity: *End of treatment:* 0.92 (0.09, 1.74) Attrition: 0.62 (0.09, 4.34)
Littleton 2016	Surviver to Thriver online Cognitive Behavioural Therapy	Active	Cognitive and behavioural therapies		9 sessions 14 weeks	Low	Individual, Computer	Student focused	Focused	Paraprofessional	N: 87 Symptom Severity: *End of treatment:* -0.11 (-0.53, 0.31) *3 Months:* -0.18 (-0.60, 0.24) Attrition: 1.86 (0.76, 4.53)

Study ID	Intervention	Comparison	Intervention Strategy	Self Help (guided/unguided)	Length	Intensity (High/Low)	Format, Delivery	Student adaption	Disorder adaption	Treatment provider	Study level effect size: Hedges' g/OR (95% CI)
Sloan 2011	Written Emotional Disclosure	Attentional control	Other: Expressive writing		20 minute sessions 3 sessions 1 week	Low	Individual, Face to face	Convenience sample	Focused	NR	N: 42 Symptom severity: *End of treatment:* -0.13 (-0.73, 0.48) Attrition: 1.50 (0.23, 9.92)

Note: Symptom Severity and Wellbeing data presented as Hedges' g, Attrition data presented as Odds Ratio (OR)

For studies with 2 interventions, and one control, we halved the N for the control group.

[a]Authors contacted, no data available. Included in attrition analysis only.