Systematic Review

The Impact of Resilience Interventions on University Students' Mental Health and Well-Being: A Systematic Review

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Abstract: Attending university is a time of considerable change, and there are rising concerns about the mental health and well-being of university students, leading to calls for a whole-university approach to student support. Resilience interventions offer an opportunity to improve mental health and well-being, whilst also developing a much sought-after graduate attribute. We conducted a systematic review of interventions designed to increase university students' levels of resilience and examined the impact of these on students' mental health and well-being. Five databases identified 1377 unique records, 47 of which were eligible for inclusion. Eligible studies were drawn from a range of countries and adopted different designs, with the most common being the randomised controlled trial (RCT). Interventions were classified into mindfulness, skills-based, psychoeducation, and coaching, with delivery both online and face-to-face. The most common outcomes were depression, anxiety, stress, and well-being. The 'Quality Assessment Tool for Before-After (Pre-/Post) Studies' was used to assess the risk of bias with most studies rated as fair. Overall, the studies indicated that there is little evidence of a positive effect on depression, but stress and anxiety may be reduced following interventions. Well-being data were inconclusive. Interestingly, most interventions did not impact measures of resilience or mindfulness, despite the training targeting these constructs. The available research is currently limited and there is a need for more high-quality designs providing descriptions of interventions.

Keywords: depression; anxiety; resilience; stress; university; student mental health

1. Introduction

Attending university is often considered an exciting rite of passage that typically coincides with the transition to adulthood, marking a period of psychological, sociological, and biological development [1]. During university study, students develop specialist knowledge in their chosen disciplines as well as so-called graduate attributes [2]. Whilst the attributes identified vary across institutions [3], mapping studies have indicated some shared attributes, including time management, organization, conflict management, good communication, and resilience [4]. Keeping up with academic study as well as developing these attributes in higher education (HE) can create a high workload, which contributes to stress in student populations [5]. Estimates of the prevalence of stress vary, with some studies reporting as much as 84% of students experiencing stress [6]. Such stress can negatively impact academic performance [7,8]. Additionally, the impact of stress on mental health is well-established with chronic stress known to be a risk factor for both internalizing and externalizing difficulties [9]. In line with reports of high stress levels in students, there has been increasing concern about students' mental health globally with reports of a mental health crisis in this population [10–12]. These reports are not unfounded, with a study of over 14,000 students across eight countries in 19 universities, finding that over 30% met the diagnostic criteria for at least one mental health condition [13]. The most common condition

reported was depression, followed by anxiety, with various demographic characteristics (e.g., gender, age, and religiosity), correlating with mental health difficulties [13].

Several different approaches have been taken to support students in managing stress and mental health conditions. This includes universal interventions aimed at improving well-being, which may be perceived as less stigmatizing and appeal to students who might not otherwise seek help [14], peer support programmes [15], relaxation, and a range of training programmes, including social skills, attention, and mindfulness [16]. Previous reviews have indicated that training programmes for stress management can be beneficial for university students [17], whilst also noting the importance of tailoring programmes to this specific cohort [16]. One area of particular interest is resilience training, which has been shown to be beneficial as a universal intervention for university students [18] and aligns with the development of graduate attributes [4], offering an excellent opportunity to embed student support directly into the curriculum as part of a settings-based approach to students' mental health. This approach has been widely encouraged and is a consideration in the UK University Mental Health Charter scheme [19].

The American Psychological Association defines resilience as "the process and outcome of successfully adapting to difficult or challenging life experiences, especially through mental, emotional, and behavioural flexibility and adjustment to external and internal demands" [20]. This complex definition reflects the fact that resilience can be defined as a trait, process, or outcome [21,22], which has created difficulties for researchers in adopting a universal definition [23]. Despite these difficulties, current research allows resilience to be depicted as a set of competencies [24]. When viewed as a set of competencies, it is conceivable that resilience can be taught or trained, something supported by prior research [25,26]. Furthermore, a competency approach to resilience creates a framework that supports the development of interventions, which can target external factors, such as building relationships and communities within specific contexts (e.g., support systems), and individual factors (e.g., coping skills, problem-solving, and cognitive flexibility) [18], the latter of which also aligns with the sought-after skills within HE graduate attributes [4]. It is perhaps unsurprising then that research on HE has identified that resilience is beneficial in students, helping them to adjust to university life and overcome adversity, as well as improve their well-being and academic outcomes [27–31].

As interest in resilience training within HE has grown, several reviews have been conducted in this area, with a focus specifically on students. A systematic review published in 2016 focused on undergraduate indigenous students only and identified limited evidence as an issue [32]. Two scoping reviews followed, one of which focused on health profession students only, and in both cases, the researchers also identified a lack of methodological constraints within the studied review, making conclusions hard to establish [33,34]. More recently, a more comprehensive meta-analytic systematic review was conducted, which focused on students across disciplines and explored the effects of resilience training as well as the features of the training programmes [18]. This review exclusively focused on randomised controlled trials (RCTs) and examined primary outcome measures of resilience, depressive symptoms, and stress, alongside several secondary outcomes. The review included 29 studies from 2008 to 2020 and reported that resilience interventions within RCTs have a small beneficial effect on symptoms of depression and stress and a small positive effect on resilience. Whilst the focus on RCTs does result in the use of a robust study design, it also risks missing considerable research within an education context. For example, a recent systematic review examining well-being interventions within education found that only 17.4% of studies used an RCT design [35] and the Education Endowment Foundation identified several challenges to RCTs in educational contexts [36]. Furthermore, whilst randomisation is suitable for health-related intervention assessment, which is considered a strength of RCTs, it is unlikely to account for a considerable amount of the sources of error within an educational context [37]. As such, whilst the previous review included high-quality evidence, it is unlikely that the exclusion of other designs had created the robustness reported for other disciplines, and it is likely that considerable research was

omitted. The current review aims to build upon previous reviews in this area by including students of all disciplines rather than just health profession students, and incorporating the most common experimental designs employed in education research to address the research question "What is the effect of resilience interventions on mental health and well-being in university students?".

2. Materials and Methods

2.1. Protocol Registration

This review was conducted in accordance with PRISMA guidelines [38]. The systematic review protocol was registered in the prospective register of systematic reviews, PROSPERO (registration number CRD42022315583 [39]).

2.2. Eligibility Criteria

Studies had to fulfil several eligibility criteria to be included in this review. Firstly, studies had to be published in English and be peer-reviewed primary research articles. Secondly, they had to focus on students in post-compulsory education (16 years old or older), including full-time undergraduate or postgraduate students registered for an on-campus program. We opted to exclude those studying for a distance learning programme, given that the majority of HE qualifications are campus-based, even since COVID-19. Additionally, previous research has indicated that the challenges faced by distance students are distinct from those on campus and that this means different adjustments are required to be resilient [40]. Thirdly, the interventions studied had to be resilience-based, i.e., targeting individual factors, which can support greater resilience such as attention, behaviour and mood control, coping skills, self-esteem, cognitive flexibility, optimism, and problem-solving [24]. This could be in the form of psychoeducation, coaching, skills-based training, and mindfulness-based interventions. Interventions targeting non-student populations, such as instructors and staff, were excluded. We deliberately selected a wide range of intervention approaches to reflect the diverse mediating processes and mechanisms that can impact resilience according to a recent conceptual framework [18]. Fourthly, eligible studies focused on quantitative research, with observational, randomised controlled trials, non-randomised controlled trials (otherwise known as quasi-experimental), and cross-sectional studies. Qualitative studies were excluded from this review, in line with previous reviews [18,33,34]. Comparison groups for these designs were either the non-intervention control group, where available, or the pre-scores in pre/post-study designs. Finally, to be eligible, the study needed to include at least one measure of well-being (e.g., mental well-being, quality of life, happiness, self-efficacy, life satisfaction, positive affect, and coping), or mental health (e.g., depression, anxiety, stress, and negative affect).

2.3. Search Strategy

Literature searches were performed on five databases (PsycINFO, Medline, Embase, Global Health, and Web of Science), which included a considerable amount of education-based literature from the earliest possible dates to February 2024, when the last searches were conducted. Searching was completed in two phases, with initial searching conducted by April 2022 and an updated search run in February 2024. Search terms were related to the population (undergraduate OR post-graduate or graduate or adult learner or "university student"), intervention (psychoeducation or resilience interventions), and outcomes (resilien* OR optimis* or coping or mental health or depress* or anxiety or well-being), with all search categories combined with AND (see published protocol).

2.4. Selection Process

Preliminary searches were conducted by two authors (Authors 1 and 2) to check the viability of search terms before Author 1 ran the first search phase in April 2022. Studies were exported into Endnote X9 software and duplicates were removed before the list was exported into Rayyan software [41], where a further duplication check was

conducted. Author 1 then completed the title and abstract screening and full-text screening in collaboration with Author 2. Any disagreements were planned to be discussed and resolved by Authors 3 and 4, but no disagreements were found. An updated search was run in February 2024 by Author 1, which identified a further 303 papers after the removal of duplicates. Author 1 and Author 4 conducted title and abstract screening independently, with no disagreements reported. Author 1 then completed the full-text screening in collaboration with Author 4. Full details of the selection process are shown in Figure 1.
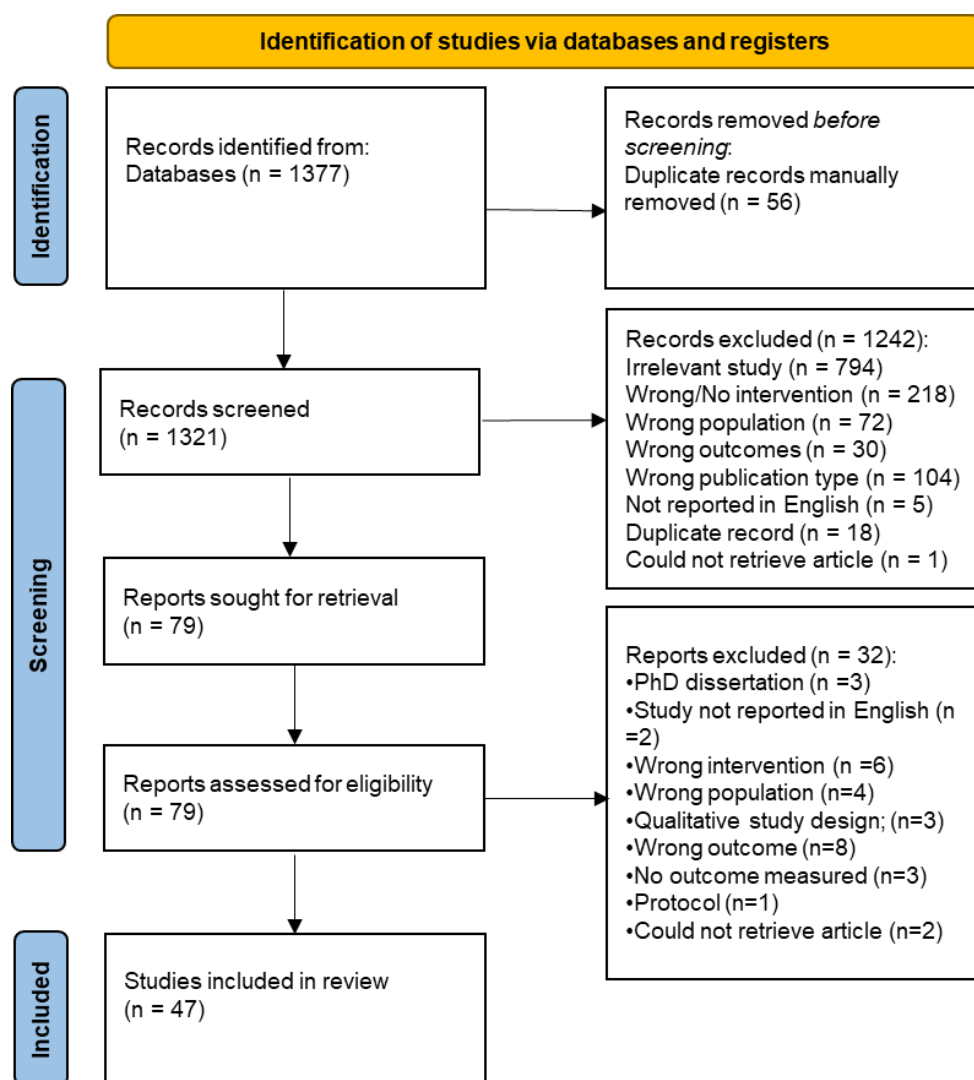

Figure 1. Prisma flowchart for the study selection [38].

2.5. Data Collection and Extraction

A data extraction form was developed in Excel by all authors, and studies included in the review underwent data extraction, whereby the following information was extracted for each paper: (i) Study characteristics: study design, the country where the study was conducted, exclusion/inclusion criteria, and publication year; (ii) intervention characteristics: types of resilience interventions used in the study with detailed descriptions, delivery modes, intervention facilitator roles, number of sessions in the intervention, and duration of intervention; (iii) Study population characteristics: graduate or undergraduate, sample size, cohort type, participants' mean age, standard deviation, participant's identified gender, and ethnicity; (iv) Outcome measures: measures used for mental health and well-being, as well as any measures used to assess the impact of treatment on the targeted construct

(e.g., resilience or mindfulness); (v) Findings: for each identified outcome, we extracted the number of participants in the intervention and control group, mean and standard deviations at both T1 (pre-intervention) and T2 (immediately post-intervention), confidence intervals, and effect sizes when possible. Follow-up points beyond T2 were not extracted. Data extraction was completed by Author 1 and any ambiguities were discussed with all authors.

2.6. Quality Assessment

Risk of bias (RoB) assessment was conducted by Author 1 in collaboration with Author 2 using the National Heart Lung and Blood Institute tool [42], previously adapted for education-based studies [35]. Risk of bias rating was calculated by the percentage of RoB criteria rated 'yes': rating categories included very poor (0–24%), poor (25–49%), fair (50–74%), and good (75–100%), as previously adopted in reviews focused on education and well-being [35].

2.7. Data Analysis

For each study in this systematic review, mean differences (pre/post-intervention) for each outcome were calculated using the publications' reported raw scores. 'Cannot Determine' [CD] notation was used if the mean differences could not be calculated due to missing raw data. Outcome data (for pre-post intervention) were extracted; 95% confidence intervals along with Cohen's d were calculated for each study with a control group using STATA15 (StataCorp, 2017). Raw data used in Cohen's d calculation included the sample size, mean, and standard deviation (pre and post-intervention). In the case of studies containing a control group, it was stated whether the results significantly favoured the intervention or control or if there was no significant difference between conditions (NS). Where studies had no control group, Cohen's d values and 95% confidence intervals were reported. The direction of effect was reported if effect sizes could not be calculated due to missing raw data, according to the results section of individual studies.

Populations and interventions were very heterogeneous, and the number of studies was relatively small, making a meta-analysis inappropriate. Instead, we employed the vote-counting method as defined by SWiM guidelines [43]. Vote counting was conducted by intervention type to judge whether the different types of resilience intervention improved measures of mental health and well-being, as well as measures of resilience and mindfulness, where collected. For each type of intervention, the percentage of studies showing an effect on the outcomes was reported along with the binomial test, indicating the probability of the results if the intervention was ineffective (i.e., equal to 0.5), and the 95% confidence intervals for the percentage of effects favouring the intervention [44]. The syntax 'bitesti X Y 0.5' was used to calculate the binomial test calculated through STATA 15 (StataCorp, 2017). Intervals were calculated following the syntax 'cii proportions X Y, level (95)'; X means the number of effects and Y means the number of intervention-favouring effects. Additionally, given the rise in online delivery, we examined the association between the likelihood of finding a positive effect and the mode of delivery across interventions using chi-square analysis for the main outcomes reported.

3. Overview of Included Studies

Details of all the study characteristics are shown in Table 1 and summarised in the following sections.

Table 1. Summary of study characteristics.

Author(s), (Year of Publication), Country	Design Time Measurements Time 1–Time 2	University Population	Intervention Category	Facilitator	Mode of Delivery (f2f, Online)	Number of Sessions (Duration of Individual Session)	Risk of Bias Rating
Ando (2011) Japan [45]	RCT T1-T2	Undergraduates	Skills-based	Teaching staff	f2f	11 sessions (90 min)	Fair
Bastien et al. (2022) Canada [46]	RCT T1-T2-T3	Undergraduates	Psychoeducation	Peer facilitators and external facilitators	Online	9 weeks	Good
Baumgartner and Schneider (2021) USA [47]	RCT T1-T2-T3	Undergraduates	Mindfulness	Teaching staff	f2f	7 sessions (1.5 h)	Fair
Bernstein et al. (2021) USA [48]	Pre-post T1-T2-T3	Graduates	Psychoeducation	Peer facilitators	f2f	1 session (2 h)	Fair
Bultas, Boyd, and McGroarty (2021) USA [49]	RCT T1-T2	Undergraduates (nursing)	Mindfulness	NR	Online	1 session (20 min)	Fair
Burke et al. (2020) USA [50]	Pre-post T1-T2	Undergraduates	Skills-based	External facilitators and peer facilitators	f2f	4 sessions (1.5 h)	Poor
Chugani et al. (2023) USA [51]	Pre-post T1-T2-T3	Undergraduates	Skills-based	Peer facilitators and external facilitators	Online	15 sessions (2.5 h)	Fair
Csirmaz et al. (2023) Hungary [52]	RCT T1-T2	Students	Skills-based	NR	Online	8 sessions (8 weeks)	Poor
Demarzo et al. (2017) Spain [53]	NRCT T1-T2-T3	Undergraduates (Health Sciences)	Mindfulness	External facilitators	f2f	120 sessions (45 min)	Fair
Dietel et al. (2024) Germany [54]	RCT T1-T2-T3-T4	Undergraduates	Psychoeducation	NR	Online	7 sessions (1 week)	Fair
El Morr et al. (2020) Canada [55]	RCT T1-T2	Undergraduates (Health and liberal arts)	Mindfulness	External facilitators	Online	8 weeks	Fair
Fiodorova and Farb (2022) Canada [56]	RCT T1-T2	Undergraduates (Psychology)	Mindfulness	NR	Online	21 sessions (5 min)	Poor
Frazier et al. (2023) USA [57]	RCT T1-T2-T3	Undergraduates	Mindfulness	NR	Online	3 weeks	Good
Fried, Atkins, and Irwin (2019) Canada [58]	Repeated Measures NRCT T1-T2-T3	Graduates	Coaching	External facilitators	f2f	8 Sessions (1 h)	Poor

Table 1. *Cont.*

Author(s), (Year of Publication), Country	Design Time Measurements Time 1–Time 2	University Population	Intervention Category	Facilitator	Mode of Delivery (f2f, Online)	Number of Sessions (Duration of Individual Session)	Risk of Bias Rating
Gatto et al. (2022) USA [59]	Pre-Post T1-T2-T3	Undergraduates	Skills-based	Teaching staff and peer facilitators	Online	5 sessions (50 min)	Poor
Goldhagen et al. (2015) USA [60]	Pre-post T1-T2	Medical students	Mindfulness	External facilitators	f2f	2–3 sessions (1 h)	Poor
Grant and Atad (2021) Israel [61]	RCT T1-T2	Undergraduates (Art)	Coaching	Peer facilitators	f2f and online	13 sessions (1.5 h)	Fair
Hobbs et al. (2022) UK [62]	NRCT T1-T2	Undergraduates	Psychoeducation	Teaching staff and peer facilitators	Online	10 pre-recorded lectures, 11 weekly live sessions. (11 weeks)	Fair
Houston et al. (2016) USA [63]	RCT T1-T2	Undergraduates	Skills-based	External facilitators (social workers)	f2f	3 sessions (45 min)	Fair
Kalamatianos et al. (2023) Greece [64]	Pre-post T1-T2	Undergraduates (Engineering)	Psychoeducation	External facilitators	f2f	5 sessions (2 h)	Poor
Linton et al. (2021) UK [65]	Pre-post	Undergraduates	Psychoeducation	NR	f2f and online diary entry	9 weeks	Poor
Lohner and Aprea (2021) UK [66]	Pre-post T1-T2	Undergraduates (Economics and business education)	Skills-based	NR	Online	5 days	Poor
Martinez-Rubio, Navarrete, and Marin (2021) [67]	RCT T1-T2	Undergraduates (Psychology)	Mindfulness	External facilitators	f2f	5 sessions (90 min)	Fair
Maurer et al. (2023) Canada [68]	Pre-post T1-T2-T3	Undergraduate and graduate (Social work)	Skills-based	NR	Online	2 sessions (28 days)	Fair
Medlicott et al. (2021) UK [69]	Pre-post T0-T1-T2	Undergraduates and graduates	Mindfulness	Teaching staff	f2f	8 weeks, 8 sessions	Fair
Melo-Carrillo, Oudenhove, and Avila (2011) Mexico [70]	Pre-post T1-T2-T3-T4	Medical students	Psychoeducation	External facilitators	f2f	NR	Fair
O'Driscoll et al. (2019) Ireland [71]	RCT T1-T2	Undergraduates (Pharmacy)	Mindfulness	Teaching staff	f2f	4 sessions (2 h)	Fair
Ozturk (2023) Turkey [72]	RCT T1-T2	Undergraduates (Nursing)	Mindfulness	Teaching staff	Online	8 sessions (1.5 h)	Fair

Table 1. *Cont.*

Author(s), (Year of Publication), Country	Design Time Measurements Time 1–Time 2	University Population	Intervention Category	Facilitator	Mode of Delivery (f2f, Online)	Number of Sessions (Duration of Individual Session)	Risk of Bias Rating
Palamara et al. (2023) USA [73]	RCT T1-T2	Medical students	Coaching	Teaching staff	f2f	1 session (3 h)	Fair
Pan and Zhuang (2023) * Hong Kong [74]	RCT T1-T2-T3	Undergraduates	Skills-based	Teaching staff and external facilitators	f2f	13 sessions (3 h)	Fair
Rajiah and Saravanan (2014) Malaysia [75]	RCT T1-T2	Undergraduates (Pharmacy)	Skills-based	Teaching staff and external facilitators	f2f	6 sessions (1 h)	Fair
Recabarren et al. (2019) Switzerland [76]	RCT T1-T2	Undergraduates	Skills-based	External facilitators	f2f	8 sessions (2 h)	Fair
Roulston et al. (2017) Ireland [77]	NRCT T1-T2	Undergraduates (Social work)	Mindfulness	External facilitators	f2f	6 sessions (2 h)	Fair
Saravanan and Kingston (2014) Malaysia [78]	RCT T1-T2	Undergraduates (Medicine)	Skills-based	Teaching staff and external facilitators	f2f	5 sessions	Fair
Savell et al. (2023) USA [79]	NRCT T1-T2	Undergraduates	Psychoeducation	Peer facilitators	f2f	21 sessions (1.75 h)	Fair
Schlechter et al. (2023) USA [80]	NRCT T1-T2	Undergraduates	Skills-based	Peer facilitators	f2f	23 sessions (NR)	Poor
Seppala et al. (2020) USA [81]	RCT T1-T2	Undergraduates	Mindfulness	External facilitators	f2f	16 sessions. 30 total hours.	Fair
Shatkin et al. (2016) USA [82]	NRCT T1-T2-T3	Undergraduates (Psychology)	Skills-based	Teaching staff, peer facilitators, and external facilitators	f2f	2 semesters (1 school year)	Poor
Shillington et al. (2023) Canada [83]	Pre-post T1-T2-T3-T4	Graduates	Coaching	Peer facilitators	Online	4 sessions (40 min) per month	Fair
Singh and Bandyopadhyay (2021) India (Study 3) [84]	Pre-post T1-T2	Undergraduates (Agriculture)	Psychoeducation	Teaching staff and external facilitators	Online	14 sessions (28 min)	Poor
Sousa and Padovani (2021) Brazil [85]	RCT T1-T2-T3	Undergraduates	Psychoeducation	Teaching staff and peer facilitators	f2f	10 sessions (60 min)	Fair
Szuster, Onoye, and Matsu (2023) USA [86]	Pre-Post T1-T2-T3	Medical students	Mindfulness	Teaching staff	Online	6 sessions (1 h)	Poor

Table 1. *Cont.*

Author(s), (Year of Publication), Country	Design Time Measurements Time 1–Time 2	University Population	Intervention Category	Facilitator	Mode of Delivery (f2f, Online)	Number of Sessions (Duration of Individual Session)	Risk of Bias Rating
Vidic (2021) USA [87]	NRCT T1-T2	Undergraduates	Mindfulness.	NR	f2f	14 sessions (45 min)	Poor
Wang and Farb (2023) ** Canada [88]	Pre-post T1-T2-T3	Undergraduates	Mindfulness	NR	Online	9 sessions (20 min)	Fair
Yin et al. (2023) China [89]	Pre-Post T1-T2	Medical students	Mindfulness	Teaching staff and peer facilitators	f2f	8 sessions (2 h)	Fair
Yook et al. (2024) Republic of Korea [90]	RCT T1-T2	Undergraduates	Mindfulness	Teaching staff	Online	8 sessions (2 h)	Good
Yotsidi et al. (2023) Greece [91]	Pre-post T1-T2	Undergraduates	Psychoeducation	Teaching staff	Online	8 sessions (NR)	Fair

f2f = face-to-face; NR = not reported; RCT = randomised controlled trial; NRCT = non-randomised controlled trial. Pre-Post: Multiple assessment study with no control group. NB: Information not reported within the table was not reported in the included studies. Risk of bias (Yes percentages): very poor (0–24%), poor (25–49%), fair (50–74%) or good (75–100%). * Pan and Zhuang (2023) have an adventure-based intervention as part of 3 step intervention program. ** Wang and Farb (2023) have 3 intervention groups with no control group.

3.1. Study Design

Eight studies implemented a non-randomised controlled trial (NRCT) study design [53,58,62,77,79,80,82,87]. Seventeen studies employed a pre-post without control group study design [48,50,51,59,60,64–66,68–70,83,84,86,88,89,91], and twenty-two studies adopted a randomised controlled trial (RCT) study design [45–47,49,52,54–57,61,63,67,71–76,78,81,85,90].

3.2. Population

Most of the studies recruited undergraduate students (*n* = 38) [45–47,49–51,53–57,59,61–69,71,72,74–82,84,85,87,88,90,91]. Only four studies recruited graduate students [48,58,69,83] and a subset did not specify, but all those not specifying focused on medical students [60,70,73,86,89]; as such, the level may not have been reported as medical degrees can include a typical undergraduate degree within the higher medical degree. Apart from medical students, some studies recruited specific disciplines, with the most common being psychology (*n* = 3) [56,67,82] but the majority did not indicate that they focused on a specific discipline.

3.3. Intervention Categories

The theoretical foundations of the interventions were deduced from the descriptions by the study authors and the mediating processes that were targeted according to the framework developed previously [18], as well as previous systematic reviews in this area [92] and allowed categorisation into distinct types of intervention.

Skills-based training, psychoeducation, coaching, and mindfulness were the four resilience intervention categories used to group the studies in this systematic review. The most common type of intervention was mindfulness (*n* = 18) [47,49,53,55–57,60,67,69,71,72,77,81,86–90], followed by 14 studies using skills-based training [45,50–52,59,63,66,68,74–76,78,80,82], 11 adopting psychoeducation [47,49,55,63,65,66,71,80,85,86,91], and just 4 studies utilising coaching [58,61,73,83].

Across all intervention types, there was a range of modes of delivery, although online interventions were more frequent in recent studies, as may be expected due to COVID and advances in technology. For skills-based interventions, nine used face-to-face delivery [45,50,63,74–76,78,80,82] and five used online delivery [51,52,59,66,68]. For mindfulness interventions, ten used face-to-face delivery [47,53,60,67,69,71,77,81,87,89] and eight used online delivery [49,55–57,72,86,88,90]. Within the psychoeducation interventions, around half were delivered using face-to-face sessions (*n* = 5) [48,64,70,79,85] with the same number using online delivery [46,54,62,84,91]. Only one study used hybrid delivery, which incorporated face-to-face and online components [65]. Finally, for the coaching interventions, two studies used face-to-face [58,73], one was online [83], and one took a hybrid approach [61].

3.4. Outcomes

The most common outcomes related to mental health were depression (*n* = 25) [45,48,50–55,57–61,63,67,68,70,74,76,79,81,83,84,86,91], anxiety (*n* = 21) [45,48,50,51,53,55,57,58,60–63,76,81,83,84,86,88–90], and stress (*n* = 21) [46,47,49,55,56,58–61,67,68,72,73,77,79,81,82,87,88,90,91]. A range of measures was used for each of these constructs, summarised in Table 2. The most common measures of depression were the Beck depression inventory [93] (BDI) [50,70,74,76], the patient health questionnaire [94] (PHQ)-4 or -9 [48,55,68,86,88], and the depression anxiety stress scales [95] (DASS) [51,52,57,59–61,84,91]. The most common measures for anxiety were the generalised anxiety disorder assessment [96] (GAD-7) [48,62,63], state-trait anxiety inventory [97] (STAI) [50,76,89,90], and DASS [52,57,59–61,84]. Stress was most frequently measured with a version of the perceived stress scale [98] (PSS) [46,49,54–57,67,68,71,72,74,77,81,87,88,90]. Less frequently measured mental health-related outcomes were psychological distress (*n* = 4) [69,71,75,78], test anxiety (*n* = 2) [75,78], and negative affect (*n* = 1) [85]. Well-being or positive mental health was primarily measured through mental well-being (*n* = 8) [62,65,66,69,72,77,80,84], most commonly utilising the

Warwick-Edinburgh mental well-being scale [99] (WEMWBS) [62,65,69,77,84]. However, other measures included positive mental health (*n* = 1) [88], quality of life (*n* = 2) [48,76], happiness (*n* = 3) [56,62,64,84], self-efficacy (*n* = 1) [50], life satisfaction (*n* = 2) [81,85], positive affect/emotion (*n* = 3) [59,73,85], and coping (*n* = 2) [46,82].

In addition to the outcomes relating to mental health and well-being, several studies measured resilience using a specific resilience measure (*n* = 18) [51–53,58,61,63,64,66, 68,69,74,77,83,84,87,89,91]. It was most commonly assessed with the Connor Davidson resilience scale [100](CD-RISC; *n* = 10) [52,53,63,64,66,67,69,74,84,89], followed by the resilience scale [101] (*n* = 3) [78,84,88], and the brief resilience scale [101] (*n* =4) [58,83,87,91]; one study used the cognitive hardiness scale [102] (*n* = 1), [46]. Perhaps reflecting the high proportion of studies utilising a mindfulness intervention, a significant number measured mindfulness (*n* = 11) [47,49,50,53,55,56,60,67,87,89,103] with the most frequently used scale being the mindful attention awareness scale [104] (MAAS; *n* = 6) [47,49,53,60,87,89], followed by the five-facet mindfulness questionnaire [105] (FFMQ; *n* = 3) [50,55,56], the five-facet mindfulness questionnaire short form [106] (FFMQ-SF; *n* = 1) [67], and the Freiburg mindfulness scale [107] (*n* = 1) [103].

3.5. Quality Assessment

The risk of bias assessment for all studies is shown in Table 1. Three studies were rated 'good' [46,57,90]. Twenty-nine studies were rated 'fair' [45,47–49,52–55,61–63,67–75,77–79,81,83,85,88,89,91]. The remaining fourteen studies were rated 'poor' [50,52,56,58–60,64–66,80,82,84,86,87].

There were several common strengths to the papers reviewed. For example, the vast majority (*n* = 45) reported clear research objectives with only two missing them [74,86]. Additionally, most studies reported clear population eligibility criteria, with only six failing to do this [47,52,59,64,82,88]. Similarly, most studies provided specific descriptions of the interventions, with only four not doing so [52,70,82,87]. Clearly stated outcomes were also found in most studies, with only three exceptions [65,80,87]. Around two-thirds of the studies (*n* = 36) reported appropriate statistical analyses, means, and standard deviations; however, 14 failed to do this [46,54,56,57,60,64,65,72,79,82,85–88]. The same number did not report the presence of a control group in the study [48,50,59,60,65,66,68–70,83,84,86,88,91], indicating that the majority of studies had a control group.

Despite some common strengths indicated above, there were also limitations. For example, most studies did not measure the outcome beyond the immediate post-intervention time point, i.e., there was no follow-up (*n* = 29) [45,49,50,52,55,56,60–67,71–73,75–81,84,87, 89–91] and they did not randomise the participants when placing them into experimental or control groups (*n* = 24) [45,48,50,51,58–60,62,64–66,68–70,77,79,80,83,84,86,87,89,91]. Additionally, less than half (*n* = 22) had samples representative of the university student population [45–48,51,57,60–63,65,66,69–71,77,79,82,84,87,88,91]. Furthermore, we could not determine if the researchers had adequately powered their study in 33 studies as they included the number of participants in their studies, but they did not mention conducting a power analysis [45,47–52,54,58,61,63–71,73,75,78–87,91]. We could not determine the inclusion or exclusion criteria the researchers used to recruit participants in a large proportion of the studies (*n* = 31) [45,47–50,52,53,55,56,58–67,69–71,75,77,78,81,82,84,85,87,88]. Lastly, 42 studies did not state, and for some studies, we could not determine, whether the experimenters reviewing the outcome variables were blinded to the participants' exposure, meaning only 5 studies did this [57,74,79,90,91,108].

Table 2. Summary of effects reported for studies for measures of mental health and well-being. Where studies also collected data on resilience or related constructs these were included.

Study	Sample Size Intervention Group IG: Time 1/Time 2 Control Group CG: Time 1/Time 2	Outcome	Mean Difference in IG T1–T2 (p-Value)	Mean Difference in CG T1–T2 (p-Value)	Effect Size (Cohen's d), (95% Confidence Interval CI)	Findings *
Ando (2011) [45]	IG: 204/157 CG: 96/65	DEP: Profile of mood status ANX: Profile of mood status	Male: 0.00 (1.00) Female: −0.09 (0.86) Male: −2.13 (<0.001) Female: −2.34 (<0.001)	Male: 0.87 (0.33) Female: 2.38 (0.006) Male: −0.76 (0.40) Female: 1.88 (0.007)	Male: −0.17 (−0.41, 0.07) Female: −0.51 (−0.75, −0.26) Male: −0.25 (−0.49, −0.01) Female: −0.94 (−1.20, −0.69)	NS Favours intervention Favours intervention Favours intervention
Bastien et al. (2022) [46]	IG: 180/158 CG: 90/82	STRESS: PSS COPING: Coping self-efficacy scale	MHSP: CD (CD) Peer presented: CD (CD) MHSP: CD (CD) Peer presented: CD (CD)	MHSP: CD (CD) Peer presented: CD (CD) MHSP: CD (CD) Peer presented: CD (CD)	MHSP: CD (CD) Peer presented: CD (CD) MHSP: CD (CD) Peer presented: CD (CD)	NS NS NS NS
Baumgartner and Schneider (2021) [47]	IG: 99/56 CG: 29/29	MIND: MASS STRESS: SAS	MBSR: 0.26 (0.01) Study skills: −0.14 (0.17) MBSR: −0.19 (0.01) Study skills: −0.05 (0.30)	(0.93) −0.19 (0.01)	MBSR: CD Study skills: CD MBSR: CD Study skills: CD	NS NS
Bernstein et al. (2021) [48]	IG: 64/53 CG: N/A	ANX: GAD-7 QOL: Q-LES-Q-SF DEP: PHQ-9	(1.00) 13.60 (<0.0001) −1.10 (0.18)	N/A N/A N/A	CD CD CD	NS NS Sig. improvement
Bultas, Boyd, and McGroarty (2021) [49]	IG: 25/25 CG: 24/24	STRESS: PSS MIND: MAAS	NR (NR) NR (NR)	NR (NR) NR (NR)	CD CD	NS NS
Burke et al. (2020) [50]	IG: 63/60 CG: N/A	DEP: BDI ANX: STAI MIND: FFMQ SELF-EFFICACY: SES	−1.83 (0.003) −3.30 (0.002) 3.15 (0.18) 1.75 (0.002)	N/A N/A N/A N/A	0.39 (0.63, 3.04) 0.41 (1.23, 5.38) 0.18 (−7.76, 1.46) 0.42 (−2.83, −0.66)	Favours intervention Favours intervention NS Favours intervention
Chugani et al. (2023) [51]	IG: 96/76 CG: 196/158	RES: BRS DEP: DASS-21 ANX: DASS-21	0.20 (0.10) −0.57 (0.44) 0.06 (0.93)	0.10 (0.21) 1.10 (0.06) 1.34 (0.004)	0.14 (−0.11, 0.38) −0.18 (−0.42, 0.07) −0.14 (−0.39, 0.10)	NS NS NS
Csirmaz et al. (2023) [52]	IG: 78/63 CG: 76/64	RES: CD-RISC10 DEP: DASS ANX: DASS STRESS: DASS	1.66 (0.12) −0.57 (0.48) 0.06 (0.93) −0.02 (0.98)	−0.39 (0.77) 1.10 (0.23) 0.06 (0.93) 2.17 (0.001)	0.30 (−0.03, 0.61) −0.33 (−0.65, −0.01) −0.32 (−0.63, 0.001) −0.54 (−0.86, −0.22)	NS Favours intervention NS Favours intervention

Table 2. *Cont.*

Study	Sample Size Intervention Group IG: Time 1/Time 2 Control Group CG: Time 1/Time 2	Outcome	Mean Difference in IG T1–T2 (*p*-Value)	Mean Difference in CG T1–T2 (*p*-Value)	Effect Size (Cohen's d), (95% Confidence Interval CI)	Findings *
Demarzo et al. (2017) [53]	IG: 99/99 CG: 49/47	MIND: MAAS	8-week MBI: 5.84 (0.015) Short MBI: 6.11 (0.014)	−1.02 (0.64)	0.58 (0.23, 0.93) 0.61 (0.26, 0.96)	Favours intervention Favours intervention
		RES: CD-RISC	8-week MBI: −0.25 (0.82) Short MBI: −0.06 (0.96)	−0.59 (0.66)	0.06 (−0.28. 0.40) 0.09 (−0.25, 0.43)	NS NS
		DEP: HADS	8-week MBI: −0.78 (0.08) Short MBI: −0.48 (0.33)	0 (1.00)	−0.29 (−0.63, 0.05) −0.17 (−0.51, 0.17)	NS NS
		ANX: HADS	8-week MBI: −0.82 (0.10) Short MBI: −0.37 (0.58)	0.49 (0.48)	−0.43 (−0.77, −0.08) −0.25 (−0.59, 0.09)	Favours intervention NS
Dietel et al. (2024) [54]	IG: 33/40 CG: 29/36	STRESS: PSS-10 DEP: CES-D	−5.36 (0.0004) NR (NR)	−5.18 (0.0005) NR (NR)	−0.03 (−0.53, 0.47) CD	NS NS
El Morr et al. (2020) [55]	IG: 78/68 CG: 80/80	DEP: PHQ-9 ANX: BAI STRESS: PSS MIND: FFMQ	−1.32 (0.15) −4.88 (0.01) −0.52 (0.54) 2.61 (0.28)	1.3 (0.24) 0.63 (0.75) −0.85 (0.30) −3.04 (0.18)	−0.44 (−0.76, −0.13) −0.46 (−0.77, −0.14) 0.059 (−0.25, 0.37) 0.40 (0.08, 0.71)	Favours intervention Favours intervention NS Favours intervention
Fiodorova and Farb (2022) [56]	IG: NR/52 CG: NR/43	STRESS: PSS HAPPY: Subjective Happiness Scale MIND: FFMQ	−0.69 (0.002) −0.69 (0.15) −0.03 (0.87)	NR (NR) NR (NR) NR (NR)	CD CD CD	Favours intervention NS NS
Frazier et al. (2023) [57] [β]	IG1: 334-337/NR IG2: 269-272/NR CG: 162-163/NR	STRESS: PSS-10	CWYC: −0.23 (CD) CDC: −0.24 (CD)	−0.01 (CD)	CWYC: d = −0.32 CDC: d = −0.34	Favours intervention Favours intervention
		DEP: DASS	CWYC: −0.15 (CD) CDC: −0.12 (CD)	0.00 (CD)	CWYC: d = −0.20 CDC: d = −0.17	NS NS
		ANX: DASS	CWYC: −0.01 (CD) CDC: −0.05 (CD)	0.01 (CD)	CWYC: d = −0.02 CDC: d = −0.08	NS NS
Fried, Atkins, and Irwin (2019) [58]	IG: 16/11 CG: 16/11	RES: BRS ANX: Mental Health inventory DEP: Mental Health inventory	0.12 (0.71) 7.27 (0.45) 10.00 (0.20)	NR (NR) NR (NR) NR (NR)	CD CD CD	NS NS NS
Gatto et al. (2022) [59]	IG: 42/28 CG: N/A	DEP: DASS-21 ANX: DASS-21 STRESS: DASS-21 POSITIVE AFFECT: Modified differential emotions scale	−0.86 (0.57) −0.27 (0.81) 1.70 (0.31) 0.22 (0.93)	NR (NR) NR (NR) NR (NR) NR (NR)	CD CD CD CD	Sig. improvement Sig. improvement Sig. improvement Sig. improvement

Table 2. *Cont.*

Study	Sample Size Intervention Group IG: Time 1/Time 2 Control Group CG: Time 1/Time 2	Outcome	Mean Difference in IG T1–T2 (*p*-Value)	Mean Difference in CG T1–T2 (*p*-Value)	Effect Size (Cohen's d), (95% Confidence Interval CI)	Findings *
Goldhagen et al. (2015) [60]	IG: 47/30 CG: N/A	ANX: DASS	CD	N/A	CD	NS
		DEP: DASS	CD	N/A	CD	NS
		STRESS: DASS	CD	N/A	CD	NS
		MIND: MAAS	CD	N/A	CD	NS
Grant and Atad (2022) [61]	IG: 88/88 CG: 90/90	RES: Cognitive hardiness scale	2.61 (0.05)	0.22 (0.86)	0.29 (−0.01, 0.58)	NS
		DEP/ANX/STRESS: DASS	−2.52 (0.03)	2.37 (0.06)	−0.60 (−0.90, −0.30)	Favours intervention
Hobbs et al. (2022) [62]	IG: 176/145 CG: 208/191	MENTAL WELL-BEING: SWEMWBS	0.29 (0.38)	−1.09 (0.001)	0.43 (0.22, 0.63)	Favours intervention
		ANX: GAD-7	0.15 (0.78)	1.45 (0.01)	−0.27 (−0.47, −0.07)	Favours intervention
		HAPPY: Subjective happiness scale	0.1 (0.42)	−0.17 (0.15)	0.24 (0.04, 0.44)	Favours intervention
Houston et al. (2016) [63]	IG: 64/58 CG: 65/61	RES: CD-RISC	0.09 (0.33)	0.01 (0.91)	0.16 (−0.18, 0.51)	NS
		ANX: GAD-7	−0.21 (0.12)	0.05 (0.73)	−0.34 (−0.68, 0.01)	NS
		DEP: Center for Epidemiological Studies Depression Scale	−0.08 (0.38)	0.05 (0.61)	−0.25 (−0.60, 0.10)	NS
Kalamatianos et al. (2023) [64]	IG: 75/34 CG: 89/35	RES: CD-RISC	NR (NR)	NR (NR)	CD	NS
		HAPPY: Subjective Happiness Scale	NR (NR)	NR (NR)	CD	Favours intervention
Linton et al. (2021) [65]	IG: 149/144 CG: N/A	MENTAL WELL-BEING: SWEMWBS	CD	N/A	CD	NS
Lohner and Aprea (2021) [β] [66]	IG: 97/97 CG: N/A	RES: CD-RISC	MV: −0.03 (0.58)	N/A	CD	NS
			AV: 0.05 (0.37)		CD	NS
		MENTAL WELL-BEING: Satisfaction with Life Scale	MV: 0.05 (0.74)	N/A	CD	NS
			AV: 0.07 (0.58)		CD	NS
Matinez-Rubio, Navarrete, and Marin (2021) [67]	IG: 15/14 CG: 15/10	STRESS: PSS	−9.72 (0.0004)	−2.80 (0.24)	−1.04 (−1.80, −0.27)	Favours intervention
		MIND: FFMQ-SF	7.71 (0.0034)	0.43 (0.91)	0.87 (0.11, 1.62)	Favours intervention
		DEP: GHQ-12	−10.28 (0.0001)	−0.29 (0.91)	−1.56 (−2.38, −0.73)	Favours intervention
Maurer et al. (2023) [68]	IG: 103/91 CG: N/A	RES: CD-RISC-10	0.66 (0.46)	NR (NR)	CI: −1.65, 0.33	NS
		STRESS: Perceived Stress Reactivity Scale	−2.76 (0.0099)	NR (NR)	CI: 1.64, 3.87	Sig. improvement
		DEP: PHQ-9	−0.32 (0.66)	NR (NR)	CI: −0.57, 1.10	NS

Table 2. *Cont.*

Study	Sample Size Intervention Group IG: Time 1/Time 2 Control Group CG: Time 1/Time 2	Outcome	Mean Difference in IG T1–T2 (*p*-Value)	Mean Difference in CG T1–T2 (*p*-Value)	Effect Size (Cohen's d), (95% Confidence Interval CI)	Findings *
Medlicott et al. (2021) [69]	IG: 86/86 CG: N/A	RES: CD-RISC MENTAL WELL-BEING: SWEMWBS DISTRESS: CORE 10	3.31 (0.002) 2.37 (0.0001) −2.99 (0.002)	N/A N/A N/A	CD CD CD	Sig. improvement Sig. improvement Sig. improvement
Melo-Carrillo, Oudenhove, and Avila (2011) [70]	IG:1958/1950 CG: N/A	DEP: BDI	CD	N/A	CD	Sig. improvement
O'Driscoll et al. (2019) [71]	IG: 81/51 CG: 83/48	STRESS: PSS DISTRESS: GHQ	0.10 (0.93) −1.90 (0.04)	2.00 (0.04) 2.00 (0.02)	−0.33 (−0.63, −0.02) −0.84 (−1.16, −0.52)	Favours intervention Favours intervention
Ozturk (2023) [72]	IG: 32/29 CG: 32/30	STRESS: PSS MENTAL WELL-BEING: Psychological Well-being Scale	−14.93 (CD) 12.21 (CD)	28.17 (CD) −11.8 (CD)	CD CD	Favours intervention Favours intervention
Palamara et al. (2023) [73]	IG: 121/84 CG: 116/50	POSITIVE AFFECT: PERMA	2.58 (0.02)	0.10 (0.93)	0.35 (0.09, 0.61)	Favours intervention
Pan and Zhuang (2023) [74]	IG: 197/126 CG: 347/71	RES: CD-RISC DEP: BDI SRESS: PSS	0.19 (0.002) −3.74 (0.0002) −0.31 (<0.0001)	−0.07 (0.31) −0.33 (0.77) 0 (1.00)	0.48 (0.30, 0.66) −0.38 (−0.55, −0.20) −0.79 (−0.98, −0.61)	Favours intervention Favours intervention Favours intervention
Rajiah and Saravanan (2014) [75]	IG: 20/20 CG:20/20	TEST ANX: WTAS DISTRESS: Perceived Distress Scale	−16.80 (<0.0001) −11.10 (<0.0001)	1.50 (0.25) 1.00 (0.48)	−4.46 (−5.31, −3.28) −3.06 (−4.00, −2.14)	Favours intervention Favours intervention
Recabarren et al. (2019) [76]	IG: 31/31 CG: 32/32	DEP: BDI-II ANX: STAI QOL: WHOQOL-BRIEF	−1.33 (0.23) −0.86 (0.70) 0.47 (0.40)	0.47 (0.73) 1.94 (0.48) 0.06 (0.93)	−0.37 (−0.87, 0.13) −0.34 (−0.83, 0.16) 0.18 (−0.32, 0.67)	NS NS NS
Roulston et al. (2017) [77]	IG: 15/13 CG: 15/12	RES: Shortened resilience scale MENTAL WELL-BEING: WEMWBS STRESS: PSS	7.50 (0.085) 10.9 (0.001) −8.00 (0.001)	−5.00 (0.29) −6.80 (0.060) −1.70 (0.48)	1.16 (0.38, 1.94) 2.02 (1.13, 2.91) −1.01 (−1.77, −0.24)	Favours intervention Favours intervention Favours intervention
Saravanan and Kingston (2014) [78]	IG: 33/32 CG: 34/33	TEST ANX: WTAS	−18.37 (<0.0001)	0.42 (0.70)	−4.42 (−5.64, −3.28)	Favours intervention

Study	Sample Size Intervention Group IG: Time 1/Time 2 Control Group CG: Time 1/Time 2	Outcome	Mean Difference in IG T1–T2 (*p*-Value)	Mean Difference in CG T1–T2 (*p*-Value)	Effect Size (Cohen's d), (95% Confidence Interval CI)	Findings *
Savell et al. (2023) [79]	IG: CD/20 CG: CD/46	DEP: CES-D STRESS: PSS	CD CD	CD CD	CD CD	NS NS
Schlechter et al. (2023) [80]	IG: 105/64 CG: 114/88	MENTAL WELL-BEING: PERMA Profiler	(0.92)	−0.08 (0.73)	0.07 (−0.20, 0.33)	NS
		MENTAL WELL-BEING: Satisfaction with life scale	1.28 (0.13)	0.87 (0.38)	0.06 (−0.20, 0.33)	NS
Seppala et al. (2020) [81] [β]	IG: 135/84 CG: 54/47	ANX: MASQ	Sky: −0.3 (0.001) MBSR: −0.31 (<0.0001) EI: −0.29 (0.0004)	−0.03 (0.78)	−0.42 (−0.73, −0.10) −0.50 (−0.82, −0.18) −0.43 (−0.74, −0.11)	Favours intervention Favours intervention Favours intervention
		DEP: MASQ	Sky: −0.54 (<0.0001) MBSR: −0.23 (0.036) EI: −0.17 (0.087)	0.12 (0.42)	−0.89 (−1.22, −0.57) −0.45 (−0.77, −0.13) −0.39 (−0.71, −0.075)	Favours intervention Favours intervention Favours intervention
		STRESS: PSS	Sky: −0.59 (<0.0001) MBSR: −0.33 (0.0001) EI: −0.38 (<0.0001)	0.08 (0.50)	−1.03 (−1.36, −0.69) −0.72 (−1.05, −0.40) −0.76 (−1.09, −0.44)	Favours intervention Favours intervention Favours intervention
		LIFE SATISFACTION: SWLS	Sky: 0.90 (<0.0001) MBSR: 0.61 (0.003) EI: 0.79 (<0.0001)	0.22 (0.30)	0.57 (0.25, 0.89) 0.26 (−0.052, 0.58) 0.43 (0.12, 0.75)	Favours intervention NS Favours intervention
Shatkin et al. (2016) [82]	IG: 36/21 CG: 62/NR	COPING: Brief COPE STRESS: PSS	4.08 (0.19) −4.44 (0.06)	−0.48 (0.84) 0.40 (0.83)	0.36 (−0.05, 0.77) −0.49 (−0.91, −0.07)	NS Favours intervention
Shillington et al. (2023) [83]	IG: 32/32 CG: N/A	RES: Brief resilience scale	0.15 (0.38)	NR (NR)	CD	NS
		ANX: Mental health inventory	5.93 (0.20)	NR (NR)	CD	Favours intervention
		DEP: Mental health inventory	6.51 (0.10)	NR (NR)	CD	NS
Singh, and Bandyopadhyay (2021) (Study 3) [84]	IG: 125/112 CG: N/A	MENTAL WELL-BEING: WEMWBS	4.34 (<0.0001)	N/A	0.49 (3.13, 5.55)	Sig. improvement
		RES: CD-RISC	0.78 (0.38)	N/A	0.10 (−0.53, 2.09)	NS
		DEP/ANX: DASS−21	−2.54 (0.11)	N/A	0.17 (−4.30, −0.77)	NS
Sousa and Padovani (2021) [85] [β]	IG: 25/25 CG: 4/4	LIFE SATISFACTION: LSS	REBT: 2.34 (0.36) PE: −1.38 (0.65)	2 (0.35)	REBT: 0.05 (−1.00, 1.11) PE: −0.59 (−1.66, 0.47)	NS NS
		POSITIVE AFFECT: PANAS	REBT: 2.5 (0.33) PE: 1.6 (0.60)	1.25 (0.78)	REBT: 0.17 (−0.89, 1.23) PE: 0.07 (−0.99, 1.12)	NS NS
		NEGATIVE AFFECT: PANAS	REBT: 2.50 (0.33) PE: −0.86 (0.70)	1.25 (0.78)	REBT: 0.14 (−0.91, 1.20) PE: −0.26 (−1.32, 0.79)	NS NS

Table 2. *Cont.*

Study	Sample Size Intervention Group IG: Time 1/Time 2 Control Group CG: Time 1/Time 2	Outcome	Mean Difference in IG T1–T2 (*p*-Value)	Mean Difference in CG T1–T2 (*p*-Value)	Effect Size (Cohen's d), (95% Confidence Interval CI)	Findings *
Szuster, Onoye, and Matsu (2023) [86]	IG: 43/31 CG: 147/101	DEP: PHQ-4	−0.572 (CD)	NR (NR)	CD	NS
		ANX: PHQ-4	−0.5 (CD)	NR (NR)	CD	Favours intervention
Vidic (2021) [87]	IG: 103/NR CG: 116/NR	STRESS: PSS	−2.46 (CD)	0.17 (CD)	CD	Favours intervention
		RES: Brief resilience scale	0.23 (CD)	0.07 (CD)	CD	Favours control
		MIND: MAAS	0.21 (CD)	0.04 (CD)	CD	NS
Wang and Farb (2023) [88]	IG1 (Stress mindset): 77/58 IG2 (mindfulness meditation): 77/56 IG3 (Mindfulness with choice): 79/63 CG: N/A	STRESS: PSS	NR (all groups)	NR	CD	Sig. improvement (IG1) Sig. improvement (IG1) NS
		POSITIVE MENTAL HEALTH: PANAS	NR (all groups)	NR	CD	
		ANX: PHQ-4	NR (all groups)	NR	CD	
Yin et al. (2023) [89]	IG: 30/30 CG:30/27	RES: CD-RISC	17.27 (<0.0001)	12.04 (0.0001)	0.49 (−0.02, 1.00)	NS
		ANX: STAI	−7.96 (0.0002)	−1.04 (0.57)	−1.22 (−1.77, −0.67)	Favours intervention
		MIND: MAAS	4.26 (0.17)	1.30 (0.67)	0.27 (−0.23, 0.78)	NS
Yook et al. (2024) [90]	IG: 19/19 CG: 19/19	STRESS: PSS	−9.58 (< 0.0001)	0.79 (0.70)	−1.66 (−2.40, −0.92)	Favours intervention
		ANX: STAI	−26.21 (< 0.0001)	−1.74 (0.76)	−1.36 (−2.07, −0.65)	Favours intervention
Yotsidi et al. (2023) [91]	IG: 126/124 CG: N/A	RES: BRS	0.02 (0.84)	NR (NR)	CD	NS
		DEP: DASS-9	−0.24 (0.40)	NR (NR)	CD	Favours intervention
		STRESS: DASS-9	0.34 (0.19)	NR (NR)	CD	NS

DEP = Depression, ANX = Anxiety, RES = Resilience, MIND = Mindfulness CG = Control Group; IG = Intervention Group; N/A = Not Applicable; NR = Not Reported; NS = Not Significant; Sig. = Significant; * = *p* < 0.05. CD = Cannot Determine. DASS = Depression Anxiety and Stress Scale, MAAS = Mindful Attention Awareness Scale, SAS = Stressor Appraisals Scale, GAD-7 = Generalized Anxiety Disorder Assessment, Q-LES-Q-SF = The Quality-of-Life Enjoyment and Satisfaction Questionnaire Short Form, PHQ-9 = Patient Health Questionnaire, PSS = Perceived Stress Scale, BDI = Beck Depression Inventory, BDI-II = Second Version of Beck Depression Inventory, STAI = State Trait Anxiety Inventory, FFMQ = Five-Facet Mindfulness Questionnaire, FFMQ-SF = Five-Facet Mindfulness Questionnaire Short Form, CORE 10 = Clinical outcomes in Routine Evaluation 10, SES = Self Efficacy Scale, CD-RISC = Connor Davidson Resilience Scale, HADS = Hospital Anxiety and Depression Scale, LSS = Life Satisfaction Scale, PANAS = Positive and Negative Affect Schedule, BAI = Beck Anxiety Inventory, BRS = Brief Resilience Scale, SWEMWBS = Short Warwick Edinburgh Mental Well-being Scale, CES-D = Center for Epidemiological Studies Depression Scale, WEMWBS = Warwick Edinburgh Mental Well-being Scale, WHOQOL-BRIEF = World Health Organization Quality of Life Scale, GHQ-12 = General Health Questionnaire, WTAS = Westside Test Anxiety Scale, MASQ = Mood and Anxiety Symptoms Questionnaire, SWLS = Satisfaction with Life Scale. Final column: Sig. improvement used for designs without a control. NB. Information not reported within the table was not reported in the reviewed studies. [β] : CWYC = Control What You Can intervention groups (IG1) encouraging participants to focus on things they could control. CDC = Centers for Disease Control and Prevention recommended stress management (IG2), MV = Mastery Version AV = Attention Version. Sky = SKY Campus Happiness, MBSR = Mindfulness-based stress reduction, EI = Foundations of emotional intelligence. REBT = Rational Emotive Behaviour Therapy PE = Psychoeducation.

4. Results of Individual Studies

The effect estimates of the outcomes in each individual study are provided in Table 2 and are summarised by intervention type below.

4.1. Coaching Interventions

There were four coaching studies [58,61,73,83]. Three studies measured the effects on depression, anxiety, and resilience [58,61,83]. The three studies were consistent in reporting no effects on resilience. Two of the three studies also reported no effect on depression [58,83], whilst one reported a positive effect of the intervention on depression [61] (33% (95% CI 0.8–90.6%), $p = 1.00$). For anxiety, two of the three studies measuring this reported a positive effect of the coaching intervention on anxiety [61,83] (67% (95% CI 9.4–99.2%), $p = 1.00$). The final study measured only positive affect but reported that the intervention had a positive impact on this [74], (100% (95% CI 2.50–100%), $p = 1.00$). Collectively, the results of these studies suggest no impact on resilience or depression but possibly some beneficial effects on anxiety.

4.2. Psychoeducation Interventions

There were eleven psychoeducation studies [46,48,54,62,64,65,70,79,84,85,91]. Of these, six measured depression [48,54,70,79,84,91], with three finding a significant improvement after training [48,70,92] (50% (95% CI 11.8–88.2%), $p = 1.00$), and three reporting no effect [54,79,84]. Anxiety was measured in three studies [48,62,84], with one reporting a beneficial effect of training on anxiety [62] (33% (95% CI 0.84–90.6%), $p = 1.00$), and two reporting no effect [48,84]. Stress was also measured in several studies [46,54,79,91] and all studies reported no effect of the intervention on this construct. Additional measures of mental health included a measure of negative affect in one study, which was not impacted by the intervention [85]. In summary, these studies show largely inconsistent results, with a few studies indicating positive effects of psychoeducational interventions on mental health measures.

These psychoeducation interventions also took several measures of well-being. No effects were reported for coping [46], quality of life [48], life satisfaction [85], or positive affect [85]. However, two studies reported a benefit for well-being [62,84], (67% (95% CI 9.43–99.2%), $p = 1.00$), whilst another reported no effect [65]. Two out of two studies indicated benefits when happiness was measured [62,64], (100% (95% CI 15.8–100%), $p = 0.50$). Therefore, in line with the results for mental health measures, results are inconsistent with little evidence of an impact on well-being across the studies. Finally, only two studies examined resilience and found no effect of their intervention [64,84].

4.3. Mindfulness Interventions

There were eighteen studies in the mindfulness category [47,49,53,55–57,60,67,69, 71,72,77,81,86–90]. Depression was assessed in seven studies with four reporting no effect [53,57,60,86], and three reporting benefits for depression [55,67,81], (43% (95% CI 9.9–81.6%), $p = 1.00$). Anxiety was measured in nine studies with three reporting no effects [57,60,88] and six reporting benefits to anxiety after the intervention [53,55,81,86,89,90], (67% (95% CI 29.9–92.5%), $p = 0.51$), although in one case, this was only for the longer of the two interventions tested [53]. Fifteen studies examined stress with four reporting no effects on stress [47,49,55,60], whilst the majority ($n = 11$) reported beneficial effects of the mindfulness intervention on stress measures [53,56,57,67,71,72,77,81,87,88,90] (73% (95% CI 44.9–92.2%), $p = 0.12$). Finally, distress was also measured in two studies and was found to be improved by the intervention [69,71] (100% (95% CI 15.8–100%), $p = 0.50$). Collectively, these studies indicate that mindfulness intervention reduces stress and anxiety in students and may also have effects on depression and distress, although there is less research in these areas.

Well-being measures were less commonly collected in this type of intervention. Three studies found that the intervention had a positive effect on well-being [69,72,77] (100% (95%

CI 29.2–100%), *p* = 0.25), one study reported no effect on happiness [56], another noted a positive effect on a positive mental health measure [88] (100% (95% CI 2.5–100%), *p* = 1.00), and a final study showed that life satisfaction was helped by two of the three interventions tested, most notably the mindfulness-based stress reduction programme [81] (100% (95% CI 2.5–100%), *p* = 1.00). Despite the limited number of studies available, most reported a positive effect on well-being.

As might be expected, eight studies examined the effect of the mindfulness intervention on a measure of mindfulness. Most of these reported no effects of the intervention on mindfulness [47,49,55,56,60,87,89], although one did report positive effects [67] (12.5% (95% CI 0.32–52.6%), *p* = 0.07). Similarly, five studies looked at whether resilience had improved with the intervention and two reported no effects [53,89], whilst two reported that the intervention improved resilience [69,77] (40% (95% CI 5.27–85.3%), *p* = 1.00), and one reported that the control condition was more effective [87] (20% (95% CI 0.50–71.6%), *p* = 0.37).

4.4. Skills-Based Training Interventions

There were fourteen studies in the skills-based training category [45,50–52,59,63,66, 68,74–76,78,80,83]. Ten studies assessed depression and five reported no effect of the intervention [51,63,68,76,83], whilst four reported some improvements [50,52,59,74] (40% (95% CI 12.1–73.8%), *p* = 0.75), and one noted improvements only for female participants [45] (10% (95% CI 0.25–44.5%), *p* = 0.021). Anxiety was measured in eight studies, of which, five reported no effects [50–52,63,76] and three found the intervention to be beneficial [45,59,83] (37% (95% CI 8.52–75.5%), *p* = 0.73). A further two studies, focused on test anxiety found improvements [75,78] (100% (95% CI 15.8–100%), *p* = 0.50). Stress was assessed in three studies using skills-based training interventions and all reported that the training was beneficial for stress levels [52,59,68] (100% (95% CI 29.2–100%), *p* = 0.25). Two studies also examined levels of distress and found this to be improved with the intervention [74,75] (100% (95% CI 15.8–100%), *p* = 0.50). Collectively, the results indicate very inconsistent findings for measures of depression and anxiety whilst testing anxiety and stress, although the focus of fewer studies appears to be positively impacted by these interventions.

Measures relating to well-being were less frequently assessed in these studies. Well-being was measured in two studies, with both reporting no effect [66,80]. Self-efficacy [50] (100% (95% CI 2.5–100%), *p* = 1.00) and positive affect [59] (100% (95% CI 2.5–00%), *p* = 1.00) were found to be improved after the intervention, whilst quality of life was unaffected [76]. The few studies examining well-being and the range of measures mean that it is premature to make any conclusions on the impact of skills-based training interventions on well-being.

Resilience was measured in eight studies. Seven reported no effects [51,52,63,66, 68,76,83] and only one reported a beneficial effect of the intervention [74] (12.5% (95% CI 0.32–52.6%), *p* = 0.07). Mindfulness was measured in one study but found not to be affected [50]. These studies indicate that the skills-based training interventions are not impacting resilience as measured in these studies.

4.5. Mode of Delivery

Due to the relatively small number of studies overall, it was not possible to examine whether the likelihood of a positive outcome was associated with a specific mode of delivery within each intervention category. However, across intervention types, we examined whether there was an association between a positive effect being found and mode of delivery, considering only face-to-face or online delivery as only two studies took a hybrid approach. There was no significant association between the likelihood of a positive effect and delivery mode for measures of depression (χ^2 (1) = 0.22, *p* = 0.485), anxiety (χ^2 (1) = 0.20 *p* = 0.500), stress (χ^2 (1) = 0.01, *p* = 0.633), well-being (χ^2 (1) = 3.73, *p* = 0.143), resilience (χ^2 (1) = 0.27, *p* = 0.554), or mindfulness (χ^2 (1) = 0.00, *p* = 0.774).

5. Discussion

The aim of this review was to answer the research question "What is the effect of resilience interventions on mental health and well-being in university students?". We identified 47 publications for inclusion, all of which had assessed at least one measure of mental health or well-being. As expected in an educational context [36], whilst the single biggest design category was the RCT, NRCT and pre-post designs made up a significant proportion of the studies included. Most also focused on undergraduate students without recruiting specific disciplines of study (Table 1). However, the characteristics of participants were not generally described in detail with studies not including details pertaining to ethnicity, for example. We categorised the interventions into coaching, psychoeducation, mindfulness, and skills-based training, with the latter two being the most prominent. Mental health measures varied but the most frequently assessed constructs were depression, anxiety, and stress, in line with the only previous systematic review in this area, which identified measures of depression and stress [18]. Well-being was also measured with a range of scales, including those focused on mental well-being, self-efficacy, happiness, and measures of quality of life or life satisfaction (Table 2). A total of 38% of the studies also measured resilience and 23% measured mindfulness.

Analysis of the results of the different types of interventions revealed that coaching interventions had no clear effects on resilience or depression but may be beneficial to anxiety. Most of these studies were rated as fair in terms of quality, although the small number of studies overall limits any conclusions that can be drawn. A previous systematic review found beneficial effects on depression and resilience overall but this included only one coaching study [18]. For psychoeducation intervention, a more diverse selection of outcomes was recorded but results were inconsistent for measures pertaining to mental health and well-being with little evidence of impact. This inconsistency was found despite most studies using this approach being rated as fair or good in terms of quality. Only two studies examined resilience in response to these interventions and found no impact. Most studies using mindfulness interventions were also deemed fair or good in the quality assessment and these interventions demonstrated more consistent results for stress and anxiety, both of which appeared to benefit from the intervention. The latter is in line with a previous review, which reported the beneficial effects on stress but did not examine anxiety [18]. There were also some indications about the beneficial effects on depression and distress but there were too few studies to make firm conclusions. Well-being measures were more limited for mindfulness interventions, but they did reveal positive effects. Despite the positive impacts of these interventions on anxiety and stress, measures of mindfulness did not improve post-intervention, and there was no consistent impact on resilience. This could indicate that whilst the interventions were beneficial, the mechanism may not be as intended. Skills-based training interventions resulted in inconsistent findings for depression and anxiety but did appear helpful for test anxiety and stress. There were fewer studies on well-being, and they reported mixed results, making it inappropriate to draw any firm conclusions. As with mindfulness interventions, although some improvements were seen in mental health measures, these were not generally accompanied by improvements in resilience or mindfulness, which could suggest this type of training is tapping into another important construct. Furthermore, even where beneficial effects were found, it is noteworthy that almost half of the studies in this category were recorded as having poor quality ratings, with the remainder rated as fair, meaning no good quality studies were included. The lack of impact of resilience-based interventions on resilience itself is in line with previous findings that resilience interventions had limited effects on the resilience of university students [92]. Additionally, even where an effect was found, it was deemed to be of a small effect size [18]. This is arguably concerning given resilience is a key graduate attribute [4] and, thus, its development is important for HE outcomes in general as well as mental health and well-being.

It should be acknowledged that there was a huge variety in the types of interventions employed in the reviewed studies (Table 1). Apart from the four categories of intervention,

they also differed in terms of the number of sessions, facilitator type, and number of students involved. Because of the small number of studies overall and the diversity of approaches, it was not possible to assess statistically whether characteristics such as the facilitator type impacted the likelihood of a study reporting a positive effect. However, for the mode of delivery, there appeared to be no impact on whether there was a positive effect recorded for the most common outcomes, suggesting that any mode could be effective.

Despite this review aligning with (and extending) previous research, there are several limitations to the study. Firstly, due to the limited number of studies and missing data, we were not able to conduct a meta-analysis, although, in line with SWiM guidelines, we utilised vote-counting [43]. Secondly, we focused only on quantitative studies, which may have resulted in important findings being missed in qualitative research. Similarly, we utilised only peer-reviewed journal articles. It is possible that grey literature would have provided different sources for inclusion and future reviews should consider this. Finally, we focused on students attending campus-based degree programs, even if the intervention was delivered online. This was done because the majority of degree programs offered are campus-based rather than distance learning, and distance learning appears to impact resilience differently [40]. However, future research should consider this cohort as well.

6. Conclusions

Although there are limitations to the current review, this is, to our knowledge, the first systematic review of the effect of resilience interventions on mental health and well-being, which includes a range of study designs and centres on higher education. Overall, this review suggests that there may be some benefits to such interventions for stress and anxiety but they are not necessarily accompanied by changes in measures of resilience or mindfulness, which may indicate different underlying mechanisms. Furthermore, this review demonstrates that more high-quality studies are required, as has been previously noted in reviews in this area [32–34,108]. This is particularly noticeable for skills-based interventions. A greater number of studies would also allow for a comparison of intervention features, which was not possible here beyond the mode of delivery.

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References

1. Duffy, A. University Student Mental Health: An Important Window of Opportunity for Prevention and Early Intervention. *Can. J. Psychiatry* **2023**, *68*, 495–498. [CrossRef] [PubMed]
2. Bowden, J.; Hart, G.; King, B.; Trigwell, K.; Watts, O. *Generic Capabilities of ATN University Graduates*; Australian Government Department of Education, Training and Youth Affairs: Canberra, Australia, 2000.
3. Wong, B.; Chiu, Y.-L.T.; Copsey-Blake, M.; Nikolopoulou, M. A mapping of graduate attributes: What can we expect from UK university students? *High. Educ. Res. Dev.* **2022**, *41*, 1340–1355. [CrossRef]
4. Scott, F.J.; Willison, D. Students' reflections on an employability skills provision. *J. Furth. High. Educ.* **2021**, *45*, 1118–1133. [CrossRef]
5. Sampson, K.; Priestley, M.; Dodd, A.L.; Broglia, E.; Wykes, T.; Robotham, D.; Tyrrell, K.; Ortega Vega, M.; Byrom, N.C. Key questions: Research priorities for student mental health. *BJPsych Open* **2022**, *8*, e90. [CrossRef] [PubMed]

6. Asif, S.; Mudassar, A.; Shahzad, T.Z.; Raouf, M.; Pervaiz, T. Frequency of depression, anxiety and stress among university students. *Pak. J. Med. Sci.* **2020**, *36*, 971. [CrossRef] [PubMed]

7. Frazier, P.; Gabriel, A.; Merians, A.; Lust, K. Understanding stress as an impediment to academic performance. *J. Am. Coll. Health* **2019**, *67*, 562–570. [CrossRef] [PubMed]

8. Wunsch, K.; Fiedler, J.; Bachert, P.; Woll, A. The Tridirectional Relationship among Physical Activity, Stress, and Academic Performance in University Students: A Systematic Review and Meta-Analysis. *Int. J. Environ. Res. Public Health* **2021**, *18*, 739. [CrossRef] [PubMed]

9. Grant, K.E.; Compas, B.E.; Thurm, A.E.; McMahon, S.D.; Gipson, P.Y. Stressors and child and adolescent psychopathology: Measurement issues and prospective effects. *J. Clin. Child Adolesc. Psychol.* **2004**, *33*, 412–425. [CrossRef] [PubMed]

10. Andersen, R.; Holm, A.; Côté, J.E. The student mental health crisis: Assessing psychiatric and developmental explanatory models. *J. Adolesc.* **2021**, *86*, 101–114. [CrossRef]

11. Schwartz, V.; Kay, J. The crisis in college and university mental health. *Psychiatr. Times* **2009**, *26*, 32.

12. Ebert, D.D.; Mortier, P.; Kaehlke, F.; Bruffaerts, R.; Baumeister, H.; Auerbach, R.P.; Alonso, J.; Vilagut, G.; Martínez, K.U.; Lochner, C. Barriers of mental health treatment utilization among first—Year college students: First cross—National results from the WHO World Mental Health International College Student Initiative. *Int. J. Methods Psychiatr. Res.* **2019**, *28*, e1782. [CrossRef] [PubMed]

13. Auerbach, R.P.; Mortier, P.; Bruffaerts, R.; Alonso, J.; Benjet, C.; Cuijpers, P.; Demyttenaere, K.; Ebert, D.D.; Green, J.G.; Hasking, P.; et al. WHO World Mental Health Surveys International College Student Project: Prevalence and distribution of mental disorders. *J. Abnorm. Psychol.* **2018**, *127*, 623–638. [CrossRef]

14. Ryan, M.L.; Shochet, I.M.; Stallman, H.M. Universal online interventions might engage psychologically distressed university students who are unlikely to seek formal help. *Adv. Ment. Health* **2010**, *9*, 73–83. [CrossRef]

15. Pointon-Haas, J.; Waqar, L.; Upsher, R.; Foster, J.; Byrom, N.; Oates, J. A systematic review of peer support interventions for student mental health and well-being in higher education. *BJPsych Open* **2024**, *10*, e12. [CrossRef] [PubMed]

16. Barnett, P.; Arundell, L.L.; Saunders, R.; Matthews, H.; Pilling, S. The efficacy of psychological interventions for the prevention and treatment of mental health disorders in university students: A systematic review and meta-analysis. *J. Affect. Disord.* **2021**, *280*, 381–406. [CrossRef] [PubMed]

17. Alborzkouh, P.; Nabati, M.; Zainali, M.; Abed, Y.; Shahgholy Ghahfarokhi, F. A review of the effectiveness of stress management skills training on academic vitality and psychological well-being of college students. *J. Med. Life* **2015**, *8*, 39–44.

18. Ang, W.H.D.; Lau, S.T.; Cheng, L.J.; Chew, H.S.J.; Tan, J.H.; Shorey, S.; Lau, Y. Effectiveness of resilience interventions for higher education students: A meta-analysis and metaregression. *J. Educ. Psychol.* **2022**, *114*, 1670. [CrossRef]

19. Hughes, G.; Spanner, L. *The University Mental Health Charter*; Student Minds: Leeds, UK, 2019.

20. American Psychological Association. Resilience. In *Dictionary of Psychology*; American Psychological Association: Washington, DC, USA, 2024.

21. Reich, J.W.; Zautra, A.J.; Hall, J.S. *Handbook of Adult Resilience*; Guilford Press: New York, NY, USA, 2010.

22. Van Breda, A.D. A critical review of resilience theory and its relevance for social work. *Soc. Work* **2018**, *54*, 1–18. [CrossRef]

23. Aburn, G.; Gott, M.; Hoare, K. What is resilience? An integrative review of the empirical literature. *J. Adv. Nurs.* **2016**, *72*, 980–1000. [CrossRef]

24. Alvord, M.K.; Rich, B.A.; Berghorst, L.H. Resilience interventions. In *APA Handbook of Clinical Psychology: Psychopathology and Health, Vol. 4*; APA Handbooks in Psychology®; American Psychological Association: Washington, DC, USA, 2016; pp. 505–519.

25. Earvolino-Ramirez, M. Resilience: A concept analysis. *Nurs. Forum* **2007**, *42*, 73–82. [CrossRef]

26. Stephens, T.M. Nursing student resilience: A concept clarification. *Nurs. Forum* **2013**, *48*, 125–133. [CrossRef] [PubMed]

27. Beltman, S.; Mansfield, C.; Price, A. Thriving not just surviving: A review of research on teacher resilience. *Educ. Res. Rev.* **2011**, *6*, 185–207. [CrossRef]

28. Howe, A.; Smajdor, A.; Stöckl, A. Towards an understanding of resilience and its relevance to medical training. *Med. Educ.* **2012**, *46*, 349–356. [CrossRef] [PubMed]

29. McAllister, M.; McKinnon, J. The importance of teaching and learning resilience in the health disciplines: A critical review of the literature. *Nurse Educ. Today* **2009**, *29*, 371–379. [CrossRef] [PubMed]

30. Reyes, A.T.; Andrusyszyn, M.-A.; Iwasiw, C.; Forchuk, C.; Babenko-Mould, Y. Resilience in nursing education: An integrative review. *J. Nurs. Educ.* **2015**, *54*, 438–444. [CrossRef] [PubMed]

31. Pidgeon, A.M.; Coast, G.; Coast, G.; Coast, G.; Coast, G. Examining characteristics of resilience among university students: An international study. *Open J. Soc. Sci.* **2014**, *2*, 14. [CrossRef]

32. Milne, T.; Creedy, D.K.; West, R. Integrated systematic review on educational strategies that promote academic success and resilience in undergraduate indigenous students. *Nurse Educ. Today* **2016**, *36*, 387–394. [CrossRef] [PubMed]

33. Brewer, M.L.; Van Kessel, G.; Sanderson, B.; Naumann, F.; Lane, M.; Reubenson, A.; Carter, A. Resilience in higher education students: A scoping review. *High. Educ. Res. Dev.* **2019**, *38*, 1105–1120. [CrossRef]

34. Sanderson, B.; Brewer, M. What do we know about student resilience in health professional education? A scoping review of the literature. *Nurse Educ. Today* **2017**, *58*, 65–71. [CrossRef] [PubMed]

35. Upsher, R.; Nobili, A.; Hughes, G.; Byrom, N. A systematic review of interventions embedded in curriculum to improve university student wellbeing. *Educ. Res. Rev.* **2022**, *37*, 100464. [CrossRef]

36. Dawson, A.; Yeomans, E.; Brown, E.R. Methodological challenges in education RCTs: Reflections from England's Education Endowment Foundation. *Educ. Res.* **2018**, *60*, 292–310. [CrossRef]

37. Sullivan, G.M. Getting off the "gold standard": Randomized controlled trials and education research. *J. Grad. Med. Educ.* **2011**, *3*, 285–289. [CrossRef]

38. Page, M.J.; McKenzie, J.E.; Bossuyt, P.M.; Boutron, I.; Hoffmann, T.C.; Mulrow, C.D.; Shamseer, L.; Tetzlaff, J.M.; Akl, E.A.; Brennan, S.E.; et al. The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *Br. Med. J.* **2021**, *372*, n71. [CrossRef]

39. Abulfaraj, G.; Zavos, H.; Dommett, E.; Upsher, R. Protocol: A Systematic Review of the Effect of Resilience on Mental Health and Wellbeing of Students in Post-Compulsory Education; 2022. Available online: https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=315583 (accessed on 30 March 2024).

40. Simons, J.; Beaumont, K.; Holland, L. What factors promote student resilience on a level 1 distance learning module? *Open Learn.* **2018**, *33*, 4–17. [CrossRef]

41. Ouzzani, M.; Hammady, H.; Fedorowicz, Z.; Elmagarmid, A. Rayyan—A web and mobile app for systematic reviews. *Syst. Rev.* **2016**, *5*, 210. [CrossRef]

42. NHLBI. Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies. Available online: https://www.nhlbi.nih.gov/health-topics/study-quality-assessment-tools (accessed on 20 April 2023).

43. Campbell, M.; McKenzie, J.E.; Sowden, A.; Katikireddi, S.V.; Brennan, S.E.; Ellis, S.; Hartmann-Boyce, J.; Ryan, R.; Shepperd, S.; Thomas, J.; et al. Synthesis without meta-analysis (SWiM) in systematic reviews: Reporting guideline. *Br. Med. J.* **2020**, *368*, l6890. [CrossRef]

44. McKenzie, J.E.; Brennan, S.E. Synthesizing and presenting findings using other methods. In *Cochrane Handbook for Systematic Reviews of Interventions*; Wiley: Hoboken, NJ, USA, 2019; pp. 321–347.

45. Ando, M. An intervention program focused on self-understanding and interpersonal interactions to prevent psychosocial distress among Japanese university students. *J. Adolesc.* **2011**, *34*, 929–940. [CrossRef]

46. Bastien, L.; Boke, B.; Mettler, J.; Zito, S.; Di Genova, L.; Romano, V.; Lewis, S.; Whitley, R.; Iyer, S.; Heath, N. Peer-Presented Versus Mental Health Service Provider-Presented Mental Health Outreach Programs for University Students: Randomized Controlled Trial. *JMIR Ment. Health* **2022**, *9*, e34168. [CrossRef]

47. Baumgartner, P.; Jennifer, N.; Schneider, P.; Tamera, R. A randomized controlled trial of mindfulness-based stress reduction on academic resilience and performance in college students. *J. Am. Coll. Health* **2023**, *71*, 1916–1925. [CrossRef] [PubMed]

48. Bernstein, E.E.; LeBlanc, N.J.; Bentley, K.H.; Barreira, P.J.; McNally, R.J. A single-session workshop to enhance emotional awareness and emotion regulation for graduate students: A pilot study. *Cogn. Behav. Pract.* **2021**, *28*, 393–409. [CrossRef]

49. Bultas, M.W.; Boyd, E.; McGroarty, C. Evaluation of a brief mindfulness intervention on examination anxiety and stress. *J. Nurs. Educ.* **2021**, *60*, 625–628. [CrossRef]

50. Burke, A.S.; Shapero, B.G.; Pelletier-Baldelli, A.; Deng, W.Y.; Leathem, L.; Holt, D.J. Rationale, methods, feasibility, and preliminary outcomes of a transdiagnostic prevention program for at-risk college students. *Front. Psychiatry* **2020**, *10*, 473920. [CrossRef]

51. Chugani, C.D.; Mazza, J.J.; Fuhrman, B.J.; Lavage, D.R.; Murphy, C.; Talis, J.; Miller, E.; Coulter, R.W. A multisite, quasiexperimental trial of a college course to support student mental health during the COVID-19 pandemic. *J. Clin. Psychol.* **2023**, *79*, 2781–2797. [CrossRef]

52. Csirmaz, L.; Vikor, F.; Szekely, A.; Kasos, K. A Home-based Approach to Reduce Test Anxiety Using a Combination of Methods: A Randomized Controlled Trial. *J. Ration.-Emotive Cogn.-Behav. Ther.* **2023**, 1–17. [CrossRef]

53. Demarzo, M.; Montero-Marin, J.; Puebla-Guedea, M.; Navarro-Gil, M.; Herrera-Mercadal, P.; Moreno-González, S.; Calvo-Carrión, S.; Bafaluy-Franch, L.; Garcia-Campayo, J. Efficacy of 8-and 4-session mindfulness-based interventions in a non-clinical population: A controlled study. *Front. Psychol.* **2017**, *8*, 1343. [CrossRef] [PubMed]

54. Dietel, F.A.; Rupprecht, R.; Seriyo, A.M.; Post, M.; Sudhoff, B.; Reichart, J.; Berking, M.; Buhlmann, U. Efficacy of a smartphone-based Cognitive Bias Modification program for emotion regulation: A randomized-controlled crossover trial. *Internet Interv.* **2024**, *35*, 100719. [CrossRef] [PubMed]

55. El Morr, C.; Ritvo, P.; Ahmad, F.; Moineddin, R.; Team, M. Effectiveness of an 8-week web-based mindfulness virtual community intervention for university students on symptoms of stress, anxiety, and depression: Randomized controlled trial. *JMIR Ment. Health* **2020**, *7*, e18595. [CrossRef] [PubMed]

56. Fiodorova, A.; Farb, N. Brief daily self-care reflection for undergraduate well-being: A randomized control trial of an online intervention. *Anxiety Stress Coping* **2022**, *35*, 158–170. [CrossRef]

57. Frazier, P.; Liu, Y.; Selvey, A.; Meredith, L.; Nguyen-Feng, V.N. Randomized controlled trials assessing efficacy of brief web-based stress management interventions for college students during the COVID pandemic. *J. Couns. Psychol.* **2023**, *70*, 314. [CrossRef] [PubMed]

58. Fried, R.R.; Atkins, M.-A.P.; Irwin, J.D. Breaking grad: Building resilience among a sample of graduate students struggling with stress and anxiety via a peer coaching model–An 8-month pilot study. *Int. J. Evid. Based Coach. Mentor.* **2019**, *17*, 3–19. [CrossRef]

59. Gatto, A.J.; Elliott, T.J.; Stamper, M.J.; Porter, N.D.; Brown, A.M.; Harden, S.M.; Cooper, L.D.; Dunsmore, J.C. Development and feasibility of an online brief emotion regulation training (BERT) program for emerging adults. *Front. Public Health* **2022**, *10*, 858370. [CrossRef] [PubMed]

60. Goldhagen, B.E.; Kingsolver, K.; Stinnett, S.S.; Rosdahl, J.A. Stress and burnout in residents: Impact of mindfulness-based resilience training. *Adv. Med. Educ. Pract.* **2015**, *6*, 525–532. [CrossRef] [PubMed]

61. Grant, A.M.; Atad, O.I. Coaching psychology interventions vs. positive psychology interventions: The measurable benefits of a coaching relationship. *J. Posit. Psychol.* **2022**, *17*, 532–544. [CrossRef]

62. Hobbs, C.; Jelbert, S.; Santos, L.R.; Hood, B. Evaluation of a credit-bearing online administered happiness course on undergraduates' mental well-being during the COVID-19 pandemic. *PLoS ONE* **2022**, *17*, e0263514. [CrossRef] [PubMed]

63. Houston, J.B.; First, J.; Spialek, M.L.; Sorenson, M.E.; Mills-Sandoval, T.; Lockett, M.; First, N.L.; Nitiéma, P.; Allen, S.F.; Pfefferbaum, B. Randomized controlled trial of the Resilience and Coping Intervention (RCI) with undergraduate university students. *J. Am. Coll. Health* **2017**, *65*, 1–9. [CrossRef] [PubMed]

64. Kalamatianos, A.; Kounenou, K.; Pezirkianidis, C.; Kourmousi, N. The role of gratitude in a positive psychology group intervention program implemented for undergraduate engineering students. *Behav. Sci.* **2023**, *13*, 460. [CrossRef]

65. Linton, M.-J.A.; Jelbert, S.; Kidger, J.; Morris, R.; Biddle, L.; Hood, B. Investigating the use of electronic well-being diaries completed within a psychoeducation program for university student: Longitudinal text analysis study. *J. Med. Internet Res.* **2021**, *23*, e25279. [CrossRef] [PubMed]

66. Lohner, M.S.; Aprea, C. The resilience journal: Exploring the potential of journal interventions to promote resilience in university students. *Front. Psychol.* **2021**, *12*, 702683. [CrossRef] [PubMed]

67. Martínez-Rubio, D.; Navarrete, J.; Montero-Marin, J. Feasibility, effectiveness, and mechanisms of a brief mindfulness-and compassion-based program to reduce stress in university students: A pilot randomized controlled trial. *Int. J. Environ. Res. Public Health* **2021**, *19*, 154. [CrossRef]

68. Maurer, K.; Kimyaci, M.; Konyk, K.; Wekerle, C. Building resilience through daily smartphone app use: Results of a pilot study of the JoyPop app with social work students. *Front. Digit. Health* **2023**, *5*, 1265120. [CrossRef]

69. Medlicott, E.; Phillips, A.; Crane, C.; Hinze, V.; Taylor, L.; Tickell, A.; Montero-Marin, J.; Kuyken, W. The mental health and wellbeing of university students: Acceptability, effectiveness, and mechanisms of a mindfulness-based course. *Int. J. Environ. Res. Public Health* **2021**, *18*, 6023. [CrossRef] [PubMed]

70. Melo-Carrillo, A.; Van Oudenhove, L.; Lopez-Avila, A. Depressive symptoms among Mexican medical students: High prevalence and the effect of a group psychoeducation intervention. *J. Affect. Disord.* **2012**, *136*, 1098–1103. [CrossRef] [PubMed]

71. O'Driscoll, M.; Sahm, L.J.; Byrne, H.; Lambert, S.; Byrne, S. Impact of a mindfulness-based intervention on undergraduate pharmacy students' stress and distress: Quantitative results of a mixed-methods study. *Curr. Pharm. Teach. Learn.* **2019**, *11*, 876–887. [CrossRef] [PubMed]

72. Öztürk, Ş. The effect of a distance-delivered mindfulness-based psychoeducation program on the psychological well-being, emotional intelligence and stress levels of nursing students in Turkey: A randomized controlled study. *Health Educ. Res.* **2023**, *38*, 575–586. [CrossRef] [PubMed]

73. Palamara, K.; McKinley, S.K.; Chu, J.T.; Merrill, A.L.; Yu, L.; Parangi, S.; Makowski, M.S.; Park, Y.S.; Donelan, K.; Stein, S.L. Impact of a virtual professional development coaching program on the professional fulfillment and well-being of women surgery residents: A randomized controlled trial. *Ann. Surg.* **2023**, *277*, 188–195. [CrossRef] [PubMed]

74. Pan, J.-Y.; Zhuang, X. Adventure-Based Cognitive Behavioral Intervention for Hong Kong University Students: A Randomized Controlled Study. *Res. Soc. Work. Pract.* **2024**, *34*, 144–157. [CrossRef]

75. Rajiah, K.; Saravanan, C. The effectiveness of psychoeducation and systematic desensitization to reduce test anxiety among first-year pharmacy students. *Am. J. Pharm. Educ.* **2014**, *78*, 163. [CrossRef] [PubMed]

76. Recabarren, R.E.; Gaillard, C.; Guillod, M.; Martin-Soelch, C. Short-term effects of a multidimensional stress prevention program on quality of life, well-being and psychological resources. A randomized controlled trial. *Front. Psychiatry* **2019**, *10*, 414151. [CrossRef] [PubMed]

77. Roulston, A.; Montgomery, L.; Campbell, A.; Davidson, G. Exploring the impact of mindfulness on mental wellbeing, stress and resilience of undergraduate social work students. *Soc. Work. Educ.* **2018**, *37*, 157–172. [CrossRef]

78. Saravanan, C.; Kingston, R. A randomized control study of psychological intervention to reduce anxiety, amotivation and psychological distress among medical students. *J. Res. Med. Sci.* **2014**, *19*, 391. [PubMed] [PubMed Central]

79. Savell, S.M.; Lee, J.; Stern, J.A.; Wilson, M.N. Exploring the benefits of psychoeducation on college students' mental health during the COVID-19 pandemic. *J. Am. Coll. Health* **2023**, 1–10. [CrossRef] [PubMed]

80. Schlechter, A.D.; McDonald, M.; Lerner, D.; Yaden, D.; Clifton, J.D.; Moerdler-Green, M.; Horwitz, S. Positive psychology psychoeducation makes a small impact on undergraduate student mental health: Further curriculum innovation and better well-being research needed. *J. Am. Coll. Health* **2023**, 1–6. [CrossRef]

81. Seppälä, E.M.; Bradley, C.; Moeller, J.; Harouni, L.; Nandamudi, D. Promoting mental health and psychological thriving in university students: A randomized controlled trial of three well-being interventions. *Front. Psychiatry* **2020**, *11*, 534776. [CrossRef]

82. Shatkin, J.P.; Diamond, U.; Zhao, Y.; DiMeglio, J.; Chodaczek, M.; Bruzzese, J.-M. Effects of a risk and resilience course on stress, coping skills, and cognitive strategies in college students. *Teach. Psychol.* **2016**, *43*, 204–210. [CrossRef]

83. Shillington, K.J.; Labadie, C.T.; Johnson, A.M.; Irwin, J.D. PROmoting Resilience During GRADuate School and Beyond (PRO-GRAD): A Motivational Coaching Intervention. *Int. J. Evid. Based Coach. Mentor.* **2023**, *21*, 232. [CrossRef]

84. Singh, K.; Bandyopadhyay, S. Enhancing college students well-being: The psycho-spiritual well-being intervention. *J. Hum. Behav. Soc. Environ.* **2021**, *31*, 867–888. [CrossRef]

85. Sousa, C.R.d.; Padovani, R.d.C. Assertive skills: A comparison of two group interventions with Brazilian university students. *Psicol. Reflexão E Crítica* **2021**, *34*, 27. [CrossRef]

86. Szuster, R.R.; Onoye, J.; Matsu, C. Presence, Resilience, and Compassion Training in Clinical Education (PRACTICE): A Follow-Up Evaluation of a Resident-Focused Wellness Program. *J. Grad. Med. Educ.* **2023**, *15*, 237–243. [CrossRef]

87. Vidic, Z. Multi-year investigation of a relaxation course with a mindfulness meditation component on college students' stress, resilience, coping and mindfulness. *J. Am. Coll. Health* **2023**, *71*, 2711–2716. [CrossRef] [PubMed]

88. Wang, Y.; Farb, N.A. Web-based training for post-secondary student well-being during the pandemic: A randomized trial. *Anxiety Stress Coping* **2023**, *36*, 1–17. [CrossRef] [PubMed]

89. Yin, D.; Wang, H.; Xu, X.; Jin, C.; Wang, Z.; Wang, T. Effects of MBCT training on anxiety-related personality traits in medical students: A pilot study. *Curr. Psychol.* **2023**, *43*, 15898–15907. [CrossRef]

90. Yook, Y.S.; Lee, J.-H.; Park, I.; Cho, H.-y. Effects of Online Mindful Somatic Psychoeducation Program on Mental Health During the COVID-19. *Psychiatry Investig.* **2024**, *21*, 63. [CrossRef] [PubMed]

91. Yotsidi, V.; Nikolatou, E.-K.; Kourkoutas, E.; Kougioumtzis, G.A. Mental distress and well-being of university students amid COVID-19 pandemic: Findings from an online integrative intervention for psychology trainees. *Front. Psychol.* **2023**, *14*, 1171225. [CrossRef] [PubMed]

92. Kunzler, A.M.; Helmreich, I.; Chmitorz, A.; König, J.; Binder, H.; Wessa, M.; Lieb, K. Psychological interventions to foster resilience in healthcare professionals. In *Cochrane Database of Systematic Reviews*; John Wiley & Sons, Ltd.: Hoboken, NJ, USA, 2020. [CrossRef]

93. Beck, A.T.; Steer, R.A.; Brown, G.K. Beck depression inventory. In *STOP, THAT and One Hundred Other Sleep Scales*; Springer: San Antonio, TX, USA, 1987.

94. Spitzer, R.L.; Kroenke, K.; Williams, J.B.; Group, P.H.Q.P.C.S.; Group, P.H.Q.P.C.S. Validation and utility of a self-report version of PRIME-MD: The PHQ primary care study. *JAMA* **1999**, *282*, 1737–1744. [CrossRef] [PubMed]

95. Lovibond, S.H.; Lovibond, P.F. *Manual for the Depression Anxiety Stress Scales*, 2nd ed.; Psychology Foundation: Sydney, Australia, 1995.

96. Spitzer, R.L.; Kroenke, K.; Williams, J.B.W.; Löwe, B. A Brief Measure for Assessing Generalized Anxiety Disorder: The GAD-7. *Arch. Intern. Med.* **2006**, *166*, 1092–1097. [CrossRef] [PubMed]

97. Spielberger, C.D.; Gorsuch, R.L.; Lushene, R.; Vagg, P.R.; Jacobs, G.A. *Manual for the State-Trait Anxiety Inventory*; Consulting Psychologists Press: Palo Alto, CA, USA, 1983.

98. Cohen, S.; Kamarck, T.; Mermelstein, R. A global measure of perceived stress. *J. Health Soc. Behav.* **1983**, *24*, 385–396. [CrossRef]

99. Tennant, R.; Hiller, L.; Fishwick, R.; Platt, S.; Joseph, S.; Weich, S.; Parkinson, J.; Secker, J.; Stewart-Brown, S. The Warwick-Edinburgh mental well-being scale (WEMWBS): Development and UK validation. *Health Qual. Life Outcomes* **2007**, *5*, 63. [CrossRef] [PubMed]

100. Connor, K.M.; Davidson, J.R. Development of a new resilience scale: The Connor-Davidson resilience scale (CD-RISC). *Depress. Anxiety* **2003**, *18*, 76–82. [CrossRef]

101. Smith, B.W.; Dalen, J.; Wiggins, K.; Tooley, E.; Christopher, P.; Bernard, J. The brief resilience scale: Assessing the ability to bounce back. *Int. J. Behav. Med.* **2008**, *15*, 194–200. [CrossRef]

102. Nowack, K.M. Initial development of an inventory to assess stress and health risk. *Am. J. Health Promot.* **1990**, *4*, 173–180. [CrossRef]

103. Mahatmya, D.; Thurston, M.; Lynch, M.E. Developing students' well-being through integrative, experiential learning courses. *J. Stud. Aff. Res. Pract.* **2018**, *55*, 295–307. [CrossRef]

104. Brown, K.W.; Ryan, R.M. The benefits of being present: Mindfulness and its role in psychological well-being. *J. Personal. Soc. Psychol.* **2003**, *84*, 822. [CrossRef] [PubMed]

105. Baer, R.A.; Smith, G.T.; Hopkins, J.; Krietemeyer, J.; Toney, L. Using self-report assessment methods to explore facets of mindfulness. *Assessment* **2006**, *13*, 27–45. [CrossRef] [PubMed]

106. Bohlmeijer, E.; Ten Klooster, P.M.; Fledderus, M.; Veehof, M.; Baer, R. Psychometric properties of the five facet mindfulness questionnaire in depressed adults and development of a short form. *Assessment* **2011**, *18*, 308–320. [CrossRef] [PubMed]

107. Walach, H.; Buchheld, N.; Buttenmüller, V.; Kleinknecht, N.; Schmidt, S. Measuring mindfulness—The Freiburg mindfulness inventory (FMI). *Personal. Individ. Differ.* **2006**, *40*, 1543–1555. [CrossRef]

108. Ang, W.H.D.; Shorey, S.; Zheng, Z.J.; Ng, W.H.D.; Chen, E.C.W.; Shah, L.; Chew, H.S.J.; Lau, Y. Evaluating the online Resilience Skills Enhancement programme among undergraduate students: A double-blind parallel randomized controlled trial. *Stress Health* **2024**, 1–18. [CrossRef]