

# Resilience Interventions in Undergraduate Populations: A Meta-Analytic Study of their Effect in Perceived Stress

Grace Renaud; Faculty Mentor: Reed Mueller  
Psychology Department, Northwestern College

## Introduction

Resilience training using mindfulness exists and has demonstrated effectiveness across studies in producing positive outcomes. Outcomes such as reducing stress, improved sleep quality, increased GPA, coping ability, emotional awareness, belonging, good health, and well-being have all demonstrated positive effects with resilience training (Chandler et al., 2020; Gray et al., 2018). Therefore, it is known that under stress, individuals will benefit from resilience abilities.

The levels of stress in college student populations have risen recently—potentially due to the evolution of smartphones—as well as other negative outcomes (Bambacus et al., 2021). Since college students tend to be more stressed than other populations it is important to find interventions that reduce perceived stress by teaching enduring skills to those who are emerging adults; purportedly, they will then be better prepared for life during and after college.

It is not known what the comparative effectiveness of both short-term and long-term various modalities of resilience training with college student populations, nor do we have an updated summary of those effects. With such rationale, there is a need for an updated meta-analysis that asks these questions: Do resilience interventions improve perceived stress when deployed within undergraduate student populations? If so, how strong is this effect and are the intervention effects durable? Are effect sizes influenced by dosage of the intervention and are effect sizes influenced by timing of the intervention? Are the effects consistent across demographic categories such as year in college, gender identity, race/ethnicity, age, first-generation vs. returning-generation students? Are the effects consistent across types of interventions?

**Objective:** Given the importance of resilience trainings and the associated construct perceived stress, a systematic exploration of the effects of resilience trainings with perceived stress is valuable. In this meta-analysis, I investigate the effects of these constructs to mindfulness, reducing stress, and enhancing psychosocial competence interventions.

## Method

**Study Variables:** The variables of this study included the outcome of perceived stress as a consequence of resilience interventions. This meta-analysis included studies meeting the inclusion criteria described below.

**Study Selection:** Electronic databases such as ProQuest Central, Worldcat.org, Education Database, ERIC, JSTOR Arts and Sciences Collection I-V, Medline, PsychArticles, ScienceDirect, Social Science Database, were used as information sources to obtain manuscripts that were relevant to the meta-analysis.

Search logic was as follows: [ti:(resilience OR resiliency OR coping OR mindfulness OR compassion OR grit OR toughness OR well\*) AND ti:(training OR intervention OR workshop OR class OR bibliotherapy OR program OR book)) AND ti:(college OR undergraduate OR university) AND ti:(training OR intervention OR workshop OR class) AND au:(college OR undergraduate OR university) AND (eu:Peerreviewed)]; there were no planned limits.

Using the available criteria a search was conducted across the listed databases. After manual deduplication, 90 records were included in our abstract review. For this step, two independent reviewers reviewed abstracts of all 90 studies against the following inclusion criteria: (1) participants being enrolled undergraduate students (2) in western, educated, industrialized, rich, and democratic (WEIRD) settings, the (3) specification of the delivery mode and frequency of the studies, and included (4) the intervention focus needing to on resilience which also included (5) a waitlist control/comparison group, and/or alternative treatment, (6) a post-only, pre-post, or pre-post-follow up, (7) a measure of perceived stress, (8) effect sizes, (9) a reported publishing year of 2005, (10) was an English manuscript.

At the conclusion of the abstract review phase, 59 publications had been excluded and the remaining 31 underwent full-text review against the aforementioned inclusion criteria. Of these, eight met inclusion criteria and were included in this meta-analysis.

**Data Extraction:** Included studies were coded for (1) population, (2) intervention type, (3) design type, (4) outcome(s), (5) time, (6) publishing year, (7) language, and (8) publication status. Across these eight publications, eight independent samples were used in conducting eight separate studies; as such, no publications reported on multiple samples or intervention trials. Altogether, 18 effect sizes were extracted, seven of which related to perceived stress.

**Analyses:** A meta-analysis was conducted using a random-effects model, because the treatment samples and conditions varied across studies, and since there is sampling variability among the included studies. Pooled mean difference effect sizes were calculated using Hedges and colleagues' method. Significance was assessed at  $p < .05$ . Additional analyses included assessment of publication bias using Duval and Tweedie's (2000) trim and fill method.

## Results

**Perceived Stress:** There were 1079 participants in the eight selected peer-reviewed studies. Characteristics of the studies included resilience or mindfulness interventions for undergraduate student populations and outcomes (i.e., general wellness, depression, stress). All studies used a control group. Parcover et al. contained 271 participants; Taylor et al. contained 61 participants; Jones et al. contained 96 participants; Gray et al. contained 36 participants; Dvorakova et al. contained 109 participants; Bambacus & Conley contained 373 participants; Chandler et al. contained 56 participants. Overall, a medium intervention effect was noted across these studies ( $g = -.420$  [95% CI  $-.691, -.150$ ];  $p = .002$ ) indicating symptom reduction of self-reported perceived stress following included resilience interventions (Figure 1). Trim and fill analysis suggested modest publication bias, adjusting the point estimate to  $g = -.247$  (small).

## Discussion

To my knowledge, this is one of the most updated meta-analyses assessing the strength of resilience intervention to decrease reported perceived stress in college student populations. As college students live in a period of their lives containing extreme stress, it is important to consider whether or not resilience interventions impact their stress levels; it seems that they do, at least to a small degree. A statistically significant effect is observed in perceived stress with resilience training including mindfulness components. Most of the mindfulness interventions articulate that “mindfulness has been shown to reduce these negative automatic thought processes” primarily depression and anxiety, but also with stress levels (Bambacus et al., 2021). Future studies could benefit from emphasizing frequency, time, and longevity of mindfulness interventions, and measurement specificity.

## Conclusion

Given that perceived stress is higher among college students than other populations, might there be a better way to cultivate resilience among undergraduate students? In short, the answer is a qualified yes. At least with regard to resilience training, it seems that perceived stress can be reduced. Given this, perhaps interventions designed to build resilience and mindfulness would be preferred to colleges and universities that are wanting to reduce the stress of their undergraduate students.

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