

**Effectiveness of Savoring Interventions: a Systematic Review and Meta-analysis of Randomized Controlled Trials**

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**ADMINISTRATIVE INFORMATION****Support** - None.**Review Stage at time of this submission** - Preliminary searches.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY202530114**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 26 March 2025 and was last updated on 26 March 2025.**INTRODUCTION**

**Review question / Objective** To investigate the effectiveness of savoring intervention emotional status, including both positive and negative emotions.

**Rationale** Savoring, a positive psychology intervention, has gained considerable attention as an effective approach to enhancing individuals' well-being and positive emotions, as well as alleviating depressive symptoms. However, due to the diverse forms of savoring interventions and the lack of a standardized approach, its clinical effectiveness remains unclear. Therefore, we aim to conduct a systematic review and meta-analysis to investigate the effectiveness of savoring on emotional status, including both positive and negative emotions.

**Condition being studied** The PICO (population, intervention, comparison, outcome) setting of the current meta-analysis included: (1) P: human participants; (2) I: savoring intervention; (3) C: usual

care or no intervention; and (4) O: position emotions or depression.

**METHODS**

**Search strategy** Two authors (P.-H.C. and C.-Y.W.) made independent electronic searches in the PubMed, psycINFO, Cochrane Library, CINAHL, MEDLINE and Google Scholar with keyword of ('savoring' OR 'savouring' OR 'savoring intervention' OR 'savouring intervention' OR 'savoring the moment' OR 'savouring the moment' OR 'three good things' OR 'counting blessings' OR 'self-congratulations' OR 'memory building' OR 'positive emotion regulation' OR 'positive life review' OR 'positive life review' OR ) AND ('randomized controlled trials' ) AND ('positive emotion\*' OR 'positive affect\*' OR 'well-being' OR 'wellbeing' OR 'spiritual well-being' OR 'happiness' OR 'happiness' OR 'PANAS' OR 'depression' OR 'anxiety') through the earliest record to March 6, 2025.

**Participant or population** Human participants.

**Intervention** Savoring Intervention.

**Comparator** Usual care or no intervention.

**Study designs to be included** Randomized controlled trials.

**Eligibility criteria** To generate a list of included studies, the following inclusion criteria will be applied: (1) randomized controlled trials (RCTs) involving human participants; (2) RCTs that quantitatively evaluate positive emotions (e.g., well-being, happiness, PANAS-PA scores) or negative emotions (e.g., PANAS-NA scores, depression, anxiety) following a savoring intervention; (3) placebo-controlled trials and (4) availability of pre- and post-intervention data assessing positive or negative emotional outcomes.

**Information sources** Two authors (P.-H.C. and C.-Y.W) made independent electronic searches in the PubMed, psycINFO, Cochrane Library, CINAHL, MEDLINE and Google Scholar with keyword of ('savoring' OR 'savouring' OR 'savoring intervention' OR 'savouring intervention OR 'savoring the moment' OR 'savouring the moment' OR 'three good things' OR 'counting blessings ' OR 'self-congratulations' OR 'memory building' OR 'positive emotion regulation' OR 'positive life review' OR 'positive life review' OR ) AND ('randomized controlled trials' ) AND ('positive emotion\*' OR 'positive affect\*' OR 'well-being' OR 'wellbeing' OR 'spiritual well-being' OR 'happiness' OR 'happiness' OR 'PANAS' OR 'depression' OR 'anxiety') through the earliest record to March 6, 2025.

**Main outcome(s)** The primary outcomes focused on positive emotions, such as changes in PANAS-PA scores or well-being following the savoring intervention. Secondary outcomes included negative emotions, such as changes in PANAS-NA scores, depression, or anxiety score after the savoring intervention. The validity and appropriateness of the emotional rating scales used in each trial were assessed by reviewing the relevant references. In cases where multiple scoring systems for emotional evaluation were used within a single study, the index measure selected for meta-analysis was determined by consensus between two authors (P.-H.C. and C.-Y.W).

**Data management** Data extraction from the included studies was independently conducted by two authors (P.-H.C. and C.-Y.W), covering demographic characteristics, study design,

specifics of the savoring intervention and control groups, as well as the reported values for primary and secondary outcomes. Particular attention was given to the directionality of the scales used in each trial to ensure accurate interpretation of the results. When relevant data were not available in the published articles, the corresponding authors were contacted to request the original datasets.

**Quality assessment / Risk of bias analysis** To evaluate the methodological quality of the included studies, we utilized the Cochrane Risk of Bias tool for randomized trials, version 2 (RoB 2), which assesses six key domains: the randomization process, adherence to the assigned intervention, missing outcome data, outcome measurement, selective reporting, and overall risk of bias.

**Strategy of data synthesis** Given the variability in target populations across the included studies, a random-effects model was applied in this meta-analysis using Comprehensive Meta-Analysis software, version 4 (Biostat, Englewood, NJ). Statistical significance was determined by a two-tailed p-value of less than 0.05. To evaluate the effectiveness of changes in emotional status following the savoring intervention, Hedges' g along with 95% confidence intervals (CIs) was used. Effect sizes were interpreted as small (0.2), moderate (0.5), and large (0.8), based on standard thresholds. Heterogeneity among the studies was assessed using both the  $I^2$  statistic and Cochran's Q test.  $I^2$  values of 25%, 50%, and 75% were interpreted as indicating low, moderate, and high levels of heterogeneity, respectively.

**Subgroup analysis** Subgroup analyses based on the disease, culture background and intervention delivery format were performed. We conducted meta-regressions of the effects on positive and depression emotions with the duration of the savoring intervention to examine whether the length of the intervention was associated with the aforementioned parameters.

**Sensitivity analysis** To assess the robustness of the meta-analysis, sensitivity analyses were conducted using the one-study removal method, in which each study was sequentially removed to determine whether the exclusion of any single trial substantially altered the overall effect size.

**Language restriction** English and Chinese.

**Country(ies) involved** Taiwan.

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**Keywords** savoring intervention, well-being, positive emotions, depression, randomized controlled trials.

**Contributions of each author**

Author 1 - Pei-Hsin Chen - Writing – original draft, Software, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

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