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Effectiveness of forgiveness training programs in university contexts: a systematic review and meta-analysis

Clara Molinero , Saray Bonete , Paula Crespi , Susana Sendra Ramos  and Anna Mariela González De Abreu 

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ABSTRACT

This research offers a systematic review and meta-analysis of forgiveness training programs conducted with university students. A search of international databases (Web of Science, SCOPUS, PUBMED and Dialnet) revealed 316 articles published up to 2023, 20 of these articles were finally included in the systematic review, following the PRISMA protocol. Of these, eleven randomized-controlled trials ($n = 11$) and one quasi-experimental study ($n = 1$) were used in the meta-analysis. The results of the analysis show that Forgiveness Interventions (FI) have a positive effect on the capacity to forgive in experimental groups which showed significantly higher scores in empathy, self-esteem and hope, with a reduction in negative symptomologies such as anxiety and depression. The findings also suggest that an important facilitating variable in FI is the length of the interventions. The two most commonly utilized programs were Worthington's REACH program and the Enright Forgiveness Process Model. The intervention program used both face-to-face sessions with trainers and autonomous group work sessions. Given the significant benefits these programs offer in terms of mental health and well-being, it is recommended that FI programs should be offered at universities and colleges as part of a comprehensive and truly competence-based education.

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Introduction

Studies conducted during and after the COVID-19 pandemic generally regard young adulthood is a critical stage of growth and development, a time of continuous and profound personal, academic and professional change. As a result, young adults may be particularly vulnerable to potentially stressful situations which can produce symptoms of anxiety, rage, depression, loneliness, etc. (Lee et al., 2020; O'Reilly et al., 2021). Thus, those between the ages of 19 to 40 may experience emotions which arise from a combination of past injuries and the current stresses inherent to this period of exploration, growth and change during which they attempt to forge their own personal identity and find their place in the world (Erickson, 1982; Levinson, 1986).

The inability to cope with and resolve interpersonal conflicts may result in further injury, increased anger and foster the development of 'angry communities' (Galiti, 2015). Certain emotions, such as anger, are an essential part of human adaptation and survival, but when they become chronic they can give rise to pathologies that affect not only the individual but also their broader social environment (Al Majali & Ashour, 2020; Yadav et al., 2017). Training in forgiveness is therefore an essential tool that can enable young adults to cope with the stresses and challenges inherent to this period of their lives and only further exacerbated by the COVID-19 pandemic.

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Forgiveness intervention is an area of psychotherapy which has seen significant evolution in recent years, and increasingly become the subject of a great deal of research (López et al., 2021). One of the strategies developed to address emotional symptomatology is forgiveness training. While there is no consensus within the scientific community on the precise definition of forgiveness, there is a consensus on the distinction between forgiveness and other concepts, such as forgetting, reconciling, pardoning, condoning or justifying, excusing or denying (López et al., 2020; Serrano et al., 2018). There is also broad agreement that forgiveness is a much more positive solution, both for the victim and the offender (Peterson & Seligman, 2004; Wade & Worthington, 2005). Enright (2011) describes forgiveness as a moral virtue, an undeserved act of mercy toward the offending person. Thus, forgiveness is an event in which the emotions, intellect and morals of the forgiving individual come together in responding to unfair treatment (Enright & Fitzgibbons 2000). Furthermore, in positive psychology, forgiveness is considered a strength (Peterson & Seligman, 2004), unique in that it can be trained through a process which takes time and effort. Worthington and Scherer (2004) define forgiveness as 'an emotion-focused coping strategy through which the person who forgives can reduce the lack of forgiveness, which is a stressful reaction to a transgression' (Kim et al., 2022, p. 2).

Several studies have highlighted the mental and physical benefits of forgiveness (Davis et al., 2015; Riek & Mania, 2012). In the field of mental health, these benefits include reduced stress and the underlying negative emotions caused precisely by the absence of forgiveness. Moreover, forgiveness has been associated with higher levels of self-esteem, well-being, empathy, compassionate love and hope (Abid & Sultan 2015; Anithalakshmi, 2023; Susanto & Darmayanti, 2023; Taysi et al., 2015), as well as decreased anxiety, depression and suicidal ideation (Donat Bacıoğlu, 2020; Quintana-Orts & Rey 2018; VanderWeele, 2018). Physiologically, forgiveness is known to contribute to lower heart rate and blood pressure (Rasmussen et al., 2019).

A number of models have been developed for forgiveness training, two of which are particularly salient: that by Enright and the Human Development Study Group (Enright & Fitzgibbons, 2000) and the REACH forgiveness intervention model by Worthington (2001). The first is a step-by-step forgiveness training model structured in four phases: 1) *Uncovering*, in which the participant becomes aware of their negative feelings and emotions about an offence; 2) *Decision*, when the participant accepts the need to find a different solution, involving a 'change of heart' toward the offender; 3) *Work*, focusing on developing understanding and empathy for the offender; and, 4) *Deepening*, the period in which meaning and universality in the forgiveness process is found (Enright & Fitzgibbons, 2000; Klatt & Enright, 2011; López et al., 2021). The second, the REACH model, consists of five general steps: 1) *Recalling*, in which the events related to the offence are recalled and emotions identified; 2) *Empathizing*, the attempt to empathize with the offender and to understand their perspective and possible motivation; 3) *Altruistic gift*, recalling times and situations in which we ourselves have been forgiven for hurting others, making it possible to altruistically grant forgiveness; 4) *Committing*, engaging publicly or making a commitment to forgive; 5) *Holding on*, working to maintain forgiveness over time, recalling the gains achieved at difficult times (López et al., 2021; Shechtman et al., 2009; Worthington, 2001). Both of these programs share a key aspect which is essential to the intervention, that is, the importance of clarifying and defining the meaning of forgiveness, distinguishing it from similar concepts (Wade & Worthington, 2005).

Numerous meta-analyses (Baskin & Enright, 2004; López et al., 2021; Lundahl et al., 2008; Rapp et al., 2022) have shown these forgiveness interventions to be effective and studies have found that these programs bolster the ability or skill to forgive, increasing feelings of hope and decreasing anxiety or depression (Akhtar & Barlow, 2018; Lundahl et al., 2008; Rainey et al., 2012; Wade et al., 2014). However, these outcomes may also be influenced by the magnitude of the perceived offence (Baskin & Enright, 2004), by religious faith (Rainey et al., 2012), the passage of time (Akhtar & Barlow, 2018; Wade et al., 2014) or levels of anxiety (Lundahl et al., 2008).

Although numerous studies attest to the effectiveness of these forgiveness intervention programs, there has been very little empirical research into how university students actually experience the process of forgiving. In some cases, young people undergo a phase of individuation and reflection on their family relationships, often involving the recognition of past injuries that may provoke acute emotional pain (Al-Mabuk et al., 1995).

The aim of this research is to provide a systematic review and meta-analysis of studies on the effectiveness of different forgiveness intervention programs around the world focused on college and university students (as a general population and future professionals). Moderator analyses were conducted for variables such as country, instrument, presence of the facilitator, year of publication, percentage of men and women, number of sessions and length, gender, study design, type of training, follow-up, therapist fidelity and prior negative symptomatology as well as the quality of the study.

2. Method

2.1. Search strategy, eligibility criteria and study Selection

We first confirmed there was no systematic review focused on Forgiveness Intervention for college students registered in the PROSPERO database. A stepwise systematic literature review (PRISMA guidelines; Moher, et al., 2015) was conducted, searching a number of international databases (Web of Science (WOS), PubMed, Scopus and Dialnet) for relevant empirical studies and scientific articles published up to October 2023, with no restrictions on language or year of publication. The following search terms were used: Program OR Intervention OR Training AND Forgiveness AND Students.

The following inclusion criteria were applied: (A) Scientific articles or studies related to forgiveness training programs were included when the contents of the study were shown. (B) Participants were college or university students over the age of 18. The following exclusion criteria were also applied: (A) Studies on interventions whose central variable was not forgiveness. (B) Studies not framed within an educational context, and (C) research in which participants had been diagnosed with a mental disorder.

In order to decrease the risk of bias, two independent reviewers, part of the research team, screened the titles and abstracts from the databases. Studies considered eligible based on the inclusion/exclusion criteria were read in full before a final decision on inclusion was reached. Discussions including a third member of the research team were held to resolve any unclear cases or disagreements on inclusion. The database search was updated most recently on November 27, 2023.

2.2. Data collection and quality assessment

Using a pilot-tested coding form, two of the authors collected the following descriptive and statistical data from primary studies: 1) characteristics of the participants in the experimental and control groups (n° of participants, gender, age and characteristics), study design, intensity and length of the intervention (total length, n° of sessions per week, n° of weeks), type of forgiveness (interpersonal vs. self-forgiveness), program type, features of the facilitator, where applicable, instrument type, fidelity to the program manual, follow-up and results. The validity of the selected studies was rated using two criteria lists for quality assessment of clinical trials: the Cochrane Risk of Bias tool with five criteria (Higgins et al., 2011) and the PEDro scale with eleven criteria (Maher et al., 2003). Two researchers independently evaluated the selection risk, performance bias, reporting bias, detection bias and attrition bias to assess the validity of the studies, resolving any discrepancies through debate. The quality of the studies were categorized as high, medium and low.

2.3. Meta-analysis

A meta-analysis of the effectiveness of forgiveness therapy among university and college students was conducted. In order to incorporate the widest variety of studies from the systematic review, only those studies which evaluated the effectiveness of the program using a control group without intervention were included in the meta-analysis. Studies were excluded from the meta-analysis on the basis of the following: 1) the study only addressed self-forgiveness (Bell et al., 2017; Griffin et al., 2015); 2) the study lacked methodological rigor, categorized as low quality (Jeon et al., 2019; O'Neil et al., 2006) according to the Cochrane Risk of Bias tool (two points or less) and PEDro scale (five points or less); 3) the intervention lasted two hours or less (Worthington et al., 2000), in line with previous meta-analyses by Akhtar and Barlow (2018) which noted the absence of any impact of a single intervention session; 4) the

comparative group was exposed to alternative content (Ji, Tao et al., 2016; Lin et al., 2013); and finally 5) studies lacking sufficient data (Luskin et al., 2005; Rye & Pargament, 2002). The meta-analysis was ultimately based on 12 different records from 11 independent articles (see Table 2).

For the meta-analysis, a number of categorical and continuous variables were encoded to study the sources of heterogeneity. The categorical variables were: *Country, Year, Sample size, Design, Type of program, Outcome instrument for forgiveness and Follow-up*; and the continuous variables were: *the percentage of women in the study, the average age of participants and the preliminary scores for negative symptoms (anxiety or depression)*, which, according to previous reviews, decrease after FI (Enright & Fitzgibbons, 2015). The analyses were based on the effect size of the pre- and post-treatment differences in the experimental group, including the pre-post differences in the control group. Characteristics referring to the number of sessions, length of sessions, program length, the presence or absence of a facilitator, and the therapist's fidelity to the program were not explored as sources of heterogeneity.

In both the experimental group and in the control group, the mean and standard deviations of the pre- and post-treatment scores were used in the meta-analysis. Follow-up scores were not considered as few studies included this data. Given that most studies used different measures (forgiveness, revenge or resentment) to infer changes in forgiveness, it was decided to group them within the variable 'Capacity to forgive', on the assumption that a decrease in revenge or resentment may indicate changes in the capacity to forgive.

A random-effect model with weighted effect sizes (inverse variance method) was used. The assessment of the effectiveness of Forgiveness Interventions was based on comparing the pre-test and first reported post-test results, given that not all the studies presented follow-up data. For each group (experimental vs control), the aggregated effect size was initially calculated, indicating the pooled mean differences (pre-post treatment) using Hedges' g . The difference between the two effect sizes was calculated to consider the interaction between group and moment. Negative values reflect a greater willingness to forgive in the experimental group (that is, compared to the control group, greater differences between the pre- and post-intervention scores were seen on the forgiveness tests).

The Q-test was used for homogeneity and the I^2 reported to assess the heterogeneity of effect sizes between studies.

To examine potential sources of variability, a study of the categorical variables was conducted using weighted ANOVAs, and meta-regression analyses were used to evaluate the continuous variables.

All analyses were conducted using the metafor package in R (Version 3.5.3).

2.4.3. Risk of publication bias across studies

To assess publication bias, the symmetry of the funnel plot was examined with an asymmetrical funnel plot indicating bias (Borenstein et al., 2011). Additionally, the Egger's test was used to examine whether there was true asymmetry beyond mere visual inspection.

3. Results

3.1. Selection and inclusion of studies

Figure 1 shows the PRISMA flow chart indicating the process for identifying, screening and determining the eligibility of studies for inclusion in this research. A total of 20 studies met the inclusion criteria for the systematic review.

A total of 12 studies met the inclusion criteria for the meta-analysis.

3.2. Characteristics of included studies

The synthesis of the study characteristics are as follows:

Country: fifteen of the studies were conducted in the USA, three in China (Ji, Hui et al., 2016; Ji, Tao et al., 2016; Zhang et al., 2014) one in Korea (Jeon, et al., 2019) and one in India (Toussaint, Griffin et al., 2020).

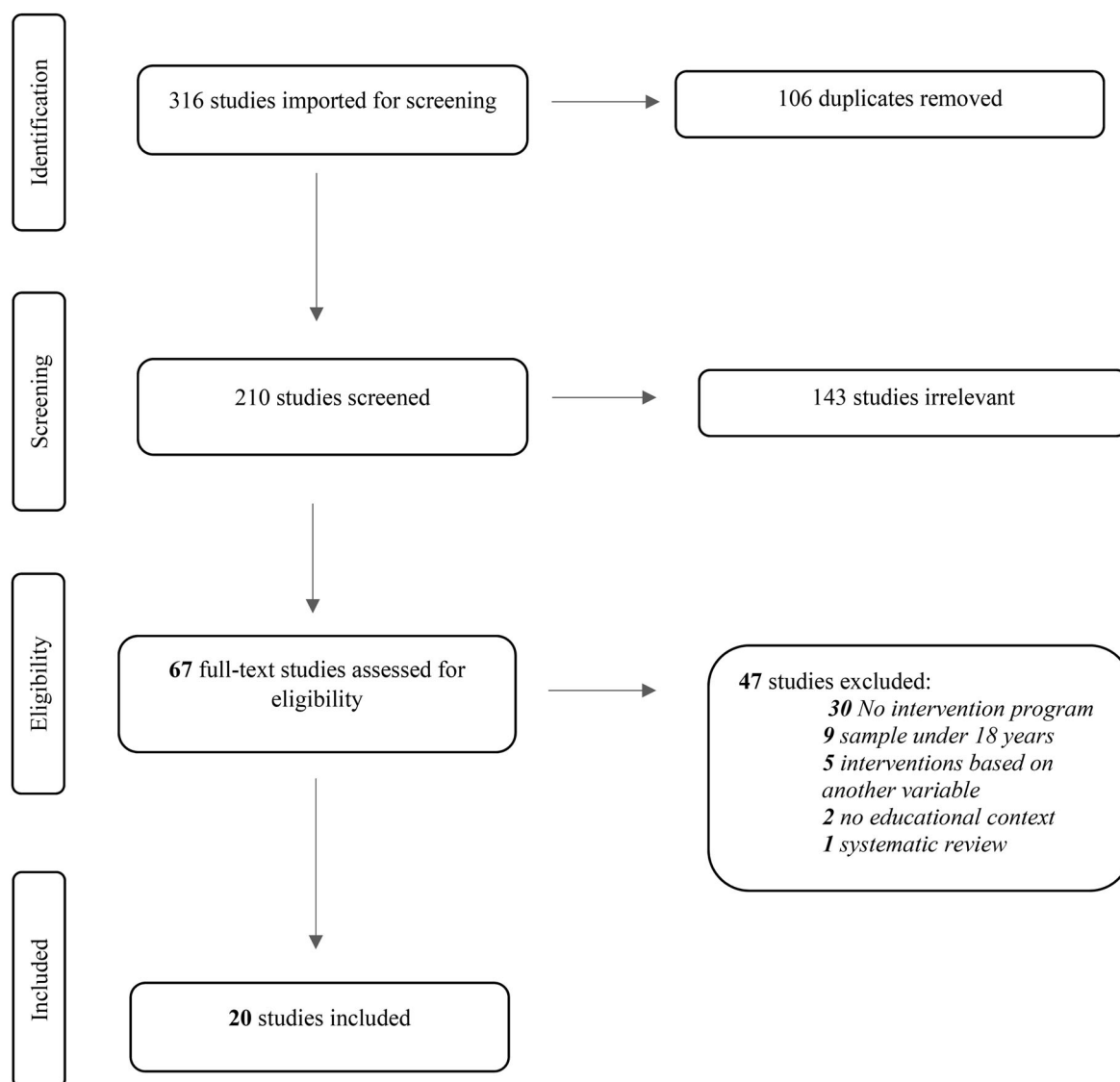


Figure 1. PRISMA Flow Diagram of study selection.

Sample: the total sample contained 1,570 university students, with a greater percentage of women participants, between 50% and 100%; three studies involved women only (Lin et al., 2014; Rye & Pargament, 2002; Zhang et al., 2014). The average age of participants was between 18 and 22; 14 studies had an average age of 19 to 21, and the remaining six studies had an average over the age of 22.

Participant characteristics: all participants were university students, in four studies over 90% of participants were Christians. In terms of type of injury, two of the studies focused specifically on the process of forgiving parents (Al-Mabuk et al., 1995; Lin et al., 2013) and two focused on forgiveness toward partners (Rye & Pargament, 2002; Zhang et al., 2014).

Design: in 75% of the studies, the subjects were assigned randomly to the experimental and control groups. Some 65% of the studies provided follow-up (Goldman & Wade, 2012; Greer et al., 2014; Griffin et al., 2015; Harper et al., 2014; Kim et al., 2022; Lin et al., 2013; 2014; Luskin et al., 2005; Rye & Pargament, 2002; Toussaint, Griffin et al., 2020; Toussaint, Worthington et al., 2020; Worthington et al., 2000; Zhang et al., 2014).

Intervention Density: Two of the studies reported 4 hours or less of intervention (Bell et al., 2017; Ji, Tao et al., 2016), 11 studies reported 6 hours of sessions (Al-Mabuk, et al., 1995; Bell et al., 2017; Goldman & Wade, 2012; Greer et al., 2014; Griffin et al., 2015; Harper et al., 2014; Lampton et al., 2005; Luskin et al., 2005; Toussaint, Griffin et al., 2020; Toussaint, Worthington et al., 2020; Worthington et al., 2000), two studies reported over 9 hours (Ji, Hui et al., 2016; Kim et al., 2022; Rye & Pargament, 2002) and

one study reported 30 hours in total (Lin et al., 2013). In the remaining studies, the hours of the interventions were not specified although Zhang et al., (2014) reported 6 intervention sessions, O Neil et al., (2006) reported 2 sessions and Jeon et al., (2019) indicated the program lasted 1 semester (Jeon, et al., 2019).

Type of program: in terms of the intervention content, most of the studies focused on interpersonal forgiveness training. 40% used the REACH program (Worthington, 2001) and 40% the Forgiveness Process Model (Enright & Fitzgibbons, 2000) or a variation of that model. The others used different forgiveness training programs. Only two of the selected studies entailed self-forgiveness training (Bell et al., 2017; Griffin et al., 2015). The general aim of all the studies was to evaluate the effectiveness of forgiveness training compared to no training (control group) or to an alternative program, as was the case in six of the studies (Goldman & Wade, 2012; Ji, Tao et al., 2016; Lin et al., 2013; Rye & Pargament, 2002; Worthington et al., 2000; Zhang et al., 2014).

Facilitator: five studies used a workbook format methodology which did not require a facilitator to carry out the intervention (Bell et al., 2017; Greer et al., 2014; Griffin et al., 2015; Harper et al., 2014; Kim et al., 2022).

Fidelity: eight studies included an analysis of the therapist's fidelity to the program (Goldman & Wade, 2012; Greer et al., 2014; Griffin et al., 2015; Harper et al., 2014; Ji, Hui et al., 2016; Ji, Tao et al., 2016; Lin et al., 2014; Rye & Pargament, 2002).

Instruments: the studies used a variety of different instruments were used to measure the change in willingness to forgive after training (Table 1). For example, the Transgression-Related Interpersonal Motivations Inventory - TRIM (McCullough et al., 1998) was most frequently used, although not always in its complete form; the TRIM identifies the motivation for revenge or avoidance based on two subscales. The second most commonly used instrument was the Enright Forgiveness Inventory - EFI (Enright et al., 2000), which examines changes in terms of affect, cognition and behavior. Other instruments used in several studies were the Willingness to Forgive Scale - WFS (Al-Mabuk et al., 1995), which describes several situations and asks participants to choose the solution they would use (ending solution) and the one they would prefer to use but would not end up using (preferred solution); finally, the Emotional Forgiveness Scale - EFS (Worthington et al., 2007) examines positive and negative emotions to which the participant must respond.

Variables: regarding changes observed in certain variables other than forgiveness as a result of the training, there was no consistency in either the variables examined or the instruments used to gather evidence. Of the studies evaluating the REACH program, only one included an analysis of the decrease in rage among its objectives; another examined whether the forgiveness differed depending on culture, and a further study examined whether the changes persisted over time. Among the research projects that studied the effects of the Forgiveness Process Model, these focused on aspects that foster well-being (such as empathy, self-esteem and hope) and on the effect of reducing negative symptoms (such as anxiety and depression), although different scales were used in each study. Table 1 shows the variables inferred from the various instruments.

3.3. Overall effects in studies

As shown in Table 2, the close examination of studies on forgiveness intervention provides an in-depth perspective on the effectiveness of these programs. Overall, a statistically significant improvement in forgiveness scores was found, with varying effect sizes or statistical significance across studies. Some studies reported only modest changes (Al-Mabuk et al., 1995; Worthington, 2000).

Regarding positive variables, statistically significant changes were observed in the scores for hope (Al-Mabuk et al., 1995; Lin et al., 2013; Luskin et al., 2005), self-esteem (Al-Mabuk et al., 1995; Goldman & Wade, 2012; Jeon et al., 2019; Lin et al., 2013), well-being (Rye & Pargament, 2002; Zhang et al., 2014), and empathy (Ji, Tao et al., 2016; Toussaint, Worthington et al., 2020). Following the intervention, studies also found a decrease in scores for clinical variables related to anxiety (Al-Mabuk et al., 1995; Kim et al., 2022; Lin et al., 2013; Zhang et al., 2014), depression (Kim et al., 2022; Zhang et al., 2014), anger and hostility (Goldman & Wade, 2012; Luskin et al., 2005).

Table 1. Variables and instruments.

Variable	Instrument ID	Instrument	Study ID
Motivation of forgiveness	1	Transgression Related Interpersonal Motivations (TRIM; McCullough et al., 1998).	D, F, Q, R, S
	2	Transgression Related Interpersonal Motivations Revenge Subscale (TRIM-R; McCullough et al., 1998).	C, K
Forgiveness	3	Enright Forgiveness Inventory (EFI; Enright et al., 2000).	G, H, J, L
	4	Willingness to forgive scale (WFS; Al-Mabuk et al., 1995).	A, N
	5	Emotional Forgiveness Scale (EFS; Worthington et al., 2007).	D, F, I, M, Q, R
	6	Decisional Forgiveness Scale (DFS; Worthington et al., 2007).	D, F, I, M, Q, R
	7	Courtship Forgiveness Scale (Zhang, 2012).	T
	8	Psychological profile of forgiveness scale (Hebl & Enright, 1993).	A
	9	The Trait Forgivingness Scale (TFS; Berry et al., 2005).	D
	10	Rye Forgiveness Scale (RFS; Rye et al., 2001).	P, Q
	11	Forgiveness-Positive Responses to the Offender (Witvilet et al., 2002).	K
	Self- forgiveness	12	Dispositional self-forgiveness, Heartland Forgiveness Scale (HFS; Thompson et al., 2005).
13		Self-forgiveness of a specific offense was measured using State self-forgiveness (SSFs; Wohl et al., 2008).	B, E
Interpersonal restoration	14	Willingness to make reparations using Interpersonal Restoration Scale (Woodyatt & Wenzel, 2013).	B
Acceptance of responsibility	15	Acceptance of responsibility for the offense (Fisher & Exline, 2006).	B
Perceived transgression	16	Perceived transgression severity (Hall & Fincham, 2008).	E
Anxiety	17	Anxiety inventory The State Trait Anxiety Inventory (STAI; Spielberger, 1983).	A, H, L
	18	Beck Anxiety Inventory (Beck et al., 1985).	T
Depression	19	Depression inventory The Beck Depression Inventory (Beck et al., 1961).	A, P, T
	20	Korean center for epidemiologic studies depression scale (CES-D; Cho & Kim, 1998)	G, L
	21	State-Trait Anger Expression Inventory (STAXI; Spielberger, 1996)	G, L, N
Anger	22	The Rumination about an Interpersonal Offense Scale (RIO; Wade et al., 2008).	C
Hostility	23	The State Hostility Scale (SHS; Anderson, Deuser & DeNeve, 1995).	C
Distress	24	The Brief Symptom Inventory (BSI; Derogatis, 1993).	C
Negative symptomatology	25	Patient-Reported Outcomes Measurement Information System (PROMIS) (Cella et al., 2010; 2019; Pilkonis et al., 2011).	J
Interpersonal distance	26	Interpersonal Distance Scale (IDS; McCullough et al., 1997).	N
Shame and guilty	27	The State Shame and Guilt Scale (Marschall et al., 1994)	E
Self esteem	28	Self-Esteem Inventory (CSEI; Coppersmiths, 1981).	A, L
	29	The Rosenberg Self-Esteem Scale (SES; Rosenberg, 1965).	H, J
Empathy	30	Batson's Empathy Adjectives (BEA; Batson, 1987; 1991).	C, H, I, R, S
Hope	31	The Hope Scale (Al-Mabuk et al., 1995)	A, L, P
	32	Adult Hope Scale (AHS; Snyder et al., 1991).	J
Self-efficacy	33	Self-efficacy measure (SEM; Luskin, et al., 2005)	N
Attitude toward parent	34	Attitude toward mother/father (Hudson, 1976).	A
Life satisfaction	35	Korean version of the satisfaction with the life scale (K-SWLS; Lim, 2012).	G
	36	The Satisfaction with Life Scale (SWLS; Diener et al., 1985).	I
	37	Spirituality scale (Lee et al., 2003).	G
	38	Subjective Happiness Scale (Jang, 2009).	G
Love for humanity	39	Compassionate Love for Humanity Scale (CLHS; Sprecher & Fehr, 2005).	J
Self construal	40	Self-Construal Scale (SCS; Singelis, 1994).	M
Focus on future	41	Focusing on the future scale (FOF; Al-Mabuk et al., 1995).	N
Principles of living	42	Principles of living survey (PLS; Thoresen, 1996)	N
Expressivity	43	The Berkeley Expressivity Scale assesses bodily (Gross & John, 1997).	R
	44	The Positive and Negative Affect Scales were used to assess positive and negative mood (Watson & Lee, 1999).	R
Affect	45	Index of Well-Being & Index of General Affect (Campbell et al., 1976).	T
	46	The relationship questionnaire (RQ; Bartholomew & Horowitz, 1991).	L
Spiritual well-being	47	The Spiritual Well Being Scale (Ellison, 1983).	P

Instrument ID: The number assigned to the instrument used to assess changes referred to in Table 2. Study ID: Indicates which studies used that instrument.

3.4. Study quality Assessment

An analysis of the quality of the studies and the risk of bias and quality, based on the combined criteria of the Cochrane tool and the PEDro scale, showed that most of the studies offer complete information on their inclusion criteria, with the exception of 5% (O Neil et al., 2006). 75% of the studies randomly

Table 2. Study Review.

Study ID	Author, country	Sample, N ^a , gender AGE	Participant Characteristics	Design follow-UP	Intervention density	Program	Facilitator	Fidelity	Results (Instrument ID)
A	*Al-Mabuk et al. (1995) USA	Study 1: N = 48 37 (F) 11 (M) EG = 19 (F) 5 (M) CG = 18 (F) 6 (M) Study 2: N = 45 29 (F) 16 (M) EG = 18 (F) 6 (M) CG = 11 (F) 10 (M) AGE = 18-21	Students with parent love deprived from childhood	Experimental design Non follow-up	60MIN X SESSION 2 xWEEK 2WEEKS 60MIN X SESSION 1 xWEEK 6WEEKS	Units of a manual in a workshop based in FPM of Enright (involved in forgiveness education) Interpersonal forgiveness	Trained student in forgiveness and human relationships	NO	Study1: EG ↑ (4) (31) Study2: EG ↑ (4) (8) (31) (28) (34) EG ↓ (17) EG = CG in (19)
C	*Goldman and Wade (2012) USA	N = 113 70 (F) 43 (M) EG = 41 EG (Other) = 39 CG = 32 AGE = 18-46 AGE M = 21.1 SD = 4.3	Students	RCT Follow-up 3 WEEKS	90MIN X SESSION 2 xWEEK 3WEEKS	REACH Anger reduction intervention Interpersonal	Doctoral students in an APA qualified counseling psychology program	YES Weekly supervision to the facilitators	EG = OG = CG ↑ (30) EG ↓ (23) (24) Follow-up EG = OG in (2) more than CG OG CG ↓ (30) EG = OG = CG in (22)
E	Griffin et al. (2015) USA	N = 140 82% (F) 18% (M) EG = 65 CG = 75 AGE M = 19.38 SD = 3.12	Students	Wait-list intervention. Follow-up 4 WEEKS	6HR	Online Workbook Reach Self-forgiveness	NO	YES Self-reported time to complete the workbook and the number of words typed into this workbook. (manipulation)	EG ↑ (12) (13) EG ↓ (27) Follow-up EG = the results persisted in (12)
G	Jeon et al. (2019) Korea	N = 86 EG = 43	Students	Quasi-experimental research	1 SEMESTER			NO	

(continued)

Table 2. Continued.

Study ID	Author, country	Sample, N ^a , gender AGE	Participant Characteristics	Design follow-UP	Intervention density	Program	Facilitator	Fidelity	Results (Instrument ID)
H	*Ji, Hui et al. (2016) China	CG = 43 39% (F) 47% (M) N = 28 EG = 16 CG = 12 25(F) 3(M) AGE M = 20.20 SD = 1.35	Students	ANCOVA Non follow-up Pretest, posttest controlled design Non follow-up	60MIN X SESSION 1 xWEEK 10WEEKS	Other forgiveness education program Interpersonal Enright process model integrate with Chinese values. Interpersonal	Professors of psychology, social welfare and nursing The facilitator obtained her Master's degree in counselling, a certified counselling psychologist	YES A spectator was requested to sit in the groups to ensure that the facilitator guided the program based on the manual.	EG ↑ (3) (35) (37) (38) EG ↓ (21) EG = CG in (20) EG ↑ (3) EG = CG in (17) (29) (30)
I	Ji, Tao et al. (2016) China	N = 24 EG = 12 EG(Other)=12 AGE = 18-21 AGE M = 18.96	Students	Quasi-experimental design pretest, posttest design Non follow-up	60MIN X SESSION 1 xWEEK 4WEEKS	Programs based on the Enright Psycho-social Model and Tang's Chinese Cultural Values-based Interpersonal	First author of this study accredited counselor in China	YES A spectator was requested to sit in the groups to ensure that the facilitator managed the program based on the manual	EG ↑ (36) EG(Other) ↑ (5) (6) EG = EG(Other) in (36).
J	*Kim et al. (2022) USA	N = 10 EG = 5 CG = 5 9(F) 1(M) AGE = 20-26 M = 21.60 SD = 2.01	Students	RCT Follow-up 1 MONTH	12-20HR 1CHAPTER X WEEK 8 WEEKS	8 keys to forgiveness by R. Enright Interpersonal	NO	NO	EG ↑ (2) EG ↓ (25) EG = CG in (29) (32) Follow-up EG = the results persisted in (2) (25)
K	*Lampton et al. (2005) USA	N = 65 EG = 42 CG = 23 AGE M = 20.0 SD = 1.3	Christian College students	Effectiveness study with convenience sample assignment to condition Non follow-up Pre post Follow-up 8 WEEKS	6HR 60MIN X SESSION 2 xWEEK 3WEEKS FPM: 12SESSIONS 150MIN 1 xWEEK OTHER: 12 SESSION 60MIN 1 xWEEK	Worthington REACH workshop Interpersonal The Forgiveness Process Model (FPM; Enright and Fitzgibbons 2000) Interpersonal	Group trained leaders NO INFO	NO NO	EG ↑ (28) (31) (46) EG ↓ (17) EG = OG in (3) (20) (21) Follow-up EG = the results did not persist in (28) (31) (46) (17)
L	Lin et al. (2013) USA	N = 25 32(F) 4(M) EG (FPM)= 15 EG (Other)=12 AGE = 18-23 AGE M = 21	Students with Insecure Attachment	Experimental wait-list control design Follow-up 3 WEEKS	6HR	REACH FORGIVENESS Interpersonal	Manual-directed for leaders trained	YES Sessions were audiotaped. Segments were compared to the manual.	EG = CG in (6) (40) Follow-up EG ↑ (5) EG = persisted in (6) (40)
M	*Lin et al. (2014) USA	N = 78 EG=? CG=? AGE 18-38 AGE M = 19.00 SD = 3.31	Female students	Experimental wait-list control design Follow-up 6 WEEKS	60MIN X SESSION 1 xWEEK 6 WEEKS	Combination of the principles of Rational Emotive Therapy (RET; Ellis and Harper 1975) and positive affective-based refocusing techniques developed by the Institute of Heart Math. Interpersonal	The first author, a licensed marriage and family counselor, conducted two groups of the same intervention following the same topical outline and pacin	NO	EG ↑ (4) (33) (41) (42) Follow-up EG ↓ (21) and persisted in (4) (33) (41) (42)
N	Luskin et al. (2005) USA	N = 55 EG = 28 CG = 27 41(F) 14(M) AGE = 18-29 AGE M = 21.6	Students	RCT Follow-up 6 WEEKS					

(continued)

Table 2. Continued.

Study ID	Author, country	Sample, N ^a , gender AGE	Participant Characteristics	Design follow-UP	Intervention density	Program	Facilitator	Fidelity	Results (Instrument ID)
O	O'Neil et al. (2006) USA	Study 1 N = 44 89% (F) 11% (M) Study 2 N = 49 85% (F) 15% (M)	Students	No info	2SESSIONS 10-day period in three, 90MIN X SESSION	Workshop based in Enright books Interpersonal	Small group leaders NO	NO	Participants were positively affected by the forgiveness program in different ways. The results also suggest that cognitive, affective, and behavioral changes can result from short forgiveness interventions.
P	Rye & Pargament (2002) USA	N = 56 (F) AGE = 18-23 AGE M = 18.8 SD = 1.1	Female Christian students wronged by a romantic partner	RCT Follow-up 6 WEEKS	90 X SESSION 1 xWEEK 6 WEEKS	Secular and religious forgiveness based on REACH program. Interpersonal	Group leaders (doctoral psychology students)	YES The psychologist supervised the group's leaders every week	EG OG ↑ (10) (47) (19) (31) Follow-up EG OG ↑ (47) and persisted in (10) (19) (31)
Q	*Toussaint, Griffin et al. (2020) USA	N = 99 60(F) 38(M) AGE M = 19 SD = 1.08	Christian students	RCT Follow-up 2 MONTHS	6HR	REACH Forgive for Good Interpersonal	Led by undergraduate coleaders	NO	EG = OG ↑ (10) (5) (6) EG = OG ↓ (1) Follow-up EG results did not persist in (10) (5)
R	*Toussaint, Worthington et al. (2020) India	N = 124 69(F) 55(M) AGE = 21-30 AGE M = 23 SD = 1.44	Students	Wait-list comparison groups Follow-up 4 WEEKS	6HR	REACH Forgiveness program. Interpersonal	Led by a research fellow working with one of the co- authors and trained by two of the co- authors.	NO	EG ↑ (5) (6) (30) (43) (44) EG ↓ (1) Follow-up EG results did not persist
S	Worthington et al. (2000)	Study 1 N = 96 76%(F) AGE M = 20 Study 2 N = 64 91% (F) AGE M = 21 Study 3 N = 106 EG1 = 28 EG2 = 30 EG3 = 25 CG = 23 78% (F) AGE M = 21 N = 31 (F) EG = 10 EG(Other) = 10 CG = 11 AGE = 21-24 AGE M = 22.1 SD = 0.98	Students	2x2x3x4 repeated measures factorial design 4x4 ANOVA 2x2 factorial analysis Follow-up (5 weeks)	60MIN 120MIN 120MIN	REACH Interpersonal	Study 1 : 2 counselors from a doctoral psychology program Study 2: 2 counselors from a doctoral psychology program	NO	Study 1 EG = CG in(1) Study 2 EG = CG in (1) (30) Follow-up EG ↓ (1) Study 3 EG1 ↓ (1) EG2 = EG3 = CG in (1) (30) Follow-up The results persisted in (1) and (30)
T	*Zhang et al. (2014) China	AGE M = 21 N = 31 (F) EG = 10 EG(Other) = 10 CG = 11 AGE = 21-24 AGE M = 22.1 SD = 0.98	Female students with romantic relational transgression	ANOVA Follow-up (4 weeks)	6 SESSIONS	EG: Chinese version of Enright's model Other G: the intervention used was based on interpersonal psychotherapy Interpersonal	NO INFO	NO	EG ↑ (7) EG OG ↓ (45) EG OG ↓ (18) (19) Follow-up EG results persisted in (7) (18) (19) (45)

EG: experimental group; CG: control group; OG: other group; (F): female; (M): male; M: mean; SD: standard deviation; N: numbers of participants; MIN: minutes; HR: hours; X: for. Increase: ↑; Decrease: ↓; ?: no information. *Metanalysis studies. ID Instrument is used to identify them in the Result column.

assigned subjects to the control, experimental and alternate training groups. Furthermore, some 25% use quasi-random or discretionary assignments (Greer et al., 2014; Jeon et al., 2019; Lampton et al., 2005; O'Neil et al., 2006; Rye & Pargament, 2002). In 35% of the studies, participants were blinded to their assigned group (Bell et al., 2017; Greer et al., 2014; Griffin et al., 2015; Harper et al., 2014; Ji, Hui et al., 2016; Kim et al., 2022; Rye & Pargament, 2002).

In just 15% of the studies the subjects were blinded to the fact of any distinctions between the groups (Bell et al., 2017; Goldman & Wade, 2012; Greer et al., 2014). In 30% of the studies, the therapists were blinded to at least one key finding (Bell et al., 2017; Goldman & Wade, 2012; Greer et al., 2014; Ji, Hui et al., 2016; Ji, Tao et al., 2016; Rye & Pargament, 2002).

In addition, in 50% of the studies, the results were measured for more than 85% of the participants originally assigned to the groups. 90% showed measures of variability in the results with the exception of two studies (Luskin et al., 2005; O'Neil et al., 2006). Finally, the studies had similar group sizes and offered statistical results for the data obtained in each group.

In general terms, the studies were methodologically rigorous, with the exception of the studies by O'Neil et al., (2006) and Jeon et al., (2019) which were excluded from the meta-analysis.

3.5. Results of the meta-analysis

3.5.1. Publication bias

An analysis of asymmetry using the Egger test showed no issues with regard to publication bias ($z = -.51$; $p = .61$). Figure 2 contains the funnel plot for the studies analyzed.

3.5.2. Principal results

Twelve studies were included in the meta-analysis. As shown in Figure 3, the effect of the forgiveness interventions was significant ($d = .69$, IC95[-1.04, -.34]). Only two studies (Goldman & Wade, 2012; Lampton et al., 2005) showed no statistically significant effect. In terms of homogeneity, both the Q-test and I^2 show a high degree of heterogeneity ($Q_{11} = 412.48$; $p < .0001$; $I^2 = 97.3\%$).

3.5.3. Moderator analyses

To identify possible sources of variability, two analyses of possible moderator variables were conducted. First, an analysis of the categorical moderator in a mixed effects model was conducted and weighted

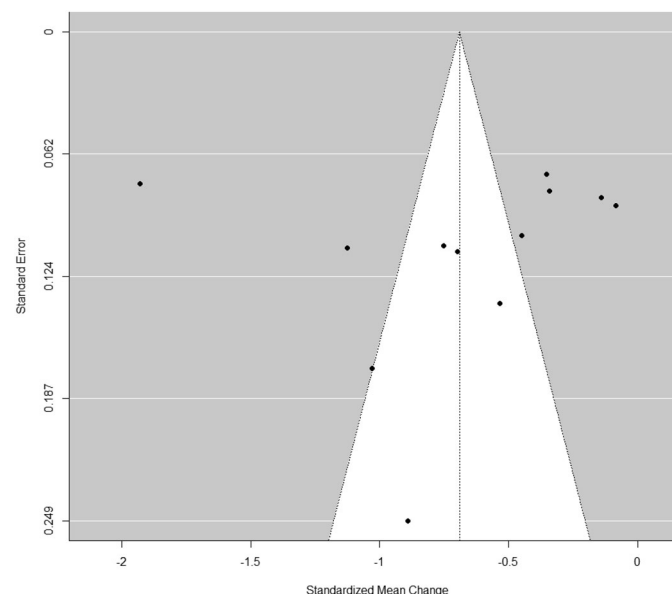


Figure 2. Funnel plot ($k = 12$).

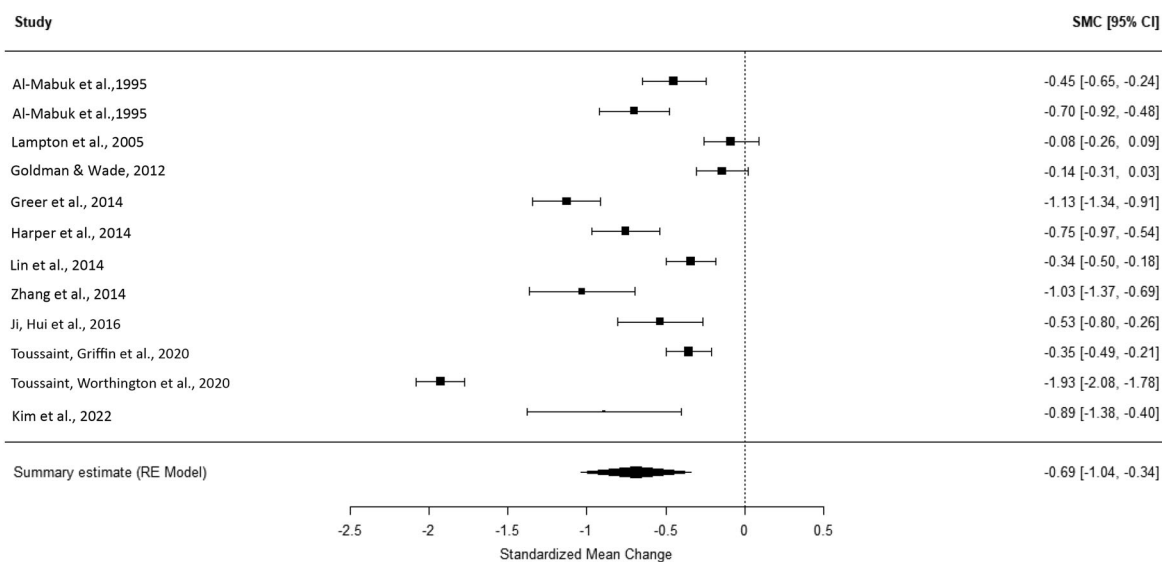


Figure 3. Forest plot.

Table 3. Analysis of categorical moderator variables.

Moderator variable	k	d	95% CI		ANOVA results
			d_l	d_u	
Country					$Q_b(2) = .009$; $p = .99$ $Q_w(9) = .015$ $p = 1$
USA	9	-.71	-6.03	4.60	
China	2	-.83	-9.74	8.08	
India	1	-1.93	-27.25	23.39	
Quality					$Q_b(2) = .002$; $p = .99$ $Q_w(9) = .023$ $p = 1$
High	5	-.79	-6.65	5.06	
Medium	5	-.70	-8.27	6.88	
Low	2	-1.19	-19.68	17.29	
Design					$Q_b(1) = .004$; $p = .95$ $Q_w(9) = .017$ $p = 1$
Randomized	10	-.85	-5.55	4	
Not randomized	1	-.08	-22.21	22.04	
Measure of Forgiveness					$Q_b(5) = .013$; $p = 1$ $Q_w(6) = .011$ $p = 1$
(1) TRIM	4	-1.02	-11.46	9.42	
(2) TRIM-R	2	-.11	-16.13	15.91	
(3) EFI	2	-.81	-7.69	6.08	
(4) WFS	2	-.58	13.43	12.27	
(6) DFS	1	-.34	-24.51	23.83	
(7) CFS	1	-1.03	-12.48	10.42	
Type of program					$Q_b(1) = .0005$; $p = .98$ $Q_w(10) = .023$; $p = 1$
FPM	5	-.82	-6.18	4.54	
REACH	7	-.70	-8.93	7.52	
Follow-up					$Q_b(1) = .99$; $p = .32$ $Q_w(10) = .376$; $p < .0001$
Yes	4	.38	-.37	1.12	
No	8	-.82	-1.25	-.39	

k: no. studies; d: combined ES; Q_b : statistic between categories to test the influence of the moderator variable. Q_w = statistic within category to test the model misspecification. (1) = Transgression Related Interpersonal Motivations. (2) = Transgression Related Interpersonal Motivations Revenge subscale. (3) = Enright Forgiveness Inventory. (4) = Willingness to forgive scale. (6) = Decisional Forgiveness Scale. (7) = Courtship Forgiveness Scale.

ANOVA calculated. The results are provided in Table 3. None of these variables showed a statistically significant relationship with the forgiveness effect.

Second, a simple meta-regression was calculated to analyze the effect of continuous moderator variables (Table 4). Only the mean anxiety level of participants before the intervention showed a statistically significant relationship with the forgiveness effect ($Q_m = 12.98$; $p = .0003$, $R^2 = .96$).

Table 4. Meta-regression analysis of continuous moderator variables.

Moderator variable	k	b	Q _m	P	Q _e	p	R ²
Year of publication	12	-.020	.96	.33	361.6	<.0001	.02
%women	11	.52	.15	.70	335.4	<.0001	.00
Mean anxiety score (pre-intervention)	6	.018	12.98	.0003	4.5	.34	.96

k: no. studies; b: regression coefficient of the moderator variable; Q_m: statistic to test the influence of the moderator variable; Q_e: statistic to test the model misspecification.

Discussion

The aim of this research was to examine the empirical evidence regarding the effectiveness of forgiveness training programs conducted with college and university students up to 2023. The programs were found to be effective in increasing the disposition to forgive, and also had a positive impact on the mental health of participants. The meta-analysis confirms this positive influence although with a high degree of variability. In light of these results, it can be asserted that, in general, interventions increase the capacity for forgiveness. The meta-analysis also found no significant differences according to the type of program (FPM or REACH) nor type of instruments used to evaluate changes. Interventions were also found to be effective in reducing negative symptoms such as depression, anxiety and rage, while producing an increase in positive emotions and feelings such as hope and self-esteem.

Considering the positive variables, improvements were observed in terms of hope, self-esteem, well-being and empathy among participants. These findings are in line with those of previous studies which highlight the importance of forgiveness in enhancing the strengths of the subject (Akhtar & Barlow, 2018; Enright, 2019; Karremans et al., 2003).

Similarly, the increased capacity for forgiveness coincided with decreased levels of depression, anxiety and anger, in line with research which suggests that forgiveness intervention is a protective factor in guarding against these negative symptoms (Hirsch et al., 2012; Lavafpour Nouri et al., 2015). It can be understood that the act of forgiveness frees an individual from the negative emotional burdens associated with past resentments and injuries, resulting in reduced symptoms of depression, anxiety and anger.

The meta-analysis indicates that anxiety prior to the intervention is a moderator variable; that is, subjects showing higher levels of anxiety (among the general population) benefited most from the program. This is consistent with the results of a study by Goldman and Wade (2012) which found that forgiveness training may be more effective in inducing significant changes in patients than traditional psychotherapy using alternative programs such as rage control. The relationship between forgiveness and easing feelings of anxiety and stress, including among university students, has been widely studied (Gençoğlu et al., 2018). Specifically, forgiveness therapy has proven to be successful with different types of populations and profiles, such as those with issues of substance abuse and trauma (Amiri et al., 2020; Lin et al., 2004), and may also be a moderating variable in longitudinal studies (Gu & Kwok, 2020; Kravchuk & Khalanskyi, 2022).

Regarding program density, it was found that shorter interventions correlate to diminished and less sustained or persistent changes over time, suggesting that longer and more comprehensive programs should be developed to maximize effectiveness (Al-Mabuk et al., 1995; Ji, Tao et al., 2016; Rye & Pargament, 2002; Worthington, 2000). While some studies found improvements even with shorter interventions, it is considered that longer-term therapeutic approaches induce deeper and more lasting transformations that permeate all aspects of emotional well-being and interpersonal relationships (Kim et al., 2022; Toussaint, Griffin et al., 2020). Forgiveness is a complex process involving the revision and restructuring of ingrained thoughts and emotions; interventions spanning over multiple sessions are recommended as more extensive interventions may provide greater space for reflection, practice and internalization of forgiveness skills, and thus have a more meaningful impact on the lives of participants. This notion is supported by a number of authors (Baskin & Enright, 2004; Lundahl et al., 2008) who emphasize the importance of having more sessions to have a more positive effect on the subject's well-being.

In terms of intervention methodologies, it is important to note the positive outcomes of programs using an autonomous workbook format. This type of intervention is self-administered and does not

require a trainer (Bell et al., 2017; Greer et al., 2014; Griffin et al., 2015; Harper et al., 2014). This methodology has been positively valued in other areas of therapeutic intervention (Beatty et al., 2010; L'abate, 2014) when learning the process itself. However, in the case of serious and profound offenses, it is recommended to seek the help of a specialized trainer.

Regarding the characteristics of participants, certain studies adapted their program to the religious faith of participants (Christians, in this case), evaluating the outcome of the program over time (Kim et al., 2022; Lampton et al., 2005; Toussaint, Griffin et al., 2020). The results suggest that interventions adapted to the religion of participants are more effective, offering greater spiritual benefits, and highlighting the importance of adapting programs to the specific culture in which they are conducted (Toussaint, Worthington et al., 2020). Another relevant aspect is the type of relationship an individual has with the offender: the forgiveness process is different when a relationship is ongoing or when it is over. Continued interaction with the offender, or the failure of the offender to change their injurious behavior, can often be an obstacle to forgiveness (Lin et al., 2013; Ridge et al., 2023).

This meta-analysis has several limitations. Firstly, the small sample size of the studies included in the meta-analysis can influence the overall effect size. With a small sample size there may be less statistical power to detect minor effects. Thus, the results may be influenced by an individual study and may not accurately represent the true effect size in the population. In addition to the limited number of studies into forgiveness training for university students, the heterogeneity of the sample in terms of programs, variables and evaluation tools, make it difficult to generalize the conclusions. The demographic disparity within the sample is also striking. In several studies, the percentage of women participants was significantly higher, perhaps because the participants were recruited from psychology and nursing programs in which women are generally more prevalent. López et al., (2021) suggest that women may be more sensitive to the need to address their own emotional issues and are generally more willing to take part in therapy sessions. However, generalizing the findings may not pose a problem given that the percentage of women does not appear as a significant moderating variable in forgiveness intervention programs.

Complementary effects may also be hindered by the limited number of studies which evaluate other variables associated with positive or negative symptoms and outcomes, as well as the heterogeneity of the variables and the instruments used to evaluate change. Instruments were grouped according to the variables they measured, and future studies should seek homogeneity in the measurement instruments for more consistent conclusions. Given the diversity of the design and methodologies of the studies, priority was given to calculating the overall effect compared to the control groups. A further limitation is that session length, program length and program duration over time were not analyzed as possible moderating variables in the meta-analysis.

Based on the findings of the present research, it is recommended that forgiveness training interventions adopt a hybrid methodology, combining face-to-face sessions with trainers and autonomous work sessions. The suggestion may help address the need to find a balance between the effectiveness of intervention programs and the optimization of resources, such as time and cost. Face-to-face sessions with trainers will allow for expert guidance and the opportunity for direct interaction, while autonomous work sessions will give participants the space necessary for individual reflection while practicing the acquired skills. This hybrid approach seeks to maximize the effectiveness of forgiveness training programs while also managing the logistical and financial constraints associated with the constant presence of a trainer. Thus, a hybrid strategy can deliver efficiency without compromising the quality of the training experience in forgiveness.

For future research, it is important to analyze the differences in outcomes when assessing forgiveness toward a specific offender versus general forgiveness. Forgiving a particular offender may significantly differ from the general willingness to forgive.

Upcoming studies should also seek to use rigorous research methodologies, such as randomized controlled trials, and include comprehensive outcome evaluations to measure the effectiveness of forgiveness training programs across various domains of mental health and well-being. Additionally, researchers should consider conducting longitudinal studies to evaluate the long-term effectiveness of forgiveness interventions and to better understand the mechanisms underlying the observed changes. Studies of

this kind could help identify the factors which contribute to the sustainability of the effects over time and inform the development of more effective intervention strategies.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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* indicates that the article is included in the systematic review.

** indicates that the article is included in the meta-analysis.

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