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A scoping review on social problem-solving interventions for college students

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Social problem-solving is a critical skill that enables individuals to effectively cope with real-life challenges. For college students, enhancing this ability is essential for successful adaptation to post-graduation life. While previous reviews have primarily focused on improving social problem-solving skills in adolescents and younger students, or have examined its role in mental health disorders, few have systematically explored intervention programs specifically targeting college populations. This scoping review aimed to investigate the characteristics, underlying theoretical frameworks, and implementation strategies of social problem-solving training programs for college students. An extensive literature search was conducted in February 2024, followed by thematic analysis to synthesize the findings. Fourteen relevant studies were identified. Of these, eleven employed group-based training formats, while the remaining three involved a one-time induction, an online training module, and specialized training for nursing students conducted in a hospital unit. Most interventions were grounded in cognitive–behavioral and psychoeducational approaches. Thematic analysis revealed two primary dimensions: training format and training content. The training content generally emphasized knowledge acquisition, attitude development, and practical skills such as interpersonal communication and emotional regulation. These interventions, typically delivered over multiple sessions in team-based settings, were found to be effective in enhancing students' social competence and problem-solving abilities.

KEYWORDS

social problem-solving, college students, intervention, scoping, review

1 Introduction

1.1 Background on social problem-solving

Social problem-solving (SPS) refers to the cognitive, emotional, and behavioral processes involved in identifying, evaluating, and responding to social challenges in everyday life (D'zurilla and Goldfried, 1971; D'Zurilla and Nezu, 2010; D'zurilla et al., 2004). Unlike general problem-solving, which focuses on logical or technical issues, SPS specifically addresses interpersonal and situational difficulties that require adaptive strategies for resolution. Effective SPS skills allow individuals to navigate complex social interactions, resolve conflicts, and make constructive decisions in challenging environments.

D'zurilla and Goldfried (1971) conceptualize social problem-solving as a process that involves both cognitive–behavioral skills and the motivational disposition to resolve interpersonal challenges. According to their model, social problem-solving comprises two fundamental orientations and three distinct problem-solving styles. The two orientations—positive problem orientation and negative problem orientation—represent opposing motivational tendencies, where the former reflects a constructive and optimistic approach to

problem-solving, while the latter is characterized by a tendency to perceive problems as threats. The three problem-solving styles include the rational problem-solving style, which involves logical analysis and systematic decision-making; the impulsivity/carelessness style, which reflects a hasty and insufficiently thought-out approach; and the avoidance style, where individuals tend to procrastinate or evade problem-solving situations altogether (D'Zurilla et al., 2002).

SPS has been recognized as a core component of adaptive functioning and mental health (Nezu, 2004). Individuals with strong SPS abilities tend to experience lower levels of stress, anxiety, and depression, as they can efficiently analyze problems, generate alternative solutions, and implement effective coping strategies (Ruan et al., 2022). Conversely, deficits in SPS are linked to various maladaptive outcomes, including increased emotional distress, poor academic performance, and heightened vulnerability to psychological disorders (Chang et al., 2020).

1.2 Challenges faced by college students

SPS plays a crucial role in multiple domains of life for college students, who must navigate academic, social, and personal challenges. During the transition to adulthood, students encounter various stressors, such as academic workload, peer relationships, financial responsibilities, and career planning (Leppink et al., 2016). The ability to effectively solve social problems can enhance their capacity to manage these stressors, thereby promoting emotional wellbeing and academic success.

Research has shown that students with higher SPS competence exhibit greater resilience and adaptability in university settings (Jiang et al., 2016). For instance, they are more likely to engage in positive coping strategies, maintain healthy interpersonal relationships, and demonstrate higher levels of academic self-efficacy. In contrast, students with poor SPS skills often struggle with conflict resolution, decision-making, and stress management, which may lead to academic underperformance and psychological distress (Trunzo et al., 2014). Moreover, SPS has been associated with lower levels of social anxiety and loneliness, as it facilitates effective communication and problem resolution in interpersonal contexts (Ruan et al., 2022).

1.3 Benefits of social problem-solving interventions

SPS interventions are designed to improve individuals' ability to define problems, generate alternative solutions, and evaluate outcomes effectively (D'Zurilla and Nezu, 2010). These skills are crucial for academic success, career decision-making, and interpersonal relationships, as they enable students to approach challenges with confidence and adaptability.

Resilience, or the ability to adapt positively to stress and adversity, is a key determinant of student success and wellbeing. SPS interventions promote adaptive coping strategies, such as cognitive reframing, active problem-solving, and emotional regulation, which help students respond effectively to academic and social stressors (de Almeida and Benevides, 2018).

Moreover, physical health is also related with social problem-solving. A good level of social problem-solving contributes to increased physical activity in college students (Sone et al., 2017).

Many psychological difficulties, such as anxiety and depression, stem from poor problem-solving abilities and difficulties in emotional regulation (Ruan et al., 2022). SPS interventions help students develop emotional awareness, regulate negative emotions, and reduce maladaptive coping behaviors (Nezu, 2004). Studies indicate that cognitive–behavioral problem-solving training significantly reduces symptoms of depression and anxiety by teaching students how to approach challenges in a structured and constructive manner (Sulu et al., 2022).

1.4 Overview of different intervention approaches

Cognitive–behavioral therapy (CBT)-based interventions are among the most widely studied and empirically supported approaches for enhancing social problem-solving (SPS) skills and alleviating psychological distress in young adults (Nezu, 2004). These interventions typically aim to help individuals recognize and modify maladaptive problem orientations, develop structured and effective problem-solving strategies, and regulate emotional responses to stressors. One prominent example is problem-solving therapy (PST), which integrates core principles of CBT and psychotherapy to improve individuals' SPS capabilities while simultaneously reducing symptoms of mental health disorders such as depression (D'Zurilla and Nezu, 2010; Bell and D'Zurilla, 2009). CBT-based social problem-solving therapy also closely aligns with the broader framework of Social–Emotional Learning (SEL), as promoted by the Collaborative for Academic, Social, and Emotional Learning (CASEL). According to CASEL, effective SEL interventions target five core competencies: self-awareness, social awareness, self-management, responsible decision-making, and relationship skills. Many SPS intervention programs are grounded in the SEL framework, aiming to strengthen these competencies as part of a holistic approach to personal and interpersonal development (Nezu, 2004). As such, SPS training is not only a means of addressing immediate psychological concerns but also a proactive strategy for fostering emotional resilience, adaptive functioning, and long-term wellbeing among college students.

Psychoeducational interventions focus on increasing awareness and understanding of effective problem-solving strategies. These programs are typically implemented in workshop or classroom settings and incorporate a combination of theoretical instruction, skill-building exercises, and guided practice sessions to facilitate the real-world application of problem-solving strategies (Heppner et al., 2004).

Group interventions offer a collaborative and interactive setting for developing problem-solving skills. These programs often integrate peer support and constructive feedback to reinforce learning. Additionally, they utilize role-playing exercises to enhance interpersonal problem-solving strategies and incorporate goal-setting and self-reflection activities to foster self-awareness and motivation (Eskin, 2012).

While previous studies have highlighted cognitive–behavioral, psychoeducational, and group-based approaches, existing interventions for enhancing social problem-solving (SPS) skills are not strictly confined to these three categories. In practice, many programs adopt an integrative or hybrid model, combining multiple strategies depending on target outcomes and population needs.

Furthermore, much of the current research on SPS interventions has concentrated on younger populations, such as preschoolers (Barnes et al., 2018), primary school students, and adolescents (Shaw, 2016; Yılmaz and Griffiths, 2023). For instance, Merrill et al. (2017) reviewed SPS interventions for children and adolescents grounded in social and emotional learning (SEL) theory, which largely draws from a cognitive–behavioral foundation.

In contrast, studies targeting college students tend to explore SPS in relation to broader psychological or behavioral variables, such as wellbeing and suicidality (Speckens and Hawton, 2005; Heapy et al., 2024) or aggression (Keltikangas-Järvinen, 2001), rather than evaluating structured intervention programs. To date, there is a lack of comprehensive, systematic synthesis of SPS interventions specifically designed for college student populations.

Moreover, existing reviews rarely integrate SPS interventions with other types of social competence training that include SPS components. This represents a significant limitation in understanding how SPS can function both as a standalone therapeutic approach and as an embedded skill within broader social–cognitive interventions.

Therefore, a scoping review that maps all intervention programs aimed at improving social problem-solving skills in college students—whether or not they are explicitly labeled as "problem-solving therapy"—is warranted. Such an inclusive approach would better capture the diverse methods used to enhance SPS and clarify its potential SPS as a therapeutic tool and as a critical life skill for navigating real-world challenges.

This scoping review aims to systematically map existing research and intervention programs related to social problem-solving (SPS) for college students, as well as to identify current gaps in the literature. The overarching goal is to provide a comprehensive overview of the scope, characteristics, theoretical foundations, and outcomes of SPS interventions targeting this population. Specifically, this review pursues the following four objectives:

(1) To identify and categorize the range of SPS intervention programs designed for college students, including their structural and contextual features (e.g., duration, delivery format, session frequency, participant demographics, and implementation settings).
(2) To examine the theoretical frameworks that underpin these interventions, with attention to models such as cognitive–behavioral theory, problem-solving therapy, and social–emotional learning paradigms.
(3) To synthesize empirical findings on the effectiveness of SPS interventions in enhancing college students' social and emotional competence, academic performance, and behavioral outcomes.
(4) To identify gaps in the current literature and provide evidence-based recommendations for future research and program development in this area.

To address these objectives, the review is guided by the following research questions:

(1) What types of social problem-solving interventions have been implemented for college students, and what are their key features? This includes information about participant characteristics, duration and frequency of training, delivery format (e.g., individual, group, and classroom), location, type of intervention (e.g., CBT-based and SEL-based), and, where available, participants' satisfaction with the programs.
(2) What theoretical models or conceptual frameworks form the basis of these interventions?
(3) What are the reported effects of these programs on college students' social–emotional skills, academic success, and behavioral adjustment?
(4) What gaps exist in the current body of literature, and what directions should future research take to strengthen the evidence base for SPS interventions in college populations?

In sum, this scoping review seeks to provide a structured and comprehensive synthesis of existing SPS interventions for college students, offering a detailed mapping of program types, theoretical foundations, outcomes, and areas that remain underexplored. By doing so, it aims to inform both researchers and practitioners working to enhance college students' problem-solving competencies and overall psychological wellbeing.

2 Method

To address the research questions outlined above, this scoping review followed the methodological framework proposed by Arksey and O'Malley (2005), and subsequently refined by Levac et al. (2010). The review process consisted of five key stages: identifying relevant studies through defined search terms and strategies; selecting studies based on predefined inclusion and exclusion criteria; extracting and charting relevant data; and finally, collating, summarizing, and reporting the results, in line with prior scoping review practices. In accordance with the PRISMA-ScR guidelines (Tricco et al., 2018), studies were included regardless of their methodological quality, as quality appraisal is not a requirement in scoping reviews.

2.1 Search terms and search strategies

Five databases—Scopus, PubMed, ScienceDirect, ERIC, and EBSCOhost—were searched between 6 and 8 February 2024. Keywords were developed through a review of literature relevant to the aims of this study and were evaluated collaboratively by all authors. The search strategies for each database were also designed by the research team.

As this review focuses on interventions aimed at improving college students' social problem-solving (SPS) abilities, three primary categories of keywords were identified: "social problem-solving," "intervention," and "college students." Accordingly, the core search formula applied was: "social problem solving" AND "intervention" AND "college students."

Due to variations in search functionalities across databases, the specific search terms used for each platform differed slightly. Full details of the database-specific search strategies are provided in the study protocol. For example, the following search string was used in Scopus: (TITLE-ABS-KEY (social problem solving)) AND ((TITLE-ABS-KEY (program*)) OR (TITLE-ABS-KEY (practice*)) OR (TITLE-ABS-KEY (intervention)) OR (TITLE-ABS-KEY (project))

OR (TITLE-ABS-KEY (training))) AND ((TITLE-ABS-KEY (college student*)) OR (TITLE-ABS-KEY (university student*))).

Several filters were applied across all databases to refine the search results, including language (English and Chinese), publication date (from 2003 onward), peer-reviewed status, and human subject research. The detailed inclusion and exclusion criteria are presented in the following section.

2.2 Inclusion and exclusion criteria

The inclusion criteria were collaboratively developed by all authors and covered eight key domains. (1) Studies were required to focus on training programs that included at least one session explicitly aimed at improving social problem-solving (SPS) abilities. (2) Given the exploratory nature of a scoping review, a broad range of study designs were considered eligible, including qualitative, quantitative, and mixed-methods research, as well as program evaluations, descriptive studies, case reports, and pilot studies. (3) Only studies involving students enrolled in higher education were included. These could involve general college populations or specific groups, such as students with symptoms of mental illness or those with disabilities. (4) No geographical restrictions were applied, allowing inclusion of studies from diverse cultural and educational contexts. (5) Only peer-reviewed journal articles were considered, and studies of all levels of methodological quality were included to ensure a comprehensive mapping of existing evidence. (6) Publications in English or Chinese were eligible, based on the language competencies of the research team. (7) Eligible studies needed to report outcomes related to social problem-solving abilities as the primary outcome, while secondary outcomes included broader measures of social competence, such as social skills, friendship skills, interpersonal communication, and social decision-making. Both short-term and long-term intervention effects were considered. (8) Finally, only studies published from 2003 onward were included to reflect contemporary educational and psychological practices.

The exclusion criteria were also clearly defined. Studies were excluded if they did not explicitly address social problem-solving as a primary component of the intervention. For example, studies that focused solely on academic problem-solving, general problem-solving, or broad coping strategies without specific social content—such as social emotions or social behaviors—were not considered. Additionally, studies that discussed social problem-solving but did not involve any training programs for college students (e.g., those focusing only on instructional methods or theoretical discussions) were excluded. In terms of the target population, studies involving non-college student groups, such as preschool children, primary school students, adolescents, or college students with clinically diagnosed mental illnesses (e.g., depression and anxiety disorders), were excluded. Regarding the type of publication, incomplete studies, conference abstracts without full texts, non-peer-reviewed literature, and book chapters were also excluded from the review.

2.3 Study selection

Three reviewers (i.e., the three authors of this article) independently screened the titles and abstracts of all identified studies according to the previously established inclusion and exclusion criteria. During this initial screening phase, each study was labeled in EndNote 20 using the following classification system: five stars (relevant), no star (not relevant), one star (uncertain), and four stars (requiring double-check). After the initial tagging, the reviewers held a consensus discussion to resolve any discrepancies, particularly those tagged as "uncertain" or "requiring double-check."

In the second phase, full-text articles were reviewed. The two first authors independently examined the full texts of studies previously marked as "relevant," "uncertain," or "requiring double-check," and applied the same labeling scheme in EndNote 20. The third author then cross-checked their evaluations and finalized the classification by assigning either five stars (relevant) or no star (not relevant).

Finally, all three authors reviewed the 14 full-text articles that received five-star ratings to proceed with the next stage of the review: data charting (see Figure 1 for the PRISMA flow diagram).

2.4 Data charting, collation, summarization, and reporting of the results

Following Levac et al. (2010), the data charting process was carried out independently by all three authors and subsequently discussed collectively to ensure consistency and accuracy. Initially, the two first authors independently extracted data from the first eight studies using a preliminary data charting form. These initial extractions were then reviewed by the third author, who refined and updated the charting form based on the feedback and findings from the initial set of studies.

Subsequently, all authors independently reviewed the remaining 14 included studies using the revised data charting form, which was structured to capture both descriptive information following the Population, Content, Outcomes, and Setting (PCOS) framework and qualitative data for thematic analysis (e.g., training format and training content).

Data collation and synthesis followed a two-step approach as recommended by Levac et al. (2010). First, a descriptive summary of each study was created, including publication details, study design, intervention characteristics, measured variables, and outcomes (see Tables 1, 2). Second, thematic and qualitative analyses were conducted based on the methodological sections of the included articles. The authors collaboratively proposed and refined a set of labels that guided theme development, enabling consistent interpretation across studies.

The thematic analysis was organized into two main dimensions: (1) training formats, such as lectures, teamwork activities, and experiential learning; and (2) training content, categorized into knowledge, attitudes, and skills in alignment with the Collaborative for Academic, Social, and Emotional Learning (CASEL) framework (see Table 3).

3 Results

A total of 14 intervention studies identified through database searches were included in this scoping review. Among them, one study was a qualitative pilot project without formal data collection (Aguiar and Palmira, 2014), while the remaining thirteen studies involved empirical data collection. Of these thirteen, one employed a qualitative

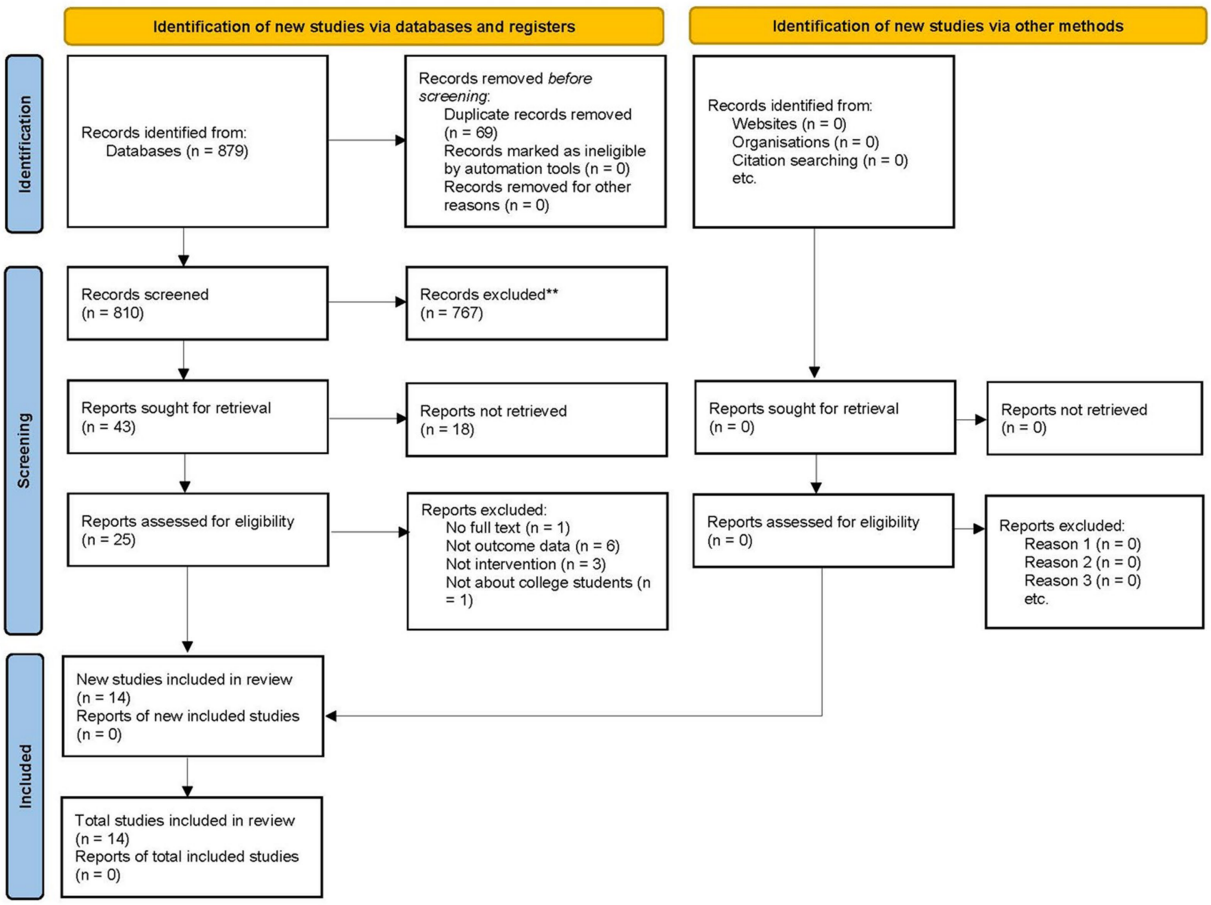

FIGURE 1
Algorithm for selection of studies in this scoping review.

research design (Lekka et al., 2015), nine utilized quasi-experimental pretest-posttest designs (Ahmady and Shahbazi, 2020; Al-Nabrawi et al., 2015; Ando, 2011; Brown et al., 2012; Chen et al., 2021; Kim et al., 2015; Koydemir and Sun-Selışık, 2016; Nguyen et al., 2023), and three adopted a single-group pretest-posttest design (Li and Shek, 2020; Şenocak and Demirkıran, 2023; Zazula and Appenzeller, 2019).

Among the twelve quantitative studies, two applied social problem-solving therapy as the main intervention approach (Ahmady and Shahbazi, 2020; Şenocak and Demirkıran, 2023), and three employed other cognitive–behavioral intervention frameworks (Brown et al., 2012; Kim et al., 2015; Nguyen et al., 2023). The remaining studies explored approaches such as group counseling, positive psychology interventions, and other multimodal strategies. A detailed summary of the study designs and intervention types can be found in Tables 1, 2.

3.1 The range of social problem-solving programs for college students

Regarding intervention focus, the reviewed studies demonstrated three thematic clusters: (1) stress coping strategies were targeted in two studies (14.3%) (Kim et al., 2015; Nguyen et al., 2023); (2) social problem-solving (SPS) development constituted the primary focus in five studies (35.7%), with standardized measurement tools employed—four studies utilized the Social Problem-Solving Inventory-Revised (SPSI-R) (Ahmady and Shahbazi, 2020; Chen et al., 2021; Şenocak and Demirkıran, 2023; Lau and Wang, 2014), while one study employed the Means-Ends Problem Solving procedure (MEPS) (Brown et al., 2012); (3) general social skills enhancement accounted for seven studies (50.0%), encompassing interpersonal communication, relationship building, and social decision-making (Aguiar and Palmira, 2014; Lekka et al., 2015; Al-Nabrawi et al., 2015; Ando, 2011; Koydemir and Sun-Selışık, 2016; Li and Shek, 2020; Zazula and Appenzeller, 2019).

Concerning intervention format, two primary modalities emerged: (a) Course-based interventions (n = 6, 42.9%) comprised one online curriculum (Koydemir and Sun-Selışık, 2016) and five traditional classroom-based programs (Ahmady and Shahbazi, 2020; Nguyen et al., 2023; Li and Shek, 2020; Zazula and Appenzeller, 2019); (b) Extracurricular interventions (n = 8, 57.1%) included four group training programs (Lekka et al., 2015; Al-Nabrawi et al., 2015; Kim et al., 2015; Şenocak and Demirkıran, 2023), one single-session induction (Brown et al., 2012), one residential summer camp intervention (Lau and Wang, 2014), and one hospital-based program for nursing students (Chen et al., 2021). Notably, one study failed to specify group implementation details (Nguyen et al., 2023).

Implementation parameters revealed (1) dosage—13 studies (92.9%) adopted multi-session formats ranging from 3 days to

TABLE 1 Summary of the selected studies.

Publication details	Study characteristics		Population				Outcomes		
Author	Purpose	Design	Country	Type of students	Sample size	Mental state	Satisfaction	Follow-up results	Limitation
Aguiar and Palmira (2014)	To evaluate the transversal skills developed in LaDETS	QUALI	Portugal	Normal	Nine groups	/	It was expected that the transversal skills would improve after training.	6 months	No data
Ahmady and Shahbazi (2020)	To investigate the impact of social problem-solving skills training on nursing students' critical thinking and decision-making	QUASI	Iran	Senior nursing	20 CTR 20 EXP	MH	After training: (1) the experimental group showed better social problem-solving, social decision-making, and critical thinking than the control group; (2) post-test results were better in three variables than pre-test, and the difference existed in subgroups of critical thinking and social problem-solving.	one month after intervention	(1) NTFC; (2) no immediate intervention data.
Al-Nabrawi et al. (2015)	To determine the effect of training on university students' life skills.	QUASI	Saudi Arabia	Preparatory year college students	75 CTR 75 EXP	/	The training program positively influenced self-confidence, self-assertiveness, tolerance of responsibility, and problem-solving.	/	NTFC
Ando (2011)	To report on a program of self-understanding and interpersonal interactions to prevent psychosocial distress among Japanese university students	QUASI	Japan	Normal	157 EXP (54 M; 103\u00B0F); 65 CTR (31 M; 34\u00B0F)	/	After training, both female and male students in the experimental group reported a significant increase in social self-efficacy in interpersonal relationships, and anxiety significantly decreased.	/	
Brown et al. (2012)	To examine whether experimentally manipulating self-identity can impact mental time travel and social problem-solving	QUASI	Wales	/	17 EXP, 16 CTR (23\u00B0F and 10 M)	MH	Individuals in the high self-efficacy group generated past and future events with greater (a) specificity, (b) positive words, and (c) self-efficacious statements, and also performed better on social problem-solving indices than those in the low self-efficacy group.	/	1 time induction
Chen et al. (2021)	To explore whether a 3-month specialized training program would improve clinical decision-making skills and social problem-solving abilities	QUASI	China	Senior nursing	77 EXP, and 73 CTR	/	After training, the experimental group showed improvement in social problem-solving, with this effect evident in all 5 subgroups. PPO, NPO, and RPS benefited more in the experimental group than in the control group.	/	/
Kim et al. (2015)	To examine the effects of an REBT program for senior nursing students aimed at enhancing stress-coping strategies and self-efficacy	QUASI	Korea	Senior nursing	18 EXP and 16 CTR	/	After training, the experimental group achieved a higher problem-solving score than the control group.	/	Stress coping
Koydemir and Sun-Selışık (2016)	To examine the effectiveness of an online intervention in promoting subjective and psychological wellbeing among first-year university students	QUASI	Capital of Turkey	1st year	44 EXP (26 M, 18\u00B0F); 36 CTR (20 M, 16\u00B0F)	MH	After training, social relationships did not change.	/	NTFC

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TABLE 1 (Continued)

Publication details	Study characteristics		Population				Outcomes		
Author	Purpose	Design	Country	Type of students	Sample size	Mental state	Satisfaction	Follow-up results	Limitation
Lau and Wang (2014)	To develop a learner-centered educational camp program for nursing students aimed at enhancing the ability, clinical interaction, interpersonal relationships, and social problem-solving	PRE-PST	Macao, China	Nursing college students	59	NM	After training, communication ability (total and all subscales), clinical interaction in all domains, interaction with the opposite gender regarding interpersonal dysfunction, and positive problem orientation in social problem-solving improved compared to before.	/	NCT
Lekka et al. (2015)	To investigate the impact of counseling-based training on online peer support by comparing the interventions of trained peer supporters to those of non-trained peer supporters	QUALI	Greece	Online peer supporters	57	NM	Comparing trained peer supporters to non-trained peer supporters, the training enhanced the peer support offered without compromising the nature of the relationships formed between peers.	/	(1) Number of non-trained group is unknown; (2) peer supporters
Li and Shek (2020)	To explore the changes in undergraduate students regarding positive youth development, psychological wellbeing, and desired graduate attributes after taking a leadership subject	PRE-PST	Hong Kong, China	1st year	2,876 (1,409 M; 1,460\u00B0F)	NM	After training, social competence, emotional competence, problem-solving, and critical thinking improved compared to before.	/	(1) NTFC; (2) NFSCI
Nguyen et al. (2023)	To examine the effects of the transforming stress program (TSP) among first-year medical students on their stress mindset and coping strategies when confronted with stressors	QUASI	Vietnam	1st year medical	205 EXP; 204 CTR	NM	After training, the intervention group showed improvements in stress mindset and coping strategies across six domains (problem-solving, social support, humor, religion, venting, and self-distraction) and decreases in three (avoidance, substance use, and self-blame).	Six months later, the effects diminished over time.	Stress coping
Şenocak and Demirkıran (2023)	To investigate the effect of problem-solving skills development training on nursing students' levels of resilience, perceived stress, and self-efficacy	QUASI	Western Turkey	2nd year nursing	36 EXP; 36 CTR	MH	After training, social problem-solving improved at post-training and at the 1-month follow-up.	Positive effect lasted at the 1-month follow-up.	NTFC
Zazula and Appenzeller (2019)	(a) To improve social skills in academic and interpersonal settings and (b) to increase the likelihood of effective adaptation to university for incoming medical students	PRE-PST	Brazil	1st year medical	57	NM	After training: (1) social skills improved in general specifically in self-affirmation, coping with risk, conversation, and social ease; (2) academic experience improved in general and specifically in interpersonal, career, and institutional domains.	/	/

EXP, experimental group; CTR, control group; M, male; F, female; MH, without receiving psychological treatment; NC, not clear; /, none; NTFC, no training for control group; NFSCI, not specific for social component; NCT, no control group; QUASI, a quasi-experimental pre- and post-test design; QUALI, qualitative study; PRE-PST, a single-group pretest-posttest design.

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TABLE 2 Intervention characteristics of studies.

Author	Social competence and measurement	Intervention type	Underlying theory	Session	Duration of each session	Duration of program	Trainer	Group size	Place	Report details
Aguiar and Palmira (2014)	Transversal skills (communication, conflict management, teamwork, critical thinking, creativity, problem-solving)	AFCLT	Constructivist paradigm and experiential learning theories as problem-based learning	NM	One morning/ afternoon per month	36 weeks	NM	NM	Library of college	NM
Ahmady and Shahbazi (2020)	Social problem-solving: SPSI-R	CSBIN	(1) Social problem-solving model (CBT); (2) a learner-centered educational intervention	8	NM	2 months	LEC	Four persons	In college	Yes
Al-Nabrawi et al. (2015)	Interaction with others	AFCLT	Psychoeducational intervention based on the development of college students' life skills	8	NM	4 days within 2 weeks	Four trainers	NM	In college	Yes
Ando (2011)	The efficacy of social problem-solving measured by social self-efficacy	CSBIN	Psychoeducational intervention based on social cognitive theory	11	90 min	11 weeks	LEC certified clinical psychologist; a teaching assistant	NM	In college	Yes
Brown et al. (2012)	Social problem-solving ability: MEPS	1-time induction	CBT	1	NM	NM	NM	/	NM	NM
Chen et al. (2021)	Social problem-solving: SPSI-R	Specialized training program in a hospital.	/	/	1 week training for each unit	3 months	1 nursing director, 1 assistant, 3 nursing educators	/	Hospital	NM
Kim et al. (2015)	Coping strategies including seeking social support, problem-solving, and avoidance.	Experience	REBT based on the ABC model.	8 (twice a week)	60 min	4 weeks	Researcher with a PhD	9	NM	Yes
Koydemir and Sun-Selışık (2016)	Social relationships, including social support and personal relationship	Online CSBIN	Psychoeducational intervention based on positive psychology concepts,	8	60–75 min	8 weeks	1 graduate student, 1 senior student and 1 LEC	/	Computer lab	Yes

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TABLE 2 (Continued)

Author	Social competence and measurement	Intervention type	Underlying theory	Session	Duration of each session	Duration of program	Trainer	Group size	Place	Report details
Lau and Wang (2014)	(1) Social problem-solving: C-SPSI-R; (2) Communication ability: C-CAS; (3) Interpersonal skill: C-IDC; (4) Clinical interaction ability: C-CIS	Summer camp	A learner-centered educational camp intervention	Three sharing sessions and five experiential learning games,	NM	3 days	1 coordinator, 3 experts, and 6 volunteers.	NM	Residential program in a village	Yes
Lekka et al. (2015)	Peer support	AFCLT	(1) Peer support; (2) counseling skills	10	3 h	10 weeks	NM	NM	NM	NM
Li and Shek (2020)	(1) Social competence: CPYDS	CSBIN	Psychoeducational intervention based on the positive youth development approach and positive psychology	13	3 h	13 weeks	LEC	NM	In college	Yes
Nguyen et al. (2023)	Coping strategy measured by Brief COPE including problem-solving, social support, avoidance, substance use, self-blame, humor, religion, and self-distraction	CSBIN	CBT; DBT	5	1–2 h	10 weeks	1 principal investigator and 2 psychologists	/	In college	Yes
Şenocak and Demirkıran (2023)	Social problem-solving: SPSI-R-Short Form	AFCLT	Social problem-solving model; (CBT)	8	55–150 min	7 weeks	First author	18 students	In college	Yes
Zazula and Appenzeller (2019)	(1) Social skills: SSI-Del-Prette; (2) interpersonal relationship: AEQ-r	CSBIN	Psychoeducational intervention	7	4 h	14 weeks	NM	5–20 students top	In college	Yes

SPSI-R, social problem-solving inventory—revised by D'Zurilla et al. (2002); MEPS, Means-End Problem Solving Task (Platt et al., 1975); REBT, Rational emotive behavior therapy; C-SPSI-R, short form Social Problem Solving Inventory–Revised; C-CAS, Communication Ability Scale; C-IDC, Interpersonal Dysfunction Checklist; C-CIS, Clinical Interaction Scale; CPYDS, The Chinese Positive Youth Development Scale (Shek et al., 2007); SSI-Del-Prette, Social Skills Inventory; AEQ-r, Academic Experiences Questionnaire—reduced version; CBT, cognitive behavioral therapy; DBT, dialectical behavioral therapy; CSBIN, a course-based intervention; AFCLT, after class training; LEC, lecture of university.

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36 weeks; (2) setting—12 studies (85.7%) occurred within university contexts, with exceptions being a hospital clinical environment (Chen et al., 2021) and a rural summer camp (Lau and Wang, 2014) (see Table 2 for cross-tabulated analysis).

Based on a review of all 14 studies, twelve aspects of training forms were identified by the reviewers (see Table 3). Only three studies did not involve "team work." One study applied a one-time induction of self-efficacy, which involved "individual study" (Brown et al., 2012); one study conducted situational training in a specific hospital unit (Chen et al., 2021); and one introduced online training via computer, which also involved "individual study" (Koydemir and Sun-Selışık, 2016). One study incorporated both "individual study" and "team work" (Şenocak and Demirkıran, 2023).

The "team work" training form was typically used in conjunction with "personal sharing." Among the twelve studies involving "personal sharing," only one did not use "team work" (Koydemir and Sun-Selışık, 2016). "Experiential learning" was another method frequently paired with "team work" training. One study involving "team work" did not adopt "experiential learning," while another study employed "experiential learning" without using "team work."

Aside from these, nine studies involved both training forms. Nine studies that incorporated "team work" also applied the "problem-focused learning and practicing" method. Two studies used the "team work" method without "problem-focused learning and practicing" (Al-Nabrawi et al., 2015; Ando, 2011), while another two showed the opposite pattern (Chen et al., 2021; Koydemir and Sun-Selışık, 2016).

"Homework or additional practice after training" was not commonly included in the training programs; only four studies incorporated this component (Kim et al., 2015; Koydemir and Sun-Selışık, 2016; Nguyen et al., 2023; Şenocak and Demirkıran, 2023).

Two of the 14 studies provided participants with specific knowledge related to a major, such as nursing or peer support. Seven of the 14 studies offered psychological theory knowledge, while three studies provided both specific professional knowledge and psychological theory.

Regarding training attitudes, two studies aimed to foster positive motivation for problem-solving (Koydemir and Sun-Selışık, 2016; Şenocak and Demirkıran, 2023). Five studies focused on enhancing participants' self-efficacy in problem-solving (Aguiar and Palmira, 2014; Ahmady and Shahbazi, 2020; Al-Nabrawi et al., 2015; Ando, 2011; Brown et al., 2012). Two studies addressed both positive motivation and self-efficacy (Lekka et al., 2015; Li and Shek, 2020).

As for training skills, two studies did not involve any skill training (Brown et al., 2012; Chen et al., 2021), while the remaining studies incorporated at least two types of skills. Three of the seven core skills—emotion recognition and regulation, relationship and communication, and social problem-solving/decision-making—were each mentioned nine times, indicating they are the most common techniques used in training programs aimed at enhancing college students' social skills. In addition, self-and social awareness was mentioned eight times, self-management seven times, and resilience six times. Critical thinking training was included in only four intervention studies.

3.2 The underlying theory of social problem-solving programs for college students

Among the fourteen intervention studies targeting college students, one study did not report any underlying theoretical framework (Chen et al., 2021). Four studies referenced cognitive–behavioral therapy (CBT), including two that specifically adopted social problem-solving therapy (Ahmady and Shahbazi, 2020; Şenocak and Demirkıran, 2023). One study implemented an intervention grounded in rational emotive behavior therapy (Kim et al., 2015).

Five studies applied psychoeducational interventions based on various psychological theories, including positive psychology (Koydemir and Sun-Selışık, 2016; Li and Shek, 2020), social cognitive theory (Ando, 2011), and life skills development for college students (Al-Nabrawi et al., 2015; Zazula and Appenzeller, 2019).

Two studies adopted a learner-centered educational approach. The first delivered a course-based intervention (Ahmady and Shahbazi, 2020), while the second provided training through a summer camp format (Lau and Wang, 2014).

Only one study reported using a peer support counseling framework as the theoretical basis for its intervention (Lekka et al., 2015).

3.3 The impact of social problem-solving programs on college students

With the exception of one study that did not include data collection and another that offered an online training format (Koydemir and Sun-Selışık, 2016), the remaining twelve studies demonstrated improvements in social competencies related to social problem-solving following the intervention.

Additionally, several studies reported enhanced decision-making abilities and general problem-solving skills as a result of the training (Ahmady and Shahbazi, 2020; Al-Nabrawi et al., 2015; Chen et al., 2021; Şenocak and Demirkıran, 2023). Improvements in self-confidence and self-efficacy were also observed (Al-Nabrawi et al., 2015; Brown et al., 2012; Kim et al., 2015; Şenocak and Demirkıran, 2023).

Furthermore, participants reported gains in psychological wellbeing, reductions in depressive and anxiety symptoms, and increases in life satisfaction and subjective happiness (Brown et al., 2012; Koydemir and Sun-Selışık, 2016; Li and Shek, 2020).

Finally, the intervention programs were found to enhance emotional regulation skills, resilience, and stress management abilities (Al-Nabrawi et al., 2015; Ando, 2011; Şenocak and Demirkıran, 2023), and contributed positively to students' academic experiences (Zazula and Appenzeller, 2019).

4 Discussion

After reviewing existing research on intervention programs aimed at enhancing college students' social problem-solving abilities, a total of 14 articles were identified and included in this scoping review. The objective was to systematically summarize intervention programs suitable for improving social problem-solving among college students and to comprehensively analyze key components such as session structure, duration, implementation settings, underlying theoretical frameworks, and program outcomes.

Most of the social problem-solving intervention programs identified were informed by the framework of Social and Emotional Learning (SEL) developed by the Collaborative for Academic, Social, and Emotional Learning (CASEL), which is grounded in

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TABLE 3 Thematic analysis of training form and training content.

Studies	Training form												Training content										
													Knowledge		Attitude		Skills						
	F1 n = 1	F2 n = 8	F3 n = 3	F4 n = 11	F5 n = 11	F6 n = 6	F7 n = 1	F8 n = 12	F9 n = 11	F10 n = 1	F11 n = 13	F12 n = 4	K1 n = 5	K2 n = 10	A1 n = 4	A2 n = 7	S1 n = 6	S2 n = 9	S3 n = 8	S4 n = 9	S5 n = 7	S6 n = 9	S7 n = 4
Aguiar and Palmira (2014)				x	x			x	x		x					x		x	x	x	x	x	x
Ahmady and Shahbazi (2020)				x				x	x		x		x			x					x	x	x
Al-Nabrawi et al. (2015)		x		x	x			x			x			x		x			x	x	x	x	
Ando (2011)		x		x	x	x		x			x			x		x	x	x	x	x	x	x	
Brown et al. (2012)	x		x								x					x							
Chen et al. (2021)						x			x		x		x										
Kim et al. (2015)		x		x	x			x	x		x	x		x				x	x		x		
Koydemir and Sun-Selışık (2016)			x		x	x	x	x	x	x		x		x	x			x	x	x		x	
Lau and Wang (2014)				x	x	x		x	x		x		x	x			x	x	x	x		x	x
Lekka et al. (2015)		x		x	x			x	x		x		x	x	x	x	x	x	x	x		x	
Li and Shek (2020)		x		x	x			x	x		x			x	x	x	x	x	x	x	x		x
Nguyen et al. (2023)		x		x	x	x		x	x		x	x		x			x				x		
Şenocak and Demirkıran (2023)		x	x	x	x	x		x	x		x	x		x	x			x		x		x	
Zazula and Appenzeller (2019)		x		x	x			x	x		x		x	x			x	x		x		x	

F1, induction; F2, lecture; F3, individual study; F4, team work; F5, experiential learning; F6, video watching or reading; F7, personal sharing; F8, problem-focused learning and practicing; F9, online study; F10, face to face study; F11, homework or additional practice after training; K1, training related to a certain major; K2, psychological theory; A1, positive motivation; A2, self-efficacy; S1, resilience; S2, emotion recognition and regulation; S3, self-and social awareness; S4, relationship and communication; S5, self-management; S6, social problem-solving and decision-making; S7, critical thinking. "x" indicates that the corresponding training form and content was implemented in the study.

cognitive–behavioral therapy (CBT). A specific form of CBT applied in several studies is social problem-solving therapy, based on the social problem-solving model developed by D'zurilla and Goldfried (1971). This model is recognized as a targeted intervention within SEL, focusing on improving social problem-solving skills. As emphasized by Nezu (2004), social problem-solving therapy is a purposeful, effortful, and step-by-step process.

Importantly, this scoping review includes not only studies employing social problem-solving therapy but also those utilizing other forms of intervention, such as psychoeducational approaches and group-based programs, all aimed at enhancing the social problem-solving capacities of college students.

4.1 The range of social problem-solving programs for college students

Peer participation plays a crucial role in social problem-solving interventions. Among the fourteen studies reviewed, only three did not emphasize group work or peer involvement. These three studies demonstrated that individuals can receive training independently. For example, in the study by Koydemir and Sun-Selışık (2016), participants completed the intervention using a computer in the university library. Brown et al. (2012) implemented a one-time self-efficacy induction by a trainer, while Chen et al. (2021) conducted training in a specialized hospital unit, where students enhanced their clinical social problem-solving skills in situational contexts. Notably, in the study by Chen et al. (2021), although there was no explicit mention of peer involvement, the training took place during a centralized internship that required participants to address specific clinical problems in realistic scenarios. As the study did not provide detailed information about the training activities within the internship unit, the possibility of peer involvement cannot be completely ruled out.

In contrast, peer participation was an integral component in the remaining eleven studies. These interventions typically required participants to engage in group-based practice, often through role-play in structured scenarios. Within these settings, team members applied problem-solving techniques to simulate real-life challenges, such as building interpersonal relationships, effective communication, identifying problems, and resolving conflicts. The interactive nature of these exercises positively contributed to the development of participants' social problem-solving abilities.

Standardized processes were also essential across many social problem-solving programs. These structured interventions often involved a combination of project introduction, theoretical knowledge delivery, and targeted skills training. Of the fourteen studies, ten clearly reported the full training process—either in the main text, tables, or appendices—excluding one pilot study without data collection (Aguiar and Palmira, 2014), one one-time induction study (Brown et al., 2012), one clinical internship (Chen et al., 2021), and one peer-support training study (Lekka et al., 2015). Each program had a specific training objective aligned with improving problem-solving capacity, consistent with the step-by-step nature of social problem-solving (SPS) therapy.

Only one of the 14 studies was conducted entirely online (Koydemir and Sun-Selışık, 2016). In this program, the researchers designed modules accessible via university computers, integrating multiple components including psychoeducation (in the form of webinars and text/audio materials), experiential activities, gamified tasks, videos, demonstrations, and personal sharing exercises. Although delivered online, the program maintained a clear focus on teaching specific social problem-solving skills such as emotional recognition and regulation, self-and social awareness, interpersonal communication, and decision-making.

In addition to skill training, many of the reviewed interventions emphasized attitudinal change. Most programs targeted the enhancement of self-efficacy, and only four focused on fostering a *positive problem orientation*. In the social problem-solving model proposed by D'Zurilla et al. (2002), problem orientation is understood as a motivational component. A positive orientation toward problems helps individuals approach challenges with optimism and persistence, thereby increasing the likelihood of successful resolution.

Moreover, several interventions aimed to improve students' understanding of psychological theories, which may help participants process cognitive information more accurately and develop a more adaptive problem-solving approach. Notably, 7 of the 14 studies targeted nursing or medical students, and four of these provided participants with domain-specific knowledge related to medical or clinical settings. Another study focused on developing counseling skills among peer supporters. While such interventions are valuable for their respective contexts, their applicability to the general college student population may be limited, as they address workplace-specific issues such as clinical decision-making and doctor–patient communication. This reflects a trend toward implementing social problem-solving (SPS) interventions in health-related or helping-oriented educational contexts. While these groups may possess unique stressors and interpersonal demands, the core components of SPS—such as decision-making, emotional regulation, and effective communication—are highly transferable across student populations. Therefore, findings from these studies may still offer valuable insights into the broader applicability of SPS interventions for general college student populations. However, caution is warranted in generalizing results, and further research involving diverse academic disciplines is needed to ensure contextual relevance and inclusivity.

In conclusion, to better understand how to enhance social problem-solving among college students, it is essential to conceptualize it as a universal cognitive process. Future interventions should consider the psychological, motivational, and interpersonal factors that influence this process. As evidenced by studies targeting general college populations, components such as knowledge of psychological theories, problem-solving motivation, self-efficacy, and interpersonal and intrapersonal skills may serve as effective focal points for intervention design.

4.2 The underlying theory of social problem-solving programs for college students

Most of the interventions included in the reviewed studies were course-based, meaning that the programs were delivered as elective or compulsory university courses, typically lasting between 8 to 14 weeks. These course-based interventions were primarily grounded in social problem-solving therapy, cognitive and dialectical behavior therapy, and

psychoeducational intervention models. In addition to formal course structures, some interventions delivered outside the classroom were based on broader theoretical frameworks such as positive psychology, rational emotive behavior therapy, the constructivist paradigm, experiential learning theory, and learner-centered educational approaches.

However, some of these theories were presented in a relatively general manner, lacking detailed elaboration within the studies. Previous literature suggests that *social information processing (SIP) theory* provides a more specific framework for understanding social problem-solving interventions. According to Crick and Dodge (1994), the SIP model outlines the cognitive processes underlying children's behavioral responses in social contexts—processes that closely align with the phases of social problem-solving. Competent social behavior is seen as the result of successful navigation through six sequential mental steps involved in processing social cues, evaluating potential responses, and enacting appropriate behaviors.

Furthermore, emotion has been identified as a critical factor influencing social information processing. Lemerise and Arsenio (2000) extended the SIP model by integrating emotional processes, emphasizing that emotions significantly shape how individuals interpret and respond to social situations. This theoretical perspective supports the inclusion of training components such as knowledge acquisition, social problem-solving strategies, and emotional recognition and regulation in many of the interventions.

Another theoretical framework that supports social problem-solving interventions is the concept of *self-regulation* and *executive functioning*. These mental processes enable individuals to plan effectively, maintain attention, follow instructions, and manage multiple tasks simultaneously (Drigas and Karyotaki, 2019). Self-regulation encompasses the ability to control emotions, behaviors, and cognitive functions like working memory and attentional control—skills that are essential for successful social interaction and relationship-building (Maksum et al., 2021). Moreover, these executive functions are fundamental in coping with stress, managing frustration, and making well-informed decisions, all of which are central components of effective social problem-solving (Baumeister et al., 2007).

Taken together, these theoretical perspectives justify why many social problem-solving interventions for college students include training in resilience, self-and social awareness, self-management, and interpersonal communication. By targeting these areas, interventions aim to enhance not only problem-solving capacities but also the broader cognitive, emotional, and behavioral competencies required for adaptive social functioning.

4.3 The impact of social problem-solving programs on college students

Most of the fourteen studies reviewed demonstrated that social problem-solving interventions had a significant positive impact on the targeted social competencies of college students. Notably, these positive effects were often sustained over time, with follow-up assessments—ranging from 1 to 6 months—indicating maintained or even enhanced outcomes. Among the intervention models identified, cognitive behavioral therapy (CBT)-based approaches were the most frequently employed, either explicitly or implicitly. CBT is widely recognized for its capacity to promote emotional regulation, structured problem-solving, and improved interpersonal communication. When integrated with social skills training (SST), CBT has been shown to be particularly effective for individuals facing social or behavioral difficulties (Kumuyi et al., 2022). Furthermore, CBT-based programs have demonstrated improvements in cognitive flexibility, emotional involvement, and social engagement, which are critical dimensions of social functioning (Goldingay et al., 2020).

Although not all reviewed studies explicitly identified CBT as the theoretical foundation, a closer examination of their intervention structures—such as the inclusion of cognitive restructuring, behavioral modeling, and role-play exercises—revealed that several interventions incorporated core CBT elements (Ando, 2011; Zazula and Appenzeller, 2019).

In contrast, a smaller number of studies adopted psychoeducational or group-based formats, which emphasized informational content delivery, peer interaction, and self-reflection. While these approaches may not be as theoretically structured as CBT, they provide value in promoting collaborative learning and social feedback, especially in peer-support or student leadership contexts (Eskin et al., 2013).

Overall, the findings suggest that CBT-informed interventions tend to yield robust and enduring outcomes, but alternative models—such as psychoeducational and group-based approaches—may also offer context-specific advantages. Future research should aim to compare the relative efficacy of these different frameworks to inform the development of more targeted and flexible social problem-solving interventions for diverse college student populations.

4.4 Limitations

One of the primary challenges encountered in this scoping review was the conceptual ambiguity surrounding the definition and scope of *social problem-solving*, which directly influenced the identification and selection of relevant studies. Although the search strategy was guided by the specific keyword "social problem-solving," the retrieved literature revealed substantial variation in how this concept was defined and operationalized across different contexts. Many interventions did not explicitly label themselves as "social problem-solving programs," yet targeted related constructs such as social competence, interpersonal communication, emotional regulation, and decision-making—skills that are integral to the social problem-solving process. Consequently, some studies included in this review focused more broadly on enhancing social and emotional competencies rather than on problem-solving per se. While this broadened the review's scope and provided a richer understanding of intervention diversity, it also introduced conceptual variability, which limited direct comparisons across studies grounded in different theoretical perspectives.

Another key limitation lies in the heterogeneity of the interventions reviewed. The studies varied considerably in terms of program content, theoretical frameworks, delivery modalities (e.g., group-based vs. individual and online vs. face-to-face), and duration. This diversity made it challenging to synthesize findings into a coherent framework for best practices in social problem-solving interventions targeting college students. Additionally, many studies focused on specific subgroups—such as nursing or medical students and peer supporters—which may limit the generalizability of findings to the broader population of college students.

Importantly, most of the reviewed articles emphasized short-term intervention effects, often evaluating outcomes immediately

post-intervention or within 1 to 6 months. While these findings suggest promising immediate impacts, the absence of long-term follow-up data presents a significant gap in the literature. Without rigorous longitudinal studies, it remains unclear whether the observed improvements in social problem-solving abilities and related competencies are sustained over time. Future research should prioritize long-term evaluations to assess the durability of intervention effects and to better understand how these programs influence college students' social and emotional development in the long run.

Overall, these limitations suggest the need for more theoretically consistent, methodologically rigorous, and longitudinally designed studies. Future systematic reviews or meta-analyses may benefit from narrower inclusion criteria, greater emphasis on clearly defined intervention models, and a stronger focus on assessing sustained outcomes beyond the immediate post-intervention phase.

5 Conclusion

Social problem-solving interventions for college students are typically designed as structured, multi-session programs that span approximately 2 months on average. These interventions often incorporate elements such as teamwork, experiential learning, personal sharing, and problem-based scenarios. The training content usually targets three core domains: knowledge acquisition (e.g., psychological theories and decision-making models), attitudinal change (e.g., self-efficacy and positive problem orientation), and skill development (e.g., interpersonal communication, self-awareness, and emotional regulation). Most of these programs are grounded in cognitive–behavioral frameworks, including social problem-solving therapy, psychoeducational models, and positive psychology.

The findings of this review suggest that such programs are generally effective in enhancing college students' social problem-solving abilities and related competencies. Improvements were also observed in areas such as emotional wellbeing, communication, resilience, and academic engagement. However, a common characteristic of these interventions is their reliance on group-based methods, particularly role-play and peer collaboration. While these approaches are beneficial for interactive learning, they may not be feasible or accessible for all students—especially those in online or individualized learning contexts.

Therefore, future research is encouraged to explore alternative formats that allow for more independent and self-paced training. In particular, there is a need to shift some focus from specific skill acquisition to the enhancement of cognitive processes underlying social problem-solving, such as self-regulation, executive functioning, and social information processing. This could help broaden the accessibility and scalability of such interventions and contribute to a more nuanced understanding of how social problem-solving skills are developed and sustained over time.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

WW: Writing – original draft, Writing – review & editing. AM: Supervision, Writing – review & editing. NB: Validation, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The authors declare that no Gen AI was used in the creation of this manuscript.

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References

Aguiar, M., and Palmira, A. M. (2014). Laboratory of development and evaluation of transversal skills – LaDETS: a pilot project in the bachelor of education of the University of Minho (Portugal). *Mediterr. J. Soc. Sci.* 5, 149–154. doi: 10.5901/mjss.2014.v5n22p149

Ahmady, S., and Shahbazi, S. (2020). Impact of social problem-solving training on critical thinking and decision making of nursing students. *BMC Nurs.* 19:94. doi: 10.1186/s12912-020-00487-x

Al-Nabrawi, I., Jdaitawi, M., and Talafha, F. (2015). Towards a better investment of university students in light of the twentieth century challenges. *Int. Educ. Stud.* 8, 113–123. doi: 10.5539/ies.v8n6p113

Ando, M. (2011). An intervention program focused on self-understanding and interpersonal interactions to prevent psychosocial distress among Japanese university students. *J. Adolesc.* 34, 929–940. doi: 10.1016/j.adolescence.2010.12.003

Arksey, H., and O'Malley, L. (2005). Scoping studies: towards a methodological framework. *Int. J. Soc. Res. Methodol.* 8, 19–32. doi: 10.1080/1364557032000119616

Barnes, T. N., Wang, F., and O'Brien, K. M. (2018). A meta-analytic review of social problem-solving interventions in preschool settings. *Infant Child Dev.* 27:e2095. doi: 10.1002/icd.2095

Baumeister, R. F., Schmeichel, B. J., and Vohs, K. D. (2007). "Self-regulation and the executive function: the self as controlling agent" in Social psychology: handbook of basic principles, vol. 2. eds. A. W. Kruglanski and E. T. Higgins (New York, NY: The Guilford Press), 516–539.

Bell, A. C., and D'Zurilla, T. J. (2009). Problem-solving therapy for depression: a meta-analysis. *Clin. Psychol. Rev.* 29, 348–353. doi: 10.1016/j.cpr.2009.02.003

Brown, A. D., Dorfman, M. L., Marmar, C. R., and Bryant, R. A. (2012). The impact of perceived self-efficacy on mental time travel and social problem solving. *Conscious. Cogn.* 21, 299–306. doi: 10.1016/j.concog.2011.09.023

Chang, E. C., Liu, J., Yi, S., Jiang, X., Li, Q., Wang, R., et al. (2020). Loneliness, social problem solving, and negative affective symptoms: negative problem orientation as a key mechanism. *Personal. Individ. Differ.* 167:110235. doi: 10.1016/j.paid.2020.110235

Chen, L., Kong, D., Zhang, S., and Yang, L. (2021). A quasi-experimental study of specialized training on the clinical decision-making skills and social problem-solving abilities of nursing students. *Contemp. Nurse* 57, 4–12. doi: 10.1080/10376178.2021.1912616

Crick, N. R., and Dodge, K. A. (1994). A review and reformulation of social information-processing mechanisms in children's social adjustment. *Psychol. Bull.* 115, 74–101. doi: 10.1037/0033-2909.115.1.74

D'zurilla, T. J., and Goldfried, M. R. (1971). Problem solving and behavior modification. *J. Abnorm. Psychol.* 78, 107–126. doi: 10.1037/h0031360

D'Zurilla, T. J., and Nezu, A. M. (2010). Problem-solving therapy. In K. S. Dobson (Ed.), Handbook of cognitive-behavioral therapies; *3rd edition*, The Guilford Press, New York, NY, 197–225.

D'Zurilla, T. J., Nezu, A. M., and Maydeu-Olivares, A. (2002). Social problem-solving inventory-revised.

de Almeida, S. Z., and Benevides, S. A. (2018). Social skills, coping, resilience and problem-solving in psychology university students. *Liberabit.* 24, 265–276. doi: 10.24265/liberabit.2018.v24n2.07

Drigas, A., and Karyotaki, M. (2019). Executive functioning and problem solving: a bidirectional relation. *Int. J. Eng. Pedagog.* 9, 76–98. doi: 10.3991/ijep.v9i3.10186

D'zurilla, T. J., Nezu, A. M., and Maydeu-Olivares, A. (2004). "Social problem solving: Theory and assessment" in Social problem solving: Theory, research, and training. eds. E. C. Chang, T. J. D'Zurilla and L. J. Sanna (Washington, DC: American Psychological Association), 11–27.

Eskin, M. (2012). Problem solving therapy in the clinical practice. Oxford: Newnes.

Eskin, M., Akyol, A., Çelik, E. Y., and Gültekin, B. K. (2013). Social problem-solving, perceived stress, depression and life-satisfaction in patients suffering from tension type and migraine headaches. *Scand. J. Psychol.* 54, 337–343. doi: 10.1111/sjop.12056

Goldingay, S., Stagnitti, K., Robertson, N., Pepin, G., Sheppard, L., and Dean, B. (2020). Implicit play or explicit cognitive behaviour therapy: the impact of intervention approaches to facilitate social skills development in adolescents. *Aust. Occup. Ther. J.* 67, 360–372. doi: 10.1111/1440-1630.12673

Heapy, C., Haddock, G., and Pratt, D. (2024). The relationship between social problem-solving and suicidal ideation and behavior in adults: A systematic review and meta-analysis. *Clin. Psychol. Sci. Pract.* 31, 419–432. doi: 10.1037/cps0000195

Heppner, M. J., Lee, D.-g., Heppner, P. P., McKinnon, L. C., Multon, K. D., and Gysbers, N. C. (2004). The role of problem-solving appraisal in the process and outcome of career counseling. *J. Vocat. Behav.* 65, 217–238. doi: 10.1016/S0001-8791(03)00100-3

Jiang, X., Lyons, M. D., and Huebner, E. S. (2016). An examination of the reciprocal relations between life satisfaction and social problem solving in early adolescents. *J. Adolesc.* 53, 141–151. doi: 10.1016/j.adolescence.2016.09.004

Keltikangas-Järvinen, L. (2001). Aggressive behaviour and social problem-solving strategies: a review of the findings of a seven-year follow-up from childhood to late adolescence. *Crim. Behav. Ment. Health* 11, 236–250. doi: 10.1002/cbm.398

Kim, M. A., Kim, J., and Kim, E. J. (2015). Effects of rational emotive behavior therapy for senior nursing students on coping strategies and self-efficacy. *Nurse Educ. Today* 35, 456–460. doi: 10.1016/j.nedt.2014.11.013

Koydemir, S., and Sun-Selışık, Z. E. (2016). Well-being on campus: testing the effectiveness of an online strengths-based intervention for first year college students. *Br. J. Guid. Couns.* 44, 434–446. doi: 10.1080/03069885.2015.1110562

Kumuyi, D. O., Akinnawo, E. O., Akpunne, B. C., Akintola, A. A., Onisile, D. F., and Aniemeka, O. O. (2022). Effectiveness of cognitive behavioural therapy and social skills training in management of conduct disorder. *S. Afr. J. Psychiatry* 28:28. doi: 10.4102/sajpsychiatry.v28i0.1737

Lau, Y., and Wang, W. (2014). Development and evaluation of a learner-centered educational summer camp program on soft skills for baccalaureate nursing students. *Nurse Educ.* 39, 246–251. doi: 10.1097/NNE.0000000000000065

Lekka, F., Efstathiou, G., and Kalantzi-Azizi, A. (2015). The effect of counselling-based training on online peer support. *Br. J. Guid. Couns.* 43, 156–170. doi: 10.1080/03069885.2014.959472

Lemerise, E. A., and Arsenio, W. F. (2000). An integrated model of emotion processes and cognition in social information processing. *Child Dev.* 71, 107–118. doi: 10.1111/1467-8624.00124

Leppink, E. W., Odlaug, B. L., Lust, K., Christenson, G., and Grant, J. E. (2016). The young and the stressed: stress, impulse control, and health in college students. *J. Nerv. Ment. Dis.* 204, 931–938. doi: 10.1097/NMD.0000000000000586

Levac, D., Colquhoun, H., and O'Brien, K. K. (2010). Scoping studies: advancing the methodology. *Implement. Sci.* 5, 1–9. doi: 10.1186/1748-5908-5-69

Li, X., and Shek, D. T. L. (2020). Objective outcome evaluation of a leadership course utilising the positive youth development approach in Hong Kong. *Assess. Eval. High. Educ.* 45, 741–757. doi: 10.1080/02602938.2019.1696944

Maksum, A., Widiana, I. W., and Marini, A. (2021). Path analysis of self-regulation, social skills, critical thinking and problem-solving ability on social studies learning outcomes. *Int. J. Instr.* 14, 613–628. doi: 10.29333/iji.2021.14336a

Merrill, K. L., Smith, S. W., Cumming, M. M., and Daunic, A. P. (2017). A review of social problem-solving interventions. *Rev. Educ. Res.* 87, 71–102. doi: 10.3102/0034654316652943

Nezu, A. M. (2004). Problem solving and behavior therapy revisited. *Behav. Ther.* 35, 1–33. doi: 10.1016/S0005-7894(04)80002-9

Nguyen, T., Pu, C., Waits, A., Tran, T. D., Ngo, T. H., Huynh, Q. T. V., et al. (2023). Transforming stress program on medical students' stress mindset and coping strategies: a quasi-experimental study. *BMC Med. Educ.* 23:587. doi: 10.1186/s12909-023-04559-9

Platt, J. J., Spivack, G., and Bloom, W. (1975). Manual for the means-ends problem solving (MEPS) procedure: a measure of interpersonal problem-solving skill. Philadelphia, PA: Hahnemann Medical College Hospital.

Ruan, Q.-N., Chen, C., Jiang, D.-G., Yan, W.-J., and Lin, Z. (2022). A network analysis of social problem-solving and anxiety/depression in adolescents. *Front. Psych.* 13:921781. doi: 10.3389/fpsyt.2022.921781

Şenocak, S. Ü., and Demirkıran, F. (2023). Effects of problem-solving skills development training on resilience, perceived stress, and self-efficacy in nursing students: a randomised controlled trial. *Nurse Educ. Pract.* 72:103795. doi: 10.1016/j.nepr.2023.103795

Shaw, D. R. (2016). A systematic review of pediatric cognitive rehabilitation in the elementary and middle school systems. *Neuro Rehabil.* 39, 119–123. doi: 10.3233/NRE-161343

Shek, D. T., Siu, A. M., and Lee, T. Y. (2007). The Chinese positive youth development scale: a validation study. *Res. Soc. Work Pract.* 17, 380–391. doi: 10.1177/1049731506296196

Sone, T., Kawachi, Y., Abe, C., Otomo, Y., Sung, Y.-w., and Ogawa, S. (2017). Attitude and practice of physical activity and social problem-solving ability among university students. *Environ. Health Prev. Med.* 22, 1–8. doi: 10.1186/s12199-017-0625-8

Speckens, A. E., and Hawton, K. (2005). Social problem solving in adolescents with suicidal behavior: a systematic review. *Suicide Life Threat. Behav.* 35, 365–387. doi: 10.1521/suli.2005.35.4.365

Sulu, C., Karadayi Kaynak, G., Koskun, T., Koca, O., Icli, T. B., Kavla, Y., et al. (2022). Problem-solving therapy can reduce psychological distress in patients with Cushing's disease: a randomized controlled trial. *Pituitary* 25, 891–902. doi: 10.1007/s11102-022-01275-3

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., et al. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Ann. Intern. Med.* 169, 467–473. doi: 10.7326/M18-0850

Trunzo, J. J., Samter, W., Morse, C., McClure, K., Kohn, C., Volkman, J. E., et al. (2014). College students' use of energy drinks, social problem-solving, and academic performance. *J. Psychoactive Drugs* 46, 396–401. doi: 10.1080/02791072.2014.965291

Yılmaz, E., and Griffiths, M. D. (2023). Children's social problem-solving skills in playing videogames and traditional games: a systematic review. *Educ. Inf. Technol.* 28, 11679–11712. doi: 10.1007/s10639-023-11663-2

Zazula, R., and Appenzeller, S. (2019). Evaluation of a psychoeducational intervention in the development of social and communication skills for incoming medical students at a bilingual university. *Trends Psychol.* 27, 749–762. doi: 10.9788/TP2019.3-11