



**HAL**  
open science

## Improving personal, social, and life skills in adolescents: a scoping review of key components in interventions

Olivier Aromatario, Fanny Velardo, Emma Martel, Delphine Couralet, Linda Cambon, Judith Martin-Fernandez

### ► To cite this version:

Olivier Aromatario, Fanny Velardo, Emma Martel, Delphine Couralet, Linda Cambon, et al.. Improving personal, social, and life skills in adolescents: a scoping review of key components in interventions. Journal of Public Health, 2024, 10.1007/s10389-024-02256-5 . hal-04687701

**HAL Id: hal-04687701**

**<https://hal.science/hal-04687701>**

Submitted on 4 Sep 2024

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution 4.0 International License



# Improving personal, social, and life skills in adolescents: a scoping review of key components in interventions

Olivier Aromatario<sup>1</sup> · Fanny Velardo<sup>2</sup> · Emma Martel<sup>3</sup> · Delphine Couralet<sup>1,4</sup> · Linda Cambon<sup>1,2,5</sup> · Judith Martin-Fernandez<sup>1,2</sup>

Received: 20 October 2023 / Accepted: 24 March 2024  
© The Author(s) 2024

## Abstract

**Aim** Numerous interventions focus on personal, social, and life skills in adolescents in order to provide them the knowledge required to acquire, apply, and mobilize their skills across various domains and challenges of everyday life and to help them to cope with life challenges and transition to adulthood. While various interventions targeting these skills have been developed, less is known about their key components, particularly the obstacles and levers that can impact the outcome of the intervention. This scoping review aims to bridge this gap by examining literature on the components of interventions that can effectively enhance the personal, social, and life skills of adolescents in various areas.

**Methods** A scoping review was undertaken according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for scoping reviews (PRISMA-ScR) guidelines to identify obstacles and levers of interventions targeting adolescents' skills.

**Results** Seventy articles fulfilling the inclusion criteria were selected for data extraction. This work identified key elements that may influence the outcome of these interventions. Three main categories emerged: participation and involvement of participants, creation of a safe environment for the intervention, and anchoring change in the lives of adolescents.

**Conclusion** Our results highlight the need to robustly present and detail interventions in the literature, including information on the intervention's objective and mechanisms. Evaluations should therefore focus on the intervention system and on the underlying mechanisms through which it could have an impact, using more comprehensive methodologies.

**Keywords** Social skills · Life skills · Interventions · Adolescents · Key components · Public health

---

Olivier Aromatario and Fanny Velardo contributed equally as first authors.

✉ Judith Martin-Fernandez  
judith.martin-fernandez@u-bordeaux.fr

<sup>1</sup> University of Bordeaux, INSERM, BPH, U1219, MÉRISP/ PHARES Team Labelled League Against Cancer, CIC 1401, F-33000 Bordeaux, France

<sup>2</sup> University Hospital of Bordeaux, Prevention Unit, 33000 Bordeaux, France

<sup>3</sup> Bergonié Institute, Bordeaux, France

<sup>4</sup> IREPS, Bordeaux, France

<sup>5</sup> University of Bordeaux, ISPED, Chaire Prévention, 33000 Bordeaux, France

## Introduction

Adolescents are frequently at the center of social interventions designed to develop or enhance personal, social, and life skills. Such skills encompass a broad spectrum of capabilities, with varied definitions and interpretations. As defined by the World Health Organization (WHO), life skills are “abilities for adaptive and positive behavior that enable individuals to deal effectively with the demands and challenges of everyday life” (World Health Organization. Division of Mental Health 1994). A broader definition might encompass the “skills that enable individuals to succeed in the diverse environments they inhabit, such as school, home, and their neighborhoods. Life skills can be behavioral (such as communicating effectively with peers and adults), cognitive (making effective decisions), interpersonal (being assertive), or intrapersonal (setting goals)” (Danish et al. 2004). The aim of skills-based interventions is to arm individuals

with the knowledge required to acquire, apply, and mobilize their skills across various domains.

Adolescence is a particularly sensitive phase of life where different behaviors, sometimes problematic, can emerge. There has been an increasing demand for interventions aimed at enhancing adolescent skills. These interventions are designed to help adolescents to cope with life challenges and transition to adulthood, focusing on areas such as addictive behaviors, violence, and broader themes such as school environment. While numerous interventions targeting life skills have been developed, less is known about their underlying components, particularly the obstacles and levers for action ensuring their effectiveness. Identifying the key components of the interventions that can significantly contribute to their success or failure is indeed crucial. This scoping review is aimed at identifying the interventional components that can effectively enhance adolescents' life skills across various areas.

## Methods

This review adheres to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for scoping reviews (PRISMA-ScR) guidelines (Tricco et al. 2018) (see supplementary file).

## Research strategy

This review included peer-reviewed literature published over a 6-year period (2016–2022). We reviewed articles across various disciplines, including public health, humanities, and social sciences, to integrate a large panel of interventions among adolescents.

Articles were selected based on the following inclusion criteria:

- Articles reporting evaluation results of interventions or programs designed to improve life skills, social skills, personal skills, or psychosocial skills
- Population: children/adolescents/young adults aged 10 to 21 years
- Location: EU, US, or Canada
- Language: English, French, or Spanish
- Publication date: between 01/01/2016 and 31/08/2022

Articles characterized by the following were excluded:

- Presented interventions targeting a population with specific needs (youth with mental, emotional, behavioral, or physical disorders)

- Featured interventions implemented to treat a diagnosed disorder (such as autism, facial paralysis, HIV, and so forth)
- Discussed interventions implemented in specific settings (such as the court system, foster care, and so forth)
- Were situated outside the predefined geographical zones or were written in languages other than English, French, or Spanish

## Databases searched

We selected six relevant databases for this purpose: PubMed, PsycINFO, APA PsycArticles, Psychology & Behavioral Sciences Collection, SocINDEX, and Web of Science. The search was conducted in September 2022, considering all available articles. Keywords used included “prevention OR intervention OR program” AND (“life skills” OR “social skills” OR “personal skills”) AND (“adolescents” OR “teenagers” OR “young adults”). Detailed search parameters for each database can be found in Table 1 of the supplementary file 2.

## Screening

All identified studies were reviewed through a rigorous double-blind screening process conducted by two professionals using the Covidence tool (<https://www.covidence.org/>). In the first step, they evaluated the relevance of each article based on its title and abstract. At this stage, irrelevant articles were excluded. Any discrepancies were resolved via discussion. The full text for each retained article was then examined according to the inclusion/exclusion criteria. In the event of disagreement over the inclusion or exclusion of an article, consensus was reached through further review and discussion.

## Data extraction

In this review, we sought to identify factors that facilitate or inhibit the effectiveness of interventions or programs. We focused on the practical implementation of interventions and on factors, contexts, or processes identified as having an impact on their effectiveness. These elements, called “key functions” (Hawe et al. 2004) or “levers,” refer to an aspect of an intervention that contributes to its effectiveness. Such elements are components that can be transferred to a new context when implementing an intervention (Cambon et al. 2012).

Three professionals independently extracted each study, followed by a consensus discussion before drafting this review. The objective of this review was not to compare intervention efficacy but to identify various factors contributing to the intervention's effect. Thus, we deliberately

avoided categorizing the quality of the studies, to maintain an overview of current interventions.

### Results

A total of 3579 articles were retrieved, of which 70 met the inclusion criteria. The flowchart in Fig. 1 details each stage of this process. In the first step, we evaluated the relevance of each article based on its title and abstract, resulting in 1503 articles. Of these, 1336 were deemed irrelevant to the scope of our review. From the remaining 167 articles, 97 were discarded due to study location, absence of intervention or evaluation, sample population, or article type. Consequently, 70 articles fulfilling the inclusion criteria were selected for data extraction.

### Characteristics of the interventions

Most of the selected articles centered on a specific intervention, each with a distinct implementation, theoretical framework, objective, and so on. Large-scale programs such as IPSY (Information + Psychosocial Competence = Protection), Ready for Life, and LifeSkills Training (LST) have been frequently published and evaluated and recurred several times in our sample (Weichold and Blumenthal 2016; Giannotta and Weichold 2016; Spoth et al. 2016; Velasco et al. 2017; Haug et al. 2017, 2021; Vroom et al. 2020).

The studies were primarily published in 2016, 2020, and 2021. The interventions took place in Europe ( $n=40, 57.1\%$ ) and in North America ( $n=30, 42.9\%$ ). Within Europe, the UK and Italy had the highest number of publications (eight and six, respectively).

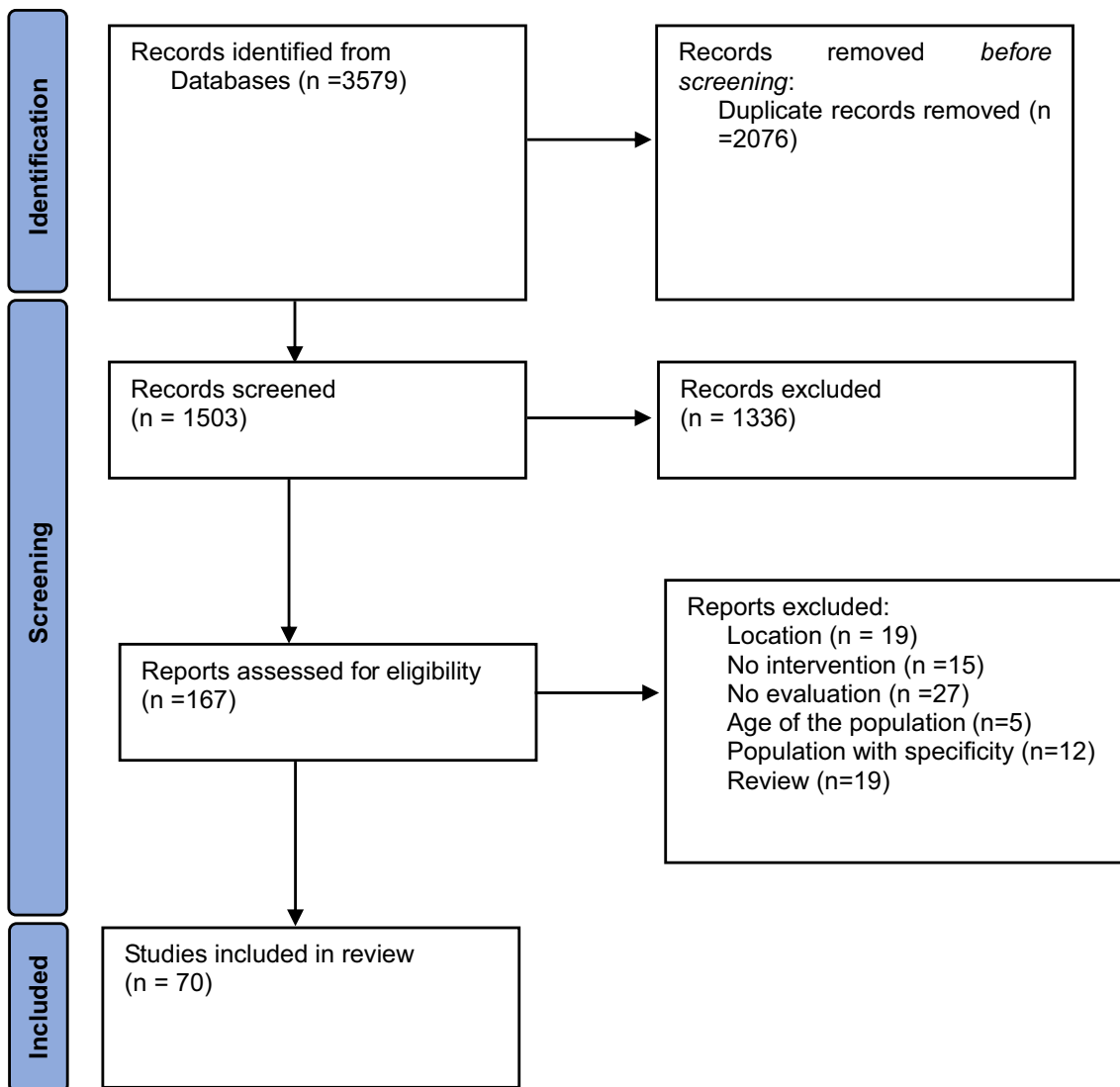


Fig. 1 Flow diagram

## Targeted population

The mean age of individuals targeted by the interventions was 13.6 years, with a range from 7 to 20 years. More than half of these interventions were designed for children aged 12 to 15 years.

## Setting

Most of the studied programs were school-based ( $n = 45$ , 64.3%), while 18 (25.7%) were conducted in other spaces such as associations or sports facilities outside school hours. Four were online, and two were implemented in open-air settings. One program was hybrid, both school-based and online.

## Objectives and topics

We identified the objective of each intervention (i.e., the skills or competencies intended to be activated by the program) and the topic or field in which these competencies were intended to be applied.

### Objectives

Almost all studies defined the intervention's objective. While many articles described interventions broadly targeting life skills ( $n = 24$ , 34.3%), some focused on social skills ( $n = 17$ , 24.3%) and others focused on social and emotional skills ( $n = 8$ , 11.4%) or various combined skills such as life skills and literacy (Velasco et al. 2017) or empowerment and social skills (Whitson et al. 2020). Literacy was targeted by three programs (Huic et al. 2017; Velasco et al. 2017; Meng et al. 2018), and empowerment was the goal of another three programs (DeBate and Bleck 2016; Lewis et al. 2018; Whitson et al. 2020). Leadership (Richmond et al. 2018; Bates et al. 2020) and violence prevention (Garaigordobil and Martínez-Valderrey 2016; Barnes et al. 2017) were each the focus of two programs.

### Topics

Only 50 studies (71.4%) specified the application area of the competencies potentially targeted by these programs. Among these programs, 16 (22.9%) aimed at enhancing health and mental health, and 10 (14.3%) targeted consumption of legal and illicit psychoactive products. Violence and/or harassment were frequently targeted ( $n = 11$ , 15.7%). Other fields included professional and adulthood responsibilities ( $n = 6$ ), school environment ( $n = 3$ ), and sexual risks ( $n = 2$ ). Of the 70 interventions, 14 (20%) incorporated physical activities, three involved music practices, and two utilized yoga activities.

## Implementation of interventions

Most programs were long-term (i.e., lasting more than 2 months), with 33 (47.1%) lasting more than 10 weeks, including 10 (14.3%) that lasted more than 30 weeks. Eight programs (11.4%) were more sporadic, consisting of one or two sessions. Among these, seven (10%) were intensive interventions, requiring several hours per week. The intensity of the programs varied: 22 (31.4%) were intensive and 27 (38.6%) were steady (occurring once a week, for instance).

In 20 (28.6%) articles, the intensity or frequency of the studied intervention was not mentioned. Regarding the individuals involved in the programs, 29 (41.4%) engaged school staff and 39 (55.7%) had non-school-affiliated professionals. For 46 (65.7%) interventions, the facilitators or individuals in charge of the intervention received specific training for this purpose.

## Program evaluations

Most evaluations were quantitative ( $n = 60$ , 85.7%), with only a few being qualitative ( $n = 4$ , 5.7%) or having a mixed methodology ( $n = 6$ , 8.6%). Regarding results, 54 (77.1%) studies reported positive outcomes, 13 (18.6%) showed mixed results, and none produced negative results. Among the evaluations, 12 (17.1%) presented variable results according to sex ( $n = 7$ , 10%) or other determinants, such as ethnic group or background.

## Obstacles and levers

As mentioned earlier, this review aimed to focus on key functions (Hawe et al. 2004), levers, and obstacles (i.e., aspects of an intervention that contribute to or limit its effectiveness). Therefore, we identified and documented any elements that may have influenced the outcomes of an intervention. This was done by either identifying them ourselves through evaluation, or noting those already highlighted by the authors of the article. Various levers with positive effects were identified, as were elements that served as moderators or obstacles.

### Levers

Of the 70 papers, 44 (62.9%) mentioned levers and 16 identified potential elements that could contribute to the effect of an intervention. These levers fell into three categories: those related to the individuals involved in the intervention, those related to the implementation and modalities of the intervention, and those related to interpersonal elements within the intervention (e.g., levers activated during an intervention that are associated with the relationship between student and

intervention staff). Some studies showed that their interventions were based on several levers ( $n = 15$ ).

### People involved and their participation

Overall, 16 articles (22.9%) cited the involvement and/or participation of specific individuals as significantly contributing to the intervention's outcome. Twelve interventions leveraged a community or local group (including whole school communities, parents, and neighborhoods) to foster change, which reflects an ecosystemic approach (Barkoukis et al. 2016; Bean and Forneris 2016; Garaigordobil and Martínez-Valderrey 2016; Velasco et al. 2017; Bonell et al. 2018b; Lewis et al. 2018; Meng et al. 2018; Gouveia et al. 2019; Iyer and Iyer 2019; Bates et al. 2020; Johnson et al. 2021; LeCroy et al. 2021). Other programs involved professionals or institutional representatives who could add value to the program, such as a pediatric care provider (Clifton et al. 2022).

The link between a research institute or a university and the program (Sullivan et al. 2017; Haug et al. 2021) could also influence the outcome of the intervention by enhancing the program's credibility or ensuring the intervention's independence. One study noted that program staff not being associated with the school fostered a sense of anonymity (Haug et al. 2017) that could benefit the intervention. The empowerment and involvement of facilitators or trained staff was also widely cited as a lever, identifiable through the intervention being delivered according to the facilitator's wishes (Carreres-Ponsoda et al. 2021) or by the personal involvement and commitment of the staff (Vroom et al. 2020).

### Implementation modality

The modalities of implementation were frequently cited as a lever ( $n = 25$ ). These are summarized below.

- **Pedagogical approach:** Various pedagogical elements were identified to enhance intervention outcome, including active learning (Lewis et al. 2018; Rizzi et al. 2020; Pavarini et al. 2022), recreational activities (Barnes et al. 2017), perspective-taking and planning for action (Wallrich et al. 2021), realistic experience (Barker et al. 2016), focus groups (Allen and Rhind 2019), roleplaying games (Moulier et al. 2019), real-time feedback and reinforcement (Zarglayoun et al. 2021), self-coaching, co-learning and autonomy (Barker et al. 2016; Bonell et al. 2018b; Lewis et al. 2018), flexibility and openness to students' ideas (Ahmed and Schwind 2018), using sports as an activity to facilitate knowledge acquisition (Pesce et al. 2016; Greco et al. 2019), using engaging and adapted intervention support (Lakes et al. 2019), and combining with another goal or training model (Munoz-Llerena et al. 2021; Casado-Robles et al. 2022).
- **Temporality:** The duration and intensity of interventions were widely cited as active components (Barkoukis et al. 2016; Sullivan et al. 2017; Allen and Rhind 2019; Maalouf et al. 2019; Bates et al. 2020; Koszałka-Siłska et al. 2021; Clifton et al. 2022). A study of an evidence-based program emphasized the need for at least 15 sessions a year (Maalouf et al. 2019), while another study on a physical educational intervention suggested that shorter programs maintained high levels of motivation (Koszałka-Siłska et al. 2021). Routine (Meng et al. 2018) and regularity (Sánchez-SanSegundo et al. 2020) were also mentioned as important, as was the timing of an intervention during adolescence, with one study suggesting that early adolescence may be best (Spath et al. 2016).
- **Methodology:** The delivery method of programs was also frequently cited. The activities should be focused (Sánchez-SanSegundo et al. 2020; Rizzi et al. 2020), sequenced or progressive (Richmond et al. 2018; Sánchez-SanSegundo et al. 2020; Rizzi et al. 2020; Wallrich et al. 2021), delivered in small groups (Richmond et al. 2018), structured and meaningful (Garaigordobil and Martínez-Valderrey 2016; Clifton et al. 2022), and practical when using a virtual world (Johnson et al. 2021).
- **Setting:** Some papers mentioned an intervention's setting as influencing its effectiveness. Various elements were noted, such as a comfortable environment that allows participants to feel at ease (LeCroy et al. 2021), a realistic experience in a virtual intervention (Barker et al. 2016), a safe and secure place even when the intervention takes place in a school classroom (Lakes et al. 2019), access to new locations (Richmond et al. 2018; Bates et al. 2020), or even on-demand interventions (as in the case of a cell phone application) (Haug et al. 2017; Iyer and Iyer 2019).
- **Adaptations:** While some papers suggested that an intervention should be designed for the majority of adolescents (Spath et al. 2016; Sullivan et al. 2017), others indicated that it should be tailor-made, adapted to a specific targeted population (Paz Castro et al. 2022; Martinez et al. 2022), or adjusted according to a coach's strengths or wishes (Carreres-Ponsoda et al. 2021).
- **Intentionality:** Another important element is that a program must explicitly address the goal defined upstream, by tackling its objectives directly (Bean and Forneris 2016; Allen and Rhind 2019; Sánchez-SanSegundo et al. 2020).



## Relational elements

Eight articles (11.4%) reported that interpersonal elements enhanced intervention outcomes. Certain papers hypothesized that interventions are facilitated by a relationship based on trust and credibility between participants (Ahmed and Schwind 2018; Mala et al. 2022), by student involvement (Barnes et al. 2017; Mala et al. 2022), freedom of expression (Sheltzer and Consoli 2019), caring adult leaders (Sheltzer and Consoli 2019; Bates et al. 2020), or sharing a common interest (Millar et al. 2020).

## Limiting factors

### Intervention elements

A few articles identified elements of the intervention itself as limiting factors. For instance, teenagers said they found few opportunities to apply the skills they had learned, or felt that these skills were not relevant to their daily lives (Allen and Rhind 2019). Another article mentioned the lack of immersion of an intervention and its use of a first-person perspective (Zarglayoun et al. 2021) as limiting factors. Another study questioned the cognitive maturity of the children targeted in the intervention (Sánchez-SanSegundo et al. 2020).

### Implementation fidelity

Implementation fidelity was frequently cited to explain the failure or limited effect of an intervention. Several articles reported that variability in this factor could account for the observed effects (Bonell et al. 2018b; Yanagida et al. 2019). This variability in implementation was also observed in studies that mentioned other limiting factors such as sociodemographic characteristics and personality differences between coaches (Mala et al. 2022) or individual characteristics of the beneficiaries that could impact the effects of universal prevention programs, such as equitable access to the program (Bates et al. 2020) or gender (Bickham et al. 2021).

### Organizational

Some limiting factors were considered organizational, referring to the setting of an intervention. These included a lack of comfort (Ahmed and Schwind 2018), the fact that the interventions took place indoors or the absence of a natural environment that could facilitate an emotional experience (Koszałka-Silska et al. 2021), or unfavorable weather conditions (Scheithauer et al. 2020), leading to lower motivation among both coaches and adolescents.

## Group composition

Another limiting factor was related to the composition of the group receiving the intervention. Issues noted included newly formed groups, leading to a lack of bonding or comfort between participants (Koszałka-Silska et al. 2021), or the presence of a negative atmosphere within the group (Obsuth et al. 2016).

### Motivation

Finally, some papers identified adolescents' motivation (directly linked or not to the intervention) as a factor limiting the effect of an intervention. This element is linked to lower participation (Scheithauer et al. 2020) and reduced engagement (Obsuth et al. 2016).

## Discussion

This literature review considered the elements that facilitate or impede the effectiveness of more than 60 interventions, largely targeting children in a school setting. These interventions span a variety of personal, social, and life skills, focusing on areas such as health, mental health, substance use, and violence. Positive elements included the individuals involved (such as whole school, parents, or community) and their roles, training, and involvement, the modality of implementation (such as the interventions' methodology, setting, or pedagogical approach), and relational elements (between participants and with the facilitators). Limiting factors primarily pertained to implementation, such as fidelity (in cases where an intervention was transferred to another setting), organizational constraints, and group composition.

For reasons of feasibility and homogeneity, our review focused on a certain geographical area and time period. Although substantial, it is not exhaustive, and its generalizability should be considered accordingly. However, the review provides a thoughtful examination of key components of interventions targeting adolescent skills and how these interventions should be designed, pre-tested, and/or evaluated.

Overall, our findings underscore the need to design interventions in a more participatory manner to involve professionals, adolescents, and sometimes the community at each stage of the intervention (design, implementation, and during sessions). Whether concerning the pedagogical approach (such as how adolescents are involved in the learning process or the method of implementing the session), the aim of the intervention, its implementation modalities, or the relationships involved, the participation of all stakeholders should be encouraged and emphasized.

In addition, creating a secure environment is vital when designing interventions targeting life skills among

adolescents. Indeed, the objectives, strategies, and even settings of interventions should be easily understandable to prevent confusion, mistrust, and consequently a lack of motivation or involvement. For example, the regularity of sessions, the intentionality behind the intervention, and the fact that it is carried out in a safe place can all contribute to creating a reliable interventional environment.

Finally, incorporating practical applications can help anchor the interventions in adolescents' lives. Interventions are often highly theoretical and rarely directly applicable. Adolescents may benefit from a more practical and global approach that could be more easily applied to their everyday lives.

More broadly, we found that interventions aiming at improving life skills among adolescents usually take a small-scale focus, rarely addressing broader, more intersectional targets such as school policies and systems. In our sample, only one paper focused on modifying the school environment (Bonell et al. 2018a). Likewise, there is a significant lack of detail on preliminary implementation work, including continuity with grades prior to lower secondary school, inter-school collaboration, external institutional partnerships that finance the construction of schools, or the social and sociocultural structures of a district. Furthermore, there is no clarification on how to sustain intervention approaches, although this is a crucial factor for embedding life skills in young people. Finally, adverse living conditions (such as poverty, lack of access to healthcare, inadequate housing, and so forth), which directly impact physical, mental, and social health (Wilkinson et al. 2004), are seldom addressed by such interventions. Moreover, while life skills are useful, they may not overcome the daily hurdles present in adverse living conditions.

The results of this review were shared with a group of French field professionals involved in interventions targeting adolescents. They found the results to be consistent with their own practices but supplemented the findings with two important elements: (i) consistency in approaches between different local establishments (such as after-school care, leisure centers, and so forth) and (ii) considering the role of psychosocial skills in the curriculum and in the daily lives of young people in school. All of this underscores the importance of continuing studies that incorporate environmental and structural elements, in addition to strictly individual approaches with pupils.

## Conclusion

This work identified key elements that may influence the outcome of interventions aimed at helping adolescents manage the transition to adulthood. Three main categories emerged: participation and involvement of participants, creation of a secure environment for the intervention, and the anchoring of change in adolescents' lives. In addition, the small scale of the interventions in terms of people and institutions implicated and in terms

of continuity or sustainability points out the weakness in terms of the viability of these interventions (Chen 2010). Our findings highlight the need for authors to present and robustly detail the interventions carried out in the literature, including information on the purpose of the intervention and the key underlying mechanisms and functions assumed. We found that very few mechanisms were explained; in most cases, the authors limited their analyses to hypotheses on how the intervention might have had an impact. Evaluations should focus on the intervention system and the underlying mechanisms, using comprehensive methodologies such as qualitative or mixed-methods studies (Altman et al. 2015; Cambon and Alla 2021) to inform the research and to help to create viable interventions.

**Supplementary Information** The online version contains supplementary material available at <https://doi.org/10.1007/s10389-024-02256-5>.

**Authors' contributions** LC and JMF conceived the idea for the article; FV, OA, EM and JMF performed the literature search and data analysis; and OA, FV, LC, DC and JMF drafted and critically revised the work.

**Funding** This work received support from a nationally recognized research agency, the INCa. This funding was obtained via a national competitive peer review grant application process, "2018 Call for projects—Population health intervention research: Addressing all dimensions of cancer control" (No. 2019–008).

### Declarations

This work received support from a national recognized research agency, the INCa. This funding was obtained via a national competitive peer review grant application process, "2018 Call for projects- Population health intervention research: Addressing all dimensions of cancer control" (No. CAMBON-2019–008).

**Ethics approval** This study does not contain any studies involving animals or human participants performed by any of the authors.

**Consent to participate** Not applicable.

**Consent for publication** Not applicable.

**Conflict of interest** The authors have no competing interests to declare that are relevant to the content of this article.

**Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

## References

Ahmed N, Schwind JK (2018) Supporting the wellbeing of inner-city middle-school students through mindful and creative reflective



- activities. *Reflective Pract* 19(3):412–425. <https://doi.org/10.1080/14623943.2018.1479691>
- Allen G, Rhind D (2019) Taught not caught: exploring male adolescent experiences of explicitly transferring life skills from the sports hall into the classroom. *Qual Res Sport, Exercise and Health* 11(2):188–200. <https://doi.org/10.1080/2159676X.2018.1519717>
- Altman L, Kuhlmann AKS, Galavotti C (2015) Understanding the black box: a systematic review of the measurement of the community mobilization process in evaluations of interventions targeting sexual, reproductive, and maternal health. *Eval Program Plann* 49:86–97. <https://doi.org/10.1016/j.evalprogplan.2014.11.010>
- Barker B, Halsall T, Forneris T (2016) Evaluating the “pulse” program: understanding the implementation and perceived impact of a “tpr” based physical activity program for at-risk youth. *Agora Para La Educacion Fisica Y El Deporte* 18(2):99–116
- Barkoukis V, Lazuras L, Ourda D, Tsozbatzoudis H (2016) Tackling psychosocial risk factors for adolescent cyberbullying: evidence from a school-based intervention. *Aggressive Behav* 42(2):114–122
- Barnes TN, Leite W, Smith SW (2017) A quasi-experimental analysis of schoolwide violence prevention programs. *J Sch Violence* 16(1):49–67. <https://doi.org/10.1080/15388220.2015.1112806>
- Bates S, Anderson-Butcher D, Ferrari T, Clary C (2020) A comparative examination of how program design components influence youth leadership-skill development. *J Youth Dev* 15(6):91–115. <https://doi.org/10.5195/jyd.2020.868>
- Bean C, Forneris T (2016) Examining the importance of intentionally structuring the youth sport context to facilitate positive youth development. *J Appl Sport Psychol* 28(4):410–425. <https://doi.org/10.1080/10413200.2016.1164764>
- Bickham DS, Moukalled S, Inyart HK, Zlokower R (2021) Evaluating a middle-school digital citizenship curriculum (screenshots): quasi-experimental study. *JMIR Ment Health* 8(9):e26197. <https://doi.org/10.2196/26197>
- Bonell C, Allen E, Warren E, Legood R, Opondo C, Sturgess J, Sadique Z, Elbourne D, McGowan J, Bevilacqua L, Mathiot A, Miner RM, Jamal F, Wiggins M, Fletcher A, Bond L, Christie D, Scott S, Viner RM (2018a) Effects of the learning together intervention on bullying and aggression in English secondary schools (INCLUSIVE): a cluster randomised controlled trial. *Lancet* 392(10163):2452–2464
- Bonell C, Allen E, Warren E, McGowan J, Bevilacqua L, Jamal F (2018b) Effects of the learning together intervention on bullying and aggression in English secondary schools (INCLUSIVE): a cluster randomised controlled trial. *Lancet* 392:2452–2464
- Cambon L, Alla F (2021) Understanding the complexity of population health interventions: assessing intervention system theory (ISyT). *Health Res Policy Syst* 19(1):95. <https://doi.org/10.1186/s12961-021-00743-9>
- Cambon L, Minary L, Ridde V, Alla F (2012) Transferability of interventions in health education: a review. *BMC Public Health* 12:497. <https://doi.org/10.1186/1471-2458-12-497>
- Carreres-Ponsoda F, Escarti A, Jimenez-Olmedo JM, Cortell-Tormo JM (2021) Effects of a Teaching Personal and Social Responsibility Model Intervention in Competitive Youth Sport. *Front Psychol* 12. <https://doi.org/10.3389/fpsyg.2021.624018>
- Casado-Robles C, Mayorga-Vega D, Guijarro-Romero S, Viciano J (2022) Effect of a sport education-based teaching unit in physical education on high school students’ social networks and quantitative sociometry scores: a cluster randomized control trial. *Rev De Psicodidactica* 27(1):66–75. <https://doi.org/10.1016/j.psicod.2021.09.002>
- Chen HT (2010) The bottom-up approach to integrative validity: a new perspective for program evaluation. *Eval Program Plann* 33(3):205–214. <https://doi.org/10.1016/j.evalprogplan.2009.10.002>
- Clifton M, Boden L, Milton LE (2022) Toxic stress in children and youth: exploring the role of community-based programming to support health and well-being in the United States. *Child Soc* 36(1):137–148. <https://doi.org/10.1111/chso.12489>
- Danish S, Forneris T, Hodge K, Heke I (2004) Enhancing youth development through sport. *World Leisure J* 46(3):38–49. <https://doi.org/10.1080/04419057.2004.9674365>
- DeBate RD, Bleck JR (2016) Changes in developmental assets and physical activity frequency among 3rd–5th grade girls participating in a girl-focused sport-based positive youth development program. *Int J Health Promot Educ* 54(2):95–112. <https://doi.org/10.1080/14635240.2015.1126528>
- Garaigordobil M, Martínez-Valderrey V (2016) Impact of cyberprogram 2.0 on different types of school violence and aggressiveness. *Front Psychol* 7:428. <https://doi.org/10.3389/fpsyg.2016.00428>
- Giannotta F, Weichold K (2016) Evaluation of a life skills program to prevent adolescent alcohol use in two European Countries: one-year follow-up. *Child Youth Care Forum* 45(4):607–624. <https://doi.org/10.1007/s10566-016-9349-y>
- Gouveia P, Leal I, Cardoso J (2019) Preventing and reducing school violence: development of a student and family office—a pilot study. *Educ Psychol Pract* 35(1):67–81. <https://doi.org/10.1080/02667363.2018.1532875>
- Greco G, Fischetti F, Cataldi S, Latino F (2019) Effects of Shotokan karate on resilience to bullying in adolescents. *J Hum Sport Exerc* 14:S896–S905. <https://doi.org/10.14198/jhse.2019.14.Proc4.52>
- Haug S, Castro RP, Meyer C, Filler A, Kowatsch T, Schaub MP (2017) A mobile phone-based life skills training program for substance use prevention among adolescents: pre-post study on the acceptance and potential effectiveness of the program, ready4life. *JMIR Mhealth Uhealth* 5(10):e143. <https://doi.org/10.2196/mhealth.8474>
- Haug S, Castro RP, Wenger A, Schaub MP (2021) A mobile phone-based life-skills training program for substance use prevention among adolescents: cluster-randomized controlled trial. *JMIR Mhealth Uhealth* 2021:1–18
- Hawe P, Shiell A, Riley T (2004) Complex interventions: how “out of control” can a randomised controlled trial be? *BMJ* 328(7455):1561–1563. <https://doi.org/10.1136/bmj.328.7455.1561>
- Huic A, Kranzelic V, Hundric DD, Ricijas N (2017) Who really wins? Efficacy of a Croatian youth gambling prevention program. *J Gambl Stud* 33(3):1011–1033. <https://doi.org/10.1007/s10899-017-9668-4>
- Iyer RB, Iyer BN (2019) The impact of heartfulness-based elective on middle school students. *Am J Health Behav* 43(4):812–823. <https://doi.org/10.5993/AJHB.43.4.14>
- Johnson MT, Troy AH, Tate KM, Allen TT, Tate AM, Chapman SB (2021) Improving classroom communication: The effects of virtual social training on communication and assertion skills in middle school students. *Front Educ* 6. <https://doi.org/10.3389/educ.2021.678640>
- Koszalka-Silkska A, Korcz A, Wiza A (2021) The impact of physical education based on the adventure education programme on self-esteem and social competences of adolescent boys. *Int J Environ Res Public Health* 18(6). <https://doi.org/10.3390/ijerph18063021>
- Lakes K, Nguyen HM, Jones M, Schuck SEB (2019) I am me: adolescent perspectives of a school-based universal intervention program designed to promote emotional competence. *Int J Emot Educ* 11(1):97–114
- LeCroy CW, Milligan-LeCroy S, Lopez D (2021) Guy talk: a gender-specific sexual education program to reduce sexual risk behaviors with high school males. *Health Educ Behav* :10901981211010440. <https://doi.org/10.1177/10901981211010441>
- Lewis RK, Lee FA, Brown KK, LoCurto J, Stowell D, Maryman J, Lovelady T, Williams G, Morris DM, McNair T (2018) Youth empowerment implementation project evaluation results: a program designed to improve the health and well-being of

- low-income African-American adolescents. *J Prev Interv Community* 46(1):28–42. <https://doi.org/10.1080/10852352.2018.1385954>
- Maalouf W, Stojanovic M, Kiefer M, Campello G, Heikkila H, El-Khatib Z (2019) Lions quest skills for adolescence program as a school intervention to prevent substance use—a pilot study across three South East European countries. *Prev Sci* 20(4):555–565. <https://doi.org/10.1007/s1121-019-01012-6>
- Mala J, Corral MD, McGarry JE, Macauley CDT, Arinze NA, Ebron K (2022) Positive impacts of a sport intervention on male students of color and school climate. *Res Q Exerc Sport* 93(1):36–52. <https://doi.org/10.1080/02701367.2020.1789039>
- Martinez RR, Marraccini ME, Knotek SE, Neshkes RA, Vanderburg J (2022) Effects of dialectical behavioral therapy skills training for emotional problem solving for adolescents (DBT STEPS-A) program of rural ninth-grade students. *Sch Ment Heal* 14(1):165–178. <https://doi.org/10.1007/s12310-021-09463-5>
- Meng Y, Manore MM, Schuna JM, Patton-Lopez MM, Branscum A, Wong SS (2018) promoting healthy diet, physical activity, and life-skills in high school athletes: results from the WAVE ripples for change childhood obesity prevention two-year intervention. *Nutrients* 10(7):947. <https://doi.org/10.3390/nu10070947>
- Millar SR, Steiner A, Calo F, Teasdale S (2020) COOL music: a “bottom-up” music intervention for hard-to-reach young people in Scotland. *Br J Music Educ* 37(1):87–98. <https://doi.org/10.1017/S0265051719000226>
- Moulier V, Guinet H, Kovacevic Z, Bel-Abbass Z, Benamara Y, Zile N, Ourrad A, Arcella-Giroux P, Meunier E, Thomas F, Januel D (2019) Effects of a life-skills-based prevention program on self-esteem and risk behaviors in adolescents: a pilot study. *BMC Psychol* 7(1):82. <https://doi.org/10.1186/s40359-019-0358-0>
- Munoz-Llerena A, Hernandez-Hernandez E, Garcia-de-Alcaraz A, Caballero-Blanco P (2021) Personal and social responsibility development in a volleyball hybrid positive youth development program: a mixed methods approach. *Front Psychol* 12. <https://doi.org/10.3389/fpsyg.2021.675532>
- Obsuth I, Cope A, Sutherland A, Pilbeam L, Murray AL, Eisner M (2016) London Education and Inclusion Project (LEIP): exploring negative and null effects of a cluster-randomised school-intervention to reduce school exclusion—findings from protocol-based subgroup analyses. *PLoS One* 11(4). <https://doi.org/10.1371/journal.pone.0152423>
- Pavarini G, Reardon T, Hollowell A, Bennett V, Lawrance E, Pinfold V, Singh I (2022) Online peer support training to promote adolescents’ emotional support skills, mental health and agency during COVID-19: randomised controlled trial and qualitative evaluation. *Eur Child Adolesc Psychiatry* :1–12. <https://doi.org/10.1007/s00787-021-01933-0>
- Paz Castro R, Haug S, Wenger A, Schaub MP (2022) Longer-term efficacy of a digital life-skills training for substance use prevention. *Am J Prev Med*. <https://doi.org/10.1016/j.amepre.2022.06.017>
- Pesce C, Marchetti R, Forte R, Crova C, Scatigna M, Goudas M, Danish SJ (2016) Youth life skills training: exploring outcomes and mediating mechanisms of a group-randomized trial in physical education. *Sport Exerc Perform Psychol* 5(3):232–246. <https://doi.org/10.1037/spy0000060>
- Richmond D, Sibthorp J, Gookin J, Annarella S, Ferri S (2018) Complementing classroom learning through outdoor adventure education: out-of-school-time experiences that make a difference. *J Adventure Educ* 18(1):36–52. <https://doi.org/10.1080/14729679.2017.1324313>
- Rizzi V, Pigeon C, Rony F, Fort-Talabard A (2020) Designing a creative storytelling workshop to build self-confidence and trust among adolescents. *Think Skills Creat* 38:100704. <https://doi.org/10.1016/j.tsc.2020.100704>
- Sánchez-SanSegundo M, Ferrer-Cascales R, Albaladejo-Blazquez N, Alarcó-Rosales R, Bowes N, Ruiz-Robledillo N (2020) Effectiveness of the reasoning and rehabilitation v2 programme for improving personal and social skills in Spanish adolescent students. *Int J Environ Res Public Health* 17(9). <https://doi.org/10.3390/ijerph17093040>
- Scheithauer H, Leppin N, Hess M (2020) Preventive interventions for children in organized team sport tackling aggression: results from the pilot evaluation of “Fairplayer.Sport”. *New Dir Child Adolesc Dev* 2020(173):49–63. <https://doi.org/10.1002/cad.20380>
- Sheltzer JM, Consoli AJ (2019) Understanding the impact of an after-school music program with engaged underserved youth. *J Community Psychol* 47(6):1364–1379. <https://doi.org/10.1002/jcop.22193>
- Spoth R, Trudeau L, Redmond C, Shin C (2016) Replicating and extending a model of effects of universal preventive intervention during early adolescence on young adult substance misuse. *J Consult Clin Psychol* 84(10):913–921. <https://doi.org/10.1037/ccp0000131>
- Sullivan T, Sutherland K, Farrell A, Taylor K, Doyle S (2017) Evaluation of violence prevention approaches among early adolescents: moderating effects of disability status and gender. *J Child Fam Stud* 26(4):1151–1163
- Tricco AC, Lillie E, Zarin W (2018) PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. 169(7). <https://doi.org/10.7326/M18-0850>
- Velasco V, Griffin KW, Botvin GJ, Celata C (2017) Preventing adolescent substance use through an evidence-based program: effects of the Italian adaptation of life skills training. *Prev Sci* 18(4):394–405. <https://doi.org/10.1007/s1121-017-0776-2>
- Vroom EB, Massey OT, Yampolskaya S, Levin BL (2020) The impact of implementation fidelity on student outcomes in the life skills training program. *School Ment Health* 12(1):113–123. <https://doi.org/10.1007/s12310-019-09333-1>
- Wallrich L, Palmer SB, Rutland A (2021) Adolescents challenging discrimination: the benefits of a perspective-taking and action-planning intervention on self-efficacy. *J Commun Appl Social Psychol* 31(5):530–536
- Weichold K, Blumenthal A (2016) Long-term effects of the life skills program IPSY on substance use: results of a 4.5-year longitudinal study. *Prev Sci* 17(1):13–23. <https://doi.org/10.1007/s1121-015-0576-5>
- Whitson ML, Robinson S, Valkenburg KV, Jackson M (2020) The benefits of an afterschool music program for low-income, urban youth: the music haven evaluation project. *J Community Psychol* 48(2):426–436. <https://doi.org/10.1002/jcop.22263>
- Wilkinson RG, Marmot M, Organizació Mundial de la Salut, Oficina Regional para Europa, Organizació Mundial de la Salut, Centre for Urban Health, University College London, International Centre for Health and Society (2004) Les déterminants sociaux de la santé: les faits. OMS Bureau régional de l’Europe, Copenhagen
- World Health Organization. Division of Mental Health (1994) Life skills education for children and adolescents in schools. Pt. 1, introduction to life skills for psychosocial competence. Pt. 2, guidelines to facilitate the development and implementation of life skills programmes. World Health Organization
- Yanagida T, Strohmeier D, Spiel C (2019) Dynamic change of aggressive behavior and victimization among adolescents: effectiveness of the ViSC program. *J Clin Child Adolesc Psychol* 48(Suppl 1):S90–S104. <https://doi.org/10.1080/15374416.2016.1233498>
- Zarglayoun H, Laurendeau-Martin J, Tato A, Vera-Estay E, Blondin A, Lamy-Brunelle A, Chaieb S, Morasse F, Dufresne A, Nkambou R, Beauchamp MH (2021) Assessing and optimizing socio-moral reasoning skills: findings from the MorALERT serious video game. *Front Psychol* 12:767596. <https://doi.org/10.3389/fpsyg.2021.767596>