

# Impact of a transdiagnostic prevention protocol for targeting adolescent anxiety and depression

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## Abstract

The present study examined the benefit of a transdiagnostic prevention program, Super Skills for Life – adolescent version (SSL-A), among adolescents with internalizing and externalizing problems in two types of school settings (mainstream school and pupil referral unit) using a randomized waitlist-controlled trial (RCT). The main aims were to examine the effects of the SSL-A in reducing internalizing and externalizing problems in adolescents, and to identify the moderating role of gender, age, and school type on the intervention outcome. The RCT involved 112 adolescents aged 11 to 14 years old, randomly allocated to either an SSL-A intervention group or a waitlist-control group (WLC). Adolescents in the intervention group participated immediately in the SSL-A, whereas adolescents in the WLC group received the intervention after the intervention group completed the six months follow-up assessment. Results showed that internalizing and externalizing problems were significantly reduced from pre-test to follow-up assessments. Gender, age and school setting moderated the intervention outcome. Specifically, males, younger adolescents and adolescents from mainstream schools showed a significant reduction over time on both internalizing and externalizing problems. Although SSL was designed to target internalizing problems, this study shows that it also had positive effects on adolescents with internalizing and externalizing problems.

**Keywords:** transdiagnostic, anxiety, depression, adolescents, cognitive-behavioural

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## O impacto de um protocolo transdiagnóstico de prevenção de ansiedade e depressão em adolescentes

### Resumo

O presente estudo explorou a eficácia do programa transdiagnóstico de prevenção, *Super Skills for Life – versão adolescente (SSL-A)*, em adolescentes com problemas internalizantes e externalizantes em dois tipos de escolas (escolas públicas convencionais e *pupil referral units*) usando um estudo randomizado controlado com lista de espera (RCT). Os objetivos principais consistiram em examinar os efeitos do SSL-A na redução de problemas internalizantes e externalizantes em adolescentes, e identificar o papel moderador do género, idade e tipo de escola nos resultados da intervenção. O RCT envolveu 112 adolescentes, entre os 11 e os 14 anos, distribuídos aleatoriamente para o grupo de intervenção SSL-A ou para o grupo de lista de espera. Os adolescentes do grupo de intervenção participaram imediatamente no programa SSL-A, enquanto os adolescentes do grupo de espera receberam a intervenção após o grupo de intervenção ter completado a avaliação do seguimento de seis meses. Os resultados mostraram que os problemas de internalização e externalização foram significativamente reduzidos do pré-teste para as avaliações de seguimento. O género, a idade e o tipo de escola moderaram os resultados da intervenção. Mais especificamente, rapazes, adolescentes mais novos e adolescentes de escolas convencionais mostraram uma redução significativa de problemas internalizantes e externalizantes ao longo do tempo. Embora o SSL tenha sido desenhado para os problemas de internalização, este estudo mostrou que o programa também teve efeitos positivos nos adolescentes com problemas de internalização e externalização.

**Palavras-chave:** transdiagnóstico, ansiedade, depressão, adolescentes, cognitivo-comportamental

## INTRODUCTION

Internalizing problems such as anxiety and depression occur commonly among adolescents. It is estimated that up to 30% of adolescents in the general population are affected by anxiety and depression which cause significant distress and impairment in major areas of life (Essau, Lewinsohn, et al., 2014). Anxiety and depression also co-occur frequently with externalizing problems such as conduct problems (Essau, Lewinsohn, et al., 2014; Frick et al., 2013). Recent studies have

indicated that these internalizing and externalizing problems shared some common risk factors, including low self-esteem and social skills (Essau & de la Torre-Luque, 2019; de la Torre-Luque & Essau, 2019). Individuals with comorbid disorders tend to experience higher level of psychosocial impairment (Kessler et al., 2005) and have worse quality of life (Rapaport et al., 2005) compared to those with only one disorder. Studies have also reported that internalizing and externalizing problems that occur early in life, if left untreated, tend to have a negative course and outcome (Essau, Lewinsohn, et al., 2014).

These findings have led to the development of intervention programs, with cognitive behaviour therapy (CBT) as the treatment of choice. However, almost all intervention programs are disorder specific. Particularly, intervention programs tend to focus on specific type of internalizing problems such as only for anxiety or only for depressive disorders. For anxiety disorders, various types of programs are available for specific types of anxiety disorders such as intervention programs for social anxiety disorder or specific phobias. Up to 65% of the young people have been reported to respond positively to such interventions (Essau et al., 2012; Kendall et al., 1997; Seligman & Ollendick, 2011; Stallard et al., 2007). These moderate remission rates might be attributed to the fact that these studies have been based on interventions that are designed for specific disorders and do not consider the presence of comorbid disorders. In fact, the treatment outcome of adolescents with presence of depressive disorder or depressive symptoms who received treatment for their anxiety disorders had a poorer outcome than those without any comorbid depressive symptoms or disorders (O'Neil & Kendall, 2012).

Given the findings on the high comorbidity both within internalizing problems (e.g., anxiety and depression) and also between internalizing and externalizing problems (e.g., anxiety and conduct problems), disorder-specific intervention programs might not be the most cost-effective way to addresses comorbid problems. Thus, recent years have seen the development of increasing number of interventions that use the transdiagnostic approach. The term “transdiagnostic” refers to intervention programs that address various mental disorders that show common risk factors. Transdiagnostic approaches to intervention have a number of advantages compared to disorder-specific intervention programs. First, given the high rate of comorbidity within internalizing disorders, transdiagnostic approach is more cost-effective because it involves training practitioners/clinicians in one intervention protocol instead of a protocol for each type of disorders (Sauer-Zavala et al., 2016). Second, in routine clinical settings, patients generally have comorbid disorders with heterogeneous manifestations of symptoms, which makes it difficult to select the most appropriate protocols for specific disorders

(Sauer-Zavala et al., 2016). Third, some factors related to the onset and maintenance are common across internalizing and externalizing disorders (Essau & de la Torre-Luque, 2019; de la Torre-Luque & Essau, 2019). From the “shared mechanisms approach” (Sauer-Zavala et al., 2016), it is important to target common factors that underlying comorbid disorders.

A transdiagnostic intervention protocol that has been developed for children and adolescents with internalizing problems (i.e., anxiety and depression) is called “Super Skills for Life” (SSL, Essau & Ollendick, 2013, 2016). SSL has five core principles: (1) it targets common core risk factors (e.g., low self-esteem, lack of social skills) of anxiety and depression, and as such it should be more time efficient and cost-effective than using interventions that focus on only anxiety or depression; (2) it uses principles of CBT to help children and adolescents develop skills to cope with anxiety-provoking situations; (3) it uses video feedback with cognitive preparation to help children and adolescents increase their self-perception (Harvey et al., 2000; Rodebaugh, 2004); (4) it uses the principle of behavioural activation by having children and adolescents increase their activity levels and participate in positive and rewarding activities; such activities can help to improve their mood and overall self-esteem; (5) finally, it teaches children and adolescents basic skills to use during social interactions.

Recent studies have shown that the SSL is effective in reducing emotional problems such as anxiety and depressive symptoms as well as other forms of difficulties such as anxiety-related interferences, and peer and conduct problems among children and adolescents in school settings (Essau, Olaya, et al., 2014; Fernández-Martínez et al., 2020; Orgilés et al., 2020) and in residential care institutions (Ramdhonee-Dowlot et al., 2021). However, studies that examined the role of gender, age, and school type in moderating the intervention outcome is lacking.

Therefore, the aim of our study was to assess the benefit of a transdiagnostic prevention program (Super Skills for Life – adolescent version; SSL-A) to reduce mental health problems among adolescents. The specific objectives were: (1) to examine the effects of the SSL-A in reducing internalizing and externalizing problems in adolescents; and (2) to examine the moderating role of gender, age, and school type on the benefit of the SSL-A. Based on recent promising findings of SSL (Essau et al., 2019; Fernández-Martínez et al., 2020; Orgilés et al., 2020), it was hypothesized that at both post-treatment and six-month follow-up, compared to those in a waitlist-control group, adolescents who participate in SSL-A would demonstrate improvements in internalizing (e.g., anxiety and depressive symptoms) and externalizing (e.g., conduct problems) symptoms. Being female and younger age are expected to moderate the intervention outcome (Essau, Olaya, et al., 2014).

## METHOD

### *Participants*

A total of 112 adolescents who were referred by their teacher as having internalizing and externalizing problems participated in this study. The participants were recruited from two high schools (one mainstream school and one Pupil referral unit) in the south-west area of London, UK. Over half (64.3%) of the participants were from the Pupil Referral Unit (PRU) and 35.7% were from the mainstream school. In the UK, PRU is an alternative education provision which is organised to provide education for children and adolescents who need greater care and support than the mainstream school can provide. One of the most common reasons for referral to the PRU is the presence of emotional or behavioural difficulties. In the present study, participants from the mainstream school were considered as community sample, and those from the PRU were considered as a clinical sample.

Sixty-seven (59.8%) were boys and 45 (40.2%) were girls. Their age ranged from 11 to 14 years ( $M = 12.16$ ,  $SD = .83$ ). The sample was relatively diverse, 23.7% were White, 43.4% Black or African, 22.2% Asian, and 10.8% other/unreported. About 60.8% of the adolescents live in the community setting, compared to 39.2% of adolescents who live with both parents in the clinical setting. Thus, a higher percentage of clinical samples lived in a single parent family. The percentage of adolescents in the clinical setting who were entitled to free school dinners were about double the percentage of those who live in the community setting.

### *Measures*

*The Youth Self Report* (YSR; Achenbach, 1991) was used to measure internalizing and externalizing problems. Its 120 problem items can be scored on a 3-point scale, ranging from “0 = not true” to “2 = very or often true”, apart from question 56h, which was an open-ended item (i.e., Physical problems without known any medical cause: Other). The participants rated how true each item is now or was within the past six months. The YSR was scored on the scale of the total problems, which was the sum of the scores of each problem item. The problem items were combined to form eight syndrome scales, which were further divided into two broadband scales, namely Internalizing and Externalizing scales. Internalizing problems include emotional disturbances and are made up

of the following subscales: Withdrawn (e.g., “I would rather be alone than with others”), Somatic Complaints (e.g., “I feel dizzy or lightheaded”) and Anxious/Depressed (e.g., “I feel lonely”). The Externalizing problems reflect conduct disorders or behavioural excess and were made up of Delinquent Behaviour (e.g., “I don’t feel guilty after doing something I shouldn’t”) and Aggressive Behaviour (e.g., “I am mean to others”) scales. Other scales that were assessed were Social Problems (e.g., “I act too young for my age”), Thought Problems (e.g., “I can’t take my mind off certain thoughts”), Attention Problems (e.g., “I have trouble concentrating or paying attention”), and Other Problems (e.g., “I don’t eat as well as I should”). The YSR has good reliability in the original English version (Achenbach, 1991) and it has been replicated in American, German and Dutch studies of children and adolescents in clinical and epidemiological settings (Ebesutani et al., 2011; Steinhausen et al., 1998; Van Lang et al., 2005). In the current sample, the internal consistency of the YSR was excellent, with Cronbach alpha being .94.

*Demographics Scale* was used to measure the participant’s sociodemographic features such as age, gender, religious affiliation, and ethnicity as well as living arrangement (i.e., whether the participants lived with either or both of their parents).

No data were available of the type of parental employment, and hence, a proxy for socio-economic status (SES) was used instead of the Hollingshead-Redlich Factor. It consisted of a composite index (range 0-6) including single-parent family status (divorced, separated, or widowed), employment for each parent separately, highest education for each parent separately, number of times the family had moved during the study period (with three or more times being a risk factor), and child’s free lunch status in school (“Were you entitled to free or help with cost of lunches?”). The adolescents responded to these items by checking “yes” (coded 1) or “no” (coded 0).

### *The Intervention: Super Skills of Life – Adolescent version (SSL-A)*

The SSL-A consists of eight sessions, which are implemented a week for the duration of eight weeks. Each session consists of 45 minutes with on average ten adolescents per treatment group. The content and activities covered in SSL-A are listed in Table 1. The program teaches adolescents to: (1) learn how to live a healthy and balanced lifestyle; (2) build emotional resilience by self-monitoring and adjustment; (3) encourage peer learning and build peer networks; and (4) promote self-confidence and social skills.

**Table 1**  
*Contents of the SSL-A*

<b>Session</b>	<b>Aims / Activities</b>
Session 1	Introduce the participants to the Super Skills for Life – adolescent version (SSL-A). Discuss behaviours that are related to a healthy lifestyle (i.e., eating healthy food, regular physical activities, enough sleep).
Session 2	Introduce the participants with the concept of self-esteem and to discuss activities that could help to enhance self-esteem. Discuss various small steps that are needed to develop a particular skill.
Session 3	Introduce the participants to the concept of feelings and thoughts.
Session 4	Introduce the concept of the link between thoughts, feelings, and behaviour.
Session 5	Learn about the impact of stress on our body and feelings. Teach the participants specific relaxation strategies.
Session 6	Discuss the importance of having a good relationship. Learn specific skills that are needed to get along with other people.
Session 7	Introduce the participants to the idea of using problem-solving steps in dealing with social problem.
Session 8	Introduce the importance of having a sense of future.

Home activities were given at the end of each session to enable the continued practice of the skills learnt and participants were needed to return completed home tasks in the following sessions. At the beginning of the next session, these tasks were reviewed and discussed. Adolescents who missed a session had to complete an individual session with their trainer before they could join the next group session.

### ***Implementation of the SSL-A***

SSL-A was delivered by two facilitators, who were both checked and cleared before starting this program by the Disclosure and Barring Service (DBW). Both facilitators received training by the senior author of SSL-A (CAE) and were equipped with the Facilitator's manual to guide them and ensure consistency in each session (Essau et al., 2014). The manual gives step-by-step instructions on how to implement each session of SSL-A. The instructions clearly outline the main aims and

strategies to be used for each session; the desired outcomes, and the exercises to be used in meeting to attain these outcomes. Adolescents were given a workbook which holds the main messages of each session, exercises, activities, role plays and homework. The workbook was used to re-enforce the in-class lessons and enable the participants to refer to them to implement the skills in real life situations.

The group meeting with the facilitators and the senior author of SSL-A was conducted after each session to discuss if the level of engagement and if the home activity was completed and any other relevant feedback on each session.

### *Procedure*

Ethical approval was obtained from the Ethical Board of the University of Roehampton before conducting the present study. Two schools in South East London were recruited via an email invitation explaining the purpose and procedures of the current study. All parents were provided with a letter of invitation explaining the study followed by an opt-out consent form, which they were asked to complete only if they did not want their children to participate. The opt-out consent forms informed parents/participants that the purpose of the study was to further our understanding of the nature of internalizing and externalizing problems and how it can affect their cognition, emotional state, and their social skills. Parents were informed that their children would be taught specific skills that they could use to better cope with challenging situations.

The adolescents were randomly allocated to either the intervention ( $n = 55$ , 49.1%) or a waitlist control group (WLC) ( $n = 57$ , 50.9%). Adolescents in the intervention group participated immediately in the SSL-A, whereas adolescents in the WLC group received the intervention approximately eight months later (i.e., after the intervention group completed the six months follow-up assessment).

The adolescents completed the same questionnaires one week before and one week after participating in SSL-A, and six months after the last session of SSL-A, within school hours. Adolescents in the WLC also completed the same questionnaires at the same interval as the adolescents in the intervention group.

### *Data analyses*

Initially, descriptive statistics were calculated for both the WLC and intervention group detailing means and standard deviations before (T1), after (T2), and six months after the completion of the program (T3). A series of factorial repeated measure

ANOVAs were conducted to determine the effect of SSL-A on internalizing problems (i.e., withdrawn, somatic complaints, anxious/depressed) and externalizing problems (i.e., delinquent problems and aggressive behaviour). The effect of the SSL-A on groups' other problems such as social problems, thought problems, attention problems and YSR problems were also assessed. A series of factorial repeated measure ANOVAs were also conducted for the intervention group data on internalising problems, externalising problems, and other problems to identify whether age, gender, and setting (clinical or community) acted as moderators for change in pre- to follow-up test scores.

## RESULTS

Table 2 shows the means and standard deviations of the study variables (internalizing and externalizing problems) for adolescents in the intervention and control groups. A series of factorial repeated measure ANOVAs showed significant interactions between time (pre- and post-test, follow-up) and group (intervention, WLC) were found for total internalizing problem,  $F(2, 104) = 8.58, p < .001$ , and somatic complaints,  $F(2, 109) = 17.92, p < .001$ . Specifically, follow-up score was significantly lower ( $p < .001$ ) than post-test score on internalizing syndrome. Similarly, follow-up score was significantly lower ( $p < .001$ ) than post-test score on somatic complaints. Significant interaction was also found on withdrawn,  $F(2, 109) = 13.4, p < .001$ ; and anxious/depressed ( $F(2, 104) = 2.63, p < .001$ ) subscales.

Significant interactions were also found between time (pre- and post-test, follow-up) and group (intervention, WLC) for total externalizing problems,  $F(2, 104) = 8.58, p < .001$ , and aggressive behaviour,  $F(2, 104) = 5.54, p < .001$ . Specifically, follow-up score was significantly lower ( $p < .001$ ) than both post-test and pre-test scores on total externalizing problems and on aggressive behaviour. However, no significant interaction effect was found on delinquent behaviour,  $F(2, 109) = 2.96, p > .001$ .

Further analyses showed significant interactions between time (pre- and post-test, follow-up) and group (intervention, WLC) for total Other Problems such as thought problems score,  $F(2, 109) = 9.21, p < .001$ ; attention problems,  $F(2, 109) = 10.47, p < .001$ ; YSR problems score,  $F(2, 104) = 26.26, p < .001$ . Multiple comparison using Bonferroni used for the dependent variables that showed interaction effect (Group X Time) showed that follow-up score was significantly lower ( $p < .001$ ) than both post-test score and follow-up scores on thought problems. Similarly, on attention problem, follow-up scores were found significantly lower than post-test scores ( $p = .001$ ) and pre-test scores ( $p = .001$ ). Results regarding YSR total problem, follow-up score was found significantly lower than post-test scores ( $p < .001$ ) and pre-test scores ( $p = .001$ ).

**Table 2***Internalising and externalising problems at pre- and post-test and at follow-up*

<b>YSR Syndromes</b>	<b>Pre-test Mean (SD)</b>	<b>Post-test Mean (SD)</b>	<b>Follow-up Mean (SD)</b>
<b>Internalizing Problems (total)</b>	9.28 (6.63)	9.82 (6.51)	8.85 (6.03)
Intervention group	9.94 (6.72)	9.42 (5.76)	8.52 (5.52)
Control group	8.70 (6.55)	10.17 (7.14)	9.15 (6.48)
<b>Withdrawn</b>	1.96 (1.92)	1.89 (1.99)	1.91 (1.87)
Intervention group	1.92 (1.86)	1.83 (1.96)	1.85 (1.69)
Control group	2.00 (2.00)	1.94 (2.03)	1.98 (2.05)
<b>Somatic Complaints</b>	2.47 (2.41)	3.87 (2.34)	2.78 (2.33)
Intervention group	3.18 (2.08)	3.09 (1.82)	2.32 (2.09)
Control group	2.47 (2.41)	3.87 (3.34)	2.78 (2.33)
<b>Anxious/Depressed</b>	4.50 (4.09)	4.38 (3.71)	4.38 (3.67)
Intervention group	4.82 (4.34)	4.42 (4.49)	4.38 (3.46)
Control group	4.22 (3.88)	4.35 (3.93)	4.38 (3.88)
<b>Externalizing Problems (total)</b>	9.39 (6.11)	8.96 (5.86)	8.84 (5.85)
Intervention group	10.20 (6.18)	9.44 (5.83)	9.28 (5.84)
Control group	8.68 (6.02)	8.54 (5.90)	8.45 (5.87)
<b>Delinquent Problems</b>	2.58 (2.16)	2.55 (2.11)	2.44 (2.10)
Intervention group	2.52 (2.04)	2.41 (1.95)	2.27 (1.92)
Control group	2.63 (2.29)	2.68 (2.26)	2.61 (2.25)
<b>Aggressive Behaviour</b>	6.78 (4.71)	6.38 (4.43)	6.36 (4.42)
Intervention group	7.62 (4.91)	6.98 (4.51)	6.96 (4.49)
Control group	6.05 (4.44)	5.85 (4.33)	5.84 (4.32)
<b>Other problems</b>			
<b>Social Problems</b>	3.11 (2.25)	2.83 (2.10)	2.85 (2.11)
Intervention group	3.36 (2.49)	2.87 (2.11)	2.89 (2.16)
Control group	2.87 (1.98)	2.79 (2.10)	2.82 (2.08)
<b>Thought Problems</b>	3.12 (2.54)	2.83 (2.35)	2.70 (2.28)
Intervention group	3.14 (2.54)	2.60 (2.11)	2.40 (1.99)
Control group	3.10 (2.56)	3.07 (2.56)	3.00 (2.51)
<b>Attention Problems</b>	3.83 (2.29)	3.53 (2.13)	3.57 (2.12)
Intervention group	3.78 (2.38)	3.14 (1.93)	3.18 (1.94)
Control group	2.87 (2.22)	2.91 (2.27)	2.94 (2.24)
<b>YSR Problems (total)</b>	35.80 (19.20)	34.48 (17.75)	33.28 (17.39)
Intervention group	37.78 (20.54)	33.64 (17.29)	32.26 (17.13)
Control group	34.07 (17.95)	35.22 (18.26)	34.17 (17.72)

### *Moderators for change of symptoms*

The next step of our analysis was to examine the moderating role of gender, age, and school type on the intervention outcomes (i.e., reducing internalizing and externalizing problems, other problems) from pre- to follow-up-test using a series of factorial repeated measure ANOVAs.

*Internalizing problems:* There was a significant interaction between time and gender,  $F(2, 47) = 3.27, p < .05$ , on internalizing problems. Specifically, among males, follow-up test scores were significantly lower than post-test ( $p = .006$ ) and pre-test scores ( $p = .006$ ). A significant age and time interaction was also found on internalizing problems,  $F(4, 92) = 3.50, p < .05$ . Specifically, follow-up scores of the 13-olds were significantly lower than post-test ( $p = .002$ ) and pre-test scores ( $p = .012$ ). A significant school type and time interaction was also found on internalizing problems,  $F(2, 47) = 4.96, p < .05$ . Specifically, mainstream school follow-up scores were significantly lower than post-test ( $p = .002$ ) and pre-test scores ( $p = .005$ ).

*Externalizing problems:* There was a significant interaction between time and gender,  $F(2, 47) = 6.93, p < .05$ , on externalizing problems. Among males, follow-up scores were significantly lower than post-test ( $p < .001$ ) and pre-test scores ( $p < .001$ ). A significant age and time interaction were also found on externalizing symptoms,  $F(4, 94) = 5.85, p < .05$ . Specifically, among 12 years old, follow-up scores were significantly lower than post-test ( $p < .001$ ) and pre-test scores ( $p < .001$ ). A significant school type and time interaction was also found on externalizing problems,  $F(2, 47) = 6.31, p < .05$ . This finding suggested that at follow-up, the externalizing problems scores among adolescents from mainstream school were significantly lower than post-test ( $p < .001$ ) and pre-test scores ( $p < .001$ ).

*Other Problems:* There was no significant interaction between time and gender,  $F(2, 52) = 3.13, p > .05$ , on other problems. A significant age and time interaction was found on other problems,  $F(4, 104) = 8.82, p < .05$ , suggesting that among the 12 years old, follow-up scores were significantly lower than post-test ( $p < .001$ ) and pre-test scores ( $p < .001$ ). No significant interaction was found between school type and time on other problems,  $F(2, 52) = 1.25, p > .05$ .

## DISCUSSION

The aims of the present study were to examine the effects of the SSL-A in reducing internalizing and externalizing problems in adolescents, and to exam-

ine the extent to which gender, age, and school type moderate the intervention outcome. To our knowledge, this is the first study to have used SSL-A in both mainstream school and in pupil referral unit, and to have focussed on internalizing and externalizing problems. The study took place in the natural environment, i.e., within the school setting, which ensured that adolescents with internalizing and externalizing problems did received an evidence-based intervention (Meltzer et al., 2000). In particular, a high proportion of the adolescents in PRU have parents from single parents and “dysfunctional” family situations who are unwilling to engage in evidence-based intervention, so the school-based intervention approach may be an important option (Gottfredson et al., 2000). As argued by Wilson and Lipsey (2007), a program that is delivered to all students in a classroom can be accessed by the highest number of students targeting multiple internalizing and externalizing problems at the same time.

The findings could be summarised as follows: first, as hypothesized and in line with previous studies (Essau, Olaya, et al., 2014, 2019; Fernández-Martínez et al., 2020; Orgilés et al., 2020; Ramdhonee-Dowlot et al., 2021), total internalizing problems were significantly reduced from pre-test to follow-up assessments. Within the internalizing problems, significant reductions were found for somatic complaints, withdrawn and anxious/depressed subscales. The finding on the reduction in somatic complaints at follow-up is interesting because previous studies have shown a high comorbidity between somatic complaints and internalizing problems (Essau et al., 2013). Within the externalizing problems, significant reduction was found for aggressive behaviour, which replicated the previous study by Essau, Olaya et al. (2014). This is an important finding because, although SSL was designed to target internalizing problems, it also had positive effects on externalizing problems as well. By using the transdiagnostic approach, SSL-A targets low self-esteem and social skills which are common among young people with internalizing and externalizing problems (Barry et al., 2003; Glass et al., 2011). It could be speculated that these adolescents benefit from SSL-A as it contains activities that help to enhance their self-esteem and social skills, and thus in turn may have a positive impact on externalizing problems.

Second, sociodemographic factors such as gender and age moderated the intervention outcome. Gender showed a significant interaction between time and group, whereby males showed a significant reduction over time on both internalizing and externalizing problems after the intervention. The effect of gender in internalizing problems was inconsistent with some previous studies. For example, studies that used the FRIENDS program reported that both girls and boys uniformly benefited from the intervention (Essau et al., 2012; Lowry-Webster et al., 2003). The reason for this inconsistent finding was unclear although it could

be attributed to the fact that in the present study there were more boys than girls, whereas in the two previous studies, there were more girls than boys. By contrast, the moderating effects of gender on behaviour found in this study is in line with previous research (Kendall & Choudhury, 2003) whereby boys showed a reduction over time on behaviour problems greater than girls after the SSL-A intervention. Our finding also showed age to be a moderating factor of change for internalizing and externalizing problems; younger compared to older adolescents displayed significant benefits of SSL-A. Similar findings have been reported in previous studies (Essau et al., 2012; Kendall & Choudhury, 2003), which might suggest that at younger age, the problems are not as severe as in older age and, thus, they might be faster to see the impact of the intervention. Future studies are needed to test this hypothesis.

Third, school type (mainstream or PRU) and time (pre- and post-test and follow-up) together had a moderating effect on both internalizing and externalizing problems. Specifically, mainstream school on follow-up test scores was significantly lower than post-test and pre-test scores. This finding is interesting and may be related to the adolescents in PRU who have been removed from the mainstream schools due to externalizing and/or internalizing problems, and many come from a dysfunctional family environment.

In interpreting our findings, it is important to take into account the study's limitations. First, the sample size was small. Thus, more studies are needed with a larger sample size. Second, the study did not use any structured diagnostic interviews because it was implemented in a school setting with limited human resources. However, the study did use the YSR to measure internalizing and externalizing problems in adolescents which has proven to be both valid and reliable in distinguishing adolescents with and without any mental health problems (Achenbach & Rescorla, 2001). Third, participants were recruited from two schools. To have a diverse group of adolescents, future studies should consider including more schools.

These limitations notwithstanding, our findings suggest that future studies should consider the inclusion of this program in school settings as a taught lesson for all in Personal, Social, Health and Economic (PSHE) Education, as a valuable practice for the reduction of the development and maintenance of internalizing and externalizing problems. PSHE is a school subject being taught in England through which young people learn to develop the knowledge, skills and attributes to keep them healthy and safe and to prepare them for life. Additionally, Child and Adolescent Mental Health Services (CAMHS) could use the SSL-A as an entry point for the treatment of all non-urgent presentations to enable better management of the extensively long wait lists for treatment within CAMHS.

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