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The impact of a school-based positive psychology programme on state wellbeing in Irish school children: A cluster randomized controlled trial

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ABSTRACT

Childhood into early adolescence is a critical developmental period for mental health, with growing evidence that universal school-based wellbeing interventions can improve children's mental health outcomes, with lifelong benefits.

The A Lust for Life (ALFL) school-based positive psychology intervention is widely implemented in Ireland, with some evidence of benefits. This cluster randomized controlled trial (RCT) aimed to evaluate the effectiveness of the ALFL programme for children in fifth and sixth class grades, aged 9-13 years, using a measure of state wellbeing as the primary outcome variable, with trait measures of wellbeing, depression and anxiety as secondary outcome variables, building on previous research studies. Participants were 402 children, recruited from 9 schools, randomly allocated to a 10-week ALFL programme group (n = 180) or 10-week waiting list control group (n = 222). Outcome measures were administered pre and post intervention/waiting time. The trial showed that the ALFL schools programme led to small improvements in state wellbeing arising from using behavioural skills learned on the ALFL programme ($d = 0.18$, $p = .034$), and an increase in the use of skills learnt on the programme to promote state wellbeing ($d = 0.27$, $p = .001$), but no significant improvements in measures of trait wellbeing, anxiety or depression. This study's use of a state wellbeing measure and its consideration of children's real-world use of skills learnt, which are central to the evaluated intervention's theory of change, constitute an original contribution to the research base.

Keywords: children's wellbeing, school wellbeing programme, depression, anxiety.

INTRODUCTION

Child and early adolescent mental health difficulties constitute a major global public health challenge, with 10-20% of children experiencing mental disorders, giving rise to substantial disability and impairment in childhood that extends through the lifespan (Kieling et al., 2011). An estimated 34.6% of all mental disorders originate before the age of 14 years (Solmi et al., 2022). The neuroplasticity of the developing brain in early childhood and adolescence presents opportunities to develop adaptive skills that can offset vulnerabilities to psychopathology, improve coping, develop resilience and increase mental wellbeing (Masten et al., 2021), resonating with global calls for effective early intervention programmes to improve children's mental health, prevent mental disorders, and support positive mental health in adulthood (Patel et al., 2018). The negative impact of the COVID-19 pandemic on children's mental health gives this an added urgency, with evidence of increased mental health difficulties and psychological distress post-pandemic, including anxiety and depressive symptoms (Miao et al., 2023), disordered eating and self-harm (Trafford et al., 2023).

Mental health, described by the World Health Organization (WHO) as a state of mental wellbeing that enables people to cope with life stresses, realise their abilities, learn well and work well, and is more than the absence of disorder (World Health Organisation, 2022), is increasingly recognised as a human right (World Health Organisation, 2022) central to human flourishing (Patel et al., 2018). The positive psychology movement is focused on the enhancement of human strengths and happiness (Seligman, 2003) with growing evidence that positive psychology interventions (PPIs) have significant positive effects on wellbeing, depression, anxiety and stress in children and adults (Carr et al., 2021; Carr et al., 2024), and that school-based programmes are an effective way of making these interventions universally available to young people (Mendes de Oliveira et al., 2022).

Positive education aims to enhance wellbeing by blending positive psychology with best practices in teaching and learning (White & Kern, 2018), consistent with the whole-child approach of 21st Century education (Waters & Loton, 2019), with evidence that strengths-based positive education interventions result in improved wellbeing and positive emotions (Kumar & Mohideen, 2021). Schools are well-placed to deliver wellbeing programmes given the synergy between wellbeing and learning, the amount of time children spend at school, the fact that most children attend school (Seligman et al., 2009; Waters, 2011), and the rapport that teachers have with pupils (Kumar & Mohideen, 2021). School-based Positive Psychology Interventions (PPIs) are associated with increased psychological wellbeing and reduced depressive symptoms (Tejada-Gallardo et al., 2020); and increased student wellbeing, hope, serenity and resilience (Waters, 2011). Mindfulness is a component in an estimated 49% of school-based PPIs, and is associated with improvements in depression, anxiety, stress, attention and behaviour (Owens & Waters, 2020), with a positive association between students' mindfulness practice and wellbeing (Huppert & Johnson, 2010). Increasing children's social-emotional competencies can also reduce internalizing

problems, and increase prosocial behaviour and academic performance (Durlak et al., 2011; Waters, 2011).

The formal education system in the Republic of Ireland begins with Primary School education, spanning eight years, from Junior Infants to sixth Class, with children typically starting Junior Infants aged four years and completing sixth class aged 12 to 13 years. The Primary School curriculum seeks to provide a learning environment in which the growing child can thrive and flourish, and provide a strong foundation for the next step in the formal education system, Secondary School, which covers the adolescent years (Department of Education, 2023). The ALFL schools programme is a PPI which aims to build resilience, increase wellbeing, and enhance the emotional literacy of school children (A Lust for Life, 2024), with developmentally staged versions currently available for two groups: 3rd and 4th class children, and fifth and sixth class children respectively. The programme taps into core aspects of the Primary School curriculum (Department of Education, 2023), including a close alignment with the Social, Physical, and Health Education (SPHE) curriculum (Department of Education, 1999). Developed for the A Lust for Life Mental Health Charity (https://alflschools.com/our-team/) by an expert team of psychologists and educators in consultation with teachers, parents and children, the ALFL programme is free of charge and widely implemented in Ireland. The programme follows the UK Medical Research Council's (MRC) framework for the development and evaluation of complex interventions (Skivington et al., 2021), with ongoing programme refinement being an iterative process involving evidence-based design and rigorous evaluation (O'Cathain et al., 2019). The programme design draws on contemporary positive psychology, especially mindfulness-based interventions; traditional, second, and third wave cognitive behaviour therapy (CBT); and developmental, educational, and health psychology. The ALFL programme is delivered by primary school teachers, who can access free online training and resources for the ALFL programme on the A Lust for Life organisation's website (https://alflschools.com). Resources include lesson plans, lesson slides, information, homework sheets, and videos which support learning self-regulation exercises, all of which supports intervention fidelity.

The ALFL programme involves ten 40-minute classes delivered by teachers during class time. Children learn a range of self-regulation skills: naming and rating the intensity of emotions; linking thoughts, feelings and actions; mindfulness; breathing exercises; visualization exercises; progressive muscle relaxation; positive self-talk (gratitude, optimism, and cognitive restructuring); obtaining social support from adults and peers; assertiveness; managing bullying; and using the internet safely. Skills are learned through didactic instruction, video modelling, in-class experiential exercises, and homework practice, consistent with key competencies of wellbeing, digital learning, creativity and active learning contained in the formal Primary School curriculum framework (Department of Education, 2023). The ALFL theory of change is that the ALFL programme helps children develop specific skills which enhance their mood states, or state wellbeing, when they apply these skills in particular situations in their day-to-day lives. The current study is focused on the fifth and sixth class ALFL programme, this being a critically important time for children as they complete the Primary School curriculum and face the challenging transition to Secondary School (Smyth, 2017).

Two previous cluster randomized controlled trials of the ALFL schools programme for fifth and sixth class children showed that in the main trial analyses trait measures of a range of wellbeing and mental health variables did not detect positive changes arising from the intervention (Clancy, 2023, 2024; O'Connor, 2022; O'Connor et al., 2022). The studies found no evidence of improvement on a range of mental health outcomes such as anxiety and depression (Clancy, 2023; O'Connor, 2022), resilience and positive mental health growth (O'Connor, 2022) and coping skills (Clancy, 2023). In contrast, two qualitative studies found that children who participated in the ALFL programme (Hoctor, 2022; Hoctor et al., 2023) and parents of programme participants (Listwan, 2023) reported that the programme had positive benefits in specific situations and these included improvements in emotional literacy, coping skills, self-awareness, openness to sharing their feelings, emotion management, conflict resolution, and lifestyle changes. A possible reason for these discrepant results is the respective use of trait vs state outcome measures in the RCT and qualitative research studies respectively. Given the importance of using outcome measures relevant to the programme's theory of change (Mangan et al., 2020), and the goodness of fit between state wellbeing and the ALFL programme's theory of change, this RCT used state wellbeing as its primary outcome measure, with trait wellbeing, depression and anxiety as secondary measures.

The research study asked if children who completed the ALFL programme, compared with those placed on a 10-week waiting-list, showed a significant improvement in:

1. State wellbeing when skills taught on ALFL were used.
2. Self-reported anxiety, depression, and wellbeing experienced in the preceding week.
3. State wellbeing when skills taught on ALFL were used, and positive changes in self-reported anxiety, depression, and wellbeing experienced in the preceding week, for children who reported a low level of adjustment at Time 1.

Additionally, the study asked participants to rate their satisfaction with the programme.

METHOD

Ethics, preregistration, reporting guidelines

The study was conducted with ethical approval from the research ethics committee of the institution affiliated with the implementation of this research. Written parental consent and child assent was secured in advance of study participation. A safeguarding and adverse response policy was developed in the event that a child became distressed while completing the online measures. The research ethics committee approval includes GDPR compliance (https://gdpr.eu). The study was pre-registered on a public trials registry (ClinicalTrials.gov ID NCT06135766). CONSORT (http://www.consort-statement.org) (Moher et al., 2010; Schulz et al., 2010) and American Psychological

Association JARS (https://apastyle.apa.org/jars) (Appelbaum et al., 2018) guidelines were followed in reporting results.

Design

The study was conducted in primary schools affiliated to the ALFL organisation in the Republic of Ireland. A parallel-group cluster randomised controlled trial with stratification was used, in line with increasing evidence of its usefulness for evaluating school-based interventions (Goesling, 2019). School was the unit of randomisation, to reduce the risk of contamination or peer effects, with each class being a cluster. Clusters were randomised to intervention (N = 180 pupils) and waiting list control (N = 222 pupils) groups. An online generator was used to reduce the risk of selection bias and maximise comparability, with a relatively equal number of participants according to gender and intervention allocation. Stratification was by gender (male, female, other), school type (mixed, single sex) and socioeconomic status, with "Delivering Equality of Opportunity in Schools" (DEIS) school designation used as an indicator of relatively lower (DEIS) or higher (Non-DEIS) socioeconomic status. DEIS is the Irish Department of Education's policy initiative which targets schools in educationally disadvantaged communities for additional resources. Only schools which had not previously had contact with the ALFL programme were included in the study, to avoid potential contamination. The intervention group engaged in the fifth and sixth class 10-session ALFL programme, with the control group placed on a 10-week waiting list for the programme. Both groups were assessed with the Feeling Better Scale (FBS; (McKenna et al., 2024)), the Stirling Children's Well-being Scale (SCWS) (Liddle, 2013) (Liddle, 2015); and the Revised Children's Anxiety and Depression Scale Short Form (RCADS-25;(Ebesutani et al., 2017)) before (Time 1) and after (Time 2) the intervention group engaged in the ALFL programme/the control group had curriculum as usual for a 10 week waiting time respectively. The programme was delivered to the control group after the study was completed.

Power analysis and sample size

An a priori power analysis was conducted in Optimal Design Software (Raudenbush, 2011) for multilevel cluster randomized controlled trial designs. The analysis revealed that a total of 275 participants or 11 clusters of 25 participants would provide 80% statistical power to detect a medium-sized effect (d = 0.5) at alpha 0.05. Allowing for about 33% attrition, the aim was to recruit 16 clusters of 25 participants, and a total of 400 children.

Participants

Eligible participants were children aged 9 to 13 years old who were enrolled in fifth or sixth class in a primary school in Ireland in the 2023/2024 academic year, who provided child assent, and whose parents/guardians had provided parental consent. Failure to meet inclusion criteria was the only exclusion criterion. A total of 446 children from 28 classes in 9 schools were recruited, the number reduced by 44 (N = 402) when two sixth classes withdrew from the project stating insufficient time to complete the programme in that school year. Participants were aged 9 to 13 years (M = 11), of mixed genders (Male = 199, Female = 202, Other = 1), who were enrolled in fifth class (n = 58%) or sixth class (n = 42%), in DEIS (n = 22%) or non-DEIS (n = 78%) schools. There were 180 and 222 participants in the ALFL and waiting-list control groups respectively. The flow of participants through the study is shown in Figure 1. Descriptive statistics for demographic and dependent variables at Time 1 for ALFL and control groups are also given in Table 1. There was no significance testing of baseline differences between the groups, consistent with CONSORT guidelines (Moher et al., 2010).

Dropouts

There were 39 (22%) dropouts from the intervention group and 42 (19%) from the control group. There was a statistically significant difference between dropouts and completers in the ALFL and control groups on 4 main variables: age ($F(3, 398) = 3.00$, $p<.01$), school gender type, χ^2 ($6, N = 402$) = 72.10, $p<.001$), school disadvantage status (χ^2 ($6, N = 402$) = 9.87, $p<.05$), and FBS total state wellbeing ($F(3, 398) = 6.74$, $p<.01$). Details of these differences are given in Table S1 in supplementary information. The stated reason for dropouts was pupil absence from school at Time 2 data collection.

Figure 1 Participant flow diagram

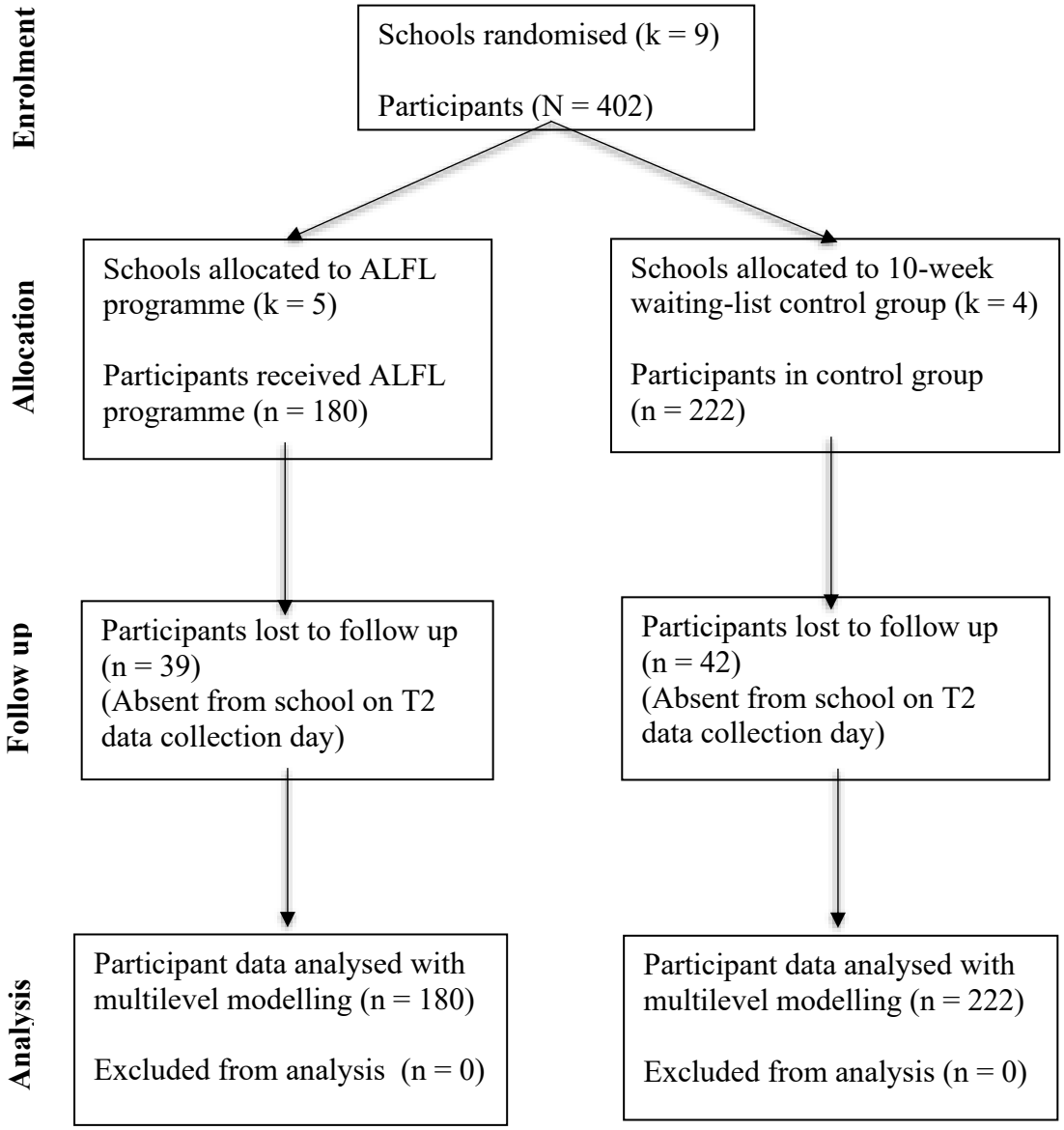


Table 1 Descriptive statistics for all demographic and dependent variables at Time 1 for ALFL and control groups, with results of t-tests and chi square tests comparing two groups

			ALFL (Group 1)	Control (Group 2)
N			180	222
Age		M	11.02	10.92
		SD	0.70	0.73
Gender[§]	Female	f	92	110
		%	51.10	49.50
	Male	f	87	112
		%	48.30	50.50
	Non-binary	f	1	0
		%	0.60	0
School gender type[§]	All female	f	23	0
		%	12.80	0
	All male	f	38	17
		%	21.10	7.70

	Mixed	f	119	205
		%	66.10	92.30
School disadvantage status[§]	Non-DEIS	f	131	181
		%	73.20	81.50
	DEIS	f	48	41
		%	26.80	18.50
FBS state wellbeing		M	32.98	35.62
		SD	19.52	21.01
FBS behavioural skills		M	13.37	14.77
		SD	12.40	13.84
FBS cognitive skills		M	19.64	20.82
		SD	8.99	9.27
FBS skills used		M	11.18	11.93
		SD	5.65	5.99
SCWS trait wellbeing		M	35.53	35.41
		SD	8.87	9.29
SCWS positive emotions		M	15.75	15.45
		SD	4.55	4.87
SCWS positive outlook		M	19.72	19.88
		SD	4.87	4.95
RCADS total internalizing		M	48.23	49.96
		SD	11.88	12.44
RCADS anxiety		M	47.79	48.78
		SD	11.17	11.66
RCADS depression.		M	49.46	51.80
		SD	11.55	11.99

Note: ALFL = group that received A lust for Life programme. Control = control group. FBS = Feeling Better Scale. SWSC= Stirling Well-Being Scale for Children. RCADS-25 = Revised Children's Anxiety and Depression Scale Short Form. N = number of cases. M = mean, SD = standard deviation.

Procedure

Schools were recruited through the ALFL organisation using online advertisements, with follow-up screening calls made to interested schools and a teacher information pack containing information leaflets, parental consent and child assent forms sent to those who registered for the study. Schools facilitated parental consent in writing or via school digital communication systems, such as Aladdin (Aladdin Schools, 2024), with child assent facilitated via the Pavlovia platform (https://pavlovia.org). Data were collected online via the Pavlovia platform, using tablets in a classroom setting during normal class time, with participating children provided with unique ID codes which they used at Times 1 and 2. Children whose parents had not provided consent were assigned schoolwork during data collection. Two researchers facilitated the data collection sessions. Participating children were provided with information on the project and online assessment verbally and visually, with questions answered in a plenary format and one-to-one. Children were reminded that participation was voluntary and that they could withdraw at any time. The FBS, SCWS and RCADS-25 were completed at Times 1 and 2. The demographic questionnaire was also completed at Time 1, and the Satisfaction Scale by the intervention group at Time 2. Brief rest periods were permitted if participants experienced fatigue. Between Times 1 and 2 participants in the intervention group completed the ALFL Schools Programme for fifth and sixth class, and the control group was placed on a 10-week waiting list.

Intervention

The ALFL Schools Programme for fifth and sixth class involved ten 40-minute classroom-based weekly lessons which were facilitated by pupils' regular school teachers between September 2023 and June 2024. Teachers received online training and resources from the ALFL organisation prior to the study, including lesson plans, presentation slides, support sheets, skills-training videos for children, and homework sheets to support children's home practice of skills learned in ALFL classroom lessons. The ALFL programme curriculum is detailed in Table 2. Each lesson focused on a set of core topics, and included video-based training in self-regulation, breathing, mindfulness, relaxation, and cognitive coping skills. Each lesson also involved individual and group activities focused on the core topics and skills of that lesson. At the conclusion of each lesson teachers invited pupils to add the new skills they had learned to their 'Resilience App' and practise these at home. The 'Resilience App' was the term used for the cumulative set of wellbeing skills learned on the programme. Children were then assigned home practice/a short homework assignment.

Table 2 Summary of key elements of each lesson in the fifth and sixth class ALFL programme

Lesson	Title	Core topics	Self-regulation strategies	Video	Activities	My Resilience App	Homework
1	My Wellbeing	Wellbeing and resilience	Square Breathing	Square Breathing Wellbeing Wonders	Discussion and psychoeducation: Wellbeing and resilience	Square Breathing Wellbeing Rights	Square Breathing Keep a Sleep Diary
2	My Digital Wellbeing	Digital wellbeing Factors influencing wellbeing Batteries	Mindful Moment	My Phone and me Be Internet Legends	Discussion and psychoeducation: Digital wellbeing, effects of screen time	Mindful Moment Internet Legends Pledge	Keep a Wellbeing Battery diary Design a shield to manage online world.
3	My Thoughts & Feelings	Four Big Feelings (Happy, Sad, Angry, Afraid) Feelings Thermometer	Selfie Scan Feelings Thermometer	Four Big Feelings	Discussion, psychoeducation and activities: Four Big Feelings Feelings Thermometer	Selfie scan Feelings Thermometer 3 good things	Selfie Scan Three good things gratitude exercise
4	Linking my Thoughts & Feelings	Fight, Flight, Freeze Effects of thoughts on feelings and actions	Thoughtful Words	Fight Flight Freeze	Discussion and psychoeducation: My Thoughtful Words Identifying Feelings	Thoughtful Words	Thoughtful words Share with a family member
5	Managing My Thoughts & Feelings	Strategies for managing feelings Pause, Think, Act (PTA) Managing feelings when transitioning to secondary school	Tighten, Loosen Calm (TLC) Pause Think Act (PTA)	Adults and their feelings	Discussion and psychoeducation: Managing my Thoughts and Feelings Adults and their Feelings Transitioning to secondary school	Tighten, Loosen Calm (TLC) Pause, Think, Act (PTA)	Tighten, Loosen Calm (TLC) Make a Step Ladder of Fears with your parents & use PTA to manage some steps on the ladder
6	Healthy Relationships	Relationships with self and others Trust in Relationships Self-compassion & self-talk	Wise Words	The Fallout	Discussion, psychoeducation and individual activities: Words of Encouragement Exploring our Relationships	Wise Words Note to Self	Wise Words Write and draw a positive, optimistic thought to read tomorrow morning

					Compassionate Note to Self		
7	Managing Relationships	Strategies for managing and maintaining friendships Conflict resolution Assertive communication	Inner Warrior	360 Degrees of a Problem	Discussion, psychoeducation and activities: Friendships, Inclusion, Conflict Maintaining friendships	Inner Warrior	Inner Warrior One mindful activity each day
8	Tricky World – Influences	Influence of social media and peers Thinking traps: mind-reading and worst-thinking	Belly Breathing	Tricky World on Social Media	Discussion and psychoeducation: Tricky World, Influence of Others Social Media	Belly Breathing Recognizing Social Media Thinking Traps	Belly Breathing 4 self-regulation skills you like Talk with parents
9	Tricky World - Internet Safety 1	Internet Safety Real and fake information Information that is Safe or Unsafe to share on the internet	Switching Off	Real/Fake Be Alert	Discussion and psychoeducation: Internet Safety Real and Fake Safe and Unsafe	Telling the difference between real and fake information on the internet	Switching Off Complete a safe or unsafe internet quiz with parents
10	Tricky World - Internet Safety 2	Information that is fair, safe or unsafe to share Pause Think and Ask a trusted adult Empathy and Understanding	Switching Off Trusted Adult	Fair to Share	Discussion and psychoeducation: Fair to Share Be Internet Legends Our Share Code, Power Card	List things you learned, found useful and want to learn more about	Practice the Switching Off & Trusted Adult exercises Play the Be Internet Legends online game

Intervention fidelity

The ALFL programme lesson plans were used to develop a fidelity checklist for each of the ten sessions in the fifth and sixth class ALFL schools programme. Two independent raters used these checklists to evaluate the fidelity with which the ALFL programme was delivered, using a randomly chosen 20% sample of audio recordings of ALFL sessions. The mean fidelity rating across 10 lessons (shown in Table S2 in supplementary information), was 82%, which falls above the 80% threshold for high fidelity set by the National Institute of Health Behaviour Change Consortium (Borrelli et al., 2005). However, there was variability in treatment fidelity with 7 sessions obtaining fidelity ratings above 80% and 3 obtaining ratings between 60 and 69%. Cohen's Kappa Coefficient of Agreement calculated to determine the level of agreement between the two raters, indicated excellent agreement (k=. .954 , p <.001) (Fleiss et al., 2003). The part of the lesson plans most frequently omitted was home practice.

Instruments

The Feeling Better Scale (FBS)

The FBS (McKenna et al., 2024) is a newly developed child self-report scale for assessing state wellbeing. It assesses momentary increases in wellbeing following the use of skills learned in the ALFL schools programme. This 23-item scale yields a total state wellbeing score (with a range of 0-92), and scores for state wellbeing associated with sub scales of behavioural skills (with a range of 0-52, based on 13 items) and cognitive skills (with a range of 0-40, based on 10 items). The behavioural and cognitive skills subscales were established with exploratory and confirmatory factor analysis (McKenna et al, 2024). The FBS also yields a skills score (with a 0-23, based on 23 items) indicating the number of wellbeing skills used. The following is an example of an item that assesses the use of a cognitive skill to promote wellbeing: Something upset me so I paused to think about the situation, before I decided what to do. The following is an example of an item that assesses the use of a behavioural skill to promote wellbeing: I used Heart Breathing. Heart Breathing is when I breathe in love and breathe out my worries. For all FBS items there are five response options: Yes and it made me feel a lot better; Yes and it made me feel somewhat better; Yes and it made me feel a little better; Yes but I did not feel better; and No I did not do it. Each item yields a score from 0 = No I did not do it, to 4 = Yes and it made me feel a lot better. The FBS has good internal consistency reliability (α = 0.93), and good concurrent and construct validity evidenced by a medium correlation with SCWS trait wellbeing (r = 0.337) (McKenna et al., 2024). In the present study, it demonstrated good internal consistency (α = 0.91).

Stirling Children's Well-being Scale (SCWS)

The SCWS (Liddle, 2013, 2015) is a 15-item self-report scale which yields scores for overall wellbeing (with a range of 12-60, based on 12 items); positive emotional state (with a range of 6-30, based on 6 items); and positive outlook (with a range of 6-30, based on 6 items); as well as a 3 item social desirability index (with a range of 3-15) which detects 'faking good'. The following is an example of a positive emotional state item: I've been feeling calm. The following is an example of a positive outlook item: I thought there are many things I can be proud of. The following is an example of a social desirability item: I have always told the truth. There are five response options for all items ranging from 1 = Never to 5 = Always. The SCWS has good psychometric properties and UK norms. In this study, it showed good internal consistency (α = 0.91).

Revised Children's Anxiety and Depression Scale (RCADS-25)

The RCADS-25 (Ebesutani et al., 2012) is a 25-item self-report measure which yields scores for the severity of anxiety and depression symptoms in children aged 8-18 years. The following is an example of an item from the 15-item anxiety subscale: I felt scared if I had to sleep on my own. The following is an example of an item from the 10-item depression subscale: I felt sad or empty. There are four response options for all items ranging from 0 = Never to 3 = Always. The RCADS has good psychometric properties and US norms. In this study, it showed good internal consistency (Internalizing α = 0.93, Anxiety α = 0.86 and Depression α = 0.87).

Satisfaction Scale (SS)

The SS is an 8-item scale which assesses participants satisfaction with the ALFL schools programme (O'Connor, 2022; O'Connor et al., 2022). A 5-point response format was used for all items ranging from 0 = Strongly Disagree to 4 = Strongly Agree. The following is an example of an SS item: Overall, I am satisfied with A Lust for Life.

Demographic Information

Two items were used to collect information about participants' age and gender.

Data analytic plan

Data were collected online via the Pavlovia platform, with the questionnaire layout designed to maximise legibility and accessibility. Children were reminded to answer every question, to minimise missing data.

While the force response option can reduce missing data, it was not used as it can introduce response bias (Bogner & Landrock, 2016). Data were downloaded from Pavlovia, cleaned, and imported into IBM SPSS Statistics software (Version 27). Raw scores on the RCADS-25 internalizing scale were converted to T-scores using the RCADS-25 Child Batch Scoring Syntax (Version 1.0) (Chorpita & Spence, 2024). Missing data and missing cases (dropouts) were handled with Multiple Imputation, a rigorous method widely used in public health research (Graham, 2009), facilitating intention-to-treat (ITT) analysis. Patterns of missing values were analysed as an exploratory step before imputation. The linear mixed-effects models (MIXED) procedure in IBM SPSS Statistics was conducted for repeated measures analyses of primary (FBS) and secondary (SCWS and RCADS-25) outcome measures. In comparison to standard linear regression models, the MIXED procedure has the advantage of imputing missing data points, and handling situations in which experimental units are nested in a hierarchy and not independent of each other (Heck et al., 2014). In the multilevel analysis of this cluster randomized controlled trial, time-points were nested within participants, who were nested within schools, and located in trial group conditions (ALFL versus Control). For each outcome, mixed-effects linear regression models were developed with fixed effects for time (Time 1 and 2), group condition (ALFL and Control), and their interaction (Group X Time), in addition to random effects for time. Data clustering was accounted for in mixed-effects models by including random effects in the analysis (McNeish & Kelley, 2019; Stiratelli et al., 1984). The β coefficients reported in the paper are unstandardized. To provide a standardised effect size, Cohen's d (i.e. standardised mean difference) was calculated.

Subgroup analyses using a similar linear mixed-effects procedure were completed on primary and secondary outcome variables at Time 1 for children whose scores indicated relatively poor adjustment in comparison to the full sample. These two groups were defined as (1) participants who scored above the median on the RCADS-25 and below the median on the SCWS at Time 1, and (2) participants who scored above the clinical cut-off of a T-score of 65 on the RCADS-25 internalizing scale.

RESULTS

Preliminary analyses showed that the dependent variables were reliably assessed and normally distributed, justifying the use of parametric statistical tests. For all scales Cronbach's (1951) alpha was calculated and found to be above 0.7, as shown in Table S3 in supplementary information. This indicated that all dependent variables had adequate internal consistency reliability. Skewness, and kurtosis indices were calculated on Time 1 and 2 data for all dependent variables and their distributions in the overall sample and the intervention and control groups were found not to deviate from normality, as shown in Table S4 in supplementary information.

Table 3 contains means and standard deviations of all dependent variables at Time 1 and 2 in ALFL and control groups, and Group X Time interaction results of intention-to-treat multilevel modelling analyses, after controlling for the effect of cluster randomisation. The table also contains Cohen's d effects sizes (Cohen, 1988) reflecting differences between intervention and control groups at Time 2.

Table 3 Means and standard deviations of all dependent variables at Times 1 and 2 in ALFL and control groups, and results of intention-to-treat multilevel modelling analysis

			ALFL Time 1	ALFL Time 2	Control Time 1	Control Time 2	Cohen's d at T2	GXT β	95% CI	p
N			180	141	222	180				
FBS state wellbeing		M	32.98	35.25	35.62	32.97	0.10	4.188	-0.446, 8.823	.076
		SD	19.52	21.60	21.01	23.31				
FBS behavioural skills		M	13.37	16.12	14.77	13.50	0.18	3.312	0.253, 6.371	.034*
		SD	12.40	13.36	13.85	14.57				
FBS cognitive skills		M	19.64	19.17	20.82	19.65	-0.02	0.876	-1.244, 2.996	.417
		SD	8.99	9.77	9.27	10.45				
FBS skills used		M	11.18	13.10	11.93	10.99	0.27	2.115	0.834, 3.396	.001**
		SD	5.65	6.79	5.99	6.34				
SCWS trait wellbeing		M	35.53	41.84	35.41	42.04	-0.02	-0.280	-2.473, 1.912	.802
		SD	8.87	8.21	9.29	10.14				
SCWS positive emotions		M	15.75	21.23	15.45	21.53	-0.04	-0.446	-1.623, 0.731	.457
		SD	4.55	4.25	4.87	5.28				
SCWS positive outlook		M	19.72	20.61	19.88	20.50	0.01	0.166	-1.015, 1.346	.783
		SD	4.87	4.50	4.95	5.55				
RCADS internalizing	**Raw score**	M	18.40	18.35	20.10	19.41				
		SD	12.72	13.46	13.21	13.94				
	T-score	M	48.23	48.42	49.96	49.54	-0.11	0.420	-2.344, 3.184	.765
		SD	11.88	12.92	12.45	13.77				
	% Clin Sig§	%	9.50	13.80	11.30	12.20				
RCADS anxiety	**Raw score**	M	11.12	10.25	11.72	11.02				
		SD	8.01	8.03	8.25	8.62				
	T-score	M	47.79	47.21	48.78	47.27	0.01	1.048	-0.929, 3.025	.298
		SD	11.17	11.02	11.66	11.41				

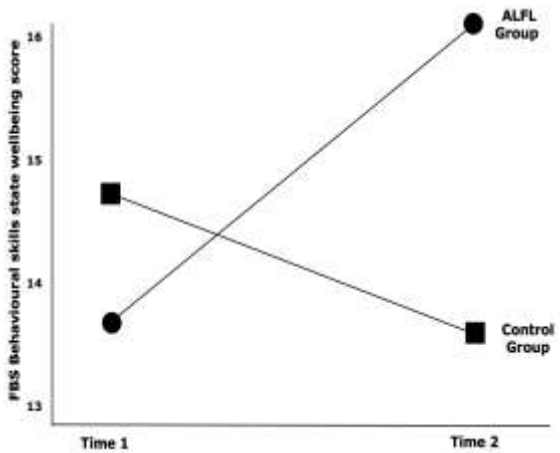
	% Clin Sig§	%	9.60	9.30	11.30	9			
RCADS depression	**Raw score**	M	7.33	8.09	8.40	8.39			
		SD	5.35	6.10	5.58	6.04			
	T-score	M	49.46	51.38	51.80	51.88	-0.08	1.36	-1.362, 4.082 .327
		SD	11.55	13.44	11.99	13.35			
	% Clin Sig§	%	11.80	15.50	12.20	14.40			

Note: ALFL = group that received A lust for Life programme. Control = control group. FBS = Feeling Better Scale. SCWS= Sterling Children's Wellbeing Scale. RCADS-25 = Revised Children's Anxiety and Depression Scale Short Form. N = number of cases. M = mean. SD = standard deviation. GXT β is the groups X Time interaction effect from the intention-to-treat multilevel modelling analysis. 95% CI = 95% confidence interval. *p<.05. **p<.01. ***p<.001. §The percentage of the group that scored in the clinically significant range, i.e., RCADS-25 T-score >65 (Chorpita et al., 2000).

State wellbeing

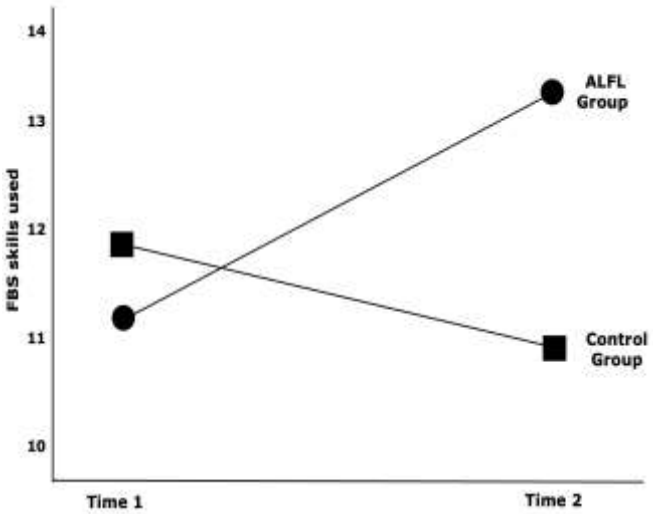
In answer to the first research question concerning the effect of the ALFL schools programme on the primary outcome variable, no significant Group X Time interaction was found on state wellbeing assessed with the FBS total, β = 4.188, p = .076, 95% CI [-0.45, 8.82]. This indicates that compared with the control group the ALFL group did not show a significantly greater increase in state wellbeing from Time 1 to 2 arising from using all behavioural and cognitive skills learned on the ALFL programme. There was, however, a statistically significant Group X Time effect for state wellbeing arising from using behavioural skills β = 3.312, p = .034, 95% CI [0.25, 6.37] but not cognitive skills as assessed by the FBS. This indicates that, compared with the control group, the ALFL group showed a significantly greater increase in state wellbeing arising from using behavioural skills from Time 1 to 2, as illustrated in Figure 2.

Figure 2 Mean FBS state wellbeing arising from using behavioural skills at Time 1 and 2 in ALFL and control groups.



There was also a statistically significant Group X Time effect on the number of wellbeing skills used, assessed with the FBS β = 2.11, p = .001, 95% CI [0.83, 3.40]. This indicates that participants in the ALFL group increased their use of wellbeing skills from Time 1 to 2 at a significantly greater rate than participants in the control group, as illustrated in Figure 3. The effect sizes for the increased state wellbeing when behavioural skills were used (d = 0.18) and increased number of skills used (d = 0.27) by the ALFL group compared with the control group, were small, using the guidelines that effect sizes of d = 0.2, 0.5, and 0.8 are considered small, medium and large respectively (Cohen, 1988). The top five skills which participants reported using were: square breathing, switching off, body scan or selfie scan, inner warrior, and heart breathing.

Figure 3 Mean FBS wellbeing skills used at Time 1 and 2 in ALFL and control groups



Trait wellbeing, internalizing problems, anxiety, and depression

In answer to the second research question concerning the effect of the ALFL schools programme on the secondary outcome variables, no significant Group X Time interactions were found on SCWS wellbeing, positive emotional state, and positive emotional outlook scales; nor RCADS-25 internalizing, anxiety and depression scales, as shown in Table 3. These results indicate that compared with the control group the ALFL group did not show a significantly greater increase in trait wellbeing, or decrease in internalizing problems, anxiety, and depression from Time 1 to 2.

With regard to trait wellbeing, on the SCWS, after controlling for the effect of cluster randomisation, multilevel models revealed no statistically significant Group X Time interactions in trait wellbeing, $\beta = -0.28$, $p = .802$, 95% CI [-2.47, 1.91], positive emotional state, $\beta = -0.45$, $p = .457$, 95% CI [-1.62, 0.73], or positive outlook, $\beta = 0.17$, $p = .783$, 95% CI [-1.01, 1.35].

With regard to emotional problems, after controlling for the effect of cluster randomisation, no statistically significant Group X Time interactions were detected through multilevel modelling of RCADS internalizing problems, $\beta = 0.42$, $p = .765$, 95% CI [-2.34, 3.18], anxiety, $\beta = 1.05$, $p = .298$, 95% CI [-0.93, 3.02], or depression, $\beta = 1.36$, $p = .327$, 95% CI [-1.36, 4.08] scale scores.

Subgroup analyses of participants with a low level of adjustment

In answer to the third research question concerning the effect of the ALFL schools programme on all outcome variables in children who reported a low level of adjustment at Time 1, no significant Group X Time interactions were found on any dependent variables. Table S6 in supplementary information presents the results of the analysis in which poor adjustment was defined as scoring above the median on the RCADS and below the median on the SCWS at Time 1. Table S7 contains the results of the analysis in which the criterion for poor adjustment was obtaining a T-score greater than 65 at Time 1 on the RCADS-25 internalizing scale.

Satisfaction

In answer to the fourth research question, Table 4 shows that the majority of participants (51-73%) strongly agreed or agreed with 6 of 8 satisfaction items. Using strong agreement or agreement as an index of satisfaction, averaging across all 8 items, 53% of participants were satisfied with the ALFL schools programme for fifth and sixth class. Considering individual SS items, and using strong agreement or agreement as an index of satisfaction, 73% understood the ALFL content; 61% said that they learned something new; 56% reported overall satisfaction; 54% said it was helpful; 53% thought the programme was fun; 51% thought ALFL was a high quality programme; 45% would recommend it to a family member or friend; and 30% thought it was suited to their needs.

Table 4 Satisfaction with ALFL programme

	Strongly agree or agree	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Understood information	73%	19%	54%	13%	9%	5%
Learned something new	61%	15%	46%	15%	14%	10%
Satisfied	56%	12%	44%	29%	10%	5%
Helpful	54%	11%	43%	24%	15%	7%
Fun	53%	20%	33%	23%	18%	6%
High quality	51%	12%	39%	32%	9%	8%
Would recommend	45%	11%	34%	28%	18%	9%
Suited to needs	30%	9%	21%	33%	28%	9%
Overall Average	53%					

DISCUSSION

This study addressed four research questions. In answer to the first research question concerning the effect of the ALFL schools programme on the primary outcome variable, the study found that children who completed the ALFL programme showed increased state wellbeing due to using behavioural skills and an increase in the number of wellbeing skills used, but no significant change to their self-reported overall state wellbeing or state wellbeing arising from using cognitive skills learned on the programme. The effect sizes were small, and confidence intervals relatively wide. In answer to the second research question concerning the effect of the ALFL programme on the

secondary outcome variables, there was no evidence that the programme led to increased trait wellbeing, or decreased internalizing problems, anxiety, and depression. In answer to the third research question, about the impact of ALFL for children who showed relatively poor levels of psychological adjustment at Time 1, there was no evidence of beneficial effects. In answer to the fourth research question concerning satisfaction with ALFL, the majority of participants reported that they found the programme helpful, fun, understandable and that they learned something new, although only 30% of participants said that it was suited to their needs. These relatively high satisfaction levels were also found in the two previous RCTs of the ALFL programme (Clancy, 2023; O'Connor, 2022).

The main novel findings of the study were the demonstration that the ALFL schools programme led to small significant improvements in state wellbeing arising from using behavioural skills learned on the ALFL programme, and that children increased their use of wellbeing skills learnt on the programme. Although it has been argued that the Cohen's D rule of thumb is not appropriate for preventative universal interventions as it excludes the broader context and underestimates the magnitude of impact (Tanner-Smith et al., 2018), and that small effect sizes for universal programmes can have a significant public health impact (Salazar de Pablo et al., 2020), this study's findings should still be interpreted with caution as effect sizes were small and confidence intervals wide. This study's finding that children learnt and used behavioural and cognitive skills is in line with previous qualitative research on the ALFL programme (Hoctor et al., 2023; Listwan, 2023). The primacy of square breathing also resonates with previous research in which children cited it as their most used and favourite skill (Hoctor et al., 2023).

The finding of improved state wellbeing with regard to behavioural skills use is particularly welcome given that early adolescence is a time when there can be disengagement coping with an associated increased risk of internalizing problems and poor psychological adjustment (Anderson et al., 2024), and that those with early onset mental health disorders often wait at least ten years before seeking treatment (Wang et al., 2007).

The difference in findings with regard to wellbeing between this and previous RCTs of the ALFL programme may be due to the fact that this study measured state rather than trait wellbeing. On trait measures of anxiety and depression, this study's findings were consistent with those previous RCTs (Clancy, 2023; O'Connor, 2022) and a meta-analysis of 9 further studies of similar school-based interventions (Bastounis et al., 2016), which found no beneficial effect. Ceiling effects may have been a factor here, given the relatively good psychological functioning of this study's participants, with 91% of intervention group participants not reaching clinical cut-off for anxiety or depression, allowing relatively little room for improvement.

There are several strengths to this study. Firstly, this study's primary outcome measure, state wellbeing, was clearly aligned to the ALFL programme's theory of change. The chosen measure, namely the FBS, had a coherent factor structure grounded in the population context where the intervention was delivered, good sensitivity to change and good test retest reliability (McKenna et al., 2024). Secondly, the study used a cluster RCT design with a large sample size, determined by an a priori power analysis, thus achieving adequate power. Thirdly, the ALFL programme meets many of the criteria for standards of effectiveness of preventative programs, including implementation in real-world conditions of a classroom setting, programme delivery by teachers, and a manualised intervention with training (Flay et al., 2005). It also follows the SAFE protocol, being sequenced, active, focused, with explicit learning outcomes, and programmes which follow this protocol are more effective than those which do not (Durlak et al., 2011). Fourthly, intervention fidelity is an important consideration when measuring programme effectiveness (Borrelli et al., 2005) and this study included a robust intervention fidelity check.

Limitations of the study include that the FBS is a relatively new tool, and validated to date with only one sample. There was also no follow-up, a consideration in the assessment of intervention effectiveness (Flay et al., 2005), albeit the given rationale was a focus on the immediate measurement of state wellbeing. The study also used only child self-report measures, and didn't include the perspective of teachers or parents. Finally, the effect sizes of the observed benefits to state wellbeing and skills use were small, meaning in practical terms that the effects were not substantial and should be interpreted with caution.

With regard to next steps, it would be useful for the ALFL programme developers to review the home practice component of the programme given that home practice was omitted by teachers in many of the lessons analysed in the fidelity check, and that programmes with home practice are associated with more positive outcomes than those which do not (Kazantzis et al., 2010). Given the positive findings regarding behavioural skills and wellbeing, programme developers might also increase this component and enhance the way in which cognitive skills are taught. Future research should include follow-up, and potentially a different sample. Finally, there is a rationale for seeking the perspectives of teachers, and assessing the quality of intervention delivery, given the key role played by teachers in programme delivery.

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Supplementary Information

Table S1 Descriptive statistics for all demographic and dependent variables at Time 1 for completers and dropouts in ALFL and control groups, and results of one-way analysis of variance and chi square comparing four groups

			ALFL		Control		F or χ^2	Group
			Completers (G1)	Dropouts (G2)	Completers (G3)	Dropouts (G4)	(Groups 1-4)	Differences
N			141	39	180	42		
Age		M	11.07	10.82	10.96	10.74	3.00*	2=3=4, 4<1
		SD	0.68	0.72	0.74	0.67		
Gender§	Female	f	70	22	90	20	0.70	
		%	49.60	43.60	50.00	47.6		
	Male	f	70	17	90	22		
		%	49.60	43.60	50.00	52.4		
	Non-binary	f	1	0	0	0		
		%	0.70	0	0	0		
School gender type§	All female	f	22	1	0	0	72.10***	3<2=4<1
		%	15.60	2.60	0	0		
	All male	f	31	7	7	10		3<2<1<4
		%	22.00	17.90	3.90	23.80		
	Mixed	f	88	31	173	32		1<2=4<3
		%	62.40	79.50	96.10	76.20		
School disadvantage status§	Non-DEIS	f	107	24	151	30	9.87*	2<1=4<3
		%	75.90	63.20	83.90	71.40		
	DEIS	f	34	14	29	12		3<1=4< 2
		%	24.10	36.80	16.10	28.60		
FBS state wellbeing		M	33.16	32.15	32.72	48.18	6.74**	1=2=3<4
		SD	19.89	18.03	19.27	23.73		
FBS behavioural skills		M	13.33	13.55	13.27	21.41	4.48**	1=2=3, 1=3<4
		SD	12.42	12.50	12.68	16.78		
FBS cognitive skills		M	19.83	18.84	19.57	25.95	6.20***	1=2=3<4
		SD	9.22	8.08	9.00	8.68		
FBS skills used		M	11.21	11.04	11.17	15.21	5.61***	1=2=3<4
		SD	5.75	5.27	5.68	6.25		

SCWS trait wellbeing	M	35.79	34.72	35.10	36.64	0.46
	SD	8.95	8.70	9.32	9.15	
SCWS positive emotions	M	15.89	15.31	15.28	16.17	0.67
	SD	4.61	4.35	4.87	4.88	
SCWS positive outlook	M	19.81	19.41	19.74	20.48	0.36
	SD	4.91	4.79	4.94	5.00	
RCADS total internalizing	M	48.43	47.52	49.41	52.30	1.35
	SD	11.96	11.74	11.78	14.91	
RCADS anxiety	M	47.91	47.38	48.24	51.13	0.99
	SD	11.15	11.40	10.99	14.09	
RCADS depression	M	49.77	48.36	51.43	53.37	1.74
	SD	11.65	11.28	11.71	13.16	

Note: ALFL = group that received A lust for Life programme. Control = control group. Completer = cases who completed data collection at Time 1 and 2. Dropout = cases who completed data collection at Time 1 but not Time 2. FBS = Feeling Better Scale. SWSC= Stirling Well-Being Scale for Children. RCADS-25 = Revised Children's Anxiety and Depression Scale Short Form. N = number of cases in each group.. M = mean, SD = standard deviation. F = F value form one-way analysis of variance on 4 groups. §Frequencies (f) and percentages are given and frequencies were compared with chi square tests. Significant group differences were detected with post hoc tests for continuous variables, and inspection of standardized residuals for categorical variables. 1=2>3=4: means or frequencies of groups 1 and 2 are greater than those of group 3 and 4. *p<.05. **p<.01. ***p<.001.

Table S2 Mean fidelity ratings in a 20% sample of ALFL lessons

	Lesson number									
	1	2	3	4	5	6	7	8	9	10
Mean Rating	100%	93%	100%	81%	81%	69%	61%	67%	88%	100%

Note: Mean ratings are based on recordings from two classes for all lessons except lessons 1, 3, 6, 8, and 10, in which, due to operational problems with the audio recorder use, ratings were based on recordings from a single class.

Table S3 Cronbach's alpha internal consistency reliability for all dependent variables in the total sample at Times 1 and 2

		Total Sample	
		Time 1	**Time 2**
N		402	321
FBS state wellbeing		0.91	0.94
FBS behavioural skills		0.90	0.93
FBS cognitive skills		0.79	0.86
FBS total skills used		0.90	0.93
SCWS trait wellbeing		0.91	0.85
SCWS positive emotions		0.88	0.90
SCWS positive outlook		0.81	0.85
RCADS internalizing	**Raw score**	0.93	0.93
RCADS anxiety	**Raw score**	0.86	0.88
RCADS depression	**Raw score**	0.87	0.90

Note: FBS = Feeling Better Scale. SCWS = Sterling Children's Wellbeing Scale. RCADS-25 = Revised Children's Anxiety and Depression Scale Short Form. N = number of cases in each group. M = mean, SD = standard deviation. Values exceeding .69 indicate acceptable reliability.

Table S4 Skewness and kurtosis of distributions of all dependent variables at Time 1 and 2 in the ALFL and control groups and the total sample

		ALFL		**Control**		**Total**	
		Time 1	**Time 2**	**Time 1**	**Time 2**	**Time 1**	**Time 2**
N		180	141	222	180	402	321
FBS state wellbeing	S	0.569	0.361	0.639	0.686	0.621	0.555
	K	-0.712	-0.694	-0.422	-0.524	-0.492	-0.619
FBS behavioural skills	S	0.963	0.443	1.035	1.037	1.023	0.797
	K	-0.031	-0.833	0.073	-0.140	0.1	-0.492
FBS cognitive skills	S	0.102	0.148	-0.112	0.128	-0.016	0.139
	K	-0.836	-0.589	-0.946	-0.863	-0.923	-0.766
FBS total skills used	S	0.502	-0.092	0.325	0.418	0.401	0.209
	K	-0.672	-1.164	-0.928	-0.902	-0.837	-1.113
SCWS trait wellbeing	S	-0.201	-0.171	-0.386	-0.221	-0.312	-0.204
	K	-0.181	-0.315	0.014	-0.357	-0.068	-0.259
SCWS positive emotions	S	-0.412	-0.295	-0.199	-0.281	-0.285	-0.269
	K	0.304	-0.239	-0.432	-0.301	-0.173	-0.198

SCWS positive outlook		S	-0.016	-0.009	-0.425	-0.231	-0.249	-0.179
		K	-0.620	-0.461	0.126	-0.674	-0.214	-0.534
RCADS internalizing	**Raw score**	S	1.097	1.205	0.903	1.200	0.982	1.198
		K	1.135	1.189	0.639	1.503	0.805	1.360
	T-score	S	1.042	1.204	0.957	1.357	0.991	1.304
		K	0.962	1.286	1.124	2.229	1.038	1.913
RCADS anxiety	**Raw score**	S	1.068	1.227	0.912	1.195	0.976	1.208
		K	0.870	1.206	0.499	1.260	0.628	1.239
	T-score	S	1.048	1.140	0.966	1.231	1.000	1.191
		K	0.808	1.012	0.885	1.792	0.837	1.469
RCADS depression	**Raw score**	S	0.963	1.015	0.849	1.024	0.893	1.013
		K	0.754	0.582	0.693	1.057	0.687	0.830
	T-score	S	0.887	0.996	0.845	1.117	0.858	1.063
		K	0.506	0.545	0.859	1.545	0.695	1.115

Note: FBS = Feeling Better Scale. SCWS = Sterling Children's Wellbeing Scale. RCADS-25 = Revised Children's Anxiety and Depression Scale Short Form. N = number of cases. M = mean, SD = standard deviation.

Table S5 Means and standard deviations, using imputed values for missing data, on all dependent variables at Time 1 and 2 in ALFL and control groups, and results of intention-to-treat multilevel modelling analysis

		ALFL		**Control**		**Cohen's d at T2**	**GXT β**	**95% CI**	**p**
		Time 1	**Time 2**	**Time 1**	**Time 2**				
N		180	180	222	222				
FBS State wellbeing	M	33.45	36.29	35.68	34.33	0.10	4.188	-0.446, 8.823	.076
	SD	18.51	17.09	20.35	20.03				
FBS behavioural skills	M	13.70	16.65	14.85	14.48	0.18	3.312	0.253, 6.371	.034*
	SD	11.82	10.63	13.54	12.69				
FBS cognitive skills	M	19.75	19.64	20.84	19.85	-0.02	0.876	-1.244, 2.996	.417
	SD	8.65	7.87	9.02	9.09				
FBS skills used	M	11.28	13.08	11.92	11.60	0.27	2.115	.834, 3.396	.001**
	SD	5.34	5.37	5.79	5.55				
SCWS trait wellbeing	M	35.50	41.97	35.34	42.09	-0.02	-0.280	-2.473, 1.912	.802
	SD	8.47	6.652	9.09	8.92				
SCWS positive emotions	M	15.76	21.37	15.47	21.53	-0.04	-0.446	-1.623, 0.731	.457
	SD	4.380	3.504	4.83	4.70				

SCWS positive outlook		M	19.74	20.60	19.87	20.56	0.01	0.166	-1.015, 1.346	.783
		SD	4.67	3.70	4.84	4.89				
RCADS internalizing	**Raw score**	M								
		SD								
	T-score	M	48.24	48.54	49.96	49.84	-0.11	0.420	-2.344, 3.184	.765
		SD	11.82	10.88	12.45	12.93				
	% Clin Sig§	%	9.4	8.90	11.3	11.3				
RCADS anxiety	**Raw score**	M								
		SD								
	T-score	M	47.80	47.41	48.78	47.35	0.01	1.048	-0.929, 3.025	.298
		SD	11.11	10.23	11.66	11.08				
	% Clin Sig§	%	9.40	8.30	11.30	8.10				
RCADS depression	**Raw score**	M								
		SD								
	T-score	M	49.47	51.18	51.80	52.15	-0.08	1.36	-1.362, 4.082	.327
		SD	11.49	11.35	11.99	12.45				
	% Clin Sig§	%	11.7	10.50	12.20	13.10				

Note: ALFL = group that received A lust for Life programme. Control = control group. FBS = Feeling Better Scale. SCWS= Sterling Children's Wellbeing Scale. RCADS-25 = Revised Children's Anxiety and Depression Scale Short Form. N = number of cases. M = mean. SD = standard deviation. GXT β is result of intention-to-treat multilevel modelling analysis. 95% CI = 95% confidence interval. *p<.05. **p<.01. ***p<.001. §The percentage of the group that scored in the clinically significant range, i.e., RCADS-25 T-score >65 (Chorpita et al., 2000).

Table S6 Means and standard deviations on all dependent variables at Time 1 and 2 in ALFL and control groups, and results of multilevel modelling analysis for the low adjustment subgroup that scored above the median on the RCADS and below the median on the SCWS at Time 1

		ALFL		**Control**		**Cohen's d at T2**	**GXT β**	**95% CI**	**p**
		Time 1	**Time 2**	**Time 1**	**Time 2**				
N		65	54	79	67				
FBS State wellbeing	M	31.23	31.22	29.16	34.52	-0.11	3.337	-6.039, 12.714	0.484
	SD	19.57	19.31	19.16	23.75				
FBS behavioural skills	M	12.83	14.43	11.92	15.45	-0.03	2.951	-3.291, 9.194	0.352
	SD	12.75	12.63	12.89	15.56				
FBS cognitive skills	M	18.89	16.43	17.70	19.80	-0.21	0.797	-3.467, 5.060	0.713
	SD	9.21	8.45	8.68	9.97				

FBS skills used		M	11.25	13.02	10.88	11.58	0.17	1.635	-1.152, 4.422	0.249
		SD	5.53	6.97	6.09	6.39				
SCWS trait wellbeing		M	27.21	36.98	26.67	40.63	-0.25	1.040	-2.104, 4.183	0.515
		SD	5.43	8.08	6.22	9.96				
SCWS positive emotions		M	11.85	19.02	11.22	21.30	-0.28	0.353	-1.480, 2.186	0.705
		SD	3.56	4.41	3.46	5.34				
SCWS positive outlook		M	15.53	18.00	15.50	19.45	-0.19	0.699	-1.055, 2.454	0.433
		SD	2.93	4.08	3.61	5.36				
RCADS internalizing	**Raw score**	M	30.04	28.09	31.72	21.32	0.41	-1.757	-6.695, 3.182	0.484
		SD	11.63	15.10	11.10	13.08				
	T-score	M	59.11	57.75	60.40	50.76				
		SD	10.69	14.33	10.48	11.75				
	% Clin Sig§	%	23.50	33.30	21.50	12.00				
RCADS anxiety	**Raw score**	M	18.08	16.10	18.39	11.85	0.23	3.820	-0.729, 8.369	0.099
		SD	7.55	9.09	7.04	7.90				
	T-score	M	57.47	56.17	57.78	52.64				
		SD	10.35	10.91	9.92	12.52				
	% Clin Sig§	%	25.00	23.60	20.30	14.10				
RCADS depression	**Raw score**	M	12.05	11.98	13.35	9.48	0.33	-1.703	-6.771, 3.366	0.508
		SD	5.00	6.73	4.93	5.99				
	T-score	M	59.70	59.94	62.02	53.78				
		SD	10.65	14.54	10.66	12.47				
	% Clin Sig§	%	31.30	31.10	29.10	17.90				

Note: ALFL = group that received A lust for Life programme. Control = control group. FBS = Feeling Better Scale. SCWS = Sterling Children's Wellbeing Scale. RCADS-25 = Revised Children's Anxiety and Depression Scale Short Form. N = number of cases. M = mean, SD = standard deviation. GXT β is the groups X Time interaction effect from the intention-to-treat multilevel modelling analysis. 95% CI = 95% confidence interval. *p<.05. **p<.01. ***p<.001. §The percentage of the group that scored in the clinically significant range, i.e., RCADS-25 T-score >65 (Chorpita et al., 2000).

Table S7 Means and standard deviations on all dependent variables at Time 1 and 2 in ALFL and control groups, and results of intention-to-treat multilevel modelling analysis for the low adjustment subgroup that scored above the clinical cut-off of a T-score of 65 on the RCADS at Time 1

	ALFL		**Control**		**Cohen's d at T2**	**GXT β**	**95% CI**	**p**
	Time 1	**Time 2**	**Time 1**	**Time 2**				
N	17	14	25	17				

FBS state wellbeing		M	37.40	30.82	42.04	38.00	-0.28	-1.41	-21.81, 18.99	0.89
		SD	21.27	18.13	28.01	20.69				
FBS behavioural skills		M	16.87	13.91	20.88	17.24	-0.20	1.25	-11.60, 14.11	0.85
		SD	14.14	13.00	17.72	13.94				
FBS cognitive skills		M	21.00	16.91	21.16	20.76	-0.35	-2.63	-11.51, 6.25	0.55
		SD	8.79	6.70	11.58	8.56				
FBS skills used		M	13.60	12.82	13.96	12.35	0.05	0.15	-5.36, 5.66	0.96
		SD	6.21	7.07	7.16	5.83				
SCWS trait wellbeing		M	27.50	35.10	29.20	39.67	-0.33	0.63	-7.83, 9.10	0.88
		SD	9.32	10.81	12.75	10.22				
SCWS positive emotions		M	11.93	17.60	12.56	21.19	-0.37	1.11	-3.71, 5.93	0.65
		SD	5.33	5.72	6.84	5.91				
SCWS positive outlook		M	15.53	17.50	16.64	19.07	-0.23	-0.48	-4.78, 3.82	0.83
		SD	4.22	6.19	6.42	4.92				
RCADS internalizing	**Raw score**	M								
		SD								
	T-score	M	74.71	69.66	74.60	51.01	0.80	-3.00	-10.41, 4.42	0.42
		SD	6.40	13.44	8.37	13.67				
	% Clin Sig§	%	100	100	100	100				
RCADS anxiety	**Raw score**	M								
		SD								
	T-score	M	72.31	69.41	71.69	62.04	0.37	8.66	1.64, 15.67	0.02
		SD	6.45	10.21	7.70	16.55				
	% Clin Sig§	%	100	100	100	1001				
RCADS depression	**Raw score**	M								
		SD								
	T-score	M	72.51	72.79	73.02	55.99	0.78	-1.00	-9.78, 7.78	0.82
		SD	7.87	12.48	10.17	14.44				
	% Clin Sig§	%	100	100	100	100				

Note: ALFL = group that received A lust for Life programme. Control = control group. FBS = Feeling Better Scale. SCWS = Sterling Children's Wellbeing Scale. RCADS-25 = Revised Children's Anxiety and Depression Scale Short Form. N = number of cases. M = mean, SD = standard deviation. GXT β is the groups X Time interaction effect from the intention-to-treat multilevel modelling analysis. 95% CI = 95% confidence interval. *p<.05. **p<.01. ***p<.001. §The percentage of the group that scored in the clinically significant range, i.e., RCADS-25 T-score >65 (Chorpita et al., 2000).