Evaluating the real-world effectiveness of a Cognitive Behavior Therapy-based transdiagnostic programme for emotional problems in children in a regular school setting

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Abstract

Background: The present study examined the real-world effectiveness of a transdiagnostic prevention programme, Super Skills for Life (SSL), among children with emotional problems in regular school settings. SSL is based on the principles of Cognitive Behaviour Therapy (CBT), behavioural activation, and social skills training.

Methods: Participants were 205 children, aged 8 to 12 years, who were referred by their teachers as having significant emotional problems. All the children completed measures of emotional and behavioural problems and self-esteem, both before and after participating in SSL, and at six months after the intervention. The children's parents and class teachers also completed a questionnaire that measures children's general difficulties and positive attributes. Children also gave a 2-minute speech task in front of the video in sessions 1 and 8.

Results: There was agreement among self, parent, and teacher report, showing significant decreases of emotional symptoms from pretest to posttest and pretest to follow-up. Main effect of gender was significant for anxiety symptoms, emotional problems, peer problems, and prosocial behavior. Video analysis of the 2-minute speech task showed significant improvement in length of eye gaze, vocal quality, length of speech, manifestation of comfort, and conversational flow. However, hypothesized increases in self-esteem, did not act as mediator of change in pre- to post-anxiety symptoms or social phobia subscale scores.

Limitations: The present study used an open clinical trial design.

Conclusions: This study provides initial support for the effectiveness of the manual-guided CBT for emotional problems in regular school settings when delivered by school services staff.

Keywords: Anxiety symptoms; Depressive symptoms; Transdiagnostic programme; Prevention; Super Skills for Life; Social skill

1. Introduction

Anxious and depressive symptoms and disorders are common among children and adolescents (Costello et al., 2003; Essau et al., 2000; Lewinsohn et al., 1993; Merikangas et al., 2010). They are not only common, they frequently co-occur with each other and with other disorders (Essau, 2008; Merikangas and Avenevoli, 2002; Ollendick et al., 2005). Moreover, anxiety and depression which have an early onset and when left untreated often tend to have a negative course and outcome (Bernstein et al., 1996; Essau et al., 2014; Kessler et al., 1994). These disorders are associated with impairment in academic, social and family domains, as well as resulting in high costs to health, social care, and educational services (Essau et al., 2000; Feehan et al., 1993; Woodward and Fergusson, 2001; Snell, et al., 2013).

Given the long term negative impact of anxiety and depression, considerable effort has been devoted to developing intervention programmes for these disorders. Of these interventions, cognitive behavior therapy (CBT) is the intervention of choice for anxiety and depression (Kendall et al., 2012). Related to this development, considerable effort has been made in empirically testing CBT-based interventions among young people with emotional disorders. The number of well-controlled efficacy studies in research settings have been accumulative in the past decades. According to these studies, CBT is effective in treating anxiety and depression both in individual and group format as well as in computerized form, with up to 65% of the young people with emotional disorders responding positively to CBT (Barrett et al., 2001; Essau et al., 2012; Essau and Ollendick, 2013; Kendall et al., 1997; Ost and Ollendick, 2017; Seligman & Ollendick, 2011; Stallard et al., 2007).

Despite these positive findings, there are limitations in CBT for anxiety and depression

in children which need to be addressed. For example, most studies published so far have been performed at highly specialised university clinics with above average competence and experience in the clinical treatment of emotional problems, including highly selected clinicians and participants (Weisz et al., 1992, 1995). Furthermore, studies conducted in research setting may have numerous exclusion criteria such as the presence of comorbidity, adherence to manualized treatment protocols, and different levels of supervision (Chambless and Hollon, 1998). Additionally, practitioners do not usually have the same level of intensive training, monitoring and supervision compared to therapists in research settings. As shown by Weisz et al. (1992), treatment outcomes in experimental research-based studies show significant benefits for the effected children and adolescents; however, when these findings are compared to studies conducted in clinic practice, the positive benefits could not be replicated. This has raised concern about the generalizability of findings of previous studies and transportability of childhood emotional problems to regular school settings. Schools offer an excellent venue to deliver the intervention because children spend a significant amount of time in schools.

Additionally, only about 25% of children and adolescents who need treatment for emotional problems actually sought treatment from mental health professionals (Essau, 2005). Part of this low rate of mental health services utilization is linked to limited service provision (Children and Young People's Mental Health Taskforce, 2015), which often lead to a long waiting time. For example, in Canada a mean waiting period for high priority cases is 30 days and for low priority cases, it is up to 109 days (Kowalewski et al., 2011). Furthermore, parents' lack of knowledge regarding mental health and the help-seeking process as well as their perceptions of seeking professional help for their child might also influence the low use of

mental health services (Reardon et al., 2017).

Among those who begin treatment, high levels of missed appointments and premature therapy termination have also been reported to be common (Gearing et al., 2012; Gopalan et al., 2010). In other studies, schools are the most common settings for those who have received intervention (Hazen et al., 2004; Merikangas et al., 2011). The fact that treatment occurs in a familiar and naturally occurring settings means that stigma might be reduced compared to when the family has to seek treatment in mental health clinics (Masia-Warner et al., 2006). Thus, schools have been recognized as playing a key role in the treatment of mental health problems in children and adolescents (Hoagwood and Erwin, 1997). There is an urgent need to investigate the extent to which CBT can be successfully administered in regular school settings with results that are comparable to those reported in research settings/university clinics. However, dissemination research in real-world setting (delivered in schools by school services staff) is lacking and is timely in order to make a meaningful impact on service provision to young people with mental health problems.

The present study aimed to evaluate the transportability of a manualized CBT-based programme when administered in a regular school setting by professionals with a range of skills and experience (i.e., social workers, counselors, therapists). Another aim was to examine change in emotional problems between pre- and post-intervention, and follow-up about six months after treatment.

2. Method

2.1. Participants

A total of 205 children aged 8 to 12 (99 boys and 106 girls) participated in the present study. Mean age of participants was 10.19 years (SD=1.18). The participants were from diverse cultural backgrounds. These children were from 27 schools in the United Kingdom who were referred by their teachers to participate in the present study as they evinced significant emotional problems.

2.2. Super Skills for Life (SSL)

SSL is an 8-session intervention protocol (Essau and Ollendick, 2013), which targets anxiety and depression in children and adolescents. The programme includes the delivery of the following skills: education about emotions and feelings, cognitive reappraisal, problem-solving, behaviour activation, relaxation techniques, self-monitoring, and social competence.

SSL is based on several core principles. First, it is a transdiagnostic protocol that targets common core risk factors of anxiety and depression such as low self-esteem, lack of social skills, and cognitive dysfunction (Cummings et al., 2014; Dozois et al., 2009; Garber and Weersing, 2010). Second, it is based on the principles of CBT that are designed to help children develop skills to cope with stress-provoking situations (Kendall et al., 1997). Third, it uses video feedback with cognitive preparation to help children enhance their self-perception and appraisal of their performance (Harvey et al., 2000; Rodebaugh, 2004), where they are asked to give a 2-minute speech in front of a video camera at the first and the last sessions. Fourth, it uses the principle of behavioural activation. By having children increase their activity levels and participate in positive and rewarding activities, these activities will in turn help to

improve the children's mood and overall self-esteem. Finally, it teaches children skills to use during social interactions to help increase their experience of successful outcomes from the interactions (such as "when to start conversations", "when to join a group conversation"), and techniques to solve social problems. SSL has two versions, one version is for use with children and one for use with adolescents. It can be used in both group and individual settings. The present study used the child version of SSL in a group format.

SSL was developed with input from key stakeholders (e.g., teachers, counselors, school nurses, parents) during a theory of change (TOC) workshop (see Figure 1). During the TOC, the following matters were discussed: the needs of the target population and the expected outcome for the children (i.e., reducing emotional problems in children) (but also the outcome for the organizations and SSL-trained facilitators [not the focus of this research]), and the activities which are to be carried out in order to achieve the expected outcome. Some of the activities included determining the availability of resources (i.e., financial and human resources), recruiting, training, and setting up the SSL programme; the latter involves five groups of individuals. As indicated in Figure 1, an SSL specialist is needed to train facilitator to deliver SSL to the children in school. The implementation team supports SSL-trained facilitators by coordinating with the schools and the children's families; this team also monitors the implementation of SSL and works closely with the innovation champion. The innovation champion works closely with the headteacher to ensure that SSL is integrated with the school timetable, recruit SSL specialist to train and supervise SSL facilitator and organizes regular meetings with the key stakeholders.

During the TOC, stakeholders were encouraged to discuss specific rationale that

underlined the target outcome, as well as the extent to which intervention was needed. Rationales were based on findings of relevant empirical studies. Under “implementation of intervention”, specific assumptions were made. For example, it is assumed that in order to achieve the outcome for the children, they need to participate in SSL. Similarly, in order to achieve the outcome for the SSL facilitators, they will need to participate in SSL training and be supervised by SSL specialist. Factors related to its implementation in school settings were also discussed. An important aspect of the theory of change workshop was the buy-in from influential stakeholders to facilitate intervention delivery.

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Insert Figure 1 here

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2.3. Implementation of the SSL

Ethical approval to conduct this research was obtained from the Ethics Board at the University of Roehampton. Parents were sent letters informing them of the nature of the study and giving them the opportunity to inform the teachers if they wished their child to be excluded from the study. Children’s participation was voluntary; they were informed that their responses to the questionnaires would be kept confidential and they could withdraw from the research at any point in time.

The children involved in this study all received SSL intervention by School Services staff of the Caritas Diocese of Salford, which is a charity organization that aims to help the most vulnerable children, as well as young people and adults in the communities to transform their lives and fulfil their potential. The School Services staff offers interventions in schools in

the Caritas Diocese of Salford to children and adolescents with a wide range of mental health problems.

The delivery of the SSL was conducted by School Services staff of the Caritas Diocese of Salford after receiving an intensive one-day workshop by the senior author (CAE); all of the leaders were either qualified social workers or counsellors. The main aim of this workshop was to ensure fidelity of implementation of the protocol and to overcome potential problems in the implementation of the programme. The workshop covered topics related to anxiety and depressive disorders and their risk factors, and the principles of prevention. All the facilitators were given a leader's manual which included a detailed outline of each session of the SSL. They were all cleared by the disclosure and barring service (DBS) before the commencement of the study.

Children participated in the 8 group sessions of the SSL, with each session lasting for approximately 45 minutes, once a week. All children received a copy of the SSL workbook. Group size ranged from 4 to 8 children with girls and boys in each group. In the first and last sessions (sessions 1 and 8), children were asked to give a 2-minute speech in front of the whole group. For these 2-minute speech tasks, children were asked to say anything they would like to share with the group which was video-recorded; before the children were shown their video during the speech task, they were instructed to pay attention to the way in which they appeared during the speech. Homework was set at the end of each session, in which children were asked to practice the skills they had been taught. Children who completed their homework were given a sticker at the end of each session. As noted, SSL was delivered at the pupils' schools by in-school social workers or counsellors.

Children completed a set of questionnaires before and after the SSL programme, and at an average of 6 months after the intervention (see below). Their parents and class teachers completed parent and teacher measures (see below), respectively.

2.4. Measures

2.4.1. Questionnaires for Children

Self-Description Questionnaire I (SDQ-I; Marsh, 1990b) was used to measure self-concept and self-esteem. The SDQ-I contains five subscales that are used to measure physical appearance, peer relations, physical activity and sport, academic achievement, and self-esteem. Each subscale consists of eight items, and children are required to respond to each item on a 5-point Likert scale, ranging from "False" (1) to "True" (5). Higher scores are indicative of positive self-concepts and lower scores are indicative of negative self-concepts. The internal consistency for the SDQ-I has been demonstrated to be high, with Cronbach's alpha ranging from .83 to .90. It has also been reported to have good convergent and discriminant validity (Marsh, 1990). The Cronbach Alpha of the SDQ-I in the present study was .96.

Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997; Essau et al., 2012) was used to measure children's general difficulties and positive attributes: emotional symptoms (i.e., anxiety and depression), conduct problems, hyperactivity, peer problems and pro-social behaviour. To get the total of the difficulties score, all the subscales except for the pro-social behaviour subscale were combined; the higher the scores, the greater the difficulties. The Cronbach Alpha of the SDQ in the present study was .77.

The Screen for Child Anxiety Related Emotional Disorders (SCARED; Birmaher et al., 1999) was used to measure symptoms for common anxiety disorders in children, namely,

generalized anxiety disorder, separation anxiety disorder, panic disorder, social and school phobia. It contains 41 items, which are rated on a 3-point scale, ranging from “not true” (0) to “often true” (2). The SCARED total anxiety and subscale scores can be obtained by summing across relevant items. The Cronbach Alpha of SCARED in the present study was .93.

2.4.2. Questionnaire for Parents and Teachers

Parents and teachers completed the parent and teacher versions of the SDQ before and after the intervention, and at 6-month follow-up.

Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) parent and teachers version was completed by the children’s parents and teachers, respectively to capture the children’s general difficulties and positive attributes: emotional symptoms (i.e., anxiety and depression), conduct problems, hyperactivity, peer problems and pro-social behaviour. As with the self-report version of the SDQ, the total SDQ difficulties score was obtained by adding up all the subscales except for the pro-social behaviour subscale; the higher the scores, the greater the difficulties. In the present study, Cronbach Alpha of SDQ-parent and the teacher versions was .83 and .81, respectively.

2.4.3. Behavioural indicators of anxiety

All videos were assessed using the Fydrich et al. (1998) rating system. The video was rated on the following item: (a) Gaze, which is rated from very poor (i.e., participant completely avoids looking at the camera or stares continually) to very good (i.e., looks at the camera during the conversation); (b) Vocal quality, rated from very poor (i.e., speaks in a monotonous voice, or speaks at a low volume or mumbles) to very good (i.e., has a warm and enthusiastic in verbal expression); (c) Length, which is rated as very poor (i.e., monosyllabic [`hmmm', `yeah', `OK'])

to very good (i.e., for most part, participant's utterances are two or more sentences long); (d) Discomfort, which is rated from very high (i.e., complete rigidity of arms, legs or whole body, or constant leg movements) to very low (i.e., relaxed body posture and natural body movement); and (e) Conversation flow, which is rated from very poor (i.e., participant makes few attempts to talk) to very good (i.e., talk in a coherent manner and not jumping from one topic to the other).

The observers rated (offline) the video of the 2-minute speech task indicating the frequency with which the children displayed that particular behaviour. Rating of each child during the 2-minute speech tasks at pre- and post-test were rated independently by two trained observers who independently rated all the videos at each time point. Both raters, who held a Masters degree in Psychology, did not participate in the delivery of the SSL and they were blind to the children's scores on any of the questionnaires.

3. Statistical analyses

A series of Generalized Linear Models for Repeated measures was conducted to examine the effect of gender and time (pretest, posttest and 6-month follow-up). Interactions between gender and time were also tested. If the Mauchly's Test of Sphericity was significant, the univariate *F* statistic was reported with the epsilon correction (Box, 1954) based on the Greenhouse-Geisser estimation (Geisser and Greenhouse, 1958), which is more conservative.

4. Results

4.1. Gender differences

Main effect of gender was significant for the following measures across time points: Separation anxiety ($F(1, 108)=10.81$, $p < .01$), Social anxiety ($F(1, 111)=6.24$, $p < .05$), Panic

(F(1, 106)=14.52, $p < .001$), Generalized anxiety (F(1, 106)=14.78, $p < .001$), School phobia (F(1, 115)=4.58, $p < .05$), Total SCARED score (F(1, 86)=11.65, $p < .01$), Total SCARED without school phobia (F(1, 87)=12.35, $p < .01$), Emotional problems (F(1, 108)=28.27, $p < .001$), Peer problems (F(1, 109)=6.34, $p < .05$), Prosocial behavior (F(1, 116)=13.28, $p < .001$), Teacher-rated hyperactivity (F(1, 121)=9.06, $p < .01$), Teacher-rated prosocial behavior (F(1, 108)=4.63, $p < .05$), and Self-esteem related to sports (F(1, 92)=9.42, $p < .01$). Girls scored higher than boys for the anxiety variables (i.e., separation anxiety, social anxiety, panic, generalized anxiety, school phobia, total SCARED with and without school phobia), emotional problems, peer problems, and prosocial behavior. In contrast, boys scored higher than girls for self-esteem related to sports. For teacher-rated variables, boys scored higher in hyperactivity and lower in prosocial behavior.

4.2. Treatment effect

Table 1 shows the within-subject effect of time for all of the dependent variables. For anxiety symptoms as measured by the SCARED, SSL programme proved effective for all subscales and the total score, with the exception of social phobia. Subsequent analyses using the Bonferroni method showed a significant decrease from pretest to posttest for the total SCARED scores and its generalized anxiety subscale, and a significant decrease from posttest to follow-up for separation anxiety, panic, generalized anxiety, school phobia, and total SCARED score. Changes in social phobia score did not reach statistical significance level.

Discrepancy between self-report and others' ratings were found for SDQ and its subscales as well. While there was an agreement between all three ratings (i.e., self, parent, and teacher report) showing significant decrease of emotional symptoms from pretest to posttest,

and pretest to follow-up, the results for the total SDQ score and its subscales were considerably divergent. Parent evaluation found an improvement in all of the measures aside from the prosocial subscale, but the only other variable that demonstrated significant change in child and teacher ratings was the total SDQ score. For child self-report, Bonferroni test showed a decrease from pre to posttest and follow-up, but the teachers' reported only a marginally significant change between pretest and follow-up.

Changes in total self-esteem score did not reach significance; however, self-esteem in the domain of appearance and academic achievement benefitted from the SSL programme. Participants showed an improvement at follow-up, which suggests that the skills learned within the programme were utilized over the 6-month period and contributed to enhancing the child's self-image.

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Only three of the dependent variables measured in the present study showed a significant interaction between gender and time: overall conversational flow as measured by behavioral assessment during the 2-minute speech task ($F(1, 163)=6.58$, $p < .05$), self-reported conduct problems on the SDQ ($F(2, 214)=4.44$, $p < .05$), and teacher-rated emotional symptoms from the SDQ ($F(2, 236)=3.56$, $p < .05$). Results of post hoc analyses using the Bonferroni method are shown in Figure 2. Overall conversational flow improved from pretest to posttest for both boys and girls, and the significant discrepancy between boys and girls at pretest was no longer present at posttest (Figure 2.0). Changes in conduct problems was significant only

for girls, and while there was no difference between boys and girls at pretest, girls scored lower than boys at posttest (Figure 2.1). As for teacher-rated emotional symptoms, both boys and girls showed a significant decrease from pretest to 6-month follow-up. The amount of decrease at posttest was larger for boys; there was a significant gender difference in scores at posttest, and the change between pretest to posttest was non-significant for girls, whereas there was a significant decrease for boys (Figure 2.2).

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4.3. Behavioral changes in the speech task

A substantial improvement was found in the behavioral assessment of speech task from pretest to posttest (Table 1). Specifically, changes in length of gaze, vocal quality, length of speech, manifestation of discomfort, and overall conversational flow as measured by objective raters proved to be all highly significant. These results suggested that while the subjective ratings of anxiety remained unaffected from pretest to posttest, participants acquired behavioral skills from the present programme, which may prove to function as a protective factor towards anxiety disorders over time.

4.4. Mediators of change

Incremental scores of total self-esteem were examined as a possible mediator of change between pre- and post-total anxiety scores and subscales. We evaluated this based on structural equation modeling using Mplus. Bootstrap estimation based on 2000 resamples was utilized, and 95% confidence interval was calculated for indirect effects. If the confidence interval does

not include 0, one can conclude that the mediation effect is robust. The correlation between pretest and posttest anxiety scores and incremental self-esteem, and the confidence interval are shown in Tables 2 and 3, respectively. Incremental scores of self-esteem did not act as mediator of change in pretest to posttest total anxiety scores and social phobia subscale.

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5. Discussion

To our knowledge this study is among the first to examine the effectiveness of a manualized CBT intervention (SSL; Essau and Ollendick, 2013) for childhood anxiety and depression delivered in a real world setting by school services staff as part of their routine services provision to schools. The results contribute to our understanding on the transportability of evidence-based intervention in a real world school setting that was delivered by professionals with diverse training and experience. As is typical in the provision of mental health services in routine school settings (a) minimal inclusion/exclusion criteria were used, (b) facilitators were not specialist psychologists but were social workers and counselors with diverse experience in working with children, (c) treatment integrity measurements were not included, and (d) children who participated in this study were identified by their teachers as having emotional problems. Furthermore, as is typical in routine school settings, these children were not interviewed to determine whether or not they met the diagnosis of any anxiety and/or depressive disorders based on DSM-5 criteria.

The main findings are as follows: First, in line with previous studies, girls scored

higher than boys for the anxiety as measured using the SCARED (i.e., separation anxiety, social anxiety, panic, generalized anxiety, school phobia), as well as on emotional problems, peer problems and prosocial behavior as measured using the SDQ (Lewinsohn et al., 1993; Letcher et al., 2012; Merikangas et al., 2010; Reinherz et al., 1993; Su et al., 2008). Based on teachers' report, boys scored higher in hyperactivity and lower in prosocial behavior. These results are in line with previous studies examining gender differences in children; girls tend to show more internalizing symptoms and prosocial behavior, while boys show more externalizing symptoms (e.g., hyperactivity) and being good at sports. While it is beyond the scope of this study to determine reasons for this gender difference, socialization practices that include power and control and management of feelings have been suggested as a possible explanation (Petersen et al., 1991).

Second, similar to previous studies that use CBT-based interventions in school settings (Barrett and Turner, 2001, Lowry-Webster et al., 2003), SSL proved effective in significantly reducing the total anxiety symptoms and on the various forms of anxiety symptoms, except for social phobia. Why reduction in social phobia did not reach a significant level was unclear because many of activities in SSL are related to being exposed to social situations; however, while their subjective evaluation of social phobia did not reach a significant reduction, analyses of their video during the 2-minute speech task showed significant reduction in major indicators of social anxiety. Indeed previous studies have reported that participants with social phobia show a discrepancy between subjective and objective evaluation of their behavior in social situation (Cartwright-Hatton et al., 2003; Ollendick et al., 2019). Specifically, in the present study, independent raters noticed significant changes length of gaze, vocal quality, length of

speech and conversational flow, and that they appeared more comfortable talking in front of the video at the last compared to the first session of the SSL. As concluded by Alden and Wallace (1995, p. 503) ‘‘social phobics displayed a negative bias in their appraisal of their own behavior relative to observer’s ratings of their behavior’’.

Third, there was an agreement between all three informants (i.e., self, parent, and teacher report) in showing significant reduction in emotional symptoms from pretest to posttest. The results for the total SDQ score and its subscales from pretest to follow-up, however, were significantly different across the three informants. The lack of agreement in reporting children’s internalizing problems among informants is widely recognized, partly because of the internally-derived experience of some of the emotional symptoms (Klein, 1991; Loeber et al., 1990). Furthermore, some of the behaviors such as prosocial behavior might only be observable at certain situations or when the children are with certain groups of individuals.

6. Limitations

The study's limitation need to be considered when interpreting our findings. First, because the present study used an open clinical trial design, the potential problem related to the internal validity of SSL could be the passage of time and factors (e.g., being in a group of children) that are not related specifically to the programme. However, since we found the intervention effects between pretest, posttest and follow-up assessments, external influences are unlikely to explain the improvements and the maintenance during the follow-up period. Nevertheless, future studies should consider conducting a randomized control trial to determine the extent to which our findings could be replicated. Second, the study did not use structured diagnostic interviews because such an interview is time consuming to conduct and needs the

interviewer to be trained; for this reason, diagnostic interviews are rarely used in routine school settings. The study used the SCARED and the SDQ to examine anxiety and mental health problems in children; both scales have proven to be valid and reliable in distinguishing children with and without any anxiety or mental health problems (Stallard et al., 2007). Finally, therapist treatment integrity measurement was not included. Therefore, it is not clear the extent to which the facilitators strictly followed the intervention protocol.

These limitations notwithstanding, this study provides empirical support for the utility of the SSL in reducing mental health problems among primary school children when delivered in regular school setting when delivered by school services staff. Our findings have important implication for the development and implementation of public health policies in relation to mental health promotion for children.

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Table 1. Results of ANOVAs, means, and standard deviations for pretest, posttest, and 6-month follow-up trials

Dependent variable	Pretest (T1)	Posttest (T2)	6-month follow-up (T3)	Contrast
SCARED (self-report)				
Separation anxiety	7.95 (4.23)	7.14 (4.45)	5.75 (4.31)	F(1.81,195.58)=21.75, p < .001 T1 > T2 > T3
Social phobia	6.95 (3.72)	6.35 (3.91)	6.23 (3.98)	F(2, 222)=2.27, p=n.s.
Panic	9.79 (6.57)	9.15 (6.77)	7.27 (6.45)	F(2, 212)=12.73, p <.001 T1 = T2 > T3
Generalized anxiety	8.49 (4.75)	7.40 (5.42)	6.30 (4.97)	F(2, 212)=15.50, p <.001 T1 > T2 >T3
School phobia	2.91 (1.98)	2.64 (2.20)	2.19 (2.01)	F(2, 230)=7.88, p < .001 T1 = T2 > T3
Total SCARED score	35.92 (18.22)	32.68 (20.80)	26.76 (18.53)	F(2, 172)=19.64, p < .001 T1 = T2 > T3
Total SCARED score (without school phobia)	33.31 (17.09)	30.07 (19.12)	24.73 (17.11)	F(2, 174)=19.71, p < .001 T1 > T2 > T3
SDQ (self-report)				
Emotional symptoms	5.30 (2.69)	4.63 (2.79)	4.09 (2.63)	F(1.82, 197.03)=9.35, p < .001 T1 > T2 = T3
Conduct problems	3.29	3.24	3.01	F(2, 214)=1.42, p=n.s.

	(2.20)	(2.11)	(2.11)	
Hyperactivity	5.02	4.92	5.03	F(2, 228)=0.16, p=n.s.
	(2.19)	(2.41)	(2.31)	
Peer problems	3.94	3.42	3.47	F(2, 218)=2.91, p=0.06
	(2.32)	(2.18)	(2.07)	T1 ≧ T2 (p=0.06)
Prosocial	7.44	7.53	7.79	F(2, 232)=1.54, p=n.s.
	(1.86)	(2.09)	(1.95)	
Total SDQ score	18.09	16.43	15.97	F(2, 168)=5.18, p < .01
	(6.47)	(6.78)	(6.42)	T1 > T2 = T3
SDQ (parent report)				
Emotional symptoms	4.89	4.00	3.92	F(2, 146)=6.86, p < .01
	(2.81)	(2.84)	(2.89)	T1 > T2 = T3
Conduct problems	2.67	2.25	1.96	F(2, 140)=6.22, p < .01
	(2.00)	(1.82)	(2.02)	T1 > T2 = T3
Hyperactivity	5.50	4.54	4.54	F(2, 144)=8.72, p < .001
	(2.81)	(2.97)	(2.73)	T1 > T2 = T3
Peer problems	3.50	3.00	2.63	F(1.83, 128.31)=7.65, p < .01
	(2.59)	(2.27)	(2.18)	T1 > T3
Prosocial	8.17	8.45	8.57	F(1.81, 132.33)=1.39, p=n.s.
	(1.91)	(1.80)	(2.01)	
Total SDQ score	16.38	13.81	12.70	F(2, 124)=11.31, p < .001
	(7.31)	(7.39)	(7.57)	T1 > T2 = T3

SDQ (teacher report)				
Emotional symptoms	4.05	3.36	3.20	F(2, 236)=9.04, p < .001
	(2.59)	(2.59)	(2.46)	T1 > T2 = T3
Conduct problems	1.48	1.41	1.32	F(1.87, 218.90)=0.76, p=n.s.
	(1.91)	(1.80)	(1.87)	
Hyperactivity	4.01	4.00	3.89	F(1.88, 227.43)=0.30, p=n.s.
	(3.05)	(2.75)	(2.89)	
Peer problems	2.54	2.42	2.43	F(1.88, 210.98)=0.33, p=n.s.
	(2.43)	(2.38)	(2.29)	
Prosocial	7.70	7.62	7.80	F(2, 216)=0.48, p=n.s.
	(2.30)	(2.10)	(2.15)	
Total SDQ score	11.84	10.90	10.63	F(1.82, 176.67)=4.01, p < .05
	(6.02)	(5.62)	(6.31)	T1 ≧ T2 = T3 (p < .10)
Self-esteem				
(self report)				
Appearance	27.50	27.98	29.94	F(1.84, 161.47)=4.71, p < .05
	(8.67)	(8.28)	(9.19)	T1 < T3
Academic	25.87	27.02	28.10	F(2, 192)=5.50, p < .01
	(8.67)	(7.81)	(8.01)	T1 < T3
Sport	29.95	30.49	31.52	F(1.75, 161.15)=2.14, p=n.s.
	(8.23)	(9.98)	(7.08)	
Friend	28.22	28.39	29.53	F(2, 188)=2.11, p=n.s.
	(8.23)	(8.10)	(7.32)	
Self-esteem	30.42	29.95	30.85	F(2, 186)=1.09, p=n.s.
	(6.92)	(7.05)	(6.54)	
Total self-esteem	147.36	148.29	152.89	F(2, 86)=1.22, p=n.s.
	(34.81)	(34.55)	(35.81)	

Behavioral assessment				
Gaze	2.93 (0.73)	3.36 (0.57)	N/A	F(1, 164)=58.55, p < .001 T1 < T2
Vocal quality	3.35 (0.70)	3.78 (0.53)	N/A	F(1, 164)=71.34, p < .001 T1 < T2
Length	3.05 (0.64)	3.45 (0.59)	N/A	(1, 163)=58.38, p < .001 T1 < T2
Discomfort	2.58 (0.80)	3.14 (0.66)	N/A	(1, 163)=80.07, p < .001 T1 < T2
Conversation	3.16 (0.61)	3.45 (0.64)	N/A	(1, 163)=40.26, p < .001 T1 < T2

Note: SCARED= Screen for Child Anxiety Related Emotional Disorders

SDQ=Strengths and Difficulties Questionnaire

Values in parenthesis=SD

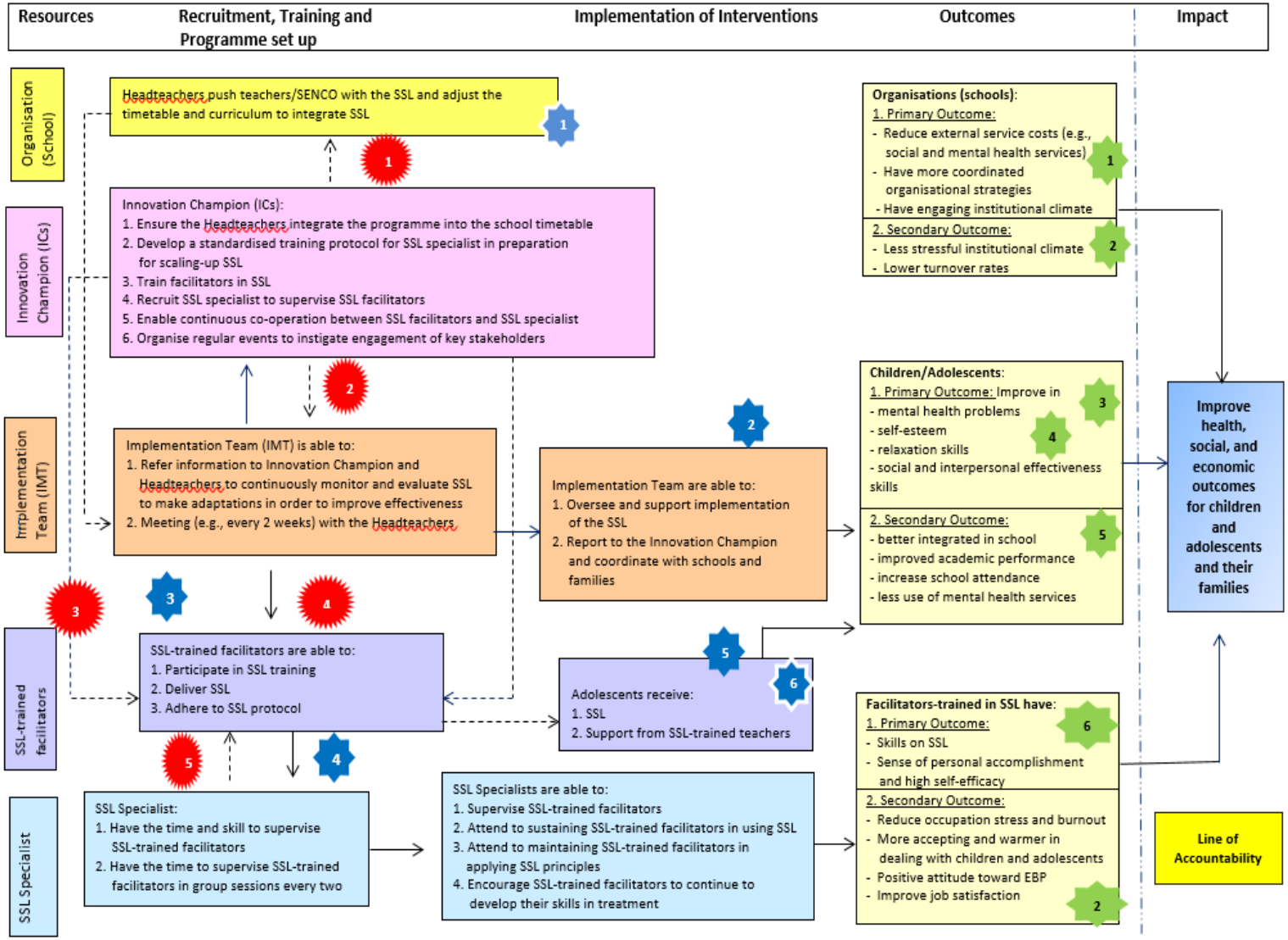
Table 2. Correlations between incremental self-esteem and T1/T2 SCARED ratings

	Incremental Self-Esteem	Separation anxiety (T2)	Social phobia (T2)	Panic (T2)	Generalized anxiety (T2)	School phobia (T2)	Total SCARED (T2)	Total SCARED (without school phobia) (T2)
Incremental Self-Esteem		0.05	-0.07	-0.05	0.08	0.08	0.02	0.01
Separation anxiety (T1)	0.06	0.72***						
Social phobia (T1)	0.04		0.51***					
Panic (T1)	0.01			0.69***				
Generalized anxiety (T1)	0.11				0.75***			
School phobia (T1)	-0.16					0.46***		
Total SCARED (T1)	0.06						0.77***	
Total SCARED (without school phobia) (T1)	0.05							0.78***

Table 3. Results of confidence intervals for mediating effects of total self-esteem

	Mean	SE	Lower Limit	Higher limit
Separation anxiety	0.00	0.01	-0.02	0.03
Social phobia	0.00	0.02	-0.06	0.02
Panic	0.00	0.01	-0.05	0.02
Generalized anxiety	0.00	0.01	-0.02	0.02
School phobia	-0.04	0.05	-0.20	0.01
Total SCARED score	0.00	0.01	-0.05	0.01
Total SCARED score (without school phobia)	0.00	0.01	-0.05	0.01

Figure 1. Theory of change workshop with the key stakeholders



Key

Abbreviations

SSL – Super Skills for Life
ICs - Innovation Champion
IMT - Implementation team
EBP – Evidence based practice

Arrows

Intervention ---→
No intervention needed ⟶

Interventions

1. Innovation Champion convinces the Headteacher/SENCO of the importance of mental health prevention and the SSL
2. Implementation team revises the timetable to integrate SSL
3. Innovation Champion develops standardised protocol to deliver SSL and trains SSL facilitators
4. SSL facilitators provides SSL to the children/adolescents
5. SSL Specialist provides regular supervision to the SSL facilitators

Assumptions

1. Headteacher supports the intervention and understands its importance
2. Implementation team supports the implementation of the SSL
3. SSL facilitators have the time and interest to be trained in SSL
4. SSL facilitators accepted to be supervised by SSL Specialist
5. Children/Adolescents are receptive of the intervention
6. Children/Adolescents internalise, maintain and act on what they have learnt in SSL

Rationale (examples)

1. Involvement of stakeholders is important for political buy-in
2. Evidence that positive organization climate reduce annual turnover rates among staff

3,4. Evidence that CBT-based intervention reduced mental health problems, enhanced self-esteem and social skills

4, 5. Evidence that CBT-based interventions are associated with better integrated in school, improved academic performance, increased school attendance, and less use of mental health services

6. Evidence that training specific evidence-based training enhances staff's therapeutic skills and self-efficacy
7. Evidence that supportive and positive organization climate improve staff satisfaction

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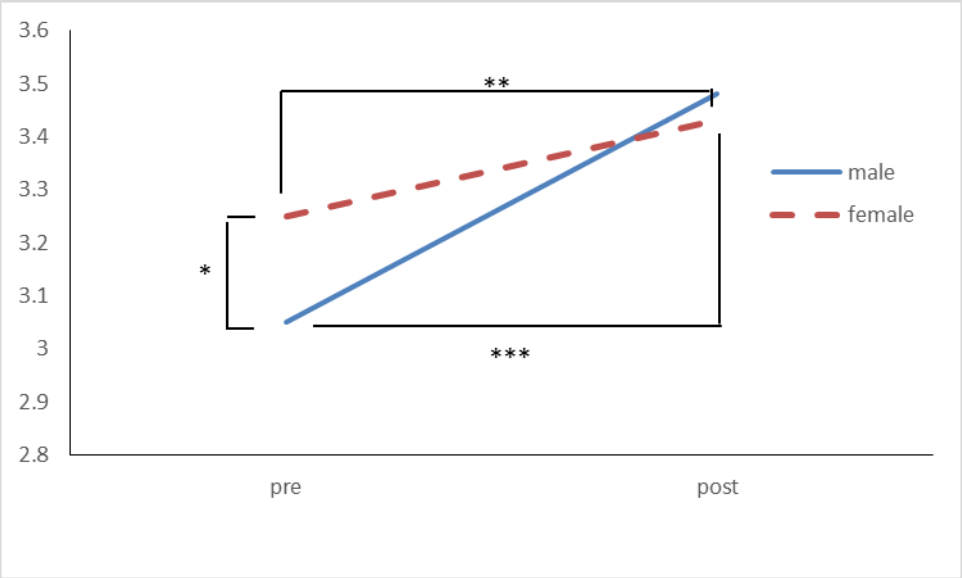
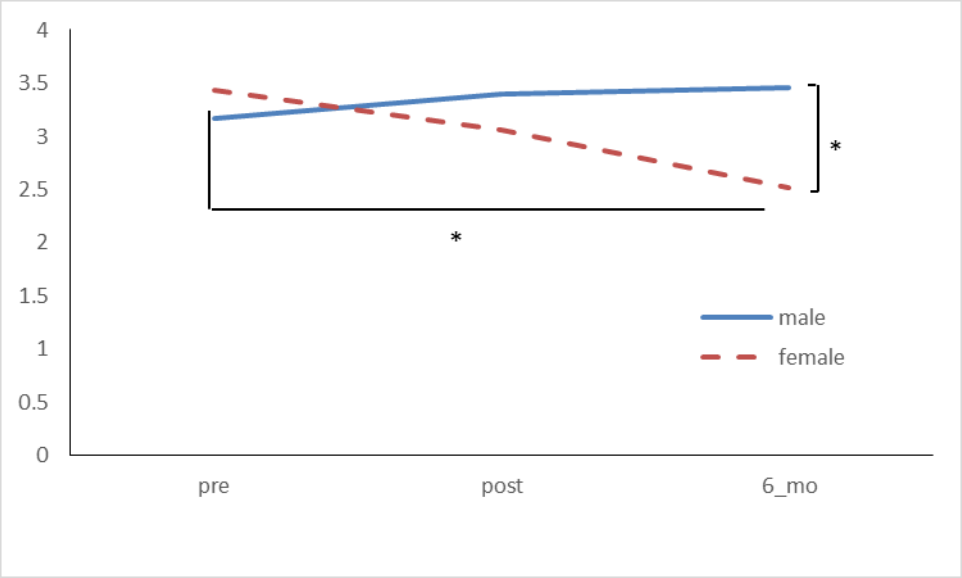
Figure 2.0 Post hoc analyses for overall conversational flow



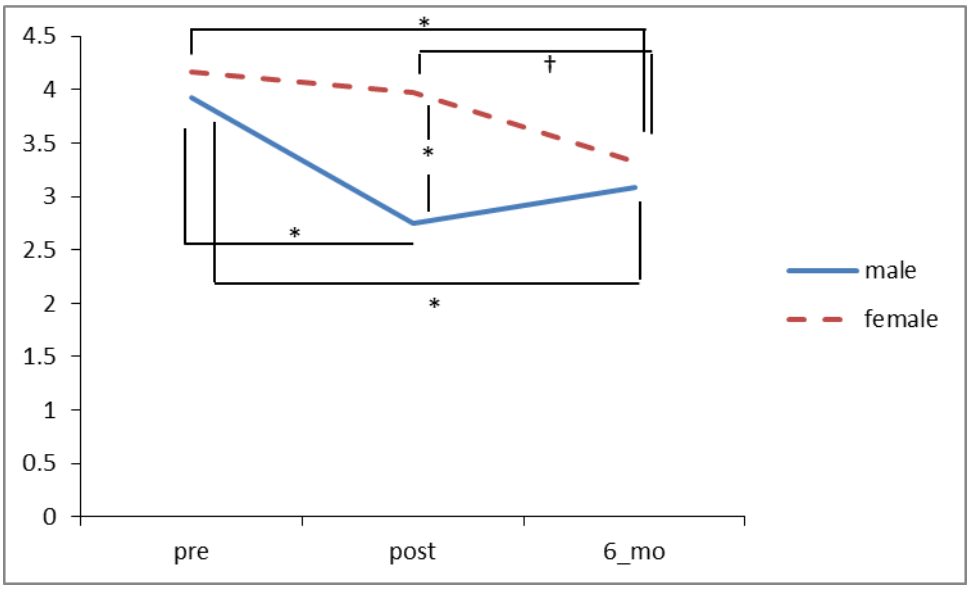
Note: pre = pretest; post = posttest

Figure 2.1 Post hoc analyses for conduct problems



Note: pre = pretest; post = posttest; 6_mo = 6-month follow-up

Figure 2.2 Post hoc analyses for teacher-rated emotional symptoms



Note: pre = pretest; post = posttest; 6_mo = 6-month follow-up