Effectiveness of the Super Skills for Life programme in enhancing the emotional wellbeing of children and adolescents in residential care institutions in a low- and middle-income country: A randomised waitlist-controlled trial

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ABSTRACT

Background: The present study examined the effectiveness of a transdiagnostic prevention programme, Super Skills for Life (SSL), among children and adolescents with emotional problems in residential care institutions (RCIs) in the low- and middle-income country of Mauritius using a randomised waitlist-controlled trial (RCT). SSL is based on the principles of cognitive behavioural therapy, behavioural activation, social skills training, and uses video-feedback and cognitive preparation as part of the treatment.

Methods: The RCT involved 100 children and adolescents aged 9 to 14 years, from six RCIs, randomly allocated to either an SSL intervention group (IG) or a waitlist-control (WLC) group. A set of questionnaires measuring internalising and externalising problems, emotion regulation and self-esteem, and experimental tasks measuring attentional bias and inhibitory control, were completed at baseline, post-intervention and 3-month follow-up. Participants also completed a 2-minute video speech task during the first and final sessions of the SSL intervention.

Results: Children and adolescents in the SSL IG showed significant improvements in internalising symptoms (e.g. anxiety and depressive symptoms), externalising symptoms (e.g. conduct problems and hyperactivity), and inhibitory control, and an increase in adaptive (except putting into perspective strategy) and decrease in maladaptive emotion regulation strategies, at both post-intervention and follow-up. These findings were not replicated among children in the WLC.

Limitations: The small sample size and lack of an active control group were the major limitations of this study.

Conclusions: This study provides evidence for the effectiveness of a transdiagnostic prevention programme for emotional problems in RCIs in a low- and middle-income country.

1.   Introduction

Globally, it is estimated that up to eight million children and adolescents live in residential care institutions (RCIs) (UNICEF, 2009), with the majority of these being from low- and middle-income countries (LMICs; also known as developing countries) (Kaur et al., 2018; Whetten et al., 2014). The prevalence of emotional problems among this vulnerable population is estimated at 49% (Bronsard et al., 2016), which is alarmingly four-fold greater than the 13.4% prevalence among the general young population (Polanczyk et al., 2015). Children in RCIs often have negative early experiences, such as maltreatment, poverty or separation from parents/families (Bronsard et al., 2011; Oswald et al., 2009). This leaves them vulnerable to increased risk of emotional problems, such as anxiety and depression, which cause substantial impairments in multiple domains of psychosocial (e.g. educational underachievement; Woodward and Fergusson, 2001) and psychological (e.g. social and cognitive; Essau et al., 2000; Langley et al., 2004) functioning. When left untreated, these conditions tend to lead to negative life outcomes (Essau et al., 2014a; Kessler et al., 2005) and there is a heightened risk of developing psychiatric disorders later in life (Clark et al., 2007; Essau et al., 2014a; Fergusson et al., 2006).

The development and maintenance of anxiety and depressive symptoms in children and adolescents has been linked to difficulties in central components of executive functioning (e.g. Han et al., 2016; Kertz et al., 2016) and emotion regulation (Berking et al., 2014) by often creating a vulnerability to negative emotionality, regulation and compromised coping (Riggs et al., 2004). Diminished executive functions may make it difficult for children to disengage from threatening stimuli, resulting in attentional bias toward anxiety-provoking environmental cues (Dudeney et al., 2015) and increased difficulties in inhibitory control – the ability to

actively inhibit or delay a dominant response to achieve a goal (White et al., 2011). Both attentional bias to threat and inhibition difficulties have been identified as early risk markers for the emergence and development of comorbid emotional disorders (Réveillon et al., 2016; Salum et al., 2013; Waters et al., 2010), typically arising prior to the onset of a disorder (Joormann and Gotlib, 2007; Mogg et al., 2012), and often moderating treatment outcomes (Byrow and Peters, 2017; Hadwin and Richards, 2016; Niles et al., 2013).

When faced with difficult situations, anxious children are more likely to avoid situations that induce emotional arousal and often revert to maladaptive emotion regulation strategies such as avoidance and distraction (Mash & Wolfe, 2002; Suveg and Zeman, 2004; Zeman et al., 2006). Dysregulated emotions coupled with anxiety are often associated with poor social functioning (Kim-Spoon et al., 2013), social difficulties (Jacob et al., 2014), low quality friendships (Muris and Meesters, 2002) and high peer victimisation (Rubin et al., 2004). These difficulties lead to the maintenance of low self-esteem and prevent positive social outcomes and success in social situations, thus maintaining the cycle of social anxiety and depression (Rapee and Spence, 2004).

Cognitive behavioural therapy (CBT) is the treatment of choice for children and adolescents with emotional problems (Higa-McMillan et al., 2016; Hofmann et al., 2012; Kendall et al., 2012). However, the high rates of comorbidity among anxiety and depression (Cummings et al., 2014) remains a clear threat to the efficacy and effectiveness of the diagnostic-specific treatment of CBT. Recent developments suggest that by targeting the core risk factors of multiple disorders, a transdiagnostic preventive approach is potentially valuable as a step to treat mental health problems (e.g. Ehrenreich-May and Bilek, 2011; Garber et al., 2016; Martinsen et al., 2016).

Promising results have emerged for the feasibility and effectiveness of adapting evidence-based transdiagnostic approaches from high-income settings to LMICs to address the mental health of children across different cultures, often delivered by non-mental health professionals (Jordans et al., 2016; Singla et al., 2017; Tol et al., 2013).

Evidence of effective interventions for young people's mental health among the general population in LMICs is growing, with positive outcomes for their mental health and wellbeing (Pedersen et al., 2019; Yatham et al., 2018). However, this picture is more complex for child welfare interventions in LMICs, with their value having a weaker evidence-base, and their inclusion in national strategies and care programmes being rare. Some of the other major barriers that remain are the limited mental health workforce, lack of infrastructure, and funding (Knapp et al., 2006; Murray et al., 2014; Patel et al., 2007). This failure to effectively implement evidence-based interventions remains a key obstacle in the progress of the child welfare system in LMICs (Campbell Collaboration UNICEF, 2017), leaving a large number of young people in RCIs without access to mental health care (Brown et al., 2017; Knerr et al., 2013; Saxena et al., 2007).

An effort to overcome the problem of accessibility of evidence-based interventions in LMICs for the prevention of emotional problems among young people was the development of Super Skills for Life (SSL; Essau and Ollendick, 2013). The transdiagnostic SSL programme has shown both immediate and long-term efficacy in reducing emotional problems such as anxiety and depressive symptoms as well as other forms of difficulties such as anxiety-related interferences, and peer and conduct problems among children in school settings (Essau et al., 2014b, 2019; Fernández-Martínez et al., 2019; Orgilés et al., 2019).

The present study aimed to evaluate the effectiveness of SSL for reducing emotional problems among children and adolescents living in RCIs in the LMIC of Mauritius. To the best of our knowledge, this study is the first to investigate the effectiveness of a preventative programme for emotional problems among this population through a randomised waitlist-controlled trial (RCT). Based on recent promising findings of SSL (Essau et al., 2019; Fernández-Martínez et al., 2019; Orgilés et al., 2019), it was hypothesised that at both post-treatment and 3-month follow-up, compared to those in a waitlist-control group, children and adolescents who participate in SSL would demonstrate: (1) improvements in primary outcomes of internalising (e.g. anxiety and depressive symptoms) and externalising (e.g. conduct problems and hyperactivity) symptoms and (2) improvements in secondary outcomes of cognitive emotion regulation strategies, attentional bias and inhibitory control.

2. Methods

2.1. Participants

One-hundred eligible participants from six RCIs were advanced to the trial (see Figure 1 for CONSORT Flow Chart). According to a priori power analysis using G*Power software (Faul et al., 2007), a sample size of 86 children was necessary to detect a medium-sized effect of 0.3 (power = .80; alpha = .05) (Cohen, 1988). However, considering that attrition rate during an intervention phase can be approximately 10% (e.g. García-Escalera et al., 2016; Johnson et al., 2016), the minimum number of participants required was deemed to be 96 participants.

Participants in the study were predominantly female (76%) and aged between 9 to 14 years ($M = 11.75$, $SD = 1.97$). All participants were Mauritian nationals and self-reported ethnic groups were Creole (73%), Hindu (24%) and Muslim (3%).

Length of living in the RCIs ranged from 2 to 10 years (M = 5.86, SD = 2.63), however, no significant differences emerged between length of living across the six RCIs, χ^2 (15) = 9.14, p = .87. Half of the participants lived with their siblings in the same RCI. All the children/adolescents had been placed in the RCIs due to childhood maltreatment.

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Participants met the following inclusion criteria: (a) RCI report on child/adolescent displaying difficulties in managing emotions or emotional distress; (b) aged 9 to 14 years; and (c) willingness to attend assessments and SSL sessions. While we did not require a clinical cut-off for emotional problems as an inclusion criterion, all the participants at baseline assessment displayed moderate to high levels of emotional distress (M = 5.77, SD = 2.71), as indicated by scores greater than 5 on the Emotional Symptoms subscale of the self-report *Strengths and Difficulties Questionnaire* (SDQ; Goodman, 1997), which is considered to indicate elevated risks of anxiety and/or depression (Goodman, 2001). The exclusion criteria included: (a) serious risk of harm to self or others; (b) undergoing active psychiatric treatment and/or concurrent psychological treatment; or (c) in the process of leaving the RCI.

2.2. Super Skills for Life (SSL)

The SSL intervention protocol (Essau and Ollendick, 2013) targets anxiety and depression in children and adolescents through 8 sessions of manualised CBT.

SSL has five core principles: (1) it is based on a transdiagnostic approach that targets common core risk factors (e.g. low self-esteem, lack of social skills) of comorbid disorders; (2) it contains elements of CBT; (3) it uses video feedback with cognitive preparation to help children enhance their self-perception (Harvey et al., 2000; Rodebaugh, 2004); (4) it uses the principle of behavioural activation by having children increase their activity levels and participate in positive and rewarding activities; and (5) finally, it teaches children basic skills to use during social interactions. Children participate in 45-minute sessions of the SSL once a week in groups of 8–9 within their regular setting. In the first and last sessions (sessions 1 and 8), children are given a 2-minute video-recorded speech task where they are encouraged to say anything they would like to share with their group.

Prior to conducting the study, two bilingual psychologists translated the original SSL programme from English to French. To ensure an adequate cultural adaptation of the programme, an expert focus group discussion was carried out with 5 professionals working with children in RCIs. Additionally, the programme was pilot-tested on 8 children aged 9-14 years living in an RCI, who participated voluntarily. As a result, while the original components of the programme were maintained, slight modifications (e.g., contexts, language expressions, examples) were made in order to facilitate understanding and improve the SSL adaptation to both the Mauritian culture and the specific population of children in RCIs.

2.3. Measures

In order to assess the effects of the intervention, children completed a set of questionnaires and experimental tasks before and after the SSL, and at an average of 3 months after the intervention. The self-report questionnaires were chosen because

they have been used widely in numerous countries with children and adolescents and have been proven to have strong psychometric properties (e.g., Panter-Brick et al., 2011).

2.3.1. Primary Outcomes

2.3.1.1. Emotional and behavioural difficulties and positive attributes

The *Strengths and Difficulties Questionnaire* (SDQ; Goodman, 1997), comprising 25 items plus impact supplement, measured children's general difficulties and positive attributes: emotional symptoms, conduct problems, hyperactivity, peer problems, and prosocial behaviour. Each item was rated on a 3-point scale, ranging from 0 *(not true)* to 2 *(certainly true)*; higher scores indicate greater difficulties or problem behaviours. Subscales are also combined to measure overall internalising behaviours, overall externalising behaviours, total difficulties and total impact of these difficulties on their everyday lives. In the present study, the Cronbach's alpha values were .54 for the overall internalising behaviours scale, .68 for the overall externalising scale, .71 for the total difficulties scale, and .84 for the total impact scale. Subscale alpha values ranged from .38 for the peer problems subscale to .70 for the emotional symptoms subscale. The official translation for the French version of the SDQ was used in the present study (http://www.sdqinfo.com/b3.html).

2.3.1.2. Anxiety and depression

The *Revised Children's Anxiety and Depression Scale* (RCADS; Chorpita et al., 2000) measured DSM-IV relevant symptoms of anxiety disorders (generalised anxiety disorder, separation anxiety disorder, panic disorder, social phobia, obsessive compulsive disorder, and total anxiety disorders) and major depressive disorder. It consists of 47 items scored on a 4-point scale ranging from 0 *(never)* to 3 *(always)*;

higher scores indicate more severe symptoms. In the present study, the Cronbach's alpha value for the total anxiety disorders scale was .92 (with subscale alpha values ranging from .50 for the obsessive compulsive disorder subscale to .81 for the panic disorder subscale) and for the major depressive disorder scale, it was .80. The official translation for the French version of the RCADS was used in the present study (https://www.childfirst.ucla.edu/resources).

The video speech tasks at session 1 and 8 were assessed for behavioural signs of anxiety using a rating system developed by Fydrich et al. (1998), which was modified for use with children (Essau et al., 2019). This rating system has been used in several studies that showed significant reductions in behavioural indicators of anxiety among children and adolescents who have participated in the SSL programme (Essau et al., 2014b; 2019; de la Torre-Luque et al., 2020). All the videos were rated (offline) from very poor/low to very good/high on length of eye gaze, vocal quality, length of speech, manifestation of discomfort, and conversational flow (Essau et al., 2014b, 2019).

2.3.2. Secondary Outcomes

2.3.2.1. Cognitive emotion regulation strategies

The *Cognitive Emotion Regulation Questionnaire–kids version* (CERQ-k; (Garnefski et al., 2007) measured cognitive emotion regulation (ER) strategies that children use in response to their experience of threatening or stressful life events. The CERQ-k consists of nine subscales, with four items in each. Items are rated on a 5-point scale from 1 *(almost never)* to 5 *(almost always)*, with higher scores indicating more pronounced use of the ER strategy. Four of the subscales represent maladaptive ER strategies: self-blame, rumination, catastrophising and other-blame. Five subscales

represent adaptive ER strategies: acceptance, positive refocusing, planning, positive reappraisal and putting into perspective. In the present study, the Cronbach's alpha values for the maladaptive ER strategies ranged from .52 (other-blame) to .61 (self-blame), and for the adaptive ER strategies, they ranged from .50 (acceptance) to .62 (positive refocusing).

The English version of the CERQ-k was adapted and translated according to guidelines for the successful translation of instruments in cross-cultural research (Brislin, 1970). One bilingual translator who was also a native speaker blindly translated the questionnaires from the original language (English) to French, and another bilingual individual translated them back to the original language. Differences in the original and the back-translated versions were discussed and resolved by joint agreement of both translators.

2.3.2.2. Self-esteem

The *Rosenberg Self-Esteem Scale* (RSE; Rosenberg, 1965) measured children's global self-esteem. Respondents indicate their level of agreement on a 4-point scale ranging from 1 *(strongly disagree)* to 4 *(strongly agree)*, with higher scores reflecting higher levels of self-esteem. The Cronbach's alpha value for the RSE in the present study was .65. The official translation for the French version of the RSE was used in the present study (Vallières & Vallerand, 1990).

2.3.2.3. Attentional bias

To measure attentional bias, an Emotion Dot-Probe task was used. Twelve adult models (six females) were selected from the NimStim face set (Tottenham et al., 2009). Pictures of the same face were presented horizontally in angry-neutral, happy-

neutral and neutral-neutral pairings across congruent and incongruent conditions (see

Figure 2). Only children's bias towards threat-related stimuli was used in further

analyses. The task consisted of a practice block (10 practice trials) and a test block

(144 trials). Trials with short (<200ms) and long (>2000ms) reaction times (RTs) and

outlier trials (i.e. *Z*-scores outside ±2.5 *SD* of mean bias scores) were excluded

(Tabachnik and Fidell, 2013). Attentional bias is calculated by subtracting scores of

congruent trials from incongruent trials. Positive scores indicate a bias towards threat,

whereas negative scores indicate a bias away from threat. Bias scores that are zero (or

near zero) reflect no bias.

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2.3.2.4. Inhibitory control

Inhibitory control was assessed through a modified version of the flanker task

(Eriksen and Eriksen, 1974) adapted for children (Christ et al., 2011). Participants

were instructed to pay attention to the orientation (right or left) of the central fish

(target). The other fish (flankers) were oriented either in the same direction

(congruent trial) or in the opposite direction (incongruent trial). Children were

instructed to report the direction of the central target by pressing left or right response

keys. Accuracy across incongruent trials was recorded as a measure of inhibitory

control (Rueda et al., 2005).

2.4.   Procedure

Ethical approval to conduct this research was approved by the Ethics Board at the University of Roehampton, UK. Approval to conduct this study was also granted by the Ministry of Gender Equality and Family Welfare in Mauritius. Following these two institutional approvals, RCIs across Mauritius were assessed for eligibility of participation. Within the 17 RCIs in Mauritius, 5 RCIs catered only for children under age 7 or above age 18 and one RCI catered only for children and young adults with severe disabilities. Out of the 11 eligible RCIs invited to participate, 6 RCIs gave approval for participation, all of them from different sub-regions of Mauritius.

The six RCIs were from both urban and rural areas across Mauritius, with mixed gender children and adolescents up to age 18. Half of the institutions were run by the government and the other half were run by NGOs who work in close collaboration with the government. Occupancy in the six RCIs ranged from 65% to 111%, with one RCI operating in excess of capacity.

After informed consent, all eligible participants completed baseline assessments, after which they were randomly assigned to either a treatment immediate (intervention group; IG) or waitlist-control (WLC) group; hence this was a two-arm randomised, waitlist-controlled trial. Blocked randomisation, stratified by RCI, was performed to balance the group sizes in each condition at each RCI. A block size of six and an allocation ratio of 1:1 were specified. The trial included three assessment time-points: baseline (T1; one week before the IG started the intervention); post-intervention (T2; one week after the IG finished the intervention); and follow-up (T3; three months after the IG finished the intervention). The WLC group received the intervention approximately 5 months after the intervention group (IG) started the intervention (8-week waiting period between T1 to T2 [while the IG received the intervention] and 3 months follow-up period from T2 to T3). All experimental tasks

were completed online, which were completed individually by each child with one of the residential carers present.

The SSL programme was delivered by one facilitator, who was a developmental psychologist with 5 years of experience in working with children with mental health problems in Mauritius. During the delivery of the SSL, the facilitator was assisted by one staff member of the RCI. Prior to implementing the SSL, the facilitator received intensive training from the first author (CAE) of the SSL to ensure fidelity of implementation of the protocol and to overcome potential problems. The training also covered topics related to anxiety and depression and their risk factors, principles of prevention, organization, ethical issues, and group-process skills. Additionally, the facilitator received a leader's manual which provides a detailed outline of each session of the SSL programme. Weekly supervisions were provided by the lead author (CAE) of the SSL to address any implementation concerns.

Adherence to the SSL manual was monitored by completion of session-specific checklists of all required materials and activities (Garbacz et al., 2014). Adherence to the intervention content across RCIs was on average 92%. This is similar to the adherence levels of 78% to 97% as reported in previous studies (Essau et al., 2012).

2.5. Data analyses

To ensure equivalence of the IG and WLC group following randomisation and prior to treatment, the groups were compared on demographic and baseline measures using chi-square tests and t-tests. A series of General Linear Model analyses were then conducted with the intent to treat (ITT) sample. Controlling for baseline scores as covariates (T1), one-way between-groups analysis of covariance (ANCOVA) tests

were carried out for each of the outcome variables to compare differences between groups (IG vs. WLC) at T2 and T3 separately. The use of ANCOVAs has been advocated when analysing randomised pretest, posttest, follow-up designs and controlled trials due to its superior statistical power, precision, and ability to control for any pre-treatment group differences (Rausch et al., 2003; Vickers and Altman, 2001). For attentional bias, one-sample t-tests were performed to compare scores on the dot-probe task against zero.

3.   Results

Prior to conducting analyses, data were inspected and no significant departures from statistical assumptions were detected. Listwise deletion was used to address the few missing data (2%) at T2 and T3. Levene's tests were significant for some of the ANCOVA analyses, which indicates possible violations of the homogeneity of variance assumption. However, when group sizes are equal, F-tests are fairly robust to this violation (Blanca et al., 2018), so no adjustments to these analyses were deemed to be necessary. To control the familywise error rate of multiple analyses, the Bonferroni-Holm method (Holm, 1979) for adjusted p-values was used. Results were defined as significant if the unadjusted p-values were less than or equal to the Bonferroni-Holm corrected p-value.

3.1.   Pre-treatment comparisons

Prior to intervention, no significant associations were found between the groups and participants' gender, ethnicity, age groups, number of years in RCIs, living together with siblings and type of child maltreatment (all ps > .05; see Table 1). No significant differences (ps > .05) emerged on most of the primary and secondary

outcome measures at baseline, except for the ER strategies of self-blame [$t(98) =$ 2.21, $p = .03$, $d = .44$] and planning [$t(98) = 2.21$, $p = .03$, $d = .44$], and hyperactivity symptoms [$t(98) = 2.91$, $p = .01$, $d = .58$], and prosocial behaviour [$t(98) = 2.47$, $p =$ .02, $d = .50$]; these were all significantly higher in the IG than the WLC group. Moreover, in relation to attentional bias, the IG had higher accuracy in incongruent trials than the WLC group at baseline [$t(98) = 2.08$, $p = .04$, $d = .42$]. Since even small and non-significant group differences in outcome variables at baseline can have a confounding effect in RCT analyses (Twisk et al., 2018), these preliminary analyses confirmed the need for including T1 outcome variables as covariates.

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3.2.   Primary Treatment Outcomes

Unadjusted pre-/post-intervention and follow-up mean comparisons for all outcomes are reported in Table 2. The results of covariance-adjusted post-intervention and follow-up mean comparisons, along with effect sizes for each outcome variable, can be found in Table 3 and are summarised below.

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3.2.1. Emotional and behavioural difficulties and positive attributes

Scores for emotional problems, conduct problems, and hyperactivity, as well as overall internalising and externalising symptoms, total difficulties and total impact, were significantly lower for the IG than the WLC group at both T2 and T3. Prosocial behaviour scores were found to be significantly higher for the IG than the WLC group at both T2 and T3. No significant SSL effects on peer problems were found at either time-point. Medium to large effect sizes were found for all significant effects, indicating that the SSL reduced most emotional and behavioural difficulties for participants.

3.2.2. Anxiety and depression

Compared to the WLC group, the IG reported significantly lower scores for generalised anxiety, separation anxiety, panic disorder, social phobia and obsessive-compulsive disorder at both T2 and T3. Large effect sizes were found for all effects, demonstrating that the SSL reduced participants' anxiety and depressive symptoms. However, no significant SSL effects were identified in the behavioural assessments of anxiety.

3.3.   Secondary Treatment Outcomes

3.3.1.   Cognitive emotion regulation strategies and self-esteem

All maladaptive ER strategies were significantly lower for the IG than the WLC group at both T2 and T3. Adaptive ER strategies were significantly higher for the IG than the WLC group at both time-points, except for adaptive ER strategy of putting into perspective. Large effect sizes were found for all effects, demonstrating that the SSL reduced participants' use of maladaptive strategies and increased their

use of adaptive strategies. No significant SSL effects on self-esteem emerged at either time-point.

3.3.2. Attentional bias

Participants had accuracy levels ranging from 75% to 82% at all time-point assessments, hence no data was removed from attentional bias analyses due to low accuracy (Nozadi et al., 2016). However, outliers and inaccurate trials were removed (T1: 3%; T2: 2%; T3: 2%).

Comparing attentional bias scores against zero, no significant attentional bias to threat was found across the whole sample at baseline, $t(95) = -0.91$, $p = .37$. ANCOVAs revealed no significant effects of the SSL on attentional bias, or RTs and accuracy across congruent and incongruent trials at either time-point. Across the two groups, there were two types of participants at baseline: those who attended toward threat (bias score > 0, $n = 42$) and those who attended away from threat (bias score < 0, $n = 58$). ANCOVAs were run separately for the two types of threat bias and no significant effects were found at either time-point for attentional bias away from or toward threat.

3.3.3. Inhibitory control

Inhibitory control, as measured by level of accuracy across incongruent trials, was significantly higher for the IG than the WLC at both T2 and T3. Additionally, accuracy across congruent trials was also significantly higher for the IG than the WLC group at both T2 and T3. RTs for congruent trials were significantly lower for the IG than the WLC group at T3 only, while no significant group differences were found in RTs for incongruent trials at either time-point. Medium to large effect sizes

were found for all significant effects, indicating that the SSL improved participants' inhibitory control.

4. Discussion

To our knowledge, this is the first RCT study to assess the effectiveness of an evidence-based prevention programme (SSL) among a sample of institutionalised children and adolescents within the child welfare system in the LMIC of Mauritius.

In line with the first hypothesis and in agreement with previous studies using the SSL in schools settings (Essau et al., 2014b, 2019; Fernández-Martínez et al., 2019), the trial treatment indicates significant improvements, with moderate to strong SSL effects, on children's internalising and externalising problems, overall difficulties and the impact of these difficulties on their everyday lives at both post-intervention and 3-month follow-up. Specifically, there were significant reductions in emotional problems, conduct problems and hyperactivity, and significant improvements in prosocial behaviour at both time-points, although no significant SSL effects on peer problems were found. Thus, consistent with previous studies, participation in SSL was associated with a significant reduction not only in emotional problems but also in behavioural problems (Essau et al., 2014b; Fernández-Martínez et al., 2020). Despite the SSL not being specifically designed for problem behaviours, the varied components within SSL (e.g. improving social skills, problem-solving skills, self-esteem) might improve non-targeted behavioural problems such as conduct problems and hyperactivity; hence learnt skills acquired during sessions might have functioned as protective factors towards not only internalising, but also externalising behaviour problems (Andrade et al., 2014; Andrade and Tannock, 2012). Positive attribute skills when implemented effectively, may influence and counter the negative impacts of

disruptive behaviours such as conduct problems and improve social functioning over time (Carson, 2013; Criss et al., 2002).

Results also indicate large significant reductions in depressive symptoms and overall anxiety, as well as symptoms of specific anxiety disorders (i.e., symptoms of generalised anxiety, separation anxiety, panic, social phobia and obsessive-compulsive disorders), both immediately after treatment and 3 months later. The findings are consistent with recent SSL research (Essau et al., 2019; Fernández-Martínez et al., 2019; Orgilés et al., 2019) and other CBT-based transdiagnostic programmes (Barlow et al., 2004; Chu et al., 2016; Ehrenreich et al., 2009) targeting anxiety and depression among young people in school or community settings. The positive impact of SSL among children in RCIs is worth discussing. By being in the RCI, these children have experienced separation from their family because of various kinds of harmful family environment which could put them at a greater risk for developing mental health problems compared to children in the general population (Cameron et al., 2009). Some studies have indeed shown higher prevalence of emotional and behavioural problems among children in RCIs than those in the community setting (Vorria et al., 1998). However, other studies have failed to find any significant differences in the prevalence of emotional and behavioural problems among children in these two types of settings (Fernández-Molina et al., 2011). What is consistent across settings seems to be factors that are associated with emotional and behavioural problems, including low social skills and use of maladaptive regulation strategies (Knorth et al., 2008). It is therefore not surprising that by targeting these core risk factors of mental health problems, SSL is effective in reducing emotional and behavioural problems, independent of settings from which the children were recruited. Hence it is noteworthy that the positive impact of SSL among the

vulnerable population of institutionalised children adds support for the use of transdiagnostic interventions within residential contexts. Given our positive findings, future studies are needed to replicate the implementation of SSL in RCIs in high-income countries. A meta-analysis of transdiagnostic interventions in RCIs indicated large treatment effects when interventions focus on social-cognitive and social-emotional skills training in these settings (Knorth et al., 2008).

The reduction in anxiety and depressive symptoms may be attributed to the integrated SSL components of cognitive and behavioural techniques that serve to target emotion dysregulation. For example, relaxation training has been used to help reduce children's physiological response to anxiety (Larson et al., 2010; Norton, 2012). Thus, relaxation may have served as an adaptive ER strategy in the current study by reducing anxiety symptoms such as panic. The efficacy of SSL validates the strong components of behavioural activation, social skills training, cognitive preparation and exposure in being efficacious for treating anxiety and depressive symptoms.

In line with the second hypothesis, the SSL intervention caused significant increases in the use of adaptive ER strategies of acceptance, positive refocusing, refocus on planning and positive reappraisal, and significant reductions in the use of maladaptive ER strategies of self-blame, rumination, catastrophising and other-blame, at both post-intervention and follow-up. An important aim of SSL is to improve resilience in young people, and such adaptive cognitive ER strategies are considered to be important markers of resilience (Mak et al., 2011). Research suggests that working mechanisms of behavioural activation and cognitive reappraisal are effective in reducing internalising symptoms (Dimidjian et al., 2006; Forman et al., 2007) by enhancing adaptive ER strategies in building resilience (Hoge et al., 2007; Southwick

et al., 2004). Moreover, adaptive ER strategies matter most in particular circumstances (Aldao and Nolen-Hoeksema, 2012), notably childhood adversity of maltreatment and in the child welfare system (Kim-Spoon et al., 2013; Robinson et al., 2009).

Being the most significant predictors of psychological maladjustment in the young population (Garnefski et al., 2009), rumination and catastrophising were used as cognitive coping strategies less following the SSL intervention, making children and adolescents less vulnerable to emotional problems (Kraaij et al., 2003). By targeting emotional understanding and positive and negative emotionality, it is arguable that skills-based cognitive and behavioural ER has largely promoted children's active form of acceptance and thoughts about future steps and handling of negative life events.

Participants reported better inhibitory control both immediately and 3 months after the SSL intervention. This suggests that following the SSL, participants were able to resist interference from non-relevant distractors through the use of more effortful cognitive processing and executive control (Posner and DiGirolamo, 1998; Ridderinkhof and van der Stelt, 2000). The implementation of exposure techniques that optimise inhibitory learning and cognitive restructuring during treatment may compensate for identified deficits and maximise inhibitory control processes (McGuire and Storch, 2019; Waters et al., 2015), despite early adversity of child maltreatment.

In the present study, there was no evidence of attentional bias at baseline in our sample, and no evidence of attentional bias change following SSL intervention. The absence of an attentional bias at baseline could be due to a number of methodological factors. Recent meta-analyses suggest that the use of pictorial over

linguistic stimuli and the presentation of threat stimuli (e.g. angry faces) for longer durations (1000ms rather than 500ms) seems to moderate the link between attentional bias and anxiety (Cristea et al., 2015; Dudeney et al., 2015). The attention patterns emerging at 1000ms angry-stimulus presentation in the emotion dot-probe task may reflect top-down control processes rather than vigilance to threat (Romens and Pollak, 2012). It may be that children were vigilant to anger cues, but they did not dwell on these cues and this pattern is therefore not captured in the reaction time methodology of the emotion dot-probe task used. Moreover, difficulty in differentiating between angry and neutral faces in the task might have influenced the pattern of findings in the present sample. Impaired discrimination between threatening and neutral emotional signals, where neutral facial expressions are also interpreted as negative, have been observed in individuals with experiences of trauma (Fani et al., 2011; Felmingham et al., 2003).

Some outcomes (e.g. anxiety symptoms) showed stronger SSL effects at post-intervention than at follow-up (i.e. effect sizes were smaller after three months), indicating that the SSL may be more effective in RCIs in the short-term. Despite the long-term benefits of the SSL found among children in regular school settings (Essau et al., 2019; Fernández-Martínez et al., 2019; Orgilés et al., 2019), our findings are consistent with meta-analysis findings, which indicate that CBT-based interventions in RCIs show promising short-term outcomes but less favourable long-term outcomes (Knorth et al., 2008). This effect might relate to the complexity and severity of social and interpersonal difficulties that are typically observed among maltreated children in care (Tarren-Sweeney, 2017). Even in optimal conditions (i.e. care, therapy, etc.), the longer-term developmental course of trauma- and attachment-related difficulties may make recovery for many children and adolescents slow (Sonuga-Barke et al., 2017).

To ensure intervention effects over time, repeated applications of the intervention should be carried out (Stockings et al., 2016); adding booster sessions to CBT interventions counters their declining long-term efficacy and helps maintain treatment gains more effectively in individuals with anxiety and depression (Gearing et al., 2013).

5.   Limitations

The present study has some limitations that need to be considered when interpreting its findings. First, the sample size was small; further RCTs with larger samples of young people in RCIs are needed. Second, the study relied on referral reports from RCIs and did not use any structured diagnostic interviews. Still, participants' levels of emotional distress were assessed by the emotional problems subscale of SDQ because it discriminates well between children with and without psychopathological symptoms (Muris et al., 2003; Stallard et al., 2007). Furthermore, at baseline, moderate to high emotional distress was reported in both groups. Third, the effects of SSL were assessed immediately and 3-months after treatment. Further RCTs in RCIs should examine the long-term effectiveness of SSL along with treatment adherence, which is important for recovery from mental health problems. Fourth, participants' readiness to use mental health care as evidenced by the relatively low attrition in this study was perhaps higher than can be expected of the general population. Fifth, the Cronbach's alpha values for some subscales of the SDQ were quite low, which replicated results of several other studies (e.g., Essau et al., 2012), including those that were conducted in a low-income country (Essau et al., 2017). It has been suggested that the low internal consistency of some of the SDQ subscales might have been confounded by the reverseditems (Riso et al., 2010). Additionally,

the Cronbach's alpha values for some subscales of the CERQ-k were low, similar to findings reported in some other studies (e.g., Liu et al., 2016), which need to be considered in future research. Sixth, the use of multiple assessments would be informative. Although it is widely acknowledged that the best method of assessing psychopathology and its correlates in children is via multiple informants, studies have found parents less satisfactory as informants of emotional problems compared to self-report (Essau & Barrett, 2001). Additionally, given the low agreement among informants, the use of children's self-report measures seemed justified given the fact that anxiousness is an internally derived experience. More crucially, in addition to the self-report measures, our study used (a) video analyses of children's two-minute speech tasks at the first and last sessions of SSL to identify changes in behavioural indicators of anxiety, and (b) two experimental tasks to measure executive function. The use of these different approaches ensured a more objective measure of our intervention outcome than when self-report questionnaires are used alone. Finally, comparing the IG to the WLC group may have created an inflated effect size of SSL, which may be associated with positive changes due to the attention that participants in the IG received from trainers (Morales et al., 2018). Examining SSL efficacy against active controls (e.g. alternative psychological interventions) may diminish Hawthorne effects, so this is an important direction for future trials.

6.   Conclusion

Despite the limitations mentioned, this study demonstrated the effectiveness of SSL in reducing internalising and externalising symptoms and maladaptive ER strategies, as well as improving adaptive ER strategies and inhibitory control in institutionalised young people. Our findings lend support to the effectiveness of

interventions using a residential approach in reducing psychological distress (Watters and O'Callaghan, 2016) and have important implications for the implementation of evidence-based mental health interventions in RCIs in LMICs, not least because SSL can be implemented effectively by professionals with a wide range of experience (Essau et al., 2019).

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Table 1
Participant demographics and characteristics by treatment group at randomisation

	Intervention Group (*n* = 50)	Waitlist-Control Group (*n* = 50)	χ^2	*df*	*p*
	%	%			
Age groups			4.67	2	.10
8 – 10 years	24	40			
11 – 13 years	44	44			
14 -15 years	32	16			
Gender (female)	74	78	.22	1	.64
Nationality					
Mauritian	100	100	-	-	-
Other	-	-			
Ethnicity			.62	2	.73
Creoles	76	70			
Hindu	22	26			
Muslim	2	4			
Number of years in RCI			4.34	3	.23
< than 1 year	-	-			
2 – 4 years	32	42			
5 – 7 years	36	30			
7 – 10 years	22	10			
> than 10 years	10	18			
Together with sibling(s) in RCI (yes)	60	40	4.01	1	.46
Type of abuse on admission to RCI			7.91	5	.16
Sexual abuse	10	16			
Physical abuse	10	2			

Child neglect	32	32
Child at risk	34	22
Abandonment	12	18
Child trafficking	2	10

Table 2

Unadjusted means for all outcome variables at pre-intervention (T1), post-intervention (T2), and follow-up (T3)

	Intervention Group			Waitlist-Control Group		
	Pre	Post	Follow-up	Pre	Post	Follow-up
Outcome	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
SDQ						
Emotional problems	6.20 (2.78)	5.28 (2.38)	4.60 (2.44)	5.34 (2.58)	6.42 (1.70)	7.10 (1.88)
Conduct problems	5.12 (2.07)	3.88 (1.35)	3.72 (1.29)	4.90 (2.21)	5.50 (1.07)	5.46 (1.01)
Hyperactivity	6.04 (1.83)	5.32 (1.49)	5.86 (1.55)	5.00 (1.75)	6.54 (1.46)	7.54 (1.13)
Peer problems	6.50 (1.68)	6.52 (1.73)	5.90 (1.49)	6.30 (2.26)	6.28 (2.22)	6.66 (1.67)
Prosocial behaviour	7.26 (2.03)	7.58 (2.18)	7.32 (2.77)	6.24 (2.10)	5.22 (1.04)	5.04 (0.82)
Overall externalising scores	12.56 (2.56)	12.54 (1.01)	12.78 (0.68)	11.50 (2.72)	14.42 (2.33)	15.88 (0.85)
Overall internalising scores	10.94 (3.82)	8.66 (3.92)	8.36 (4.03)	10.68 (4.04)	14.40 (1.20)	15.04 (1.31)
Total difficulties (without prosocial behaviour)	23.10 (5.50)	21.20 (4.16)	21.14 (4.15)	21.58 (5.97)	28.82 (3.44)	30.92 (2.10)
Total impact scores	6.06 (3.72)	2.66 (2.30)	2.88 (2.29)	5.20 (3.64)	7.96 (1.59)	8.88 (0.85)
RCADS						
Generalised Anxiety Disorder	10.16 (4.18)	7.30 (1.49)	8.26 (2.59)	9.56 (3.98)	14.50 (2.49)	14.56 (3.57)
Separation Anxiety Disorder	9.40 (4.71)	6.02 (2.66)	9.04 (4.11)	8.84 (5.49)	16.06 (3.88)	14.58 (4.66)
Panic Disorder	9.88 (5.73)	8.04 (3.35)	8.90 (2.84)	9.36 (6.56)	19.22 (2.96)	17.16 (3.98)
Social Phobia	13.70 (5.25)	8.78 (4.07)	9.74 (4.07)	13.64 (6.32)	18.34 (4.58)	15.78 (5.45)
Obsessive Compulsive Disorder	10.08 (3.57)	6.28 (3.06)	6.64 (3.57)	9.04 (3.52)	12.66 (1.70)	12.98 (2.39)
Total anxiety (5 subscales)	53.22 (19.89)	36.50 (9.21)	40.44 (12.52)	50.10 (22.34)	85.88 (11.29)	72.48 (22.06)

Major Depressive Disorder	11.16 (6.43)	6.14 (2.90)	7.06 (3.08)	11.10 (6.15)	19.10 (2.67)	20.36 (2.31)
Behavioural assessment of anxiety						
Gaze	2.65 (.75)	3.88 (.63)	N/A	2.29 (.90)	3.78 (.86)	N/A
Vocal Quality	2.71 (.82)	4.00 (.76)	N/A	2.25 (.87)	3.69 (.88)	N/A
Length	2.53 (.92)	3.92 (.79)	N/A	2.12 (.91)	3.73 (.70)	N/A
Conversation flow	2.67 (.92)	4.06 (.80)	N/A	2.12 (1.00)	3.86 (.72)	N/A
Discomfort	2.59 (.84)	4.08 (.71)	N/A	1.96 (.85)	3.75 (.69)	N/A
CERQ-k						
Maladaptive ER						
Self-blame	10.66 (3.97)	5.90 (1.49)	5.46 (1.31)	8.98 (3.62)	10.74 (2.19)	11.12 (2.74)
Rumination	12.26 (3.81)	10.38 (2.06)	10.14 (2.43)	11.10 (3.66)	15.48 (2.69)	14.74 (2.96)
Catastrophising	11.00 (3.80)	8.46 (2.93)	7.04 (1.97)	11.22 (3.70)	14.46 (2.29)	14.22 (2.74)
Other-blame	10.70 (3.55)	6.56 (2.20)	5.90 (2.17)	9.48 (3.49)	10.52 (2.38)	10.84 (2.47)
Adaptive ER						
Acceptance	9.30 (2.83)	11.90 (2.12)	12.90 (2.43)	10.48 (3.27)	8.64 (1.98)	6.34 (1.68)
Positive Refocusing	13.12 (3.87)	15.14 (2.39)	15.70 (2.57)	12.94 (3.55)	11.88 (2.57)	12.86 (2.85)
Refocus on Planning	13.14 (3.74)	14.78 (2.54)	15.16 (2.99)	11.62 (3.12)	9.20 (2.58)	8.14 (2.73)
Positive Reappraisal	12.16 (3.69)	15.40 (3.09)	15.34 (2.40)	11.58 (3.74)	11.12 (2.90)	9.84 (2.91)
Putting into Perspective	11.42 (3.26)	11.68 (2.39)	11.74 (2.51)	11.46 (4.14)	13.12 (3.76)	12.58 (3.36)
Self-Esteem	22.74 (4.67)	25.18 (2.48)	25.40 (1.96)	23.86 (4.16)	26.00 (3.15)	26.8 (2.64)
Emotion Dot-Probe task (Attentional Bias)						
Congruent trials						
RT	556.18 (96.07)	517.55 (87.89)	523.64 (83.90)[a]	552.33 (112.37)	552.89 (117.87)[b]	550.26 (96.58)[a]
Accuracy (%)	80.48	80.83	78.00[a]	75.13	76.22[b]	73.16[a]

Incongruent trials						
RT	538.33 (102.31)	528.27 (93.74)	542.48 (79.24)[a]	549.53 (109.70)	555.38 (108.56)[b]	538.02 (111.89)[a]
Accuracy (%)	82.17	82.12	79.63[a]	73.97	76.65[b]	71.79[a]
Attentional bias (RT)	-10.42 (92.30)[b]	2.49 (28.67)	10.41 (51.74)	-9.13 (117.53)[b]	-26.23 (79.80)[a]	30.07 (66.65)
AB away from threat (RT)	-68.95 (62.57)	2.10 (28.79)	3.95 (20.41)	-77.24 (102.01)	-50.00 (80.93)	20.41 (64.45)
AB towards threat (RT)	78.91 (47.03)	3.12 (29.25)	20.97 (42.24)	71.37 (77.44)	4.18 (68.48)	41.41 (68.83)
Child Flanker task (Inhibitory Control)						
Congruent trials						
RT	859.93 (257.35)	778.95 (203.55)	731.96 (170.13)	861.20 (258.53)	839.24 (195.68)	870.56 (245.48)[b]
Accuracy (%)	86.97 (15.76)[a]	93.17 (9.32)[a]	92.86 (9.60)[a]	86.77 (11.63)[b]	84.39 (13.65)[b]	85.36 (12.75)[b]
Incongruent trials						
RT	910.45 (290.78)[b]	814.11 (190.81) [b]	827.66 (224.66)[a]	980.39 (312.75)[a]	907.15 (210.22)[a]	981.44 (305.79)[a]
Accuracy (%)	79.91 (19.69)[a]	86.94 (14.88)[a]	88.91 (13.64)[a]	75.95 (19.33)[a]	73.50 (19.46)[a]	76.32 (16.11)[a]

Note. SDQ = Strength and Difficulties Questionnaire; RCADS = Revised Children's Anxiety and Depression Scale; CERQ-k = Cognitive Emotion Regulation Questionnaire-kids (CERQ-k); ER = Emotion Regulation; RT = Reaction Time; AB = Attention Bias; [a]$n = 49$; [b]$n = 48$.

Table 3
Covariance-adjusted means and standard errors with Bonferroni-Holm corrected ANCOVA results for all outcome variables (ITT analyses) at post-intervention (T2) and follow-up (T3), controlling for pre-intervention (T1) scores

| | Post-intervention | | | | | | Follow-up | | | | | |
| | Intervention Group | Waitlist-Control Group | | | | | Intervention Group | Waitlist-Control Group | | | | |
Outcome	M (SE)	M (SE)	F	df	p	η_p^2	M (SE)	M (SE)	F	df	p	η_p^2
SDQ												
Emotional problems	4.80 (0.30)	6.40 (0.30)	14.43	1, 97	**< .001**	.13	4.62 (0.31)	7.08 (0.31)	30.92	1, 97	**< .001**	.24
Conduct problems	3.88 (0.17)	5.50 (0.17)	43.80	1, 97	**<.001**	.31	3.71 (0.16)	5.47 (0.16)	60.23	1, 97	**<.001**	.38
Hyperactivity	5.25 (0.21)	6.61 (0.21)	20.15	1, 97	**<.001**	.17	5.87 (0.20)	7.53 (0.20)	33.90	1, 97	**<.001**	.26
Peer problems	6.42 (0.08)	6.38 (0.08)	0.18	1, 97	.672	.002	5.88 (0.22)	6.68 (0.22)	6.48	1, 97	.013	.06
Prosocial behaviour	7.52 (0.24)	5.28 (0.24)	40.95	1, 97	**<.001**	.30	7.25 (0.28)	5.11 (0.28)	28.07	1, 97	**<.001**	.22
Overall externalising scores	12.33 (0.21)	14.63 (0.21)	57.47	1, 97	**< .001**	.37	12.77 (0.11)	15.89 (0.11)	391.28	1, 97	**< .001**	.80
Overall internalising scores	8.66 (0.41)	14.40 (0.41)	97.20	1, 97	**< .001**	.50	8.36 (0.43)	15.04 (0.43)	123.01	1, 97	**< .001**	.56
Total difficulties (without prosocial behaviour)	21.17 (0.54)	28.85 (0.54)	98.85	1, 97	**< .001**	.51	21.23 (0.46)	30.83 (0.46)	217.26	1, 97	**< .001**	.69
Total impact scores	2.66 (0.28)	7.96 (0.28)	175.08	1, 97	**< .001**	.64	2.91 (0.24)	8.85 (0.24)	294.06	1, 97	**< .001**	.75

RCADS

Generalised Anxiety Disorder	7.28 (0.29)	14.53 (0.29)	315.20	1, 97	**<.001**	.77	8.25 (0.44)	14.58 (0.44)	101.92	1, 97	**<.001**	.51
Separation Anxiety Disorder	6.06 (0.46)	16.02 (0.46)	231.00	1, 97	**<.001**	.70	9.09 (0.61)	14.53 (0.61)	39.72	1, 97	**<.001**	.29
Panic Disorder	8.06 (0.45)	19.20 (0.45)	311.60	1, 97	**<.001**	.76	8.92 (0.49)	17.14 (0.49)	142.05	1, 97	**<.001**	.59
Social Phobia	8.78 (0.62)	18.34 (0.62)	120.34	1, 97	**<.001**	.55	9.74 (0.68)	15.78 (0.68)	39.02	1, 97	**<.001**	.29
Obsessive Compulsive Disorder	6.24 (0.35)	12.75 (0.36)[a]	167.87	1, 96	**<.001**	.64	6.66 (0.43)	13.07 (0.43)[a]	109.02	1, 96	**<.001**	.53
Total anxiety (5 subscales)	36.53 (1.47)	85.79 (1.49)[a]	552.76	1, 96	**<.001**	.85	40.56 (2.55)	72.28 (2.58)[a]	76.11	1, 96	**<.001**	.44
Major Depressive Disorder	6.14 (0.39)	19.10 (0.39)	547.13	1, 97	**<.001**	.85	7.06 (0.39)	20.36 (0.39)	596.83	1, 97	**<.001**	.86

Behavioural assessment of anxiety

Gaze	3.79 (0.09)	3.87 (0.09)	0.48	1, 97	.490	.01	N/A	N/A	N/A	N/A	N/A	N/A
Vocal Quality	3.89 (0.10)	3.79 (0.10)	0.46	1, 97	.502	.01	N/A	N/A	N/A	N/A	N/A	N/A
Length	3.77 (0.08)	3.77 (0.08)	0.003	1, 97	.955	.00003	N/A	N/A	N/A	N/A	N/A	N/A
Conversation flow	3.97 (0.09)	3.95 (0.09)	0.03	1, 97	.856	.0003	N/A	N/A	N/A	N/A	N/A	N/A
Discomfort	3.91 (0.09)	3.89 (0.09)	0.02	1, 97	.884	.0002	N/A	N/A	N/A	N/A	N/A	N/A

CERQ-k
Maladaptive ER

Self-blame	5.89 (0.27)	10.74 (0.27)	159.29	1, 97	**<.001**	.62	5.54 (0.31)	11.05 (0.31)	159.24	1, 97	**<.001**	.62
Rumination	10.38 (0.34)	15.48 (0.34)	109.33	1, 97	**<.001**	.53	10.14 (0.39)	14.74 (0.39)	69.68	1, 97	**<.001**	.42
Catastrophising	8.51 (0.37)[a]	14.44 (0.37)	132.73	1, 96	**<.001**	.58	7.07 (0.34)[a]	14.21 (0.34)	218.95	1, 96	**<.001**	.70
Other-blame	6.52 (0.33)	10.56 (0.33)	75.04	1, 97	**<.001**	.44	5.91 (0.33)	10.83 (0.33)	107.89	1, 97	**<.001**	.53
Adaptive ER												
Acceptance	11.89 (0.29)	8.65 (0.29)	59.64	1, 97	**<.001**	.38	12.94 (0.30)	6.30 (0.30)	243.14	1, 97	**<.001**	.72
Positive Refocusing	15.14 (0.35)	11.88 (0.35)	42.65	1, 97	**<.001**	.31	15.71 (0.38)	12.85 (0.38)	27.94	1, 97	**<.001**	.22
Refocus on Planning	14.83 (0.37)	9.15 (0.37)	116.61	1, 97	**<.001**	.55	15.19 (0.41)	8.12 (0.41)	144.10	1, 97	**<.001**	.60
Positive Reappraisal	15.36 (0.42)	11.16 (0.42)	49.67	1, 97	**<.001**	.34	15.32 (0.38)	9.86 (0.38)	104.17	1, 97	**<.001**	.52
Putting into Perspective	11.68 (0.45)	13.12 (0.45)	5.19	1, 97	.025	.05	11.74 (0.42)	12.58 (0.42)	1.98	1, 97	.162	.02
Self-Esteem	25.17 (0.40)	26.01 (0.40)	2.14	1, 97	.147	.02	25.46 (0.33)	26.77 (0.33)	8.24	1, 97	.005	.08
Emotion Dot-Probe task (Attentional Bias)												
Congruent trials												
RT	518.17 (12.81)	552.25 (13.08)[b]	3.46	1, 95	.066	.04	524.02 (12.51)[a]	549.89 (12.51)[a]	2.14	1, 95	.147	.02
Accuracy (%)	80.00 (0.02)	77.00[b] (0.02)	0.80	1, 95	.374	.01	77.00[a] (0.03)	74.16[a] (0.03)	1.18	1, 95	.280	.01

Incongruent trials

			F	df	p	ES			F	df	p	ES
RT	532.06 (12.54)	551.43 (12.80)[b]	1.17	1, 95	.283	.01	545.25 (13.16)[a]	535.26 (13.16)[a]	.287	1, 95	.593	.003
Accuracy (%)	81.00 (0.02)	77.80 (0.02)[b]	1.12	1, 95	.292	.01	79.40 (0.03)[a]	72.00 (0.03)[a]	2.98	1, 95	.088	.03
Attentional bias (RT)	2.74 (8.06)[b]	-22.21 (8.06)[b]	4.80	1, 93	.031	.05	11.36 (8.13)[b]	27.31 (8.13)[b]	1.93	1, 93	.168	.02
AB away from threat (RT)	2.20 (10.43)[c]	-44.21 (11.01)[d]	9.35	1, 52	.004	.15	4.13 (11.20)[c]	20.66 (11.83)[d]	1.03	1, 52	.315	.02
AB towards threat (RT)	2.39 (12.26)[e]	4.82 (11.40)[f]	0.02	1, 38	.885	.001	19.22 (11.35)[e]	37.90 (10.55)[f]	1.45	1, 38	.236	.04

Child Flanker task (Inhibitory Control)

Congruent trials

			F	df	p	ES			F	df	p	ES
RT	779.11 (26.72)	839.07 (26.72)	2.52	1, 97	.116	.03	731.03 (29.18)	871.53 (29.78)[b]	11.35	1, 95	**.001**	.11
Accuracy (%)	93.14 (1.55)[a]	84.43 (1.56)[b]	15.67	1, 94	**<.001**	.14	92.84 (1.59)[a]	85.38 (1.61)[b]	10.88	1, 94	**.001**	.10

Incongruent trials

			F	df	p	ES			F	df	p	ES
RT	814.11 (23.85)[b]	893.83 (23.60)[a]	3.86	1, 94	.052	.04	838.68 (36.02)[b]	969.17 (35.65)[a]	6.58	1, 94	.012	.07
Accuracy (%)	85.87 (1.98)[a]	74.57 (1.98)[a]	16.18	1, 95	**<.001**	.15	88.21 (1.91)[a]	77.02 (1.91)[a]	17.16	1, 95	**<.001**	.15

Note. SDQ = Strength and Difficulties Questionnaire; RCADS = Revised Children's Anxiety and Depression Scale; CERQ-k = Cognitive Emotion Regulation Questionnaire-kids (CERQ-k); AB = Attentional Bias; ER = Emotion Regulation; RT = Reaction Time; [a]n = 49; [b]n = 48; [c]n = 29; [d]n = 26; [e]n = 19; [f]n = 22; Figures in bold indicate statistical significance after Bonferroni-Holm corrections for 79 separate analyses.
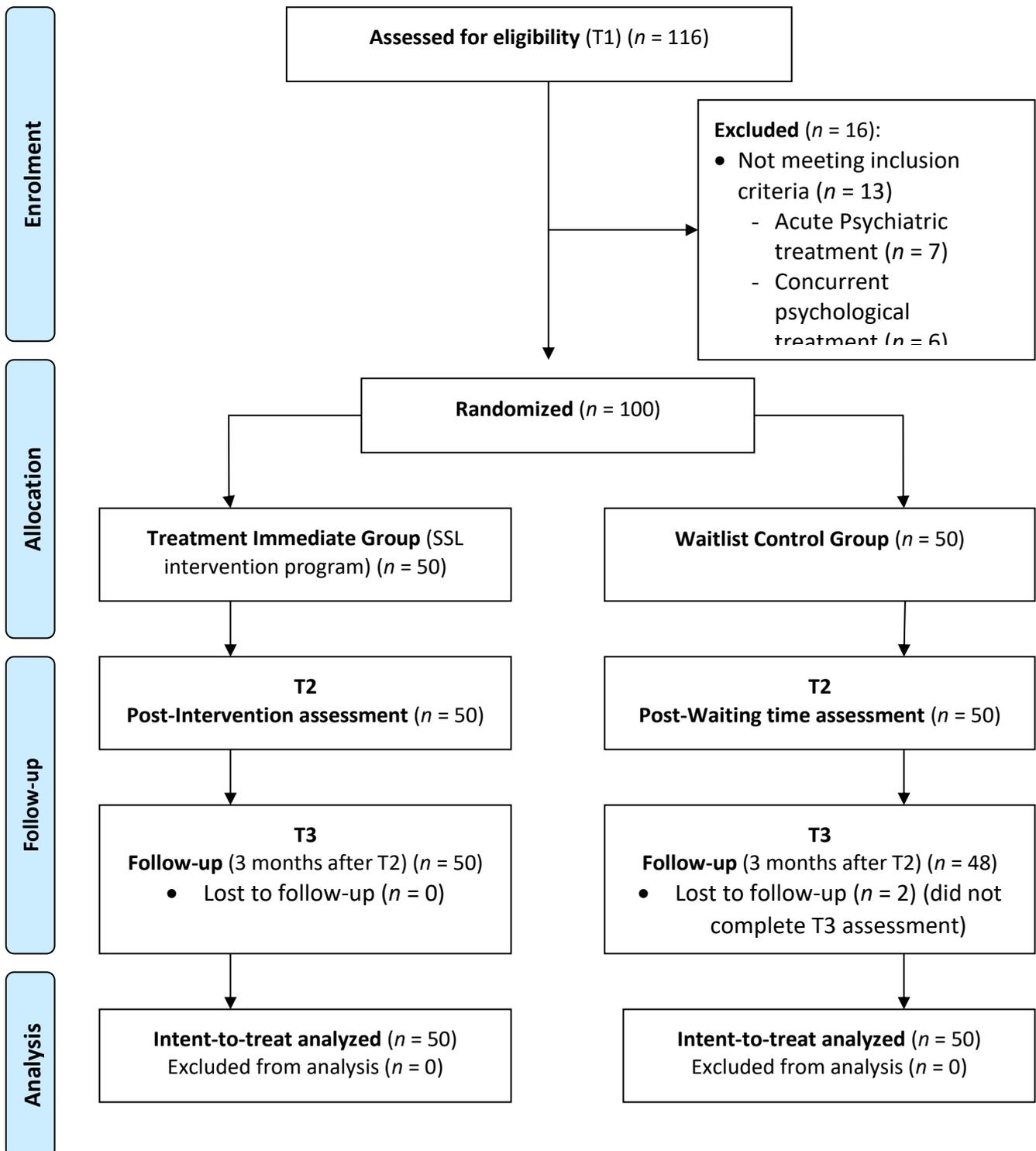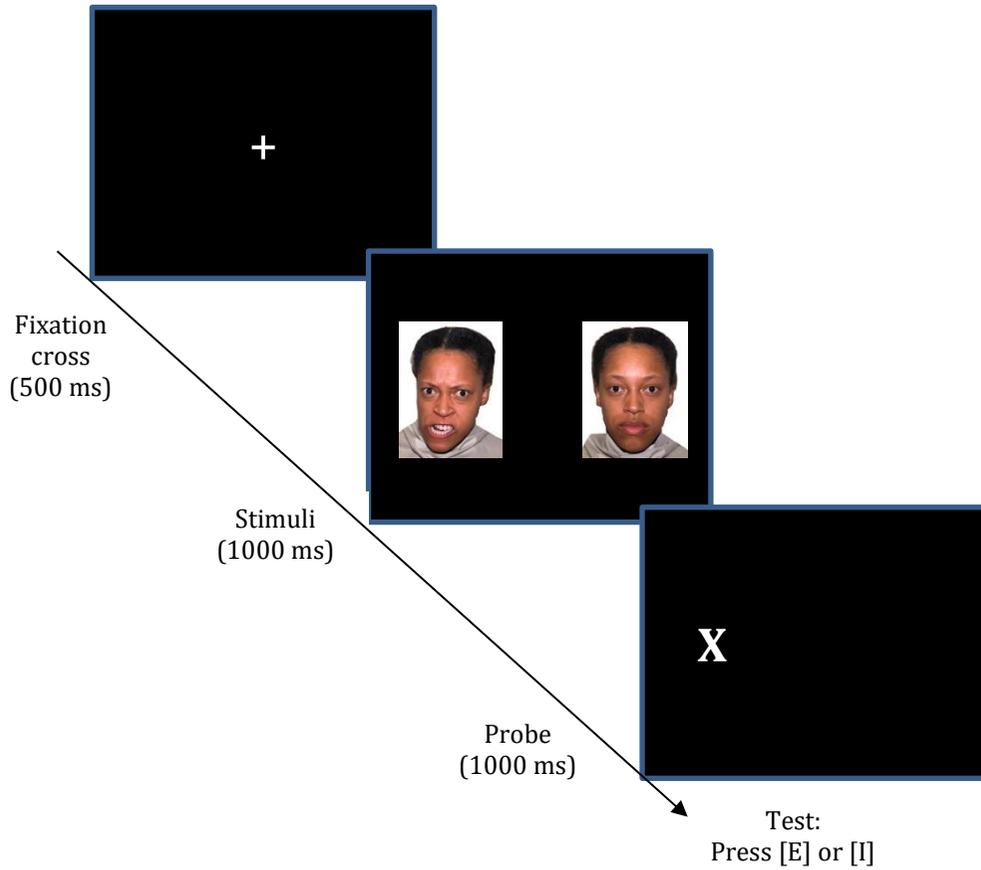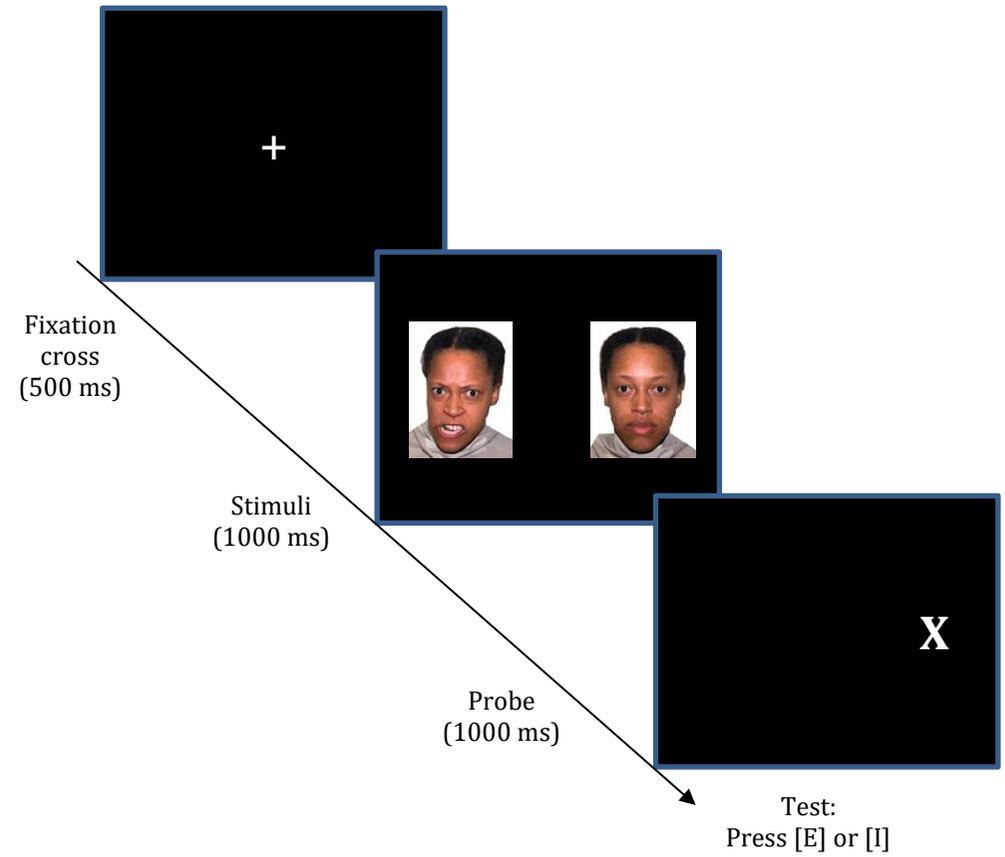
Figure 1: CONSORT Flow Diagram for the RCT

Congruent Trial

Incongruent Trial

Fixation
cross
(500 ms)

Stimuli
(1000 ms)

Probe
(1000 ms)

X

Test:
Press [E] or [I]

Fixation
cross
(500 ms)

Stimuli
(1000 ms)

Probe
(1000 ms)

X

Test:
Press [E] or [I]

Figure 2: Emotion dot probe task