# Improving Children's Mental Health and Wellbeing:

## A Pilot Study of the Magic Coat Program as a Child Group Therapy Intervention

By David A. Preece, PhD & Rodrigo Becerra, PhD

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**Abstract**

Mental health disorders in childhood, such as anxiety and depression, are prevalent and cause substantial burden of disease for children and their families. Cognitive behaviour therapy (CBT) programs are the most widely evidenced therapy approach for addressing mental health concerns in children, but still, a substantial number of children do not respond to existing programs. One challenge in implementing psychotherapy treatments for children can be in making the process of learning complex psychological skills understandable, engaging, and developmentally appropriate. The Magic Coat is a CBT program that attempts to address this challenge by using a set of named, marine animal characters, to help embody and communicate evidence-based CBT skills to children and their families. Here, we present the first empirical study of an intervention using the Magic Coat system. Specifically, we conduct a pilot study of the Magic Coat program in a 10-week child group therapy format, exploring its feasibility and impact on mental health. Participants were primary school-aged children recruited from Perth, Western Australia. Child mental health was assessed at the beginning (first session) and end (tenth session) of the program via standardized psychometric measures. Across both child-report and parent-report measures, the program significantly reduced children's mental health symptoms (e.g., depression and anxiety) and improved self-esteem, generally with medium to large effect sizes. Although the group sessions focused on children and not their parents, parents also reported improvements in their own mental health, highlighting potential value in the program for the wider family system. Children and their parents generally rated the program as having high acceptability and utility, highlighting in their qualitative feedback its engaging nature and the value of the practical skills and resources provided. Overall, our findings therefore provide initial support for the feasibility and efficacy of the Magic Coat program in this 10-week group therapy format. Our results can inform the design of larger future studies (e.g., with randomized control trial designs), to explore in more detail the contribution of specific Magic Coat program components, the long-term sustainability of effects, and performance relative to control groups or other treatment approaches.

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Mental health disorders in childhood, such as anxiety disorders and depression, are prevalent and cause substantial burden of disease. Estimates suggest that, worldwide, around 15% of children have at least one mental health disorder (Whitney & Peterson, 2019). Comorbidity, where more than one mental health disorder is present, is also common, with one recent estimate placing this at around 6.4% of children worldwide (Vasileva et al., 2021). Moreover, a substantial number of children do not meet the criteria for a mental health disorder, yet still experience significant levels of distress or sub-clinical symptoms (Uchida et al., 2018). Such mental health symptoms can have a dramatic impact on the quality of life of these children and their families, impacting well-being, academic performance, and interpersonal functioning (Martinsen et al., 2016), as well as being a prominent risk factor for later suicide (Peyre et al., 2017). The treatment of child mental health issues is therefore of vital importance.

Cognitive behaviour therapy (CBT) represents one of the most evidence-based treatment approaches for addressing mental health difficulties in children (Grave & Blissett, 2004; Hofmann et al., 2012). A core principle of CBT is that thoughts, behaviours, and feelings are connected, and as such, strategies that change our thinking or behaviour patterns can have powerful impacts on our emotions and mood (Beck, 2020). In this way, much of cognitive behaviour therapy involves the teaching of cognitive or behavioural emotion regulation skills (Preece et al., 2021), for example, cognitive reappraisal (where one changes the way they are thinking about a situation to change its emotional impact; Gross & John, 2023) and mindfulness (where one adopts a non-judgemental, accepting attitude towards difficult thoughts and feelings, and tries to focus on the present moment during valued activities; Baer, 2015). Because many mental health disorders are underpinned by

dysregulated levels of emotion (Sheppes et al., 2015), this means that CBT has strong transdiagnostic relevance across a range of mental health disorders, including anxiety disorders and depression (Aldao et al., 2010). However, while psychotherapy approaches like CBT can overall have good effectiveness in children (Hofmann et al., 2012), there remains a meaningful portion of children who do not respond to treatment, or who have difficulties engaging in the treatment process (Lundkvist-Houndoumadi & Thastum, 2017). This highlights the important need for continued innovation in the treatment space.

One key challenge in implementing CBT with children can be in making the process of learning complex psychological skills understandable, engaging, and developmentally appropriate (Grave & Blissett, 2004). In this paper, we focus on one recent attempt to address this issue, known as *the Magic Coat*. The Magic Coat is a concept and set of resources developed by Wilcox (2018), designed to help address mental health difficulties and improve well-being among children and their families. Central to the Magic Coat is the idea that evidence-based CBT skills and concepts are tied to a set of named, marine animal characters (e.g., Tate the Turtle, Sebastian the Seahorse, Solomon the Surfboard, Obi the Octopus, the Pocket Full of Starfish, Bessam the Beluga Whale, Sammy Sun). The "Magic Coat" refers to a yellow coat children can wear – or imagine wearing – where they can "carry with them" these various characters as a reminder of useful skills and values (Wilcox, 2023). The core principle is that tying evidence-based psychological concepts to individual characters might help increase child engagement with (and retention of) the concepts, and can help to facilitate psychoeducation and teaching of core CBT skills. A marine theme was selected for the characters to try to maximize cross-cultural relevance (the Magic Coat Foundation, 2024).

Magic Coat resources – for children or their parents – have been disseminated by the Magic Coat Foundation for several years via books and workshops developed by Di Wilcox (e.g., Wilcox, 2018, 2023; the Magic Coat Foundation, 2024). In recent years, a clinical

psychologist member of our research team (DP) has also collaborated with Di Wilcox to advise on the inclusion and implementation of some additional CBT emotion regulation skills, such as cognitive reappraisal (Gross & John, 2003), mindfulness (Baer, 2015), and emotion psychoeducation to build emotional awareness (Preece & Sikka, 2024). Magic Coat concepts have also recently been integrated within Perth Children's Hospital, the largest children's hospital in Western Australia.

To date, there have been no empirical studies testing the efficacy of the Magic Coat. Our aim here was therefore to conduct the first pilot study of the Magic Coat system. The intervention took the form of a 10-week child group therapy program, targeted at children aged 7 to 11. We were interested in exploring the feasibility of the program in this format, as well as its impact on child mental health and well-being. Given that children's mental health can also be influential for their parents' mental health (Bennett et al., 2012), as a secondary objective we also explored changes in parental mental health.

## Method

### The Magic Coat 10-Week Group Program

This version of the Magic Coat program was designed to be conducted as a face-to-face child group therapy program over 10-weeks, with one session per week. All sessions were around 1-hour in length, except the final session which was 1.5 hours. Only the child participants (not their parents) were present throughout the majority of sessions – with the exception being the final ($10^{th}$) session – where children and their parents were both present throughout, and where children collaborated with the group facilitators to teach and summarize the program content to their parents. At the first session, children (and by extension their parents) were given a Magic Coat book (Wilcox, 2023) that summarized much of the program's content, with the idea being that this reference would help to reinforce the program concepts at home throughout the program. After each session, upon picking up

their child, parents were also given a 1-page summary sheet of the sessions' activities and the relevant character(s) and associated skill(s) learned, to help enable them to encourage their child to implement the concepts outside of the group sessions.

This Magic Coat program was designed as a transdiagnostic cognitive behavioural therapy (CBT) program for primary school-aged children (7 to 11 years old). It aimed to build children's general capacity to regulate emotions and stress (and therefore impact associated psychological symptoms like depression and anxiety) and build self-confidence and healthy interpersonal skills. Session content in the 10-week program was designed by Di Wilcox (Magic Coat founder/creator and a trained schoolteacher) and Dr David Preece (a registered clinical psychologist and academic). Sessions involved combinations of psychoeducation, practical skills practice, and small-group time discussing personal experiences, strengths, and challenges. Session activities spanned a variety of formats to try to maintain engagement (e.g., art/craft activities, activities requiring active movement, role playing, periods listening to information or demonstrations).

Across the 10 sessions, sessions were generally themed around a Magic Coat character, with each character designed to embody or assist with the teaching of an evidence-based CBT skill or concept. For example, *Sebastian the Seahorse* (who is a "thought detective") and *Omelia and Pandora* (who are an Oyster and a Pearl) are used to teach about the connection between situations, feelings, thoughts, and behaviours, the impact of negative self-talk, and how the emotion regulation strategy of cognitive reappraisal (Gross & John, 2003) can be used to manage stress. A key focus of the program is on the role that thinking patterns play in how one ends up feeling and acting (Gross, 2015), and how one can develop skills to identify and manage negative thinking patterns more effectively. *Sammy Sun* and *Solomon the Surfboard* are used to teach mindfulness and acceptance skills (Baer, 2015), aiming to develop a mindset of acceptance, tolerating emotions, and "surfing life's waves".

*Tate the Turtle* is used to teach about courage, and building resilience to face the challenges in life that can arise when one walks in meaningful directions (Harris, 2006). *Obi the Octopus* is used in psychoeducation about the different types of emotions, facilitating skills in recognizing and expressing emotion in healthy ways (i.e., building emotional awareness or reducing alexithymia; Preece & Sikka, 2024). The *Magic Beach Ball* and *Pop the Cork* are used to teach interpersonal skills and assertiveness, in terms of handling bullying or interpersonal conflicts, and how to communicate effectively (Krumholz et al., 2014). *Meshell and the Magic String of Shells* are used to teach about the value of relationships, and harnesses the idea of transitional objects (Eisen & Schaefer, 2007) to help children feel more connected to important people in their life. And the *Pocket Full of Start Fish*, *Bessam the Beluga Whale*, and the *Magic Crown* are used to teach about the different strengths everyone has, and how to value these strengths in ourselves and others (e.g., Conoley et al., 2015). As aforementioned, core to the idea of the program is that children have a "Magic Coat", where they can carry these different characters with them, reminding them of core skills and values to help them confidently navigate their world in meaningful ways (Wilcox, 2023). During the program, a combination of posters, art materials, props, and figurines based on all these characters are used to help make the characters and concepts more concrete and engaging.

**Participants and Procedure**

This pilot running of the Magic Coat program was conducted in a group therapy room at the university psychology clinic (Robin Winkler Clinic) of the University of Western Australia in Perth, Australia. Two groups were run to provide data for this study. The 10-week groups were run corresponding to the Western Australian school terms in 2023, one running in Term 3 and the other in Term 4. The group sessions were principally facilitated by Di Wilcox and Dr David Preece (i.e., at least two facilitators were present at a session), regularly assisted by 2-3 Magic Coat Foundation staff/volunteers.

Recruitment of children aged between 7 and 11 years old was conducted via the Magic Coat Foundation, which advertised the opportunity to participate through school and parent networks in Perth. Child participants were not required to have a diagnosed mental health disorder, though the study was advertised to parents as a program designed to help their children better manage stress and anxiety. Children were dropped off and signed-in by their parents at each session, with a separate large room within the clinic provided for parents to wait in. As part of the first (pre-test) and last (post-test) sessions, children and one of their parents filled out a battery of psychometric questionnaires to help evaluate the acceptability and effectiveness of the program.

A total of 36 children began the study and completed the questionnaire battery at pre-test, with 31 parents also completing the battery at pre-test (some parents had multiple children in the study). Of these, 24 children and 20 parents completed the study and provided data at *both* pre-test and post-test,[1,2] and thus they comprised our main sample for analysis in this study. Two parents in the final sample provided parent report data for multiple (2) children in the program, thus increasing the number of data points to 22 in the parent-report analysis (except for the parental reports on their own mental health, where only one data-point was used). Beyond these, an additional one parent and three children provided data only at post-test; these data were therefore not included in the pre-post comparisons of psychometric scores, but their data were included in terms of the post-test ratings of the

[1] One of these 24 children, at the post-test, provided enough data only on the CRSES, not the RCADS-25. Hence there were 24 child data-points for the CRSES, but only 23 for the RCADS-25.

[2] Another one child completed the pre-test and post-test questionnaires, but they were excluded from our sample because it was judged that their post-test questionnaire data was not valid. Their parent flagged to the research team during the final session (where the post-test questionnaires were completed) that their child had an extremely bad day at school. This child presented as visibly distressed during the final session and spent the majority of it at the back of the room sitting under a table (not engaged in the session). In their post-test questionnaire, their rating of how much they liked the program was 1/5 (really disliked it a lot), their rating of the program's helpfulness was 1/5 (really unhelpful), and in their qualitative feedback in response to what they liked best about the program they wrote "NOTHING!" and what they disliked most they wrote "NOTHING!". Given this context, it was judged that the child's post-test questionnaire responses were likely not valid, and these data were excluded from analysis as an outlier (though, the broad pattern of results does not change if this participant is included). The questionnaire responses of their parent were included in the parent-report analyses.

program's feasibility and helpfulness and their qualitative feedback responses on the program.

In the final child sample used for the pre-post comparison analysis, 54.2% of the sample were female and 45.8% were male. The children's average school year was 3.41 (*SD* = 1.38, range = year 1 to 6). Parents reported that 45.83% of these children were currently undergoing some other form of formal mental health treatment (such as psychotherapy or medication-based treatment), 50% were not, and for 4.16% this information was not reported. In terms of parent respondents' demographics, 69.6% were mothers, 13% were fathers, and 4.3% were grandmothers. Their average age was 43.6 years (*SD* = 7.52, range = 27-63).

## Measures

To examine the program's impact, the following measures were administered to the child participants and one of their parents at the commencement (pre-test) and end (post-test) of the program.[3]

### Parent Report Measures.

***Revised Children's Anxiety and Depression Scale (RCADS).*** The RCADS (Chorpita et al., 2000), in its parent report form, is a 47-item questionnaire where parents report on how frequently anxiety and depression symptoms are experienced by their child. Items are answered on a 4-point Likert scale, ranging from 0 (Never) to 3 (Always), with higher scores indicating more severe symptoms. Several subscales can be extracted, corresponding to different types of symptoms: *Social Phobia*, *Panic Disorder*, *Major Depression*, *Separation Anxiety*, *Generalized Anxiety*, and *Obsessive-Compulsive* symptoms. These can also be combined into various composite scores that are commonly used in the literature. All

[3] Some participants had missing data for some items within a questionnaire. In cases where the number of missing items was less than 20% the missing data was imputed using expectation maximization (Gold & Bentler, 2000). In cases where missingness exceeded 20%, that questionnaire was considered incomplete and was not included in the analyses.

subscales can be combined into a *Total Score*, as an overall marker of psychological distress. All subscales, excluding Major Depression, can also be combined into a *Total Anxiety* composite. The RCADS has demonstrated good validity and reliability (Chorpita et al., 2005).

***Strengths and Difficulties Questionnaire (SDQ).*** The SDQ (Goodman, 1997), in its parent report form, is a 25-item questionnaire where parents report on how frequently different strengths and difficulties are experienced by their child. Items are answered on a 3-point Likert scale, ranging from 1 (Not True) to 3 (Certainly True). Five subscales can be extracted: *Emotional Problems*, *Conduct Problems*, *Hyperactivity/Inattention*, *Peer Relationship Problems*, and *Prosocial Behaviour*. Higher scores indicate more difficulties, except for the Prosocial Behaviour subscale where higher scores indicate more prosocial behaviour. All subscales, excluding the Prosocial Behaviour subscale, can also be combined into a *Total Difficulties* composite. The SDQ has demonstrated good validity and reliability (Goodman, 1997).

***Child Anxiety Life Interference Scale (CALIS).*** The CALIS (Lyneham et al., 2013), in its parent report form, is a 16-item questionnaire[4] where parents report on the extent to which their child has anxiety symptoms that interfere with their child's life or the parent's life. Items are answered on a 5-point Likert scale, ranging from 1 (Not at all) to 5 (A Great Deal), with higher scores indicating more severe interference. Three subscale scores can be extracted, indicating interference in the *Parent's Life* (e.g., the parent's relationship with their partner), the life of the *Child At Home* (e.g., getting on with siblings), or the *Child Outside Home* (e.g., performance in the classroom). All items can also be summed into a *Total Score*, as an overall marker of symptom interference. The CALIS has demonstrated good validity

[4] Two of the 16 items were not included when calculating CALIS scores in this study: items 1a and 3c. Item 1a was administered, but had pervasive missingness across the sample, perhaps indicating that participants often assumed it was a description of the answer scale rather than an item to complete. Item 3c was not administered to any participants due to an administration error.

and reliability (Lyneham et al., 2013).

***Depression Anxiety Stress Scales-21 (DASS-21).*** The DASS-21 (Lovibond & Lovibond, 1995) is a 21-item self-report measure of one's own depression, anxiety, and stress symptoms. We used it here as an index of psychological distress levels in the parent because, whilst our program was focused on child mental health, we were also interested in exploring whether this might have indirect effects on other members of the family system. Items are answered on a 4-point Likert scale, ranging from 0 (Did not apply to me) to 3 (Applied to me very much or most of the time), with higher scores indicating more severe or frequent symptoms. In the literature often all items are summed into a total score as an overall marker of psychological distress. The DASS-21 has demonstrated good validity and reliability (Lovibond & Lovibond, 1995).

***Questions on Acceptability and Helpfulness of the Program.*** At the final session in the post-test questionnaire battery, we also administered several questions asking parents specifically about the acceptability and helpfulness of the Magic Coat program. These included two Likert Scale items answered on a 5-point scale: for the acceptability question ("*How much did you like this 10-week Magic Coat program?*") ranging from 1 (Really Disliked it A Lot), 2 (Disliked It), 3 (Unsure), 4 (Liked It), to 5 (Really Liked it A Lot); and for the helpfulness question ("*How helpful do you think this program was for your child?*") ranging from 1 (Really Unhelpful), 2 (Unhelpful), 3 (Unsure), 4 (Helpful), to 5 (Really Helpful). We also asked parents two open-response questions to allow for qualitative written feedback: "*What did you like most about this 10-week Magic Coat Program?*" and "*What did you dislike about it? Or is there anything you think could be improved for next time?*".

**Child Report Measures.**

***Revised Children's Anxiety and Depression Scale-25 (RCADS-25).*** The RCADS-25 (Ebesutani et al., 2012), in its child report form, is a 25-item questionnaire where children

self-report on how frequently they experience symptoms of anxiety and depression. Items are answered on a 4-point Likert-scale, ranging from 0 (Never) to 3 (Always). Two subscale scores can be extracted, for *Total Anxiety* symptoms and *Total Depression* Symptoms. All items can also be summed into a *Total Score*, as an overall marker of psychological distress. The RCADS-25 has demonstrated good validity and reliability (Ebesutani et al., 2012).

***Child Rosenberg Self-Esteem Scale (CRSES).*** The CRSES (Wood et al., 2021) is a 10-item self-report measure of self-esteem. Items are answered on a 4-point Likert scale, with higher-scores indicating higher levels of self-esteem. A *Total Score* is extracted by summing all items. The CRSES has demonstrated good validity and reliability (Wood et al., 2021).

***Questions on Acceptability and Helpfulness of the Program.*** Like for parents, at the final session in the post-test questionnaire battery, we also administered several questions asking children specifically about the acceptability and helpfulness of the program. These included two Likert Scale items answered on a 5-point scale: for the acceptability question ("*How much did you like this 10-week Magic Coat program?*") ranging from 1 (Really Disliked it A Lot), 2 (Disliked It), 3 (Unsure), 4 (Liked It), to 5 (Really Liked it A Lot); and for the helpfulness question ("*How helpful did you find this 10-week Magic Coat Program?*") ranging from 1 (Really Unhelpful), 2 (Unhelpful), 3 (Unsure), 4 (Helpful), to 5 (Really Helpful). We also asked child participants two open-response questions to allow for qualitative written feedback: "*What did you like most about this 10-week Magic Coat Program, or what were some of your favourite bits?*" and "*What did you dislike about it? Or is there anything you think could be improved for next time?*".

## Results

All statistical analyses were conducted using IBM SPSS 29 software.

### Overall Ratings of Program Acceptability and Helpfulness

At the post-test survey, parents rated the program as having high acceptability (i.e.,

that they "liked" the program; $M = 4.65$, $SD = .49$) and effectiveness (i.e., that they thought it was "helpful"; $M = 4.33$, $SD = .60$). Most parents (65.2%) indicated that they "really liked it a lot", and the remainder (34.8%) rated that they "liked it". Similarly, most parents rated the program as either "helpful" (52.2%) or "really helpful" (39.1%), with one parent "unsure" (4.3%), and one parent halfway between "unsure" and "helpful".

Ratings from the child participants broadly followed similar patterns, rating the program as having generally high levels of acceptability ($M = 4.11$, $SD = .97$) and helpfulness ($M = 3.94$, $SD = .81$). Most children indicated that they "really liked it a lot" (40.7%) or "liked it" (37.0%), three children were "unsure" (18.5%), and one "really disliked it a lot" (3.7%). Most children also rated it as "helpful" (44.4%) or "really helpful" (25.9%), with six children being "unsure" (22.2%), one rating it between "helpful" and "unsure" (3.7%), and one rating it as "unhelpful" (3.7%).

**Pre-Post Comparisons of Mental Health Scores on Psychometric Measures**

**Parent Reported Measures.** We conducted a series of paired *t*-tests to examine whether parents' ratings of their children's mental health changed from pre- to post-testing on the psychometric measures. Descriptive statistics for all parent-report measures are provided in Table 1.

On the RCADS, the total level of combined depression and anxiety symptoms (i.e., the RCADS Total Score) decreased from pre- to post with a large effect size ($p < .001$, Cohen's $d = 1.008$). This pattern of a statistically significant decrease in mental health symptoms was evident across all RCADS symptom categories: social phobia ($p = .001$, Cohen's $d = .735$), panic disorder ($p < .001$, Cohen's $d = 1.161$), major depression ($p = .003$, Cohen's $d = .653$), separation anxiety ($p = .014$, Cohen's $d = .574$), generalized anxiety ($p < .001$, Cohen's $d = .913$), and obsessive-compulsive symptoms ($p = .008$, Cohen's $d = .622$).

On the SDQ, there was a significant decrease in the level of total difficulties

experienced, with a large effect size ($p < .001$, Cohen's $d = .842$). At the subscale level, there were significant decreases in emotional problems ($p < .001$, Cohen's $d = .841$) and conduct problems ($p = .004$, Cohen's $d = .701$). Levels of hyperactivity, peer problems, and prosocial behaviour did not differ significantly from pre- to post-testing ($p > .05$).

On the CALIS, the overall level of life interference from the children's anxiety decreased significantly, with a large effect size ($p < .001$, Cohen's $d = .895$). These decreases spanned all aspects, including interference in the parent's life ($p = .004$, Cohen's $d = .679$), the child's life at home ($p = .003$, Cohen's $d = .719$), and the child's life outside of home ($p = .004$, Cohen's $d = .685$).

In terms of parents' own mental health, on the DASS-21, parents' ratings of their psychological distress decreased significantly from pre-test to post-test ($p = .020$, Cohen's d = .535) with a medium effect size.

**Table 1. Descriptive Statistics for the Parent-Report Measures at Pre- and Post-Testing**

| | Pre-Test Scores | | Post-Test Scores | |
|---|---|---|---|---|
| | ***M*** | ***SD*** | ***M*** | ***SD*** |
| **RCADS** | | | | |
| Total Score | 48.49 | 20.18 | 35.76 | 21.24 |
| Social Phobia | 15.73 | 4.19 | 12.32 | 5.61 |
| Panic Disorder | 5.95 | 5.26 | 3.59 | 5.06 |
| Major Depression | 8.18 | 5.01 | 5.91 | 5.25 |
| Separation Anxiety | 8.21 | 4.55 | 6.60 | 4.44 |
| Generalized Anxiety | 7.41 | 3.66 | 5.50 | 3.81 |
| Obsessive Compulsive | 3.01 | 2.94 | 1.84 | 1.97 |
| Anxiety Total | 40.31 | 16.33 | 29.85 | 17.03 |
| **SDQ** | | | | |
| Total Difficulties | 36.56 | 7.90 | 32.77 | 7.35 |
| Emotional Problems | 10.59 | 2.59 | 8.50 | 2.70 |
| Conduct Problems | 8.14 | 2.49 | 7.18 | 2.02 |
| Hyperactivity | 10.64 | 3.44 | 10.27 | 3.17 |
| Peer Problems | 7.20 | 2.48 | 6.82 | 1.89 |
| Prosocial Behaviour | 13.14 | 2.29 | 13.09 | 1.60 |
| Internalising Composite | 17.79 | 4.04 | 15.32 | 3.75 |
| Externalizing Composite | 18.77 | 4.89 | 17.45 | 4.37 |
| **CALIS** | | | | |
| Total Score | 39.00 | 14.39 | 31.73 | 13.18 |
| Parent Life | 16.77 | 7.22 | 13.77 | 6.39 |
| Child Outside Home | 13.82 | 4.77 | 11.64 | 5.29 |
| Child At Home | 8.41 | 3.65 | 6.32 | 2.83 |
| **DASS-21** | | | | |
| Total Score | 16.60 | 12.85 | 11.75 | 11.27 |

**Child Reported Measures.** We similarly conducted a series of paired *t*-tests for the child self-report measures. Descriptive statistics for all child-report measures are provided in Table 2.

On the RCADS-25, children's combined levels of depression and anxiety symptoms (i.e., RCADS-25 total scores) decreased significantly from pre- to post-testing, with a medium effect size ($p$ = 002, Cohen's $d$ = .715). Anxiety symptoms ($p$ = 002, Cohen's $d$ = .739) and depression symptoms ($p$ = 026, Cohen's $d$ = .499) both decreased significantly.

On the CRSES, children's levels of self-esteem increased significantly, with a medium effect size ($p$ = .023, Cohen's $d$ = -.496).

**Table 2. Descriptive Statistics for the Child-Report Measures at Pre- and Post-Testing**

| | Pre-Test Scores | | Post-Test Scores | |
|---|---|---|---|---|
| | ***M*** | ***SD*** | ***M*** | ***SD*** |
| **RCADS-25** | | | | |
| Total Score | 26.58 | 14.69 | 21.60 | 13.94 |
| Total Anxiety | 14.23 | 9.41 | 11.65 | 8.99 |
| Total Depression | 10.82 | 5.18 | 8.86 | 4.66 |
| **CRSES** | | | | |
| Total Score | 28.59 | 6.24 | 30.46 | 5.46 |

**Qualitative Feedback on the Program**

Aligning with the quantitative findings reported above, parents and their children both qualitatively reported enjoying a number of elements of the program.[5] One theme that came out in both parent and child feedback was the *utility of linking the skills/concepts to the Magic Coat characters*. For example, parents noted:

- "I really like the concept of the magic coat. Characters are great"
- "I loved so much about this program including understanding the characters and how to use them when speaking to [my child]. I love how [Di Wilcox] connected with each of the children. My daughter has benefitted from this experience enormously".
- "The relatable characters that [my child] could understand and remember."

Similarly, children noted:

- "[I liked] learning about all the different characters. Meeting all the helpers. Meeting new people/friends."
- "My favourite bit is Tate the Turtle [one of the Magic Coat characters]."
- "I liked learning about the characters."
- "Maybe magic coat could improve by adding more characters like one that helps you with calming down."

[5] In some of the quotes below, the full response of the participant is not provided, only the section of the response relevant to the highlighted theme. Content in square brackets is additional context added by the research team, or is used to protect the identity of the participant.

Parents and children both seemed to appreciate the *engaging way the program presented concepts*, the *warm. welcoming tone*, and the utility of having *take-home resources for implementing practical skills* (e.g., the Magic Coat book) to aid applications at home. For instance, parents noted:

- “Di and the team really seem warm and open and great at engaging the kids”.
- “[I liked] the role playing to deliver the messages to the kids in ways they can understand”.
- “The engaging content and presenters, the way the children could take ownership of the learning. There was a strong sense of autonomy in [my child] when he was on his way to Magic Coat. He held the sessions in mind and was 100% invested in the sessions and the content”.
- “There were many great things, the organisation, the format, the book, the tools, my child came away with”.
- “[I liked the] interactive sessions. Receiving a copy of the book to continue to use at home”.
- “Great to have the book to be able to carry on using the tools”.
- “[My child] also told me that the course has helped him to employ various tools/ideas to keep calm. He would like to see it become a weekly Kids Klub”.

Similarly, children noted:

- “I liked the tools and how they can help you with life”
- “[I liked] arts and crafts”.
- “I liked it because we learnt lots of different characters and we made lots of things. Throwing ball. Art/drawing.”

In terms of elements that could be improved further, whilst the child-focus of the intervention was generally appreciated, several parents indicated that it could be beneficial to have *more periods where parents are directly involved,* or even another dedicated program for parents run concurrently. For example, parents noted:

- “[I disliked] nothing. Next program would be great to have a complementary program for grownups they also need psychoeducation, and enables them to champion their kids ”.

- "Maybe 5-minute parent involvement at the end of each [session] to bring us up to speed in a nutshell, though I think the take-home sheets were great as a recap for us anyway. I think parents could have benefitted from a psychologist on hand to sit in an open session each week to discuss the things our kids were going through in an open forum! I would have paid for that for sure. All of these tools really need a family commitment and everyone to be on the same page moving forward and remembering to remind our kids about the things they learn."
- "I liked being an active participant in the sessions, [though I] acknowledge the time the children were in there on their own was more powerful."
- "[I would have liked more] explanation to parents in first few weeks (in-person) on how to help kids with book/program".

Whilst not reported in the written feedback. Throughout the program a number of parents anecdotally expressed to the study team that they found the time in the shared "waiting room" with other parents beneficial (i.e., the communal room parents waited in whilst their children were in the group session). Parents noted that this provided a supportive environment to connect with other parents experiencing similar circumstances with their children.

A few parents also noted *difficulties with the location or program time* in the written feedback. Anecdotally, outside of the formal survey, several parents expressed during the program that they had difficulty getting to the venue on time, as the 4pm weekday start-time meant it coincided with the start of peak hour traffic. For families that lived further away, this presented logistical problems, and seemed to be a reason for some families dropping out from the program. In deciding on the time and location of the program for the study, we found this a challenging compromise, as a later start time may have interfered with after-school or dinner plans for some families. Such issues highlight the importance of considering how the location and timing of such programs can be best attuned to families' needs. Example comments from parents in the survey on this element included:

- "Haha be closer to us".
- "It would be great to have North/South locations for sessions [referring to having locations North or South of the Swan River in Perth, likely because transport times to the other side of the river can be high during peak hour]."

Given the group format, the *age-range that the program content tries to cater to* (in our case ages 7 to 11) is another important consideration, ensuring as far as possible that it is developmentally appropriate for all participants. Parents and children in this study generally raised no issues about the program in this respect, though one parent noted that "my 7yr old struggled to understand the program due to his academic level" and one child noted "It didn't make sense". Additionally, a logistical element disliked by a few parents was that their children received *candy/lollies* at the end of each session. There was not global agreement on this, with several children highlighting this as one of the elements they liked about the program, but future iterations of the program will need to consider how attendance and effort during the sessions can be best encouraged and reinforced.

In terms of things the child participants wrote that they disliked, many children replied to this open-response question with "nothing", "no I liked it" or "everything was amazing :)", reinforcing the generally positive sentiment towards the program. There did not seem to be any pervasive dislikes, though a few children noted they would have liked *higher activity levels*, for example:

- "It could be more energetic"
- "[I disliked] sitting around on the floor"
- "I thought is was really good but I reckon do more activities."

## Discussion and Implications

Our aim in this pilot study was to conduct the first empirical examination of the Magic Coat program. Overall, our findings suggest that the program has significant promise.

Across the duration of the 10-week program, both child reports and parent reports indicated substantial improvements in child mental health. On average, children's levels of

anxiety and depression symptoms decreased significantly, and their self-esteem improved. Conduct problems also improved, though there were no differences in peer problems or prosocial behaviour. As such, in line with the program's transdiagnostic design and prominent focus on targeting emotion regulation skills as a key mechanism (Gross & John, 2003), the program appeared to impact an array of relevant child mental health outcomes among our sample. The generally medium to large effect sizes of the program on this set of outcomes are highly promising. Given that a key novelty of the Magic Coat program – as compared to other CBT programs – is the use of characters to facilitate CBT skill teaching, it is particularly encouraging that this feature was highlighted by children and parents as having good engagement value. Indeed, both children and parents, on average, rated that they liked the program and found it helpful.

Furthermore, we found that levels of parental distress also decreased across the duration of the intervention. Since child mental health difficulties can be a key source of stress for parents (Bennett et al., 2012), this might be a flow-on effect from the improved mental health of their child that was targeted during the program. Another possibility is that the unguided time parents spent in the communal waiting room with other parents helped to foster peer-support and interpersonal connections, with these helping to reduce stress levels (Guralnick et al., 2008). Future implementations of Magic Coat programs might explore possibilities to enhance such effects, adding more elements of parental support/intervention.

Whilst this set of results are highly promising, they must also be viewed in the context of several limitations reflecting the early (pilot) stage of this research program. One main limitation is that we had no control group, so it is unclear the extent to which the Magic Coat program would outperform a waitlist condition or alternative treatments. A number of the children in the program were also undergoing external treatments (e.g., psychotherapy, medication), which may have increased the observed effect size for those participants.

Nonetheless, it is reassuring that children and parents generally rated the Magic Coat program as helpful. Our sample was also relatively small, though was clearly powered to detect the medium to large effect sizes we observed within this repeated measures design. Some participants did not complete the program, and we did not have post-test data from them to determine how effective they found it or formally the reason for their dropping out. Future work with larger, more diverse samples will be useful to determine the generalizability of our results. Our findings now provide an excellent platform for, moving forward, the design of larger studies with randomized control trial designs, which can begin to isolate more clearly the effectiveness of specific Magic Coat program components.

In sum, this pilot study suggests that the Magic Coat concept could be a novel and effective direction for child CBT treatments. In this 10-week group format, the program appeared to have a substantially positive impact on the mental well-being of children and their parents. These initial data therefore provide an important launching point for ongoing research programs on the Magic Coat system.

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