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University of Southampton

Faculty of Environmental and Life Sciences

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Play and children's mental health in the face of adversity

by

Ella Patterson

Thesis for the degree of Doctor of Clinical Psychology

June 2021

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University of Southampton

Abstract

Faculty of Environmental and Life Sciences

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Play and children's mental health in the face of adversity

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Ella Patterson

My thesis examines the role of children's play and mental health in adverse circumstances. In the review paper, I report the first meta-analysis of the effectiveness of therapeutic play to reduce anxiety prior to a medical procedure in 9 randomised control trials. Pre-operative play was associated with a large effect size (SMD = -0.97, 95% CI = -1.52 to -0.41) when compared to all controls but subgroup analyses showed that pre-operative play was no more effective than an active control (SMD = -0.35, 95% CI = -1.42 to 0.73). In my empirical paper, I examined the relationships between play, physical activity and contact with nature and pre-schoolers mental health. I conducted a longitudinal study of these factors in 1028 UK pre-schoolers during the first 4 months of the COVID-19 pandemic. I used mixed linear modelling and found that playing with other children, physical activity and contact with nature were negatively associated with emotional symptom severity but time spent playing alone was positively associated with emotional symptom severity. Both my thesis studies have implications for clinical practice; although further research is warranted, play can contribute positively to children's mental health in adverse circumstances.

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Research Thesis: Declaration of Authorship

Print name: Ella Patterson

Title of thesis: **Play and children's mental health in the face of adversity**

I declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. None of this work has been published before submission

Signature: E.Patterson.

Date: 10th June 2021

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Chapter 1 Using therapeutic play interventions to reduce pre-operative anxiety in children - A systematic review and meta-analysis

This review has been prepared for The Child and Adolescent Mental Health Journal (CAMH)

1.1 Abstract

Background: Therapeutic play interventions delivered prior to surgery are used to reduce children's pre-operative anxiety. The present article is a meta-analytical study of the effectiveness of therapeutic play interventions in reducing pre-operative anxiety in children undergoing elective surgery.

Methods: We conducted a systematic literature review using CINAHL, PsycINFO, MEDLINE, Web of Science and manual searches. Nine studies totalling 1038 participants, with children aged between 3-14 years due to have surgery, met the criteria for inclusion. All studies included one continuous outcome measure, which provided data on pre-operative anxiety levels.

Results: Based on the nine studies, reductions in pre-operative anxiety were significant when compared to active and non-active control groups, with a standardised mean difference (SMD) of -0.97 [95% CI = -1.52 to -0.41] indicating a large effect. Subgroup analysis showed that this effect decreased and became insignificant when interventions were compared to active controls only (SMD = -0.35, 95% CI = -1.15 to -0.62). Heterogeneity was high due to the wide diversity of studies included and variation in effect sizes of individual studies. Moreover, indications of publication bias were found, and there was variation in the quality of studies.

Conclusions: The results of this meta-analysis indicate that therapeutic play interventions can effectively reduce pre-operative anxiety in children. However, given the absence of effectiveness when interventions were compared to active controls only, it remains unclear what elements of an intervention are associated with reducing pre-operative anxiety and further studies, which explicitly investigate this, are needed.

Keywords: Therapeutic play, pre-operative anxiety, children, meta-analysis

1.2 Introduction

Play is a key element of childhood and child development (Vygotsky, 1980). Through play, children can experiment, solve problems, think creatively and co-operate with others (Karpov & Karpov 2005). These opportunities support children's emotional, cognitive, physical, social development and well-being (Barker et al., 2014; Whitebread, 2010). Play can also promote positive self-esteem, autonomy and confidence by enabling children to create a world they can master, enjoy and control (Pellegrini & Smith, 1998).

Play can be a powerful therapeutic tool, providing children with a way to express feelings and emotions that does not depend on verbal skills (Landreth & Bratton, 1998). When play is used therapeutically, it becomes the means of communication, with children using play materials to act out thoughts, feelings and experiences that they may not be able to express with words (Axline, 1947).

Therapeutically, play can be used in various forms with one such example being therapeutic play. Therapeutic play is considered appropriate for treating mild or moderate emotional and behavioural difficulties in children (Jennings & Holmwood, 2020), and involves play-based activities tailored to the child's developmental stage (Li & Lopez, 2008). These activities are designed to help children regain a sense of control and agency, express and communicate their emotions, and educate and prepare them for specific events in a playful way (Koukourikos et al., 2015).

Therapeutic play is also used to educate and prepare children for unusual, unfamiliar events (Li et al., 2016) and is often used to treat a subtype of anxiety, state anxiety, which commonly occurs when children face novel experiences (Li & Lopez, 2008). State anxiety is defined as a temporary emotional reaction which often occurs in unfamiliar situations that individuals perceive as threatening, stressful or dangerous (Spielberger, 2010).

Compared to everyday life, hospital settings are one context in which children commonly experience increased state anxiety (Delvecchio et al., 2019). Hospitalisation can generate high levels of uncertainty, cause multiple variations to a child's normal routine, trigger a lack of control and agency in children and decrease their access to support systems, parents and peers for example (Burns-Nader & Hernandez-Reif, 2016; Koukourikos et al., 2015). As a result, children may perceive being hospitalised as stressful, threatening and dangerous, thus triggering state anxiety (Lerwick, 2016).

In hospital, one of the most anxiety provoking events children may face is surgery, with approximately 50-75% of children reporting an increase in state anxiety pre-operatively (Perry, Hooper & Masiongale, 2012). Children, compared to adults, are particularly likely to experience pre-operative anxiety given their greater dependence on others, limited cognitive capacities and a lack of understanding and experience of health care systems (Kain et al., 1996; Squires, 1995). This is of concern given that heightened pre-operative anxiety is associated with negative short and long-term consequences. For example, children with high levels of pre-operative anxiety are less likely to co-operate with medical staff (Ahmed et al., 2011), experience higher levels of physical pain (Chieng et al., 2014) and more likely to experience developmental regressions and higher levels of anxiety post-operation (Zahr, 1998). Given these negative consequences and the large number of children who undergo surgery, the need to find ways of reducing pre-operative anxiety is clear.

Providing children with access to therapeutic play interventions prior to surgery is one such way of reducing pre-operative anxiety (Li et al., 2016). Therapeutic play interventions may reduce a child's pre-operative anxiety by providing ways for children to address factors linked to the development and maintenance of pre-operative anxiety, for example, uncertainty, lack of control and fear, through play. There is variation in the type of play interventions offered, with pre-operative therapeutic play interventions typically divided into three categories, preparation, free play and distraction.

Preparation play is designed to tackle children's uncertainty and lack of control, by increasing a child's understanding of what is happening by familiarising them with the procedures and equipment they will be encountering (Li & Lopez, 2008; Zahr, 1998). Preparation play typically involves tours of operating rooms, meeting hospital staff, demonstrations of medical procedures using puppets and toy medical equipment and opportunities to play with toy medical equipment. The effectiveness of pre-operative preparation programmes for children undergoing elective surgery has been evaluated (Li, Lopez & Lee, 2007; Sabaq & El-Awady, 2012), with findings indicating that children who receive preparation play, compared to those children who do not, have significantly lower levels of pre-operative anxiety. However, there is also evidence of inconsistency, for example, He et al. (2015a) found no significant differences in reduction of pre-operative anxiety between children who had received a therapeutic play intervention and those who had not. Despite these inconsistencies, some qualitative research has indicated that children find preparation play a helpful and acceptable way of reducing their anxiety (Buckley & Savage, 2010).

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Free play, in contrast to preparation play, provides children with opportunities to engage with familiar, normative play activities that do not have a specific medical focus. Free play aims to reduce anxiety by providing children with an outlet to express their fears and concerns and increase their sense of control (Rae et al., 1998). Free play can involve both non-directive and directive play activities, completed with or without a member of hospital staff and/or other children. Even brief periods (less than 30 minutes) of free play prior to surgery are associated with significantly lower pre-operative anxiety levels in children (Hosseinpour & Memarzadeh, 2010).

Distraction play is based on the premise that providing children with playful activities designed to distract their attention away from pre-operative procedures may reduce pre-operative anxiety. Distraction play can be used prior to operations, for example, whilst waiting for anaesthetic or during transfer to the operating room (Bumin et al., 2017; Ünver, Güray, & Aral, 2020). Distraction play is not to be confused with passive distraction. The key distinctions being that, unlike distraction play, passive distraction is typically not active (e.g. providing children with the opportunity to do something) and often does not contain an element of choice. Underpinned by the suggestion that activity and choice may reduce anxiety by fostering a sense of mastery and control in children (Rae et al., 1989), passive distractions studies were not included in this review.

The efficacy of therapeutic play interventions may be moderated by various factors associated with the intervention, for example, format (e.g. group vs individual), intervention length and timing (e.g. how long a session is and when a session is delivered) and who participates in the intervention (e.g. child or child and parent /carer). Unfortunately, research exploring these factors is very limited. However, one area that has been explored is the involvement of a parent or carer in interventions (He et al., 2015b) where findings support the effectiveness of therapeutic play interventions that include parents in reducing pre-operative anxiety levels in children. As studies have not directly compared therapeutic play interventions that involved parents to those that did not, it remains unclear whether interventions involving parents are more effective than those that do not.

The efficacy of interventions may also be influenced by the characteristics of a child, with certain characteristics associated with higher pre-operative anxiety. Research indicates children who have lower levels of internal emotionality (Kain et al., 1996), experience trait anxiety (Fortier et al., 2011; Li & Lopez, 2005) and those under 5 (Kain et al., 1996; McCann & Kain, 2001) have significant higher levels of pre-operative anxiety. Research exploring the role of other characteristics, such as gender, is more inconsistent, for example Quiles (2001) concluded females are more likely to experience pre-operative anxiety whilst others show no effect of gender (Kotiniemi, Ryhänen & Moilanen, 1997).

Methodological limitations may partially explain these inconsistencies, for example, inconsistency in pre-operative anxiety measures used (He et al., 2015c; Kapkin, Manav, & Muslu, 2020), failure to control potential confounding factors such as previous experience of surgery and pain medication (He et al., 2015c), poor research methodology, most notably a lack of blinding (Kapkin et al., 2020; Silva et al., 2017), variation in how the effectiveness of interventions is measured and a failure to routinely collect data relating to the characteristics of the child.

In summary, therapeutic interventions using various types of play are widely used to reduce children's pre-operative anxiety and have been shown to be effective in this aim (Li et al., 2007; Sabaq & El-Awady, 2012; Hosseinpour & Memarzadeh, 2010). However, there is also evidence of inconsistencies in findings (He et al., 2015a) which, combined with the acknowledgement that pre-operative anxiety is an emerging area of research, highlight that a meta-analytical approach would be helpful to clarify the findings of the current evidence base.

Meta-analyses can provide a more precise, reliable estimate of the effect size of interventions, which has the potential to increase the generalizability of the results of individual studies (Lee, 2019). We know of no other meta-analysis evaluating the impact of play interventions on children's pre-operative anxiety severity. In this meta-analysis, we examine how effective play interventions are in reducing pre-operative anxiety severity in hospitalised children. We also examine the moderating effects of factors suggested by previous research that may influence the effectiveness of play interventions, specifically: child age, gender and the characteristics of the intervention (i.e., its content, who it was delivered to and in what format).

1.2.1 Aims

This systematic review addressed the following research questions:

- 1- Are therapeutic play interventions given prior to a medical operation or procedure, when compared to a control condition, associated with lower pre-operative anxiety symptoms in hospitalised children?
- 2- Are the effects of the therapeutic play interventions moderated by child age and gender, type of play intervention, format of intervention and who participated in the intervention?

1.3 Methods

1.3.1 Protocol and registration

The current review was registered on the International Prospective Register of Systematic Reviews (PROSPERO registration No. CRD42020206270). The review was informed by the recommendations made by the Centre for Reviews and Dissemination (CRD, 2009) and followed the PRISMA extension for scoping reviews (Tricco et al., 2018).

The meta-analysis/systematic review reported here focuses on the association between therapeutic play and pre-operative anxiety and is a sub-question of the registered review (PROSPERO registration No. CRD42020206270). The top section of the PRISMA flow chart (Figure 1.1), 'Identification and Screening', is common for the broader question and this sub-question. The bottom section, 'Eligibility and Inclusion', applies to the present sub-question only. The broader question of the registered review, 'What is the association between play and anxiety in children?', will be answered in a separate review.

1.3.2 Eligibility criteria

Inclusion and exclusion criteria were developed and finalised before commencing searches. Studies were selected for inclusion if they:

- 1- Were published in a peer-reviewed journal in English.
- 2- Involved children and young people under the age 18.
- 3- Included a therapeutic play intervention delivered prior to a medical operation or procedure which aimed to reduce pre-operative anxiety symptoms in children in a hospital setting.
- 4- Used a therapeutic play intervention that: i) involved an active element of play with a degree of choice and ii) was not combined with another type of intervention. Interventions must have been active (e.g. providing children with the opportunity to do something) and contained an element of choice. Mixed interventions were excluded because they precluded drawing conclusions on the isolated effect of therapeutic play interventions on pre-operative anxiety.
- 5- Reported a validated measure of childhood state anxiety and/or internalising disorders or symptoms.

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- 6- Generated results relevant to the direct relationship between play and pre-operative anxiety.
- 7- Used a Randomised, Control Trial (RCT) design to compare an active intervention with a treatment as usual/control and/or an active comparison condition. Studies that provided only qualitative data and those that did not include any new data were excluded.
- 8- Had at least 10 participants. Evidence suggests effect sizes smaller than 1.5 are reasonably accurate when there are at least 10 participants (Hedges & Olkin, 1985).

1.3.3 Information sources and search terms

Four key bibliographic databases (CINAHL, PsycINFO, MEDLINE and Web of Science) were searched using specific fields (title and abstract) and subject headings/index terms for relevant published literature. Date restrictions were not placed on the literature. Databases were searched in July 2020 and these searches were re-run in December 2020. The search syntax used was adapted for each database due to the variation in individual databases procedures relating to subject headings/index terms (Appendix A). References were imported into EndnoteX9 and duplicated references removed. Following de-duplication, the initial search identified 3324 references (see Figure 1.1).

The search terms relating to play were a replication of those developed by Graber et al. (2020), which were based on the United Nations Convention on the Rights of the Child (UNCRC) definition of play (2013) (Appendix B) and encompassed a wide range of activities. These terms were used in this review to provide consistency in the conceptualisation of play and to enable the review to capture a breadth of play activities.

A hand search of reference lists from articles that met the inclusion criteria and previous reviews of related topics was also completed and 5 further papers were identified.

1.3.4 Study selection

Three reviewers (E.P and two research assistants) independently screened all abstracts for eligibility. An abstract included by any rater was included in the full text stage. These articles were read in full and rated independently by three reviewers (EP and two research assistants). There was a 97% agreement of inclusion between raters ($\kappa=.90$). Disagreements were referred to a fourth reviewer (P.L) and final decisions regarding inclusion and exclusion were made after discussions amongst PL, EP and the research assistants.

1.3.5 Summary of measures

The primary outcome measure for this review was state anxiety symptom severity. No studies used more than one state anxiety outcome measure.

1.3.6 Data extraction

Relevant data for each study was extracted for use in the meta-analysis. This data included information about the participants, the design of the study, the intervention used and the outcome measure. This information is summarized in Tables 1.1 and 1.2. Full details of extracted data are available from the author on request.

1.3.7 Data extraction and statistical analysis

Meta-analyses were completed using the R statistical program, (version 4.0.5), specifically the Metaphor and Robust Variance Meta-Regression packages for meta-analysis (Fisher et al., 2017; Viechtbauer, 2010). Meta-analyses were conducted to examine all research questions where there were at least two eligible studies. A dependent effects meta-analysis, using robust variance estimation (Hedges, Tipton, & Johnson, 2010), was used to account for the dependence that arose from a common control group being used for multiple comparisons in some studies

Due to the variation in continuous outcome measures used, results of the studies were standardized using the standardized mean difference (SMD) (Morris, 2008). The SMD was calculated by subtracting the mean change score, which is the change in score from pre to post intervention, of the control group from the mean change score of the experimental group and then dividing this figure by the pre-intervention pooled standard deviation of the control and experimental group pre-intervention.

The I^2 and τ^2 statistics were used to calculate the impact of heterogeneity between studies (Higgins et al., 2003; Borenstein et al., 2021), with I^2 providing a measure of the total variability in effect sizes due to between-studies variability based on observed effects and τ^2 providing a measure of the distribution of true effects of studies. To reflect the natural heterogeneity amongst studies, random and dependent methods were used (Higgins & Thompson, 2002) and due to the variation in samples sizes, Hedge's g was used as the pooled effect size (Hedges, 1981).

Meta-regressions were conducted to assess for moderation of effects by continuous (age, proportion of female to male) and categorical variables (type of control, active vs passive), type of play (preparation play vs free play vs distraction play), format of intervention (individual vs group vs both) and participants in the intervention (child only vs parents only vs both).

1.3.8 Coding of study quality

One author (E.P) and one research assistant independently assessed the quality of each study using the Cochrane risk-of-bias tool for randomized trials (RoB2) (Sterne et al., 2019). Inter-rater agreement for the risk of bias assessment was determined by the percentage agreement between assessors, with any disagreements in ratings referred to a third assessor (PL).

The RoB2 assesses bias in the following domains:

- 1- Randomization process
- 2- The intended intervention
- 3- Missing outcome data
- 4- Outcome measurement
- 5- Reported results

1.3.9 Publication bias

Publication bias was examined using funnel plots and an Egger test.

Table 1.1 *Demographics of included studies*

| Study | Study number | <i>N</i> | Age (M/range) | % female | Country |
|---------------------------|--------------|----------|---------------|----------|-------------|
| Vaezzadeh et al., 2011 | [9] | 122 | 9.48 (7-12) | 30.33% | Iran |
| Ünver , Guray & Aral 2020 | [8] | 94 | 8.81 (5-12) | 27.66% | Turkey |
| Li, Lopez & Lee, 2007 | [7] | 203 | 9.48 (7-12) | 31.03% | Hong Kong |
| Lee et al., 2012 | [6] | 130 | 4.60 (3-7) | 33.10% | South Korea |
| He et al., 2015 | [5] | 95 | 9.74 (6-14) | 35.79% | Singapore |
| Forouzandeh et al., 2020 | [4] | 172 | 7.29 (3-12) | 37.80% | Iran |
| Dehghan et al., 2017 | [3] | 75 | 9.30 (6-12) | 40.00% | Iran |
| Coşkuntürk & Gözen, 2018 | [2] | 43 | 9.01 (6-12) | 55.80% | Turkey |
| Bumin et al., 2017 | [1] | 104 | 5.00 (3-7) | 50.96% | Turkey |

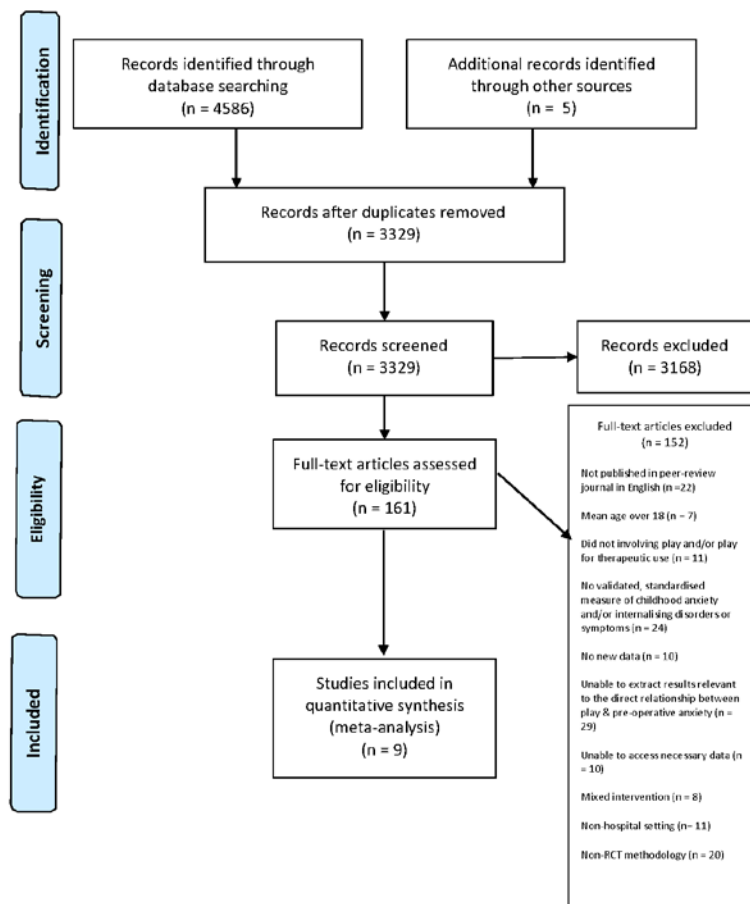


Figure 1.1 Prisma flow chart

Table 1.2 *Characteristics of play interventions*

| Study number | Measure taken | Type of play | Type of control group | Timing of session | Session length (minutes) | Who attends | Format | Outcome measure (anxiety assessment tool) | Rater | Quality rating |
|--------------|--------------------------------|--------------|-------------------------|-----------------------------|--------------------------|----------------|------------|---|-------------|----------------|
| 9 | Day after intervention | Preparation | Inactive | Day before surgery | 60 | Child & parent | Individual | SSAS-C | Self-report | Low risk |
| 8 | Immediately after intervention | Distraction | Inactive | 30 minutes prior to surgery | 20-30 | Child & parent | Individual | FAS | Self-report | Some concerns |
| 7 | 7 days after intervention | Preparation | Inactive | 1 week before surgery | 60 | Child & parent | Group | CSAS-C | Self-report | Low risk |
| 6 | Immediately after intervention | Free | Active-watching cartoon | Before anaesthetic | Not stated | Child | Individual | mYPAS | Researcher | Some concerns |
| 5 | 3-7 days after intervention | Preparation | Inactive | 3-7 days before surgery | 60 | Child & parent | Individual | SSAS-C | Self-report | Low risk |
| 4 | 5 minutes after intervention | Free | Active-painting | 30 minutes before surgery | 30 | Child & parent | Group | mYPAS | Researcher | Some concerns |
| 3 | Immediately after intervention | Free | Active-puppet show | Day of surgery | Not stated | Child | Individual | RCMAS | Self-report | Low risk |
| 2 | 1 day after intervention | Preparation | Inactive | Day before surgery | Not stated | Child | Group | STAI-CH | Researcher | Some concerns |
| 1 | Immediately after intervention | Distraction | Inactive | Immediately before surgery | 6 | Child | Individual | mYPAS | Researcher | Low risk |

mPAS – Modified Yale Preoperative scale, STAI-CH State-Trait Anxiety Inventory for Children, RCAMS-Revised Children's Anxiety Manifest scale, SSAS-C The Spielberger State Anxiety Scale for Children, CSAS-C- The Chinese State Anxiety Scale for children, FAS- Facial Affective Scale

1.4 Results

1.4.1 Study Characteristics

Nine studies met the inclusion criteria, as outlined in The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) selection flow chart (Figure 1.1) (Moher et al., 2009). The included studies involved a total of 1038 participants, who were children aged between 3-14 years due to have surgery. All studies included one continuous outcome measure, which provided data on pre-operative anxiety levels. Every study, regardless of how many arms, only reported a single measure of pre-operative anxiety, pre and post intervention.

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Three of the included studies used an active control group [3, 4, 6]. Two of these active control groups involved activities that involved active participation, puppet show [3] and painting, [4], whilst the remaining active control group used a passive activity, watching cartoons [6]. The remaining six studies [1, 2, 5, 7, 8, 9] did not have an active control group, comparing the experimental condition to treatment as usual.

In all studies, the experimental condition involved a single therapeutic play session that took place in a hospital setting before an operation. The sessions varied in length from 6 to 60 minutes. Three studies [2, 3, 6] did not report session length. In 5 of the 9 studies, parents and children took part in the therapeutic play intervention [4, 5, 7, 8, 9]. In the remaining studies, only children were involved in the intervention.

There was variation in the content of the play intervention offered, however despite this heterogeneity, studies could be grouped into three categories of therapeutic play: preparation [2, 5, 7, 9], free [3, 4, 6] and distraction [1,8].

Information relating to the development and delivery of the experimental play intervention were often not reported. All studies reported that play intervention was delivered by the researcher, but did not report the professional discipline/qualifications of the researcher. Two studies reported that the researcher delivering the intervention had received specific training relating to the intervention [5, 7]. Four studies followed a protocol for the play intervention [5, 7, 8, 9], four did not [1, 3, 4, 6] and one did not disclose this information [2].

1.4.2 Synthesis of findings

1.4.2.1 Main findings

A dependent effects meta-analysis, using robust variance estimation (Hedges, Tipton, & Johnson, 2010), was used to account for the dependence that arose from a common control group being used for multiple comparisons in some studies. The findings indicated that when play interventions were compared to inactive and active control groups, there was a significant large effect of play (SMD = -0.97, 95% CI = -1.52 to -0.41, $p < .001$). Children who had received a pre-operative therapeutic play intervention had significantly lower pre-operative anxiety when compared to inactive and active control groups. The percentage of the total variability in effect sizes due to between-studies variability was high, $I^2 = 89.5\%$. Effect sizes ranged from -0.38 [4] to -2.52 [2].

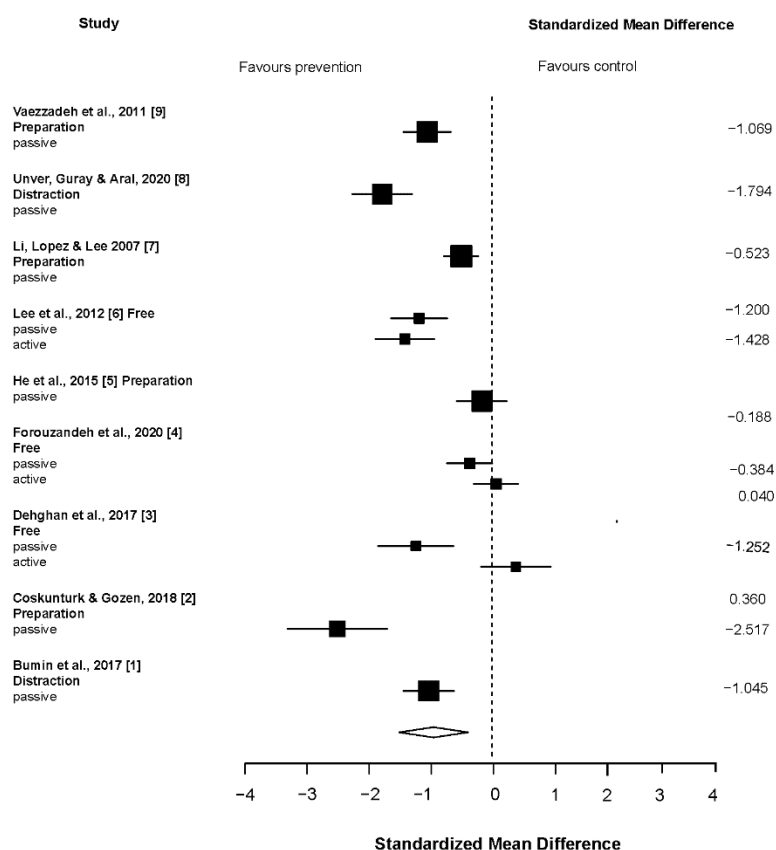


Figure 1.2 Forest plot of the studies included in the meta-analysis showing the effect size (SMD) and 95% CI

1.4.2.2 Subgroup analyses

Underpinned by the observation that the included studies were estimating different but related effects, a random effects model was used to incorporate this heterogeneity (DerSimonian & Laird, 1986).

When compared to an inactive control, children who had received a pre-operative therapeutic play intervention had significant lower pre-operative anxiety, this was a large effect (SMD = -1.02, 95% CI = -1.15 to -0.62, $p < .0001$). The percentage of the total variability in effect sizes due to between-studies variability was high ($Q = 59.48$, $p < .0001$, $I^2 = 89.62\%$). The effect sizes ranged from -0.38 [4] to -2.52 [2]. In addition, τ^2 indicated there was variance in the true effect of studies, $\tau^2 = 0.40$.

Three studies [3, 4, 6] compared pre-operative therapeutic play interventions to an active control group. In these comparisons, the effect size fell (SMD = -0.35, 95% CI = -1.42 to 0.73) and was

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non-significant, indicating pre-operative play was ineffective when compared to an active comparison. The heterogeneity amongst studies was high ($Q = 30.53, p < .0001, I^2 = 93.91\%$), with effect sizes ranging from 0.36 [3] to -1.43 [6]. In addition, τ^2 indicated there was variance in the true effect of studies, $\tau^2 = 0.84$.

1.4.2.3 Moderator analyses

In all moderator analyses, we were unable to obtain a reliable estimate of effect due to the small number of studies in each category, where all degrees of freedom were ≤ 4 .

1.4.2.4 Publication bias

Visual inspection of funnel plots and Egger's intercept regression tests showed significant evidence of publication bias for continuous measured outcomes ($z = -2.1038, p \leq 0.05$) (Figure 1.3).

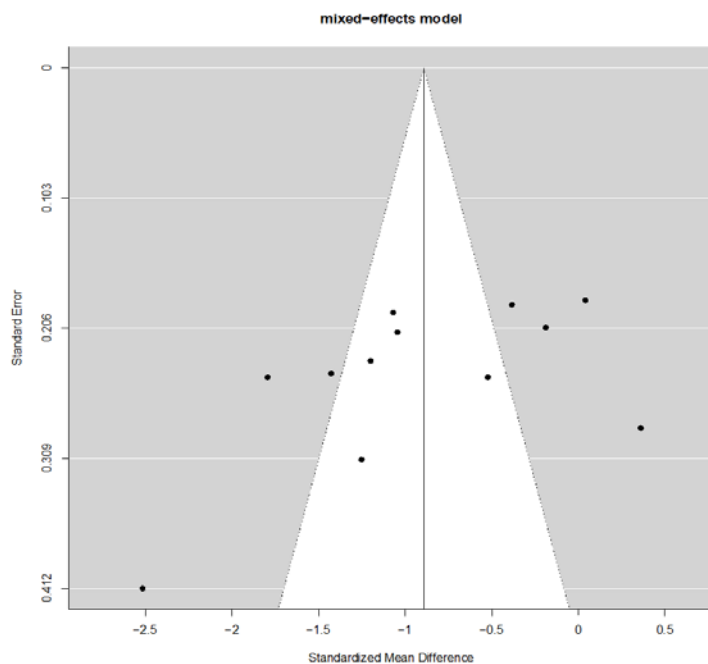


Figure 1.3 Funnel plot showing the effect sizes (SMD) of studies

1.4.2.5 Risk of bias assessment

There was an 88% agreement amongst researchers in the risk of bias assessment. Levels of overall bias in the included studies varied, the majority of studies [1, 3, 5, 7, 9] were classified as being at a low risk of bias and the remaining 4 studies classified as having some concerns relating to risk of

bias (see Figure 1.4). The concerns related to 2 domains of potential bias, i) possible deviations from intended intervention caused by a failure to blind participants and/or researchers, and ii) measurement of outcome, with 2 studies [4, 6] using an observational outcome measure administered by researchers who were not blind to treatment conditions.

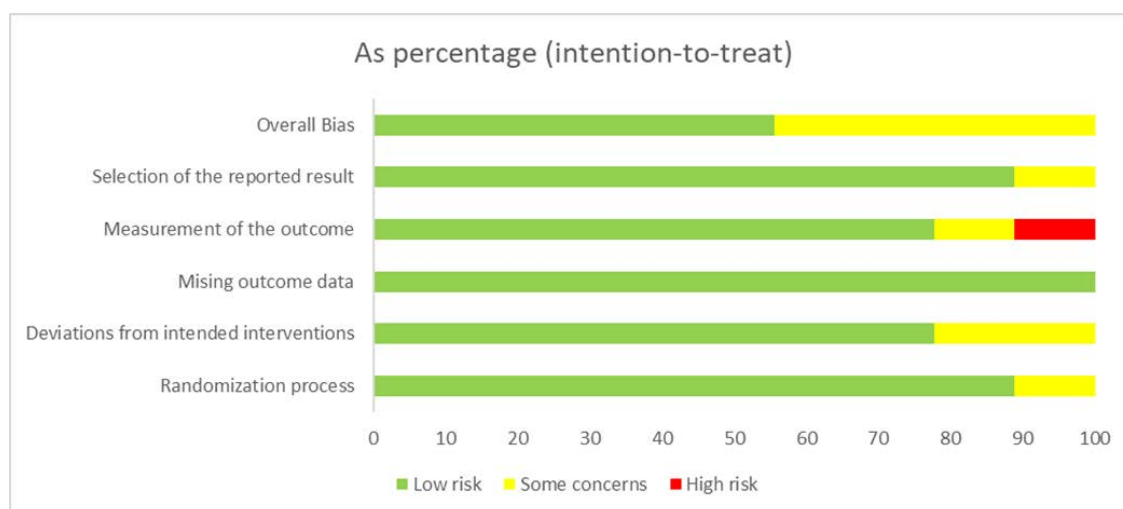


Figure 1.4 Studies overall risk of bias RoB2 ratings

1.5 Discussion

This meta-analysis identified and synthesized 9 independent RCTs which examined the effectiveness of therapeutic play interventions to reduce pre-operative anxiety. The findings indicated that when compared to both inactive and active control groups, therapeutic play interventions were effective in reducing pre-operative anxiety in children, as judged by the change in pre-operative anxiety scores pre to post intervention. This effect was large and significant (SMD = -0.97, 95% CI = -1.52 to -0.41). The type of control group, active or inactive, influenced the effect of therapeutic play interventions. When therapeutic play interventions were compared to inactive control groups, there was a large and significant effect, (SMD = -1.02, 95% CI = -1.15 to -0.62), however this effect decreased and was insignificant when compared to active control groups (SMD = -0.35, 95%CI = -1.42 to 0.73). The findings of the active control studies indicated that although the experimental group's pre-operative anxiety reduced in severity following the intervention so too did the active control groups, and the change in severity of anxiety was not significantly different between groups. Due to the small number of studies in each category (≤ 4), we were unable to assess if effects of interventions were moderated by child age or gender, presence of parents, type of play delivered (preparation play vs free play vs distraction play) or format of intervention.

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Although there is not a comparable meta-analysis, our finding that therapeutic play interventions are effective in reducing children's pre-operative anxiety is consistent with a growing body of literature (Hosseinpour & Memarzadeh, 2010; Li et al., 2007; Sabaq & El-Awady, 2012) and a number of systematic reviews (He et al., 2015c; Kapkin et al., 2020). This review supports the hypothesis that therapeutic play interventions delivered prior to surgery may contribute to a reduction in children's anxiety by providing them with opportunities to relieve factors associated with development and maintenance of state anxiety such as unfamiliarity, lack of control and heightened levels of stress (Li & Lopez, 2008; Rae et al., 1998; Spielberger, 2010).

Notably, there was considerable variation in content and timing of interventions. Closer examination reveals two groups of interventions: 1) interventions administered very shortly before (within an hour) of the children's operation or a medical procedure associated with it, having an anaesthetic for example, and 2) interventions administered between 1 and 7 days before an operation or medical procedure. Interventions in the first group (administered shortly before surgery) were either free play [3, 4, 6] or distraction [1, 8] whereas interventions in group 2 (administered between 1 and 7 days before surgery) were defined, by this review, as preparation play [2, 5, 7, 9]. Interestingly there was not a consistent pattern in effect sizes in these groups, for example, studies in group 2 had the largest [2] and smallest effect size [5].

In relation to the studies included, we found that when compared to active control groups, the effect of therapeutic play interventions decreased and became insignificant. This finding may reflect a potential overlap between the activities in the intervention and active control groups. Although activities in active control groups did not fully meet the definition of therapeutic play applied in this meta-analysis (e.g. did not contain an element of choice and/or were not active), they may have contained some elements of play or have been perceived by children as play. Howard & McInnes (2013) found that children demonstrated an increased emotional well-being when they had engaged in activities they perceived as play compared to activities they deemed as "non-play". It may, therefore be the case that play may be the component in both the intervention and active control group that contributed to a reduction in anxiety. However, as this was not specifically examined, this meta-analysis is unable to provide any firm support for this claim. A consequence of play interventions being effective compared to inactive controls but not active controls is that we are unable to conclude whether it is the case that something is better than an inactive control or something specific is better than an inactive control or both. Studies comparing play interventions with both active and inactive control groups are required to tease apart these possibilities.

1.5.1 Limitations

This study has a number of limitations that should be taken into account when interpreting the findings. First, the quality of studies was inconsistent. Specific concerns related to a lack of blinding, both in general (e.g. researchers and/or participants being aware of treatment conditions), but also specifically relating to outcome measures, with two studies using an observational outcome measure administered by researchers who were not blind to treatment conditions. A lack of blinding has previously been highlighted as an issue within this area of literature (He et al., 2015c; Silva et al., 2017; Kapkin et al., 2020) and it should be acknowledged that these issues could have biased the results of this meta-analysis.

Second, the geographical distribution of included studies is also a potential limitation. The included studies clustered in 3 areas, namely: Turkey, Iran and Asia, with a noticeable lack of RCT research in other geographical areas, particularly in western countries. There is some research to suggest the expression of anxiety is influenced by cultural beliefs and values (Incayawar & Todd, 2012), thus culturally sensitive interventions may be more effective than non-culturally adapted interventions (Sue et al., 2009). These suggestions indicate that caution should be exercised when generalising the findings to other cultures and ethnic minorities.

Third, heterogeneity in types of therapeutic play hampers our ability to draw firm conclusions about why pre-operative play interventions reduce pre-operative anxiety. In future, if a sufficient number of studies are available, it may be a sensible to limit meta-analyses to specific types of therapeutic play interventions, for example, preparation play.

Fourth, there was heterogeneity in the outcome measures used. In the 9 studies included, 4 outcome measures were used. Although we sought to minimise the potential negative effects of this variation by only including studies that used a validated and standardised measure of state anxiety, it is a possibility that the heterogeneity in measures may mean the findings have been influenced by measurement differences. Furthermore, as studies only reported the mean change in pre-operative anxiety it is unclear if these changes were of clinical significance.

Finally, the result of the funnel plot indicated significant levels of publication bias. However, due to the high levels of heterogeneity in effect sizes, this may not be meaningful as Borenstein et al. (2021) have suggested publication bias analysis should ideally only be performed on a set of homogeneous results, with the results being problematic when generated in a heterogeneous set of studies.

1.5.2 Strengths

Despite these limitations, this review has a number of strengths. To our knowledge, it is the first to provide data examining the effect of therapeutic play interventions on pre-operative anxiety at a meta-analytical level. This is of particular importance as it responds to previous research that highlights the need for more robust evaluations of effects (He et al., 2015c; Kapkin et al., 2020) and reducing pre-operative anxiety has significant clinical relevance due to the substantial number of children undergoing surgery each year and the potential detrimental impacts of pre-operative anxiety (Chieng et al., 2014; Zahr, 1998). An additional strength was the use of replicated search terms to define play. Research has suggested studies need to work towards designing and implementing consistent definitions of play to improve the generalisability of research findings (Howard & McInnes, 2013). In light of this, we replicated search terms developed by Graber et al. (2020), which were based on an agreed definition of play, namely the UNCRC definition of play (2013).

1.5.3 Recommendations for future studies

This meta-analysis provides some evidence that therapeutic play interventions can be effective in reducing pre-operative anxiety in children. However, the finding that the effect of interventions becomes insignificant when compared to active control groups and the identified heterogeneity in studies highlight the need for future research. First, it would be helpful to explore the effect that the sub-type (preparation, free, distraction) of therapeutic play interventions has on pre-operative anxiety so we can better understand the elements of therapeutic play that contribute to a reduction in pre-operative anxiety. Second, given the potential overlap, it needs to be considered if it is appropriate to compare therapeutic play interventions to active control groups that may include elements of, or be perceived by children as, play. Third, future research needs to prioritise the routine collection and analysis of data relating to possible moderating factors to enable clinicians to make informed choices about the most appropriate intervention to offer and to advise the design of future interventions. Key areas of focus would be: gender, age, individual characteristics such as trait anxiety and characteristics of the intervention. Fourth, research needs to consider ways to improve the generalisability of findings, for example: i) to continue to work on developing and using a consensus of play definitions to enable inter-study comparability, ii) conduct research in other geographical areas, iii) use a single measure of pre-operative anxiety, and iv) reduce publication bias by encouraging researchers, with journal editors' cooperation, to publish in peer-reviewed journals when no effect is detected and/or when sample sizes are small

1.5.4 Key practitioner message

- Therapeutic play interventions are frequently used to reduce pre-operative anxiety in children.
- Despite variation in the types of therapeutic play used, they can be effective in reducing pre-operative anxiety in children.
- Future studies that examining the effects of different types of therapeutic play interventions and assess the impact of potential moderating factors are required.

1.6 Acknowledgements

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Chapter 2 Are play, physical activity and contact with nature related to children's mental health during April –July 2020 of the COVID-19 pandemic?

This paper has been prepared for the Journal of Child Psychology and Psychiatry

2.1 Abstract

Background: Play, physical activity and contact with nature are associated with children's mental health, however, it is unclear how the COVID-19 pandemic induced restrictions and alterations to these activities and possible changes to children's mental health caused by the pandemic have affected these relationships.

Methods: UK based parents and carers ($n = 1028$) of pre-school aged children completed an online survey about their child's mental health and their child's activities at four time points between April and July 2020. The survey examined children's patterns of play, physical activity and contact with nature and changes in emotional symptoms.

Results: Findings from mixed linear models indicate that the amount of time children spent playing alone was associated with higher emotional symptoms, whereas being physically active, having contact with nature and playing with other children were associated with lower emotional symptoms. There was a significant interaction between contact with nature and time, initially the amount of time children spent in contact with nature did not predict their emotional symptoms, but over the time period (April to July 2020), children who had less contact with nature had higher emotional symptoms.

Conclusions: The findings highlight relationships between play, physical activity, contact with nature and mental health in children aged 2-5years during the UK's first lockdown period and suggest that one very simple way of improving the mental health of children during future periods of lockdown may be through their daily activities, for example playing with other children or engaging in activities that are physical and/or involve contact with nature.

Keywords: pre-schoolers, children, COVID-19, lockdown, mental health, pandemic, United Kingdom, play, physical activity, contact with nature, emotional problems.

2.2 Introduction

The COVID-19 pandemic has had a significant negative effect on some children's mental health, for example increasing levels of anxiety and depression (Racine et al., 2020). However, this effect has not been experienced by all children, with some reporting an improvement in their mental health (Mansfield, Jindra, Geulayov, & Fazel, 2021). It is unclear what underpins these inconsistencies. Some potential influential factors have been identified, such as age, previous mental health problems and socio-economic status (Waite et al., 2021; Wunsch et al., 2021). It may also be the case that changes in the nature of children's daily activities due to lockdown restrictions may have exacerbated or mitigated the psychological effects of the pandemic.

The pandemic has caused significant disruption to many areas of children's lives, for example, closing schools and playgrounds, restricting the amount of time allowed outside and preventing contact with friends. These changes have drastically altered the ways in which children play, the opportunities they have to be physically active and their ability to be in contact with nature (Graber et al., 2021; Natural England, 2021; Wunsch et al., 2021). These changes are of concern given that these factors are thought to contribute positively to children's mental health (Biddle & Asare, 2011; Brussoni et al., 2015; Tillmann, Tobin, Avison & Gilliland, 2018).

Developmental theorists suggests play is a crucial component of child development, enabling children to develop and practice competencies and skills that support successful functioning (Piaget, 1962; Rubin, 1982; Vygotsky, 1978). While there is no particular theory or model of play in child development, it is through play that children have the opportunities to develop cognitive, social and emotional skills associated with good mental health. For example, play provides a way for children to manage challenging events and emotions (Landreth, 1993), promotes positive feelings (Howard, Miles, Rees-Davies & Bertenshaw, 2017), enables children to develop interests and competencies that may contribute positively to their self-esteem (Lavrysen et al., 2017) and supports children to develop skills linked to resilience, such as self-control and emotional regulation (Brussoni et al., 2015). The perceptions of children also highlight the relationship between play and mental health. In qualitative studies undertaken in the UK, children reported to be motivated to engage in play because they believe it benefits their mental health (Brockman, Fox & Jago, 2011) and because it makes them feel happy (Howard et al., 2017).

The benefits of play may also depend on who and where children are playing. Playing with other children can reduce social isolation (Goldstein, 2012); playing with parents/caregivers can facilitate self-regulation (Galyer & Evans, 2001); and playing alone (solitary play) may increase creativity (Sumaroka & Bornstein, 2008). The environment in which children play may affect the impact of play on mental health, with access to outdoor play environments shown to have a

positive impact on social behaviour, independence and conflict resolution (Hüttenmoser, 1995). However, due to a lack of research, it is not clear if the relationship between play and mental health is affected by how children play, or by changes in with whom or where children play.

Physical activity can support children to develop factors associated with good mental health, such as self-confidence, self-acceptance and social connectedness (Lubans et al., 2016) whilst facilitating the development of skills that may protect children from experiencing poor mental health, such as resilience and self-esteem (Ekeland, Heian & Hagen, 2005). Physical activity has been shown to have a beneficial effect on children's mental health in both clinical and non-clinical populations, with higher levels of physical activity associated with lower levels of stress, depression and anxiety (Biddle & Asare, 2011; Rodriguez-Ayllon et al., 2019). Moreover, longitudinal research indicates that physical activity may also have longer-term benefits on mental health (Bell, Audrey, Gunnell, Cooper, & Campbell, 2019).

Contact with or exposure to nature has also been linked positively to children's mental health as indicated in a recent systematic review (Tillmann et al., 2018). Contact with nature can increase relaxation, reduce factors associated with poor mental health, such as cognitive and physical fatigue and stress (Kaplan; 1995; Korpela, 2002; Ulrich et al., 1991), and promote the development of skills associated with good mental health. For example, regular access to nature has been shown to increase children's self-esteem and self-awareness, promote resilience and improve concentration (Kahn & Kellert, 2002; Wells & Evans, 2003). These findings are supported by the views of children, who indicate that contact with nature helps to relieve stress, improve their focus and provide them with opportunities to build their confidence and develop friendships (Chawla, 2015).

A consideration that emerges when reviewing the evidence relating to children's mental health and play, physical activity and contact with nature, is the potential interaction between these factors. For example, play can increase physical activity and contact with nature, contact with nature is associated with an increase in physical activity and physical activity is linked to an increase in contact with nature (Dobbins, Husson, DeCorby, & LaRocca, 2013; Engelen et al., 2013; Gray et al., 2015). It is, therefore, of interest to explore the impact of these factors on children's mental health in a way that enables the contribution of each factor to be examined. Furthermore, given the acknowledgment that there is a lack of research exploring the relationship between play, physical activity, contact with nature and the mental health of pre-school aged children (Rodriguez-Ayllon et al., 2019; Tillmann et al., 2018) and the documented developmental differences between school and pre-school aged children (Thomas, 2000), it is of interest to explore these factors specifically in a pre-school population.

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In summary, there is evidence to suggest that play, physical activity and contact with nature are associated with children's mental health, both as individual factors and collectively. However, it is unclear how the UK government's significant pandemic induced restrictions and alterations to these activities and possible changes to children's mental health caused by the pandemic have affected these relationships. The present study is designed to enhance our understanding of these issues by exploring the following research question:

Are play, physical activity and contact with nature related to UK children's mental health during April –July 2020 of the COVID-19 pandemic?

2.3 Methods

2.3.1 Context

This study is part of the larger longitudinal Co-SPYCE (COVID-19: Supporting Parents and Young Children during Epidemics) study, funded by UKRI and the Westminster Foundation. The research protocol of the study is available via the Open Science Framework (<https://osf.io/rukpt/>).

2.3.2 Study design

The present study is a longitudinal, repeated measures, within-subjects design. It has one continuous outcome variable (the emotional problems subscale of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997; Goodman et al., 1998)), seven continuous predictor variables (playing inside, playing outside, playing alone, playing with a parent, playing with another child, physical activity, contact with nature) and two covariates, one continuous (parent/carer educational attainment) and one categorical (parent/carer mental health (the Depression Anxiety Stress Scales (DASS-21; Lovibond & Lovibond, 1995))).

2.3.3 Participants

Parents/carers (over the age of 18 years) of pre-school aged children aged between 2 and 5 years in Scotland, and between 2 and 4 years at the start of the study who lived elsewhere in the United Kingdom, were eligible to take part. The current paper focuses on the 1028 participants who completed at least two surveys (an initial survey and at least one additional monthly survey) between 17th April and 31st July 2020 (so, for example, participants could have completed surveys in May and July, 2020). In the months in which they participated, participants must have completed the following measures in all surveys: the emotional problem subscale of the SDQ, the DASS-21 and measures of children's activity. Additionally, in their initial survey, parents/carers

must have reported their level of education attainment. Participant's demographic information can be found in Table 2.1.

2.3.4 Recruitment

Participants were recruited in a variety of ways, these included: social media, distribution through partner organisations, networks, charities and the media.

2.3.5 Procedure

Parents/carers provided informed consent and completed surveys online between 17th April and 31st July. If participants had more than one child within the age range, they were asked to choose one child to report on at every time point (that is, the same child at each time point). A link to the follow-up surveys was sent via email to each parent/carer one calendar month after they had completed their first survey and then each subsequent calendar month. Full procedural information is available at (<https://osf.io/rukpt/>). Ethical approval for the study was granted by The University of Southampton Research Ethics Committee: ERGO 56217 (Appendix F).

2.3.6 Measures

Educational attainment- Parents/carers were asked a multiple-choice question 'What is your highest level of educational attainment?' with 6 possible answers (0= 'No qualifications', 1= 'Completed GCSE/CSE/O-levels or equivalent (at school till aged 16)', 2= 'Completed post-16 vocational course', 3='A-levels or equivalent (at school till aged 18)', 4= 'Undergraduate degree or professional qualification', or 5= 'Postgraduate degree').

Parent/carer's mental health- The DASS-21 (Lovibond & Lovibond, 1995) is a self-report measure designed to measure negative emotional states, with established validity in community samples (Henry & Crawford, 2005). The DASS-21 comprises 21 items that correspond to 3 subscales, Anxiety, Stress and Depression. Each subscale has 7 items and each item comprises a statement and four short response options to reflect severity. These are scored from 0 ("did not apply to me at all") to 3 ("applied to me very much, or most of the time"). Subscale scores are multiplied by two and range from 0 to 42. Subscales scores are combined to give a total score which ranges from 0- 126. 0. Internal consistency was acceptable, $\alpha = 0.79$, $\alpha = 0.81$ and $\alpha = 0.78$ for the subscales of anxiety, stress and depression respectively.

Participant's total DASS-21 scores were grouped based on defined severity ranges (Lovibond & Lovibond, 1995). Group 1- Mild - with total scores of ≤ 40 , indicating no difficulties or scores mildly

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below the population mean, and group 2- Moderate/Severe with total scores of ≥ 41 - indicating moderate, severe and extremely severe difficulties.

Children's mental health- Parents/carers were asked to report on their child's mental health using the emotional problems subscale of the SDQ (Goodman, 1997; Goodman et al., 1998). This subscale is one of 5 subscales that form the 25-item SDQ, an emotional and behavioural screening questionnaire for children and young people with acceptable levels of validity across the age range of the study (Croft, Stride, Maughan, & Rowe, 2015). The emotional problems subscale comprises 5 items which relate to fear, worry, clinginess, sadness and somatic symptoms. Each item is scored on a three point Likert scale ranging from 0 ("not at all") to 2 ("certainly true"). These scores are summed to provide a total subscale score ranging from 0-10, with higher scores indicative of increased severity. Scores of ≥ 5 fall into the 'very high' range of the provisional banding of the SDQ scores for 2-4 year olds (those who score 5 or more account for the most severe 4 % of the population in distribution norms) (Youth in Mind, 2015). Internal consistency was acceptable, ($\alpha = 0.71$).

Where 2 or fewer responses were missing for a participant, the missing responses were replaced by the person mean of the scores that were present. Participants with 3 or more missing responses were treated as completely missing and excluded.

Measurement of children's activity levels- 7 separate measures of children's activities were used to define how much time in a week children had spent:

- Playing inside
- Playing outside
- Playing alone
- Playing with a parent
- Playing with another child in your household
- Taking part in energetic physical activity (inside or outside)
- Contact with nature (plants, trees grass etc.).

Parents/carers reported on the following for each activity: "Over the last week, how much time per day did your child spend doing the following (on average)?" with five possible answers- (0= "Did not do", 1= "less than 30 minutes", 2= "30 minutes to 2 hours", 3= "3 to hours", 4= "6+ hours").

2.3.7 Data analysis

Analyses were carried out using the lmer function within the lme4 package (v. 1.1-2.3; Bates, Maechler, Bolker & Walker, 2015) of R Studio (version 4.0.5). All models were estimated using maximum likelihood estimation (see Bates et al., 2015).

To explore different components of play, two linear mixed effects models were estimated:

Model 1: 'Play where' - this model explored the associations between where children were playing on SDQ scores including 4 continuous predictor variables: play inside, play outside, physical activity and contact with nature.

Model 2: 'Play who' - this model explored the associations between who children are playing with on SDQ scores including 5 continuous predictor variables: play alone, play with a parent, play with another child in the household, physical activity and contact with nature.

The analytical process was the same for each model. The 2 covariates (parent/carer educational attainment and parent/carer's mental health) were included with each model first to control for their effect. Then the effect of time, coded as 0 (April), 1 (May), 2 (June) and 3 (July), on SDQ symptoms was examined using linear and quadratic models, with significant time trends carried over to further analysis. Following this procedure, each predictor variable was added separately to examine its main effect on SDQ scores. Given the exploratory nature of our hypotheses and to allow for possible interaction terms, the main effects, regardless of significance, were carried forward to the final model. Finally, interactions between time and each of the seven predictors were explored and significant interactions were carried forward to final models. Within final models, standardized coefficients (β) were used to interpret the fixed effects of different predictor variables, with a t-test significance of $p < .05$. Model fit was evaluated using the Akaike Information Criteria (AIC) and the Bayesian Information Criterion (BIC) with decreases in the values of AIC and BIC following the addition of predictors to the model, indicating an improved goodness of fit of the model. Chi-Squared (χ^2) was used to test the fit of models to the observed data, with a significance of $p < .05$ indicating an association between predictors.

A random intercept was included for each participant, the fixed effects were measures of children's activities and time, measured as continuous variable (0= April, 1= May, 2= June, 3= July).

Table 2.1 *Participant demographic information*

| | April | May | June | July |
|--|----------------|----------------|----------------|----------------|
| | <i>n</i> = 454 | <i>n</i> = 789 | <i>n</i> = 712 | <i>n</i> = 574 |
| Parent gender | | | | |
| Male | 28 | 35 | 31 | 33 |
| Female | 426 | 753 | 681 | 540 |
| Parent ethnicity | | | | |
| White British | 433 | 741 | 670 | 535 |
| Other | 16 | 41 | 36 | 36 |
| Parent/carer education | | | | |
| No qualifications | 2 | 4 | 5 | 1 |
| Completed GCSE/CSE/O-levels or equivalent | 15 | 29 | 26 | 15 |
| Completed post-16 vocational course | 4 | 9 | 6 | 8 |
| A-levels or equivalent | 47 | 56 | 52 | 48 |
| Undergraduate degree | 192 | 339 | 299 | 237 |
| Postgraduate degree | 194 | 352 | 324 | 265 |
| Child mean age (SD) | 2.94 (0.76) | 2.97 (0.79) | 3.01 (0.80) | 3.11 (0.79) |
| Child gender | | | | |
| Male | 223 | 413 | 365 | 307 |
| Female | 231 | 375 | 347 | 266 |
| Other | 0 | 1 | 0 | 1 |
| Child ethnicity | | | | |
| White British | 420 | 712 | 640 | 512 |
| Other | 18 | 39 | 30 | 29 |
| Child SEN | 17 | 29 | 23 | 20 |
| Household income | | | | |
| <£16,000 p.a. | 17 | 32 | 26 | 20 |
| >£16,000 p.a. | 413 | 703 | 636 | 511 |
| Prefer not to say | | | | |
| Family composition | | | | |
| Multiple adult household | 430 | 738 | 669 | 541 |
| Single adult household | 24 | 50 | 42 | 33 |
| Parent/carer mental health (DASS-21) | | | | |
| Mild (%) | 365 (80.40) | 658 (83.40) | 594 (83.43) | 482 (84.0) |
| Moderate/severe (%) | 89 (19.60) | 131 (16.60) | 118 (16.57) | 92 (16.0) |
| Mean emotional symptoms (emotional problem subscale SDQ) (SD) | 2.07 (1.89) | 2.03 (1.88) | 1.91 (1.88) | 1.89 (1.93) |
| Severe emotional problem (% of children ≥ 5) | 11.67% | 10.52% | 10.53% | 10.62% |

2.4 Results

Across the four time points (April to July 2020) there were a total of 2529 participants (see Table 2.1). Of these 2529, 1028 satisfied the inclusion criterion of completing at least two surveys between April and July 2020 and were included in the present analysis.

Assumptions of normality were explored visually using QQ plots and statistically using the Shapiro Wilks test (see Appendix G). Data was transformed using Log 10 and Square root methods to examine if this improved the fit of the data, QQ plots and Shapiro –Wilks tests are provided in Appendix G. However, as these transformations did not significantly improve the fit of the data and acknowledging violations of normality in samples sizes of > 40 does not cause analytical difficulties, the data remained untransformed (Altman & Balnd, 1995).

Table 2.2 presents the results of the two models (model 1- ‘play where’ and model 2- ‘play who’) and the main and interaction effects of time and predictor variables for parent/carer reported emotional symptoms. All model fit indices can be found in Table 2.3.

Table 2.2 *Model results from final regression models estimating the main effects of time, other predictor variables and their interaction with time point on the emotional problems subscale of the SDQ*

| Model 1- Play where | | | | Model 2-Play who | | | |
|--------------------------|--------------|----------------|----------|--------------------------|--------------|----------------|----------|
| Predictor | β (SE) | 95% CI | t-Value | Predictor | β (SE) | 95% CI | t-Value |
| Intercept | 2.19 (0.29) | [1.75, 2.64] | 9.62*** | Intercept | 2.16 (0.28) | [1.72, 2.61] | 9.50*** |
| Time | -0.18 (0.05) | [-0.29, -0.08] | -3.45*** | Time | -0.17 (0.05) | [-0.28, -0.06] | -3.15** |
| Education | -0.09 (0.05) | [-0.20, 0.01] | -1.76 | Education | -0.09 (0.05) | [-0.19, 0.02] | -1.62 |
| DASS-21 | 1.04 (0.09) | [0.85, 1.22] | 11.22*** | DASS-21 | 1.03 (0.09) | [0.84, 1.21] | 11.15*** |
| Play- inside | -0.01 (0.04) | [-0.10, 0.08] | -0.19 | Play- alone | 0.08 (0.04) | [0.00, 0.16] | 2.00* |
| Play- outside | -0.03 (0.05) | [-0.13, 0.08] | -0.50 | Play- parent | 0.03 (0.04) | [-0.06, 0.11] | 0.58 |
| Physical activity | -0.12 (0.05) | [-0.21, -0.02] | -2.37* | Play- child | -0.06 (0.03) | [-0.12, -0.00] | -2.13* |
| Contact with nature | -0.03 (0.05) | [-0.12, 0.07] | -0.57 | Physical activity | -0.13 (0.05) | [-0.22, -0.04] | -2.94** |
| Time*contact with nature | -0.16 (0.07) | [-0.29, -0.02] | -2.27* | Contact with nature | -0.04 (0.04) | [-0.13, 0.05] | -0.94 |
| | | | | Time*contact with nature | -0.15 (0.07) | [-0.29, -0.02] | -2.21* |

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

2.4.1 Effect of time

Change in children's emotional symptoms between April and July 2020 were explored using orthogonal polynomials. Estimating linear growth significantly improved the fit of the model. However, estimating quadratic growth did not significantly improve the fit. Therefore, only linear growth was carried forward to final models (see Table 2.3 for model fit indices).

2.4.2 Model 1- Where children are playing

The effects of the covariates indicated parent/carer's mental health (DASS-21) significantly improved the model fit; however, parent/carer's education did not (see Table 2.3). Despite this, as both covariates are suggested to be important when modelling change in children's mental health, they were both carried forward to the final model.

Aside from contact with nature ($p < 0.05$), there were no significant interactions between predictor variables and time, playing inside ($p = 0.78$), playing outside ($p = 0.42$), physical activity ($p = 0.19$).

2.4.2.1 Final model

The decrease in final model indices as outlined in Table 2.2, highlight that the final model improved the model fit (AIC= 9274.7, BIC= 9338.9) when compared to the random effect model (a model accounting only for the natural variation in participant's emotional symptoms, AIC= 9419.8, BIC = 9437.3). The final model indicated that an increase in time (measured in months; Figure 2.1) and an increase in time spent being physically active predicted a decrease in emotional symptoms (Figure 2.2). There was also an interaction between time and contact with nature on emotional symptoms. Initially the amount of time children spent in contact with nature did not predict their emotional symptoms, but over time, children who had less contact with nature had higher emotional symptoms, whilst children who had more contact with nature had lower emotional symptoms (see Figure 2.3). However, playing inside, playing outside and contact with nature (without an interaction with time) did not significantly predict changes in emotional symptoms. Model fit indices can be found in Table 2.3.

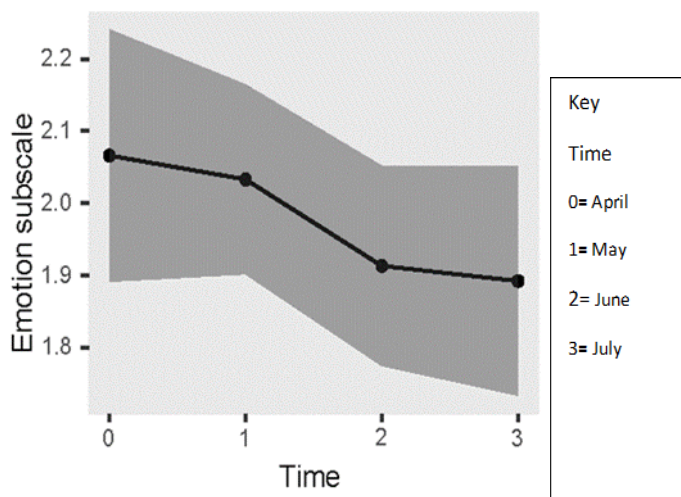


Figure 2.1 *Change in emotional symptoms over time with 95% confidence intervals shading, with 0= April, 1= May, 2=June, 3= July*

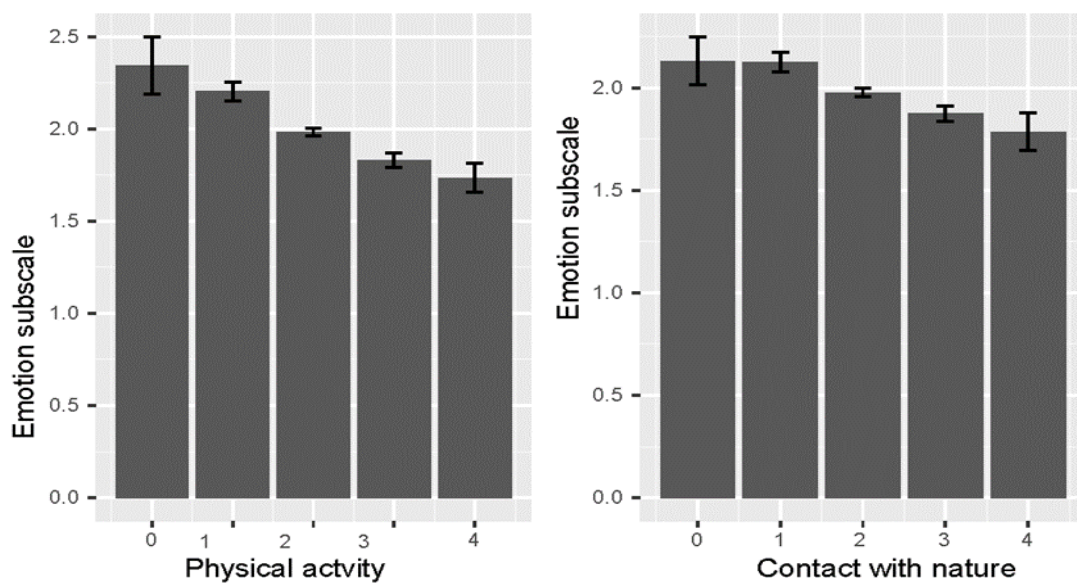


Figure 2.2 *Model 1 (play where) bar charts showing emotional subscale scores and amount of time spent being physically active and in contact with nature (0= no time, 1= < 30minutes, 2= 30 minutes to 2hrs, 3= 3 hrs, 4= >6 hours) with 95% confidence intervals*

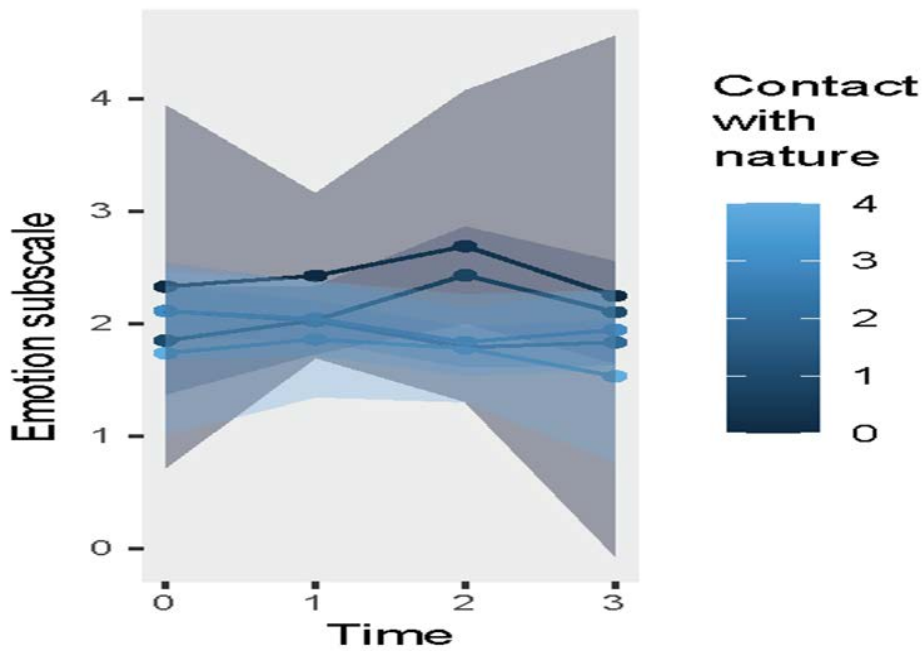


Figure 2.3 A graph showing the interaction between contact with nature and time (with 0 representing April) on emotional symptoms with 95% confidence intervals shading

2.4.3 Model 2- Who children are playing with

The effects of the covariates indicated parent/carer's mental health (DASS-21) significantly improved the model fit. However, parent/carer's education did not (see Table 2.3). Despite this, as both covariates are suggested to be important when modelling change in children's mental health, they were both carried forward to the final model.

Aside from contact with nature ($p < 0.05$), there were no significant interactions between predictor variables and time, playing alone ($p = 0.34$), playing with a parent ($p = 0.36$), playing with children ($p = 0.53$), physical activity ($p = 0.18$) (see Table 2.3).

2.4.3.1 Final model

The decrease in final model indices as outlined in Table 2.2 highlight that the final model improved the model fit (AIC= 9267.8, BIC= 9337.9) when compared to the random effect model (a model only accounting for natural variation in participants emotional symptoms, AIC= 9419.8, BIC = 9437.3). The final model indicated that increases in emotional symptoms were predicted by increases in time spent playing alone (Figure 2.4). In contrast, increases in: time (measured in months) (Figure 2.1), time spent being physically active and time spent playing with other children, predicted a decrease in emotional symptoms (Figure 2.4). As in Model 1, there was an

interaction effect between time and contact with nature on emotional symptoms. Initially the amount of time children spent in contact with nature did not predict their emotional symptoms, but over time, children who had less contact with nature had higher emotional symptoms, whilst children who had more contact with nature had lower emotional symptoms (see Figure 2.5). However, playing with a parent and contact with nature (without an interaction with time) did not significantly predict changes in emotional symptoms. Model fit indices can be found in Table 2.3.

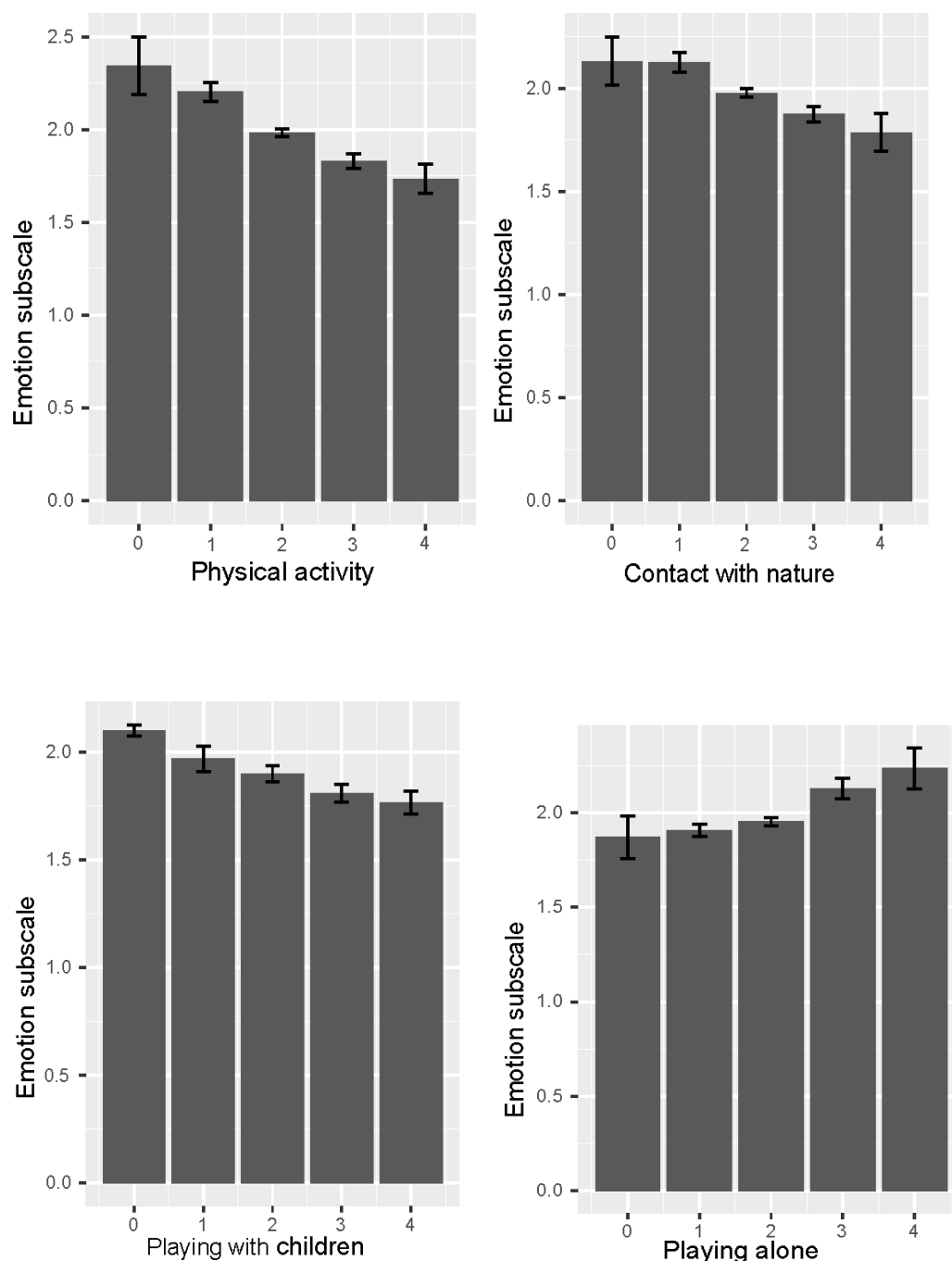


Figure 2.4 *Model 2 (play who) bar charts showing emotional subscale scores and amount of time spent engaging in activities. (0= No time, 1= < 30minutes, 2= 30 minutes to 2hrs, 3= 3 hrs, 4= >6 hours) with 95% confidence intervals*

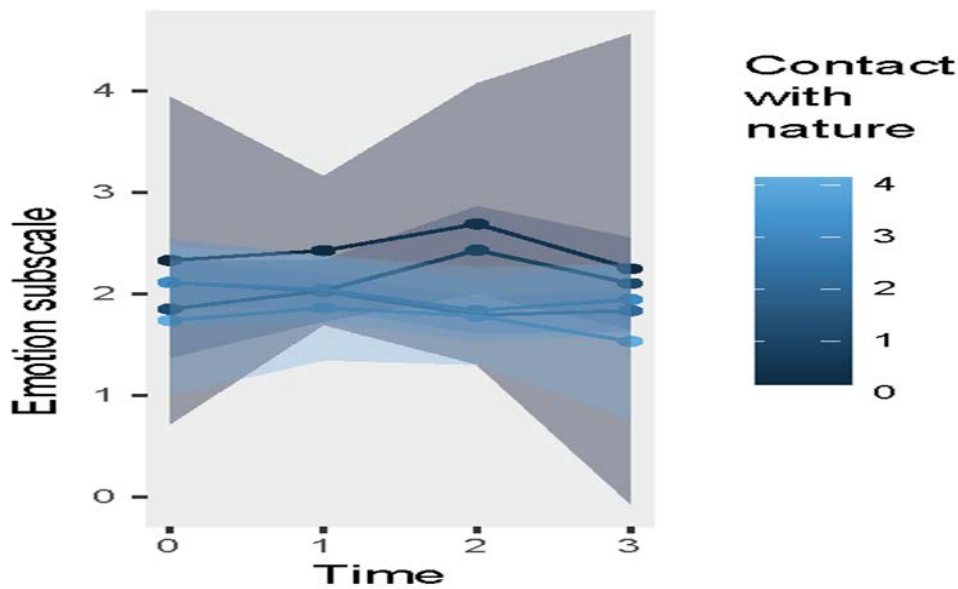


Figure 2.5 A graph showing the interaction between contact with nature and time (with 0 representing April) on emotional symptoms with 95% confidence interval shading

Table 2.3 Model fit indices for predictors of change and their interactions with time on emotional symptoms

| | Model 1 Play where | | | Model 2 Play who | | | |
|----------------------------|--------------------------|--------|-----------|-----------------------------|--------|--------|-----------|
| | AIC | BIC | χ^2 | | AIC | BIC | χ^2 |
| Random | 9419.8 | 9437.3 | | Random | 9419.8 | 9437.3 | |
| Time- linear | 9403.5 | 9426.8 | 18.30*** | Time- linear | 9403.5 | 9426.8 | 18.30*** |
| Time- quadratic | 9401.8 | 9430.9 | 3.72 | Time- quadratic | 9401.8 | 9430.9 | 3.72 |
| Education | 9402.6 | 9431.8 | 2.85 | Education | 9402.6 | 9431.8 | 2.85 |
| DASS-21 | 9282.6 | 9317.7 | 121.99*** | DASS-21 | 9282.6 | 9317.7 | 121.99*** |
| Playing inside | 9284.5 | 9325.3 | 0.19 | Playing alone | 9281.8 | 9322.7 | 2.80 |
| Playing outside | 9280.9 | 9327.6 | 5.55* | Playing with a parent | 9283.8 | 9330.5 | 0.08 |
| Physical activity | 9276.3 | 9328.9 | 6.56* | Playing with children | 9279.9 | 9332.4 | 5.87* |
| Contact with nature | 9277.9 | 9336.2 | 0.48 | Physical activity | 9269.7 | 9328.1 | 12.20*** |
| Time * playing inside | 9279.8 | 9344.0 | 0.10 | Contact with nature | 9270.7 | 9334.9 | 1.01 |
| Time * playing outside | 9279.2 | 9343.4 | 0.65 | Time* Playing alone | 9271.8 | 9341.8 | 0.92 |
| Time * physical activity | 9278.1 | 9342.3 | 1.75 | Time* Playing with a parent | 9271.9 | 9341.9 | 0.83 |
| Time * contact with nature | 9274.7 | 9338.9 | 5.14* | Time* Playing with children | 9272.3 | 9342.3 | 0.40 |
| Model 1- Where | 9274.7 | 9338.9 | | Time* Physical activity | 9270.9 | 9340.9 | 1.80 |
| | | | | Time* Contact with nature | 9267.8 | 9337.9 | 4.84* |
| | | | | Model 2- Who | 9267.8 | 9337.9 | |

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

2.5 Discussion

This study explored how two specific components of play, where and who children aged 2-5 years were playing with, alongside their levels of physical activity and contact with nature, were related to their mental health, specifically emotional symptoms (as measured by the emotional problems subscale of SDQ), during April–July 2020 of the COVID-19 pandemic.

After controlling for the impact of parent mental health and educational attainment, our findings indicate that children's emotional symptom severity (based on parents'/carers' reports) decreased over the four months of lockdown. Interestingly, the findings indicated that children's emotional symptoms did not vary based on where (inside or outside) they were playing, but did vary based on who they played with. Children who spent more time playing alone had more severe emotional symptoms, whereas children who spent more time playing with other children had less severe emotional symptoms. The amount of time children spent playing with a parent was not associated with emotional symptoms. Additionally, irrespective of where or who children were playing with, children who spent more time being physically active and more time in contact with nature had less severe emotional symptoms. The relationship between contact with nature and emotional symptoms varied over time. Whilst initially the amount of time children spent in contact with nature did not predict their emotional symptoms, over time, as children's contact with nature increased, their emotional symptom severity decreased.

The cumulative effect of prolonged restrictions and disruptions to daily life may explain why the relationship between contact with nature and emotional symptoms altered over time during the pandemic. It is possible that as the length of time children had been under restrictions increased, the potential benefits of contact with nature increased.

The findings that children's emotional symptom severity decreased over time are consistent with research highlighting a proportion of children may have some experienced benefits of the lockdown period (Asbury, Fox, Deniz, Code, & Toseeb, 2021). It is possible that pre-schoolers may have benefited from having a period of time at home due to lockdown restrictions that, due to their age, did not involve formal home schooling and may have involved more time with parents and siblings that was not constrained by imposed schedules (Dodd, 2020).

During the period of time explored, we found that who children played with, and not where they played, was associated with their mental health. Specifically, children's emotional symptoms decreased when they spent more time playing with other children, but not with parents, and increased when they spent more time playing alone. These findings highlight the complexity of play, in that it is not only the activities that take place during play that may contribute to its

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importance but also with whom children are playing. Our findings may reflect that during April to July 2020 when children were unable to have contact with peers, playing with siblings or other children in their household took on a particular importance and may have positively contributed to their mental health by providing children with a way to reduce feelings of loneliness and isolation. Research has indicated children who experience loneliness and social isolation have higher rates of mental health difficulties (Matthews et al., 2015).

Our finding that where children were playing was not associated with their mental health should be interpreted in light of a limitation as our measures did not enable parents to report on any overlap between the two play measures, for example, who children were playing inside/outside with. It is possible that there may be an interaction between these two elements of play and that location may be important when who children are playing with is considered.

Notably, regardless of where or with whom children were playing, being more physically active during April to July 2020 was associated with lower emotional symptoms. These findings are consistent with both general physical activity guidelines that suggest being more physically active is associated with better mental health (Department of Health and Social Care, 2019) and other research undertaken in the pandemic, for example, Wright, Williams & Veldhuijzen van Zanten (2021) that has indicated physical activity is a strong predictor of better mental health in children in the UK. It is possible, that during periods of increased restrictions, physical activity is one of the limited ways children can cope with difficulties linked to poor mental health, such as stress and boredom (Mikkelsen, Stojanovska, Polenakovic, Bosevski, & Apostolopoulos, 2017).

Consistent with previous research, such as Tillmann et al. (2018), our findings highlight that having contact with nature was associated with lower emotional symptom severity. Some of the ways in which contact with nature is suggested to have an impact on mental health may have been particularly relevant during the pandemic, for example enabling children to relax and reduce stress (Kaplan, 1995; Korpela, 2002; Ulrich et al., 1991). Contact with nature may also have provided opportunities for children to be in a less crowded environment which, given the significant increase in the time children had to spend in their own home, may have had a positive effect on their mental health. Research outside of a pandemic setting has highlighted how crowded home environments can have a negative impact on children's mental health (Evans & Saegert 2000).

The findings of this study should be considered in light of some limitations. First, the generalisability of our findings is constrained by the specific context in which the data was collected (i.e. during a pandemic lockdown), which makes it unclear if the associations detected would be present in more normal circumstances. Second, we are unable to generalise findings to

the wider UK population given the non-representative nature of the sample, which was heavily weighted with families from relatively affluent, White British backgrounds and under-represented families from low-income households and households of other ethnic minorities. To improve diversity and generalizability, in future research recruitment should be targeted towards minority populations, for example, translating recruitment advertisements into other languages, actively targeting minority groups through community groups and using targeted social media campaigns. Third, a further limitation arises from the need to examine possible confounding factors such as access to childcare for children of key workers, that may have influenced children's levels of play, physical activity and contact with nature that were not captured by our measures. This limitation could be overcome by completing subgroup analysis that specifically explores this and other possible confounding factors.

In addition, several limitations relate to the measures used in the current study. First, the measures did not enable parents/carers to record specific details about their child's physical activity or contact with nature, for example, whom was present. The age range of our participants (2-5 years) makes it likely that their physical activity/contact with nature involved interaction with others, parents or siblings for example. In light of our findings that the association between play and pre-schoolers' mental health was influenced by who children were playing with, it would be relevant to explore if the association between pre-schoolers' mental health and each of physical activity or contact with nature was also influenced by this. Second, the measures did not enable parents/carers to record specific details about who children were playing with when they were playing with other children; for example, if they were playing with a sibling, child family member or a friend and their age. Research outside a pandemic setting has suggested the type of play children engage with and the impact of this play may vary based on the age and relationship children have with their playmate (Goldstein, 2012; Scott & Cogburn, 2018). As such, it would be warranted to explore if the association between pre-schoolers' mental health and playing with other children detected in the present study varied based on the age and relationship children had to their playmates.

In conclusion, the present study found that being physically active, having contact with nature and playing with other children were associated with less severe emotional symptoms, whilst the amount of time children spent playing alone was associated with more severe emotional symptoms in children aged 2-5 years during the first COVID-19 lockdown. Our findings highlight the relationship between children's daily activities and their mental health and suggest that one very simple way of improving the mental health of children during periods of lockdown may be through their daily activities. Further research is needed to explore these relationships beyond the early lockdown period. Consideration could also be given to how these findings can helpfully

contribute to advice and guidance given to parents in any periods of future lockdowns, for example devising ways that children can play virtually with others or offering guidance to parents as to how they can mimic peer play or increase their child's levels of physical activity or contact with nature.

2.6 Key points and relevance

- Existing research suggests there is a relationship between play, physical activity, contact with nature and mental health in children.
- It is unclear how pandemic restrictions in the UK's first national lockdown affected these relationships in pre-school aged children.
- The present study found that being physically active, having contact with nature and playing with other children were associated with lower emotional symptoms, whilst more time spent playing alone was associated with higher emotional symptoms.
- Understanding how children's play activities can be used to improve their mental health during periods of lockdown is essential to inform the development of future policies and guidance.

2.7 Acknowledgements

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The author has declared that they have no competing or potential conflicts of interest.

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Please note that access to the datasets associated with this thesis can be found at <https://doi.org/10.5258/SOTON/D1939>

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Appendix A Systematic review search terms

CINAHL

S1- TI (play* N5 (art OR arts OR "arts-based" OR sport* OR exercis* OR "outdoor activit*" OR "outdoor space*" OR explorati* OR discover* OR toy* OR game* OR "social media" OR "free play" OR "free-play" OR "adult-directed activit*" OR drawing OR craft* OR reading OR "book sharing" OR danc* OR sing* OR fun OR drama* OR imagin*)) OR AB (play* N5 (art OR arts OR "arts-based" OR sport* OR exercis* OR "outdoor activit*" OR "outdoor space*" OR explorati* OR discover* OR toy* OR game* OR "social media" OR "free play" OR "free-play" OR "adult-directed activit*" OR drawing OR craft* OR reading OR "book sharing" OR danc* OR sing* OR fun OR drama* OR imagin*))

S2- TI "play therap*" OR AB "play therap*"

S3 (MH "Play Therapy") OR (MH "Play and Playthings+")

S4- S1 OR S2 OR S3 = Play terms

S5- (MH "Anxiety+") OR (MH "Anxiety Disorders+")

S6- TI (anxiet* or anxious* or internalis* or worr* or fear*) OR AB (anxiet* or anxious* or internalis* or worr* or fear*)

S7- S5 OR S6 = Anxiety terms

S8- S4 AND S7 = Final search

Psychinfo

S1- TI (play* N5 (art OR arts OR "arts-based" OR sport* OR exercis* OR "outdoor activit*" OR "outdoor space*" OR explorati* OR discover* OR toy* OR game* OR "social media" OR "free play" OR "free-play" OR "adult-directed activit*" OR drawing OR craft* OR reading OR "book sharing" OR danc* OR sing* OR fun OR drama* OR imagin*)) OR AB (play* N5 (art OR arts OR "arts-based" OR sport* OR exercis* OR "outdoor activit*" OR "outdoor space*" OR explorati* OR discover* OR toy* OR game* OR "social media" OR "free play" OR "free-play" OR "adult-directed activit*" OR drawing OR craft* OR reading OR "book sharing" OR danc* OR sing* OR fun OR drama* OR imagin*))

S2- TI "play therap*" OR AB "play therap*"

Appendix A

S3- DE "Childhood Play Behavior" OR DE "Childhood Play Development" OR DE "Play Therapy"

S4- S1 OR S2 OR S3 = Play terms

S5- DE "Anxiety"

S6- TI (anxiet* or anxious* or internalis* or worr* or fear*) OR AB (anxiet* or anxious* or internalis* or worr* or fear*)

S7- S5 OR S6 = Anxiety terms

S8- S4 AND S7 = Final search

MEDLINE

S1- TI (play* N5 (art OR arts OR "arts-based" OR sport* OR exercis* OR "outdoor activit*" OR "outdoor space*" OR explorati* OR discover* OR toy* OR game* OR "social media" OR "free play" OR "free-play" OR "adult-directed activit*" OR drawing OR craft* OR reading OR "book sharing" OR danc* OR sing* OR fun OR drama* OR imagin*)) OR AB (play* N5 (art OR arts OR "arts-based" OR sport* OR exercis* OR "outdoor activit*" OR "outdoor space*" OR explorati* OR discover* OR toy* OR game* OR "social media" OR "free play" OR "free-play" OR "adult-directed activit*" OR drawing OR craft* OR reading OR "book sharing" OR danc* OR sing* OR fun OR drama* OR imagin*))

S2- TI "play therap*" OR AB "play therap*"

S3- (MH "Play Therapy) OR (MH "Play and Playthings")

S4- S4- S1 OR S2 OR S3 = Play terms

S5- (MH "Anxiety") OR (MH "Anxiety Disorders) OR (MH "Anxiety, Separation")

S6- TI (anxiet* or anxious* or internalis* or worr* or fear*) OR AB (anxiet* or anxious* or internalis* or worr* or fear*)

S7- S5 OR S6 = Anxiety terms

S8- S4 AND S7 = Final search

Web of science

S1- Topic= ((play* NEAR/5 (art OR arts OR "arts-based" OR sport* OR exercis* OR "outdoor activit*" OR "outdoor space*" OR explorati* OR discover* OR toy* OR game* OR "social media"

OR "free play" OR "free-play" OR "adult-directed activit*" OR drawing OR craft* OR reading OR
"book sharing" OR danc* OR sing* OR fun OR drama* OR imagin*))

S2- Topic= ("Play Therap*") OR ("Play and Playthings")

S3 = S1 OR S2 = Play terms

S4- Topic = (anxiet* or anxious* or internalis* or worr* or fear*)

S5- S3 AND S4 = Final search

Appendix B UNCRC definition of play

† Play and related activities: The definition used for play within the review was advised by UNCRC, Article 31, General Comment No. 17, which states:

“Children’s play is any behaviour, activity or process initiated, controlled and structured by children themselves; takes place whenever and wherever opportunities arise. Caregivers may contribute to the creation of environments in which play takes place, but play itself is non-compulsory, driven by intrinsic motivation and undertaken for its own sake, rather than a means to an end. Play involves the exercise of autonomy, physical, mental or emotional activity, and has the potential to take infinite forms, either in groups or alone. These forms will change and be adapted throughout the course of childhood. The key characteristics of play are fun, uncertainty, challenge, flexibility and non-productivity. Together, these factors contribute to the enjoyment it produces and the consequent incentive to continue to play. While play is often considered non-essential, the Committee reaffirms that it is a fundamental and vital dimension of the pleasure of childhood, as well as an essential component of physical, social, cognitive, emotional and spiritual development. Children’s play also includes leisure activities (free, unobligated time without formal education, work, or responsibilities) and recreational activities (consisting of experiences such as participation in music, art, crafts, community engagement, clubs, sports, games, hiking and camping, pursuing hobbies) that are chosen voluntarily and discretionary by the child him or herself”.

Appendix C RoB2 quality assessment ratings for the included studies

| Study | D1 | D2 | D3 | D4 | D5 | Overall bias | | | | |
|-------------------------|----|----|----|----|----|--------------|--|----|--|--|
| Vaezzadeh et al, 2011 | + | + | + | + | + | + | | + | Low risk | |
| Ünver et al 2020 | + | ! | + | + | + | ! | | ! | Some concerns | |
| Li et al, 2007 | + | + | + | + | + | + | | ⊖ | High risk | |
| Lee et al, 2012 | + | + | + | ⊖ | + | ! | | | | |
| He et al, 2015 | + | + | + | + | + | + | | D1 | Randomisation process | |
| Forouzandeh et al, 2020 | + | + | + | ! | ! | ! | | D2 | Deviations from the intended interventions | |
| Dehghan et al, 2017 | + | + | + | + | + | + | | D3 | Missing outcome data | |
| Co?kuntürk et al, 2018 | + | ! | + | + | + | ! | | D4 | Measurement of the outcome | |
| Bumin et al, 2017 | ! | + | + | + | + | + | | D5 | Selection of the reported result | |

Appendix D CAMH Journal guidelines

Author Guidelines

Why submit to Child and Adolescent Mental Health?

- An international journal with a growing reputation for publishing work of clinical relevance to multidisciplinary practitioners in child and adolescent mental health
- Ranked in ISI: 2018: 75/124 (Pediatrics); 109/146 (Psychiatry); 93/142 (Psychiatry, Social Science); 78/130 (Psychology, Clinical).
- 6,239 institutions with access to current content, and a further 7,939 institutions in the developing world
- High international readership - accessed by institutions globally, including North America (25%), Europe (39%) and Asia-Pacific (13%)
- Excellent service provided by editorial and production offices
- Opportunities to communicate your research directly to practitioners
- Every manuscript is assigned to one of the Joint Editors as decision-making editor; rejection rate is around 84%
- Acceptance to Early View publication averages 6 weeks
- Simple and efficient online submission – visit http://mc.manuscriptcentral.com/camh_journal
- Early View – articles appear online before the paper version is published. [Click here](#) to see the articles currently available
- Authors receive access to their article once published as well as a 25% discount on virtually all Wiley books
- All articles published in CAMH are eligible for Panel A: Psychology, Psychiatry and Neuroscience in the Research Excellence Framework (REF)

1. Contributions from any discipline that further clinical knowledge of the mental life and behaviour of children are welcomed. Papers need to clearly draw out the clinical implications for mental health practitioners. Papers are published in English. As an international journal, submissions are welcomed from any country. Contributions should be of a standard that merits presentation before an international readership. Papers may assume any of the following forms: Original Articles; Review Articles; Innovations in Practice; Narrative Matters; Debate Articles.

Authors are asked to remember that CAMH is an international journal and therefore clarification should be provided for any references that are made in submitted papers to the practice within the authors' own country. This is to ensure that the meaning is clearly understandable for our diverse readership. Authors should make their papers as broadly applicable as possible for a global audience.

Original Articles: Original Articles make an original contribution to empirical knowledge, to the theoretical understanding of the subject, or to the development of clinical research and practice.

Adult data is not usually accepted for publication unless it bears directly on developmental issues in childhood and adolescence.

Your Original Article should be no more than 5,500 words including tables, figures and references.

Review Articles: These papers offer a critical perspective on a key body of current research relevant to child and adolescent mental health. The journal requires the pre-registration of

review protocols on any publicly accessible platform (e.g. The International Prospective Register of Systematic Reviews, or PROSPERO).

Review Articles

Research Articles offer our readers a critical perspective on a key body of current research relevant to child and adolescent mental health and maintain high standards of scientific practice by conforming to systematic guidelines as set out in the [PRISMA statement](#). These articles should aim to inform readers of any important or controversial issues/findings, as well as the relevant conceptual and theoretical models, and provide them with sufficient information to evaluate the principal arguments involved. All review articles should also make clear the relevancy of the research covered, and any findings, for clinical practice.

Your Review Article should be no more than 8,000 words excluding tables, figures and references and no more than 10,000 including tables, figures and references.

Innovations in Practice: These papers report on any new and innovative development that could have a major impact on evidence-based practice, intervention and service models.

Narrative Matters: These papers describe important topics and issues relevant to those working in child and adolescent mental health but considered from within the context and framework of the Humanities and Social Sciences.

Debate Articles: These papers express opposing points of view or opinions, highlighting current evidence-based issues, or discuss differences in clinical practice

2. Submission of a paper to *Child and Adolescent Mental Health* will be held to imply that it represents an original submission, not previously published; that it is not being considered for publication elsewhere; and that if accepted for publication it will not be published elsewhere without the consent of the Editors.

3. Manuscripts should be submitted online. For detailed instructions please go to: http://mc.manuscriptcentral.com/camh_journal and *check for existing account* if you have submitted to or reviewed for the journal before, or have forgotten your details. If you are new to the journal *create a new account*. Help with submitting online can be obtained from the Editorial Office at ACAMH (email: publications@acamh.org)

4. Authors' professional and ethical responsibilities

Disclosure of interest form

All authors will be asked to download and sign a full Disclosure of Interests form and acknowledge this and sources of funding in the manuscript.

Ethics

Authors are reminded that the *Journal* adheres to the ethics of scientific publication as detailed in the [Ethical principles of psychologists and code of conduct](#) (American Psychological Association, 2010). These principles also imply that the piecemeal, or fragmented publication of small amounts of data from the same study is not acceptable. The *Journal* also generally conforms to the Uniform Requirements for Manuscripts of the International Committee of Medical Journal Editors ([ICJME](#)) and is also a member and subscribes to the principles of the Committee on Publication Ethics ([COPE](#)).

Informed consent and ethics approval

Authors must ensure that all research meets these ethical guidelines and affirm that the research has received permission from a stated Research Ethics Committee (REC) or Institutional Review Board (IRB), including adherence to the legal requirements of the study country. Within the Methods section, authors should indicate that 'informed consent' has been

appropriately obtained and state the name of the REC, IRB or other body that provided ethical approval. When submitting a manuscript, the manuscript page number where these statements appear should be given.

Preprints

CAMH will consider for review articles previously available as preprints. Authors may also post the submitted version of a manuscript to a preprint server at any time. Authors are requested to update any pre-publication versions with a link to the final published article. Please find the Wiley preprint policy [here](#).

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Recommended guidelines and standards

The Journal requires authors to conform to CONSORT 2010 (see [CONSORT Statement](#)) in relation to the reporting of randomised controlled clinical trials; also recommended is the [Extensions of the CONSORT Statement](#) with regard to cluster randomised controlled trials). In particular, authors must include in their paper a flow chart illustrating the progress of subjects through the trial (CONSORT diagram) and the CONSORT checklist. The flow diagram should appear in the main paper, the checklist in the online Appendix. Trial registry name, registration identification number, and the URL for the registry should also be included at the end of the methods section of the Abstract and again in the Methods section of the main text, and in the online manuscript submission. Trials must be registered in one of the ICJME-recognised trial registries:

[Australian New Zealand Clinical Trials Registry](#)

[Clinical Trials](#)

[Netherlands Trial Register](#)

[ISRCTN Registry](#)

[UMIN Clinical Trials Registry](#)

Manuscripts reporting systematic reviews or meta-analyses will only be considered if they conform to the [PRISMA Statement](#). We ask authors to include within their review article a flow diagram that illustrates the selection and elimination process for the articles included in their review or meta-analysis, as well as a completed PRISMA Checklist. The journal requires the pre-registration of review protocols on any publicly accessible platform (e.g. The International Prospective Register of Systematic Reviews, or PROSPERO).

The [Equator Network](#) is recommended as a resource on the above and other reporting guidelines for which the editors will expect studies of all methodologies to follow. Of particular note are the guidelines on qualitative work <http://www.equator-network.org/reporting-guidelines/evolving-guidelines-for-publication-of-qualitative-research-studies-in-psychology-and-related-fields> and on quasi-experimental <http://www.equator-network.org/reporting-guidelines/the-quality-of-mixed-methods-studies-in-health-services-research> and mixed method designs <http://www.equator-network-or/reporting-guidelines/guidelines-for-conducting-and-reporting-mixed-research-in-the-field-of-counseling-and-beyond>

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An initiative started by *CrossRef* to help its members actively engage in efforts to prevent scholarly and professional plagiarism. The journal to which you are submitting your manuscript employs a plagiarism detection system. By submitting your manuscripts to this journal you accept that your manuscript may be screened for plagiarism against previously published works.

5. Manuscripts should be double spaced and conform to the house style of CAMH. The title page of the manuscript should include the title, name(s) and address(es) of author(s), an abbreviated title (running head) of up to 80 characters, a correspondence address for the paper, and any ethical information relevant to the study (name of the authority, data and

reference number for approval) or a statement explaining why their study did not require ethical approval.

Summary: Authors should include a structured Abstract not exceeding 250 words under the sub-headings: Background; Method; Results; Conclusions.

Key Practitioner Message: Below the Abstract, please provide 1-2 bullet points answering each of the following questions:

- **What is known?** - What is the relevant background knowledge base to your study? This may also include areas of uncertainty or ignorance.
- **What is new?** - What does your study tell us that we didn't already know or is novel regarding its design?
- **What is significant for clinical practice?** - Based on your findings, what should practitioners do differently or, if your study is of a preliminary nature, why should more research be devoted to this particular study?

Keywords: Please provide 4-6 keywords use [MeSH Browser](#) for suggestions

6. Papers submitted should be concise and written in English in a readily understandable style, avoiding sexist and racist language. Articles should adhere to journal guidelines and include a word count of their paper; occasionally, longer article may be accepted after negotiation with the Editors.

7. Authors who do not have English as a first language may choose to have their manuscript professionally edited prior to submission; a list of independent suppliers of editing services can be found at http://authorservices.wiley.com/bauthor/english_language.asp. All services are paid for and arranged by the author, and use of one of these services does not guarantee acceptance or preference for publication.

8. Headings: Original articles should be set out in the conventional format: Methods, Results, Discussion and Conclusion. Descriptions of techniques and methods should only be given in detail when they are unfamiliar. There should be no more than three (clearly marked) levels of subheadings used in the text.

9. All manuscripts should have an Acknowledgement section at the end of the main text, before the References. This should include statements on the following:

Study funding: Please provide information on any external or grant funding of the work (or for any of the authors); where there is no external funding, please state this explicitly.

Contributorships: Please state any elements of authorship for which particular authors are responsible, where contributorships differ between author group. (All authors must share responsibility for the final version of the work submitted and published; if the study include original data, at least one author must confirm that he or she had full access to all the data in the study and takes responsibility for the integrity of the data in the study and the accuracy of the data analysis). Contributions from others outside the author group should also be acknowledged (e.g. study assistance or statistical advice) and collaborators and study participants may also be thanked.

Conflicts of interest: Please disclose any conflicts of interest of potential relevance to the work reported for each of the authors. If no conflicts of interest exist, please include an explicit declaration of the form: "The author(s) have declared that they have no competing or potential conflicts of interest".

10. For referencing, CAMH follows a slightly adapted version of APA Style <http://www.apastyle.org/>. References in running text should be quoted showing author(s) and date. For up to three authors, all surnames should be given on first citation; for subsequent citations or where there are more than three authors, 'et al.' should be used. A full

reference list should be given at the end of the article, in alphabetical order.

References to journal articles should include the authors' surnames and initials, the year of publication, the full title of the paper, the full name of the journal, the volume number, and inclusive page numbers. Titles of journals must not be abbreviated. References to chapters in books should include authors' surnames and initials, year of publication, full chapter title, editors' initials and surnames, full book title, page numbers, place of publication and publisher.

11. Tables: These should be kept to a minimum and not duplicate what is in the text; they should be clearly set out and numbered and should appear at the end of the main text, with their intended position clearly indicated in the manuscript.

12. Figures: Any figures, charts or diagrams should be originated in a drawing package and saved within the Word file or as an EPS or TIFF file. See <http://authorservices.wiley.com/bauthor/illustration.asp> for further guidelines on preparing and submitting artwork. Titles or captions should be clear and easy to read. These should appear at the end of the main text.

13. Footnotes should be avoided, but end notes may be used on a limited basis.

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CAMH encourages authors to share the data and other artefacts supporting the results in the paper by archiving them by uploading it upon submission or in an appropriate public repository. Examples of possible supporting material include intervention manuals, statistical analysis syntax, and experimental materials and qualitative transcripts.

1. If uploading with your manuscript please call the file 'supporting information' and reference it in the manuscript.
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3. On publication your supporting information will be available alongside the final version of the manuscript online.
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Appendix E Journal of Child Psychology and Psychiatry guidelines

Journal of Child Psychology and Psychiatry

Author Guidelines

Please read the Notes for Contributors guidance below for all types of contributions and styles of manuscript.

Why submit your article to *The Journal of Child Psychology and Psychiatry*?

- The leading, international journal covering both child and adolescent psychology and psychiatry;
- Provides an interdisciplinary perspective to the multidisciplinary field of child and adolescent mental health, though publication of high-quality empirical research, clinically-relevant studies and highly cited research reviews and practitioner review articles;
- Impact Factor 6.129 (2018): ISI Journal Citation Reports © Ranking: 2018: 2/74 (Psychology, Developmental); 6/77 (Psychology); 11/142 (Psychiatry (Social Science)); 16/146 (Psychiatry);
- Ranked in the Top 20 journals in psychiatry and psychology by citation impact over the last decade (Thomson Reuters, Essential Science Indicators);
- Over 12,000 institutions with access to current content;
- Massive international readership; over one million articles downloaded every year (35% North America, 31% Europe, 11% Asia-Pacific);
- Quick turnaround times:
 - Decision on your paper in around 5 weeks (excluding reject without review decisions).
 - On average, articles are published online within 5 weeks of acceptance.
- Articles appear on Early View before the paper version is published – Click [here](#); to see the Early View articles currently available online; Epub entries on PubMed and widely indexed/abstracted, including MEDLINE, EMBASE and ISI Citation Indexes;
- Every manuscript is assigned to 1 of the 19 decision editors specialising in a particular subject domain. Acceptance rate is around 16%;
- State of the art online submission site, simple and quick to use:- http://mc.manuscriptcentral.com/jcpp_journal; dedicated journal Editorial Office for easy, personal contact through the peer review and editorial process; proof tracking tool for authors.
- All papers published in JCPP are eligible for Panel A: Psychology, Psychiatry and Neuroscience in the Research Excellence Framework (REF);

Notes for Contributors

1. [General](#)
2. [Authors' professional and ethical responsibilities](#)
 - [Data Sharing](#)
 - [Preprints](#)
3. [Recommended guidelines and standards](#)
 - [Trial registration](#)
4. [Manuscript preparation and submission](#)

5. [Manuscript processing](#)
6. [For authors who do not chose open access](#)
7. [For authors choosing open access](#)
8. [Liability](#)

General

Contributions from any discipline that further knowledge of the mental health and behaviour of children and adolescents are welcomed. Papers are published in English, but submissions are welcomed from any country. Contributions should be of a standard that merits presentation before an international readership.

Papers may assume either of the following forms:

- *Original articles*
These should make an original contribution to empirical knowledge, to the theoretical understanding of the subject, or to the development of clinical research and practice. Adult data are not usually accepted for publication unless they bear directly on developmental issues in childhood and adolescence or the transition from adolescence to adulthood. Original articles should not exceed **6000 words**, including title page, abstract, references, tables, and figures; the total word count should be given on the title page of the manuscript. Limit tables and figures to 5 or fewer double-spaced manuscript pages. It is possible to submit additional tables or figures as an Appendix for an online-only version. We strongly encourage you to keep the length of the manuscript within the word limit. If you would like to make an exceptional request to extend the length of your submission contact the editorial office (publications@acamh.org).
- *Review articles*
Papers for this section can include systematic reviews, meta-analysis or theoretical formulations. There are three types of reviews: Annual Research Reviews, Research Reviews and Practitioners Reviews. These papers are usually commissioned. However, we also welcome proposals from authors which our specialist editors will review before inviting a submission. The papers should survey an important area of interest within a general field and, where appropriate, closely follow PRISMA guidelines. Practitioner Reviews and Research Reviews should normally be no more than 6000 words long (as original articles). Annual Research Reviews can be considerably longer with the length negotiated at the time of commission.

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Authors' professional and ethical responsibilities

Submission of a paper to JCPP will be held to imply that it represents an original contribution not previously published (except in the form of an abstract or preliminary report); that it is not being considered for publication elsewhere; and that, if accepted by the Journal, it will not be published elsewhere in the same form, in any language, without the consent of the Editors. When submitting a manuscript, authors should state in a covering letter whether they have currently in press, submitted or in preparation any other papers that are based on the same data set, and, if so, provide details for the Editors.

Access to data and Data sharing

If the study includes original data, at least one author must confirm that he or she had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

The journal encourages all authors to share the data and other artefacts supporting the results in the paper by archiving it in an appropriate public repository. Authors may provide a data availability statement, including a link to the repository they have used, in order that this statement can be published in their paper. Shared data should be cited.

More information is available [here](#)

All data must be made available on request of the editor-in-chief either before or after submission. Failure to do so before acceptance will result in rejection of the paper and after acceptance in retraction of the paper.

Preprints

The JCPP will consider for review articles previously available as preprints. Authors may also post the submitted version of a manuscript to a preprint server, such as ArXiv, bioRxiv, psyArXiv, SocArXiv, engrXiv etc., at any time. Authors are requested to update any pre-publication versions with a link to the final published article. Please find the Wiley preprint policy [here](#).

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Authors are reminded that the Journal adheres to the ethics of scientific publication as detailed in the **Ethical principles of psychologists and code of conduct** (American Psychological Association, 2010). These principles also imply that the piecemeal, or fragmented publication of small amounts of data from the same study is not acceptable. The Journal also generally conforms to the **Uniform Requirements for Manuscripts of the International Committee of Medical Journal Editors (ICJME)** and is also a member and subscribes to the principles of the **Committee on Publication Ethics (COPE)**.

Authorship

Authorship credit should be given only if substantial contribution has been made to the following:

- Conception and design, or collection, analysis and interpretation of data
- Drafting the article or revising it critically for important intellectual content, and final approval of the version to be published

The corresponding author must ensure that there is no one else who fulfils the criteria who is not included as an author. Each author is required to have participated sufficiently in the work to take public responsibility for the content.

Conflict of interest

All submissions to JCPP require a declaration of interest from all authors. This should list fees and grants from, employment by, consultancy for, shared ownership in, or any close relationship with, an organisation whose interests, financial or otherwise, may be affected by the publication of the paper. This pertains to all authors, and all conflict of interest should be noted on page 1 of the submitted manuscript. Where there is no conflict of interest, this should also be stated. The JCPP Editor Conflict of Interest Statement can be found by clicking [here](#). The JCPP Editor Conflicts of Interest Statement is published annually in issue 1 of each volume.

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Informed consent and ethics approval

Authors must ensure that all research meets these ethical guidelines and affirm that the research has received permission from a stated Research Ethics Committee (REC) or Institutional Review Board (IRB), including adherence to the legal requirements of the study country. Within the Methods section, authors should indicate that 'informed consent' has been appropriately obtained and state the name of the REC, IRB or other body that provided ethical approval. When submitting a manuscript, the manuscript page number where these statements appear should be given.

Recommended guidelines and standards

Randomised controlled trials

The Journal requires authors to conform to CONSORT 2010 (see **CONSORT Statement**) in relation to the reporting of randomised controlled clinical trials; also recommended is the **Extensions of the CONSORT Statement** with regard to cluster randomised controlled trials. In particular, authors of RCTs must include in their paper a flow chart illustrating the progress of subjects through the trial (CONSORT diagram) and the CONSORT checklist. The flow diagram should appear in the main paper, the checklist in the online Appendix. Trial registry name, registration identification number, and the URL for the registry should also be included at the end of the methods section of the Abstract and again in the Methods section of the main text, and in the online manuscript submission. The manuscript should include sample size calculation and should specify primary and secondary trial outcomes/endpoints.

Trials should be registered in one of the ICJME-recognised trial registries such as:

Australian New Zealand Clinical Trials Registry <https://www.anzctr.org.au/>

Clinical Trials <http://www.clinicaltrials.gov>

ISRCTN Register <http://isrctn.org>

Nederlands Trial Register <http://www.trialregister.nl/trialreg/index.asp>

UMIN Clinical Trials Registry <http://www.umin.ac.jp/ctr>

Trial registration must include a pre-registered, date stamped, publicly available protocol setting out, at least, the research question, hypotheses, primary outcome and statistics plan. These requirements apply to all trials whatever their academic provenance (i.e., including trials of educational and social work interventions) or whether they include a clinical outcome (i.e., those trials that focus on a mechanism of action rather than symptoms or functional impairment retain the requirement for pre-registration). Authors must state whether the primary trial report is referenced and if they have identified the study as a secondary analysis of existing trial data.

Systematic Reviews

Systematic reviews should conform to the PRISMA guidelines. The journal strongly encourages the pre-registration of review protocols on publicly accessible platforms. From 2021 this will be mandatory.

Other submissions

Pre-registration of studies with all other types of designs on publicly available platforms is encouraged. All pre-registered studies accepted for publication will be flagged following publication.

At this time the JCPP does not publish study protocols itself but actively encourages the practice to increase transparency and reproducibility of findings. This situation is under active review. Please [click here](#) for more details on our position.

CrossCheck

The journal employs a plagiarism detection system. By submitting your manuscript to this journal you accept that your manuscript may be screened for plagiarism against previously published works.

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1. The manuscript should be double spaced throughout, including references and tables. Pages should be numbered consecutively. The preferred file formats are MS Word or WordPerfect, and should be PC compatible. If using other packages the file should be saved as Rich Text Format or Text only.

2. Papers should be concise and written in English in a readily understandable style. Care should be taken to avoid racist or sexist language, and statistical presentation should be clear and unambiguous. The Journal follows the style recommendations given in the *Publication manual of the American Psychological Association* (5th edn., 2001).

3. The Journal is not able to offer a translation service, but, authors for whom English is a second language may choose to have their manuscript professionally edited before submission to improve the English. A list of independent suppliers of editing services can be found [here](#). All services are paid for and arranged by the author, and use of one of these services does not guarantee acceptance or preference for publication.

Layout

Title: The first page of the manuscript should give the title, name(s) and short address(es) of author(s), and an abbreviated title (for use as a running head) of up to 60 characters.

Abstract

The abstract should not exceed 300 words and should be structured in the following way with bold marked headings: **Background; Methods; Results; Conclusions; Keywords; Abbreviations**. The abbreviations will apply where authors are using acronyms for tests or abbreviations not in common usage.

Key points and relevance

All papers should include a text box at the end of the manuscript outlining the four or five key (bullet) points of the paper. These should briefly (80-120 words) outline what's known, what's new, and what's relevant.

Under the 'what's relevant' section we ask authors to describe the relevance of their work in one or more of the following domains - policy, clinical practice, educational practice, service development/delivery or recommendations for further science.

Headings

Articles and research reports should be set out in the conventional format: **Methods, Results, Discussion and Conclusion**. Descriptions of techniques and methods should only be given in detail when they are unfamiliar. There should be no more than three (clearly marked) levels of subheadings used in the text.

Acknowledgements

These should appear at the end of the main text, before the References.

Correspondence to

Full name, address, phone, fax and email details of the corresponding author should appear at the end of the main text, before the References.

References

The JCPP follows the text referencing style and reference list style detailed in the *Publication manual of the American Psychological Association* (5th edn.)i.

References in text

References in running text should be quoted as follows: Smith and Brown (1990), or (Smith, 1990), or (Smith, 1980, 1981a, b), or (Smith & Brown, 1982), or (Brown & Green, 1983; Smith, 1982).

For up to five authors, all surnames should be cited in the first instance, with subsequent occurrences cited as et al., e.g. Smith et al. (1981) or (Smith et al., 1981). For six or more authors, cite only the surname of the first author followed by et al. However, all authors should be listed in the Reference List. Join the names in a multiple author citation in running text by the word 'and'. In parenthetical material, in tables, and in the References List, join the names by an ampersand (&). References to unpublished material should be avoided.

Reference list

Full references should be given at the end of the article in alphabetical order, and not in footnotes. Double spacing must be used.

References to journals should include the authors' surnames and initials, the year of publication, the full title of the paper, the full name of the journal, the volume number, and inclusive page numbers. Titles of journals must not be abbreviated and should be italicised.

References to books should include the authors' surnames and initials, the year of publication, the full title of the book, the place of publication, and the publisher's name.

References to articles, chapters and symposia contributions should be cited as per the examples below:

Kiernan, C. (1981). Sign language in autistic children. *Journal of Child Psychology and Psychiatry*, 22, 215-220.

Thompson, A. (1981). *Early experience: The new evidence*. Oxford: Pergamon Press.

Jones, C.C., & Brown, A. (1981). Disorders of perception. In K. Thompson (Ed.), *Problems in early childhood* (pp. 23-84). Oxford: Pergamon Press.

Use Ed.(s) for Editor(s); edn. for edition; p.(pp.) for page(s); Vol. 2 for Volume 2.

Tables and Figures

All Tables and Figures should appear at the end of main text and references, but have their intended position clearly indicated in the manuscript. They should be constructed so as to be intelligible without reference to the text. Any lettering or line work should be able to sustain reduction to the final size of reproduction. Tints and complex shading should be avoided and colour should not be used unless essential. Authors are encouraged to use patterns as opposed to tints in graphs. In case of essential colour figures, authors are reminded that there is a small printing charge. Authors will be able to access their proofs via Wiley Online Library. Figures should be originated in a drawing package and saved as TIFF, EPS, or PDF files. Further information about supplying electronic artwork can be found in the Wiley electronic artwork guidelines [here](#).

Nomenclature and symbols

Each paper should be consistent within itself as to nomenclature, symbols and units. When referring to drugs, give generic names, not trade names. Greek characters should be clearly indicated.

Supporting Information

Examples of possible supporting material include intervention manuals, statistical analysis syntax, and experimental materials and qualitative transcripts.

1. If uploading with your manuscript please call the file 'supporting information' and reference it in the manuscript.
2. Include only those items - figures, images, tables etc that are relevant and referenced in the manuscript.
3. Label and cite the items presented in the supplementary materials as - FigS1, FigS2 etc and TableS1, TableS2 etc (as the case maybe) in their order of appearance.
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Manuscript processing

Editorial decisions

Our editorial processes and priorities are described [here](#).

The JCPP has an active triage system and approximately 50% of papers are rejected without review by either the editor-in-chief or a specialist editor - normally within the first week following submission.

Other papers are subject to single blind peer review by multiple referees. Our goal is to deliver the initial decision within 60 days of submission. Most manuscripts will require some revision by the authors before final acceptance.

Appeals process:

1. If your manuscript is rejected, and if you believe a pertinent point was overlooked or misunderstood by the decision Editor or reviewers, you may appeal the editorial decision by contacting the decision Editor through the Editorial Office at publications@acamh.org with "Appeal against rejection decision Ms Ref: JCPP-XX-20YY-00####" in the email subject line.
2. If you appeal to the decision Editor and are not satisfied with the Editor's response, a second-step appeal may be considered by the Editor-in-Chief, whose decision will be final.

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Appendix F Confirmation of ethical approval

ERGO II – Ethics and Research Governance Online <https://www.ergo2.soton.ac.uk>

Submission ID: 56217.A1

Submission Title: COVID-19: Supporting Parents and Young Children during Epidemics (Co-SPAYCE) (Amendment 1)

Submitter Name: Pete Lawrence

The Research Integrity and Governance team have reviewed and approved your submission.

You can begin your research unless you are still awaiting specific Health and Safety approval (e.g. for a Genetic or Biological Materials Risk Assessment) or external review.

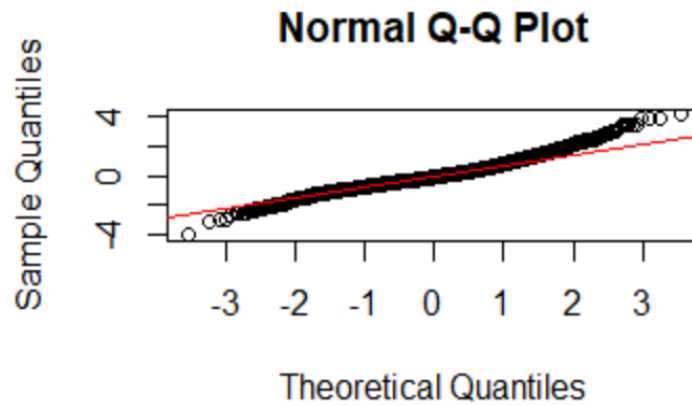
The following comments have been made:

Ac
Go

Appendix G Normality plots

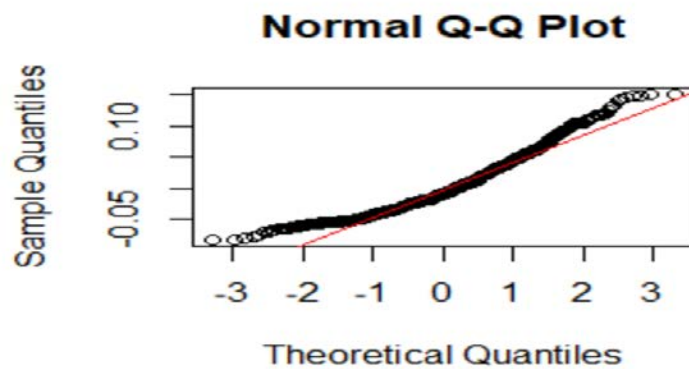
Model 1 (Play where)

Untransformed data - Shapiro- Wilks test, $W= 0.97, p= < 0.01$



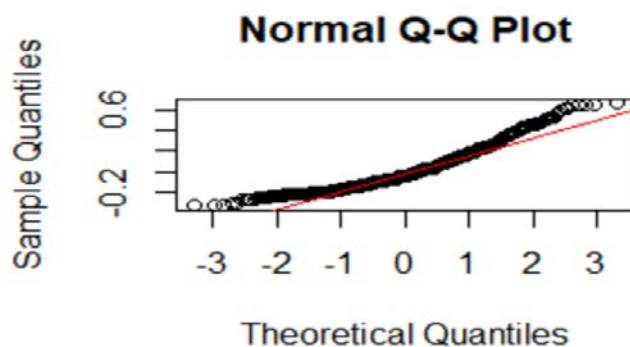
Model 1 (Play where)

Transformed data using Log-10- Shapiro- Wilks test, $W= 0.99, p= < 0.01$



Model 1 (Play where)

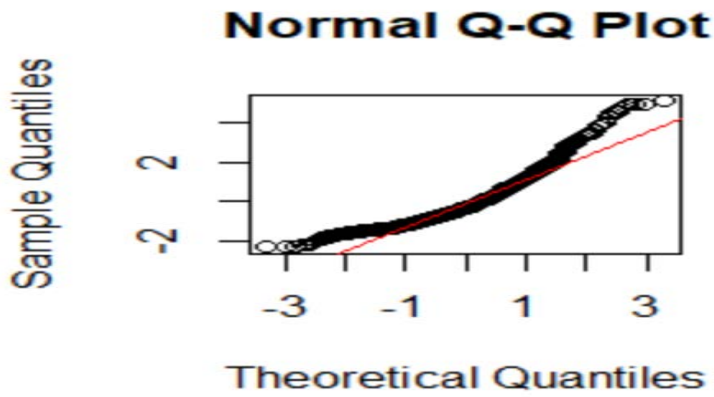
Transformed data using Square root - Shapiro- Wilks test, $W= 0.98, p= < 0.01$



Appendix G

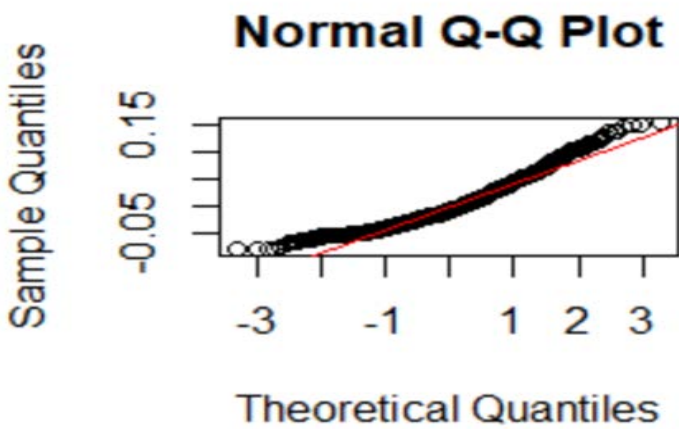
Model 2 (Play who)

Untransformed data - Shapiro- Wilks test, $W= 0.97, p= < 0.01$



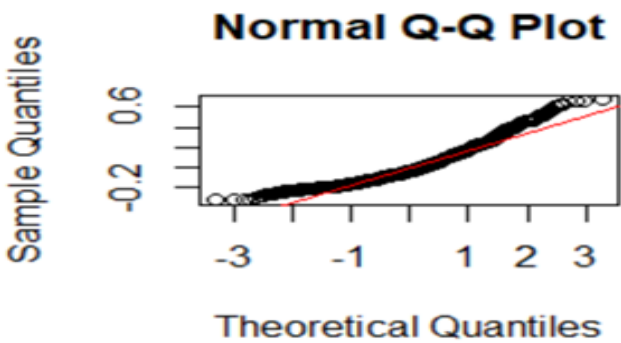
Model 2 (Play who)

Transformed data using Log-10- Shapiro- Wilks test, $W= 0.99, p= < 0.01$



Model 2 (Play who)

Transformed data using Square root - Shapiro- Wilks test, $W= 0.98, p= < 0.01$



Appendix H Survey items for empirical paper

Survey Items

BASELINE (first) SURVEY ONLY

ABOUT YOU AND YOUR FAMILY

Where do you live?

Drop down menu

Scotland

Northern Ireland

Wales

North East England

North West England

Yorkshire and the Humber

West Midlands

East Midlands

South West England

South East England

East of England

Greater London

Appendix H

Your gender:

Male

Female

Other/prefer not to say

We are afraid that you are only allowed to answer the questionnaire for one child, so if you have more than one child in your family, we would like you to answer all of the questions about one particular child.

You can pick whichever of your children you like as long as they are aged 2,3 or 4 years and have not yet begun school year 0 (reception class).

Your child's age:

Drop down menu

2

3

4

Your child's gender:

Male

Female

Other/prefer not to say

Your relationship to your child:

Parent

Step-parent

Grandparent

Other

Your child is:

Drop down menu

Neither fostered nor adopted

Fostered

Adopted

What is your ethnicity?

Asian/British – Indian, Pakistani, Bangladeshi, other

Black/Black British – Caribbean, African, other

Mixed race – White and Black/Black British

Mixed race – other

White – British, Irish, other

Chinese/Chinese British

Middle Eastern/Middle Eastern British – Arab, Turkish, other

Other ethnic group

Prefer not to say

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Is your child's ethnicity the same or different to yours?

Same

Different

If different:

What is your child's ethnicity?

Asian/British – Indian, Pakistani, Bangladeshi, other

Black/Black British – Caribbean, African, other

Mixed race – White and Black/Black British

Mixed race – other

White – British, Irish, other

Chinese/Chinese British

Middle Eastern/Middle Eastern British – Arab, Turkish, other

Other ethnic group

Prefer not to say

Does your child usually attend a childcare setting?

Yes

No

If so, on how many days per week?

1

2

3

4

5

Does your child have any special educational needs?

Yes

No

If yes:

What type of special educational needs?

Communicating and interacting

Cognition and learning

Social, emotional and mental health difficulties

Sensory and/or physical needs

Does this child receive support for any of the following?

- Mental health/emotional/behavioural difficulties
- Support from social services
- Educational support

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Yes

No

If yes:

Has this support stopped or been postponed due to Covid-19?

Yes

No

We'd like to know who lives in your household*. Please tell us how many of each type of person, including yourself. For example, if the child has two brothers, type 2 in the Child's brother box.

*Household = people living in the same house as your child

Number of each

household member

Child I am answering about

Child's mother

Child's father

Child's step-mother

Child's step-father

Child parent's partner

Child's brother

Child's sister

Child's foster brother

Child's foster sister

Child's step-brother

Child's step-sister

Child's grandmother

Child's grandfather

Child's other relative

Child's other non-relative

Total (automatically generated within Qualtrics survey)

Please list the age of all those living in your household: Ages in years

How many rooms are in your home?

- Not including any bathrooms or toilets
- If you live in a shared house only count the rooms that are open to you to use
- If you live in a block of flats, only count rooms in your flat

Drop down menu

1

2

3

4

5

6

7

8

9

10

11

12

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13

14

15 or more

Do you have access to outside space where your child can currently play or hang out?

Yes

No

What is your highest level of educational attainment?

Drop down menu

No qualifications

Completed GCSE/CSE/O-levels or equivalent (at school till aged 16)

Completed post-16 vocational course

A-levels or equivalent (at school till aged 18)

Undergraduate degree or professional qualification

Postgraduate degree

What is your current employment status?

Drop down menu

Still at school

At University

Self employed

In part-time employment

In full-time employment

Unable due to disability

Homemaker/full-time parent

Unemployed and seeking work

Retired

What is your usual total household income?

Less than £16,000 a year (£310 a week)

£16,000-£29,999 a year (£310-£569 a week)

£30,000-£59,999 a year (£569-£1149 a week)

£60,000-£89,999 a year (£1500-£1729 a week)

£90,000-£119,999 a year (£1730-£2299 a week)

More than £120,000 a year (£2300 a week)

Prefer not to say

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Does anyone in your household have any of the following medical conditions?

Myself (Please select all that apply)

High blood pressure

Diabetes

Heart disease

Lung disease (e.g. asthma or COPD)

A disability that affects my ability to leave the house

Cancer

Any other disability

Another clinically-diagnosed chronic physical health condition

Pregnancy

Clinically-diagnosed depression

Clinically-diagnosed anxiety

Attention-deficit disorder (ADD)/Attention

deficit hyperactivity disorder (ADHD)

Autism spectrum disorder (ASD)

Another clinically-diagnosed mental health condition

None of the above

Other parent/carer

High blood pressure

Diabetes

Heart disease

Lung disease (e.g. asthma or COPD)

A disability that affects their ability to leave the house

Cancer

Any other disability

Another clinically-diagnosed chronic physical health condition

Pregnancy

Clinically-diagnosed depression

Clinically-diagnosed anxiety

Attention-deficit disorder (ADD)/Attention

deficit hyperactivity disorder (ADHD)

Autism spectrum disorder (ASD)

Another clinically-diagnosed mental health condition

Not applicable

None of the above

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The child I am answering questions about

High blood pressure

Diabetes

Heart disease

Lung disease (e.g. asthma or COPD)

A disability that affects their ability to leave the house

Cancer

Any other disability

Another clinically-diagnosed chronic physical health condition

Pregnancy

Clinically-diagnosed depression

Clinically-diagnosed anxiety

Attention-deficit disorder (ADD)/Attention

deficit hyperactivity disorder (ADHD)

Autism spectrum disorder (ASD)

Another clinically-diagnosed mental health condition

Not applicable

None of the above

Any other children in the household

High blood pressure

Diabetes

Heart disease

Lung disease (e.g. asthma or COPD)

A disability that affects their ability to leave the house

Cancer

Any other disability

Another clinically-diagnosed chronic physical health condition

Pregnancy

Clinically-diagnosed depression

Clinically-diagnosed anxiety

Attention-deficit disorder (ADD)/Attention

deficit hyperactivity disorder (ADHD)

Autism spectrum disorder (ASD)

Another clinically-diagnosed mental health condition

Not applicable

None of the above

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Anyone else in your household (If applicable)

High blood pressure

Diabetes

Heart disease

Lung disease (e.g. asthma or COPD)

A disability that affects their ability to leave the house

Cancer

Any other disability

Another clinically-diagnosed chronic physical health condition

Pregnancy

Clinically-diagnosed depression

Clinically-diagnosed anxiety

Attention-deficit disorder (ADD)/Attention

deficit hyperactivity disorder (ADHD)

Autism spectrum disorder (ASD)

Another clinically-diagnosed mental health condition

Not applicable

None of the above

Do you have any of the following pets? (tick any that apply)

Cat

Fish

Dog

Spider/reptile

Hamster/mouse/gerbil/rabbit etc

Other

Bird

None

The above questions are at baseline only.

The below are REPEATED QUESTIONS – BASELINE AND SUBSEQUENT WAVES

YOUR EXPERIENCE OF COVID-19

Has your child had Covid-19 (coronavirus)?

Drop down menu

Yes diagnosed and recovered

Yes diagnosed and still ill

Suspected and recovered

Suspected and still ill

No

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Have other household members in relation to your child had Covid-19 (coronavirus)?

Drop down menu for each of member of the household

Yes diagnosed and recovered

Yes diagnosed and still ill

Suspected and recovered

Suspected and still ill

No

What is your current isolation status? (tick any that apply)

By “self-isolating” we mean staying at home and avoiding contact with people outside the household. If you have symptoms you may also be avoiding contact with people within your household.

I am living my life as normal

I am self-isolating as I am worried about

spreading it to others or getting ill (but I am not high risk)

I am not self-isolating, but I have cut down on my usual activities as a precaution/I am social distancing

I am self-isolating to protect a family member, friend or housemate who has an existing medical condition/is high risk

I am not self-isolating specifically, but I have stopped going to work as normal and am working from home / searching for employment from home

I am self-isolating as it has been ordered by the government or local authority as part of a lockdown

I am self-isolating due to diagnosis or Covid-19 or possible symptoms

I am self-isolating but this is NOT because of Covid-19 but because of another reason e.g., a pre-existing health condition or disability

I am self-isolating because I have an existing medical condition or am categorised as high risk

How would you rate your knowledge level on Covid-19?

1 – very poor knowledge 2 3 4 5 6 7 – very good knowledge

How would you rate your child’s knowledge level on Covid-19?

1 – very poor knowledge 2 3 4 5 6 7 – very good knowledge

Is your child following the recommendations from authorities to prevent spread of Covid-19?

1 – not at all 2 3 4 5 6 7 – very much so

How your child has been recently

(Strengths and Difficulties Questionnaire)

See PDF attachment for SDQ items.

The following questions will ask about how your child is feeling during the Covid-19 outbreak. Please answer the extent to which you agree with each statement.

Strongly disagree Disagree Neither disagree/agree Agree Strongly Agree

My child thinks that Covid- 19 is a very serious issue

My child is worried that they will catch Covid-19

My child is worried that friends and family will catch Covid-19

My child is afraid to leave the house right now

My child is worried they might transmit the infection to someone else

My child is worried we won’t have enough food and other essential items during the outbreak

My child is worried about the amount of money we have coming in

My child is worried about not being able to see their friends/ attend social/sports activities

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Your child's current lifestyle

Have you kept a similar routine to how things were before Covid-19 (e.g. bedtime, mealtimes)?

Not at all A bit A lot Completely

If not at all OR a bit

Would you agree with the following statement?

I have tried to keep a similar routine but my child hasn't stuck to it

Yes No

In the last week, has your child had a regular routine or timetable for what they do during the day?

No – not at all

Yes – a bit

Yes – a lot

Yes – completely

If not at all/a bit:

Would you agree with the following statement?

I have tried to keep a regular routine but my child hasn't stuck to it

Yes No

Has your child been attending a childcare setting in the last week?

Yes

No

If yes:

Why?

Child's parent/carer is considered critical to the Covid-19 response

Child is considered vulnerable

Child is supported by social care

Child has safeguarding and welfare needs

Over the last week how much per day did your child do the following with their friends (on average)?

Not at all

Less than once a day

Once a day

A few times a day

On and off throughout the day

Constantly

Phoning

Video talking

Communicating via Whatsapp or text messaging

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How much does your child miss their friends?

Not at all

Less than once a day

Once a day

A few times a day

On and off throughout the day

Constantly

Over the last week, how much per day did your child do the following with family members who live outside of the household (on average)?

Not at all

Less than once a day

Once a day

A few times a day

On and off throughout the day

Constantly

Phoning

Video talking

Communicating via Whatsapp or text messaging

Communicating via social media

Over the last week, how much time per day did your child spend doing the following (on average)?

Did not do

< 30 mins

30 mins – 2 hours

3-5 hours

6+ hours

Spent time outside

Take part in energetic physical activity (inside or outside)

Playing outside

Playing inside

Playing alone

Playing with another child in your household

Playing with a parent

Playing a screen-based game (e.g., on phone, tablet, computer)

Doing art or craft activities.

Reading (alone).

Reading (with another child in your household).

Reading (with a parent).

Watching a screen, but not interacting with it. (For example, watching a programme on CBeebies on BBC i-player, or videos on youtube, whether on a television, tablet, phone, computer etc.)

Contact with nature (plants, trees grass etc.).

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I have lots of ideas about different ways to play with my child. (rate agreement)

Not at all

A bit

A lot

Completely / all the time

I am confident I can keep my child occupied. (rate agreement)

Not at all

A bit

A lot

Completely / all the time

I find keeping my child occupied stressful (rate agreement).

Not at all

A bit

A lot

Completely / all the time

I worry that I am not doing enough with my child (rate agreement).

Not at all

A bit

A lot

Completely / all the time

If you have at least one other child in your household...

I have lots of ideas about different ways to play with the other child(ren). (rate agreement)

Not at all

A bit

A lot

Completely / all the time

I am confident I can keep the other child(ren) occupied. (rate agreement)

Not at all

A bit

A lot

Completely / all the time

I find keeping the other child(ren) occupied stressful (rate agreement).

Not at all

A bit

A lot

Completely / all the time

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I worry that I am not doing enough with the other child(ren) (rate agreement).

Not at all

A bit

A lot

Completely / all the time

YOUR FAMILY

Please answer how much you agree with the following statements:

Not at all

A bit

A lot

Completely

Not applicable

My child and I have a warm, close relationship

My child has a warm, close relationship with another adult with whom they have regular contact

My child and I have frequent battles of wills/conflicts

My partner and I have a warm, close relationship

In my household, there are disagreements between adults about how to parent my child

My child and their sibling(s) have a warm, close relationship

My child and their siblings have frequent battle of wills/conflicts

What you are doing and how you are feeling

Over the last week, have you worked:

Not at all

Part-time

Full-time

If part-time or full-time:

Has your work been at home or out of the home?

At home

Out of the home

If part-time or full-time:

How able have you felt to meet the needs of both your work and your child?

Not at all

A bit

A lot

Completely

Over the past week, how stressed have you felt about the following?

Not at all

A little

Quite a lot

A great deal

Not applicable

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Marriage or other romantic relationship

Friends or family living in your household

Friends or family living outside your household

My child(ren)'s behaviour

My child(ren)'s screen time

My child(ren)'s education

My child(ren)'s future

Household chores

Neighbours

Loss of usual support systems

Living conditions

My pet

Work (even if you feel your job is safe)

Losing your job/unemployment

Finances

Getting medication

Getting food

My own safety/security

Internet access

Boredom

My future plans

Depression Anxiety Stress Scales (DASS-21)

See PDF attachment for DASS-21 items.

The following questions will ask you about how you have been feeling during the Covid-19 outbreak. Please answer the extent to which you agree with each statement.

Strongly disagree

Disagree

Neither disagree/agree

Agree

Strongly agree

I think Covid-19 is a very serious issue

I am worried that I will catch Covid-19

I am worried that friends and family will catch Covid-19

I am afraid to leave the house right now

I am worried that I might transmit the infection to someone else

I am worried we won't have enough food and other essential items during the outbreak

I am worried about missing work

I am worried about the amount of money that we have coming in

I am worried about the long-term impact this will have on my job prospects and the economy

I am worried my child will catch covid-19

I am worried my child will transmit the infection to someone else

I am worried about not having enough food /milk/ essential items for my child

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I am worried about the long-term impact on my child's future

I am worried about the impact of not taking my child to social experiences/ play groups/ parks/nursery

The following questions ask about managing information about Covid-19 with your child.

Please answer the extent to which you agree with each statement.

Strongly disagree

Disagree

Neither disagree/agree

Agree

Strongly agree

I try to avoid conversations with my child about Covid-19

I try to avoid my child seeing or hearing information about Covid-19

All of the conversations with my child about the current situation around Covid-19

are serious

I let my child know that it is normal to be worried about the current situation around

Covid-19

I encourage my child to do practical things in response to the current situation

around Covid-19

Parent/carer – Needs

We are keen to know what sorts of support parents would find helpful so that we can make this information available to colleagues in health, education and the voluntary sector.

Do you feel you would benefit from advice, support or help, in relation to your child's response to COVID-19 and/or isolation?

Not at all

Yes – a bit

Yes – a lot

Yes – completely

If yes:

What areas would you like help with?

Managing children or young people's emotions

Ensuring my child follows government guidelines (e.g. handwashing, staying home)

Managing children or young people's behaviours

Managing family relationships

Managing children or young people's educational demands

Children or young people coming out of self isolation

If yes:

How would you like to receive this help?

Online written materials

Personalised online support from another parent

Online videos

Personalised online support from a professional

Television programmes

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Personalised telephone call from a professional

Podcasts

Online parent support group (text)

Telephone helpline Online parent support group (video)

Online helpline

Thank you for taking part. If you have any concerns about your or your child's mental health or would like further support, please visit www.samaritans.org or call the Samaritans on 116 123. Please also visit www.youngminds.org.uk and www.emergingminds.org.uk for their resources list.

Appendix I Information sheet for empirical paper

CO-SPYCE Study

COVID-19: Supporting Parents and Young Children during Epidemics

Participant information sheet

General Information

The Co-SPYCE study will tell us how families are coping during the covid-19 (corona virus) pandemic, and what parents can do to help support their young children's mental health. We hope this will help us to understand the needs of families at this time. We will share the findings to help others to provide the right support.

Thank you for your interest in this online survey. You have been invited to take part because you are the parent or carer of a child who is aged 2-4 years and you are living in the UK. Please read through this information before agreeing to take part by ticking the 'yes' box below.

You may ask any questions before deciding to take part by contacting the researchers (Pete Lawrence, School of Psychology, University of Southampton, and Helen Dodd, School of Psychology and Clinical Language Sciences, University of Reading, details below).

You will be asked to answer some questions about you and your child. The questions relate to your family life and relationships, overall health and wellbeing, parenting, psychological symptoms and how you are coping during the Covid-19 pandemic. The questions cover quite a lot of areas so that we can get a really good understanding of how things are for you and your family currently, which will help us better understand what kind of support parents might need.

You don't need any background knowledge and there are no right or wrong answers. The survey should take around 20 minutes but you can take a break and come back to it if you wish.

We would also like you to answer some shorter follow-up surveys (around 10 minutes each) while social isolation is taking place at further time points (monthly, and/or when there are major

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changes in Government advice around isolation). We will ask you for an email address so that we can contact you for the follow-up surveys.

The information you give us will be analysed by academic researchers at the University of Southampton, University of Reading, and University of Oxford and other institutions that have been approved by the research team so that we can work out the best way to support families.

Do I have to take part?

No, taking part is voluntary. If you do decide to take part, you may withdraw at any point during the questionnaire for any reason before submitting your answers by pressing the 'Exit' button / closing the browser. You can opt out of taking part in future surveys at any point by ignoring or unsubscribing from

follow-up emails. You will then not be sent any further surveys to complete.

How will my data be used?

We will take all reasonable steps to make sure that your answers remain confidential. Your email address will be removed from the rest of the answers you give before any analysis takes place and will be deleted as soon as the study finishes. Your email address will not be passed to any third parties.

Your data will be stored in a password-protected file and may be used in academic publications. Because we will anonymise your data, it will not be possible to withdraw your answers after they have been submitted but you can withdraw from future surveys at any point. Your IP address will not be stored.

Research data will be stored for a minimum of three years after publication or public release of the findings of the research.

Because we will anonymise the data, we will not be able to act upon any individual responses to the survey.

Who will have access to my data?

The University of Southampton is 'the data controller' with respect to your personal data, and so will decide how your personal data is used in the study. The University will process your personal data for the purpose of the research outlined above. Research is a task that we perform in the public interest.

If you have questions about your rights as a participant in this research, or if you feel that you have been placed at risk, you may contact the University of Southampton Research Integrity and Governance Manager (023 8059 5058, rgoinfo@soton.ac.uk).

We would also like your permission to use your anonymised data in future studies, and to share data with other researchers (e.g., in online databases). Any personal information (your email address) that could identify you will be removed or changed before files are shared with other researchers or results are made public.

Responsible members of the University of Southampton and funders may be given access to data for monitoring and/or audit of the study to ensure we are complying with guidelines, or as otherwise required by law.

The Principal Researcher is Dr Pete Lawrence, who is attached to the School of Psychology at the University of Southampton.

This project has been reviewed by, and received ethics clearance through, the University of Southampton Research Ethics Committee (ERGO: 56217).

How do I find out about the results?

We will provide information about the results of this study through the Emerging Minds Network website (www.emergingminds.org.uk). You can sign up to receive updates from Emerging Minds here: <https://emergingminds.org.uk/contact/>

Whom do I contact if I have a concern about the study or I wish to complain?

If you have a concern about any aspect of this study, please speak to Pete Lawrence or Helen Dodd, emails:

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p.j.lawrence@soton.ac.uk; h.f.dodd@reading.ac.uk, and they will do their best to answer your query. We will acknowledge your concern within 10 working days and let you know how it will be dealt with. If you remain unhappy or wish to make a formal complaint, please contact the University of Southampton Research Integrity and Governance Manager (023 8059 5058, rgoinfo@soton.ac.uk).

Please note that you may only participate in this survey if you are 18 years of age or over.

I certify that I am 18 years of age or over.

If you have read the information above and agree to participate with the understanding that the data (including any personal data) you submit will be processed accordingly, please check the relevant box below to get started.

Yes, I agree to take part

If you have any concerns about your child's mental health or would like further support, please visit <http://www.youngminds.org.uk/>. If you have concerns about your own or another adults' mental health please visit www.samaritans.org or call the Samaritans on 116 123. You can also visit www.emergingminds.org.uk for their resources list for supporting children and young people during the COVID-19 pandemic.

Appendix J Debrief information for empirical paper

Hello,

Thank you very much for taking part in the Co-SPYCE study.

We hope that you and your family are well.

We are writing to let you know that we have now sent you the final follow-up survey for this study. As you might have seen, we have already been reporting some of the results of Co-SPYCE on the emergingminds.org website (will add hyperlink to relevant page). We will now be able to analyse the full set of data we have collected, and report the results in summary on the emergingminds.org website, and more formally to our clinical and scientific colleagues in peer reviewed scientific journal papers. These are some of the ways that we hope our results will be useful in supporting families in the future.

Thank you and best wishes,

The Co-SPYCE team

School of Psychology, University of Southampton

School of Psychology and Clinical Language Sciences, University of Reading

Departments of Experimental Psychology and Psychiatry, University of Oxford