



EasyPeasy parenting app

Findings from an efficacy trial on parent engagement and school readiness skills

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Themes: Parent engagement; early years; school readiness; character

Parental Engagement Fund

The Sutton Trust working in partnership with Esmée Fairbairn Foundation established the Parental Engagement Fund building on the evidence that engaging parents in their children's learning can have a positive impact on their attainment. The aim of the fund is to increase attainment for disadvantaged children in the early years through the development of more effective parental engagement. In addition, the hope is to improve the sustainability of effective interventions and to identify features of good practice to share with the Early Years sector. EasyPeasy is one of six organisations that the fund is working with. An evaluation team, (Jelley, Sylva, Karemaker, Eisenstadt) from the Department of Education at the University of Oxford, has worked with EasyPeasy as an independent evaluator and 'critical friend' during the pilot.

EasyPeasy App

EasyPeasy is a smartphone app for parents of preschool aged children. It is designed to improve early child development through increasing positive parent-child interactions and learning at home. The app sends regular game ideas to parents that they can play with their children, combined with information on child development. The design of the app applies behavioural insights to help seed positive habits of play and interaction at home by sending tailored prompts, encouragement, and reminders to parents.

Parents receive EasyPeasy communications via text message (SMS). An initial SMS invites them to join EasyPeasy through a personalised message from their local practitioner or teacher, and includes a link to 'get started'. When the parent clicks on

the link, they are taken to a personal dashboard that presents them with an initial bank of games to explore. Each game is presented through a short video clip, and a short set of written instructions. Parents will then receive a series of SMS reminders throughout the intervening weeks, releasing new games (weekly), and encouraging them to play with their children. This trial lasted 18 weeks in total, but EasyPeasy currently provides an annual programme to early years setting and their parents. During this trial, parents each received around 40 text messages from EasyPeasy. The design of EasyPeasy is such that the frequency of SMS reminders reduces over the course of the programme.

The app has been designed to integrate with local early years settings, such as children's centres, primary schools, and nurseries, and function as a digital outreach service that extends the reach and impact of the setting and practitioner workforce. A secondary desktop component allows practitioners in these settings to share and communicate with parents, as well as capture information on parent engagement with the app. When used by settings, parents are typically organised into small groups or 'Pods' on the app, providing a virtual support network where they can discuss the games, and the challenges and successes of using them to engage their children. Each 'Pod' is overseen by a Pod Administrator, a practitioner from the setting who monitors parents' progress and offers remote support.

The games in the app are shared with parents via short video clips that feature real families playing the games in their own living rooms. The clips are between one and three minutes long and include tips and hints through small 'pop up' animations. The games shared

with parents involved in this trial of EasyPeasy all aligned to the Early Years Foundation Stage modes of learning: 'playing and exploring', 'active learning', and 'creating and thinking critically'. There was a particular focus in the games on building 'self-regulation' and associated capabilities like delaying gratification, concentration, attentional focus, and listening. A secondary focus in the games selected for this trial was on 'child led play' or games that involved imagination, creativity, and the parent building on the ideas of the child. The full app contains games that more explicitly cover all seven of the EYFS areas of learning and development. The selection of games used for this trial informed the choice of outcomes measures.

EasyPeasy was prototyped in 2014 through a 'challenge prize' from Guys' & St Thomas's Charity and the Design Council. The 'Knee High Challenge' was designed to generate ideas to support the health and wellbeing of children from birth to five and had a local focus on the London boroughs of Southwark and Lambeth. There was a strong focus on developing ideas locally, but that would have the potential to scale nationally or internationally.

The evaluation

A small-scale randomised controlled trial (RCT) was carried out in 8 children's centres in Bournemouth with the aim of assessing the effects of the EasyPeasy app on parents and children. The trial was a within-centre, individual randomised trial comprising an intervention group who received EasyPeasy and a control group who did not. A total of 150 families were recruited and individually assigned to one of the two groups. Randomisation was conducted using the minimisation

method with age of child, gender of child, and children's centre as factors. To be eligible, a parent had to have a child aged between 2 years 4 months and 6 years old and there had to be an absence of child protection issues in the family. Families were drawn from lists held by children's centres in disadvantaged neighbourhoods.

The EasyPeasy intervention lasted for 18 weeks. Games were sent directly to parents' mobiles via the app once per week. Families were in virtual 'pods' linked to the setting and coordinated by a children's centre practitioner. The control group were given access to the app once the final post-test data had been collected.

Both parent and child measures were completed by the parent at pre-test (on paper questionnaire), prior to randomisation, and repeated at post-test (via online survey), 4-6 weeks after the intervention had ended. Demographic information was also collected. The box below shows the measures given pre and post.

Additionally, data on parent engagement with the app was collected by the EasyPeasy team via an analytics dashboard. Qualitative comments and conversations were also captured via the 'pods' and a thematic analysis was conducted by the EasyPeasy team. A number of focus groups were also conducted by the EasyPeasy team throughout the pilot to collect feedback on the process and features in the app. Some new features and improvements were made to the app itself during the trial, in response to feedback.

Key findings

Differences in outcome were compared between the intervention and control groups. All families were included in

Table 1. Pre- and post-test means (with standard deviations) and effect sizes of the outcomes

Outcome	Intervention			Control			Sig.	Effect size (95% CI)
	N	Pre-test	Post-test	N	Pre-test	Post-test		
TOPSE play & enjoyment	31	4.19 (.73)	4.36 (.54)	41	4.03 (.73)	4.26 (.79)	ns	0.20 (-0.26, 0.66)
TOPSE control	31	3.23 (.73)	3.46 (.76)	41	3.22 (.89)	3.23 (.70)	ns	0.39 (-0.04, 0.82)
TOPSE discipline & boundaries	31	3.44 (.82)	3.70 (.67)	41	3.49 (.69)	3.39 (.83)	p<.05	0.51 (0.12, 0.90)
PSI parent-child dysfunctional interaction	30	1.67 (.46)	1.64 (.63)	41	1.78 (.61)	1.76 (.55)	ns	0.20 (-0.24, 0.64)
CSBQ behavioural self-regulation	31	3.36 (.65)	3.29 (.75)	41	3.17 (.64)	3.05 (.65)	ns	0.26 (-0.13, 0.65)
CSBQ cognitive self-regulation	31	3.45 (.65)	3.64 (.69)	41	3.53 (.62)	3.42 (.54)	p<.05	0.44 (0.01, 0.87)
CSBQ emotional self-regulation	31	3.53 (.61)	3.46 (.75)	41	3.33 (.67)	3.21 (.63)	ns	0.31 (-0.14, 0.76)

the analysis, even those who didn't use or stopped using the app ('intention to treat'). See 'additional notes' for further detail on the analysis. Table 1 presents the pre- and post-test means on all measures for the intervention and control groups. Significant findings are in bold, and effect sizes (calculated using Hedges' g) are also presented.

There were statistically significant differences between intervention and control groups on two of the seven measures for the whole (analysed) sample, i.e., all eligible families in the trial with pre- and post-test. **There was a significant effect of the intervention on:**

- **parents' self-efficacy regarding discipline and boundaries**
- **child cognitive self-regulation (parent reported)**

Both showed moderate positive effect sizes in favour of the intervention group.

The vast majority of parents were accepting of the programme, with only 2 parents 'opting out' out of receiving text messages. Parents received from 1 to 4 EasyPeasy texts messages per week throughout the trial. On average,

19% of parents in the intervention group accessed EasyPeasy on any given day, and 36% accessed in any given week. 'Accessing' includes watching videos, reading game instructions and commenting on the Pod. Some parents commented on EasyPeasy in their Pods. A key assumption tested in the pilot was that participants in the study would have a smart phone (required to access EasyPeasy). Despite some concerns at the outset from delivery partners, smart phone access did not prove to be a barrier to participation, even amongst lower income families.

Discussion

In this study, EasyPeasy led to moderate positive effects on parenting self-efficacy and on children's cognitive self-regulation (as reported by their parents), improvements unlikely to have occurred by chance. Parental consistency with discipline and boundaries significantly increased in the intervention group. Parents, for example, reported feeling more comfortable setting limits for behaviour and following through on expectations. This measure is not a measure of parental aggression or harsh discipline, focusing instead on reasoning with the child and finding positive ways to avoid conflict.

Parents also reported significant improvements in their children's persistence and concentration. 'Cognitive self-regulation' includes persisting to complete difficult tasks (rather than giving in to distractions or giving up), making decisions independently, and working things out for oneself. This is sometimes called 'grit' or 'character'. Cognitive self-regulation is a widely agreed component of school readiness, the capacity to make the most of opportunities to learn.

CSBQ --> Child Self-regulation and Behaviour Questionnaire (Howard & Melhuish, 2016)

- Behavioural self-regulation (5-point scale)
- Cognitive self-regulation (same)
- Emotional self-regulation (same)

TOPSE --> Tool to measure Parenting Self Efficacy (rating scale) (Kendall & Bloomfield, 2005)

- Play and enjoyment (6-point scale)
- Control (same)
- Discipline and Boundaries (same)

PSI --> Parenting Stress Index (Abidin, 1995)

- Parent-child dysfunctional interaction (5-point scale)

The two significant outcomes suggest a possible relationship between parents' increased consistency with rules and boundaries, and children's corresponding improvements in cognitive self-regulation. There is a research base which suggests links between parenting style and children's developmental outcomes. EasyPeasy's design team was also led by a 'logic model' hypothesising how features in the app might play into these processes.

This small-scale study had several limitations, including:

- Social desirability (a desire to present oneself or one's child in the best light) in self-report measures completed by parents
- Low retention between recruitment and post-test (further details in 'additional notes')
- Small, localised sample (75 of 144 participating families providing pre and post-test data.)
- No objective independent measure of child self-regulation

Next steps?

The significant effects of EasyPeasy are particularly encouraging given that the app is still in a developmental phase and the team used the pilot of the app during this trial to guide further improvements. Furthermore, the low cost, digital nature of the intervention provides an innovative route forward for providing parenting support and preschool learning to families of any background.

The Local Authority commissioning team described EasyPeasy as an intervention that could become part of a 'digital first' and 'early intervention' strategy for the council. Practitioners used EasyPeasy in a variety of ways, including a trigger for conversations with parents about their children's progress, a means to help parents make links between learning in the centre and at home, and finally, generation of data for Ofsted.

The results from this trial show the potential of a parent app to boost certain school readiness skills. 'School ready' in this sense would describe a child who is an eager, active learner, starting school seeking out new ideas

and skills. This child has the confidence to tackle challenges, likes to try things independently before asking for help, and enjoys a sense of accomplishment when successful.

Commentary

The Parental Engagement fund selected EasyPeasy to support them to explore further the potential of this intervention to engage parents in their children's learning. A strong evidence base shows that engaged parents and a vibrant home learning environment have a major positive influence on children's early development, yet relatively little is known about how to support effectively families who struggle to provide this.

This evaluation found moderate, positive impact on parenting style and children's cognitive self-regulation. With a moderate result, and very low delivery costs (around £35 per child per annum, predicted to fall with scale), this intervention has the potential to effectively engage parents in a manner that is both cost effective and highly scalable.

Several studies of previous interventions that aimed to increase the involvement of parents in their children's education have not found an impact on attainment, including more intensive and costly projects. The evidence in the EEF's Teaching and Learning Toolkit also suggests that changing parents' behaviour is particularly challenging. The cost effectiveness and positive impact of the approach means that delivering parenting support and preschool learning at home through digital means is something that local authority commissioners and school leaders should consider.

References

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- Howard, & Melhuish, E. (2016). An Early Years Toolbox for assessing early executive function, language, self-regulation, and social development: validity, reliability, and preliminary norms. *Journal of Psychoeducational Assessment, 10.*
- Kendall, S. & Bloomfield, L. (2005). Developing and validating a tool to measure parenting self-efficacy. *Journal of Advanced Nursing, 51, 174-181.*

Additional notes

Costs to deliver EasyPeasy

EasyPeasy is collecting the kind of data that will permit a thorough analysis of costs and benefits to public system and philanthropic investors. There is good evidence to suggest that children who are able to 'self-regulate' and who have positive interactions with their parents are readier for school, engage more in their classes and learn more. This means a reduced burden on costly special education and social care services (as well as leading to better jobs, higher income and a greater contribution to the tax burden into the future).

Reliable cost-benefit data will come as EasyPeasy expands. EasyPeasy currently costs between £35-65 per child per annum to deliver. As it moves beyond its development phase, costs are predicted to fall to below £35 per child per annum. Since information is increasingly collected directly from families by the app, it will lead to more data and more confidence in initial results that suggest potential economic benefits to public systems.

Research ethics

The University of Oxford's Central University Research Ethics Committee (CUREC) approved the ethics of recruitment, implementation and analysis/publication/data storage of the research. Parents were asked for signed consent to participate and were allowed to withdraw from the study at any time without giving a reason. Data was identified by ID number only and stored in secure, password protected files. All participants remained anonymous throughout the study and personal data will be destroyed at the end of the project.

Analytic strategy: ANCOVA

Analysis of covariance (ANCOVA) was used to compare the post-test scores of intervention and control groups. All statistical assumptions for the ANCOVA were met. ANCOVAs were conducted on the seven outcome measures collected, and the models took into account the pre-test (of each specific measure), child's age, gender and the children's centre.

After controlling for child's age, gender, centre and the appropriate pre-test, the

ANCOVAs showed a significant effect of the intervention on parents' self-efficacy regarding discipline and boundaries ($F(1,60)=6.87, p=.01$) and on parent-reported child cognitive self-regulation ($F(1,60)=4.28, p=.04$). Both showed moderate positive effect sizes in favour of the intervention group (0.51 and 0.44 respectively).

There were no differences between intervention and control on any other measures (TOPSE play and enjoyment: $F(1,60)=.768, p=.38$; TOPSE control: $F(1,60)=3.35, p=.07$; PSI parent-child dysfunctional interaction: $F(1,59)=.866,$

$p=.36$; CSBQ behavioural self-regulation: $F(1,60)=1.79, p=.19$; CSBQ emotional self-regulation: $F(1,60)=1.84, p=.18$).

Drop-out in the study

Drop-out between pre- and post-test for both intervention and control groups was quite high, with only 75 of the original 144 participating families providing post-test data. It was therefore important to test whether there was any imbalance across the two groups in the analysed sample. The attrition rate across the two groups was broadly similar and not statistically different. The difference

on key variables between the two groups within the analysed sample was then tested to check whether the two groups were balanced following attrition. There were no statistically significant differences between the two groups (as analysed) on any baseline variables.

Table 2 summarises the baseline characteristics of the sample, and compares the pre-test profiles of the randomised sample with the profiles for those who had post-test data and were included in the analysis. For completeness, the profiles for those who were lost to follow up are also included.

Table 2: Baseline characteristics of all participants in the trial (as randomised), those with post-test (as analysed) and those lost to follow up (attrition). Values are numbers (percentage of responses) for categorical variables and mean (SD) for numerical variables

	Intervention (n=70)	Control (n=74)	Intervention (n=34)	Control (n=41)	Intervention (n=36)	Control (n=33)
Parent characteristics						
Parent gender (female)	66 (94.3%)	71 (95.9%)	32 (94.1%)	39 (95.1%)	34 (94%)	32 (97%)
Parent ethnicity (White British)	56 (81.2%)	53 (71.6%)	23 (69.7%)	27 (65.9%)	33 (91.7%)	26 (78.8%)
Marital status (married/civil partner/cohabiting)	50 (71.4%)	56 (75.7%)	23 (67.6%)	34 (82.9%)	27 (75%)	22 (68.8%)
Highest qualification						
GCSE or below	18 (26.5%)	24 (33.3%)	8 (23.5%)	14 (34.1%)	10 (29.4%)	10 (32.3%)
Vocational 16-18	15 (22.1%)	11 (15.3%)	7 (20.6%)	5 (12.2%)	8 (23.5%)	6 (19.4%)
Academic 16-18	15 (22.1%)	11 (15.3%)	6 (17.6%)	4 (9.8%)	9 (26.5%)	7 (22.6%)
Degree or higher	19 (27.9%)	25 (34.7%)	12 (35.3%)	18 (43.9%)	7 (20.6%)	7 (22.6%)
Other	1 (1.5%)	1 (1.4%)	1 (2.9%)	0 (0%)	0 (0%)	1 (3.2%)
Employed (yes)	35 (50%)	40 (54.1%)	18 (52.9%)	21 (51.2%)	17 (47.2%)	19 (57.6%)
Partner employed (yes)	43 (89.6%)	54 (96.4%)	21 (91.3%)	32 (97%)	22 (88%)	22 (95.7%)
Home ownership	31 (46.3%)	36 (50.7%)	17 (51.5%)	19 (47.5%)	14 (42.2%)	17 (54.8%)
Child characteristics						
Child's gender (girls)	32 (47.1%)	32 (43.1%)	16 (48.5%)	18 (43.9%)	16 (45.7%)	14 (43.8%)
Child age in months	42.79 (9.12)	43.3 (10.61)	44.09 (8.48)	41.71 (8.12)	41.56 (9.64)	45.27 (12.93)
Child disability (yes)	2 (2.9%)	4 (5.5%)	1 (3%)	3 (7.3%)	1 (2.9%)	1 (3.1%)
Child ethnicity (White British)	55 (82.1%)	56 (77.8%)	25 (78.1%)	32 (80%)	30 (85.7%)	24 (75.0%)
Language spoken at home (only English)	56 (82.4%)	55 (76.4%)	23 (69.7%)	28 (70%)	33 (94.3%)	27 (84.4%)
Baseline scores						
TOPSE Play & Enjoyment	4.07 (.86)	4.10 (.76)	4.21 (.74)	4.03 (.73)	3.94 (.95)	4.19 (.80)
TOPSE Control	3.15 (.77)	3.23 (.86)	3.21 (.72)	3.22 (.89)	3.09 (.81)	3.24 (.85)
TOPSE Discipline and Boundaries	3.25 (.79)	3.40 (.83)	3.41 (.81)	3.49 (.69)	3.11 (.76)	3.28 (.97)
PSI Parent-child dysfunctional interaction	1.87 (.57)	1.76 (.54)	1.70 (.47)	1.78 (.61)	2.02 (.62)	1.73 (.45)
CSBQ behavioural self-regulation	3.20 (.65)	3.19 (.67)	3.33 (.65)	3.17 (.64)	3.09 (.62)	3.20 (.71)
CSBQ cognitive self-regulation	3.39 (.66)	3.49 (.65)	3.47 (.66)	3.53 (.62)	3.31 (.66)	3.45 (.70)
CSBQ emotional self-regulation	3.39 (.70)	3.34 (.72)	3.54 (.62)	3.33 (.67)	3.25 (.76)	3.35 (.79)