

**An impact and feasibility evaluation of a 6 week (9 hour) active play
intervention on fathers' engagement with their preschool children: A
feasibility study**

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Competing Interests

The authors can confirm that there are no competing interests for the present study.

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Abstract

Research has demonstrated the benefits of father involvement with their children and a link between uninvolved fatherhood and societal problems. Children's Centres (n=15) received 6 x 90 minute active play sessions designed to foster six aspects of parental engagement. Fathers' engagement and attitudes to child PA were measured pre- and post-intervention via questionnaire. Acceptability of the intervention was explored through participant and staff focus groups. Results showed no effect on overall time fathers spent with their child during the week ($t(36) = 0.178$, $p = 0.860$) and the weekend ($t(36) = 1.166$, $p = 0.252$). Qualitative results demonstrated the sessions provided opportunities for fathers to spend quality time with their children. Parenting self-efficacy increased across the subscale control, $t(36) = -2.97$, $p = 0.04$. Fathers increased awareness of their role in motivating their child to play ($z = -2.46$, $p = 0.01$). Further longitudinal research is recommended.

Key Words: fathers' engagement; childcare settings; parenting programmes; active play; parenting self-efficacy

Introduction

It has been suggested that the image of fatherhood has experienced somewhat of a cultural shift in recent years with the role of the father being more diversified when compared to previous generations. The rise to prominence of 'fatherhood' in social policy has been attributed to two key trends; the gender equality movement leading to women's increasing representation in the paid labour market and the impact of changes in family patterns (Carlson, 2006). The United Kingdom (UK) has one of the highest levels of female employment amongst major European Union countries, with 68% of all mothers in employment (27% work fulltime) in contrast to 43% in 1973 (Asmussen & Weizel, 2010). Since the early 1970s the number of children living in one parent families has increased threefold (Stanley et al., 2005) with 26% of all children now living within this family structure (Office for National Statistics, 2012). The current number of lone parent fathers in the UK has increased from approximately 60,000 in 1970 (The Stationary Office, 2007) to 186,000 in 2012 (ONS, 2012). Regardless of this, as proposed by Sarachoa and Spodek (2008), many of the studies which have investigated father involvement have built a picture of fathers to be that of hands off and hidden, particularly in comparison to mothers, focusing on father absence rather than father involvement.

Researchers and policy makers have reported a link between uninvolved fatherhood (the lack of paternal involvement) and societal problems and have consequently called for strengthening of the role of fathers' within the heart of a family as a solution (Carlson, 2006; Ihmeideh, 2013). Research has consistently demonstrated the benefits of father involvement, particularly during the child's early development e.g., language acquisition, motor skills, and social skills thus leading to positive outcomes for the child in their teenage and adult years (Flouri, 2005; Grossman et al., 2002). A number of studies have

established that children who do not live with their biological father are at a greater risk of depression, low self-esteem, substance abuse, and poor performance in school when compared to their counterparts who live with both their mother and father (Antecol & Bedard, 2007; Cowan, Cowan, Pruett, Pruett, & Wong, 2009).

Successive UK Government(s) have demonstrated their commitment to improving children's wellbeing over the last two decades, notably with the introduction of UK based initiatives such as SureStart Centres (1999), On Track (1999), and the Children's Fund (2000). All these initiatives are said to have helped to increase the number of services available to parents and children (Kennis, Brown, & Brody, 2000). The reformation of the Early Years Foundation Stage (EYFS) in the UK, the national preschool curriculum framework, has placed greater focus upon the importance of the family on children's development. In addition to the EYFS, a consultation has been launched by the Department for Education to examine the Children's Act and the legal rights of fathers to spend time with their children following separation or divorce from the child's mother (The Department for Education, 2013).

Parenting programmes are considered the most practical and cost effective way of enhancing parental understanding and skills in order to help prevent the onset of behavioural problems in children (Axford, Lehtonen, Kaouki, Tobin, & Berry, 2012). Parenting practices which are associated with positive child development and encouraged through parenting programmes encourage an authoritative (firm but fair) parenting style (Hurlburt, Nguyen, Reid, Webster-Stratton, & Zhang, 2013). Authoritative fathering has been associated with a number of benefits for child well-being and development and has been shown to reduce the likelihood of the child developing problem behaviours (Prinz, Van Der Sluis, De Hann, & Dekovic (2010).

The UK Government has also begun to acknowledge the importance of parenting and the value of support which can be offered to families and parents. In December 2008, the Department for Education (DfE) introduced the Parenting Early Intervention Programme to roll out support for parenting programmes across all English local authorities until 2011 (DfE, 2011). As a result, all local authorities received funding to support families by offering a choice of five evidence-based parenting programmes: Strengthening Families Programme 10-14 (Kumpfer, DeMarsh, & Child 1989); Families and Schools Together (Milwaukee, 1998); Strengthening Families Strengthening Communities (Steele, Marigna, Tello, & Johnston, 2000); Incredible Years (Webster-Statton, 2001) and Triple P (Sanders, Turner, & Markie-Dadds, 2002).

One of the key features of UK parenting programmes is that they are designed to support parents to influence the health and development of their children. Engaging in parenting programmes should therefore, principally, help parents to develop parenting self-efficacy. Self-efficacy can be increased or developed by performance mastery and vicarious experience and learning through role modelling (Bandura, 1982). It could be suggested that the offering of parental programmes based around parenting self-efficacy may be a means by which to both attract and retain those parents most in need of support. This is particularly important for fathers against claims that across Europe fathers are notoriously difficult to engage within programmes of parental support (WHO, 2007). Even where fathers are engaged, dropout rates can be as high as 40% to 60% (Baker, Arnold, & Meagher, 2011). Furthermore, it has been suggested that evidence based parenting programmes often struggle to engage with those “hard-to-reach” families (Flanagan & Hancock, 2010).

Physical activity has been proposed as an appropriate mechanism by which to attract males who may otherwise be reluctant to engage with programmes of parental support (Ghate, Shaw, & Hazel, 2000). Fathers in particular have been shown to spend a large

proportion of their time engaging in leisure type activities with their children, and supporting their children with sport and physical activity, even if they have no interest in sport themselves (Kay, 2009). Similarly fathers are more likely to engage in physical forms of play with their children from a young age, in comparison to mothers who are verbal, didactic and object-orientated (Parke, 1996). The benefits of physical activity (PA) and active play for preschool age children have been widely reported in the literature (Gunter, Almstedt, & Janz, 2012; Jiménez-Pavón, Kelly, & Reilly, 2010; Jiménez-Pavón et al. 2013; Burdette & Whitaker, 2005; Brockman, Fox, & Jago, 2011). However, despite the known benefits of engaging in physically active play, the majority of preschool aged children in the UK do not meet the recommended daily levels of PA as outlined by government guidelines (Griffiths et al., 2013).

Parental attitudes, behaviours and engagement in PA have been identified as determinants of preschool children's physical activity levels (Hinkley, Crawford, Salmon, Okely, & Hesketh, 2008) through modelling of positive behaviours and removing barriers to good health through offering choice (Gustafson & Rhodes, 2006). It should also be acknowledged that many children in the UK spend time in child care settings. In January 2013, the number of children taking up early education places was 1,365,640 (DfE, 2013). Aside from the home environment, childcare settings may be ideal places to implement policies and activity based interventions which could, through appropriate sharing mechanisms, encourage active play at home.

A study investigating the impact of a family focused active play intervention on physical activity and sedentary levels of behaviour preschool children (O'Dwyer et al., 2013) demonstrated that active play can reduce the amount of time which children and families spend being sedentary, improve confidence within children which in turn allows them to play more freely. Findings also highlighted the importance of a family based intervention and

direct involvement of parents in particular when implementing PA ref. A further Liverpool-based study (O'Dwyer et al., in press) clearly showed that Liverpool preschool children are in need of additional PA during the time they spend in childcare settings. This study noted that children who spend less time (a half day) in preschool were significantly more active than their counterparts who spend a full day at preschool, signifying that preschool was not as conducive to engagement in PA as other environments.

Whilst active play programmes have been used to attempt to increase levels of PA in preschool age children for health reasons, no known research has explored the effects of active play on father-child relationships. Further, while a number of parenting programmes exist within the UK which aim to promote engagement between parent and child and/or help parents develop and refine parenting skills, none of these focus on providing support to fathers in particular. The overall aim of the Fathers' Engagement Project was to assess the effectiveness and feasibility of a physically active play based programme on fathers' engagement with their preschool aged children across Liverpool. The objectives underpinning the research aim were to assess the impact of the physically active play programme on: Fathers' attitudes towards their child's physically active play; fathers' time (quantity and quality) spent with their child during the week and at weekend; parenting self-efficacy (emotion and affection, play and enjoyment, empathy and understanding, control, and learning and knowledge). Furthermore, the project also aimed to explore the acceptability of the intervention to fathers and Children's Centre (CC) staff.

Methods

Participants and recruitment

Participants were fathers/male carers and children (aged 3-5 years) living in the catchment area of the 26 Sure Start CC's across the City of Liverpool (n=94). Liverpool is located in the North West of England, comprises of 31 districts and has a population of 445,200. Liverpool has persistently high levels of deprivation and remains ranked as the most deprived local authority area in England (Liverpool City Council, 2010), a statistic that has remained unchanged from the 2004 and 2007 indices. All 26 CC's in Liverpool were invited and agreed to participate in the study. Participants were recruited by CC staff, who themselves employed a variety of techniques including face to face promotion at CC's and local schools, and contact with existing CC users via telephone or home visits. Flyers and posters were also displayed within the CC and local communities e.g. within doctors surgeries and community centres. Ethical approval for the study was gained from the Liverpool John Moores University Research Ethics Committee (application reference # 12/SPS/029).

Design

All CC's were given an opportunity to take part in the intervention (subject to achieving recruitment targets). The project was delivered on a "rolling" basis with blocks of four or five CC's receiving sessions at one time. Baseline data were collected pre-intervention between September 2012 and April 2013 (dependent on intervention delivery). Post intervention measures were completed after the six week intervention period between December 2012 and June 2013. Full details of the flow of participants through the study can be found in the consort diagram (additional file 1). A mixed method design was employed for the study, in

order to observe the impact of the intervention from a number of different perspectives (Nutbeam & Bauman, 2006). A quantitative approach was utilized in order to explore the impact of the intervention on father engagement, while a qualitative approach was applied in order to 1) further assess the impact of the intervention on father engagement 2) gain insight into the feasibility of the intervention from the perspective of both fathers and staff involved in the project. The design of the intervention and research collection procedures are represented in Figure 1, a graphical depiction which reflects the relatively complex nature of the research design, informed by previous research (Perera, Heneghan, & Yudkin, 2007).

FIGURE 1 HERE

Intervention (Dads Active Fun Time (DAFT))

The Dads Active Fun Time (DAFT) intervention involved 6 x 90-minute weekly active play sessions for fathers'/male carers and their children held within CC's, aimed at encouraging positive father engagement in order to increase fathers' parenting self-efficacy, encourage fathers to spend constructive time with their children and promote an understanding of children's play. An external delivery partner who had significant experience working with pre-school age children and their fathers within a CC setting delivered all sessions, with a member of CC staff available to assist at all times. A member of the research team also assisted with the first and last session. Session plans for the DAFT intervention were developed based on existing theory and contemporary research with each week having a specific theme within its delivery (see additional file 3).

Time

A close father-child relationship requires fathers to spend enough time with their child to develop sensitivity to their needs, process the necessary skills and gain confidence in their parenting. It is also considered valuable for both father and child if fathers spend some regular time caring for their children alone (Wilson & Prior, 2010). High levels of father involvement (time spent with child) are associated with a number of significant and highly desirable outcomes for the child such as: good mental health/state of mind, higher levels of cognitive and social competence, increased social responsibility, capacity for empathy, self-control, and better academic achievements (Lamb, 2004).

Quality

How fathers spend time with their children is also important. Father engagement that is high in both quantity and quality is desirable for optimum well-being of the child (Kahn, 2006). Fathers need to be both available and accessible to their children, and when present the father is responsive to their child's desires, needs and are engaged—taking an active and hands on role through both interacting and listening (Lamb, Pleck & Levine, 1987). This, in turn, emphasises the long term and far reaching benefits of investing time and resources to support and develop the relationship between fathers and children.

Positive parenting

Parenting practices that are associated with positive child development include:

- Nurturing behaviours (emotional security)
- Structure (setting boundaries and guiding behaviours)

- Recognition (the child needs to be respected and acknowledged by parents/mutual understanding)
- Empowerment (combining a sense of personal control with the ability to affect the behaviour of others).

These practices are features of an authoritative (firm but fair) parenting style. Authoritative parents monitor and impact clear standards for their children's conduct, they are assertive, but not intrusive and restrictive and disciplinary methods supportive, rather than punitive.

Authoritative parents want their children to be assertive as well as socially responsible, and self-regulated, as well as cooperative. (Baumrind, 1991). Authoritative parenting has been associated with a number of benefits for child well-being and development and has been shown to reduce the likelihood of the child developing problem behaviours at all developmental stages (Weiss & Schwarz, 1996).

Role modelling

Socialisation is the process by which humans learn about others' attitudes, values, and beliefs and eventually come to formulate our own. Children develop and learn socialisation in the main by observing and experiencing the behaviour of others around them. Fathers are generally central members of this process and can potentially influence the decisions and behaviours of young children (Bandura, 1977). However, not all parents are aware of this role and may lack confidence (self-efficacy) in their ability to act as a role model to their child.

Body language also plays a vital role in parental role modelling, children respond more consistently and more actively to what a parent does than what a parent says.

Teaching new skills

It has been suggested that children's parents are their first and most important teachers and every day help children to learn new information, skills and behaviours (Hart & Risley, 1995). Research suggests father involvement encourages children's exploration of the world around them and confidence in their ability to solve problems (Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004). For many fathers, this teaching comes naturally, however others may need support in teaching their children new skills in a positive way. Offering an opportunity for fathers to receive this support and a setting by which they can put these new skills into practice, in turn may lead to an increase of parenting self-efficacy.

Rough and tumble play

Fathers typically, as opposed to mothers, push their children to take risks, establish boundaries and reach for their physical, cognitive and emotional limits during play which can aid development (Paquette, 2004). The role of rough and tumble play is often misunderstood, in particular the role that this type of activity can play in the development of all children i.e., girls as well as boys (DiPietro, 1981). An increase in the understanding of rough and tumble play may lead to an increase in parenting self-efficacy, particularly within the remit of play and enjoyment.

Session design

Each session was split into 3 x 30 minute sections (an example session plan can be found in additional file 2:

- (1) PA/play based games
- (2) interactive workshop/break (linking parent/carer-child activity such as drawing, discussion, craft with a PA focus)

(3) PA/play based section (consisting of different games to the first PA section).

Measures and procedures

The impact of the intervention was measured through a repeated measures design where participants completed a questionnaire at baseline and post-intervention. Demographic information was also gained (pre-intervention only). The questionnaire took 10-15 minutes to complete and the researcher and CC staff were present to offer support when needed. Qualitative focus group data was also collected from participants and staff at the post-intervention stage.

Questionnaire

The questionnaire consisted of 3 main sections detailed below

(1) Father's attitude towards their child's physically active play

In this section fathers were asked to rate (1-5 where 1 was *never* and 5 was *all the time*) against a number of statements according to how well the statements described themselves and their child. This section aimed to explore the perceived physical activity levels of both father and child, how variables such as work and weather conditions may impact on play, and fathers' knowledge and understanding of the conditions surrounding their child's play behaviours e.g., whether the child needs the father to motivate him/her to play. This section of the questionnaire was developed based on the Preschool-Age Physical Activity Questionnaire (Dwyer, Hardy, Peat, & Baur, 2011), where the reliability of responses ranged from 0.31-1.00 (ICC (2, 1)) for continuous measures and 0.60-0.97 (κ) for categorical measures.

(2) Father's time spent with their child

This section of the questionnaire required fathers to estimate the amount of time (in minutes) spent with their child on the following activities on an average week day and an average weekend day: Active playing (games and activities where adult and child were both moving), quiet play (arts & crafts, jigsaws etc.), reading, eating together, and routine activities (dressing, bathing, teeth cleaning etc.)

(3) Parenting self-efficacy

The final section of the questionnaire was developed based on The Tool to Measure Parenting Self-Efficacy (TOPSE) (Kendall & Bloomfield, 2005). Internal reliability coefficients for the subscales ranged between 0.80-0.89 and external reliability coefficients ranged from 0.58-0.88. The overall scale reliability was 0.94. This section focused on parenting self-efficacy, by exploring the range of challenges and difficulties faced by parents and children and parents' perceived ability to manage their children, based on their own views and experiences through the subscales of: emotion and affection, play and enjoyment, empathy and understanding, perceived control, and learning and knowledge. Each question within the section required fathers to rate on an 11-point Likert scale where 0 represents completely disagree and 10 represents completely agree how much they agree on a range of statement. The scale consists of both positive e.g. 'my child will respond to the boundaries I put in place' and negatively worded items e.g. 'I find it hard to cuddle my child' which are then summed to create a total score; the higher the score, the higher the level of parenting self-efficacy.

Focus groups and 1-1 interviews

All fathers who attended a DAFT session were invited to participate in a focus group which was held at the CC within 2 weeks of the programme ending. As a result focus groups included those who had engaged with the majority of the DAFT (4+) sessions as well as those participants who had limited engagement with the programme. 13 participant focus groups were completed in total, in which a focus group schedule was used to explore participant's views on the structure and content of the DAFT sessions, as well as father-child engagement with their child outside of the CC setting. The focus groups lasted from 20-50 minutes and were conducted with groups of 3-5 fathers. Participants were permitted to respond freely but the researcher ensured that all topics were covered in detail to saturation point. All focus groups were conducted by a trained postgraduate researcher, digitally recorded and transcribed verbatim.

Staff focus groups/1-1 interviews were also completed in order to gather views of CC staff on the programme, the impact on fathers who attended, and also their views on recruitment including any challenges and the ability of the programme to recruit new fathers (the staff focus group schedule can be found in. Staff from all CC's, including those who were not able to recruit any fathers to the sessions or had sessions cancelled due to no fathers attending were invited to attend to take part in a focus group which lasted between 20-50 minutes. In total five staff focus groups were conducted with between 2-4 staff members, while four 1-1 interviews (lasting 15-30 minutes) were also conducted due to time constraints and CC staff commitments outside of the project.

Data Analysis

Prior to data analysis, questionnaires were collated and checked for anomalies using descriptive statistics, which were also used to describe the study population and to investigate changes in outcome measures. Participants who attended at least four out of the six DAFT sessions were included in the analysis. This inclusion criteria was deemed sufficient to detect any changes in fathers' behaviour/attitudes/self-efficacy as a result of the intervention and not external variables. All data was checked for normality using the Shapiro-Wilks normality test. The change in outcomes from baseline to post-intervention for each questionnaire component were compared using a paired sample T-test or wilcoxon signed-rank test (for non-parametric data) as appropriate. Statistical significance was set at $p < 0.05$, all data is reported as mean \pm standard deviation unless otherwise stated and all analyses were conducted using SPSS 22.0 for Windows.

All focus groups and interviews were recorded with permission from participants and transcribed verbatim for analysis. Data was then analysed using themes analysis and cross-examined by the research team until a consensus was reached and represented via pen profiles. This type of approach has been used within previous PA research (Mackintosh, Knowles, Ridgers, & Fairclough, 2011; Boddy et al, 2012) and is considered an appropriate method for representing outcomes of analysis particularly for researchers who have an affinity with both qualitative and quantitative backgrounds. This approach incorporates diagrams to display themes and subthemes with direct verbatim quotations which are used to further expand on each theme.

Results

Participant baseline characteristics

From 26 CC's invited to take part in the programme, 11 CC's had no fathers attending sessions and therefore after a period of two weeks the sessions were cancelled at these affected CC's. 15 CC's were able to successfully recruit fathers' (N = 94), 14 of which had fathers who attended at least four out of six sessions and were included in the final analysis (N=36).

95.7% of those who engaged with the programme were fathers (3.2% grandads, 1.1% other), 70.2% were white British with the remainder of the sample being made up of a range of ethnicities as shown in the table below.

TABLE 1 HERE

The average age of children who attended sessions was 3.8 years (SD 1.2), with the average age of fathers being 37.7 (SD 8.7). 56.4% of fathers who engaged with the programme were employed (working an average of 37.1 hours a week), 33% were unemployed, 4.3% were retired, 3.2% were full time students and 3.2% were unable to work and of the fathers who attended the programme approximately 1 in 4 (26.6%) had not used the CC and it's services before.

Intervention impact

1) Father's attitude towards their child's physically active play

Table 2 shows the impact of the intervention on fathers' attitudes to their child's physically active play. The intervention had a significant impact on statement B – my child needs me to

motivate him/her to play, suggesting fathers' awareness had increased related to their understanding of their role in their child's play. There were no significant differences for the remaining statements.

TABLE 2 HERE

Qualitative comments further support these results with fathers reporting how the sessions provided them with ideas and activities which could be used in outdoor play. There also were a number of comments (n=6) which demonstrated an increased understanding and knowledge about their children and play behaviours.

FIGURE 2 HERE

2) Father's time spent with their child

Table 4 shows the time fathers estimated they spent with their child on various activities both before (pre) and after (post) the intervention. In general, the intervention did not appear to have an impact on the quantity of time fathers spent with their children, however the times recorded post intervention were overall lower than pre-intervention. There was a significant reduction in time $P=0.04$ spent eating during the week from pre to post-intervention (from 50.56 minutes to 43.03).

TABLE 3 HERE

The overall (total) time which fathers spent with their child also decreased both during the week (from 296.67 minutes to 294.14 minutes, $P=0.87$ and at the weekend (from 457.64 minutes to 428.06 minutes, $P=0.25$), however these differences were not significant.

While the quantitative results indicated the intervention did not have an impact on the *quantity* of time which fathers spent with their children, qualitative comments (Figure 2) suggested that the sessions themselves provided valuable bonding time for father and child.

FIGURE 3 HERE

3) *Parenting self-efficacy*

Figure 3 shows fathers' parenting self-efficacy scores on the five subscales measured in the questionnaire. Results show there was a significant increase in fathers' perceptions of parental control from pre to post-intervention; however there were no significant differences on any of the other subscales.

FIGURE 4 HERE

The impact of the intervention on parental control was also replicated in the qualitative results, as fathers reported the impact of the sessions on their skills and knowledge as a parent. At one CC in particular the fathers reported how the sessions had made life at home easier and that they had noticed a significant improvement in their children's behaviour both

at home and at school since attending the sessions.

FIGURE 5 HERE

Comments from staff focus groups/1-1 interviews (Figure 5) also provided support for fathers' comments, making reference to both the benefits that the sessions had on parenting skills and children's behaviour.

FIGURE 6 HERE

Acceptability of the intervention

Fathers' views

1) Session content

Fathers on the whole were positive about the session content. For example:

... Yeah really good we really enjoyed it. The instructors, I think they do a really good job yeah so we all enjoyed it F24.

Areas for improvement identified by fathers included a larger group size and more team based games being offered within the sessions. For example:

... If there had been some more team games I think then they (father and child) would bond more and I just think it would have been a better experience F39.

2) Attendance and barriers to engagement

In general Saturday sessions proved to be the most successful in terms of attendance with a number of fathers indicating they would have not been able to attend the course if sessions were on another day. Fathers were also more likely to attend if CC Staff were present during the sessions.

Barriers to engagement were linked to external variables and circumstances such as illness or disability of parent and/or child; lack of understanding about the sessions and how this was conveyed through advertising; needing to engage multiple children within/outside the programme target age range; how taking a number of children out of the house can be quite a daunting task for a father, parental laziness, shyness and session timings clashing with commitments (particularly work schedules), and perceptions that the CC was perceived as a female environment. In respect of the latter one father commented:

...Often when you go to normal toddler groups it's mostly mums and there's hardly any dads F65.

A number of fathers also made reference to the role of the mother as a gatekeeper and organiser suggesting that they would not have attended the sessions or been aware of the programme if they had not been encouraged to attend by the child's mother. For example:

...I suppose for me, how do I put this? My wife's the organiser....if there's a Dad's club or something sort of going on (she will say) why don't you go along there and that's what we've done. F32

CC Staff views

1) Session structure and content

In general feedback from CC staff was positive related to both session structure and content, with staff particularly noting the ability of the delivery team to adapt the session plans in order to suit the needs of the group. For example:

...It was nice because the session wasn't structured (in its delivery) and it was a bit more kind of adaptable then to the parents and the children that were there S10.

Other members of staff made reference to some potential areas for improvement, particularly the inclusion of health based activities alongside different types of sports and games. For example:

...But I don't get it. Now, me, myself, I'd prefer to have if it was like getting fathers active with health. I'd like to have the food bit there one week. For example, sports drinks there or people doing a mini Olympic thing or a bit of swimming S4.

2) Recruitment of new fathers

Feedback also focused on the potential of the DAFT sessions to encourage new fathers to the CC. Several centres and staff members indicated that the sessions enabled them to recruit new fathers, several of whom have now since signed up to additional courses and groups within the CC. However this was not the case for all centres some of who suggested fathers who attended the sessions were already registered and using services within the centre.

FIGURE 7 HERE

3) *Barriers to engagement*

Staff made reference to a number of potential barriers to engagement, which prevented fathers from signing up to the programme or engaging with the CC in general including; the perception of the CC as a female environment, a lack of understanding about CC's and the role they play, and the influence or role of the mother as gatekeeper. With regard to the latter one staff member suggested the following:

...Some people don't think that they should be passing on information to dads because it's just...mum keeps it as the gatekeeper. S6

Qualitative maps for all the themes generated from the qualitative focus group data (fathers and CC staff) can be found in additional files 4 and 5.

Discussion

The aim of the research was to explore the feasibility and impact of a 6 week (9 hour) active play intervention to encourage fathers' engagement with their pre-school children. Fathers' attitudes to their child's physically active play changed in relation to knowledge of the role they had in their child's play. However, the intervention did not impact on fathers' perceptions of whether their children required motivation to play in general, perceptions of their physical activity patterns (alone or with their children), whether they would encourage their children to play outside, and whether work commitments limited play with their

children. The intervention also did not impact on the quantity of time which fathers' spent with their children. There was however a significant increase in fathers' perceptions of parental control from pre- to post-intervention related to parenting self-efficacy, however the programme did not impact on the other subscales.

As noted above, fathers' attitudes to their role within their children's play appeared to change as a result of the intervention and fathers both accepted and appreciated that their children needed some motivation from themselves to play. However there was no difference for the remaining statements. Results from the Ribena Plus Play Report (2012) indicated that 13% of parents say they 'don't know what they are doing when they are playing with their kids' (p.3) and 29% felt 'under pressure' (p.3). As a result of the DAFT intervention, fathers also seemed to gain confidence in their ability to play with their children. This was reported candidly by one father who spoke about the ideas they had gained from attending the sessions and that these had transferred to the home environment (Figure 1). It is important to note that while PA was used as a vehicle to increase engagement between father and child, the intervention was not aiming to increase PA levels per se. In addition, quantitative results pre-intervention suggest that the fathers and children who were involved in the programme generally considered themselves to be active anyway and this was further demonstrated within the focus groups data.

The impact of the intervention on fathers' self-efficacy related to control demonstrates the perceived benefit of attending the DAFT sessions. This result is in line with suggestions within the literature that attending parent education programmes and reading literature relevant to parenting can have a positive impact on aspects of parenting self-efficacy (Bloomfield & Kendall, 2007). Further, the literature also suggests that in order to have a strong impact on parenting self-efficacy interventions need to focus on parent-training, provide information and encourage the development of new skills (Coleman & Karraker,

1998). The intervention within the Fathers' Engagement Project was underpinned by these aspects and demonstrates a positive impact related to control. However, future programmes may consider a greater emphasis on each, however formed and delivered, to create an overall significant impact on parenting self-efficacy.

There was no effect of the intervention on the amount of time fathers reported spending with their children during weekdays or weekend day and this could be explained by a number of factors, such as: 1) Fathers were asked to report the time spent on five different activities both during the week and at the weekend. As this information was not formally recorded (e.g. using a diary), it may be that fathers' estimations were not accurate. 2) Before the intervention fathers may have over reported the time spent with their child but after spending quality time with their child during the sessions may have had a more realistic and accurate view of the time they actually spent with their child leading to lower time values being reported. This is supported by literature which questions the reliability and validity of this type of self-report method when considering changes in behaviour at an individual level, especially when reporting past events from memory (Clarke et al., 2011). 3) It could be suggested that the fathers who attended the sessions were likely to be those who were already engaged with their children. While a range of recruitment techniques were adopted by CC staff in order to promote the programme to all fathers within the catchment area, ultimately engagement was reliant on fathers signing up to and attending sessions themselves. Within the literature it is acknowledged that there are challenges in reaching parents who are most in need of support identified as those who may subsequently spend less time and quality engagement with their children (Winkworth, McArthur, Layton, Thomson, & Wilson, 2010). 4) In the present study the intervention focused on improving both the *quantity* and *quality* of time spent with their child however quantitative questions within the questionnaire were not able to explore the latter. A reduction in the time spent eating with the child may support

these suggestions, as fathers may have substituted this time in order to spend additional time on quiet activities such as arts and crafts which were promoted within the sessions (there was a slight increase on time spent on both quiet activities and reading during week days). Likewise, qualitative data from fathers and CC staff indicated that the programme provided opportunity and ideas for fathers to spend time with their child.

Overall, results demonstrated that in general fathers spent more time (quantity and quality) with their child on all activities on the average weekend day (Saturday/Sunday) than on the average week day. This is consistent with recent research in the UK, but the overall time spent on the average weekday was higher than previously reported in the literature at 294 minutes during the average weekday post intervention, compared with up to 271 hours reported by previous research (Hook, 2012). However, weekend time was consistent with previous findings of between 320-536 minutes (Hook, 2012), with a mean value of 428 minutes post intervention.

While the programme was able to successfully attract a number of fathers including those who had not attended sessions at a CC before, a number of barriers to attendance were identified within the qualitative results. Fathers in particular are notoriously difficult to engage with, particularly within environments such as CC's (Baker, Arnold, & Meagher, 2011). Research has explored this lack of engagement with services (Katz, La Palca & Hunter, 2007), including barriers for parents engaging in mainstream services and notes that men still exhibit traditional views regarding the role of the father with a tendency to want to be self-sufficient and independent rather than accept help and parenting services.

The term "maternal gatekeeping" has been frequently used to refer to the role mothers can play in dictating the nature and extent of a father's involvement and encourage or dissuade a father from accessing services (Allen & Hawkins, 1999; O'Brien, 2005). A number of both fathers and staff made reference to this within the qualitative focus groups.

However, as reported by the Equal Opportunities Commission even in the case of lone parent fathers, where there is no evidence of a partners influence, the uptake of parental services is low. (O'Brien, 2005) The One Parent Families Support and Information Network reported just 2% of all contacts were made with fathers despite 9% of all registered lone parents being fathers (Equal Opportunities Commission, 2006). One reason for this may be related to male perceptions of the CC as a female environment. Research has previously suggested that early years settings in general are considered feminine places and highly populated with female staff which may be off-putting for some fathers (Ihmeideh, 2013). Comments by a number of fathers and staff in the present study were in accordance with these suggestions and suggest a potential reason as to why some fathers weren't keen to sign up to the sessions, regardless of the advertising and promotion efforts of CC staff.

It could be suggested that the intervention within the current project was limited in length due to practical reasons of overall timescales and funding, however it should also be noted that its aim was to ensure the programme was offered to all of Liverpool CC's. It is accepted that increasing the intervention period may have led to more significant results being seen however the study has demonstrated impact on fathers. Further, conducting follow up interviews at 6 or 12 months will allow for exploration of the long term impact of the project for fathers and/or the CC and work is scheduled for the academic year 2014-2015 outside the current project timescales. Additionally, the intervention for the Fathers' Engagement Project was six weeks in length with 540 minutes spent in sessions in total and may be considered short within the context of other parallel parenting-based programmes. Indeed the Incredible Years Programme includes weekly 120 minute sessions for a period of 12 weeks (1440 minutes). Increasing the length of the programme and contact time, may have led to a greater intervention impact being seen, particularly related to parenting self-efficacy.

Regardless of these limitations, a number of recommendations for both research and practice can be put forward based on the work within CC's throughout the current study.

Recommendations for practice

- Where possible sessions targeting fathers should be offered on Saturdays to facilitate attendance.
- When courses led by an external company /agency are delivered within a CC setting a member of staff from the CC should be present during the session. This would enable rapport to be developed and foster continuation of engagement post course.
- Active play is an appropriate means for fostering fathers' engagement with pre-school children. The current programme has demonstrated that active play can be a basis for PA and also a focus or 'hook' for craft and quiet 1-1 time for father and child.

Practitioners may consider combining sessions such as craft and active sessions that may be by virtue of their nature delivered as separate sessions.

Recommendations for research

- Using log books or diaries to record time spent with child when implementing and measuring a programme of fathers' engagement will enable fathers to record the time spent with child and the focus of those activities over the course of several days. This may lead to more accurate data being collected and enable interventions to be accurately assessed.
- The effects of intervention programmes on fathers' engagement with their preschool age children requires further investigation, particularly from that of studies which are

more longitudinal in design. This may involve an increased period of intervention which would allow families to attend around 10-12 x 90 minute sessions and/or include a 6 month follow up to assess whether any changes in engagement between father and child and or parent/child with CC were maintained or indeed developed further.

- More research needs to be conducted with ethnic minority families in particular to explore the barriers which may prevent fathers from different cultures or with additional needs to engage with local CC's and groups.

Conclusion

The intervention had no impact on the amount of time fathers reported spending with their child, however results suggested that the sessions helped to provide positive and impactful opportunities for fathers to spend 1-1 quality time with their preschool age children. Self-efficacy did not increase across any of the subscales apart from control, suggesting that using positive messages and providing ideas for activities to do at home helped fathers feel more in control over their children but did not increase parenting self-efficacy in general. Fathers' understanding about their own role in their child's play did increase, however fathers' perceptions of their own and their children's PA levels did not change as a result of the intervention. Although as previously mentioned, PA perception was one of the relatively high activity levels to begin with and though these were not objectively measured there may have been a ceiling effect meaning little room for increased PA through the intervention. The programme can be considered a feasible and appropriate way promote father engagement and is deemed to be portable to that of other similar childcare settings/programmes and be conducted indoors within a CC setting, but may also be adapted and carried out outdoors. It could be applied to different districts across the UK and adopted locally to assess whether

results from Liverpool are representative across the whole of the UK. A similar approach could also be adopted internationally.

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Appendices

Additional file 1 – Consort diagram of participant flow through the project

Additional file 2 – Session focus (learning outcomes and example activity for each week of the intervention)

Additional file 3 - Example session plan (time)

Additional file 4 - Qualitative map produced from participant focus group data

Additional file 5 - Qualitative map produced from CC staff focus group data

Tables

Table 1 Ethnicity (%) of participants who engaged with the programme at baseline

Ethnicity	Percentage
White British	70.2
Other White	6.4
White & Black Caribbean	1.1
White & Asian	2.1
Other Mixed	3.2
Indian	1.1
Other Asian	5.3
Caribbean	1.1
African	5.3
Other	4.3

Table 2 Mean pre and post-intervention questionnaire scores for the statements relating to fathers' attitudes to their child's physically active play

Statement	Pre Intervention (Mean ± SD)	Post Intervention (Mean ± SD)	P Value
My child is very active	4.5 ± 0.6	4.5 ± 0.7	0.71
My child needs me to motivate him/her to play	1.9 ± 0.8	2.4 ± 1.0*	0.02
My child needs company to be motivated to play	2.5 ± 1.0	2.3 ± 1.1	0.30
I encourage my child to play outside when the weather is suitable	4.2 ± 0.9	4.2 ± 0.9	0.66
I am physically active with or in front of my child	4.1 ± 0.6	4.3 ± 0.6	1.00
My work schedule or other commitments limit the time I have to play with my child	2.5 ± 1.2	2.6 ± 1.0	0.10

Notes. * denotes a significant difference from pre to post intervention (P<0.05)

Table 3 Father's time spent with their child on various activities pre and post-intervention on an average weekday (Monday-Friday) and an average weekend day (Saturday/Sunday)

Activity	Time period	Pre Intervention	Post Intervention	P Value
Active Play	Weekday	106.67 ± 80.09	101.11 ± 72.81	0.83
	Weekend	171.39 ± 104.80	164.86 ± 118.25	0.68
Quiet Play	Weekday	52.36 ± 32.55	59.72 ± 45.03	0.32
	Weekend	92.08 ± 60.23	88.61 ± 70.6	0.49
Reading	Weekday	36.39 ± 25.37	42.36 ± 27.92	0.56
	Weekend	52.50 ± 33.39	44.03 ± 29.20	0.06
Eating	Weekday	50.56 ± 29.24	43.03 ± 24.88*	0.04
	Weekend	80.00 ± 48.11	73.61 ± 49.49	0.53
Routine Activities	Weekday	50.68 ± 39.22	47.92 ± 33.45	0.94
	Weekend	61.67 ± 48.27	56.94 ± 39.41	0.68

Notes. * denotes a significant difference from pre to post intervention (P<0.05)

Figures

Figure 1. Graphical depiction of research and intervention components for the fathers' engagement project

Figure 2. Fathers knowledge of children's play behaviours

Figure 3. Fathers view on the DAFT sessions related to 1-1 time

Figure 4. Pre and post-intervention scores across 5 subscales of parenting self-efficacy

■ denotes pre-intervention ▨ denotes post-intervention ($P > 0.05$)

Figure 5. Fathers views on the impact of the DAFT sessions on parenting skills

Figure 6. Staff views on the impact of the DAFT sessions

Figure 7. Staff views on the ability of DAFT to attract new fathers