

The impact of the Mellow Parenting programme on later measures of childhood verbal IQ

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Aim(s): *Development of language is one of the most remarkable and pivotal achievements in early childhood with the majority of children learning to talk by the age of three years. Good language development has major social and academic advantages. Poor language development puts them at an increased risk of behaviour problems, psychiatric disorders, and later educational failure. However, as many as 20 per cent of parents in the UK have concerns over their children's speech and language development. Early childhood is the most effective and cost-efficient time to ensure that all children develop their full potential.*

Method/Rationale: *The present study investigated the impact of an evaluated parenting programme, Mellow Parenting, delivered when the child was aged between 3 and 5 years on verbal IQ years using the Wechsler Preschool and Primary Scale of Intelligence (WPPSI), and compared the findings to a control group who experienced Care as Usual in nearby nurseries.*

Findings: *The Mellow Parenting programme resulted in a 7.89 point increase in verbal IQ by the target group, sustained over 18 months, using the WPPSI. No such effect was seen in a contrast group, who experienced Care as Usual in nearby nurseries. The programme aims to help them make changes in their relationships including increasing positive parent-child interaction.*

Conclusions: *The present study found that the group intervention, contrasted with Care as Usual in neighbouring family centres, resulted in a clinically significant improvement in the children's verbal IQ of a magnitude to enable them to enter the school system with age appropriate verbal skills.*

Keywords: *mellow parenting; verbal IQ; language development; parenting programme; parent-child interaction.*

Background to the study

A CRUCIAL DETERMINANT of a child's progress in language is the quality of the parent-child language interaction during the first three years (Hart & Risley 1995). Maternal behaviours such as maternal responsiveness, contingency and stimulating interactions have been found to be predictive of subsequent language performance of the child. Optimal parenting behaviour is reciprocal, supports the child's interests and recognises the child's need for autonomy (Landry et al., 1997; Murray & Hornbaker, 1997). Cognitive ability level in early childhood has been found to be associated with stimulating and contingent parent-infant interactions (Olson, Bates & Kaskie,

1991; Sylva et al., 2011). Children's pre-school language performance can be predicted from the quality of maternal involvement (Olson, Bates & Bayles, 1984). Maternal responsiveness – the way in which the mother provides for, interacts or responds to their child – creates an environment which has an impact on the language development of their child (Brady, Warren & Sterling, 2009; Hirsh-Pasek & Burchinal, 2006; Masur, Flynn & Eichorst, 2005). A large UK cohort study examined maternal responses rated at 12 months during an observed mother-infant interaction and found that positive maternal responses and infant development were associated at 18 months (Pearson et al.,

2011). The cognitive ability of 4-year-old children and maternal responsiveness has also been found to predict reading comprehension skills at 8 years (Taylor et al., 2008), suggesting that early interaction continues to play a significant role in later progress.

Greater maternal sensitivity is associated with enhanced infant language abilities (Cusson, 2003; Leigh, Nievar & Nathans, 2011; Pungello Iruka et al., 2009) and reaching development of language milestones earlier (Tamis-Lemonda, Bornstein & Baumwell, 2001; Tamis-Lemonda & Bornstein, 2002). In 9-month-old infants, there was a relationship between increased maternal cognitive stimulation and development of receptive language, expressive language, social relationships and feeding (Cheng et al., 2009). Greater expressive vocabulary size and frequent symbolic and functional play has been exhibited in 1-year-old children of mothers who paid them greater 'attention following' and used elaborative referential speech (Sung & Hsu, 2009).

Communication and language difficulties often exist in children whose parents are experiencing significant levels of psychological distress (Mensah & Kiernan, 2010). Mothers suffering from depression and stress verbally interact with their children much less (Lovejoy et al., 2000). There is an increased risk of later cognitive and language problems in children exposed to maternal depressive symptoms: either in the prenatal period, postpartum period or chronically (Sohr-Preston & Scaramella, 2006). Compared to children of non-symptomatic children, those of mothers with six-week postnatal depressive symptoms (PNDS) were significantly more likely to exhibit poor cognitive outcome (cognitive, language, personal, and social skills development) (Sutter-Dallay et al., 2011). Additionally, negative, harsh or inconsistent discipline, lack of supervision or emotional warmth and parental conflict have been found to increase the risk of behavioural and emotional problems which can subsequently lead to anti-social behaviour, substance

misuse and criminal behaviour (Utting, 2009).

The strong relationship between quality of early interpersonal experiences and the child's later language development has also been explained within the context of attachment theory. Bell and Ainsworth (1972) first highlighted the relationship between secure mother-infant attachments and pre-verbal communication and specifically found a relationship between responsive parenting in the first months of life and clear and extensive gestural communication when the infants is between 9- to 12-months-old.

Generally, prevention and early intervention programmes promote and target greater quantity and quality of language stimulation (Chang et al., 2014; Sylvestre & Mérette, 2010). A longitudinal study found that variations in parenting behaviour, especially maternal warmth and sensitivity, can account for approximately 9.3 per cent of the income-related gaps on the Naming Vocabulary Measure in children aged 5 years (Waldfoegel & Washbrook, 2010). Review of the literature strongly indicates that other environmental factors, in particular the mother's psychological availability, involvement, responsiveness and her sensitivity towards the child's needs should be considered.

Aims of the current study

One parenting programme which targets these factors is the Mellow Parenting programme (www.mellowparenting.org), an intensive parenting programme that has been found to be effective in improving the psychosocial functioning of very vulnerable babies and preschool children (Puckering, 2009, 2010; Puckering et al., 2011). Although now developed for use with fathers as well as mothers, initial research was conducted with mothers only. Renaud (1998) conducted a waiting list controlled study of a group of eight mothers participating in a Mellow Parenting programme in Fife. Despite the small numbers, the mothers exhibited an increase in positive affect and a decrease in negative affect as well as depression and

anxiety. Decrease in child behaviour problems were also found. The present study investigated the impact of the Mellow Parenting programme delivered when the child was aged between 3 and 5 years on verbal IQ years using the Wechsler Preschool and Primary Scale of Intelligence (WPPSI, Wechsler, 1989), and compared the findings to a control group who experienced Care as Usual in nearby nurseries. The quality of relationship between a parent and children can be evaluated using the Mellow Parenting Observational System (MPOS; Puckering et al., 2010) which assesses positive and negative interactions between parent and child. It examines behaviour across six dimensions: anticipation of child's needs, responsiveness, autonomy, co-operation, containment of child distress, and control/conflict. In this study, the rate of total positive interactive events across the observations of mother and child was examined in relation to changes in verbal IQ. The effects were measured a year after the end of the programme, representing a sizable portion of the child's early life.

Specific research questions

The present study aims to address two research questions:

1. Does the Mellow Parenting programme have an impact on later measures of childhood Verbal IQ compared to Care as Usual in neighbouring family centres, and;
2. What is the relationship between Verbal IQ and positive mother-child interaction?

Methods

The study reports on data from a subset of children aged three and over who joined a Mellow Parenting group (Puckering et al., 1996) in four family centres. The groups are offered to mothers in complex and difficult circumstances, which often include poor parenting experienced by the mothers in their own childhood, poor marital and social support, as well as depression and other psychological difficulties. Some of the children were on child protection plans.

A cohort control group was recruited from neighbouring family centres who offered similar services, including day care and support for parenting, but did not use Mellow Parenting. Since they did not all use the same programme, though they all aimed to improve parenting, the control condition is described here as 'Care as Usual'. All the family centres were sited in Central Scotland in areas of high deprivation, all being in the highest 10 per cent for social deprivation (Scottish Index of Multiple Deprivation, 2012). They were run by social services or third sector organisations, often with service level agreements with social services.

Mellow Parenting is a 14-week full-day programme delivered one day a week. The content includes group support for mothers and a parenting workshop based on attachment theory and using video feedback. The children are in a children's group during these activities, but join their mothers for lunch and a play activity which includes songs and games, and simple craft activities, cooking and outings. An example of one of the outings would be visiting the local children's library, a resource that mothers were unaware of or too intimidated to enter. These outings aim to introduce parents and children to a range of enjoyable joint activities they may not have tried before, but are cheap or free and therefore accessible to parents and children outside and after the group. The programme actively encourages 'Have a Go' activities to practice new skills and sharing at home.

Measures were taken by independent interviewers (graduate psychologists) who saw mothers and children at home over a series of meetings, interviewing mothers, administering standardised tests and questionnaires and making video recordings of mother-child interaction, which were later analysed by independent scorers from video recordings of the mother and child, blind to the group allocation and time-frame status of the recordings.

The interviews were based on the Present State Examination (Wing et al., 1990) and

the children's behaviour assessed using the Richman Behaviour Screening Questionnaire (Richman & Graham, 1971). Children aged 3 and over were assessed using the Wechsler Preschool and Primary Scale of Intelligence (WPPSI-R UK edition).

Mothers and children were seen by the independent psychologists before the groups and immediately after the groups, some four months later. However, since this was too soon to repeat a psychometric test validly, the WPPSI-R measures were not repeated until the follow-up data collection one year after the end of the intervention, that is, some 16 to 18 months after the first data sweep.

Videos were analysed using the Mellow Parenting Observational System (MPOS; Puckering et al., 2010). As this generates a number of possible outcome measures, a measure of total positive social involvement was chosen, using event recording of positive mother-child interactions. The events recorded included warmth, sensitivity, anticipation and autonomy and the management of distress and control.

The study was granted ethics permission from the Ethics of Research Committee at the local area NHS Health Board.

Participants

Twenty children and their mothers completed a Mellow Parenting group and their results were compared with 11 children and mothers attending family centres in close proximity, offering Care as Usual in the form of day-care and parenting interventions.

The 31 children were a subset of the 74 children who were involved in the whole study. They were selected as they were the children who were 36 months or over at entry to the study and so eligible to be tested using the then current version of the Wechsler Preschool and Primary Scale of Intelligence.

Pre-group and post-group WPPSI-R scores were available for 14 boys and six girls in the Mellow Parenting group, and six boys and five girls in the Care as Usual group. The

gender imbalance may have been caused by the mothers being asked to identify the child they were finding most difficult if they had more than one child, with boys often presenting with more difficulties (Rutter, Tizard & Whitmore, 1970). A further six children from the Mellow Parenting group and three from the Care as Usual group had missing data at either pre- or post-group assessments and were therefore excluded from the current analyses.

At intake to the group, 13 of the Mellow Parenting mothers were in a relationship, either living with a partner or in an intimate relationship. Eight Care as Usual mothers were in such a relationship. Of the 13 Mellow Parenting mothers in a relationship, eight of them described conflict with their partner. Of the eight Care as Usual mothers, three of them reported that their relationship with their partner was acrimonious. Eleven of the Mellow Parenting mothers had psychiatric symptoms, usually depression, consistent with a diagnosis of a psychological disorder. In the Care as Usual group, only one mother had symptoms sufficiently severe to warrant a psychological diagnosis (see Table 1)

Although the children were not initially identified as having behavioural problems, many of them did so. Sixteen of the Mellow Parenting group had a score of seven or more on the Richman Behaviour Screening Questionnaire, and four Care as Usual children, consistent with a diagnosis of child psychiatric problems.

Results

In comparing the verbal IQs of Mellow Parenting (MP) and Care as Usual (CaU) groups, we can see that both started before intervention with IQs in the middle of the low average range as defined by the WPPSI test manual (MP $M=86.55$, $SD=11.81$; CaU $M=85.18$, $SD=12.81$). After intervention, the children in the Mellow Parenting group had improved their test scores into the average range ($M=94.44$, $SD=14.63$), while the Care as Usual group remained unchanged ($M=86.73$, $SD=12.51$) (see Table 1). Due to

Table 1: Subject characteristics in Mellow Parenting and Care as Usual groups.

	Mellow Parenting (N=20)	Care as Usual (N=11)
Gender	14 boys 6 girls	6 boys 5 girls
Marital/relationship status	13 in a relationship (65%)	8 in a relationship (72%)
Relationship quality	8 conflictual (61%)	3 conflictual (37%)
Mothers with diagnosable psychological problems	11 (55%)	1 (9%)
Children with Richman BSQ in symptomatic range	16 (80%)	4 (36%)

Table 2: PPSI-R Verbal IQ scores in Mellow Parenting and Care as Usual groups, before and after Mellow Parenting interventions.

	Pre-group Mean (SD)	Post-group Mean (SD)
Mellow Parenting (N=20)	86.55 (11.81)	94.44 (12.85)
Care as Usual (N=11)	85.18 (14.63)	86.73 (12.51)

$p=.057$ Repeated measures ANOVA Group x time interaction.

the small sample size, this differential only approached statistical significance, but the partial Eta squared of 0.11 constitutes a medium to large effect, a measure of effect size, generated by SPSS and reflecting the meaningfulness of the differences between the groups. Such a difference would be expected to reach statistical significance in a larger sample of 23 per group, 80 per cent of the time with a 0.05 level of significance.

In seeking an explanation for this change, we examined the quality of interaction between mothers and children. We examined the correlation between the count of the rate of good social involvement (play, chatting, joint activities, etc.) and verbal IQ at follow-up, as we expected that good interaction would promote good verbal skills. We used a rate per minute as the variable of choice as the video-recordings varied in

length, being observations of a normal family mealtime in the family home. The correlations confirmed the relationship between positive interaction and Verbal IQ after the group intervention (Spearman's $Rho=0.42$ $p=0.009$). No such relationship was evident at the pre-group stage (Spearman's $Rho=0.16$, $p=0.36$).

Discussion

The present study found that the group intervention, contrasted with Care as Usual in neighbouring family centres, resulted in a clinically significant improvement (7.89 points) in the children's verbal IQ of a magnitude to enable them to enter the school system with age appropriate verbal skills. Given a larger sample size, these findings may well have reached statistical significance considering the effect size.

Mellow Parenting has been shown to be effective in engaging hard-to-reach families where the children are either on the child protection register or the extent and nature of associated risk factors for child development give significant concern that child protection might become an issue.

The impact of the Mellow Parenting programme on verbal IQ will also increase the school readiness of disadvantaged children. The importance of targeting families which are disadvantaged is emphasised by the findings of Hart and Risley (2003) who found that, by the age of three, children from disadvantaged families have heard 30 million less words compared to children from more privileged families (Hart & Risley, 2003). Mellow Parenting engages parents 'at the extreme end of the spectrum' (Puckering, nd). Other major parenting programmes such as the Incredible Years programmes (Webster-Stratton & Herbert, 1994) and the 'Triple P' programme (Sanders & Dadds, 1993) may actually be failing to engage the families most in need, despite their effectiveness when delivered fully (Puckering, 2004). Many of these parenting programmes (i.e. Incredible Years and Triple P) focus on managing children's behaviour. However, managing behaviour is only one part of parenting and is often better managed when children's other fundamental needs are also addressed. It is also an aspect of parenting that becomes more pertinent after the age of about 2. Before that, the key constructs are nurturance and sensitivity, enabling the child to develop a secure attachment relationship by supporting the emotional and physical well-being of both the parent and child. Those families most in need of support for managing their child's behaviour are often not ready to consider and implement the suggested strategies because of their own problems, and so continue to fail to successfully complete behavioural programmes. They may be experiencing a variety of personal and interpersonal difficulties including mental health issues, financial and

emotional problems. Their parenting skills may reflect their general poor experience of relationships. These are often hard-to-reach families who either will not engage with parenting programmes (unless made statutory under child protection orders) or who will not gain anything from attending. Mellow Parenting aims to reach these parents by providing a more nurturing context in which to develop their own relationships and their own skills alongside applying those to the relationships with their child.

The almost universal offer and uptake of preschool education in the UK means that even troubled parents are more likely to take up parenting groups where these are delivered in a known and non-stigmatising environment such as nursery class or school.

Limitations

One of the limitations with this study is that it only included mothers. In addition to mothers, fathers and other caregivers are also involved in parenting. There is an increasing need to engage fathers in parenting interventions. There have been recent developments, in response to the issue of the importance of father's. Mellow Dad's, an adaptation of Mellow Parenting is currently being implemented and has recently been evaluated (Scourfield, Allely & Yates, 2014). It is important to note that this is an exploratory study. Further research is required which replicates the findings using a much larger sample. Future studies should also investigate the gender imbalance in the children, investigate the differences between the groups pre-intervention and also look at even longer follow-up times. Given the effect size, it might be expected that the findings would be firmer with a larger sample. It is important to note here that there have been a number of critical reviews of the WPPSI-R (for instance, Bracken & Delugach, 1990; Kaufman, 1990; Sattler, 1990; Slate & Saddler, 1990). Lastly, there was – as might have been expected – a high degree of continuity between WPPSI-R verbal IQ at intake

and follow-up, so that the change during the group, though clinically significant, does not exclude the continuing influence of other factors in the child's life.

Clinical and educational implications

Early childhood is the most effective and cost-efficient period in which to ensure that all children develop their full potential. Internationally, there is an increasing consensus among developmental and clinical psychologists, public health researchers, educationalists and policy advocates that safe, nurturing, and positive parent-child interactions provide the foundations for healthy child development and later mental health, with good language development as a key mediator (Leadbeater, Mitic & Egilson, 2014; Thorpe, Rutter & Greenwood, 2003; Topping, Dekhinet & Zeedyk, 2013). Indeed, a recent review on early interventions carried out in the UK (Allen, 2011) recommended the wide implementation of evidence-based parenting programmes. This study provides further support for the merits of implementing an early parenting programme, in this specific case the Mellow Parenting programme, and its positive influence on later child verbal IQ. This study also highlights that Educational Psychologists should also explore the caregiver-infant/child interaction and offer parenting programmes if required using their privileged access to almost all parents in safe, trusted and non-threatening nursery education settings. Given that the target parents will be largely from vulnerable groups, the highly specialist skills of an educational psychologist will be particularly important, but co-working with early years educators will bring a depth of expertise that

one profession alone may not offer. In time, the educational psychologist may be able to step back to a more supervisory and consultative role having successfully cascaded skills.

Conclusion

The present study found that the group intervention, contrasted with Care as Usual in neighbouring family centres, resulted in a clinically significant improvement in the children's verbal IQ of a magnitude to enable them to enter the school system with age appropriate verbal skills. This progress has importance for the children's progress in all areas of education, not just literacy but behaviour and the ability to function well in what is a very language dependent environment. Since the original research, the programme used in the present study has been extended to include fathers and refined so that over-twos are offered a tailored group programme which meets their specific needs, rather than trying to meet the needs of children from birth to preschool.

The study is particularly timely given the current political climate and the offer of nursery places to children from two years of age where their home circumstances may be less than optimal and the recent increased emphasis on learning opportunities (DFE, 2011; Wilshaw, 2014). The programme in this study is highly suitable to run in nursery schools or nursery classes within primary schools. It provides a structured curriculum, but most importantly harnesses the power of parents to offer a Home Learning Environment which enhances children's language development, the royal road to success in education (Melhuish et al., 2001, 2005).

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