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Exploring the effect of an attachment intervention in areas of multiple deprivation on adult–child interaction and the implications for children’s social, emotional and behavioural development

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ABSTRACT

This paper explores the incidence of children’s social, emotional and behavioural difficulties within areas of multiple deprivation in one Local Authority in Wales and the potential effects of targeted training interventions on the quality of adult–child interactions. The quality of adult–child interaction was measured pre and post-test using the Sustained Shared Thinking and Emotional Wellbeing Scale (SSTEW). Strengths and Difficulties Questionnaires (SDQ) identified social, emotional and behavioural difficulties of children aged two to three years old illustrating the levels of difficulties presented by children attending Flying Start childcare. The SDQ results highlight a high incidence of social emotional and behavioural difficulties for children in areas of multiple deprivation. The SSTEW results highlight the potential impact of targeted professional development on the quality of adult–child interactions with the consideration that good quality childcare is associated with better outcomes for emotional, hyperactivity and peer problems with an improvement in pro-social skills.

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Poverty; quality adult–child interactions; emotional development; areas of multiple deprivation; early intervention; attachment

Introduction

Key reports from the Center on the Developing Child at Harvard University (2016, 2017) draw from prominent research in the field of early relationships and the impact on child development and child outcomes. These reports define the effect of responsive relationships and positive experiences on brain development in the early years of the life of a child. Furthermore, the reports call for the development of ongoing professional learning opportunities that develop practitioners to enable warm and responsive adult–child interactions in early year’s education and care. The role of early years education and care in closing the attainment gap continues to be high on Government priorities with the APPG report (Madders & Tyler, 2019) stating that children from low socio-economic status backgrounds start school an average of 11 months behind their peers. In Wales, one in three children are living in poverty and are falling behind their peers before they start formal schooling (Save the Children, 2018). Concerns have been raised regarding the current shift in focus in early years policy from quality of provision to quantity (Stewart & Waldfogel, 2017). This research aligns with these recommendations and current policy direction exploring the potential impact of targeted professional development on adult–child interaction quality. Process quality in early years settings, in particular adult child interaction significantly contributes to children’s development. Lippard, La Paro, Rouse, and Crosby (2018) found that interaction quality is a significant predictor of levels of problem

behaviours where higher levels of interaction quality were associated with lower levels of behaviour problems.

Helmerhorst, Riksen-Walraven, Gevers Deynoot-Schaub, Fukkink, and Tavecchio (2015) study into process quality variations cross-country concluded that levels of interactional quality for preschool childcare (in particular for 0–2 age range) had declined over an eight-year period. Recommendations were made for targeted and specific professional development opportunities to raise practitioner knowledge and skills in interaction. Further research in 2017 concluded that specific professional development resulted in significant improvement in targeted areas of adult–child interaction (Helmerhorst, Fukkink, Riksen-Walraven, Gevers Deynoot-Schaub, & Tavecchio, 2017). Schmitt, Flay, and Lewis (2014) study findings indicate that focused interventions are effective at supporting children's social, emotional and behavioural development in early years settings with statistical significant change score pre and post-intervention test. Specific attachment theory training has been found to facilitate relational pedagogical approaches to early education and care and a greater commitment to establishing quality adult–child interactions (Reeves & Le Mare, 2017). Aspelin (2019) found that targeted social and emotional development theory training supported practitioners ability to be sensitive and responsive to the child's needs, support the child's emotional development and identify behaviour cues linked to socio-emotional development. Rege, Foldøy Solli, Størksen, and Votruba (2018) acknowledge evidence that high-quality childcare provision has a positive impact on children's socio-emotional development, in particular for children from a low socio-economic status. However, findings from the study indicate that this varies significantly across childcare provisions identifying inconsistency in the quality of provision.

Context

In Wales, poverty is one of the most significant factors relating to a child's early development and the high-risk factors associated with living in areas of multiple deprivation (Welsh Government, 2014a). The number of children living in poverty in Wales is increasing, with areas of multiple deprivation presenting with the highest level of need (Welsh Government, 2014a). The Welsh Government has committed to making a 'decisive difference to the life chances of children under 4' (p. 3) (Welsh Government, 2012a) in line with their seven core aims for children and young people. Thus, there is a need to consider how childcare professionals are supported to counteract the negative effects that are associated with poverty and ACEs (Welsh Government, 2012a). This commitment is reinforced through the identification of provision in the early years as one of the priorities within '*Prosperity for all: the national strategy; Taking Wales Forward*' where Welsh Government recognize 'an individual's experiences in childhood play a significant part in shaping their future' (Welsh Government, 2017f, p. 4).

Attachment

Research by Matte-Gagné (2015), Sektan (2010), MacKay (2010) and Munson, McMahon, and Speiker (2001) suggest children in areas of deprivation are more likely to have insecure attachments which creates a high proportion of children with emotional and behavioural difficulties that may affect their academic achievement. It is recognized that the attainment gap between children living in poverty and those not living in poverty persists despite initiatives within schools to promote literacy and numeracy skills to close the attainment gap (Ofsted, 2014; Welsh Government, 2017b). Oriakhi, Osamiro, and Omogbai (2013) in a study with Nigerian children, referred to 'anxious attachment formed by infants in poverty' (p. 154) leading to later insecurity, and that a 'strong reliable caregiver' with 'reciprocal interactions' is vital in early life. Sheridan, Knoche, Edwards, Bovaird, and Kupzyk (2010) noted that a child's social-emotional ability contributes to learning, and for disadvantaged children, advocated interventions that develop positive relationships and have a positive effect on social-emotional competency. Similarly, Mistry, Benner, Biesanz, Clark, and Howes (2010) in a US study using data from the *National Early Head Start Research and Evaluation Project*, highlighted that one

important factor that contributed to young children's learning was the ability to 'foster healthy interpersonal relationships between infants and their primary care givers' (p. 447). Research by Hammer, Melhuish, and Howard (2018) reaffirms previous study findings indicating the long-term impact of emotional factors on children's later academic achievements.

Hartas (2011) recorded that socio-economic disadvantage influenced the competencies of three-year olds who demonstrated less cognitive skills and higher risks of difficulties with behaviour.

Child development theories examine the effect of early relationships and a secure home environment on children's learning, suggesting that factors that disrupt early relationships lead to developmental delay (Bowlby, 1951; Bretherton, 1992; Maslow and APA, 1943; Perry & Pollard, 1997). The broad descriptor 'social, emotional and behavioural development' refers to specific aspects of child development including pro-social skills, self-regulation, behaviour, hyperactivity and emotional development (Hammer et al., 2018).

Brain development is rapid during early childhood (Newman, Sivaratnam, & Komiti, 2015), with increasing evidence that brain development is impacted by the child's experience and that the interactions and relationships experienced within a caregiving environment can significantly affect the development of the parts of the brain responsible for regulating socio-emotional behaviour (De Bellis & Kuchibhatla, 2006; Fox, Nelson, & Zeanah, 2017; Strathearn, 2006). Additionally, Lee, Walker, Hale, and Chen (2017) emphasize the impact adverse experiences can have on children's neurological development, indicating that early experiences can affect the development of neural pathways. These maladapted neural pathways regulating emotional and behavioural functions can impact on the child's ability to form stable and functioning relationships in later life (Fox et al., 2017; Lee et al., 2017; Letourneau, Hart, & Macmaster, 2017). Recent neurobiological evidence has highlighted the positive effect emotional regulation and control, formed during the pre-formal educational years of a child life, has on their cognitive development and ability in later education (Djambazova-Popordanoska, 2016). Newman et al. (2015) concluded that integrating research relating to attachment theory with underlying neurobiology systems, is beginning to demonstrate that a child's social experience and interactions have significant implications for a child's development and long-term outcomes (Bowlby, 1969; McCrory, De Brito, & Viding, 2011; Newman et al., 2015). This idea is further explored through a review by Letourneau et al. (2017) that demonstrates that attachments to non-parenting adults are pervasively correlated with executive function. Furthermore, understanding the implications of the role of caregiver interactions is significant in supporting interventions that develop positive attachment and long-term well-being (Newman et al., 2015).

Findings from longitudinal studies on the effectiveness of preschool education provide a substantive and ongoing body of evidence detailing the positive effects of high quality preschool on children's attainment and lifelong outcomes (Melhuish, 2016; Melhuish, Gardiner, & Morris, 2017; Sammons et al., 2004; Siraj-Blatchford, Sylva, Muttock, Gilden, & Bell, 2002; Siraj-Blatchford, Taggart, Sylva, Sammons, & Melhuish, 2008; Sylva, Melhuish, Sammons, Siraj-Blatchford, & Taggart, 2010). Longitudinal research findings from the Perry Preschool Project have suggested the effect of preschool education extends through generations and can break the cycle of poverty (Heckman, 2019). In-depth case studies from this body of research highlighted the adult-child relationships as a particular focus of the high-quality settings that had long-term effect on children's learning and development (Sammons et al., 2004, 2014; Siraj-Blatchford et al., 2002; Sylva et al., 2010). Positive effects were identified on language, cognitive and social development at age five, followed by continuing positive effects seen on GCSE attainment at age 16 and post 16 education (Sammons et al., 2004, 2014; Sylva et al., 2010). Such studies emphasize the importance of the relational aspect of early years education and care practice in children's longer-term outcomes.

Professional learning

Sylva et al. (2010) recognized that effective working relationships between children, parents and carers were essential to ensure high-quality provision in early years settings and schools. This has

implications not only for high-quality preschool provision but also for the professional development of early years professionals.

Ofsted (2014) stated that 'High-quality early education is crucial in countering the effects of socio-economic disadvantage' (p. 4). Social and emotional development was highlighted as an area that significantly affects children's ability to learn, and the best practice was seen with staff who had undertaken professional development to acquire a high level of specific knowledge and skill to support this area of development. It is argued therefore that a key resource in providing equity for children living in areas of multiple deprivation are the childcare professionals that work with these children in these areas (Bronfenbrenner, 1979; Sammons et al., 2017; Siraj-Blatchford et al., 2002). Such practitioners are critical in creating an environment and ethos in which the challenges faced by children living in these areas are understood; children's individual needs are recognized and support is provided to allow children to maximize educational opportunities and increase their life chances.

Research aims

The Local Authority commissioned the professional learning intervention for practitioners in a Flying Start area of Wales. The Flying Start Welsh Government initiative is the flagship early intervention programme supporting children and families in areas of disadvantage age 0–4 (Welsh Government, 2014b). A key element of Flying Start provision is the quality of the early years workforce. Social Care Wales (SCW) established a minimum level of qualifications for Flying Start staff, which is above the minimum qualifications set out for day care, childminders and sessional care (SCW, 2017). The aim of the research was to evaluate the effect of the professional learning programme on the quality of adult–child interaction within Flying Start childcare provision.

The professional learning intervention

The 'Attachment and Me' training intervention involved a specifically designed full-day training session for Flying Start leaders and practitioners, with a focus on the importance of attachment and the effect on social emotional and behavioural development. Hammer et al. (2018) identifies that behavioural factors are viable targets for early intervention as predictors of later academic success.

The training and resources were designed to enable practitioners to support children with emotional and behavioural difficulties (Macdonald & Battenbough, 2016). A 'whole setting' training approach was adopted to facilitate a change in the setting's ethos by engaging all staff members. The training included a knowledge transfer session examining attachment theory, social and emotional development research and the impact of good quality childcare intervention. It also incorporated understanding and using measures to identify social, emotional and behavioural difficulties. Strategies to provide ongoing support to children either as a whole group or on a one-to-one basis with case study examples formed part of the training. Record keeping, progress tracking and transition information sharing were incorporated into the training as good practice suggestions.

The strategies and procedures suggested in the training were intended to support all children with emotional and behavioural difficulties and were not solely related to attachment.

The objective of the training was to develop the skills of childcare staff to enable them to provide relational based support for children with identified social, emotional and behavioural difficulties that may or may not be related to attachment. Following the initial Strengths and Difficulties Questionnaires assessment scores for children on entry to the Flying Start childcare provision, the social, emotional and behavioural difficulties identified formed the basis of individual support for children during their attendance at the Flying Start setting. Support was identified using the suggested training resources within the professional development and through the development of Individual Play Plans. Such plans and strategies supplement any existing support and do not replace appropriate

referrals to a supporting agency or professional (for example, educational psychologist, and health visitor or speech and language therapist). Strategies for supporting a child's development could include regular one to one activities, changes to setting routines; changes to behaviour management within the setting; whole staff awareness of the difficulty and individual support as outlined above.

Methodology

Approach

The research was undertaken in accordance with the University of Wales Trinity Saint David (UWTSD) Research Ethics & Integrity Code of Practice (2017) and was ethically approved by the UWTSD Procedures for the Ethical Approval of Research Projects. The British Educational Research Association (British Education Research Association (BERA), 2018) Ethical Guidelines for Educational Research were used to design and complete the research.

This research followed a quasi-experimental research design (Cohen, Manion, & Morrison, 2018). The study adopted a pre- and post- training intervention test using a process quality measure. A quasi-experimental research design allows research to be undertaken within a natural environment, which allows researchers to explore whether interventions will work in the real world (Muijs, 2011). Natural, real-life classrooms are multifaceted and complex, and as such identifying a cause and effect response to a research aim or hypothesis is difficult. The implementation of the intervention or experiment cannot be controlled as meticulously as in a pure experimental approach, therefore having an in-depth understanding of the contextual factors and situation of the location is important (Jensen & Laurie, 2016). Having more than one measure can support the identification of specific factors that have had more or less of an impact in a natural setting. Data collection methods therefore included structured questionnaires (SDQ) and structured observation rating scale tool (SSTEWS), detailed below.

Sample

Following a short pilot study, the research was conducted using purposive sampling (Cohen et al., 2018) in one Local Authority in Wales. The sample consisted of twenty-four Flying Start Childcare provisions in one Local Authority in Wales. The selection of these settings ensured all children attending the settings were living in areas of low socio-economic status.

The participants comprised the full staff set of each of the 24 Flying Start settings: 24 childcare leads, 24 deputy childcare leads and approximately 120 childcare professionals, across 24 childcare settings contracted to deliver Flying Start provision by one Local Authority. Within the settings 133 children were attending the childcare session during the intervention, Strengths and Difficulties Questionnaires were undertaken for each of these children with 120 complete data sets used in the data analysis to supplement the interaction quality data. The interaction rating scale (the SSTEWS scale) observations were undertaken in 24 settings, of which data for 21 settings were analysed from full data sets.

Data collection

Data was collected using two research tools including (Figure 1):

- i rating scale observations using the Sustained Shared Thinking and Emotional Wellbeing Scale (SSTEWS) (Siraj, Kingston, & Melhuish, 2015) to measure adult-child interaction pre and post-test;
- ii Standardized questionnaires (SDQs 2-4-year-old version) (Goodman, 2005) as supplementary data highlighting areas of difficulty within social, emotional and behavioural development.

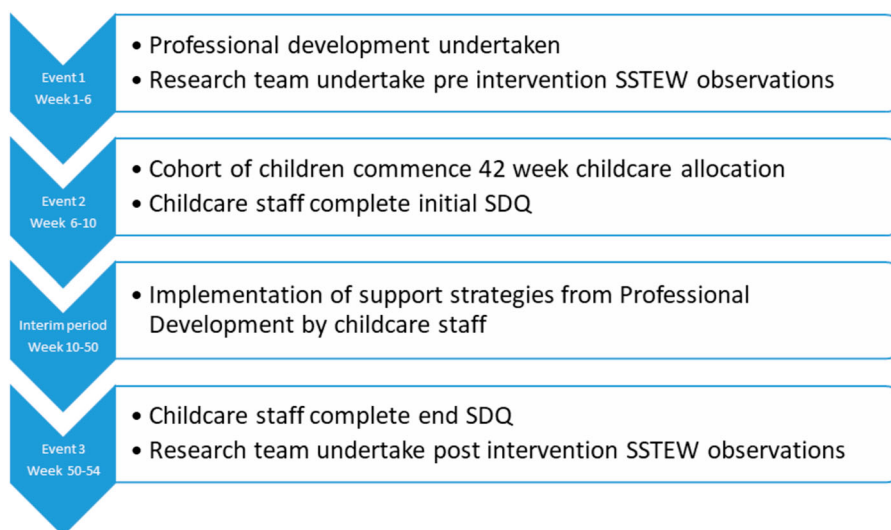


Figure 1. Professional development and data collection timeline.

Sustained shared thinking and emotional wellbeing scale observation (SSTEW)

The SSTEW scale (Siraj et al., 2015) is an observation-based quality rating scale that focussed on process (pedagogic and interactional) quality for 2–5years olds. It was used in this study to provide pre- and post-intervention measures of pedagogic behaviour of the adults in the FS settings. A study by Howard et al. (2018) compared the validity of results from SSTEW observations against established standardized ratings observations of the Early Childhood Environment Ratings Scale – Extension (ECERS-E; a well-established quality measure for early years education and care, Sylva et al., 2010). The findings identified a significant association between ECERS-E and SSTEW rating overall scores ($r = .88$) indicating that the SSTEW scale was effective at capturing the process quality levels of early years education and care settings. The observation scale includes in total 14 items, which focus on identifying adult behaviours that support the development of children's cognitive, social, emotional, behavioural development, sustained shared thinking, concept and language development (Howard et al., 2018). Scoring for the SSTEW scale ranges from 1–7 for each item where a score of 1 is inadequate, a score of 3 is minimal, a score of 5 is good and a score of 7 is excellent. A Score in-between these amounts indicate where a setting has achieved some, but not all, of the criteria meeting the score above. This research focused in particular on three items: item 1 '*Self-regulation and social development*', item 4 '*Supporting socio-emotional well-being*' and item 8 '*Sensitive responsiveness*' as these items align with the focus of the training intervention and aim of the research (Siraj et al., 2015). Items 1, 4 and 8 measure adult–child interaction associated with building and maintaining positive relationships with children. The importance of these interactions has been identified as key to ensuring the development of high-quality settings that have a long term and sustained effect on children's development and outcomes (Siraj-Blatchford et al., 2002; Sylva, Melhuish, Sammons, Siraj-Blatchford, & Taggart, 2004). The research team undertook formal training in the use of the SSTEW scale, this involved two days training from the scale authors, a significant number of observation hours and a benchmarking visit with the trainer/author of the scale to ensure inter-rater reliability. Prior to the primary data collection, the researcher team engaged in rigorous inter-rater reliability observations to standardize judgments, ratings and scoring of all scales. This standard allows the research to claim reliability in the observation results and enable comparison with ratings made by other 'gold standard' benchmarked research findings, this process supports the validity of the observation ratings enabling high inference and reliability of judgments (Cohen et al., 2018). Difficulties with variations in inter-rater reliability within observation measures have been

highlighted as a concern, however, Vitiello et al. (2018) identified there were no significant differences between observation rater teams with moderate to high correlations between team ratings. The SSTEWS scale was used to create rating scores at each participating setting prior to the intervention. Post intervention rating was undertaken at each participating setting. These were conducted within a timescale that coincided with the completion of the second SDQ assessments.

The process quality rating scores enabled the measurement of any scoring differences in adult–child interaction and relationships following the implementation of the targeted professional development. The results were analysed pre and post-test to identify any changes in scores of adult–child interactions specifically linked to items 1, 4 and 8.

The quantitative SDQ data was analysed and triangulated with the pre and post-test process quality ratings. The difference in SDQ results were analysed alongside the difference in process quality scores pre and post-test to examine whether there was any relationship between a reduction in social, emotional and behavioural difficulties and changes in adult–child interaction following the training intervention.

Strength and difficulties questionnaires (SDQs)

The incidence of children's social, emotional and behavioural difficulties was collected using the SDQ 2–4-year-old version. The SDQs were introduced as part of the training intervention as a method to identify children with social, emotional and behavioural difficulties allowing the implementation of targeted support suggested by the training intervention. The SDQs provided a robust and internationally reliable method to identify areas of difficulty in children's social, emotional and behavioural development through a structured questionnaire (Goodman, 1997; Goodman & Scott, 1999; Li, 2017; Muris, Meesters, & Van den Berg, 2003). The SDQs were selected because of: their suitability for children aged 2–3 years old; the robust evidence base of the design; and the relevance of the areas evidenced to align with the scope of the attachment training. SDQs are structured questionnaires completed by the educator or parent of the child, and the answers given are converted into scores that feed into a total score for social, emotional and behavioural areas of development. The total scores indicate a level of difficulty for the individual child in the areas of pro social skills, hyperactivity, peer problems, emotional health and conduct. The version used in the settings was the '*One-sided SDQ for parents or educators of 2–4 year olds*' and '*Scoring instructions for SDQs for 2–4 year olds, completed by parents or teachers*'; as this version was deemed most suitable for the sample and for identifying psychosocial problems in preschool children (Theunissen, Vogels, De Wolff, & Reijneveld, 2013).

Self-administration of the SDQs was deemed appropriate for the geographical and time implications of the study and were completed by the child's key worker and leads at the setting following a four-week settling in period following the training intervention (Li, 2017; Muris et al., 2003). The settling in period allowed children to become familiar with the environment and staff, and for the children's key worker to become familiar with each child. Information on the level of difficulties of children in the settings was gathered by the early years professionals using the SDQs without direct observation of the children, based on the childcare professional's knowledge of the child using the SDQs (Goodman, 1997; Goodman & Scott, 1999). The training intervention included instruction on how to complete an SDQ assessment and all early years professionals undertaking the SDQs had completed the training. The research team did not observe or collect data from the children in the settings. The results of the initial SDQs were kept and used by the setting to inform practice and support for individual children using the strategies and behaviours in the training intervention.

Completion of the SDQ assessment produced scores, which indicated whether the child experienced difficulties within the areas of Emotional, Conduct, Pro-Social, Peer and Hyperactivity. Combining the SDQ difficulty indicators with the strategies set out in the training intervention allowed the childcare staff to identify and implement strategies and behaviours to support individual children through activities designed to encourage positive interactions, positive attachment behaviours and scaffold children's social, emotional and behavioural development. At a suitable time, before the child moved on from the setting and towards completion of their Flying Start entitlement of

42 weeks, the key worker and setting leads completed a second SDQ. The data from the second assessment was compared to the first assessment in order to identify any change in the level of difficulties identified by the SDQs following 42 weeks of attendance at Flying Start. SDQ assessments results at 4 and 42 weeks were analysed using IBM SPSS Statistics 24. 133 Strength and Difficulty Questionnaires (SDQ) were completed and of those, 119 had complete data sets. Loss of 14 data sets was due to missing or incomplete questionnaires, or that the individual child had left the Flying Start provision.

Limitations

Establishing a control group was not possible since it was difficult to identify a comparable group of practitioners in a comparable multiple deprivation area. This is because the nature of childcare provision in Wales leads to these areas being Flying Start provision, and thus included in the research. 'True' control group in quasi-experimental research is difficult (Muijs, 2011) however; Muijs also highlighted the benefits of undertaking this type of research in the 'natural' real-life environment as this reflects the participants real lived context more closely as opposed to an artificial and controlled experimental design. Research limitations were, to some extent, addressed through multiple data collection methods and triangulation of data. Some movement of childcare staff and changes in management across the settings during the 42 weeks may have affected the level of quality within each setting. Any changes in SDQ scores could be the result of the training intervention; since children were measured as part of the implementation of the training, in order to track progress, and not measured pre and post-test it is impossible to conclude the training intervention as a cause of any changes.

Analysis and discussion

Sustained shared thinking and emotional wellbeing data

Figure 2 exemplifies the difference in means pre and post-test for items 1, 4 and 8 of the SSTEWS scale observations. A paired sample t-test was conducted to compare the change scores between pre-test observation scores and post-test test scores for items 1, 4 and 8 of the SSTEWS scale (Siraj et al., 2015).

Item 1 'Self-regulation and social development' – There was a significant difference in the scores for pre-test observation scores ($M = 5.30$, $SD = 1.302$) and post-test observation scores ($M = 6.30$, $SD = .865$), $t(20) = -2.939$, $p = .008$.

Item 4 'Supporting socio-emotional well-being' – There was a significant difference in the scores for pre-test observation scores ($M = 4.60$, $SD = 1.046$) and post-test observation scores ($M = 5.45$, $SD = 1.146$), $t(20) = 2.904$, $p = .009$.

Item 8 'Sensitive Responsiveness' – There was no significant difference in the scores for pre-test observation scores ($M = 6.20$, $SD = 1.196$) and post-test observation scores ($M = 6.60$, $SD = 1.353$), $t(20) = 1.094$, $p = .228$.

The changes in t scores indicate a significant difference in the increase in the mean score for items 1, 4 of the SSTEWS scale from pre-test scores to post-test observation scores; however, the difference in scores for item 8 was not significant.

Strengths and difficulties pre and post test analysis

Figure 3 represents the difference in means for SDQ scores for the children on entry and exit from childcare, following 42 weeks of attendance at Flying Start childcare settings. The changes in

SSTEW Item	Mean / Standard Deviation Pre-Intervention	Mean /Standard Deviation Post-Intervention	Statistical Significance
<i>Item 1</i>	<i>M = 5.30 SD = 1.302</i>	<i>M = 6.30 SD = .865</i>	<i>t (20) = -2.939 p<.05(.008)</i>
<i>Item 4</i>	<i>M = 4.60 SD = 1.046</i>	<i>M = 5.45 SD = 1.146</i>	<i>t (20) = 2.904 p<.05 (.009)</i>
<i>Item 8</i>	<i>M = 6.20 SD = 1.196</i>	<i>M = 6.60 SD = 1.353</i>	<i>t (20) = 1.094 p>.5 (.228)</i>

Figure 2 .SSTEW statistical analysis pre and post-test.

SDQ Category	Mean / Standard Deviation Entry scores	Mean /Standard Deviation Exit scores	Statistical Significance
<i>Total</i>	<i>M = 10.96 SD = 6.337</i>	<i>M = 6.58 SD = 6.041</i>	<i>t (119) = 9.324 p=,000</i>
<i>Emotional</i>	<i>M = 1.39 SD = 2.018</i>	<i>M = .79 SD = 1.347</i>	<i>t (119) = 3.861 p=,000</i>
<i>Conduct</i>	<i>M = 1.83 SD = 1.930</i>	<i>M = 1.41 SD = 2.002</i>	<i>t (119) = 2.720 p=,008</i>
<i>Hyperactivity</i>	<i>M = 4.43 SD = 2.932</i>	<i>M = 2.89 SD = 2.688</i>	<i>t (119) = 6.234 p=,000</i>
<i>Peer Problems</i>	<i>M = 3.30 SD = 2.040</i>	<i>M = 1.59 SD = 1.789</i>	<i>t (119) = 9.449 p=,000</i>

Figure 3. SDQ statistical analysis entry and exit scores.

difficulty scores here may or may not be due in part to the training intervention and subsequent change in adult-child interaction levels, however, the changes in SDQ scores are included to supplement the findings for the process quality measure findings. Mean average descriptive statistics were used to characterize the sample. T-test and chi-square tests were used to test group differences at baseline total scores. Change SDQ scores for individual children were calculated. Paired sample t-tests were used to analyse change scores for difficulties. Data were analysed per protocol using IBM SPSS Statistics 24.0.

In line with findings from the Study of Early Education and Development (SEED) (Melhuish et al., 2017) where the effect of early education and development is explored, children attending the setting had improved socio-emotional outcomes following 42 weeks attendance at preschool provision; through a reduction in emotional and peer-related problems and an increase in prosocial behaviour.

A paired sample t-test was conducted to measure emotional, conduct, hyperactivity and peer problem difficulty SDQ scores.

Emotional difficulties – There was a significant difference in the scores for emotional difficulties for entry ($M = 1.39$, $SD = 2.018$) and exit ($M = .79$, $SD = 1.347$); $t(119) = 3.861$, $p = .000$.

Conduct Difficulties – There was a significant difference in the scores for conduct difficulties for entry ($M = 1.83$, $SD = 1.930$) and exit ($M = 1.41$, $SD = 2.002$); $t(119) = 2.720$, $p = .008$.

Hyperactivity difficulties – There was a significant difference in the scores for hyperactivity difficulties for entry ($M = 4.43$, $SD = 2.932$) and exit ($M = 2.89$, $SD = 2.688$); $t(119) = 6.234$, $p = .000$.

Peer problem difficulties – There was a significant difference in the scores for peer problem difficulties for entry ($M = 3.30$, $SD = 2.040$) and exit ($M = 1.59$, $SD = 1.789$), $t(119) = 9.449$, $p = .000$.

Statistical significance following a paired sample t-test to $p < .005$ was identified for scores in emotional, hyperactivity and peer problems through the SDQs. Similar to the SEED (Melhuish et al., 2017) study the effect on conduct problems was less significant although still at $p < .05$. In addition to this, following an eta squared statistical analysis, a large effect size was indicated for peer problems (.43), hyperactivity (.25) and total scores (.41) with a moderate to large effect for emotion (.11) and a moderate effect size for conduct (.06).

Summary of findings

The process quality score results indicate a change in adult–child interaction for items 1 and 4 of the scale, the areas focussed on adult behaviours supporting children’s social and emotional development including self-regulation. These results indicate a change in adult–child interaction and adult behaviour scores, from minimal to good for item 4 and from good to almost a maximum score of 7 for item 1. This suggests that the training intervention had an effect on adult behaviours and adult–child interactions related to *self-regulation and social development* and *supporting socio-emotional development*.

Item 8 also highlighted an improvement in adult–child interaction scores for *sensitive responsiveness* but this was not statistically significant. If we consider the SSTEWS score for this item, the mean on entry at 6.30 was high and close to the maximum score of 7 on the scale. Following the training intervention, the mean score at 6.60 is an improvement in score and is closer to the maximum score of 7. This indicates that childcare staff were already displaying high-quality interactions with children related to *sensitive responsiveness*, which is an essential behaviour linked to forming secure bonds and positive attachments with children (McCrary et al., 2011; Newman et al., 2015).

The SDQ results indicate a reduction in the level of difficulties across the cohort following 42 weeks of attendance at the childcare settings. It cannot be determined how much of the reduction in difficulties can be attributed to the training intervention, in line with previous studies the reduction in difficulties mirrors that of children attending preschool settings (Melhuish et al., 2017). However, analysis of these results together with pre and post-test SSTEWS ratings, suggests that following the training intervention there was a change in the quality and level of adult–child interaction within the settings for items 1, 4 and 8 of the SSTEWS scale. This indicates a change in adult behaviour following the professional learning intervention, which may have enabled children to overcome their early social, emotional or behavioural difficulties more readily than they may otherwise have done.

Discussion

Professional learning

The background research highlight the challenges faced by childcare professionals working in areas of deprivation, such as Flying Start settings, are having to support children with increased social, emotional and behavioural difficulties (Bellis, Ashton, Ford, Bishop, & Paranjothy, 2015; Bellis, Lowey, Lecjenby, Hughes, & Harrison, 2013). In Wales, the Welsh Government's commitment to supporting children and early years professionals in areas of multiple deprivation is evident through the Flying Start initiative programme, providing targeted support to children and their families in areas of socioeconomic disadvantage (Welsh Government, 2017a, 2017e, 2017f). High-quality practitioners are part of the initiative's key elements to achieving 'a high-quality experience for the child' with a commitment to the professional development of the early years workforce through the *Childcare, Play and Early Years Workforce Plan* (Welsh Government, 2012a, 2017g). Thus, a high level of appropriate and relevant professional learning is required to facilitate Flying Start childcare professionals to best support the children in their care.

These findings suggest that children in an area of socio-economic deprivation face significant social, emotional and behavioural difficulties. Results suggest accessing the training intervention improved the quality of the adult-child interaction, measured using the SSTEWS ratings scale. Targeted professional learning opportunities are key to ensuring that childcare professionals develop a high level of skills, knowledge and understanding that subsequently supports the individual needs of children with additional adverse childhood experiences.

Studies into the effectiveness of provision in early childhood have highlighted that high-quality early education is beneficial for young children and improves equity for children living in poverty and socio-economic deprivation (Siraj & Mayo, 2014; Siraj-Blatchford et al., 2002). This is particularly pertinent as the Institute for Fiscal Studies (2013) predicted that one in four children in the United Kingdom would be living in poverty by 2020. Save the Children (2013) noted that children from poorer backgrounds were: at risk of lagging behind with their key skills; more likely not to catch up with their peers; and that their predicted later results were determined by the age of seven years. This is reflected by an 11% gap in attainment between pupils from the highest and lowest poverty indicators (Welsh Government, 2017b).

High quality, well-trained staff are therefore key to ensure quality support for children's development and approach to learning; this is reflected within the childcare professional requirements in the Flying Start initiative 'Quality Childcare' guidance from Welsh Government (Siraj-Blatchford et al., 2002; Welsh Government, 2014b). Early years childcare professionals are in a key position to build positive relationships with children in their care, compensating for ACEs and providing a secure base from which the children can learn and develop (Bronfenbrenner, 1979; Commodari, 2013; Howes, 1995; Perry & Pollard, 1997; Poulou, 2013). It is with the consideration of the role of early years practitioners' in supporting children's social and emotional well-being that the training and research was designed and undertaken.

Conclusion

The SDQ results indicated that children living in the area of multiple deprivation in which the research took place had a high incidence of social, emotional and behavioural difficulties, suggesting that a need for specific support is pertinent in such deprived areas.

The increase in SSTEWS scores following professional development indicated improved quality of adult-child interaction, thus identifying a need for professional development specifically related to attachment, social and emotional well-being.

Implications and future work

Given the potential effect on practitioners' ability to support children living in areas of multiple deprivation and to progress the Welsh Government's agenda to eradicate poverty, Welsh Government may need to consider funding specific and targeted professional development. Such professional development could focus on attachment theory, social and emotional development and well-being of children, in particular in the early years, and could be extended beyond early years professionals to include all education professionals. Such training would positively affect the life chances of children under four and address the Welsh Government priority of tackling the effect of poverty (Welsh Government, 2012a, 2017f).

The implications of ACEs and the prevalence of social, emotional and behavioural difficulties in areas of multiple deprivation, is recognized as needing further intervention and support through initiatives such as the Welsh Government's Flying Start initiative (Welsh Government, 2012b). It is now appropriate to explore the skill set and expectations of early years professionals working with children in areas of poverty to ensure that children are supported in particular in areas of social, emotional and behavioural development. This would ensure that individual children's development needs are considered and addressed appropriately, avoiding overestimation or underestimation of ability and the use of unsuitable early years practice.

Disclosure statement

No potential conflict of interest was reported by the authors.

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