ADOLESCENTS' EMOTIONAL INTELLIGENCE AND UNDERSTANDING OF ATTACHMENT

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Thesis Overview

This thesis comprises two volumes, the first is the research component and the second represents the clinical component of the thesis.

Volume 1 – Research Component

The literature review explores whether there are differences between the interactions of adolescent and adult mothers and their infants. The empirical paper explores whether adolescents' knowledge of attachment can be improved by the use of a DVD teaching tool and whether their pre-existing knowledge or change in knowledge is related to trait emotional intelligence. The third paper is a public dissemination document which summarises the research findings for dissemination to the general public.

Volume 2 – Clinical Component

The first report details the cognitive-behavioural and psychodynamic formulation of a woman presenting with symptoms of depression and anxiety within a Community Mental Health Team. The second details a service evaluation focusing on the completion of early warning signs plans with service-users with a diagnosis of psychosis, and evaluation of training on this aspect of clinical work. The third is a single-case design evaluating a psychological intervention with a male service-user with a learning disability, presenting with anger and behaviours that challenge. The fourth report is a case study of an assessment and cognitive-behavioural intervention with a 10 year-old girl referred to the Child and Adolescent Mental Health Service for anxiety. The final Clinical Practice Report was presented as an oral presentation, outlining an assessment and intervention conducted with a service-user presenting with depression, the abstract of which is included in this thesis.

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Firstly I would like to thank my research supervisor Dr Biza Stenfert-Kroese for her unwavering patience and calming influence. I would like to thank Dr Ruth Butterworth for her support and expertise with my literature review. I would also like to thank Dr Chris Jones for his help with the analysis of my data.

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1. LITERATURE REVIEW

Do Adolescent Mother-Infant Dyads Differ from Adult Mother-Infant Dyads in the way they Interact?

1.1 Abstract

Objective: Attachment and the interaction between mother and infant is recognised as being a fundamental aspect of infant development. This review seeks to explore whether there are observable differences between the interactions of adolescent mothers in comparison to adult mothers and their infants, and if so, what are these differences? It sets out to answer the following sub-questions: 1. which of these differences are identified in the mothers' behaviour during interaction? 2. which differences are identified in the infants' behaviour during the interaction? Method: A systematic review of the literature was conducted using various synonyms of 'attachment behaviour' and 'maternal age'. Thirteen papers were identified as relevant and these were evaluated using a quality framework (Kmet, Lee & Cook, 2004). Quality ratings for the identified papers ranged from 0.63-1. Findings: The results suggest that there are some significant differences between the interactions of adolescent mothers and their infants and adult mothers and their infants. Differences in relation to mothers' interactions appear to relate to sensitivity, vocalisations, and positive versus negative behaviours. Infant interactive behaviours appear to differ in terms of engagement and expressions of affect. Conclusion: Despite the difficulty in comparing the findings of the studies reviewed due to methodological differences and nuances in the areas of focus, a number of robust differences between the interactions of adolescent and adult mothers and their infants have been identified. These preliminary results are discussed in relation to the specific limitations of the review and areas for future research are identified.

Keywords: Adolescent mother, maternal age, maternal behaviour, mother-infant relationship, mother-infant interaction, attachment

1.2 Introduction

1.2.1 Interaction between mothers and their infants.

The importance of the relationship between mothers and their infants is widely accepted, and is supported by a large body of literature (Egeland & Carlson, 2004; Eshel, Daelmans, Cabral de Mello & Martines, 2006). Research shows that our attachment as infants has far reaching consequences on our lives, including our mental health, physical health, the relationships we develop as adults (Dallos, 2006; Dozier, Stovall-McClough & Albus, 2008; Feeney, 2008; Puig, Englund, Simpson & Collins, 2013), and even impacts on the functioning and structure of our brains (Schore, 2001), in particular in terms of cortisol production and the hypothalamus–pituitary–adrenal (HPA) axis (Dozier, Peloso, Lewis, Laurenceau & Levine, 2008).

One of the most prominent and enduring theories within psychology is the theory of attachment, which highlights the importance of a positive early relationship with the mother or main caregiver for an infant in early life (Bowlby, 1988; Wallin, 2007). John Bowlby (1988) suggested that infants are evolutionarily programmed to develop an attachment to their caregiver as a means of ensuring their survival. Infants make attempts to increase proximity to their caregivers, using them as the "secure base" from which they explore the world, and to which they can return to seek safety (Bowlby, 1988, p.10).

Through the development and use of the 'Strange Situation' assessment (Ainsworth, Blehar, Waters & Wall, 1978), involving various stages during which the infant's caregiver leaves and returns, several patterns of behaviour were identified (Ainsworth et al., 1978). These were thought to develop as a result of the infant's attempts to adjust its communication according to the behaviour of its caregiver (Ainsworth et al., 1978; Wallin, 2007). In securely

attached dyads, caregivers are responsive and attuned to the needs of the infant and the infant is able to be soothed by the caregiver, using them as a base for exploration (Dallos, 2006; Wallin, 2007). In insecurely attached dyads, infants may either be seen as distant and uninterested in their mothers' presence or absence (indicating an avoidant attachment), or distressed and unable to be calmed on their mothers' return (suggesting an ambivalent attachment; Main & Solomon, 1990; Wallin, 2007). A fourth type of attachment is identified in infants who show unusual behaviour, such as freezing or strange postures which cannot be classified into the above patterns of attachment (Main & Solomon, 1990). These infants are described as having a disorganised attachment style, meaning that they do not have any reliable pattern of relating to their caregiver, possibly as a result of maltreatment (Egeland & Carlson, 2004; Van Ijzendoorn, Schuengel & Bakermans-Kranenburg, 1999).

Individual attachment styles have been found to relate to various outcomes across the lifespan. During childhood, communication patterns are said to differ across attachment styles, such that avoidant styles are associated with inhibition of affect, and anxious styles with angry or exaggerated expressions of distress (Dallos, 2006). In addition, disorganized attachment in childhood has been found to be related to poorer cognitive development (Jacobsen, Edelstein & Hofmann, 1994) and behavioural problems at school (Carlson, 1998). During adulthood, avoidant attachment in particular has been found to be related to lower quality of interpersonal relationships (Shaver, Schachner & Mikulincer, 2005), less social support networks (possibly related to lower levels of self-disclosure, Anders & Tucker, 2000), and an increased likelihood of experiencing pain related health conditions (McWilliams & Bailey, 2010). In addition, avoidant attachment has been found to be related to increased incidence of mental health difficulties, and in particular, drug and alcohol use (Mikelson, Kessler & Shaver, 1997), and anxious (or ambivalent) attachment has been found to be related

to lower levels of assertiveness (Anders & Tucker, 2000), higher levels of depression and other mental health diagnoses (Mikelson, Kessler & Shaver, 1997; Shaver, Schachner & Mikulincer, 2005), and greater risk of physical health conditions such as cardiovascular disease (McWilliams & Bailey, 2010). Disorganized attachment has also been found to be related to mental health difficulties in adulthood (Carlson, 1998). In contrast, research suggests that securely attached individuals are likely to develop healthy relationships with others (Anders & Tucker, 2000), better physical health (McWilliams & Bailey, 2010), and lower levels of depression (Ciechanowski, Sullivan, Jensen, Romano & Summers, 2003).

1.2.2 Adolescent mothers and interaction.

Although teenage pregnancy rates in England and Wales have reduced in the last fifty years, Britain's rates remain higher than comparable Western European countries (Office for National Statistics, 2016). Dramatic increases in teenage pregnancies globally in the latter half of the 20th century sparked debate about whether young mothers could parent effectively and prompted research into the later outcomes for infants of young mothers (Arai, 2009). Early studies suggest that teenage mothers interact differently with their infants when compared with adult mothers, and are less responsive, positive, knowledgeable and more controlling than older mothers (Culp, Culp, Osofsky., & Osofsky, 1991; Fry, 1985; Garcia, Hoffman, Van Houten & Oh, 1987; Teberg, Howell, & Wingert, 1983). Research has suggested that infants of adolescent and adult mothers differ in terms of attachment style; in particular, a higher proportion of disorganised attachment classifications (Lamb, Hopps & Elster, 1987), and avoidant styles (van Ijzendoorn, Schuengel, & Bakermans-Kranenburg, 1999) have been identified in adolescent mother-infant samples.

However, other studies suggest that infants of teenage mothers may not differ significantly in terms of attachment security from infants of adult mothers (Frodi, Grolnick, Bridges, & Berko, 1990). In addition, qualitative research highlights the role of social and cultural norms and the impact of the vilification of young mothers and related social inequalities (Kirkman, Harrison, Hillier & Pyett, 2001; McDermott & Graham, 2005) in limiting options and resources available to them.

Some studies have focused on the long-term outcomes of adolescent parenting. In a longitudinal study, Jaffee, Caspi, Moffitt, Belsky, & Silva (2001) found that the children of teenage mothers were more likely to leave education and parent early, to be unemployed, and to commit violent offences.

Various explanations for these differences have been considered, including social support, schooling, and mothers' economic status (Coll, Hoffman, Van Houten & Oh, 1987; Emery, Paquette & Bigras, 2008). Other factors which have been found to relate to sensitive mothering in adult samples may also be relevant to adolescent mothers. As the interaction between infant and mother is key in the development of attachment, it has been suggested that mothers' 'mind-mindedness' or the ability of mothers to recognise their infants as "mental agents" taking into account the child's "comments, actions and perspective" (Mein, 1997, p. 108) is related to positive interactions and attachment (Meins, Fernyhough, Fradley & Tuckey, 2001).

1.2.2.1 Support available for young mothers.

Many governmental schemes have focused on lowering teenage pregnancy rates and providing practical support such as housing and employment (Department for Education and Skills, 2006; Local Government Association, 2016; Teenage Pregnancy Advisory Group,

2010). The Family Nurse Partnership (FNP) initiative, was developed in the US and implemented comparatively recently in England (2007) as an attempt to provide support for young first time mothers under the age of 19 and their infants during pregnancy and until two years post-partum (FNP, 2015). It includes home visiting and psycho-education as well as support for fathers and other family members and is based in part on attachment theory (FNP, 2015). Several randomised-control trials have been carried out and results suggest that in the US the FNP has been successful in improving parental care provided by young mothers as well as improving outcomes for young mothers themselves (Olds, 2006). Unfortunately, research evaluating the effectiveness of the FNP in England did not yield such positive results (Robling et al., 2016). It is possible that this difference in outcomes is due to the populations the intervention was delivered to; in England all young mothers within a catchment area of an FNP base were eligible, whereas in the US only disadvantaged young mothers were included (FNP, 2015; Robling et al., 2016).

1.3 Aims of the Current Review

Within a chapter on risk and protective factors in parenting behaviour, Osofsky and Thompson (2000) summarise the literature relating to adolescents' interactions with their infants and highlight key differences between these dyads and the interactions of adult mother-infant dyads from research dating back to 1970. In particular, differences in verbalisation, length and quality of interactions are highlighted and the authors conclude from the research evidence thus far that these have negative consequences for the infants of adolescent mothers. No attempt has been made since then to review the research in this area. In addition, as it is not clear how inclusive or systematic Osofsky and Thompson's (2000) summary is, an up to date systematic review of the literature can provide a more comprehensive and inclusive overview. This review aims to examine the recent literature and

establish whether there is agreement on the differences in observable interactions between adolescent mothers and their infants in comparison to adult mothers and their infants. In order to avoid repetition and overlap with Osofsky and Thompson's review, research published prior to 2000 will not be included.

The review will address the following questions:

- Are there observable differences between the interaction of adolescent mothers in comparison to adult mothers and their infants?
- If so, what types of differences have been identified?
    - Which of these are identified in the mothers' behaviour during interaction?
    - Which are identified in the infants' behaviour during interaction?

Where papers have included other variables that are not directly related to the areas of interest (for example, cognitive development), the results pertaining to these variables will not be discussed.

1.4 Method

1.4.1 Search strategy.

Three databases were searched using terms synonymous with attachment and maternal age (see Table 1.1).

Table 1.1
Search terms used in systematic search

First concept (joined by OR)	AND	**Second concept** (joined by OR)
Adolescent mother		Mother child relation
Young mother		Object relation
Maternal age		Object attachment
Young parent		Attachment behaviour
Teenage mother		

Searches were limited to peer-reviewed journals, published in the English language, and including human participants. The search retrieved a total of 1,127 papers, including duplications. After 349 duplicates were removed, 778 papers remained. Titles and abstracts were initially read in order to identify papers which met the following inclusion and exclusion criteria:

Table 1.2
Inclusion and exclusion criteria for papers

Inclusion criteria	Exclusion criteria
Studies which compared adolescent and adult mothers in terms of their interaction or attachment with their infants or toddlers	Inclusion of only adolescent or adult mothers or which compared only to existing data
Studies including an observational measure of an aspect of interaction	Inclusion of samples with another significant variable, such as a mental health diagnosis, or infants with disabilities
	Studies using self-report measures of interaction only
	Studies in which young mothers ages were above 20 years

After applying these criteria to the screening of titles and abstracts, a possible sample of 30 papers was identified. These papers were read thoroughly to ensure all of the above criteria were met and only those published from 2000 onwards were included. This left 12 papers. The references of these papers were also searched for additional papers. One was identified, making the total number of studies 13. Figure 1.1 below summarises the search

process. Underlined terms are those which were ‘exploded’ within the search to include ‘narrower terms’ and increase the number of potential papers identified.

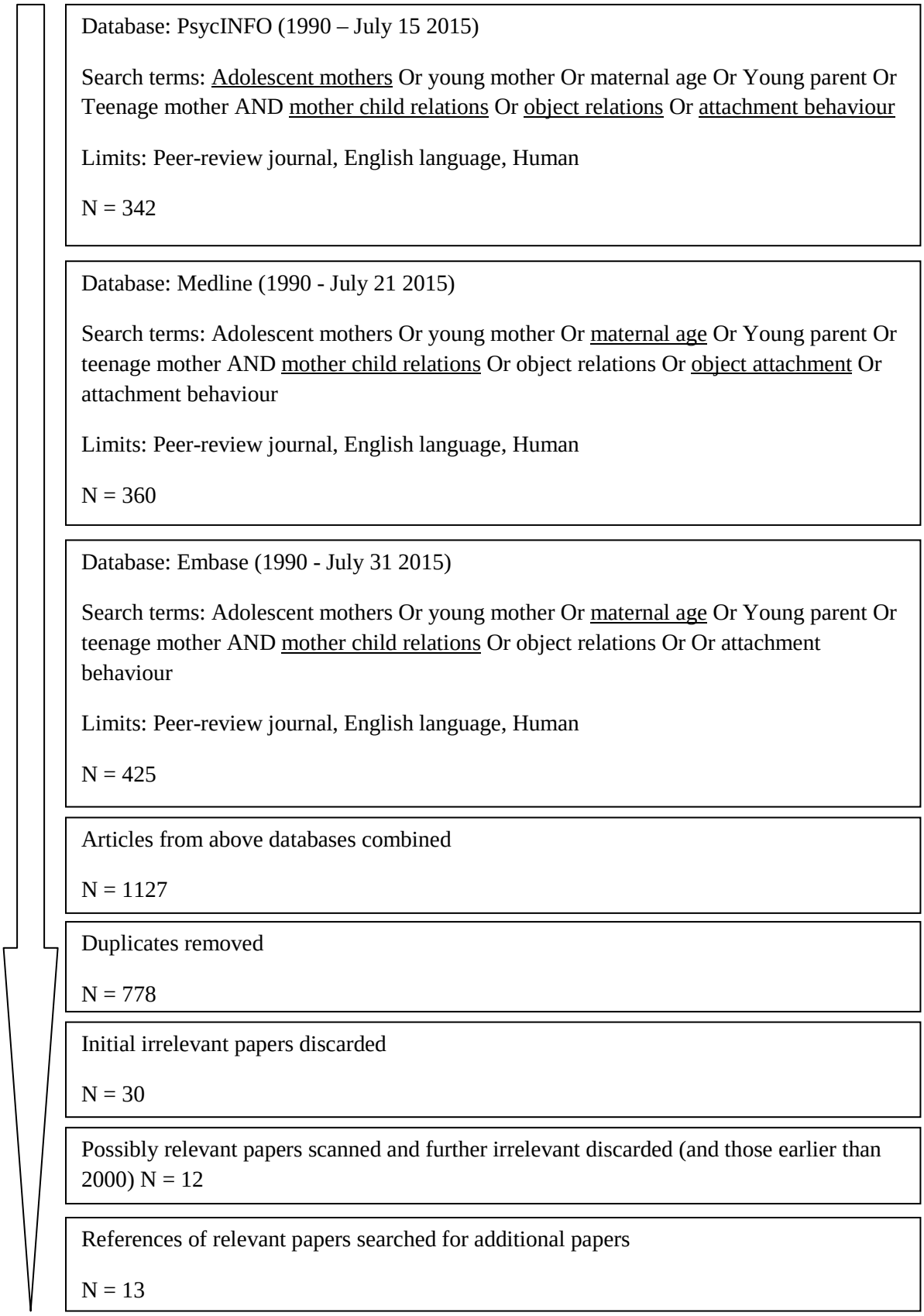


Figure 1.1. Diagram depicting systematic search process

Table 1.3 below includes data extracted from the studies reviewed as well as their quality rating. The papers are presented in chronological order and are numbered. These numbers will be used to refer to the studies in the results and discussion section. Where exact significance levels are detailed within the results sections these have been included.

Table 1.3
Data extracted from papers and their quality rating

Authors/title/date/journal/country and Quality rating	Sample demographics	Data collection and relevant measures	Main findings
1. Andreozzi, L., Flanagan, P., Siefer, R., Brunner, S., & Lester, B. (2002). Attachment classifications among 18-month-old children of adolescent mothers. *Archives of Paediatrics and Adolescent Medicine, 156*, 20-26 Rhode Island, USA **Quality rating: 1.0**	76 adult mothers (mean age 28.6, SD 5.7) ;51 adolescent mothers (mean age 16.1, SD 0.9) and their 10 month old infants (no additional information available).	The Home Observation for Measurement of the Environment (HOME) (Caldwell & Bradley, 1984) administered at 10 mths. The Ainsworth Strange Situation (Ainsworth, Blehar, Waters & Wall, 1978) to assess attachment at 18 mths.	No significant differences in attachment classification of infants according to age classification of mother.
2. Berlin, L. J., Brady-Smith, C., & Brooks-Gunn, J. (2002). Links between childbearing age and observed maternal behaviour with 14-month-olds in the early head start research and evaluation project. *Infant Mental Health Journal, 23* (1-2), 104-129. 17 sites USA **Quality rating: 1.0**	557 teen mothers (age range at birth of child 11.3-18.9 years; mean age 17, SD = 1.33); 1145 older mothers (>19 years – mean and SD not available). Infants assessed at 14, 24 and 36 months; age range at first assessment 11 – 21 months, mean 14.98 months, SD = 1.20 (no additional information available).	"Three bag" free play assessment (adapted from Vandell, 1979 and NICHD, 1997; 1999, cited by Berlin et al., 2002) at 14, 24 and 36 months. Focus on sensitivity, detachment, stimulation, intrusiveness and positive & negative regard in mothers' interactive behaviour.	Teenage mothers less supportive, more intrusive, and detached than older mothers, regardless of demographic factors (all significance levels $p<.001$).

Authors/title/date/journal/country and Quality rating	Sample demographics	Data collection and relevant measures	Main findings
3. Pomerleau, A., Scuccimarri, C., & Malcuit, G. (2003). Mother-infant behavioral interactions in teenage and adult mothers during the first six months postpartum: Relations with infant development. *Infant Mental Health Journal, 24* (5), 495-509. Montreal, Canada. **Quality rating: 0.81**	High risk sample: 23 teenage mothers (mean age 17, SD = 1.1, range not available). Under 20 years + 2 additional risk factors. Moderate risk sample: 23 adult at-risk mothers (mean age 25, SD = 6.7, range not available). Over 20 years + 2 additional risk factors. Low risk sample: 23 no-risk adult mothers (mean age 29, SD = 4.3, range not available). Over 20 years and no identified additional risk factors. Risk factors: under 20 years of age, less than 12 years education, family income below $25,000, living alone with infant.	Five minute mother-infant free play interactions observed and coded for maternal behaviour (vocalisation, stimulation activity, gazes to infant, gazes to toy, contingency) and infant behaviour (vocalisation, motor activity, gazes to mother, gazes to toy).	Teenage mothers (high risk) and at risk adult mothers (moderate risk) vocalised less ($p<.001$), and less contingent ($p<.001$) than adult low risk mothers. No differences in infant behaviours (significance level not available).
4. Tarabulsy, G. M., Provost, M. A., Deslandes, J., St-Laurent, D., Moss, E., Lemelin, J-P., Bernier, A., & Dassylva, J-F. (2003). Individual differences in infant still-face response at 6 months. *Infant Behavior and Development, 26*, 421-438. Quebec, Canada **Quality rating: 0.72**	35 adult mothers (mean age 29 years, SD = 4.4, range not available), and 41 adolescent mothers (mean age 17 years, SD = 1.56, range not available). Infants assessed at 6 months old (no further information available)	The maternal behavior Q-set (Pederson & Moran, 1995) and the still-face procedure (Tronick, Adamson, Wise, & Brazelton, 1978) coded for positive and negative expressions of affect and self-soothing behaviours by the infant at 6 mths.	Adult and adolescent mothers differed in sensitivity, adult mothers achieving higher scores ($p=<.01$). In infants of adolescent mothers, negative affect increased ($p=.01$) and self-soothing behaviour decreased with greater sensitivity($p=.05$). In adult mothers greater sensitivity was associated with decreased negative affect ($p=.01$) and increased self-soothing in infants ($p=.05$).

Authors/title/date/journal/country and Quality rating	Sample demographics	Data collection and relevant measures	Main findings
5. Krpan, K. M., Coombs, R., Zinga, D., Steiner, D., & Fleming, A. S. (2005). Experiential and hormonal correlates of maternal behavior in teen and adult mothers. *Hormones and Behaviour, 47*, 112-122. Ontario, Canada. **Quality rating: 0.77**	42 teen mothers (median age 16.7 years, SD = .13, range 15-18 years), 34 young mothers (median age 21.1, SD = .36, range 19-25 years) and 43 mature mothers (median age 30.9, SD .57, range 26-40 years). Infant age: mean 6.93 weeks (no further information available).	Behavioural observations of infants were coded in terms of functional and affectionate behaviour before infants were 3 months old.	No group differences in time spent actively interacting. A significant interaction was found between maternal age and type of behaviour ($p<.012$) with teen mothers engaging in more instrumental behaviours and less affectionate behaviours with their infants.
6. Lemelin, J., Tarabulsy, G. M., & Provost, M. A. (2006). Predicting preschool cognitive development from infant temperament, maternal sensitivity, and psychosocial risk. *Merrill-Palmer Quarterly, 52* (4), 779-806. Quebec, Canada. **Quality rating: 0.81**	27 adult mothers (mean age 29.74, SD = 4.65, range not available) and 62 adolescent mothers (mean age 18.39, SD = 1.58, range not available). Infants assessed at 15 and 18 months (no further information available)	Maternal sensitivity assessed using the Maternal Behavior q-sort (Pederson & Moran, 1995) when infants were 15 and 18 months old.	Age of mother correlated with maternal sensitivity ($p<.01$).
7. Hitchcock, D. L., Ammen, S., O'Connor, K., & Backman, T. L. (2008). Validating the Marschak interaction method rating system with adolescent mother-child dyads.	15 adolescent mothers (mean age 18 years, SD = 1.07, range 16-19 years) with infants (mean age 22.13 months, SD 7.37, range 12-33 months) and 16 adult mothers (mean age 33.19, SD = 5.98, range	Marschak interaction method rating scale (MIMRS, O'Connor, Ammen, Backman & Hitchcock, 2001, cited by Hitchcock et al., 2008)	Adolescent mother-infant dyads scored lower on all four domains than the adult mother-infant dyads and on the parent and child subscores (child subscale $p=.014$; parent subscale $p<.001$; relational/emotional

Authors/title/date/journal/country and Quality rating	Sample demographics	Data collection and relevant measures	Main findings
International Journal of Play Therapy, 17 (1), 24-38. Central California, USA. **Quality rating: 0.63**	24-44 years) with infants (mean age 42.50 months, SD = 9.87, range 13-48 months).	including domains of structuring, challenging, engaging and nurturing on which both mother child and dyad are coded.	subscale p=.001; critical items scores p=.006). Adolescent mothers engaged in more critical behaviours (high risk behaviours) with their infants (p=.006). The relational/emotional subscale score was lower for adolescent mother-infant dyads (p=.001).
8. Tarabulsy, G. M., Provost, M. A., Larose, S., Moss, E., Lemelin, J-P., Forbes, L., & Pederson, D. R. (2008). Similarities and differences in mothers' and observers' ratings of infant security on the attachment Q-sort. *Infant Behaviour and Development, 31*, 10-22. Quebec, Canada **Quality rating: 0.81**	44 adult mothers (mean age 28.80, SD = 4.66, range not available), 83 adolescent mothers (mean age 18.07, SD = 1.25, range not available). Infants assessed at 6, 10 and 15 months (no further information available).	The attachment behavior Q-set (Waters 1995) to assess infant attachment security at 15 mths; the maternal behavior Q-set (Pederson & Moran, 1995) to assess maternal sensitivity at 6 and 10 mths.	Infants of adult mothers showed higher levels of secure base behaviour during observations (as rated by observers) than those of adolescent mothers (p=.001).
9. Demers, I., Bernier, A., Tarabulsy, G. M., & Provost, M. A. (2010). Mind-mindedness in adult and adolescent mothers: Relations to maternal sensitivity and infant attachment. *International Journal of Behavioral Development, 34* (6), 529-537.	69 adolescent mother-infant dyads (mean age 18.4, SD = 1.5, range not available); 32 adult mother-infant dyads (mean age 28.7, SD = .32, range not available). Infants aged 18 months (no additional information available).	Maternal mind-mindedness assessed during free-play interaction, infant attachment security assessed using Ainsworth's Strange Situation (Ainsworth et al., 1978); maternal sensitivity assessed using the Maternal Behavior Q-Sort (Pederson	Infants of adult mothers more likely to be securely attached (p=<.05) and adult mothers more sensitive in interactions (p=.001). Adult mothers used more mind-related comments (p=<.001) which were more positive (p <.05) and appropriate p=.04). Adolescent mothers used more negative mind-related comments but this did not reach significance

Authors/title/date/journal/country and Quality rating	Sample demographics	Data collection and relevant measures	Main findings
Canada. **Quality rating: 0.81**		& Moran, 1995) using observations when infants were 18 months old	(p=.11). Associations between mind-mindedness, sensitivity and attachment found in adult mothers were less relevant for adolescent mothers (p <.05).
10. Rafferty, Y., Griffin, K. W., & Lodise, M. (2011). Adolescent motherhood and developmental outcomes of children in early head start: The influence of maternal parenting behaviours, well-being, and risk factors within the family setting. *American Journal of Orthopsychiatry, 81* (2), 228-245. 17 sites, USA. **Quality rating: 0.90**	530 adolescent mothers younger than 19 years (mean age 17.5, SD =1.5, range not available) and 710 adult mothers (mean age 25.1, SD = .43, range not available). Infants 14 months old (no further information available).	The 'three-bag assessment' (adapted from NICHD, 1999) to assess mother-child interaction (coded for supportiveness and negative regard); the HOME observation for measurement of the environment - short form (Caldwell & Bradley, 1984) to assess parenting behaviours when infants were 14 months old.	Adolescent mothers showed lower levels of positive (p <.001) and more negative (p <.001) parenting behaviour during play. They were less emotionally responsive (p <.001). No between group differences in non-punitive parenting behaviours (p >.05).
11. Bornstein, M. H., Putnick, D. L., & Suwalsky, J. T. D. (2012). A longitudinal process analysis of mother-child emotional relationships in a rural Appalachian European American community. *American Journal of Community Psychology, 50*, 89-100. West Virginia, USA.	24 adolescent mothers (<19 years), 34 adult mothers (19 - 40 years) Mothers age ranged 13-40 years when gave birth (mean 23.26, SD = 5.93). No further information available for groups. Infants – at first observation mean age 5.34 months (SD = .16); at second observation mean age 20.08 months (SD = .22).	Observations were conducted when infants were 5 and 20 months and evaluated using the Emotional Availability Scales (Biringen, Robinson & Emde, 1998, cited by Bornstein et al., 2012), evaluated for maternal sensitivity and structuring and child responsiveness	Maternal age correlated with maternal sensitivity (p<.001) Adolescent mothers less sensitive and structuring and their infants were less responsive and involving at 5 months (p values not available for age used as dichotomous variable). Most mothers were functioning adequately. When age used as a continuous variable, and all family context or socioeconomic

Authors/title/date/journal/country and Quality rating	Sample demographics	Data collection and relevant measures	Main findings
Quality rating: 0.90		and involvement of mother.	determinants controlled for, only maternal age effects on involvement remained (p<,.05)..
12. Chico, E., Gonzalez, A., Ali, N., Steiner, M., & Fleming, A. S. (2014). Executive function and mothering: Challenges faced by teenage mothers. *Developmental Psychology, 56* (5), 1027-1035. Ontario, Canada. **Quality rating: 0.81**	27 adult mothers (mean age = 30.5 years, SD = 4.9, range not available); 30 teenage mothers (mean age = 17.6 years, SD = 1.47, range not available). Infants were included in the study at 2 to 6 months (mean 5.54, SD = 2.57). Further information not available.	Observation of free play interaction (4-6 months post partum) interrupted after 20 minutes by a divided attention task. Coded for maternal sensitivity using Ainsworth Maternal Sensitivity Scale (Ainsworth, 1979, cited by Chico et al., 2014). Behavioural observations during first 20 minutes of interaction coded for instrumental behaviour, looking away, vocalising. Infant behaviours codes included crying/fussing, positive vocalisations and smiles.	Teenage mothers less sensitive (p<.02), spent less time vocalising (p<.04) and more time oriented away from infant than adult mothers (p<.012). No difference in time spent on instrumental behaviours; no difference in infant behaviours (p values not available).
13. Crugnola, C. R., Ierardi, E., Gazzotti, S., & Albizzati, A. (2014). Motherhood in adolescent mothers: Maternal attachment, mother-infant styles of interaction and emotion regulation at three months.	30 adolescent mothers-infant pairs (mothers mean age 18.36 years, SD = 1.49, range = 15-21 years); 30 adult mother-infant pairs (mothers mean age 33.2 years, SD = 3.87, range = 25-40 years).	Interactions between mothers and infants observed at infant age of 3 months and coded based on the Infant and Caregiver Engagement Phases (Weinberg & Tronick,	Adolescent mothers more negative engagement (p=.01), less involved in play (p=.03), spent more time in negatively matched states with their infants (p=.04). Infants of adolescent mothers less time in social positive engagement (p=.04) and more time in

Authors/title/date/journal/country and Quality rating	Sample demographics	Data collection and relevant measures	Main findings
Infant Behavior & Development, 37, 44-56. Milan, Italy. **Quality rating: 0.77**	Infants mean age 3.40 months (SD= 1.47) (further information not available).	1999, cited by Crugnola et al., 2014), also combined to make neutral, positive and negative states.	negative engagement (p=.01). Attachment security of mothers appeared to have different effects on interaction in adolescent and adult mothers (p=.02).

1.4.2 Quality Framework

Kmet, Lee and Cook (2004) developed a framework to appraise the quality of studies of varying designs and methodologies and to aid in the decision of which papers to include in their review. Their framework includes a checklist for quantitative and qualitative studies, which have 14 and 10 items, respectively (see Table 1.4 for details of quantitative criteria). The criteria encompass various areas of focus, including study design, sample, outcome measures and analysis (Kmet, Lee & Cook, 2004). Each item can score 0-2 depending on whether the criteria was met in full, partially met, or not met ("yes" = 2, "partial" = 1, "no" = 0) (Kmet, Lee & Cook, 2004, p.5). When scores are recorded for all items they are totalled and the sum is divided by the maximum possible score (Kmet, Lee & Cook, 2004). If items are not applicable to a study they are scored as 'non-applicable' and excluded from the total score; in this case when all scores are added, the total is divided by the maximum possible score excluding these items (Kmet, Lee & Cook, 2004).

Kmet, Lee and Cook (2004) do not suggest a cut-off for inclusion of papers, although they do say that 75% might mark a conservative cut-off point, whereas 55% may mark a more liberal cut-off point. No papers in the review scored lower than 0.63and therefore all papers were included.

This framework was chosen due to the option to answer 'non-applicable' for items that are not relevant to the study design, whilst still calculating an overall score for each paper. Other frameworks (e.g. Von Elm et al., 2007) were found to have many items which were not applicable to the papers in this review due to difficulties with random allocation to groups and blinding. Kmet, Lee and Cook's (2004) framework has also demonstrated good inter-rater reliability in previous reviews (Brandaro, 2015; Eick, Williamson & Heath, 2012). Inter-rater reliability was calculated for this systematic review using 15% of the papers and achieved

0.88, suggesting “almost perfect” inter-rater reliability (Cohen, cited by McHugh, 2012, p.279).

Table 1.3 and 1.5 show the scores for all papers included. Most papers scored above Kmet, Lee and Cook’s (2004) suggestion of a ‘conservative’ cut-off of 75%. It is noted that three items of the criteria were not relevant to any of the papers reviewed (criteria 5-7) and these were therefore not applied. This is related to study design, the papers not being intervention studies and blinding of investigators being impossible due to the likely physical differences between adult and adolescent mothers.

Table 1.4
Quality criteria (Kmet, Lee & Cook, 2004)

Number	Criteria
1	Question/ objective sufficiently described?
2	Study design evident and appropriate?
3	Method of subject/comparison group selection or source of information/input variables described and appropriate?
4	Subject (and comparison group, if applicable) characteristics sufficiently described?
5	If interventional and random allocation was possible, was it described?
6	If interventional and blinding of investigators was possible, was it described?
7	If interventional and blinding of subjects was possible, was it reported?
8	Outcome and (if applicable) exposure measure(s) well defined and robust to measurement/ misclassification bias? Means of assessment reported?
9	Sample size appropriate?
10	Analytic methods described/ justified and appropriate?
11	Some estimate of variance is reported in the main results?
12	Controlled for confounding?
13	Results reported in sufficient detail?
14	Conclusions supported by the results?

Table 1.5
Scoring of papers on quality framework (Kmet, Lee & Cook, 2004)

	Criteria														
Study	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total score
1	2	2	2	2	N/A	N/A	N/A	2	2	2	2	2	2	2	1
2	2	2	2	2	N/A	N/A	N/A	2	2	2	2	2	2	2	1
3	2	1	2	2	N/A	N/A	N/A	1	1	2	2	2	2	1	0.81
4	2	1	1	2	N/A	N/A	N/A	2	1	2	2	0	2	1	0.72
5	2	1	1	2	N/A	N/A	N/A	1	1	2	2	2	2	1	0.77
6	2	2	1	2	N/A	N/A	N/A	2	1	2	2	0	2	2	0.81
7	1	1	0	2	N/A	N/A	N/A	1	1	1	2	1	2	2	0.63
8	2	2	1	2	N/A	N/A	N/A	2	1	2	2	0	2	2	0.81
9	2	2	1	2	N/A	N/A	N/A	2	1	2	2	0	2	2	0.81
10	2	2	2	2	N/A	N/A	N/A	2	2	2	2	0	2	2	0.90
11	2	2	1	2	N/A	N/A	N/A	2	1	2	2	2	2	2	0.90
12	2	1	1	2	N/A	N/A	N/A	2	1	2	2	1	2	2	0.81
13	2	1	1	2	N/A	N/A	N/A	1	1	2	2	2	2	1	0.77
Mean	1.92	1.53	1.23	2	N/A	N/A	N/A	1.69	1.23	1.92	2	1.07	2	1.69	

1.5 Results

In order to answer the question posed at the beginning of this review, this section will consider two questions, the second of which is further split into two sub-questions.

- Do adolescent mother-infant dyads differ from adult mother-infant dyads in the way they interact?
- What types of differences have been identified?
    - Which of these are identified in the mothers' behaviour during interaction?
    - Which are identified in the infants' behaviour during interaction?

1.5.1 Is the interaction between adolescent mothers and their infants different from that of adult mothers and their infants?

Of the 13 papers identified, the majority suggest that there are differences between the interaction of adolescent versus adult mothers and their infants. Only one paper did not identify any differences (1) and a small group identified significant similarities between the interaction of adolescent versus adult mothers and their infants, such as amount of time spent in instrumental behaviour (12), time spent interacting (5) and non-punitive parenting behaviour (10) or the behaviour of infants (3,12), despite identifying differences elsewhere. Despite identifying differences, paper 11 found that the majority of mothers in both groups were functioning adequately (p.95).

1.5.2 Quality.

According to the framework used, ten of the twelve papers that found a difference in interaction according to maternal age relied on relatively small sample sizes and one of these (7) used small samples (N=15 adolescent mothers). The one study that found no difference between interactions of adolescent versus adult dyads (1) measured attachment classification only. It is possible that no differences were identified because the various components of interactions between the dyads may not have been significant enough to impact on overall

attachment classification. Paper 1 achieved the highest possible overall quality rating, indicating that its findings must not be dismissed. However paper 2, which found significant age group effects, also achieved the highest possible score. Some of the papers which conclude that there are key differences in mother-infant interaction according to maternal age scored significantly lower (4) with one scoring markedly lower than others (7), which, if using the "relatively conservative" cut-off point suggested by Kmet Lee and Cook (2004, p. 8) would not have been included in the review. This should be borne in mind when considering any conclusions drawn.

1.5.3 What types of differences in interaction have been identified?

The differences in the interactions of adolescent mother-infant and adult mother-infant dyads have been grouped according to topic and will be discussed below. The results of the same paper are sometimes discussed in more than one section.

1.5.3.1 Maternal sensitivity and attunement.

Seven papers use sensitivity or responsivity as an outcome (3,4,6,9,10,11,12) and two comment on attunement (13 and 7).

1.5.3.1.1 Maternal sensitivity.

Maternal sensitivity is described by Ainsworth, Bell, & Stayton (1971, p40) as the mother's ability to sensitively attend to the "baby's signals, in noticing them, interpreting them accurately, and in responding to them promptly and appropriately". Several of the papers reviewed in this section achieved high scores on the quality framework, the lowest score in this section is 0.72 (4).

All papers identified in this section found that adolescent mothers were significantly less sensitive (4,6,9,11,12), contingent (3), or emotionally responsive (10) than adult mothers. Paper 6 also found a relationship between adolescent motherhood, maternal sensitivity and later cognitive development. However, several of these studies did not control for socioeconomic or other contextual variables (4,6,9,10) or the samples used were not necessarily representative of the general population (11).

Interestingly, paper 3 found that adolescent mothers and adult mothers with high social risk were significantly less contingent (defined by the authors as prompt and sensitive response to infants "behavioural cues" in their responses to their infants; p.500) than adult mothers with no identified risk, but not adult mothers with identified risk, suggesting that age of mother may not be the defining factor in terms of sensitivity.

Paper 11 explored interactions in Appalachian adult and adolescent mother-child dyads. Maternal age was found to be significantly positively correlated with sensitivity, which was confirmed when age grouping was used as a dichotomous variable, demonstrating that adolescent mothers were significantly less sensitive in their interactions than adult mothers. However, all effects of maternal age relating to maternal behaviour were attenuated when significant family context determinants (extended family support, marital status, fathers' presence in home, and extended family in home) were controlled for and marital status attenuated the relationship between sensitivity and maternal age.

In contrast to these findings which highlight the importance of other contextual determinants, paper 12 found that adolescent mothers were significantly less sensitive in their interactions, with their infants and spent significantly more time orienting away from their infants regardless of socioeconomic status as measured by parental occupation. However, as

the authors suggest, parental occupation may not be an adequate measure of socioeconomic status.

1.5.3.1.2 Attunement.

The two papers included in this section achieved ratings of 0.63 and 0.77 on the quality framework (7 and 13 respectively), the first of which is the lowest quality rating in this review.

Paper 7 uses the parent subscale of the Marschak Interaction Method Rating Scale (MIMRS, O'Connor, Ammen, Backman & Hitchcock, 2001, cited by Hitchcock et al., 2008) that measures the ability of the mother to be attuned to the needs of her infant and to modify her responses accordingly. There was a significant difference between the scores of adult and adolescent mothers which were lower for adolescent mothers, suggesting that adolescent mothers may be less attuned to their infants than adult mothers. A Relational/Emotional subscale is included in the analysis and differed significantly according to maternal age group. but it is not clear what behaviours are relevant to this subscale or how it contributes to the study and therefore how these inform the conclusion.

Paper 13 investigated differences in the quality of interactions including the time mother and infant spend in matched or mismatched global states (e.g. infant positive, mother negative). The authors found that adolescent mother-infant dyads spent significantly more time in mismatched states than adult mother-infant dyads.

1.5.3.1.3 Summary.

Nine papers investigated differences in maternal sensitivity and attunement. All of these papers found some differences between adult and adolescent mothers, suggesting that adult mothers are more sensitive and more attuned in their interaction with their infants than

adolescent mothers. The findings of papers 3 and 11 highlight the relevance of other risk factors in the differences in maternal sensitivity between adolescent and adults mothers. Unfortunately not all papers made attempts to control for socio-demographic risk factors (4,6,9,10) which are likely to have impacted on maternal sensitivity.

1.5.3.2 Maternal vocalisation.

Three papers report findings related to maternal vocalisations (3,9,12) and all achieve the comparatively high score of 0.81.

Paper 3 found that adolescent and at-risk adult mothers vocalised significantly less than low-risk adult mothers, showing that risk factors rather than age might account for these differences. Unfortunately, there was no low-risk adolescent sample with which to draw comparisons. All mothers vocalised less when their infants were 6 months old than when they were 1 month old perhaps, according to the authors, reflecting a developmental change in the focus of infants' attention increasingly being towards toys and other objects. Paper 12 also found that adolescent mothers vocalised to their infants significantly less often than adult mothers, an effect which remained after infant behaviours were controlled for, suggesting that differences in maternal vocalisations were not due to infants' behaviour.

Paper 9 found that adult mothers used significantly more mental state and mind-related comments and used a significantly greater proportion of positive and appropriate comments than adolescent mothers. Adolescent mothers were noted to make few positive comments and more negative mind-related comments during interaction with their infants, but this did not reach significance. Interestingly, in adult mothers, greater maternal sensitivity was related to greater use of mind-related comments and less negative comments; however, this relationship was not seen in adolescent mothers, where sensitivity was related only to lower

rates of comments pertaining to the infants' perceived attempts to manipulate. The authors suggest that mind-minded comments may be less relevant to adolescent mothers' interactions with their infants due to more pressing practical everyday tasks and challenges taking precedence.

1.5.3.2.1 Summary.

All three papers which assessed differences in maternal vocalisations report significant differences between adolescent and adult mothers, suggesting that adolescent mothers vocalise less often and in different ways than adult mothers (9). This is likely to have important implications for later development, as maternal vocalisations predicted infants' later performance on scales relating to mental and physical development (Pomerleau, Scuccimarri & Malcuit, 2003). Due to the small sample of papers focused on maternal vocalisations, any conclusions drawn from this section should be tentative. As in the previous section, it is possible that other risk factors relate to these differences.

1.5.3.3 Positive versus negative maternal behaviour.

Four papers focus on whether mothers' interactions towards their infants are positive or negative. These papers include those with high quality ratings (2,10) and the paper with the lowest rating (7).

Paper 2 compared the interactions of adult mother-infant dyads to adolescent mother-infant dyads when infants were 14-months old. They found that adolescent mothers were significantly less supportive, more negative/hostile, more detached and more intrusive than adult mothers. Importantly, these findings are maintained even when socio-demographic variables are controlled for, with the exception of negative/hostile behaviour.

Paper 7 identified critical items relating to potentially harmful or dangerous behaviours such as physical aggression. A significantly higher number of these types of behaviours were found in adolescent mother-infant dyads than in adult mother-infant dyads.

Using the 'three-bag assessment' and the Home Observations for Measurement of the Environment (short form, Caldwell & Bradley, 1984) to code maternal behaviours, paper 10 found that adolescent mothers demonstrated significantly less positive parenting and more negative regard (which included expressions of disapproval, anger or rejection) than adult mothers. The authors found no significant difference in terms of punitive behaviours such as scolding, slapping or physical restraint.

Results reported in paper 13 suggest that adolescent mothers spend significantly more time in "negative engagement" with their infants, defined as negative, hostile or withdrawn behaviour or intrusive behaviour "towards the infants' physical space, activities or objects" (Crugnola et al., 2014, p.48-50). In addition, insecurely attached adolescent mothers spent more time in "negative social engagement" (p.50), a pattern not observed in the adult mothers.

1.5.3.3.1 Summary.

In summary, all four papers reviewed in this section found a significant difference between adolescent and adult mothers, suggesting that adolescent mothers are more likely to engage in negative behaviours and less likely to engage in positive behaviours than their adult counterparts (2,7,10,13). Three of the four papers in this section made attempts to control for confounding variables (2,7,13); however, given the complexity of the variables considered, it is difficult to draw firm conclusions based on this small collection of papers.

1.5.3.4 Types and functions of maternal behaviour.

Four papers focused on the type or function of maternal behaviour within interactions (5,11,12,13). These papers achieve mixed ratings on the quality framework, ranging from 0.77 to 0.90.

Paper 5 assessed maternal behaviour, mood and cortisol levels in adolescent and adult mothers. There were no differences between the mothers in terms of time spent interacting within a 15 minute observation, but adolescent mothers were found to spend significantly more time in instrumental behaviour (cleaning, changing etc.) and less time behaving affectionately towards their infants than adult mothers. This finding remained when controlling for breastfeeding status and income of mothers. This is the only paper that distinguished between affectionate and instrumental behaviours; therefore it is difficult to draw any conclusions on this subject.

In paper 11 the Emotional Availability Scales (Biringen et al., 1998, cited by Bornstein et al., 2012) were used to assess 'structuring', which in this context refers to the mothers' ability to facilitate and organise play and exploration by "providing rules, regulations, and a supportive framework for interaction without compromising the child's autonomy" (Bornstein, Putnick & Suwalsky, 2012, p. 92). Findings revealed that adult mothers scored higher on this scale than adolescent mothers, however as significance levels are not available for this part of the analysis it is not clear whether this is a significant difference. There was also a continuous effect for age which was statistically significant, suggesting that mothers' ability to appropriately structure interactions with their infants increases with age rather than being a categorical difference between adolescent and adult mothers.

Paper 12 investigated the differences between maternal behaviours during observations and found that there were no group differences in time spent in instrumental caregiving behaviours such as grooming. As this paper did not specify time spent in affectionate behaviours it cannot be compared directly to paper 5.

The results of paper 13 suggest that adult mothers spend significantly more time engaging in play with their infants. Interestingly, insecurely attached adolescent mothers offered more caregiving and spent less time offering objects than their securely attached counterparts, with the opposite pattern observed in adult mothers. The authors hypothesise that the results suggest that insecurity of attachment appears to have more impact on adolescent mothers than adult mothers.

1.5.3.4.1 Summary.

Whilst all the papers reviewed in this section focus on the different types of interactive behaviour of adult and adolescent mothers and their infants, they address different aspects of interaction and therefore are not easily compared. The findings in this section are particularly at odds in terms of whether adolescent mothers engage in more instrumental behaviours than their adult counterparts. Additional research is needed in order to clarify this.

1.5.3.5 Infant interactive behaviours.

1.5.3.5.1 Vocalisations.

Two papers consider whether infants of adult and adolescent mothers differ in terms of their vocalisations (3,12). They both achieved scores of 0.81, indicating good quality. Neither paper 3 nor paper 12 identified significant group differences in infant vocalisations,

suggesting that infants of adolescent mothers do not vocalise less frequently than (3) or differently to (12) infants of adult mothers.

1.5.3.5.2 Summary.

Both papers measuring infant vocalisations found no significant difference in the vocalisations of infants according to the age group of their mothers. It is acknowledged that only having two papers in this sub-topic limits the generalisability of any conclusions drawn; however, the unanimous direction of the findings suggests that this is not a significant area of difference.

1.5.3.6 Infant engagement/ responsiveness.

Four papers focused on infant non-vocal social behaviour in terms of engagement or responsiveness (3,7,11,13). The quality ratings for these papers ranged considerably, from 0.63 to 0.90.

Paper 3 found no significant group differences between infant motor activity, gazes to mother or toys.

Paper 7 focused on mother-infant interactions using the Marschak Interaction Method Scale (DiPasquale, 2000; Lindman, Booth, & Chambers, 2000, cited by Hitchcock et al., 2008) measuring five domains (structuring, challenging, engaging, nurturing, separation-reunion). For each of these domains, interactions between mother and infant are rated as to the dyads' functioning within these domains on various tasks. The child subscale scores were significantly lower for adolescent mother-infant dyads than adult mother-infant dyads, demonstrating that infants of adolescent mothers were less able to function adequately in all five domains.

In paper 11 behaviours of infants relating to responsiveness to the mother and involvement of the mother, in terms of the infants' ability to engage her were recorded. Infants of adolescent mothers scored lower in terms of responsiveness and involvement of mother. A correlational analysis including all mothers indicates that responsiveness and involvement increases significantly with maternal age, suggesting that the difference is not a dichotomous one between adult and adolescent mothers.

Paper 13 found that infants of adolescent mothers spent significantly less time in "social positive engagement" and that the mothers' attachment security impacted on infant behaviour (Crugnola et al., 2014, p. 50). Infants of insecurely attached adolescent mothers spent significantly less time oriented to an object offered by their mother than infants of securely attached adult mothers. According to the authors, these findings are likely to be related to the insecurely attached adolescent mothers displaying more negative engagement than insecurely attached adult mothers.

1.5.3.6.1 Summary.

In summary, three of the four papers in this section found that infants of adolescent mothers were significantly less engaged in interaction with their mothers and/or less responsive to them. Importantly, all of these papers made at least an attempt to control for confounding variables such as socio-demographic risk, which strengthens the validity of the findings. However, it is also noted that each paper investigated engagement and responsiveness in different ways, possibly not relating to the same concept. It is not clear whether the measure of motor activity used by paper 3 relates to engagement or responsiveness.

1.5.3.7 Infant affect.

Three papers focus in part on the affect demonstrated by infants during interaction (4,12,13). These papers differ in terms of their ratings on the quality criteria, ranging from 0.72 to 0.81.

Paper 4 found that during the Still Face Procedure (Tronick et al., 1978), infants of adolescent mothers who were more sensitive showed significantly more negative affect and less self-soothing behaviour during the still-face part of the interaction, which was at odds with the pattern identified in adult mothers. The authors hypothesise that expression of affect may function differently in high risk samples (including adolescent mother-infant dyads) but acknowledge that additional research is needed to clarify this difference.

Paper 12 found that infants do not differ significantly according to the age group of their mothers in terms of smiling, crying/ fussing and positive vocalisations, despite their mothers differing in sensitivity. Paper 13 found that infants of adolescent mothers spent significantly more time in "negative engagement" which included facial expressions of anger or annoyance, crying or minimally engaging with the mother or environment (Crugnola et al., 2014, p.48-50).

1.5.3.7.1 Summary.

In summary, the findings on whether infants of adolescent mothers differ in terms of affect appear to be complex. Two of the three papers reviewed in this section found a significant difference however, paper 4 suggests that it may not be as simple as infants of adolescent mothers expressing more negative affect. As noted by the authors of paper 4, it is possible that infants of adolescent mothers are adapting to a different type of interaction with their mothers and learning to express affect accordingly.

1.5.3.8 Attachment.

Three of the papers reviewed investigate the attachment style of infants of adolescent mothers in comparison to adult mothers (1,8,9). All three papers score well on the quality framework, ranging from 0.81 to 1.Papers 8 and 9 found that infants of adolescent mothers were significantly less likely to be securely attached (9) or exhibit secure base behaviour (8) than infants of adult mothers. Paper 1 found no significant difference between the attachment security of infants according to their mothers' age group, despite the adult and adolescent mothers differing significantly in terms of socioeconomic status and level of education.

1.5.3.8.1 Summary.

It is important to note that neither of the papers identifying group differences in this section attempt to control for potentially confounding variables such as socioeconomic status (8,9). Due to the small sample of papers, it is not possible to reliably predict whether the same group differences would be identified by better controlled research.

1.6 Discussion

This review considers whether recent research focusing on adult and adolescent mother-infant dyads can clarify whether there are key differences in interaction according to maternal age, and what these differences might be. Thirteen papers were reviewed and rated according to the quality framework used (Kmet, Lee & Cook, 2004). The findings will be discussed in regard to the two overarching questions posed by this review.

When considering whether there are differences between the interactions of adolescent and adult mother-infant dyads, it seems that the results of the papers reviewed are not wholly consistent. Differences in the interactions of adolescent and adult mother-infant dyads were

found by 12 of 13 papers and relate to both maternal and infant interactive behaviour. However, due to the variety of measures used and variables considered, it cannot be established with any confidence whether the combined results indicate that there are group differences in the same over-arching factor, or whether they have identified many separate differences in mother-infant interaction. In addition, several of the findings of papers in this review suggest that other risk factors are likely to account for some of the effect of maternal age on interaction (papers 3, 11). However, it appears that when the findings of the papers reviewed here are taken together, the findings broadly suggest that there are significant differences in the interactions between adolescent mothers and their infants and adult mothers and their infants.

When attempting to identify what these differences are, the picture is complex and suggests several areas of potential difference. Papers commenting on sensitivity suggest that adolescent mothers are less sensitive and less attuned to their infants than adult mothers (3,4,6,7,9,10,11,12,13). Again, these results must be interpreted with caution due to potentially confounding variables, such as socioeconomic status, level of education and parenting knowledge. Several of the papers identified in this section either did not consider these factors in relation to maternal sensitivity (4,6,9,10), or compared 'high risk' adolescent samples with adult 'low risk' samples (paper 6) as part of the research question.

Similarly, the results suggest that adolescent mothers vocalise less often to their infants than adult mothers (3,12) and that there may be differences in the content of this vocalisation (9). However, this issue is also clouded by a lack of control of other risk factors, as highlighted by paper 3's findings, that both adolescent mothers and adult mothers at higher social risk vocalised less than low risk adult mothers.

Paper 9 suggests that adolescent mothers use less mind-related comments which may relate to their stage of psychosocial development, or, as the authors suggest, mothers' personal background and current situation (Demers et al., 2010, p. 534).

Perhaps the most striking area of group difference identified in this review is positive and negative behaviour in adolescent versus adult mothers. All of the relevant papers suggest that adolescent mothers are more likely to behave in negative, hostile or even dangerous or harmful ways towards their infants than adult mothers (papers 2,7,10,13), although effects of maternal age on negative hostile behaviours were no longer significant when socio-demographic variables were controlled for (paper 2). These findings highlight the importance of supporting adolescent mothers in order to promote the wellbeing of their infants and to identify infants who may be at risk of abuse. Two of the four papers reviewed in this section made reasonable attempts to control for socio-demographic variables.

Findings in relation to the types and function of maternal behaviours during mother-infant interactions differed, and due to the measures used and how these behaviours were conceptualised, it is not possible to draw firm conclusions. The limited research currently available suggests that adolescent and adult mothers are similar in the total time spent interacting with their infants (5) but findings are mixed in terms of mothers' time spent in instrumental or caregiving behaviours (5,12). Only one paper distinguished between instrumental and affectionate behaviour (5) and found that adolescent mothers engaged in more instrumental and less affectionate behaviour than adult mothers.

Differences were also found in infants' behaviour during interactions with their mothers according to maternal age. Paper 11 found that infants' responsiveness and engagement increased with maternal age, suggesting that there is not a dichotomous split

between adult and adolescent mothers. This suggests that young mothers are increasingly able to foster engagement in their infants as they age, suggesting that young mothers' own development is key in this process and continues into adulthood. In addition, as highlighted by paper 13, it is possible that the attachment security of mothers is related to this process.

Only two papers focused on infant vocalisations and both of these found no group differences. It is noted that two papers (Barratt, & Roach, 1995; Culp, Osofsky, & O'Brien, 1996), which were excluded from the review due to the date of publication, found significant differences in this area, suggesting that a wider review is necessary to clarify whether infant vocalisations differ according to maternal age.

Findings relating to positive and negative affect shown by infants varied, some suggesting that infants of adolescent mothers displayed more negative affect (4,13), possibly related to the negative affect or behaviour demonstrated by their mothers (4). However, additional research is needed in order to clarify this. Paper 13 found that adolescent mother-infant dyads spent more time in mismatched states where the infant was neutral and the mother was negative, which the authors suggest might represent adolescent mothers' propensity to misinterpret neutral states in their infant as negative states (p.53). This might relate to other findings which suggest that adult mothers make more mind-minded comments (9).

Three papers measured attachment security as a variable. Although the findings of two of these papers (8,9) suggest that infants of adolescent mothers are more likely to be insecurely attached or exhibit less secure-base behaviour than infants of adult mothers, one paper (1) did not find any significant difference. As in other sections, a lack of control of other risk factors as potentially confounding variables makes these findings difficult to

interpret. It is also possible that whilst differences in attachment in infants of adolescent versus adult mothers may contribute to the literature and be of academic interest, it may be that an attachment classification tells us little about the areas of support that are clinically relevant for young mothers.

1.6.1 Limitations.

The main limitation of this review is the small number of studies which contribute to each of the key areas. Due to the variety of areas of focus and the lack of a unified approach to the investigation of mother-infant interactions, no firm conclusions can be drawn. The need to allocate papers to subgroups to ensure that findings could be meaningfully discussed resulted in a small number of papers in each section. In addition, the young mothers included in most samples in this review were socially disadvantaged so that social disadvantage was a confounding variable in many of the studies reviewed. This may be difficult to avoid as research suggests that adolescent mothers are likely to be socially disadvantaged (Hoffman, 1998); however, ideally, adult mothers would be matched on these factors in order to control for them. In addition, although there were reasonable similarities in terms of study designs, the measures used varied considerably (see Table 1.3), which makes it difficult to establish whether papers are measuring the same or different types of behaviour. Only one of the papers (13) included in this review was conducted in Europe and none of the research included was conducted in the UK, therefore generalising with any confidence to the UK population is not possible. Finally it is it noted that many of the studies reviewed here include mothers up to age 19 or 20 in their samples of adolescent mothers (3, 6, 7, 8, 13). It is likely that younger adolescent mothers (aged 12-15) differ substantially in the outcomes measured when compared to older adolescent mothers (aged 16-20), given the social and emotional development which is thought to occur during this time period (Steinberg, 2005). Therefore,

with such a wide age range it may not be meaningful to refer to ‘adolescent mothers’ as a homogenous group.

In addition, the scale of this review necessitated the exclusion of papers before 2000; however, it is recognised that several relevant pieces of research were published prior to this date. It is also possible that the key terms used did not identify all relevant research. It is noted that some key words (interaction) could not be used due to the high number of irrelevant papers identified when they were included in the search.

1.6.2 Further research.

A number of areas for future research have been identified to clarify and enhance the current knowledge and literature base. Further systematic exploration is needed in terms of:

- Whether the group differences identified are related to adolescent mothers in comparison to adult mothers as a dichotomous distinction, or whether the differences represent a continuing improvement in interactions from early adolescence into adulthood and whether there is a difference between younger and older adolescent mothers. Research using age as a continuous variable or including samples of young-adolescence, mid-adolescence and older-adolescence as well as mothers in their early twenties might help to clarify this issue.
- Whether socioeconomic or demographic variables are responsible for some of the differences found, by including larger samples in which adolescent and adult mothers can be matched for important risk factors (such as education, employment, social support, financial status).

- Whether negative behaviours seen more often in adolescent mothers' interactions are related to mind-mindedness, using measures of mind-mindedness and observed negative behaviours.
- Whether the interactions seen in adolescent mothers and their infants are related to their relationships with their own mothers, through measures of attachment type. It may also be useful to investigate the impact of other carers on mother-infant interaction.
- Additional research in the UK to inform policy on supporting adolescent mothers. A follow-up study on later outcomes of the FNP intuitive in England is due to be published in 2018 (FNP, 2015) and may clarify whether current provisions will improve outcomes for young mothers and their children.

1.6.3 Clinical implications.

Although more research is needed in order to clarify the possible mechanisms behind differences between adolescent and adult mother-infant interactions, this review suggests that there are some important differences and that infants of adolescent mothers may be less likely to receive sensitive and appropriate care and to be engaged and responsive than infants of adult mothers. This has implications for the support necessary for these mothers and infants. It is likely that if adolescent mothers do not have their basic needs met due to socio-economic or other risk factors, they will have difficulty in engaging in interventions designed to aid sensitivity and improve the way in which they engage with their infants. Equally, approaches solely providing adolescents with support with practical needs will be unlikely to meet the emotional needs of infants of adolescent mothers.

Recent research conducted on the outcomes of FNP in the US has been promising (FNP, 2015), however a recent meta-analysis in the UK suggests that the FNP initiative has not demonstrated any positive short-term outcomes when compared to standard care (Robling et al., 2016). It is possible that comparison groups in the UK and US are significantly different and that FNP in England would be better used to target those young mothers who are particularly disadvantaged rather than widening eligibility to all young mothers, or that standard care provision in the UK compares favourably to the US (Robling et al., 2016). It is also conceivable that if development of skills (e.g. mind-mindedness) is in part behind the differences in interaction and sensitivity of adolescent versus adult mothers, interventions attempting to improve sensitivity may be unsuccessful unless this developmental need is addressed. Additional research in this area may enable young mothers who are particularly at risk of having difficulties with interacting with their infants to be identified and support to be tailored to their needs.

1.7 Conclusions

In conclusion, when considering the original questions set out by this review, it appears that despite the methodological inconsistencies and the nuances of the particular aspects of interaction under investigation, existing research suggests significant differences between the interactions of adolescent mother-infant dyads and adult mother-infant dyads. These differences appear to relate to maternal sensitivity, vocalisations, and positive versus negative behaviour, and infants' engagement and expression of affect. There is no clear consensus as to an explanation for these differences, and the large range of focus makes it difficult to draw firm conclusions. In addition, dichotomously separating adolescent mothers from adult mothers and not accounting for differences in other risk factors is likely to limit the usefulness of findings. Areas of future research have been identified, which may allow for a deeper

understanding of the differences in adolescent mothers' interactions with their infants, and may aid identification of those mothers who do require additional support, as well as informing the best approach to support them.

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2. RESEARCH PAPER

Adolescents' Emotional Intelligence and Understanding of Attachment

2.1 Abstract

Background: Healthy attachments in early life are important for an infant's development (Bowlby, 1988), but there is no research into adolescents' understanding of attachment and this aspect of parenting is not covered in their standard education. The current study aims to identify whether a DVD teaching tool can increase knowledge of attachment in adolescents, whether this can be maintained, and whether attachment knowledge is related to emotional intelligence. Method: Using a repeated-measures within subject design, 95 participants were recruited from a secondary school and 91 took part in all the phases of the study. The intervention included participants watching a DVD about attachment. Demographic information and a self-report measure of trait emotional intelligence were collected in the pre-intervention condition. A measure of attachment knowledge was completed in pre-intervention, post-intervention and follow-up conditions. Results: The intervention significantly increased attachment knowledge and this increase was maintained at follow-up. Emotional intelligence was not found to be related to pre-intervention attachment knowledge or change in knowledge. Demographic factors were not related to change in attachment knowledge, but gender was found to be related to pre-intervention attachment knowledge, with female adolescents having a higher level of pre-existing knowledge. Conclusions: The results of this study support the use of the DVD teaching tool as an effective intervention to increase adolescents' knowledge and understanding of attachment. In addition, this knowledge appears to be able to be maintained. Other than gender, demographic factors and trait emotional intelligence were not significantly related to knowledge scores.

Key words: Attachment, emotional intelligence, adolescent parenting, parent-infant relationship

2.2 Introduction

2.2.1 Attachment.

Attachment behaviour is defined by Bowlby (1988, p.25-26) as “any form of behaviour that results in a person attaining or maintaining proximity to some other...who is conceived as better able to cope with the world”. Whilst attachment to others within various types of relationship is evident and is deemed important throughout life, it is essential in infanthood for survival (Bowlby, 1988). A good attachment depends largely on the responsivity of the mother (or primary caregiver) to her baby and her ability to provide a “secure base” for the child (Bowlby, 1988, p.10).

Various patterns of attachment have since been identified and suggest that the way in which a mother responds to her infant impacts on the way in which the infant attempts to elicit care and adapts in order to ensure their needs are met; patterns which are likely to continue into adult relationships (Ainsworth, Blehar, Waters & Wall, 1978; Bowlby, 1988; Dallos, 2006; Simpson, 1990). A secure attachment is generally typified by infants attempting to seek proximity to their caregiver at times of stress or when facing a perceived threat, balanced with exploration of their surroundings in the absence of threat (Ainsworth et al., 1978; Bowlby, 1988). This allows infants to learn from the environment, safe in the knowledge that they have a “secure base” to return to if necessary (Bowlby, 1988, p.10). An insecure attachment in an infant is characterised by intense distress at separation, inability to be soothed, and clinginess or, on the other hand, a lack of interest in and distancing from the caregiver (Ainsworth, 1979; Bowlby, 1988). An insecure attachment may develop when a caregiver is inconsistent, rejecting, or cannot meet the infant’s emotional needs (Ainsworth, 1979; Bowlby, 1988; Main, 2000). Disorganised attachment is characterised by the lack of a

consistent strategy to manage caregiving responses and is said to result in odd behaviours such as stereotypical movements, approaching the caregiver whilst averting the head, or displaying contradictory behaviours (Main & Solomon, 1990, p.122). Such behaviours are thought to represent the internal struggle of recognising the caregiver as both a potential source of comfort and security as well as a source of threat (Dallos, 2006, p.20).

Later research by Crittenden views attachment in less categorical terms, suggesting instead that infants develop various "self-protective strategies" (Crittenden, 2006, p. 105) through interaction with caregivers, which may be used depending on context and developmental stage, rather than categorically characterising an infant (Crittenden, 2006, p.113).

Regardless of conceptualisation, there is research evidence to support the idea that attachment and the early experience of care play an important role in childrens' development (Bowlby, 1988; Dallos, 2006), mental health (Dozier, Stovall-McClough & Albus, 2008) and adult relationships (Feeney, 2008; Simpson, 1990). As a result, parenting programmes often incorporate elements of attachment theory in order to support parents in creating effective bonds with their children (Hosking & Walsh, 2005; Puckering, Rogers, Mills, Cox & Mattsson-Graff, 1994).

2.2.2 Adolescent parenting.

In England and Wales in 2014, there were approximately 22,653 conceptions in mothers under 18, constituting a decrease of 6.8% since 2013 (Office for National Statistics, 2016). In mothers under the age of 16 there was a decrease in conception rates of 10% (Office for National Statistics, 2016). Despite these reductions, the conception rate in under 18s is higher than comparable Western European Countries (Office for National Statistics, 2016).

Although research suggests that the children of adolescent parents are at an increased risk of various negative outcomes (Jaffee, Caspi, Moffitt, Belsky, & Silva, 2001), few studies control for important variables relating to the resources of the mother and, in so doing, compare disadvantaged adolescent mothers to comparatively privileged adult mothers in many cases (Brooks-Gunn & Furstenberg, 1986). Moreover, negative misconceptions about young mothers and the stigma attached to this label (Whitman, Borkowski, Keogh & Weed, 2001) may have contributed to young mothers being socially disadvantaged and lacking confidence in their parenting abilities, making it difficult to distinguish between outcomes related to parenting capacity per se and those related to social disadvantage.

A number of research studies suggest that there are differences in the way adolescent mothers interact with their infants when compared to adult mother-infant dyads, suggesting that young parents are less likely to be responsive and interact positively with their infants (Barratt & Roach, 1995; Culp, Culp, Osofsky, & Osofsky, 1991; Krpan, Coombs, Zinga, Steiner & Fleming, 2005; Teberg, Howell, & Wingert, 1983). In particular, there is evidence that infants of adolescent mothers are less likely to have secure attachments than infants of adult mothers (Demers, Bernier, Tarabulsy, & Provost, 2010; Tarabulsy et al., 2008). Various explanations for this difference have been put forward, including the importance of specific abilities which may continue to develop during adolescence, such as 'mind mindedness' – the ability of the mother to recognise her infant as a "mental agent" and to "employ mental state terms in her speech" (Meins, 1997, p. 127).

However, to date little research has addressed adolescents' understanding or knowledge of attachment and its importance. Indeed, whilst research suggests that education on parenting in general should be delivered as early as possible (Hosking & Walsh, 2005) and there is some mention of the importance of stable parent relationships and the responsibility

of parenthood, the majority of secondary school education guidance in the UK on Sex and Relationship Education focuses on sexual intercourse, contraception and abortion and fails to address parenting (Department of Education and Employment, 2000, p. 10).

2.2.3 Emotional intelligence.

It has been suggested that constructs such as the ability to understand and reflect upon one's own and others' mental states are relevant to attachment security (Fonagy, Steele, Steele, Moran & Higgitt, 1991). Some overlap exists between concepts such as mentalisation, reflective functioning, and mind-mindedness, all of which relate to some degree to the ability to identify and respond to others as having their own mind and perspective (Sharp and Fonagy, 2008). These concepts have been found to impact on the quality of parenting interactions (Meins, Fernyhough, Fradley & Tuckey, 2001; Rosenblum, McDonough, Sameroff & Muzik, 2008). Emotional intelligence is defined as "the capacity to process emotional information accurately and efficiently, including that information relevant to the recognition, construction, and regulation of emotion in oneself and others" (Salovey & Mayer, 1990, as cited in Mayer & Salovey, 1995, p. 197). It is also likely to relate to other concepts such as mind-mindedness and mentalisation, because of the need to be able to identify with another person as having their own mind and perspective in order to consider their emotional experience and make sense of it.

Research suggests that levels of emotional intelligence are positively related to secure attachment in adults, with dismissive attachment styles found to relate to lower levels of emotional intelligence (Hamarta, Deniz & Saltali, 2009). Little research exists regarding the relationship between emotional intelligence and parenting, although one study found that mothers' emotional intelligence was related to parenting style, with high maternal emotional

intelligence being related to authoritative parenting styles, characterised by high control and high warmth (Aminabadi, Pourkazemi, Babapour & Oskouei, 2012). Intuitively, the concept of emotional intelligence is highly relevant to parenting skills such as responsiveness and sensitivity, which require a caregiver to recognise and respond to the distress and affect of the infant (Leerkes, Blankson & O'Brien, 2009). In addition, the development of emotion regulation skills, a key component of emotional intelligence, are thought to develop through a mother's ability to notice and regulate the emotional distress of the infant, which is eventually internalised (Diamond & Aspinwall, 2003). Constructs involved in emotional intelligence, such as the ability to process one's own and others' emotional experiences and to regulate emotional experiences (Salovey & Mayer, 1990, as cited in Mayer & Salovey, 1995), are likely to be relevant to the development of an attachment between parent and infant as infants are initially reliant on their parents ability to recognise and regulate their emotional distress (Diamond & Aspinwall, 2003). This study therefore included a measure emotional intelligence in order to explore whether emotional intelligence was related to baseline levels of attachment and ability to learn about attachment.

2.3 Aims of the Current Study

Two recent studies investigated the knowledge of attachment held in two different (adult) samples, the first focusing on young adults with Learning Disabilities (Pearson, 2013) and the second a sample of adults with Asperger's Syndrome (Brandaro, 2015). Knowledge was assessed prior to the use of a DVD teaching tool (see Appendix ix) and was then assessed post intervention and at follow-up two weeks later to establish whether increase in knowledge (if any) had been maintained. Results suggest that the intervention was successful in increasing baseline knowledge and that this was maintained for those with Asperger's Syndrome (Brandaro, 2015). However, although an increase in knowledge post intervention

was observed, this was not maintained at follow-up for participants with Learning Disabilities (Pearson, 2013). The current study aims to build on this research by applying this design to a sample of typically developing adolescents, in order to establish 1/ the effectiveness of a DVD teaching tool in increasing knowledge of attachment in adolescents and 2/ whether this knowledge can be maintained at follow-up. In addition the study aims to clarify whether emotional intelligence is related to the pre-existing level of attachment knowledge or change resulting from the intervention. Thus, the primary aim of the current study it to ascertain the level of knowledge that adolescents have of attachment and whether this can be improved using a DVD teaching tool. It is hypothesised that knowledge will increase following the intervention and that this will be maintained at follow-up.

The secondary aim is to ascertain whether trait emotional intelligence is related to the baseline knowledge or increase in knowledge of attachment following the intervention. It is hypothesised that emotional intelligence will be positively related to baseline knowledge of attachment and increase in knowledge.

A further aim is to identify adolescents for whom the intervention was most and least successful from the demographic factors, in order to inform the practical use of this teaching tool.

2.4 Method

2.4.1 Design.

The current study uses a quantitative repeated measures design and compares participants' scores on the attachment measure (dependent variable) across three conditions (pre, post and follow-up), which form the independent variable.

2.4.2 Ethical approval.

The study was granted full ethical approval by the University of Birmingham Ethics Committee (see Appendix i) and did not require an additional application to be made.

2.4.3 Recruitment.

Participants were adolescent boys and girls who were recruited from a secondary school within a rural county, using convenience sampling. Participants were not given individual incentives to take part. However, in return for the support and advice received from the Head Teacher and teaching staff, the researcher offered to attend an A-level Psychology class at the school's sixth form to provide information about pursuing a career as a Clinical Psychologist.

The secondary school was contacted by the researcher and the Head Teacher was given an information sheet for teachers, outlining what would be required in terms of the school's participation (see Appendix ii). The Head Teacher of the school agreed that the researcher could contact the head of the relevant PSHE department in order to arrange recruitment. The researcher met with the relevant member of staff and a discussion was held regarding how many participants would be available to participate. It was decided to exclude children who were older than 15 years or younger than 13 years, those whose comprehension of English language would not enable them to take part in the study, those who had significant difficulties with literacy, and those who had a diagnosed Learning Disability or were diagnosed with an Autism Spectrum Disorder. These exclusion criteria were agreed in order to ensure that the level of understanding demonstrated would be an accurate reflection of this age group. For practical reasons, it was agreed that four PSHE classes (comprising half of each year nine and ten year group) would be invited to take part in the study, which offered a potential sample of 106 children. None of the children identified were excluded by the

above criteria. Provisional dates were agreed with the head of department. Information sheets and consent forms (see Appendices iii, iv, v) were given to this member of staff so that they could be distributed to parents and children.

2.4.4 Participants.

Potentially, 106 children were available to take part during two PSHE lessons. These children comprised two year 9 classes and two year 10 classes, ranging in age from 13 to 15. One child declined to take part on the first day of the study. Nine children were absent on the first day and the parents of one child returned the slip stating that they did not want their child to take part in the study. Four children took part in the pre and post-intervention conditions but were absent from the follow-up. The remaining 91 took part in the entire study.

2.4.4.1 Demographics.

Demographic details of the sample are presented in Table 2.I. Just over half (55%) of participants were female; the average age was 13.9 (range 13-15). The vast majority of participants identified as White British, with only 4% of the sample being from another ethnic group. Nine percent of the participants identified as 'only children', 64% had a younger sibling. Most had one or two siblings with a range of 0-6.

Table 2.1
Sample demographic information

Demographic	Number of participants (%)
Gender	
Female	56(%)
Male	44(%)

Age	
13	24(%)
14	53(%)
15	21(%)
No answer provided	2(%)
Ethnicity	
White British	95 (%)
White Other	2(%)
Asian	1(%)
Black British	1(%)
No answer provided	1(%)
Siblings	
Only child	10 (%)
Younger sibling	64(%)
No Younger sibling	26(%)
Main caregiver	
Mother and father	77(%)
One parent	13(%)
Parent and step parent	9(%)
Prefer not to say	1(%)

2.4.5 Materials.

2.4.5.1 Information sheets and consent forms.

An information sheet for schools was developed for distribution to Head Teachers and any staff involved, explaining what would be involved should they agree to take part in the study (see Appendix ii). An information sheet was also developed for parents and for participants (see Appendices iii & iv). The information sheet for parents included an 'opt-out' slip which parents were asked to return to the school if they did not wish their children to take part (see Appendix iii).

2.4.5.2 Demographics questionnaire

A demographics questionnaire formed the first page of the booklet of questionnaires given to participants. This included age, gender, ethnicity, number of siblings and caregivers they resided with (see Appendix vi). They were asked to complete this first.

2.4.5.3 Trait Emotional Intelligence Questionnaire – Adolescent Short Form (TEIQue-ASF).

The TEIQue-ASF (Petrides, Sangareau, Furnham, & Frederickson, 2006; see Appendix vii) is a self-report measure which includes 30 items thought to relate to trait emotional intelligence and is adapted from the Trait Emotional Intelligence Questionnaire-Short Form (TEIQue-SF; Petrides, 2009) in terms of language and complexity (Petrides et al., 2006, p.540). Trait emotional intelligence is comprised of "cross-situational consistencies in behaviour (manifest in specific traits or behaviours such as empathy, assertiveness, optimism) as opposed to information-processing EI", which is more akin to traditional concepts of intelligence (Petrides & Furnham, 2000, p.314). The TEIQue-SF has been found to have good

psychometric properties, with most items having high discrimination parameters (Cooper & Petrides, 2010). Cronbach's alpha has been found to be 0.89 (Russo et al., 2012). The TEIQue-ASF (Petrides et al., 2006) asks participants to rate a series of statements on a Likert scale from 1 (completely disagree) to 7 (completely agree). Statements include "I find it hard to control my feelings", "I often find it hard to see things from someone else's point of view" and "I don't know how to show the people close to me that I care about them" (Petrides et al., 2006). Items relate to 15 trait EI facets, which include adaptability, emotion perception, emotion expression, emotion regulation, social awareness and trait empathy (Petrides et al., 2006, p.538). There are two questions for each of the 15 facets (Petrides et al., 2006). The score is calculated by summing each item's score and dividing by the total number of items, the maximum score achievable being 7 and the minimum score achievable being 1 (Cooper & Petrides, 2010). A high score indicates high trait emotional intelligence.

2.4.5.4 Attachment measure.

A seven item questionnaire measure was developed by Pearson (2013; see Appendix viii) in order to assess knowledge of attachment. Questions are open-ended and invite participants to provide short answers. In this study answers were written by participants rather than given verbally. There is no exact time limit given for this task. Answers are marked according to a marking grid developed for use with this questionnaire measure and each answer can score a maximum of 2 points and a minimum of 0. Participants can score a minimum of 0 points and a maximum of 14 (see Appendix viii). Marking guidelines are included in Appendix ix. Interrater reliability was calculated for the current study with a sample of 20 questionnaires, which were rated by the researcher and a second marker using the same marking criteria. Cohen's Kappa was calculated and was found to be .904, indicating excellent interrater reliability.

2.4.5.5 Attachment teaching DVD

A DVD teaching tool was adapted by Pearson (2013, see Appendix x) from 'Attachment in Practice' (Siren Films, 2009). The film explains the key concepts of attachment, its importance and the way in which a healthy attachment develops, and lasts for 9 minutes. Information is presented in three sections, separated by summary screens which detail the key points covered in the previous section.

Table 2.2
Content of DVD

Section	Broad focus	Specific elements
1	What is attachment?	Explanation of attachment What happens when things go well What happens when a secure attachment does not develop Later outcomes (educational, social, psychological)
2	How does attachment develop - 0-6 weeks	Proximity seeking (crying, holding on, eye contact, facial expressions) Attunement of mother
3	How does attachment develop – 6- 8 weeks	Reciprocity in interactions Vocalisations

As this film was originally developed for use with a sample of people with intellectual disabilities, adolescents were consulted in order to elicit feedback on the appropriateness of the video. As a result, a new voice-over was developed in order to make the pace at which information was presented more appropriate for the participating young adolescent group. The script was not altered from the original, with the exception of including reference to other possible main caregivers, where previously only mothers were mentioned.

2.4.6 Procedure.

Information sheets and consent forms were distributed to parents two weeks before the first day of the study. Participants were seen by the researcher in a lecture theatre on school premises. Participants were seen in two groups of approximately 50 and 45. The groups were comprised of two PSHE classes in the same year. The teachers of each class were made aware of what would be covered in each meeting and were available to ensure that measures were completed in silence and to avoid participants sharing answers. Demographics questionnaires were completed first, followed by the TEIQue-ASF and then the Attachment Questionnaire. Following the Attachment DVD, the Attachment Questionnaire was completed for a second time. Participating classes were seen twice by the researcher, initially to complete pre-intervention measures, watch the DVD teaching session and then complete post-intervention measures, and finally three weeks later as a follow-up condition.

Table 2.3

Measures used in each condition

Session number	Condition	Measures
1	Pre-intervention	Consent form Demographics questionnaire TEIQue-ASF Attachment questionnaire Attachment teaching DVD
1	Post-intervention	Attachment questionnaire
2	Follow-up	Attachment questionnaire

2.4.6.1 Session 1 (pre-intervention).

Participants were reminded of the content of the session and were asked to sign the consent form if they wished to take part. Participating adolescents then completed the demographics questionnaire, the TEIQue-ASF and the Attachment Questionnaire. Participants were asked to attempt to answer the attachment questions even if they were not sure of the answer. Participants completed the measures in silence. When all participants had finished this task, the Attachment teaching DVD was introduced and played. The DVD was paused at each summary screen to reiterate and summarise the information shown and to allow participants to ask questions, which followed the procedure of the previous two studies (Brandaro, 2015; Pearson, 2013). During these pauses key points were summarised and participants were asked if they had any questions. When questions were asked they were

answered by the researcher who made attempts to use examples shown in the video to illustrate and clarify key points where relevant.

2.4.6.2 Session 1 (post-intervention).

After the DVD had been shown, participants were given a blank copy of the Attachment Questionnaire (Pearson, 2013) and were asked to complete it.

2.4.6.3 Session 2 (follow-up).

Three weeks after the initial session the same classes returned to the lecture theatre. The Attachment Questionnaire was given for a final time and the participants were asked to complete this in silence. After questionnaires were collected, participants were given time to ask questions as a group and individually at the end of the session.

2.5 Results

Data was inspected in terms of normality of distribution by the researcher and a statistical advisor. The univariate distribution of attachment knowledge for each of the three assessment points was assessed.

Table 2.4

Levels of skew and kurtosis

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Att 1	95	3	14	9.71	2.453	-.366	.247	-.197	.490
Att 2	90	8	14	12.48	1.328	-1.065	.247	1.054	.490
Att 3	90	3	14	12.26	1.873	-2.479	.253	9.211	.500
Valid N (listwise)	90								

The critical value for skew in a sample of 90 participants is -/+ 0.503. As can be seen from Table 2.4, attachment knowledge at post intervention (Att 2) and follow-up (Att 3) evidence significant skew. The acceptable range for kurtosis in a sample of 90 participants is -0.78-1.33. As can be seen from Table 2.4, attachment knowledge at follow-up (Att 3) evidences significant kurtosis. Given that these distributions show marked skew and kurtosis, statistical inference tests (t-tests and correlation) will be evaluated using a nonparametric bootstrap method that does not make any assumptions with regard to the distribution of the sample variable.

2.5.1 Descriptive statistics.

Hypothesis 1: Attachment knowledge will be increased following the teaching DVD and this increase will be maintained at follow-up.

Figure 2.1 and Table 2.5 show that there was a significant difference between pre-intervention (Att 1) and post-intervention (Att 2) scores. The mean knowledge score before intervention was 9.71 (SD 2.45), and 12.48 (SD 1.32) after the intervention.

The baseline score was similar to the baseline scores reported by Brandaro (2015) in a sample of adults with Asperger's Syndrome (9.39), but is higher than baseline scores reported by Pearson (2013) in a sample of adults with intellectual disabilities (6.81). It was less clear from initial inspection of the means whether there was a significant difference between post-intervention and follow-up (Att 3).

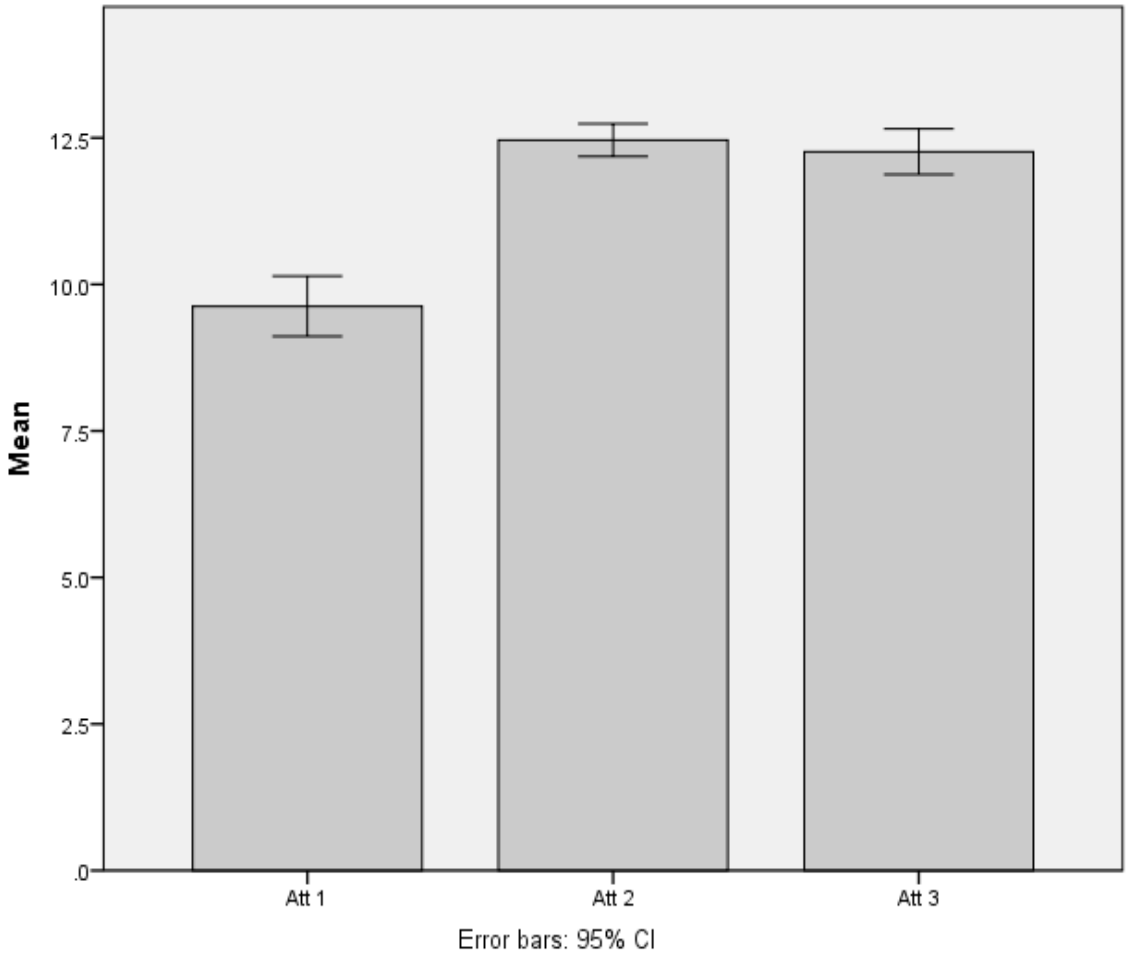


Figure 2.1. Error bars for attachment knowledge in pre-intervention (Att 1), post-intervention (Att 2), and follow-up (Att 3)

Table 2.5
Descriptive statistics for attachment scores across conditions

Condition		Attachment score	
		Mean	SD
Session 1	Pre-intervention	9.71	2.45
	Post-intervention	12.48	1.32
Session 2	Follow-up	12.26	1.87

2.5.2 Statistical analysis.

A paired samples t-test was carried out to identify whether there was a significant difference between pre-intervention and post-intervention scores, post-intervention and follow-up scores, and pre-intervention and follow-up scores. Bootstrap confidence intervals were applied to account for bias (Hardle & Marron, 1991) and because the data were not normally distributed. SPSS output can be found in Appendix x.

There was a significant difference between attachment knowledge in pre and post-intervention conditions [t=-11.982, *df*= 94; p<0.01] (bootstrap t=-11.982; 95% CI of -3.200 to -2.348), and pre and follow-up conditions [t=-9.768, *df*= 90; p<0.001] (bootstrap t=-9.768; 95% CI of -3.187 to -2.121). The effect sizes for these analyses (d=1.40 and 1.17) are large. Although there was a decrease in attachment knowledge score at three weeks follow-up when compared to scores taken directly after the intervention, this was not statistically significant [t=1.050, *df*= 90; p>0.05] (bootstrap t=1.050; 95% CI of -0.165 to 0.560). Despite a significant increase in scores following the intervention it is not possible to ascertain whether this would relate to a change in parenting behaviour if delivered to a sample of young parents.

These findings support Hypothesis 1, that the attachment teaching DVD improves attachment knowledge and that this knowledge can be maintained at follow-up.

Hypothesis 2: Emotional intelligence will be positively related to baseline knowledge of attachment and/or increase in knowledge.

A Pearson's correlation was conducted in order to assess whether scores on the TEIQue-ASF were related to baseline knowledge of attachment and/or increase in knowledge of attachment following the intervention. The mean TEIQue-ASF score was 4.82 (SD = 0.8).

There was no significant correlation between TEIQue-ASF mean scores and attachment knowledge at pre-intervention ($r = .099$, $N=95$; $p>0.05$) (95% bootstrap CI -.146 to .319). There was no significant correlation between TEIQue-ASF mean scores and change in attachment score between pre and post-intervention ($r = -.125$, $N=95$; $p>0.05$) (95% bootstrap CI -.310 to .086).

These findings do not support the hypothesis that emotional intelligence as measured by the TEIQue-ASF is related to attachment knowledge or change in attachment knowledge following the intervention.

2.5.3 Additional analysis.

A regression analysis was conducted in order to investigate whether any of the demographic variables were related to pre-existing knowledge of attachment, or change in attachment knowledge. Ethnicity could not be used in this analysis as there was little variation in ethnicity in the sample. Demographic information relating to whether participants had a younger sibling was included in the analysis, as was gender. Information relating to caregivers

had to be collapsed into two groups, those who lived with two parents (including a biological parent and step-parent) and those who lived with one parent.

Diagnostics were conducted to assess the normality of the regression model for pre-intervention attachment knowledge and change in knowledge. Normality of the regression residuals, the linearity of the regression, and of influential observations were assessed using histograms, Q-Q plots and Cooks distance statistic (see Appendix xii). The histograms of the regression residuals did not show marked deviation from normality as indicated by the close approximation of the kernel density function (serrated line) to the normal distribution (continuous line). The Q-Q plot compares the distribution of the residuals to the expected residuals of an "ideal" normal distribution. It was only at the extremes of the distribution where there was any deviation from the expected normal value. The Cook's distance plot provides a visual representation of the extent to which individual observations influence the regression coefficients. The Cook's distance statistic is a measure of impact of omitting an observation upon the regression models parameters (Cook, 1977). Values greater than one are considered to be problematic (Cook & Weisberg,1982). None of the Cool's D values exceeded this threshold value.

When considering adolescents' pre-existing knowledge of attachment, the R^2 for the entire regression model was .085, meaning that combined, the three predictor variables predicted 8.5% of the variance overall. Neither the sibling variable ($\beta = .514$, SD = .527, $p>0.05$) nor the caregiver variable ($\beta = .305$, SD = .861, $p>0.05$) related to pre-intervention attachment knowledge. However, gender was found to be a significant predictor of pre-intervention knowledge of attachment ($\beta = 1.41$, SD = .504, $p=.006$). Female participants had a significantly higher pre-existing knowledge of attachment (M = 10.28, SD = 2.29) than their male counterparts (M = 8.98, SD = 2.48). Female participants' knowledge of attachment

remained higher than male participants' after the intervention. These findings were confirmed by independent samples t-tests with bootstrapping (Appendix xi) for pre-existing attachment knowledge [t=-2.61, *df*= 89; p =.01] (bootstrap t=-2.61; 95% CI of -2.309 to -.360), and post-intervention attachment knowledge [t=-2.74, *df*= 89; p =.007] (bootstrap t=-2.74; 95% CI of -1.299 to -.212).

Table 2.6

Regression including demographic variables and change scores

	Change in attachment knowledge
Gender	ß = -.698 p = .146
Younger sibling	ß = -.139 p = .781
Care-givers	ß = -.615 p = .451

When considering the change in attachment knowledge from pre- to post-intervention, the R^2 for the entire regression model was .026, meaning that combined, the three predictor variables predicted 2.6% of the variance overall. Neither the sibling variable (β = -.139, SD = .497, p>0.05), the caregiver variable (β =-.615, SD = .812, p>0.05) nor gender (β=-.698, SD = .476, p>0.05) were related to change in attachment knowledge.

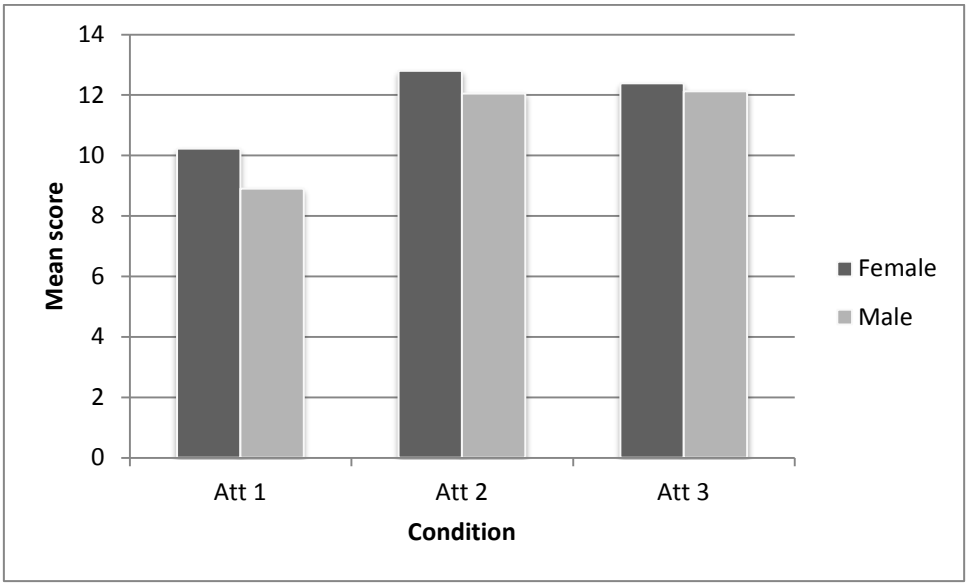


Figure 2.2 Mean attachment scores for male and female participants

It is possible that the reason that gender was found not to relate to change scores is that female participants had a greater pre-existing knowledge of attachment and that due to their high scores at pre-intervention, a ceiling effect occurred.

2.6 Discussion

This study aims to explore whether a DVD teaching tool can improve adolescents' understanding of attachment and parenting, and whether this can be maintained, as well as whether this knowledge (pre and post-intervention) is related to emotional intelligence or demographic factors.

The results demonstrated that knowledge of attachment increases after adolescents attend a DVD teaching session, with a non-significant decrease in knowledge at three week follow-up, suggesting that adolescents who attended the teaching session were able to retain most of the knowledge they gained.

Although the current study was conducted using young people who are not yet parents, these results are consistent with other research on parenting interventions for young people, which suggest that parenting knowledge can be improved in adolescents and maintained at follow-up (Barlow et al., 2011). There are no research reports relating to interventions focused on increasing knowledge of attachment in parent or non-parent adolescent samples with which to compare the current findings. It is acknowledged that the mean baseline score of 9.71 could be considered high in the context of the highest achievable score being 14. It is possible that this represents a good level of existing knowledge of attachment in adolescents in general, however, it is also possible, given the sample used that the scores achieved may be higher than we would expect in a more representative sample of adolescents. It can therefore not be ascertained whether the current sample has a typical level of pre-existing knowledge. In previous research this DVD teaching tool has been used with young people with intellectual disabilities (Pearson, 2013) and adults with Asperger's Syndrome (Brandaro, 2015) and findings suggest that the DVD teaching tool significantly increases attachment knowledge for both populations; however, in participants with intellectual disabilities, this was not maintained at follow-up (Pearson, 2013). The results achieved here with typically developing adolescents support the usefulness of this teaching tool as an intervention to increase knowledge of attachment. The current results indicate that emotional intelligence, as measured by the TEIQue-ASF (Petrides et al., 2006), is not related to adolescents' knowledge of attachment prior to the intervention, or to change in knowledge after the intervention. This does not support the hypothesis that emotional intelligence is related to existing knowledge of attachment and parenting, and ability to learn new information about this topic. Since the current research commenced, other researchers have failed to identify a relationship between attachment knowledge and emotional intelligence

(Brandaro, 2015). There is no known existing research on the relationship between emotional intelligence and understanding of attachment, however the concept of emotional intelligence has been found to be related to attachment security (Hamarta et al., 2009). It is noted that the concept of emotional intelligence has sparked ongoing debate within the literature and has evaded a universally accepted definition (Mayer, Salovey & Caruso, 2008), with some theorists suggesting that it is not a sound concept (Locke, 2005). In addition, there is disagreement about how emotional intelligence should be measured, resulting from differing conceptualisations, one suggesting that emotional intelligence is an ability, in keeping with the established conceptualisation of IQ, the other suggesting that emotional intelligence is a trait, which could be likened to other personality traits such as optimism or extroversion (Locke, 2005). This has implications for how it should be effectively measured, either, in the first instance through a test of ability such as the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) (Mayer, Salovey & Caruso, 2002, cited by Mayer, Salovey & Caruso, 2008), or, in the second instance using a measure relating to self-reported traits and tendencies (Petrides & Furnham, 2001). In the present study the second method of assessment was used and it is possible that had emotional intelligence been conceptualised as an ability and measured as such, a significant association between emotional intelligence and attachment knowledge may have been identified. Moreover, in hindsight, including other concepts such as mind-mindedness in the current study may have been beneficial.

Finally, in relation to demographic factors (gender, whether participants had a younger sibling, and caregivers they lived with), the results showed that only gender was related to pre-existing attachment knowledge; female adolescents demonstrating more existing knowledge of attachment prior to, and following the intervention. This result is perhaps intuitive, given stereotypical societal gender roles. Indeed, research suggests that children are

aware of gender stereotypes regarding toys and play (Freeman, 2007) and have strong preferences for gender-typical toys (Cherney & London, 2006). It could be hypothesised that, female children who are more likely to engage in (parenting) play with dolls, may find questions relating to parenting are easier to answer than their male counterparts.

None of the demographic factors subjected to statistical analyses were related to change in attachment knowledge scores, suggesting that these factors do not relate to the utility of the tool. That is, female as well as male adolescents from different family backgrounds can benefit from this teaching method.

2.6.1 Limitations.

The sample used in the current study was of a reasonable size, but it is acknowledged that the diversity of the sample is limited. The participants were recruited from a small rural secondary school in an area predominantly characterised by white and relatively affluent families. The sample does not represent most teenage parents, who have generally been found to come from socially and economically disadvantaged populations (e.g. Penman-Aguilar, Carter, Snead, & Kourtis, 2013).

Although a follow-up period was included in the study design to attempt to clarify whether any intervention effects were maintained, the three week period may not have been sufficient to assess whether knowledge is maintained long term. It is, however, promising that no significant decrease in knowledge was observed over this follow-up period. However, it is unclear from the current findings whether the observed increase in knowledge of attachment would translate into the relevant parenting behaviours of these young people were they to become parents. The use of the intervention with a sample of adolescent parents could assess

whether the intervention improves attachment knowledge in this sample and whether this translates into changes in parenting behaviour.

Other methodologies such as a mixed-methods design, exploring qualitative feedback on the intervention may have provided useful information on the experiences of the participants in receiving the intervention and could inform further developments of the procedure.Due to practical restrictions in recruiting this number of participants and collecting data within their school day, no control group was used, meaning that possible practice effects of completing the attachment measure may have been overlooked. The measure used was developed for a previous research project at the University of Birmingham (Pearson, 2013), and has been used in two previous samples (Brandaro, 2015; Pearson, 2013), achieving good inter-rater reliability. However, test re-test reliability has yet to be established for this measure.

Although all possible efforts were made to ensure that participants were presented with the teaching materials in a quiet environment with no distractions, the conditions were not typical of standard classroom teaching conditions due to the large size of group (45-50). With hindsight, conducting the research in smaller groups may have increased the effectiveness of the intervention, and may have better represented the type of environment in which this teaching tool might be used.

2.6.2 Research and clinical implications.

Within the existing literature on providing support for young parents, most parenting support available to young parents appears to have been delivered in the postnatal period (Barlow et al., 2011) and to date there has been no research attempting to measure and increase knowledge of attachment and parenting in adolescents who are not yet parents.

Outcomes of parenting programmes for young parents have yielded mixed results (Barlow et al., 2011), perhaps because of the many competing demands placed on young first time mothers and fathers, which are likely to limit their capacity to learn and take in new knowledge. The individual and economic need to support young mothers in order to prevent a range of negative outcomes has been well documented in various UK policies (Department for Education and Skills, 2006; Teenage Pregnancy Advisory Group, 2010). The introduction of the Family Nurse Partnership (FNP, 2015) attempts to address these issues by offering support to young mothers early in pregnancy. Early intervention is important in order to support young parents before the birth of their infants so as to give them the best chance of consolidating this information before the practical demands of being a parent take priority.

Research has demonstrated a need to provide adolescent mothers with support with parenting in order to improve maternal sensitivity and responsiveness (Demers et al., 2010; Lemelin, Tarabulsy & Provost, 2006). The set of questions relating to attachment knowledge might provide a useful means of assessing young people's knowledge of attachment prior to the birth of their child, and thus identifying those who require additional support in this area.

The current curriculum of Sex and Relationship Education focuses predominantly on physical and biological aspects such as puberty, conception and menstruation, and although relationships form part of the curriculum, the focus is on marriage or romantic relationships rather than the relationship with the child that might be conceived (Department of Education and Employment, 2000; Long, 2016). It is therefore clinically important to identify whether young people can benefit from the addition of attachment-based teaching within their standard curriculum of Sex and Relationship Education. Such teaching may enable pupils who could go on to become young parents to internalise some of the key information about forming healthy relationships with their infants. The current research findings suggest that the

assessment and teaching tools can increase knowledge and understanding of attachment, which is a first step in using this intervention to support young parents. However, in order to identify whether this can be of clinical benefit for young parents, further research exploring the impact of an increase in attachment knowledge on parenting behaviour is needed. Young people with poor knowledge of attachment may particularly benefit from this teaching and could be identified by means of the pre-intervention Attachment Questionnaire (Pearson, 2013) used here. the DVD could also be used as part of standard secondary teaching on relationships, which is an area currently neglected within the standard curriculum, and which could contribute to a more holistic knowledge base in this area.

2.6.3 Further research.

Although this research has provided evidence for the potential usefulness of a DVD teaching tool in increasing adolescents' knowledge of attachment, the sample used is not representative of all adolescents. Therefore, research is needed using samples from more diverse backgrounds in terms of ethnicity, culture and socio-economic status in order to clarify whether these results can be generalised to other samples.

Despite the sample in the current study being of a reasonable size, additional research with a control group would help to rule out whether practice effects may have distorted the results.

Previous research using this DVD teaching tool with other samples has applied it on a one-to-one basis (Brandaro, 2015; Pearson, 2013). Whilst the results of this study suggest that this is not necessary for typically developing adolescents, it may be more representative of standard teaching to carry out this teaching session with a group of not more than 30

adolescents to enable a more interactive session and encourage group discussion which may be beneficial to learning.

Further research using a longer follow-up period would also be beneficial to establish whether or not effects of the teaching session can be maintained over a significant period of time, or whether additional sessions are needed to help participants consolidate information and retain it. Although the intervention was found to increase attachment knowledge in a sample of adolescents, it is not clear whether this would relate to a positive change in parenting behaviour. In order to fully evaluate the clinical usefulness of this intervention, further research involving young parents-to-be and measuring outcomes in terms of their parenting style and relationship with their infants is required.

2.7 Conclusions

The current study aimed to investigate whether a DVD teaching tool can be effective in increasing the knowledge of attachment in adolescents, and further, to identify whether this knowledge can be maintained. It also sought to identify whether emotional intelligence is related to pre-existing knowledge or change in knowledge of attachment.

Results suggest that the DVD teaching tool is successful in increasing adolescents' knowledge of attachment and that this knowledge was largely maintained at follow-up. The group DVD teaching method appears to be a potentially useful tool for increasing young people's understanding of attachment either as part of a standard curriculum to support the existing Sex and Relationship Education teaching or to support young people who are due to become parents in increasing their knowledge about relational aspects of parenting.

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3. PUBLIC DISSEMINATION DOCUMENT

Do Adolescent Mother-Infant Dyads Differ from Adult Mother-Infant Dyads in the way they Interact?

AND

Adolescents' Emotional Intelligence and Understanding of Attachment

3.1 Attachment

The relationship between babies and their caregivers is recognised as having an important role in how a child develops and functions as an adult, in many aspects of their life (Dozier, Stovall-McClough & Albus, 2008; Feeney, 2008; Jaffee, Caspi, Moffitt, Belsky, & Silva, 2001; Simpson, 1990). A baby naturally seeks to develop an attachment with its caregiver in order to ensure its survival (Bolwby, 1988). The development of this attachment relationship is founded on the responses of the mother, or other caregiver; when a mother is appropriate and consistent in their responses most of the time, the baby learns that he/she can rely on the mother to meet their needs, resulting in a secure and healthy attachment (Ainsworth, Blehar, Waters & Wall, 1978; Bowlby, 1988; Dallos, 2006).

When a mother is not able to respond in this way, a less healthy attachment develops (Bowlby, 1988; Dallos, 2006; Main, 2000), which, research suggests, continues into adulthood with other relationships (Simpson, 1990). A mothers' ability to interact successfully with her baby has been linked to various factors, such as 'mind-mindedness', the ability to consider their baby's own perspective (Meins, 1997, p. 108), and emotional intelligence, "the capacity to process emotional information accurately and efficiently,

including that information relevant to the recognition, construction, and regulation of emotion in oneself and others" (Salovey & Mayer, 1990, as cited in Mayer & Salovey, 1995, p. 197).

3.2 Adolescent Parenting

Research has shown that the babies of adolescent mothers are at a higher risk of various negative outcomes than babies of adult mothers, such as unemployment, less education and offending behaviour (Jaffee et al., 2001). Early research identified differences between the way in which adolescent and adult mothers interact with their babies, suggesting that adolescent mothers may be less responsive and positive in their interactions (Culp, Culp, Osofsky., & Osofsky, 1991; Fry, 1985; Garcia, Hoffman, Van Houten & Oh, 1987; Teberg, Howell, & Wingert, 1983).

3.3 Literature Review

The literature review attempted to collate and explore the research on the interactions of adolescent and adult mothers and their babies, to identify whether there are any differences. It aimed to answer the following questions: 1. Are there observable differences between the interaction of adolescent mothers in comparison to adult mothers and their babies? 2. If so, what types of differences have been identified? As sub-questions, the review also aimed to identify 2a. Which of these are identified in the mothers' behaviour during interaction? And 2b. Which are identified in the babies' behaviour during interaction?

Thirteen papers where identified through a systematic search of the literature and were evaluated using a framework to assess quality (Kmet, Lee & Cook, 2004). The results suggest that there are some differences between the interactions of adolescent mother-baby pairs and adult mother-baby pairs, especially in the behaviour of the mother. Adolescent mothers were found to be less sensitive, vocal, positive and more negative in their interactions than adult

mothers (Bornstein, Putnick & Suwalsky, 2012; Chico, Gonzalez, Ali, Steiner & Fleming, 2014; Crugnola, Ierardi, Gazzotti & Albizzati, 2014; Demers, Bernier, Tarabulsy & Provost, 2010; Hitchcock, Ammen, O'Connor & Backman, 2008; Lemelin, Tarabulsy & Provost, 2006; Tarabulsy et al., 2003; Rafferty, Griffin & Lodise, 2011). Fewer differences were identified in the behaviour of babies, but some papers suggested that the babies of adolescent mothers are less engaged and that there are differences in the expression of emotion (Bornstein et al., 2012; Crugnola et al., 2014; Hitchcock et al., 2008; Tarabulsy et al., 2003). Despite these results, a number of weaknesses in the existing research were identified, namely differences in the samples of adult and adolescent mothers, (such as level of education and income), which were not accounted for in much of the research. This limits the usefulness of the findings as it is not clear whether the differences found are due to age or these other factors.

3.4 Empirical Paper

3.4.1 Background.

While research on parenting support groups for adolescents who are parents exists, there is no known research on adolescents' understanding of attachment. A DVD teaching tool (Siren Films, 2009) about attachment was developed for use in a previous study and has been used with adults with learning disabilities (Pearson, 2013) and with a diagnosis of Asperger's Syndrome (Brandaro, 2015). The study aimed to identify whether this DVD teaching tool could increase attachment knowledge in adolescents who were not parents and whether this could be maintained. The study also aimed to identify whether trait emotional intelligence or demographic factors were related to knowledge of attachment.

3.4.2 Method.

Ninety-five adolescents were recruited from a secondary school in a rural county. Participants took part in three conditions, pre-intervention, post-intervention and follow-up. The intervention involved watching the DVD teaching tool. Emotional intelligence (measured using the TEIQue-ASF, Petrides et al., 2006) and attachment knowledge (measured using a seven item questionnaire developed by Pearson, 2013) was assessed prior to the intervention and a brief demographics questionnaire was used. The Attachment Questionnaire was given again after the intervention and three weeks later at follow-up.

3.4.3 Results.

There was a significant increase in knowledge of attachment after the intervention and no significant decrease at follow-up suggesting that knowledge was maintained. Emotional intelligence was not found to be related to attachment knowledge or change in knowledge. Demographic factors were not found to be related to attachment knowledge, with the exception of gender, which was related to attachment knowledge in the pre-intervention condition, with female adolescents showing a greater knowledge of attachment.

3.4.4 Conclusions and clinical implications.

The results suggest that the DVD teaching tool can increase knowledge of attachment in adolescent populations and that this can be maintained. Trait emotional intelligence, as measured by the TEIQue-ASF (Petrides et al., 2006) was not related to attachment knowledge. The DVD teaching tool could be used to support adolescent parents or adolescents within their school curriculum. In addition, the Attachment Questionnaire (Pearson, 2013) could help to identify young parents to-be who may require additional

support. Further research would be needed to identify whether an increase of knowledge on the attachment measure would relate to change in parenting behaviour.

3.5 References

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Appendices (Volume 1)

i. Letter from ethics committee providing permission to proceed with research



ii.

Information sheet for schools (adapted from Pearson, 2013)

My name is Sabrina Nowinski and I'm a Trainee Clinical Psychologist at the University of Birmingham. I am currently doing research for my doctoral research thesis to find out what adolescents understand about the attachment behaviours between parents and babies, and whether a DVD teaching tool will increase this understanding. I am also interested in whether emotional intelligence/ understanding is related to this knowledge. The project is being supervised by Dr Biza Kroese at the University of Birmingham.

What will the study involve?

Adolescents will be asked to fill in two questionnaires, one about parent-infant relationships, and the other about their understanding of emotions. They will then be shown a DVD of parents interacting with their babies, to help us understand how we can teach adolescents about looking after young babies. After this they will be asked to fill in the questions about parent-infant relationships again. Finally, approximately 3 weeks later, they will be asked to fill in this measure for a final time.

If you choose to take part, what will happen?

I would be very grateful if you could identify potential classes which this topic may be relevant to (e.g. PSHE) and ask the teacher if they are able to spare the time to take part. This would take 1 lesson initially and approximately 20 minutes of a lesson 3 weeks following the initial session. I will then provide information sheets and consent forms for parents which would need to be given out at least a week prior to the first session.

Who would be suitable to take part in the research?

Males and females, aged between 13 and 15 years, from all different types of backgrounds will be suitable to take part.

Who would be unsuitable to take part?

Those who have a developmental disorder (e.g. Autism, ADHD etc) or learning disability, or a severe enduring mental health problem (e.g. psychosis) may not be able to take part in the research. Those with would be unable to understand the English language in the video voice-over or answer written questions in writing would also be unable to take part.

Will I need to access student files?

No, I will not have to access any files.

How will I obtain informed consent?

Parents of those who are eligible to take part will be given information and consent forms, and participants will also be given an information sheet. In the first session, participants will also be given consent forms.

Are there any risks?

We will make sure where possible that this study does not interfere with the participants' education. In the unlikely event that participants' become upset following the research, I will put them in contact with someone they can talk to. In the event of a child making a disclosure of abuse, I would inform the head teacher and would follow normal safe guarding procedure by contacting the named child protection officer.

What if participants change their mind?

Participants will be able to withdraw from the study at any point before the data is analysed (2 months after last collection).

What information will the college receive once the study has been completed?

All participants responses will be kept confidential. However once the research has been completed, a summary of key findings will be made available to the schools that took part.

Thank you

I am grateful for your support and I hope this project will be of benefit to young people.

iii. Information letter for parents/ guardians

Dear Parent/Guardian,

My name is Sabrina Nowinski and I am a Trainee Clinical Psychologist at the University of Birmingham. As part of my doctoral qualification I will be exploring how young people can be taught about parenting and the bond between babies and parents (known as attachment). The project is supervised and has been approved by the ethics committee of The University of Birmingham.

The aim of the research is to find out what young people understand about parent-baby relationships, what can be learned and remembered, and whether this is related to young people's understanding of emotion. The research will not involve asking participants questions about their relationship with their own parents but will ask them about what they have seen on a DVD (which is about positive interactions between parents and young babies).

The research will involve two meetings which will take place in your son/daughter's lessons at _____ School on the 12th February and 5th March 2015. The first session will last for one lesson, but the second meeting will take only 20 minutes of the lesson. Your child's teacher will be present at all times in the classroom. Every effort will be made to ensure this does not interfere with your son's/daughter's education, and it will take place in a PSHE lesson, where it is relevant to the curriculum. In the very unlikely event that students become upset when watching the DVD, the contact details of professional organisations who specialise in listening to people's difficulties will be given. The content of the DVD is all about parents and young babies, showing only positive and caring scenes so we think there is little risk of it upsetting your son/daughter.

Thank you for taking the time to read this letter. I am grateful for your support. After discussing this with your child, if you would prefer your child **not** to take part please return the slip below. If you do not return the slip stating that you do not want your child to take part by (11.02.15) then your child WILL take part in the study unless they decline in the session. If you would prefer them **not to take part**, please confirm whether you would prefer for them to still watch the video with their classmates, or to

join another class/ be supervised to work elsewhere during this time. If your child wishes to withdraw from the study at a later date, this can be done by contacting _____at the University of Birmingham on _____ or by email _____within 2 months (12.04.15) of the commencement of the study.

Yours sincerely,

Sabrina Nowinski

Chief Investigator

Please complete and return the slip below if you **do not** want your son/daughter to take part in the research

- -

I Parent/Guardian of _____**do not** give consent for my son/daughter to take part in this research which aims to explore young people's understanding of parent-baby relationships.

I Parent/Guardian of_____ prefer my son/daughter to watch ☐ not watch ☐ the video.

Signature_____

Date_____

iv. Information sheet for participants

My study on parent-baby relationships

Hi, my name is Sabrina and I am training to be a Psychologist at the University of Birmingham. As part of this training I will be writing a report about a study for my University course.

What is my study about?

I want to find out about young people's understanding of the bonding (or attachment) between parents and babies, and how we can teach people about this.

If I chose to take part, what will happen?

I will introduce myself to you at your school in one of your lessons, explain things in more detail, and answer any questions.

What will I be asked to do?

If you choose to take part, during your PSHE lesson, I will ask you to fill in a questionnaire about your understanding of emotions, and some questions about the attachment behaviours between parents and babies. I will then ask you to watch a short 10 minute video about this, and will pause a few times to talk about the video. After you've watched it I will ask you to fill out the questionnaire on attachment again. Then three weeks later I will come to your lesson and ask you to fill in the questionnaire for the last time.

Are there any risks?

We will make sure that my study does not interfere with your education. If, after you have taken part, you feel you would like to talk to someone, let me know and I will give you details of organisation and numbers you can call. If, after this, you feel that you would like to talk to someone about the study, you can contact _____, Senior Lecturer and Consultant Clinical Psychologist (her details at the bottom of this sheet).

Where will we meet?

We will always meet at your school during a lesson with your subject teacher.

Who will find out what I say?

All your responses will be private, only I will know what you say. The questions and questionnaire will be scored and then all the responses will be analysed, but by then your name will not be attached- so I will not be able to tell what your score was. When I have finished my research a copy of this study will be kept in the University of Birmingham library and it may be published, but your name will never be on either of these copies.

What if I change my mind?

If you change your mind and decide you do not want to take part, just let us know. It is okay if you say you do not want to come to the second session and in this case we will not use any of your answers in the study. You will be able to pull out up until I start writing my report in 2 months time (12.04.15) and can do this by either you or your parent/guardian emailing _____ (see contact details below). If you decide you do not want to take part in the study, you can still watch the DVD.

Who shall I contact if I have any questions or would like to speak to someone after I have taken part in the study?

If you feel distressed after taking part in this study here are some numbers you can call:

Child line on 0800 1111

The Samaritans on 08457 909090 or 01952 256161, or 01743 369696. If you have any questions about the study or want to withdraw, you can contact _____ at the University of Birmingham on _____ or by email _____

v. Consent form for participants

Parent-baby relationships

Meeting with Sabrina and watching the DVD

- The DVD has been explained to me and I would like to watch it. ☐
- I know I can stop watching the DVD whenever I want to ☐

Taking part in the study

- I have had the research explained to me and **I want** to take part ☐
- I have had the research explained to me and **I do not want** to take part ☐
- If I decide to take part I know I can change my mind ☐
- If I change my mind during the research, I know I can still watch the DVD. ☐
- Everything I say will be kept private, unless I tell Sabrina that I am in danger or someone I know is in danger ☐

Name_____

Signature_____

vi. Demographics questionnaire

Age:

Gender: male ☐ female ☐

Ethnicity (please tick opposite):

White British	
White other	
Asian	
Asian British	
Black/ African/ Caribbean	
Black British	
Chinese	
Other ethnic group (please write)	

Number of siblings (brothers and sisters): 0 1 2 3 4 5 6 6+

Age(s) of siblings (brothers and sisters):

Who have you lived with most of the time (for most of your childhood)?

Both parents	
One parent	
One parent and a step parent	
Step parent (s)	
Another family member	
Another carer	
I'd prefer not to say	

vii. TEIQue-ASF

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TEIQUE-ASF

Instructions: Please answer by putting a circle around the number that best shows how much you agree or disagree with each sentence below. If you strongly disagree with a sentence, circle a number close to 1. If you strongly agree with a sentence, circle a number close to 7. If you're not too sure if you agree or disagree, circle a number close to 4. Work quickly, but carefully. There are no right or wrong answers.

	Disagree						Agree
1. It's easy for me to talk about my feelings to other	1	2	3	4	5	6	7
2. I often find it hard to see things from someone else's	1	2	3	4	5	6	7
3. I'm a very motivated person.	1	2	3	4	5	6	7
4. I find it hard to control my feelings.	1	2	3	4	5	6	7
5. My life is not enjoyable.	1	2	3	4	5	6	7
6. I'm good at getting along with my classmates.	1	2	3	4	5	6	7
7. I change my mind often.	1	2	3	4	5	6	7
8. I find it hard to know exactly what emotion I'm	1	2	3	4	5	6	7
9. I'm comfortable with the way I look.	1	2	3	4	5	6	7
10. I find it hard to stand up for my rights.	1	2	3	4	5	6	7
11. I can make other people feel better when I want to.	1	2	3	4	5	6	7
12. Sometimes, I think my whole life is going to be	1	2	3	4	5	6	7
13. Sometimes, others complain that I treat them	1	2	3	4	5	6	7
14. I find it hard to cope when things change in my life.	1	2	3	4	5	6	7
15. I'm able to deal with stress.	1	2	3	4	5	6	7
16. I don't know how to show the people close to me	1	2	3	4	5	6	7
17. I'm able to "get into someone's shoes" and feel	1	2	3	4	5	6	7
18. I find it hard to keep myself motivated.	1	2	3	4	5	6	7
19. I can control my anger when I want to.	1	2	3	4	5	6	7
20. I'm happy with my life.	1	2	3	4	5	6	7
21. I would describe myself as a good negotiator.	1	2	3	4	5	6	7
22. Sometimes, I get involved in things I later wish I	1	2	3	4	5	6	7
23. I pay a lot of attention to my feelings.	1	2	3	4	5	6	7
24. I feel good about myself.	1	2	3	4	5	6	7
25. I tend to "back down" even if I know I'm right.	1	2	3	4	5	6	7
26. I'm unable to change the way other people feel.	1	2	3	4	5	6	7

27. I believe that things will work out fine in my life.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
28. Sometimes, I wish I had a better relationship with	**1**	**2**	**3**	**4**	**5**	**6**	**7**
29. I'm able cope well in new environments.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
30. I try to control my thoughts and not worry too	**1**	**2**	**3**	**4**	**5**	**6**	**7**

Scoring key: Reverse-score the following items and then sum up all responses

I don't know how to show the people close to me that I care about them. (R) 16

I often find it hard to see things from someone else's point of view. (R) 2

I find it hard to keep myself motivated. (R) 18

I find it hard to control my feelings. (R) 4

My life is not enjoyable. (R) 5

I change my mind often. (R) 7

Sometimes, I get involved in things I later wish I could get out of. (R) 22

I find it hard to know exactly what emotion I'm feeling. (R) 8

I find it hard to stand up for my rights. (R) 10

I tend to "back down" even if I know I'm right. (R) 25

I'm unable to change the way other people feel. (R) 26

Sometimes, I think my whole life is going to be miserable. (R) 12

Sometimes, others complain that I treat them badly. (R) 13

Sometimes, I wish I had a better relationship with my parents. (R) 28

I find it hard to cope when things change in my life. (R) 14

*Numbers on the right correspond to the position of the items in the questionnaire.

Trait Emotional Intelligence Questionnaire – Adolescent Short Form (TEIQue-ASF). The TEIQue-ASF is a simplified version, in terms of wording and syntactic complexity, of the adult short form of the TEIQue. The ASF comprises 30 short statements, two for each of the 15 trait EI facets, designed to measure *global* trait EI. It is also possible to derive factor scores from the TEIQue-ASF, but these tend to be somewhat less reliable. For details on

how to derive factor scores, go to www.psychometriclab.com The internal consistency of the global score usually exceeds .80. The form has been used successfully with children as young as 11 years old.

Reference for the TEIQue-ASF: Petrides, K. V., Sangareau, Y., Furnham, A., & Frederickson, N. (2006). Trait emotional intelligence and children's peer relations at school. *Social Development, 15, 537-547.*

Please note that any commercial use of this instrument is strictly prohibited.

For more information about the trait emotional intelligence research program go to:

http://www.psychometriclab.com

viii. Attachment Questionnaire (Pearson, 2013)

Question	Response	Score
1. What do we mean when we say a parent and their baby have a good attachment?		
2. What are the good things about a parent and their baby having a good and strong attachment?		
3. What problems do you get if the parent and child don't have a good attachment?		
4. Why is it important that a parent goes to the baby as quickly as possible when the baby cries?		
5. Babies do lots of things to keep their parents close, can you tell me what some of these things are?		
6. What does a parent do to show the baby they are listening to them?		
7. What does a child learn to do if their parent responds quickly and sensitively when they are upset?		

ix. Scoring guidelines for attachment measure (Pearson, 2013)

1. What do we mean when we say a parent and their baby have a good attachment (assesses participants conceptual understanding of attachment)

2 points

- Acknowledges **<u>both sides</u>** of the attachment relationship (e.g. when they both love each other. When the baby knows the mum cares and baby is looked after by parent
- Acknowledges the feeling of safety which a secure attachment can provide
- "they have a strong/ special/ good bond together"
- "they have a healthy relationship"
- Responses must acknowledge reciprocal nature of relationship

1 point

- Understands that attachment is based on the parent being responsive to the baby (e.g. when the baby cries or looks uncomfortable) as well as being able to work out what the baby needs (e.g. burping the baby)
- Acknowledges only one side of the attachment relationship e.g. the baby loves the mum more/ gets on with their parents
- Describes a feature of the attachment relationship e.g. the role of a primary care giver, baby and parent recognise/ know each other, look at faces/ eye contact, baby smiles at their parents, parent and baby get on/ play with each other/ sit or eat together.

0 point

- Response is unrelated to the question or show a limited understanding of attachment (e.g. cant think/ no response, parent and child have the same genetic make-up/ physical characteristics, mum gives birth to baby, mum knows how to treat it better than dad)
- Focuses on the benefit and consequences of attachment/ positive and negative behaviours that can result from the attachment relationship e.g. baby gets used to being picked up by adults

2. What are the good things about a parent and their baby having a good and strong attachment (assess participants understanding of the benefits of a secure attachment)

2 points:

- Describes one or more of the good things about attachment as mentioned in the dvd (e.g. when they are older babies with a good attachment can feel good about themselves, do well at school and be good at making friends)
- Describes one of the benefits of a secure attachment and gives an accurate explanation as to why the child has developed a secure attachment with its parent (e.g. the person/ child is

good at making friends because they got on well with their parent as a baby or their relationship with the parent as a baby helps them to make friends as an adult)
- Baby knows there is someone to support them and their parents will make them happy
- Baby can talk to and trust the parent
- The baby can trust and know someone is there for them
- The child will tell the parent things when they are older and will trust them

1 point:

- Focuses on how the parent might try to meet the physical needs of the infant (e.g. feeds)
- Describes the parent as being responsive and/ or sensitive to the baby (e.g. parent goes tp the baby when something is wrong/ tries to understand what the baby is communicating/ picks the baby up/ comforts the baby/ feeds the baby if he/she is hungry), plays with the baby
- Describes one characteristic and/or benefit of a secure attachment relationship (e.g. interaction between parent and baby, parent and baby enjoy each other's company, parent looks after/ takes care of the baby, keeps the baby safe, baby and parent get on more, baby will be happy, baby will know where to go to get help, parent praises baby (delights in the baby)
- The baby and mum is happy
- They have a strong bond
- baby feels comfortable and trusts the parent
- baby learns it is safe and that it can cope on its own for a while
- they get on and understand each other
- baby will be happy
- it will have a better/ good upbringing

0 points:

- Show no understanding of the question (e.g. no response, I don't know, I can't think. Response focuses on the consequences of an insecure attachment (e.g. they cry too much)
- Shows a limited understanding of a secure attachment e.g. baby and parent do not fall out, describes the parents ability to manage separation from their infant, parent gets a pushchair for the baby, pays the bills)
- Describes baby's help seeking behaviour to signal that something is wrong (cries when nappy needs changing)
- Confusing bonding with attachment (e.g. bonding with the baby is good and has to keep bond when grown up otherwise they will be naughty)
- they will always love each other in later life (not a realistic representation of attachment)
- they will not fall out

3. **What problems do you get if the parent and child don't have a good attachment (assesses participants' understanding of the problems that can emerge from an insecure attachment)**

2 points

- They won't talk to each other/ won't get along
- Babies find it hard to trust their parent and other people
- Conflict (arguments between parent and baby)
- baby will feel alone and won't have confidence in later life
- it will be hard to make friends
- the child will have confidence issues and lack motivation

1 point

- Response considers some of the wider issues (e.g. the psychological impact of having a new born on the marital relationship, social services involvement due to disputes within the family, child might run away) rather than the relationship itself
- Bad/criminal behaviour (e.g. shout, swear at mum, threaten mum or others, racist)
- Baby will be frightened and nervous – stay away from parent
- Focuses on parents behaviour in response to child's undesired behaviour and the consequences this may have for the child e.g. parents may leave the child alone if he/she becomes rowdy and child may foe hungry, be fostered, or die of hunger
- Acknowledges some of the ways that a bad attachment can affect parents e.g. lack of sleep, mother would be annoyed/ upset or get stressed. Fighting, splitting up
- Response focuses on safety issues rather than the attachment relationship e.g. limited parental supervision, lack of parental capacity to keep child safe
- Parent won't look after it as well as they need to, parent may ignore the baby when they are crying, the baby could be in danger of having no food
- Misses out on love

0 point:

- Response is unrelated to the question or lacks understanding e.g. medication, "the baby will go to sleep, they cry and the dad takes over", or the participant identifies the benefits of a secure attachment rather than the problems associated with a 'bad' attachment
- No response
- Baby won't respect parent
- The child won't have anyone to talk to
- Response describes the death of the baby

4. **Why is it important that a parent goes to the baby as quickly as possible when the baby cries?**

2 points

- Something could be wrong with the baby/ to assess the problem/. attend to a potential emergency e.g. may be frightened, poorly, hungry, nappy might need changing, burping, teething, hurt, to prevent suffocation, baby may need to see a doctor
- Baby is able to trust parent e.g. so they know the parent is there for them all the time
- To keep the baby safe (could access something dangerous e.g. bleach/ something bad could happen to the baby)
- So the baby knows they care/ love them
- They learn they are safe and secure

1 point

- To make it calm
- To make it batter
- Because the baby is crying/ to stop it from crying
- Baby wants mum
- Mum knows what to do/ how to respond
- To comfort the baby

0 points:

- Inadequate responses – "I don't know" – not sure
- To strengthen the bond between them

5. **Babies do a lot of things to keep their parents close, can you tell me what some of these things are? (Assesses understanding of some of the behaviours babies exhibit to get parents attention).**

2 points

- Gives one answer from both categories
    - Recognises the infant's proximity seeking behaviour (towards their parent) e.g. crawling, walking, shuffle, cling to mother/ stay close to parent, eye contact, play with parent, smiling
    - To signal to caregiver that something is not right/ to get attention – e.g. cry, weep, scream etc

1 point

- Gives one of the following answers

- Recognises the infant's proximity seeking behaviour (towards their parent) e.g. crawling, walking, shuffle, cling to mother/ stay close to parent, use eye contact, play with parent, smiling
-
- To signal to caregiver that something is not right/ to get attention – e.g. cry, weep, scream etc
- Baby gets happy when they see their mother/ they cry if they don't see their mother

0 points

- Inadequate response e.g. no, don't know, they like sleeping
- Response if not related to the question or shows very limited understanding e.g. not adequately supervised the child may injure themselves or exhibit a range of behaviours e.g. throws things, kicks parent, child will ask for or demands things

6. What does a parent do to show the baby they are listening?

2 points

- They are looking at them, talk. Try to understand what the baby is saying to them with their faces, facial expression
- Parent may pick baby up
- Make eye contact
- Talks to baby
- Parent talks back to the baby/ sings to the baby/ makes funny sounds/ noises

1 point

- They baby is always with the parent at the time. Baby knows it is safe
- Mum will run to them and pick them up if they cry
- Calls them, shows them a toy
- Comforting them/ care for them/ respect them
- Focuses on parental behaviours which aim to satisfy the baby's physical/ emotional needs e.g. feeds them and treats them well, looks after them if they are ill, comforts the baby

0 points

- Inadequate responses – e.g. they give a dummy to the baby, tell the baby to e quiet, show the baby the teddy bear

7. **What does a child learn to do if their parent takes care of them quickly when they are upset (assesses understanding of emotional regulation)**

2 points

- The baby learns to trust the parent when he/she is responsive to their needs/ baby knows mother is there
- Baby knows his parents are there
- Baby learns his parents care for him
- "to trust the parent"
- Baby learns it is ok to cry and that their parents will come as quickly as they can/ baby learns to go longer/ be patient/ baby waits longer before crying/ they can go longer without needing help because parent will come straight away

1 point

- To stop crying
- Learns to be calm
- Learns to cry and say momma/ cry when upset/ babies learn to cry (some mums let the baby cry because they have had enough)

0 points

- Inadequate responses e.g. no answer, "hand signals", "baby wants attention/ hug/ conversation from a parent", "responds in a positive manner", "hug the parent/ gives parent love" or "there may be a favourite if two babies"
- Response focuses more on negative parenting practices e.g. swearing in front of the baby
- Response is unrelated to the question e.g. learns to hold on tightly, throwing things, makes noises, make a mess to get attention

x. DVD

xi. SPSS output

Paired Samples Statistics

				Bootstrap[a]			
						95% Confidence Interval	
			Statistic	Bias	Std. Error	Lower	Upper
Pair 1	Att 1	Mean	9.71	-.01	.24	9.21	10.17
		N	95				
		Std. Deviation	2.453	-.020	.160	2.116	2.744
		Std. Error Mean	.252				
	Att 2	Mean	12.48	.00	.13	12.24	12.73
		N	95				
		Std. Deviation	1.328	-.014	.111	1.107	1.534
		Std. Error Mean	.136				

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Paired Samples Correlations

					Bootstrap for Correlation[a]			
							95% Confidence Interval	
		N	Correlation	Sig.	Bias	Std. Error	Lower	Upper
Pair 1	Att 1 & Att 2	95	.410	.000	-.003	.084	.236	.563

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
				95% Confidence Interval of the Difference				
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Att 1 - Att 2	-2.779	2.261	.232	-3.239	-2.318	-11.982	94	.000

Bootstrap for Paired Samples Test

			Bootstrap[a]				
						95% Confidence Interval	
		Mean	Bias	Std. Error	Sig. (2-tailed)	Lower	Upper
Pair 1	Att 1 - Att 2	-2.779	-.008	.220	.001	-3.200	-2.348

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Paired Samples Statistics

				Bootstrap[a]			
						95% Confidence Interval	
			Statistic	Bias	Std. Error	Lower	Upper
Pair 1	Att 1	Mean	9.63	-.01	.25	9.10	10.12
		N	91				
		Std. Deviation	2.466	-.017	.168	2.139	2.785
		Std. Error Mean	.259				
	Att 3	Mean	12.26	.00	.19	11.88	12.62
		N	91				
		Std. Deviation	1.873	-.040	.319	1.258	2.474
		Std. Error Mean	.196				

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Paired Samples Correlations

					Bootstrap for Correlation[a]			
							95% Confidence Interval	
		N	Correlation	Sig.	Bias	Std. Error	Lower	Upper
Pair 1	Att 1 & Att 3	91	.320	.002	.008	.079	.180	.502

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
				95% Confidence Interval of the Difference				
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Att 1 - Att 3	-2.637	2.576	.270	-3.174	-2.101	-9.768	90	.000

Bootstrap for Paired Samples Test

			Bootstrap[a]				
						95% Confidence Interval	
		Mean	Bias	Std. Error	Sig. (2-tailed)	Lower	Upper
Pair 1	Att 1 - Att 3	-2.637	-.008	.265	.001	-3.187	-2.121

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Paired Samples Statistics

				Bootstrap[a]			
						95% Confidence Interval	
			Statistic	Bias	Std. Error	Lower	Upper
Pair 1	Att 2	Mean	12.46	-.01	.14	12.19	12.70
		N	91				
		Std. Deviation	1.344	-.009	.116	1.108	1.562
		Std. Error Mean	.141				
	Att 3	Mean	12.26	.00	.19	11.86	12.63
		N	91				
		Std. Deviation	1.873	-.043	.322	1.242	2.460
		Std. Error Mean	.196				

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Paired Samples Correlations

					Bootstrap for Correlation[a]			
							95% Confidence Interval	
		N	Correlation	Sig.	Bias	Std. Error	Lower	Upper
Pair 1	Att 2 & Att 3	91	.415	.000	-.005	.087	.221	.558

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
				95% Confidence Interval of the Difference				
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Att 2 - Att 3	.198	1.796	.188	-.176	.572	1.050	90	.296

Bootstrap for Paired Samples Test

			Bootstrap[a]				
						95% Confidence Interval	
		Mean	Bias	Std. Error	Sig. (2-tailed)	Lower	Upper
Pair 1	Att 2 - Att 3	.198	-.007	.185	.296	-.165	.560

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Correlations

				Att 1	Attchange	TEIQue score
Att 1	Pearson Correlation			1	-.844**	.099
	Sig. (2-tailed)				.000	.341
	N			95	95	95
	Bootstrap[c]	Bias		0	.001	-.013
		Std. Error		0	.033	.119
		95% Confidence Interval	Lower	1	-.901	-.146
			Upper	1	-.767	.319
Attchange	Pearson Correlation			-.844**	1	-.125
	Sig. (2-tailed)			.000		.227
	N			95	95	95
	Bootstrap[c]	Bias		.001	0	.009
		Std. Error		.033	0	.103
		95% Confidence Interval	Lower	-.901	1	-.310
			Upper	-.767	1	.086
TEIQue score	Pearson Correlation			.099	-.125	1
	Sig. (2-tailed)			.341	.227	
	N			95	95	95
	Bootstrap[c]	Bias		-.013	.009	0
		Std. Error		.119	.103	0
		95% Confidence Interval	Lower	-.146	-.310	1
			Upper	.319	.086	1

**. Correlation is significant at the 0.01 level (2-tailed).

c. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean		Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
TEIQue score	95	4.4	2.2	6.6	4.818	.0839	.8175	.668
Valid N (listwise)	95							

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.292[a]	.085	.055	2.392

a. Predictors: (Constant), gender coded, SibDummy, CareDummy

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	48.023	3	16.008	2.799	.045[b]
	Residual	514.785	90	5.720		
	Total	562.809	93			

a. Dependent Variable: Att 1

b. Predictors: (Constant), gender coded, SibDummy, CareDummy

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.331	1.023		8.141	.000
	SibDummy	.514	.527	.100	.975	.332
	CareDummy	.305	.861	.037	.354	.724
	gender coded	1.416	.504	.288	2.807	.006

a. Dependent Variable: Att 1

Descriptives

	gender coded			Statistic	Std. Error
Att 1	0	Mean		8.98	.383
		95% Confidence Interval for Mean	Lower Bound	8.20	
			Upper Bound	9.75	
		5% Trimmed Mean		9.06	
		Median		9.00	
		Variance		6.170	
		Std. Deviation		2.484	
		Minimum		3	
		Maximum		13	
		Range		10	
		Interquartile Range		3	
		Skewness		-.423	.365
		Kurtosis		-.118	.717
	1	Mean		10.28	.315
		95% Confidence Interval for Mean	Lower Bound	9.65	
			Upper Bound	10.91	
		5% Trimmed Mean		10.34	
		Median		10.00	
		Variance		5.245	
		Std. Deviation		2.290	
		Minimum		5	
		Maximum		14	
		Range		9	
		Interquartile Range		3	
		Skewness		-.262	.327
		Kurtosis		-.573	.644

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
								95% Confidence Interval of the Difference	
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	.030	.864	-2.617	89	.010	-1.318	.503	-2.318	-.317
Equal variances not assumed			-2.601	83.343	.011	-1.318	.506	-2.325	-.310
Equal variances assumed	1.561	.215	-2.747	89	.007	-.751	.273	-1.295	-.208
Equal variances not assumed			-2.695	77.320	.009	-.751	.279	-1.306	-.196
Equal variances assumed	.607	.438	-.652	89	.516	-.258	.396	-1.045	.528
Equal variances not assumed			-.678	85.369	.500	-.258	.381	-1.015	.499

Bootstrap for Independent Samples Test

			Bootstrap[a]				
						95% Confidence Interval	
		Mean Difference	Bias	Std. Error	Sig. (2-tailed)	Lower	Upper
Att 1	Equal variances assumed	-1.318	-.005	.500	.013	-2.309	-.360
	Equal variances not assumed	-1.318	-.005	.500	.014	-2.309	-.360
Att 2	Equal variances assumed	-.751	-.012	.276	.005	-1.299	-.212
	Equal variances not assumed	-.751	-.012	.276	.007	-1.299	-.212
Att 3	Equal variances assumed	-.258	.007	.377	.500	-.946	.564
	Equal variances not assumed	-.258	.007	.377	.502	-.946	.564

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.292[a]	.085	.055	2.392

a. Predictors: (Constant), gender coded, SibDummy, CareDummy

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	48.023	3	16.008	2.799	.045[b]
	Residual	514.785	90	5.720		
	Total	562.809	93			

a. Dependent Variable: Att 1

b. Predictors: (Constant), gender coded, SibDummy, CareDummy

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.331	1.023		8.141	.000
	SibDummy	.514	.527	.100	.975	.332
	CareDummy	.305	.861	.037	.354	.724
	gender coded	1.416	.504	.288	2.807	.006

a. Dependent Variable: Att 1

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.162[a]	.026	-.006	2.25466

a. Predictors: (Constant), CareDummy, gender coded, SibDummy

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.360	3	4.120	.810	.491[b]
	Residual	457.512	90	5.083		
	Total	469.872	93			

a. Dependent Variable: Attchange

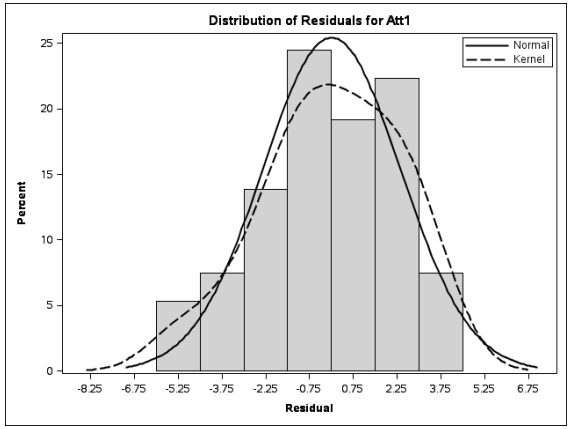
b. Predictors: (Constant), CareDummy, gender coded, SibDummy

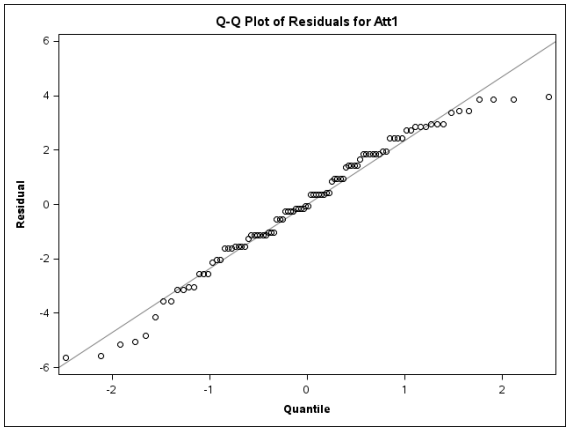
Coefficients[a]

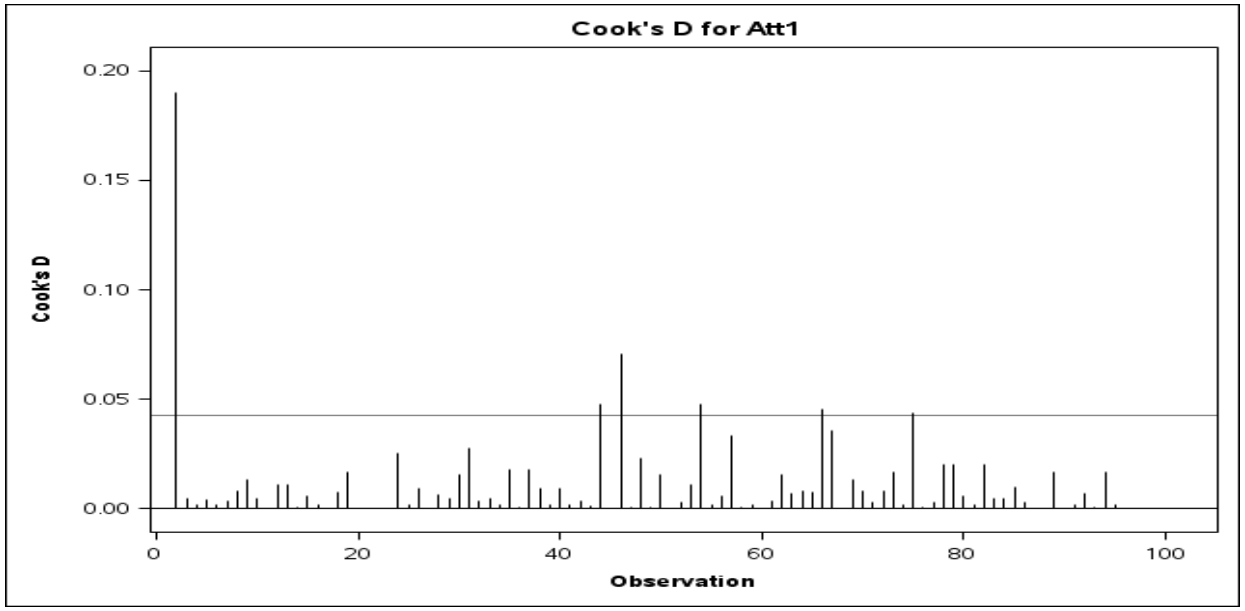
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.777	.965		3.915	.000
	gender coded	-.698	.476	-.155	-1.467	.146
	SibDummy	-.139	.497	-.030	-.279	.781
	CareDummy	-.615	.812	-.081	-.758	.451

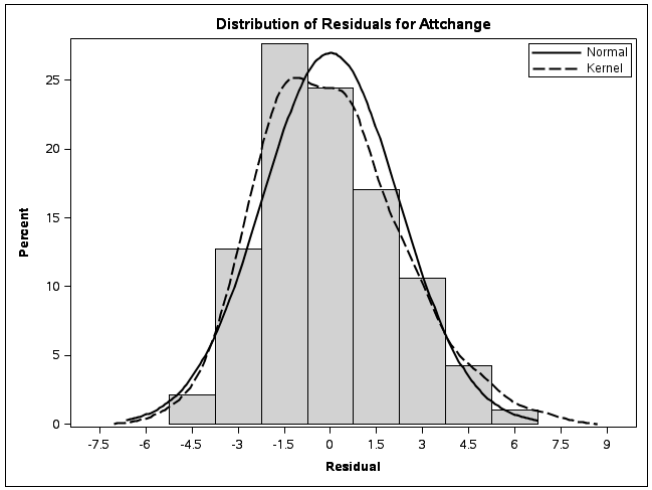
a. Dependent Variable: Attchange

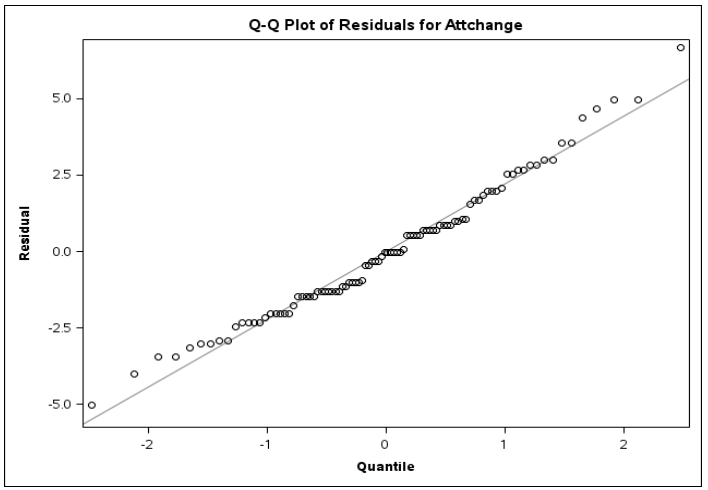
xii.

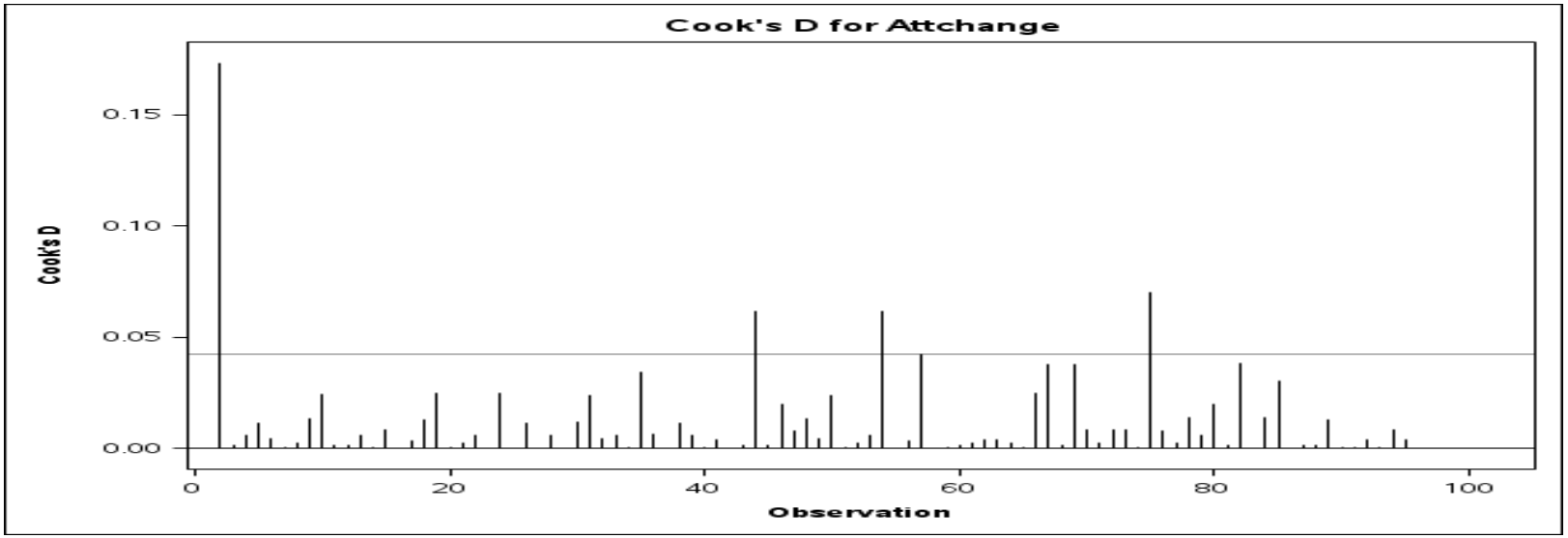

Distribution of Residuals for Att1
Normal
Kernel
Percent
Residual


Q-Q Plot of Residuals for Att1
Residual
Quantile


Cook's D for Att1
Cook's D
Observation


Distribution of Residuals for Attchange
Normal
Kernel
Percent
Residual
25
20
15
10
5
0
-7.5
-6
-4.5
-3
-1.5
0
1.5
3
4.5
6
7.5
9


Q-Q Plot of Residuals for Attchange
Residual
Quantile
5.0
2.5
0.0
-2.5
-5.0
-2
-1
0
1
2


Cook's D for Attchange
Cook's D
Observation
0.15
0.10
0.05
0.00
0
20
40
60
80
100