

Parenting and Adolescent Attachment

Madeleine Jago

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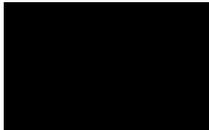
University College London

UCL Doctorate in Clinical Psychology

Thesis Declaration Form

I confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

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Name: Madeleine Jago

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Overview

The overall focus of this thesis is the relationship between parenting and adolescent attachment. Part one is a conceptual introduction reviewing what we currently know about the antecedents of adolescent attachment. This includes 30 papers exploring the relationship between adolescent attachment and factors such as infant attachment, parenting, parental attachment style, family functioning and negative life events. The aim of this is to clarify what is known about possible antecedents, the gaps and uncertainties in this knowledge and consider the best approach to further investigate this topic.

Part two of the thesis is an empirical paper investigating the relationship between parenting, parental couple relationship quality and adolescent attachment using existing data from the Twins Early Development Study (TEDS). Specifically, the study aimed to identify what aspects of parenting explain variation in adolescent attachment and whether parenting mediates the impact of the quality of the parental couple relationship on adolescent attachment.

Part three is a critical appraisal of the research process, which summarises my personal reflections, the implications of using an existing dataset and the experience of coding parent-child interaction videos. It also considers the strengths and weaknesses of the study design and the clinical implications of the results.

Impact Statement

This study investigates the relationship between parenting and adolescent attachment, including its role as a mediating variable between parental couple relationship quality and attachment. To quantify parenting, a multiple method (both observation and self-report) and multiple informant approach was used. To measure attachment, the Child Attachment Interview (Target, Fonagy & Shmueli-Goetz, 2003), which is a reliable and psychometrically valid interview-based measure of adolescent attachment, was used. The results suggest that parents who are involved in their children's lives and demonstrate good communication skills fostering an autonomous but connected relationship have more securely attached adolescents.

These results could be put to beneficial use both inside and outside of academia. Research into adolescent attachment and parenting typically relies on less than optimal measurement tools due to the time and resource intensity of high-quality measures in this field. By contributing to this body of literature with high quality measures, this adds to our theoretical understanding of the parenting factors that may influence adolescent attachment. It also identifies directions for future research, in particular the need for longitudinal studies of parenting and attachment with diverse populations.

Adding to what we know about parenting and attachment also has clinical benefits. Secure adolescent attachment has been linked to outcomes such as psychopathology and peer relationship quality (Allen, Porter, McFarland, McElhaney & Marsh, 2007; Kobak, Sudler & Gamble, 1991; Kobak, Zajac & Smith, 2009; Rosenstein & Horowitz, 1996). This provides a rationale to identify the antecedents of attachment security, informing interventions to improve security and therefore improve adolescent wellbeing. Understanding the parenting qualities linked to

attachment can inform the choice of interventions when parent-child relationship difficulties are part of a clinical presentation, or tailor the development and evaluation of new and existing interventions supporting parents to develop these skills.

One example of this is in the treatment of adolescent depression. Teenagers tend to be offered individual therapy (e.g. Klein, Jacobs & Reinecke, 2007; Mufson et al., 2004) despite evidence to link depression in childhood to family interactions (Kaslow, Deering & Racusin, 1994). In this situation, the current results could inform clinical decision-making by suggesting that where low mood co-occurs with difficulties in the parent-child relationship, parent-based interventions promoting autonomous relatedness could be effective. An example is Attachment Based Family Therapy (ABFT), which has shown promise in treating low mood and suicidal ideation (Diamond, Reis, Diamond, Siqueland & Isaacs, 2002; Diamond et al., 2010). The goals of ABFT are to repair the attachment relationship and promote autonomy, consistent with the results of the current study.

In summary, the current study suggests that involved parenting using good communication skills to foster an autonomous but connected relationship is linked to greater adolescent attachment security. The academic benefits of these findings are that it adds to our understanding of possible antecedents of security and identifies directions for future research. Outside of academia, these results could help inform clinical decision-making or lead to the development and evaluation of clinical interventions to improve security, and therefore improve adolescent outcomes.

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Part 1: Conceptual Introduction

The Antecedents of Adolescent Attachment

Introduction

The nature of the attachment relationship between a child and their caregiver, its antecedents and consequences were first researched with reference to infants. More recently, the same scrutiny has been applied to attachment in adolescence. Just like the parent-infant relationship, adolescent outcomes can be predicted by the relative security or insecurity of the parent-teen bond (e.g. Rosenstein & Horowitz, 1996). This underscores the importance of finding the determinants of secure adolescent attachment. Multiple factors have been implicated but the methodology varies hugely in this field, which may obscure the true contribution of these factors. In particular, the Child Attachment Interview (Target, Fonagy & Shmueli-Goetz, 2003) is underused despite its promising properties as a measure of attachment in childhood and adolescence. The empirical paper makes use of a large sample of teenagers who have completed this interview and an observational measure of parenting to examine the contribution of parenting behaviours to attachment security. These time and resource intensive measures have significant benefits over self-reports which are commonly used, reducing measurement error and providing a clearer picture of the contribution of parents to adolescent attachment. In this conceptual introduction, existing research into the antecedents of adolescent attachment will be reviewed and key methodological issues outlined. The aim of this is to clarify what is known about possible antecedents, the gaps and uncertainties in this knowledge, and to consider the best approach to further investigate this topic. Before reviewing these issues, this introduction begins by providing an overview of attachment theory.

Key Concepts

Attachment. John Bowlby (1969/1982) first described the origins, conceptual framework and implications of the attachment relationship between a child and their primary caregiver. He presumed that the underpinning motivational systems giving rise to attachment behaviour were biological as they conferred an evolutionary advantage to the child. By maintaining proximity to primary caregivers, this was hypothesised to have increased the likelihood of protection and survival in the evolutionary past. Whilst Bowlby suggested that the drive to form an attachment relationship was biological, he proposed that the nature of the relationship was responsive to the caregiving environment. Infants formed attachments to caregivers even if they were abusive or neglectful; however, their attachment would vary in security depending on the quality of care that was given. In a paradigm to activate the attachment system known as the Strange Situation, infants' attachment behaviours can be classified as secure or insecure (Ainsworth, 1979). Secure infants use their caregiver as a secure base from which to explore, seek proximity to them when distressed and are soothed and comforted by their caregiver's response. Insecure infants can be subdivided into anxious-avoidant, anxious-ambivalent or disorganised (Main & Hesse, 1990) and show a range of behaviours. Avoidant infants reject or dismiss caregivers when distressed, ambivalent infants tend to seek, yet resist proximity and are difficult to soothe, while disorganised infants show contradictory, confused reactions such as freezing.

Bowlby's theory of attachment (1969/1982) had many testable hypotheses, allowing it to develop into an area of significant interest for researchers. One of these was that the security of the attachment relationship was important for later personality development and psychopathology. Numerous empirical findings have gone on to

show associations between attachment security and a number of outcomes including lower levels of externalising behaviour (Fearon, Bakermans-Kranenburg, van IJzendoorn, Lapsley & Roisman, 2010), greater self-reliance, ability to regulate emotion and social competence (Sroufe, 2005).

Causal antecedents of infant attachment. The consequences of attachment insecurity provided a rationale to identify causal antecedents. Observational studies of parent-child interactions have suggested that caregiver sensitivity to infant communication is a key determinant of attachment security (Ainsworth, Blehar, Waters & Wall, 1978) and distinct patterns of parenting have been linked to each of the insecure attachment styles (Ainsworth, 1979; Main & Hesse, 1990). Further research suggests that sensitivity is not the only parenting factor associated with attachment style and that a range of caregiver interactive behaviours including positivity, responsiveness, mutuality and attunement appear to be important antecedents (De Wolff & van IJzendoorn, 1997).

The significance of caregiver responsiveness suggests that the environment plays a key role in shaping infant attachment. However, the application of quantitative behavioural genetics was required to test an alternate hypothesis; genes that influence a child's behaviour could contribute to both attachment security and parenting style and explain their association. This is a plausible suggestion considering that parenting is influenced by child genetic factors, with heritability estimates ranging from 23% to 40% (Klahr & Burt, 2014). However, in stark contrast to the majority of research showing significant genetic contribution to most human traits (Plomin, DeFries, Knopik & Neiderhiser, 2013), initial studies estimated that the heritability of infant attachment was effectively zero (Bokhust, Bakermans-Kranenburg, Fonagy &

Schuengel, 2003; O'Connor & Croft, 2001; Roisman & Fraley, 2008). In the twin study by Bokhust et al. (2003), for example, environmental factors shared by children in the same family explained 52% of the variation and environmental factors unique to each child explained 48%. Additionally, a significant proportion of the shared environmental variance in attachment security overlapped with shared environmental variance in maternal sensitivity (Fearon et al., 2006), adding weight to attachment theorists' hypotheses about the key antecedents. Similar results were reported by O'Connor and Croft (2001) and Roisman and Fraley (2008).

Attachment in adolescence. Extensive research provided a rich understanding of attachment in infancy, however attachment varies across childhood and into adolescence showing only moderate stability (Fraley, 2002). This highlights the importance of conceptualising and understanding attachment as a developmental, dynamic, non-linear process. Infants and adolescents both have to balance dependence on their parents as a source of security with the development of autonomy and their sense of themselves as a separate person, however the balance of these two aspects of attachment is likely to change across childhood. As a young person moves into adolescence, their need for proximity to and reassurance from, the primary caregiver decreases, and their motivation to develop independence and orientation towards their peers increases (Allen & Tan, 2016). In infancy, attachment behaviour is seen when children seek behavioural proximity to their parents at times of distress. In adolescence, a time of greater independence, young people can use different behaviours to achieve a sense of 'felt security' from their parents that does not rely of physical proximity and is similar to emotional support (McElhaney, Allen, Stephenson & Hare, 2009). This is demonstrated by changes in the operationalisation of

attachment from observed behaviour in young children to mental representations of the self in relation to attachment (Main, Kaplan & Cassidy, 1985) in older children and adolescents. It becomes grounded in cognition and is often measured through language rather than behavioural observation (e.g. George, Kaplan & Main, 1985). Bowlby (1969/1982) defined this mental representation as an Internal Working Model (IWM) of attachment, comprising both conscious and unconscious elements relating to attachment history, feelings and expectations.

Measurement of attachment in adolescence. One of the first measures developed for quantifying attachment in later life that has been used in research with adolescents is the Adult Attachment Interview (AAI; George, Kaplan & Main, 1985). This is a structured clinical interview that asks questions about an individual's relationship with their parents during childhood. The interviews are transcribed verbatim, paying attention to, and including, any hesitations or dysfluencies. Scoring is based on the way in which individuals can describe and reflect on their past attachment experiences while maintaining a coherent narrative. This can produce a categorical outcome similar to that of the infant classifications. Interviewees can be secure-autonomous, dismissing, pre-occupied or unresolved-disorganised, mirroring the secure, anxious-avoidant, anxious-ambivalent and disorganised classifications respectively. There is also a 'cannot classify' classification. Alongside these classifications, interviews are coded for a number of different scales, with 'overall coherence' emerging as potentially the most meaningful (Hesse, 2016). Coherence refers to the connectedness and logical flow of discourse suitable to the context of the interview.

Along with the AAI, there is a range of methods used to quantify adolescent attachment. The AAI is a narrative measure, but many self-report tools are also available (e.g. Bartholomew & Horowitz, 1991). Measures also differ by relational domain, whether they are specifically looking at the caregiving relationship like the AAI or at relationships more generally. They also differ in the extent to which they assume people fall into categories or lie along a continuum. When different measures of attachment are compared, the correlation is higher when they share both methodology and relational domain (Crowell, Fraley & Roisman, 2016), suggesting that despite trying to measure the same underlying construct, there is variation caused by the measurement tool used. This in part speaks to the broad and multifaceted nature of attachment beyond infancy and the need for careful consideration of appropriate measures based on the needs of any one study.

Rationale for research into adolescent attachment. Despite changes in the nature and measurement of attachment from infancy to adolescence, insecurity has similarly been linked to poorer adjustment outcomes, including impulsive and hostile behaviour (Kobak et al., 2007), depressive symptoms (Kobak et al., 1991), difficulties in peer relationships (Allen et al, 2007) and general psychopathology (Rosenstein & Horowitz, 1996) underscoring the importance of studying attachment at this stage. Although the conceptualisation of attachment in adolescence is comparable to attachment in adulthood, patterns of attachment styles have been found that suggest that this period may be somewhat distinct. For example, there is a greater prevalence of dismissing representations in adolescence (Bakermans-Kranenburg & van IJzendoorn, 2009a). It may be that in order to develop emotional independence, adolescents have to resist turning to their parents for many everyday threats or stressors

and this may lead to their narratives about parents containing more dismissing, insecure speech. The adolescent stage is also distinct from adulthood because, despite their heightened tendency towards a dismissing orientation with respect to attachment, adolescents are still likely to be reliant on their parents and turn to them to use as a safe base, although the threshold for seeking comfort may be very different (Allen & Tan, 2016).

Adolescence is also considered a period of both vulnerability and opportunity for young people. The social context of an adolescent, including their attachment relationships, interacts with brain and body development to provide opportunities to develop autonomy, personal interests and identity but also vulnerabilities to risk taking behaviour and mental health problems (Dahl, 2004). Increasing our understanding of attachment at this stage could provide tools to support the social contexts of young people, reducing the risk of negative adolescent outcomes.

Considering the substantial developmental changes taking place in attachment across childhood, the predictors of adolescent attachment should not be assumed to be the same as those we observe in infancy. Therefore, this conceptual introduction will review research into the determinants of adolescent attachment, the limits of that research and the unresolved questions that will be addressed by the empirical paper.

Search Methods

To evaluate relevant literature on the predictors of adolescent attachment, a PsychInfo (<https://www.ncbi.nlm.nih.gov/pubmed/>) search was conducted (6th July, 2018) using the following search terms: (adolescent* attachment OR teen* attachment OR parent-teen* relationship OR parent-adolescent relationship) AND (predict* OR antecedent* OR determin* OR cause* or influence*). The search was also restricted

to peer-reviewed journals, which resulted in 268 articles. From this list, 24 articles emerged that were available in English, used measures of attachment as an explicit variable rather than non-attachment specific aspects of the parent-child relationship (for example conflict, hostility or support) and evaluated possible antecedents of attachment in adolescence. An additional six papers were added for review from reference lists of these articles.

Critical Analysis of the Literature

Infant attachment. One predictor that may be linked to adolescent attachment is earlier attachment in the infancy period, although support for this across studies is mixed. One study did find continuity of attachment in a low-risk sample of 40 families (Hamilton, 2000). The children of these families had taken part in the Strange Situation procedure many years earlier and at around 17 years old were assessed using the AAI (George et al., 1985). Overall, 77% of adolescents retained the respective secure/insecure classification, compared to the 54% that would be expected by chance. These findings have been corroborated by another study in a low-risk sample that found 72% continuity of attachment (Waters, Merrick, Treboux, Crowell & Albersheim, 2000). However, a higher-risk sample found no significant continuity from infancy to adolescence, suggesting that stability and instability may depend on the population (Weinfield, Sroufe & Egeland, 2000). All three of these studies found that the presence of negative life events played a role in attachment outcomes, which may occur more frequently in less resourced, high-risk groups.

Another feature shared by these studies is the absence of the disorganised infant attachment classification, which was not developed at the time that the Strange Situation procedure was conducted. The disorganised classification has been linked to

the poorest outcomes for children (van IJzendoorn, Schuengel & Bakermans-Kranenburg, 1999) and therefore the attachment trajectory is of high clinical importance. Two studies that were able to follow disorganised children into late adolescence found that almost all were insecurely classified at age 19 (96% and 86% respectively; Main, Hesse & Kaplan, 2005; Weinfield, Whaley & Egeland, 2004). These studies consisted of an at-risk sample (Weinfield et al., 2004) and a small, low-risk sample (Main et al., 2005). In contrast, a large, low-risk sample (Groh et al., 2014) found only weak stability of disorganisation from infancy to late adolescence. This was also true of attachment security more generally; when categorical and continuous measures of attachment in infancy were compared to measures in late adolescence (derived from the AAI), there was a significant but weak relationship between the two.

Overall there appears to be some continuity of attachment from infancy to adolescence, the extent of which can vary depending on the population being studied. However, even in low-risk samples stability may be weak. This does not necessarily undermine the validity of attachment security as the variation may be due to predictable, lawful changes based on the child's dynamic environmental context (Groh et al., 2014). According to Bowlby (1969/1982), children use early relationships as a model to guide their expectations and interactions in future social environments, shaping later relationships. However, this theory does not specify how changing dynamics of relationships might continue to feed back into earlier models, leading to two alternate perspectives on mechanisms of stability in attachment (Fraley, 2002). The prototype hypothesis assumes that early attachment representations are held onto as a child develops, playing an important role across the lifespan. The revisionist hypothesis assumes that these early representations are revised and updated according to current and dynamic experiences and therefore may or may not resemble those of

early childhood. Statistical modelling shows that a model derived from the prototype hypothesis is a better fit to the longitudinal data, as prototype-like processes can still give rise to discontinuity depending on environmental risks and changes (Fraley, 2002). This suggests that early experiences and infant attachment styles are retained and may influence later attachment, but environmental risks and changes present for many young people also have an important role in determining their attachment security at a particular point in time.

Parenting and the parent-child relationship. Considering the influence of parental sensitivity on infant attachment, it may similarly be an important environmental factor linked to adolescent attachment. There are diverse ways to measure parenting, such as using self-report (from the parent or the teenager) or observing dyadic interactions and rating these in particular domains of interest. Using an observational measure of parenting, Vaughn et al. (2016) looked at the predictive power of early years parental sensitivity and infant attachment classification and found that they collectively accounted for 11% of the variance in adolescent attachment. Later measures of parental support and involvement at multiple time points across childhood accounted for an additional 8% of the variance in the security of attachment.

Another study by Scott, Briskman, Woolgar, Humayun and O'Connor (2011) examined the connection between parenting and adolescent attachment across a combined high, medium and low-risk sample. They found associations between parental positivity (consisting of warmth, assertiveness, communication and involvement), monitoring and supervision and adolescent attachment security. They measured attachment with the Child Attachment Interview (CAI, Target, Fonagy & Shmueli-Goetz, 2003), a developmentally sensitive narrative measure with good

psychometric properties (Shmueli-Goetz, Target, Fonagy & Datta, 2008; Venta, Shmueli-Goetz & Sharp, 2014) and measured parenting with an observed parent-child interaction task as well as parent self-reports. Later in this conceptual introduction and in the empirical paper the strengths of these measures will be discussed, making this a robust investigation of the link between parenting and adolescence.

A more recent study using the same robust measures and drawing from a similar high and medium-risk sample to Scott, Briskman, Woolgar et al. (2011) found that comparable current parenting factors (warmth and engagement) were no longer significant predictors of attachment once an observational measure of early years parent sensitivity was controlled for (O'Connor, Woolgar, Humayun, Briskman, & Scott, 2018). This is in contrast to the results of Vaughn et al. (2016). These contrasting findings could be due to the smaller sample of O'Connor et al. (2018) being underpowered and therefore unable to detect an effect of current parenting, or differences between low-risk (Vaughn et al., 2016) and high-risk (O'Connor et al., 2018) samples. Perhaps earlier parenting experiences may be more deterministic in adverse contexts than community samples.

In a much larger study, Matsuoka et al. (2006) chose to administer a self-report measure of parenting completed by the child called the Parental Bonding Instrument (PBI; Parker, Tupling & Brown, 1979). Its time and resource efficiency meant that their sample could comprise more than 3,900 Japanese students with a mean age of 20 years. They also administered the Adult Attachment Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991), a self-report measure of attachment security completed by adolescents. For male students, better paternal care and lower maternal overprotection was linked to secure attachment, whilst for female students, better paternal and maternal care and lower levels of maternal overprotection were linked to

secure attachment. Overall, the PBI scores accounted for 6.2 – 6.6% of the variance in attachment security. When considering the generalisability of this study to a Western adolescent population, it is important to note that a young adult, rather than adolescent, sample was used. Additionally, there may be cultural differences in attachment as research has shown that collectivist cultures such as Japan have higher levels of ambivalent attachment when compared to more individualist, Western cultures (van IJzendoorn & Kroonenburg, 1988). The measures used may also lack validity as they were developed in Western samples and then translated into Japanese.

In another study examining adolescents' self-reports of parenting (Van Petegem, Vansteenkiste & Beyers, 2013), their feelings of volition rather than pressure in the parent-child relationship were linked to more secure attachment in romantic relationships (measured by the Experiences in Close Relationships Scale-Revised; ECR-R; Fraley, Waller & Brennan, 2000). Their feelings of interpersonal distance rather than proximity were linked to more insecure attachment. However, the cross-sectional design of both this study and Matsuoka et al. (2006) means that the direction of the relationship between teenagers' perceptions of parenting and attachment security should be considered critically. Attachment has been conceptualised as an IWM of self and other (Bowlby, 1969/1982) shaped through one's interpersonal experiences. This IWM could be the cause of the adolescents' perceptions, interpretations and expectations of the parent-child relationship and therefore longitudinal designs are needed to present a strong case for a causal link in the reverse direction.

Ruhl, Dolan & Buhrmester (2015) used a longitudinal design and multiple informants of the parent-child relationship, combining both adolescents' and parents' reports. At four time points between the ages of 11 and 18, adolescents completed the

Adult Attachment Scale (AAS; Collins & Read, 1990). Parent and teenagers' self-reports of parenting also created 10 measures of the parent-child relationship at each of these time points. As certain positive relationship experiences increased, namely satisfaction and approval, attachment insecurity with mothers and fathers decreased. As support and companionship increased with fathers, avoidant attachment decreased. Negative relationship experiences, such as greater criticism from mothers, increased pre-occupied attachment, whilst increased pressure led to increased avoidant attachment with fathers.

A criticism of studies that use self-reports is that there may be reporting biases present, such as giving answers that are socially desirable (Morsbach & Prinz, 2006). As Ruhl et al. (2015) have done, using multiple informants can help to balance out the effects of these biases. Another way to reduce this systematic error is to use observational measurement tools (e.g. O'Connor et al., 2018; Scott, Briskman, Woolgar et al., 2011). Another study that used this method combined adolescents' reports with scores from observed parent-child interactions (Allen, McElhaney, Kuperminc & Jodl, 2004). In a sample selected due to the presence of academic risk factors, Allen et al. (2004) found that adolescents' judgements of maternal supportiveness and adolescents' over-personalising behaviour in the interaction predicted change in attachment from age 16 to age 18 (as measured by the AAI), despite a significant amount of stability. In contrast, a dyadic measure of engagement/empathy and measure of maternal attunement did not predict a change in attachment across adolescence. After controlling for potentially confounding factors such as poverty status and adolescent depressive symptoms, only adolescent over-personalising behaviour was a significant predictor, accounting for an additional 6% of the variance. In this study, individual characteristics of the adolescent within the

parent-child relationship seem to influence attachment to a greater extent than parenting factors. This study draws strength from its longitudinal design; by controlling for security at the age of 16, it suggests that these perceptions and behaviours account for additional variance over and above that of past attachment security. However, by examining change from one adolescent stage to another, information may be lost about the development of attachment from childhood into adolescence. Important changes in the parent-child relationship that influence adolescent attachment may have already occurred by the age of 16 and be missed by this study. Additionally, the sample size of 101 may mean that the study was underpowered and unable to detect a small effect of parenting behaviours.

Another study using both an observational measure of parenting and a longitudinal design assessed attachment at age 14 and 25 using the AAI (Allen & Hauser, 1996). It was found that more secure attachment at age 25 was predicted by greater 'autonomous relatedness' from mothers towards their teenagers measured at 14. In other words, if mothers were able to express and discuss reasons behind disagreements, confidently state their own position and attend to and agree or validate their child's position, children expressed greater attachment security. Attachment insecurity was predicted by teenagers' 'autonomy inhibiting' behaviours, such as over-personalising, enmeshing behaviours with their parent at age 14. However, whilst this paper is certainly relevant to adolescent attachment and speaks to its development across adolescence, the outcome variable is measured in young adulthood when many individuals may be entirely independent of their parents, which may lead to changes in the attachment relationship. Despite this, this result can be seen as underscoring the importance of parenting, as earlier parent-child relational factors appear to influence attachment even at this later stage.

Overall, many investigations into parenting and adolescent attachment rely purely on parent or child self-report that may be susceptible to bias. This is particularly problematic when relying only on child reports, as adolescent attachment security may have a causal influence over adolescents' perceptions of parenting, rather than the opposite relationship. Amongst studies that use observational measures or a combination of measures from different informants, there are mixed results, with some studies finding little effect of current parenting factors (Allen et al., 2004; O'Connor et al., 2018), whilst others suggest a range of current parenting behaviours are important (e.g. Allen & Hauser, 1996; Ruhl et al., 2014; Scott, Briskman, Woolgar et al., 2011; Vaughn et al., 2016). Considering the fundamental role parenting is presumed to play in infant attachment, this relationship in adolescence could benefit from further research.

Parental attachment style. In research on infant attachment, a mother's attachment style (as measured by the AAI) emerged as a significant predictor of her infant's attachment style (measured by the Strange Situation paradigm; van IJzendoorn, 1995). These intergenerational patterns of attachment could be seen in clinical work with mothers and infants, with sometimes multiple generations of disrupted attachments impacting on children's emotional wellbeing (Fraiberg, Adelson & Shapiro, 1975).

There is evidence to suggest that this may also be true in adolescence. One study investigated the relationship between the mother's attachment style during pregnancy and her child's 16 years later (Steele, Perez, Segal & Steele, 2016). The AAI of the mother was compared with that of her adolescent and a significant relationship was found. The AAIs were scored for evidence of reflective functioning,

a measure of an individual's ability to understand the nature of mental states and their link to behaviour, producing a continuous measure.

The authors propose two hypotheses to explain why the mother's AAI is linked to their teenager's; the first is that more reflective parents parent in a more sensitive, competent and flexible way, increasing attachment security and implying that parenting is the mechanism by which parent attachment influences their adolescent. The second hypothesis is that the reflection and coherence with which a mother speaks to her child plays a role in them developing the same coherent and reflective language.

Family functioning. Beyond the parent-child relationship, other aspects of family functioning have been linked to security of attachment. Using path analysis, Martin, Sturge-Apple, Davies, Romero & Buckholz (2017) found that greater conflict between parents was associated with a reduced ability to promote adolescent security and exploration, which in turn influenced the adolescent's comfort, autonomy and disengagement in the relationship. To measure parenting, mothers and their adolescents were observed in a conversation about worrying topics selected by the adolescent and this was coded for the extent to which they encouraged and reinforced adolescent autonomy and exploration, the extent to which they relieved the adolescent's distress, and maternal harshness. Adolescent attachment behaviour (comfort, autonomy and disengagement) was coded from an observed task where they had to prepare for and give a short speech, with their mothers present in the room. Co-parenting conflict was measured using a questionnaire completed by both parents. The authors were investigating the 'spill-over' hypothesis; that negativity and conflict in the parents' relationship with each other 'spills over' into the relationship between a parent and child, impacting on a parent's sensitivity (Feinberg, Kan & Hetherington,

2007). The 'spill over' hypothesis proposes that the elements of the parental couple relationship may be another factor influencing parenting and subsequently attachment. Other measures of parental couple functioning such as the presence of divorce have been similarly linked to security. Lewis, Feirling and Rosenthal (2000) looked at a low-risk sample of 18-year-olds and found that adolescents whose parents had divorced were significantly more likely to be insecurely attached than those from intact families.

Negative life events. Divorce is one of many experiences individuals may go through during their childhood that could fall under an umbrella term of 'negative life events'. During an investigation of attachment continuity from infancy to adolescence, Hamilton (2000) found that the presence of negative life events appeared to maintain insecure attachment. These negative life events consisted of the death or chronic/severe illness of a parent, drug or alcohol abuse, parental mental health difficulties, single parenting, divorce, chronic/severe illness of the child or physical or sexual abuse of the child. This finding was supported by Waters et al. (2000) who similarly found that these events were related to a change in attachment security from secure to insecure. Studies using high-risk samples have a greater prevalence of these stressful events and patterns of continuity and discontinuity may be linked to the presence of these events (Weinfield et al., 2000). It may be that having to manage and cope with these incidents means that parents are less available and responsive towards their children, making parenting a mediating variable between negative life events and attachment. Alternatively, these events may have a more direct effect on young people's developing concepts of relationships, safety, themselves and others.

Socioeconomic status. Another factor that may be linked to adolescent attachment both directly and indirectly through parenting is socioeconomic status. In a high-risk sample of South African students, low household income predicted pre-occupied attachment as measured by a self-report questionnaire of attachment (Rawatlal, Pillay & Kliewer, 2015). Similarly, Allen et al. (2004) found that higher poverty levels predicted a change from secure to insecure attachment across adolescence. There is evidence to suggest that parenting may act as a mediating variable for this relationship as economic hardship increases family conflict leading to more coercive and hostile interactions between parents and children (Conger, Ge, Elder, Lorenz & Simons, 1994).

Cognitive ability. As the measurement of attachment develops from observed behaviour to mental representation, it requires a young person to recall and describe abstract concepts in detail when assessed through interviews. This raises the possibility that cognitive ability may influence attachment classifications. There is limited research in this area, but some studies support this hypothesis. Haydon, Roisman, Owen, Booth-LaForce & Cox, (2014) found that the dismissing-insecure classification (measured by the AAI) could be predicted by an aggregated measure of cognitive ability measured multiple times across childhood. In a separate study that drew from the same large database, cognitive ability was a significant predictor of attachment security as measured with a continuous score using the Attachment Script Assessment (Vaughn et al., 2016). However, many studies find no relationship between cognitive ability and attachment. When attachment measures (such as the AAI or CAI) have been compared to cognitive ability, they generally demonstrate independence from

these skills (Bakermans-Kranenburg & van IJzendoorn, 1993; Shmueli-Goetz et al., 2008), suggesting that they are more than just a test of memory or verbal intelligence.

Outside of attachment research, IQ has been shown to be a general resilience factor for children who have faced adverse experiences; reducing the likelihood of negative outcomes (e.g. Masten, 2001). This may be another explanation for studies demonstrating a relationship between IQ and attachment; rather than interfering with the measurement of attachment, IQ might confer greater personal resources to manage stress across childhood leading to greater attachment security.

Non-parent relationships. Another important distinction between infancy and adolescence that has implications for attachment is the development of meaningful peer and romantic attachments, as well as other adult relationships such as those with teachers. These new and different relationship experiences can be integrated with past experiences to build an IWM of attachment from multiple sources, not just the parent-child relationship (Allen & Tan, 2016). However, it is important to point out that attachment theory suggests that a child's attachment style will influence non-parent relationships, therefore research needs to be carefully designed before making assumptions about the direction of the relationship between these two variables. Further research is needed in this area, but initial studies with small samples suggest that both parental relationships and romantic relationships might have an impact on adolescent attachment. For example, Latack & Davila (2016) recruited 71 early adolescent girls to complete a self-report measure of relational security at one time point and again one year later. Relational security is a measure of comfort with intimacy, belief one can depend on others and anxiety about rejection or abandonment (Collins & Read, 1990). As such, it is related to the mental representations linked to

the attachment system and signifies an individual's expectations about relationships. They found that romantic rejection predicted a decrease in relational security whilst the quality of parent attachment predicted comfort with intimacy one year later. This study used a regression model to control for parent-adolescent relationship variables and to check that there was an independent effect of romantic relationships on relational security. As attachment theory predicts that early parent-child relationships will influence later relationships, this was useful to ensure that experiences in romantic relationships were not highly correlated with parent-adolescent variables and that parenting did not account for the all of the variance in security. Despite this, the measure of relationship experiences, including rejection, was taken at the end time point only, meaning that the change in relational security could not be confidently linked to a change in romantic relationship experiences.

A second study used a more extensive longitudinal design following 47 infants up to 16 years old (Aikins, Howes & Hamilton, 2009). They assessed attachment with a coded narrative procedure called the Adult Attachment Projective Picture System, (George & West, 2001), rather than self-report. The strongest predictor of adolescents with an insecure-unresolved classification was negative life events. However, early attachment history, negative teacher relationships in middle childhood and lower adolescent friendship quality at 14 and 16 were also significant predictors. Teacher and friendship relationships in middle childhood were uncorrelated with attachment history (up to four years of age), suggesting that early relationship experiences did not account for later non-parent relationships and that these may have had independent effects on later attachment. Both of these studies used measures that ask about attachment beyond the caregiving relationship, which is likely to make them more sensitive to the influence of non-parent relationships.

Gender. It has been proposed that gender differences in attachment form in middle childhood and onwards. As attachment starts to have implications for romantic relationships, Del Giudice & Belsky (2010) suggest that, from an evolutionary point of view, women's reproductive strategies benefit from an anxious attachment style, whilst men's are better suited to an avoidant one. However, this specific pattern of gender differences within the insecure classifications has yet to receive convincing evidence and the limited supporting results may be due to measurement effects (Bakermans-Kranenburg & van IJzendoorn, 2009b). Looking more generally at secure versus insecure styles, it has been suggested that females report more attachment security with their parents compared to males (Buist, Deković, Meeus & van Aken, 2002; Ruhl et al., 2015). Interestingly, Buist et al. (2002) found that each child gender/parent gender combination produced unique attachment trajectories across adolescence. Girls' attachment security to their mothers decreased in a linear fashion across adolescence, whereas boys' decreased from 11 to 13 and then varied unpredictably. Boys' attachment security to their fathers showed a linear decrease, whilst girls' showed a non-linear relationship, decreasing from 12 – 15 and then increasing. However, not all studies find gender effects (e.g. Ammaniti, van IJzendoorn, Speranza & Tambelli, 2000), possibly due to variations in measurement. Buist et al. (2002) and Ruhl et al. (2015) both used a continuous measure of attachment, whereas Ammaniti et al. (2000) used categories of attachment classification. Potentially it is only due to the greater sensitivity of a continuous variable that gender-based effects are found, but they are not so significant that they result in variation in attachment classification. Overall, the effects of gender appear to be subtle and may be dependent on the measurement tool, calling their validity into question.

Adopted and looked-after children. One group of young people for whom attachment is a particularly important area of study is adopted children. These are children who are likely to have had a rupture in their earliest attachments and have a higher incidence of abuse or neglect from primary attachment figures. They then have the task of forming new attachment relationships with their adoptive parent(s) in the context of a difficult attachment history. Erich, Hall, Kanenberg and Case (2009) looked at a sample of parents and their adoptive children who had all been adopted above the age of 10. They administered the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987) to assess adolescents' attachment styles and found that the most powerful predictor was adolescent life satisfaction, which was responsible for 38% of the variation of adolescent attachment to parents. An additional predictor was parent satisfaction with the relationship with their adopted child, which accounted for 11.6% of the variance. Additionally, there were significantly higher scores on the IPPA for children adopted earlier rather than later. The cross-sectional design of the study makes it unclear whether these variables influence security or have the reverse relationship, as security could lead to greater life satisfaction (for example, through better relationships and greater emotional wellbeing) and more positive relationships with parents.

A separate study looked at early-adopted children (before six months) and compared their infant attachment classification with their AAI classification at age 14 (Beijersbergen, Juffer, Bakermans-Kranenburg & van IJzendoorn, 2012). An observational measure of maternal sensitivity was also taken at these two time points. The authors showed that the children who remained securely attached from infancy to adolescence had mothers who showed greater sensitivity at both time points compared to children who became insecurely attached in adolescence. Children who were

insecurely attached in infancy but showed secure adolescent attachments had less sensitive mothers as infants but more sensitive mothers at 14 years than those that remained insecure. Essentially, consistent maternal sensitivity was linked to the maintenance of secure attachments, and the development of greater maternal sensitivity across childhood was linked to a shift to secure attachment by adolescence.

Some adopted children have had to endure long periods of institutional care, where there has been poor or very limited care from caregivers. Clear links have been made between atypical attachment, referred to as attachment disorders, and poor, lengthy institutional care in young children (O'Connor, Rutter & English and Romanian Adoptees Study Team, 2000). A study by Vorria, Ntouma and Rutter (2015) examined whether the consequences were still present in adolescence. The institutional environment being studied lacked one-to-one care for infants, however each child had one key staff member who held special responsibility and the environment did not involve malnutrition or other forms of deprivation. Attachment in adolescence was measured using the CAI (Target et al., 2003) and it was found that two or more years of institutional care predicted less emotional openness in adolescence, and disorganised attachment in infancy increased the likelihood of insecure attachment in adolescence. This suggests that even in better than average conditions, there are long term effects on attachment of prolonged institutional care.

Genes. Another important factor to consider is whether genes play a significant role in adolescent attachment. Although this is not the case for infants (Bokhurst et al., 2003; Fearon et al., 2006) the same should not be automatically assumed for teenagers. In stark contrast to similar studies of infant attachment, Fearon, Shmueli-Goetz, Viding, Fonagy and Plomin (2014) found approximately 40% heritability of

adolescent attachment and negligible influence of the shared environment. The remaining variance was attributed to the non-shared environment; experiences or factors that were unique to each child within a family. The authors hypothesised that the increased heritability was due to the developing child's phenotype interacting with parenting over time, leading to changes in the security of the attachment relationship. In an attempt to test out this hypothesis, a subsequent study examined whether common genes could account for the co-variation between parenting and adolescent attachment (Glazebrook, 2015). The study was underpowered but hinted that common genes may indeed play a role, giving weight to this hypothesis. Another possibility is that the changing conceptualisation of attachment in adolescence from an observed set of behaviours to a framework of mental representations may be genetically determined. It is also important to note that the population being studied was relatively low-risk with low rates of disorganised attachment. Future research into more diverse and high-risk populations could investigate the extent to which these results generalise to other groups, as heritability can be specific to a population rather than inherently attached to a certain trait (Rutter, 2014).

Summary

In summary, a number of factors have been investigated and proposed as possible antecedents of adolescent attachment. One of these is infant attachment, however, the extent to which it is continuous from infancy can vary depending on the population being studied. High-risk populations appear to be less stable than low-risk populations who show greater continuity. This may be due to the increased prevalence of negative life events in high-risk populations, which have been shown to have an impact on security. Negative life events, along with parental attachment style, family

functioning, socioeconomic status and the child's genes have all been proposed as antecedents that may be mediated by parenting. Parenting plays a significant role in determining the nature of infant attachment and it may be that this effect is similar in adolescence. However, the increased independence and developed cognitive skills in adolescents means that these factors may also influence attachment security independently of parenting. Environmental factors may directly impact an individual's sense of themselves, others and the world around them and therefore their IWM of self and other, while there may also be a genetic component to adolescent attachment at this later stage. In studies that try to illuminate the nature of the relationship between parenting and adolescent attachment including its role as a mediating variable, an over-reliance on self-report parenting measures and mixed results make this an important area for future study.

There are unclear effects of gender and cognitive ability in relation to adolescent attachment and the significant results found may be the consequence of measurement. Although evidence is limited, research suggests there may be a role of non-parent relationships when attachment is measured outside of the caregiving relationship. Finally, for adopted children, earlier adoption, parental sensitivity and the length of institutional care have all been shown to have an effect on adolescent attachment.

Limitations of Current Research

It has been hypothesised that a central mechanism by which multiple factors influence adolescent attachment is parenting. If this is the case, parenting should account for a significant amount of variance in attachment and any factors that are mediated by parenting should not account for additional variance once parenting is

controlled for. Apart from Martin et al. (2017) none of the reviewed studies assessed whether parenting plays a mediating role in relation to other factors. Some of the reviewed studies estimated that current parenting variables account for approximately 6% - 8% of the variance in adolescent attachment (Allen et al, 2004; Allen & Hauser, 1996; Matsuoka et al., 2006; Vaughn et al., 2016) while others found little or mixed effects of current parenting (Allen et al., 2004; O'Connor et al., 2018). These modest estimates and null findings would be surprising if parenting truly is a central mechanism influencing attachment and mediating the impact of other variables. One possibility is that our understanding of the relationship between parenting and adolescent attachment is being obscured due to methodological issues, such as bias in self-report measures of both parenting and attachment which are prevalent in this field of research. Considering the link between adolescent security and later outcomes (e.g. Allen et al, 2007; Kobak et al., 1991; Kobak et al., 2009; Rosenstein & Horowitz, 1996), this is an important question to be able to answer in order to direct resources to support secure attachment.

Methodological issues in the measurement of parenting. Evaluating and quantifying the relationship between parenting and adolescent attachment is complex due to the range of measurement tools used to evaluate both parenting and attachment. A large number of the reviewed studies examining this relationship rely on self-report measures of the parent-child relationship. Whilst this is cost effective and efficient, the use of parents' reports of this behaviour is susceptible to reporting biases (Morsbach & Prinz, 2006). Parenting has culturally and socially ascribed 'correct' and 'incorrect' standards and therefore a parent's rating of their own practices may be influenced by their wish to present their relationship with their child in a socially desirable way. They

may feel that parenting measures are overly intrusive or that there may be some risk in disclosing certain behaviours or feelings about their child. They may also not be fully aware of their parenting practices or how these practices compare to others. There are problems with using children's reports of parenting as well, as these may be influenced by the developmental stage of each child and may be more valid for observable rather than less overt, inferred behaviours (Taber, 2010). Insecurely attached adolescents may also perceive parenting in a more negative way making it hard to tease out the direction of the relationship from child reports.

Observational methods of parenting also have their strengths and weaknesses. They are more costly and cannot measure certain parenting behaviours that are likely to be inhibited under observation, such as harsh physical discipline or leaving a younger child unattended (Morsbach & Prinz, 2006). Additionally, the presence of an observer or a camera can change the way that participants react and make the observed behaviour differ from typical behaviour (Couteur & Gardner, 2008). Despite this, multiple observers and checks on reliability can make scores more objective and reduce the systematic bias present in self-report measures. Overall, combining measurement tools to produce multi-method, multi-respondent informed scores might be the best way to capture variability in parenting practices (Morsbach & Prinz, 2006).

Methodological issues in the measurement of attachment. Not only is there significant diversity and predominance of self-report use in the measurement of parenting, this review shows that a huge range of measurement tools and approaches are used to quantify attachment security. In infancy, the Strange Situation paradigm is a universally used, gold standard measure of attachment. As attachment moves from observable behaviour to a cognitive representation however, there is an exponential

increase in the range of measurement tools and the possible classifications or outcome scores used. The large majority of measures used in the reviewed studies are either adult and/or self-report measures. The advantage of self-report measures is their quick administration and resource efficiency. For example, Matsuoka et al. (2006) were able to distribute the very brief RQ (Bartholomew & Horowitz, 1991) to a sample of over 3900, due to the efficiency of this measure. However, despite its efficiency, there is limited evidence to link the RQ to the AAI (Bartholomew & Shaver, 1997). The two measures may even be measuring separate constructs (Crowell, Treboux & Waters, 1999). The RQ also shows greater instability over time (Scharfe & Bartholomew, 1994), which may be because it is heavily influenced by current and therefore changeable relationships.

Another self-report measure that was used in some of the reviewed studies (Buist et al., 2002; Erich et al., 2009) is the IPPA (Armsden & Greenberg, 1987). One benefit of the IPPA is that it was designed specifically for adolescents. It asks teens to consider their relationship with their parents and close friends and answer questions about the level of trust, communication and alienation in these relationships. It showed good test-retest reliability over a three-week period and is correlated with measures of self-esteem and family functioning (Armsden & Greenberg, 1987). Despite this, the main criticism of the IPPA and all self-report measures used in the field of attachment is that they only measure what an individual is consciously aware of and not unconscious aspects of attachment.

The alternatives to self-report measures are the more time and resource intensive narrative measures such as the AAI (George et al., 1985). A number of studies have examined the psychometric properties of the AAI in different populations, making it a gold standard measure in adult attachment research (e.g. Bakermans-

Kranenburg & van IJzendoorn, 1993; Benoit & Parker, 1994; Crowell et al., 1996; Sagi et al., 1994; van IJzendoorn, 1995; Verhage et al., 2016). It is therefore unsurprising that many reviewed studies chose this measure. However, when the population of interests is adolescents, its major drawback is that it was originally designed for parents and therefore validated on samples of adults (Fonagy, Steele and Steele, 1991). There are problems inherent in administering a measure to a population it has not been designed for or validated on, particularly when there is evidence to suggest differences between the two populations. As discussed previously, adolescents show differences in attachment compared to adults (Bakermans-Kranenburg & van IJzendoorn, 2009a) and are navigating conflicting themes of dependence and autonomy with parents, unique to their stage of development.

The Child Attachment Interview. However, inspired by the AAI, a promising alternative measure was created; the Child Attachment Interview (CAI; Target et al., 2003). The properties and strengths of this measure will be discussed in detail in the empirical paper (page 54), recognising it as a useful research tool. Due to its relatively recent development, only four of the reviewed studies utilised this promising measure (Fearon et al., 2014; O'Connor et al., 2018; Scott, Briskman, Woolgar et al., 2011; Vorria et al., 2015) and just two have used it to evaluate the link between parenting and attachment (O'Connor et al., 2018; Scott, Briskman, Woolgar et al., 2011). The CAI may be a more valid assessment of adolescent attachment than the range of alternative measures used in the reviewed studies and it is important to utilise its research potential in a field that has such diverse measurement tools.

Conclusion

In conclusion, parenting may be an important predictor of adolescent attachment and a may be a mediating variable for a number of other suggested antecedents that affect a parent's availability and sensitivity, such as parent conflict. However, the measurement tools used to quantify both parenting and adolescent attachment limit the reviewed studies. This makes it challenging to interpret the mixed effects of parenting on adolescent attachment and greater clarity is needed in terms of what aspects of parenting, if any, influence adolescent attachment. Additionally, more research is needed to clarify the extent to which parenting mediates the impact of other variables on adolescent attachment.

The Empirical Paper

The empirical paper therefore aims to investigate the link between parenting and adolescent attachment using robust measurements of both constructs. A robust measure of parenting would be one informed by multiple methods (both observation and self-report) and multiple informants. Additionally, it will be argued in the empirical paper that a promising measure of adolescent attachment is the CAI.

This research was designed around an existing dataset containing these robust measurements. The dataset also contained measures of the parental couple relationship, which has been linked to attachment via parenting (Martin et al., 2017). Considering the limited research into parenting as a mediating variable, the extent to which parenting mediates any association between the parental couple relationship and attachment will also be examined.

Therefore, using these measures in a large sample of adolescents, the empirical paper will aim to answer the following questions:

1. What aspects of parenting explain variation in adolescent attachment?
2. Does parenting mediate the impact of parental couple relationship quality on adolescent attachment?

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Part 2: Empirical Paper

Parenting and Attachment in Adolescence

Abstract

Aims. This study aimed to identify what aspects of parenting explain variation in adolescent attachment and whether parenting mediates the impact of the quality of the parental couple relationship on adolescent attachment.

Method. Participants were 329 adolescents with a mean age of 15 years and their parents, selected from a sub-sample of participants in the Twins Early Development Study. Parenting was assessed with an observed interaction task and parents' self-reports. Attachment was assessed using the Child Attachment Interview, a narrative measure of attachment security. Parental couple relationship quality was assessed with parents' self-reports of conflict tactics.

Results. The results showed that 11% of the variation in adolescent attachment was accounted for by parenting. Significant predictors amongst the parenting variables were an observational measure of communication and engagement and a parent-reported measure of involvement. There was no evidence of a mediating pathway between parental couple relationship quality and attachment via parenting behaviour.

Conclusions. Parents who are involved in their children's lives and demonstrate good communication skills fostering an autonomous but connected relationship have more securely attached adolescents. This adds to our understanding about the possible antecedents of adolescent attachment and can inform clinical interventions aimed at improving attachment security.

Introduction

Despite changes in the nature of attachment from infancy to adolescence, insecurity has similarly been linked to poorer adjustment outcomes, underscoring the importance of studying attachment at this stage. Parenting factors have been identified as key determinants of attachment security in infancy (e.g. De Wolff & van IJzendoorn, 1997), however their role in adolescence is less clear, and therefore the focus of the current study. Improvements in measurement tools for this population provide an opportunity to develop our understanding of the relationship between parenting and adolescent attachment. In particular, The Child Attachment Interview (CAI; Target, Fonagy & Shmueli-Goetz, 2003) is underused despite its promising properties as a measure of attachment in childhood and adolescence.

Adolescent Attachment

Attachment, the bond between a child and their primary caregivers (Bowlby, 1969/1982), varies from infancy to adolescence showing only moderate stability (Fraleigh, 2002). Research investigating attachment in infancy has identified that parenting behaviours including sensitivity and mutuality influence the security of the attachment bond (De Wolff & van IJzendoorn, 1997), which is associated with psychological functioning and psychopathology in later life (e.g. Fearon, Bakermans-Kranenburg, van IJzendoorn, Lapsley & Roisman, 2010; Sroufe, 2005). Attachment in adolescence is similarly linked to poorer adjustment outcomes including impulsive and hostile behaviour (Kobak, Zajac & Smith, 2009), depressive symptoms (Kobak, Sudler & Gamble, 1991), difficulties in peer relationships (Allen, Porter, McFarland, McElhaney & Marsh, 2007) and general psychopathology (Rosenstein & Horowitz,

1996). However, the causal antecedents are less clear, as discussed in the conceptual introduction.

That attachment changes substantially in adolescence is unsurprising considering the different tasks of infancy and adolescence, with teenagers seeking greater independence and use of peers and less parental proximity and reassurance (Allen and Tan, 2016). The way attachment is measured also changes between infancy and adolescence, from observed behaviour to assessments of mental representations (or Internal Working Models; IWMs) of attachment in the form of patterns of speech and thinking relating to attachment history, feelings and expectations (Bowlby, 1969/1982; Main, Kaplan & Cassidy, 1985).

Considering these differences, parenting should not be assumed to play as important a role for adolescent attachment as it seems to for infants. Research suggests that a range of parenting variables do influence adolescent attachment, but there are mixed results, making it challenging to identify what aspects of parenting are most significant. In a study using robust measures of attachment and parenting, it was shown that parental positivity and monitoring and supervision were linked to attachment security (Scott, Briskman, Woolgar, Humayun & O'Connor, 2011). Other studies have indicated that autonomy and connection (Allen & Hauser, 1996; Van Petegem, Vansteenkiste & Beyers, 2013), support and involvement (Vaughn et al., 2016) parental care and overprotection (Matsuoka et al., 2006), satisfaction, approval, criticism and companionship (Ruhl, Dolan & Buhrmester, 2015) may also be linked to adolescent security. These studies are reviewed in greater detail in the conceptual introduction (page 18).

However, another study found that only adolescents' behaviour, not parenting or dyadic measures, predicted security (Allen, McElhaney, Kuperminc & Jodl, 2004).

This study may have been underpowered, as even in infancy, effect sizes of parenting on infant attachment are merely moderate (De Wolff & van IJzendoorn, 1997). Results found in studies of much larger samples (e.g. Matsuoka et al., 2016; Van Petegem et al., 2013; Vaughn et al., 2016) suggest a true effect of parenting may exist, but more research is needed to clarify the nature of attachment related parenting behaviours.

Parenting has also been hypothesised as a mechanism explaining the impact of multiple other factors on adolescent attachment. The heritability of adolescent attachment may be due to the child's phenotype interacting with parenting, which in turn leads to changes in attachment security (Fearon, Shmueli-Goetz, Viding, Fonagy & Plomin, 2014; Glazebrook, 2015). Additionally, evidence indicates that a mother's attachment style during pregnancy may be associated with her adolescent's later security, which has been assumed to reflect the more sensitive parenting of a reflective, secure caregiver (Steele, Perez, Segal & Steele, 2016). Elements of family functioning, such as parental conflict, are proposed to 'spill over' into the parent-child relationship reducing parental sensitivity and subsequently attachment security (Feinberg, Kan & Hetherington, 2007; Martin, Sturge-Apple, Davies, Romero & Buckholz, 2017). Other adverse experiences such as parental divorce and poverty have similarly been linked to adolescent attachment and may exert their influence through a reduction in parental availability (Allen et al., 2004; Lewis, Feirling & Rosenthal, 2003; Rawatlal, Pillay & Kliewer, 2005).

It is a plausible suggestion that parenting acts as a mediating variable for a number of these factors as there is evidence of associations between them and the parent-child relationship. For example, a large meta-analysis demonstrated that a higher level of conflict between parents is associated with more negative parent-child relationships (Erel & Burman, 1995). Economic hardship has similarly been linked to

more hostility and coercion between parents and children (Conger, Ge, Elder, Lorenz & Simons, 1994).

In summary, a range of parenting variables have been linked to adolescent security, and further research would help to clarify important factors. Additionally, parenting has been hypothesised as a mediating variable for other potential antecedents of adolescent attachment, however few studies have assessed this.

Limitations of Research

There is also significant diversity in measurement tools used to quantify attachment and parenting and many of the studies examining the relationship between the two rely purely on self-report measures or those designed for adults. This limits confidence in the results of these studies and may obscure the true contribution of parenting factors, as discussed in detail in the conceptual introduction (page 35). To ensure that the relationship between parenting and adolescent attachment is being investigated in the most rigorous way, the best approach to capture variability in parenting may be to use observational measures as part of a multi-method, multi-respondent informed assessment (Morsbach & Prinz, 2006). There is also a need for a narrative measure of attachment, specifically designed for an adolescent population.

The Child Attachment Interview

A relatively recently developed and promising tool designed to fill the measurement gap of attachment in middle childhood and adolescence is the CAI. The CAI was first developed as an interview for 8 to 13-year-olds (Target, Fonagy & Shmueli-Goetz, 2003) and consists of a series of questions with prompts about a child's relationship with each parent separately. It allows for developmentally

appropriate scaffolding and when trained, coders are taught to be sensitive to the child's abilities and not mistake immaturity for insecurity. Children are asked to reflect on their current relationships with their parents and describe their experiences. The measure also asks specifically about times when the attachment system is likely to be activated, for example, at times of loss or illness. The CAI can produce both categorical outcomes in the form of attachment classifications and continuous scores such as overall coherence. Continuous scores may have benefits over attachment classifications because if attachment meaningfully falls along a continuum, placing scores into categories could lose important individual differences (Crowell, Fraley & Roisman, 2016).

The CAI's psychometric properties have been examined in children aged 7-12 (Shmueli-Goetz, Target, Fonagy & Datta, 2008) and good inter-rater reliability was found. Attachment classifications appeared to remain relatively stable even when tested one year apart. Three of the continuous scales that can be derived from the interview (Emotional Openness, Coherence and Dismissal) showed stability over time as well. Results of the CAI were not predicted by demographic or cognitive variables and there was a significantly higher predominance of insecure attachment in a referred psychiatric sample compared to a community sample. There was good agreement between the CAI and another measure of attachment in childhood; the Separation Anxiety Test (Wright, Binney & Smith, 1995) and there was also a significant relationship between the CAI and the corresponding parents' attachment security. Additionally, those with secure attachments scored higher on measures of relationship quality and protective psychological variables such as emotion regulation.

The psychometric properties of the CAI were later examined in a clinical sample of adolescents aged 12 to 17 (Venta, Shmueli-Goetz & Sharp, 2014) and

similar psychometric properties were found, suggesting it is appropriate to use in this population. As such, when examining attachment in adolescents, the CAI is an appealing measurement tool. Although it requires more extensive resources and time than self-report measures, it is able to activate the attachment system and tap into the unconscious aspects of attachment. It is developmentally sensitive and has good psychometric properties when assessed in young people from 7 to 17 years old.

However, due to its relatively recent development and evaluation, only two studies have used it to review the link between parenting and adolescence (O'Connor et al., 2018; Scott, Briskman, Woolgar et al., 2011). None have used it to examine the possible mediating role of parenting between other factors and attachment security.

The two studies used similar methodologies and samples; Scott, Briskman, Woolgar and colleagues (2011) carried out a cross sectional investigation of the relationship between parenting and attachment with a combined high, medium and low-risk sample. This relationship was then reassessed in high and medium-risk samples, taking measures of early years parenting into account (O'Connor et al., 2018). The original study found that a collection of observed parenting variables termed parental positivity (consisting of warmth, communication, assertiveness and involvement), along with self-reported monitoring and supervision were linked to security. The second study found that associations between current parenting behaviours (observed warmth and engagement) and adolescent attachment were no longer significant once early years parental sensitivity was controlled for. This is somewhat surprising, given the different tasks of early childhood and adolescence and changes in relationships between children and parents (Allen & Tan, 2016). It is also in contrast to the results of Vaughn and colleagues (2016). There was no current measure of parenting sensitivity or mutuality in either of these studies (O'Connor et

al., 2018; Scott, Briskman, Woolgar et al., 2011), despite the fact that these are key factors linked to attachment in infancy (De Wolff & van IJzendoorn, 1997). It may be that the five parenting factors assessed in these studies (warmth/support, communication, assertiveness, involvement, anger/rejection, and coercion) fail to fully capture the variation in current parenting. To further our understanding of the parenting factors linked to adolescent attachment, more research is needed with high quality measures such as the CAI, exploring a broader range of parenting variables. The CAI's developmental sensitivity and psychometric properties make it a valuable tool in a field that has such diverse measurement instruments. Considering the link between adolescent security and later outcomes (e.g. Allen et al, 2007; Kobak et al., 1991; Kobak et al., 2009; Rosenstein & Horowitz, 1996), the nature of the relationship between parenting and adolescent attachment, including its function as a mediating variable for other factors is important to understand in order to direct resources to support secure attachment.

The Current Study

The current study was developed with an existing dataset in mind that contained robust measures of both parenting and attachment. To quantify parenting, a multiple method (both observation and self-report) and multiple informant approach was used, covering a broad range of parenting variables. To measure attachment, the CAI, which is a reliable and psychometrically valid interview-based measure of adolescent attachment, was used. The existing dataset also provided an opportunity to add to the limited research into the role of parenting as a mediating variable between other factors and adolescent attachment. As measures of parental couple relationship quality formed part of the dataset and have been linked to attachment via parenting

(Martin et al., 2017), the extent to which parenting mediates any association between parental couple relationship quality and parenting was also examined. Therefore, the current study aimed to answer the following research questions:

1. What aspects of parenting explain variation in adolescent attachment?
2. Does parenting mediate the impact of parental couple relationship quality on adolescent attachment?

Method

Participants

Participants for the current study were selected from the Twins Early Development Study (TEDS) sample. The TEDS sample consists of a large, longitudinal cohort of twins born in England and Wales between 1994 and 1996, with around 12,000 twin pairs returning information at first contact. Whilst there has been attrition over the years of follow up, the sample has remained reasonably representative of the UK population (Trouton, Spinath & Plomin, 2002).

From this large dataset, Fearon and colleagues (2014) selected 551 same-sex twin pairs for their study into genetic influences on adolescent attachment. Participants were eligible for participation in this study if they were aged 15 years \pm 14 months and lived in the greater London area. They were assessed with a primary caregiver who, in most cases, was their mother.

Participants in the current study consisted of 329 adolescents randomly selected from this sub-sample. Because the focus of this study was on between-family

variation rather than within twin pair variation, one child from each twin pair was selected in order to avoid non-independence of observations.

The demographic information for the sample is presented in Table 1. The majority of the sample (85.3%) was White or White British and the median household income was £30,000-£50,000. Approximately 34% of mothers and fathers had degree level education or above and the majority were employed in either full or part time education. There were slightly more female participants in the study (53.8%). Demographics between males and females were generally comparable, although there was more missing data for female participants. This demographic information was consistent with that of the full sample utilised in Fearon et al. (2014).

Of the 329 interviews, 174 were classified as secure, 130 as dismissing, 14 were preoccupied and 8 were disorganised. Adolescents were asked about their contact with their parents; 67.8% reported that they lived with both parents, 16.7% lived with one parent and 15.5% of data about parent contact was missing.

Table 1

Participant demographic information

| | All Participants (n=329) | Male Participants (n=152) | Female Participants (n=177) |
|----------------------------|-----------------------------|------------------------------|--------------------------------|
| Gender | | | |
| % Female | 53.8 | | |
| Mean Age | | | |
| | 14.93 (.28) | 14.91 (.27) | 14.94 (.29) |
| Ethnicity | | | |
| % Asian or Asian British | 3.0 | 3.3 | 2.8 |
| % Black or Black British | 2.1 | 2.0 | 2.3 |
| % Mixed Ethnicity | 4.0 | 5.3 | 2.8 |
| % White/White British | 85.4 | 84.9 | 85.9 |
| % Any Other Ethnicity | 1.2 | 2.0 | 0.6 |
| % Missing | 4.3 | 2.6 | 5.6 |
| Household Income | | | |
| % 0-10K | 2.4 | 2.0 | 2.8 |
| % 10-20k | 8.5 | 9.9 | 7.3 |
| % 20-30k | 13.7 | 12.5 | 14.7 |
| % 30-50k | 29.5 | 29.6 | 29.4 |
| % 50-70k | 16.4 | 17.8 | 15.3 |
| % 70k+ | 24.9 | 24.3 | 25.4 |
| % Missing | 4.6 | 3.9 | 5.1 |
| Mothers Education | | | |
| % None | 3.3 | 2.6 | 4.0 |
| % GCSEs | 19.5 | 17.8 | 20.9 |
| % A-Level | 11.2 | 13.2 | 9.6 |
| % NVQ/HND | 21.6 | 17.8 | 24.9 |
| % Degree Level | 34.4 | 39.4 | 29.9 |
| % Other | 11.6 | 7.2 | 5.6 |
| % Missing | 3.6 | 2.0 | 5.1 |
| Fathers Education | | | |
| % None | 4.9 | 5.9 | 4.0 |
| % GCSEs | 20.7 | 21.1 | 20.3 |
| % A-Level | 7.3 | 8.6 | 6.2 |
| % NVQ/HND | 19.8 | 16.4 | 22.6 |
| % Degree Level | 34.3 | 35.6 | 33.3 |
| % Other | 6.1 | 7.2 | 5.1 |
| % Missing | 6.1 | 3.9 | 7.9 |
| Mother's Occupation | | | |
| % Unemployed | 11.2 | 12.5 | 10.7 |
| % Self-employed | 10.9 | 8.6 | 13.0 |
| % Employed part-time | 40.7 | 38.8 | 42.4 |
| % Employed full time | 32.8 | 38.2 | 28.2 |
| % Missing | 4.0 | 2.0 | 5.6 |
| Father's Occupation | | | |
| % Unemployed | 5.2 | 5.9 | 4.5 |
| % Self-employed | 17.6 | 17.8 | 17.5 |
| % Employed part-time | 2.1 | 2.6 | 1.7 |
| % Employed full time | 66.6 | 67.8 | 65.5 |
| % Missing | 8.5 | 5.9 | 10.7 |

Measures

Demographic information. Parents provided information about each child's ethnicity, family income, parental educational level and parental employment status.

Assessment of adolescent attachment: The Child Attachment Interview.

All participants had completed the CAI, a semi-structured interview designed to assess attachment in middle childhood to adolescence (Target et al., 2003). The measure was developed with reference to the extensively validated Adult Attachment Interview (AAI; George, Kaplan & Main, 1996). It deviates from the AAI in order to be developmentally sensitive, however it similarly asks about perceptions of, and experiences with attachment figures. Responses are then examined for the coherence with which young people reflect on attachment relationships. For the current sample, interviews were conducted by trained interviewers, filmed, and transcribed for coding. These were coded to produce scores on a number of scales including overall coherence, as well as assigning a secure or insecure (dismissing, preoccupied or disorganised) attachment style. The overall coherence scale is the primary indicator of the security of attachment (Shmueli-Goetz et al., 2008) and therefore was used in the current study to quantify attachment. Using a continuous measure may also be more sensitive to meaningful continuous differences that would be lost by using categories of attachment (Crowell et al., 2016). A high score indicates emotional openness, good use of examples, consistency, reflection and conflict resolution.

The CAI's psychometric properties have been examined in children aged 7-12 (Shmueli-Goetz et al., 2008) and 12 to 17 (Venta et al., 2014) with good inter-rater reliability. Attachment classifications and coherence scores appeared to remain

relatively stable over time. Results of the CAI were not predicted by demographic or cognitive variables and could distinguish between clinical and community samples.

Assessment of parenting quality: Hot topics conflict resolution task. All participants had taken part in a ‘hot topics’ task (Pike, McGuire, Hetherington, Reiss & Plomin, 1996; Scott, Briskman, Woolgar et al., 2011) with their parent in which they were asked to discuss and try to resolve a contentious subject of their choosing. Adolescents were given suggested topics of conflict (for example money, schoolwork, alcohol and drugs) and asked to select the two most disputed with their parent. For the first topic, the pair was instructed to present their respective sides of the argument, discuss and try to resolve this subject. They were given eight minutes for the task and were asked to do the same with the second topic if there was time remaining. This interaction was videotaped for the purposes of coding.

Rating parenting quality: Adapted coding system. The videotaped hot-topics interactions were coded using an adapted coding system (Glazebrook, 2015). This system draws on two previously developed coding frameworks; the Family Interaction Coding System (FICS; Hetherington, Hagan & Eisenberg, 1992) and the Coding of Attachment Related Parenting (CARP; Matias, Scott & O’Connor, 2006). The FICS is designed for coding conflict resolution tasks and contains 10 scales that can be coded for the parent as well as the child, with one scale producing a joint score for the pair (problem solving). The scales have shown good inter-rater reliability (Scott, Briskman, Woolgar et al., 2011) and correlate with self-reported parenting (Scott, Briskman & Dadds, 2011). For the purpose of this study, only parent ratings and the dyadic rating for the problem solving scale were used. The anger/rejection,

coercion, assertiveness, involvement, communication skills, depressed mood, positive mood scales and transactional conflict scales were not altered from the original measure. However, parent scores on the warmth/support scale were separated into a warmth scale (see Appendix A) and a support scale (see Appendix B) and the problem solving scale was adapted to consider efforts to resolve the conflict as well as the outcome of these efforts (see Appendix C). The CARP is a measure of parent and young child interaction developed specifically with attachment theory in mind. This measure shows adequate inter-rater reliability and correlates with attachment (Matias et al., 2014). The sensitive responding and mutuality scales were selected from this measure because of their link to attachment (De Wolff & van IJzendoorn, 1997) and the fact that they were not included in the FICS. These scales were adapted (see Appendix D and E) to make them appropriate and relevant to adolescents and the hot topics task. For example, references to ‘play’ were changed to ‘conversation’, ‘discussion’ or ‘task’.

Assessment of parenting quality: Alabama Parenting Questionnaire. All parents had completed a self-reported version of the Alabama Parenting Questionnaire (APQ), a 42-item survey for parents of children aged 6-18 (Shelton, Frick & Wootton, 1996). It consists of five subscales; positive involvement with children, supervision and monitoring, positive discipline techniques, consistent discipline and corporal punishment. The measure shows acceptable internal consistency (Dadds, Maujean & Fraser, 2003; Shelton et al., 1996) and validity, demonstrating an ability to differentiate clinical from non-clinical samples of young people (e.g. Prevatt, 2003; Shelton et al., 1996; Stanger, Dumenci, Kamon & Burstein, 2004). Mothers’ reports were used for the current study as the large majority of teenagers completed the

assessments with their mother. Where this was not available, fathers' reports were used (3% of cases). Alpha internal consistencies in the current study for the positive involvement, supervision and monitoring, positive discipline and corporal punishment scales were .77, .77, .76, .82 and .60 respectively. The slightly lower alpha value for corporal punishment is likely to be because there was a low prevalence of corporal punishment behaviours according to parents' reports.

Assessment of parental couple relationship quality: Revised Conflicts Tactics Scale. To quantify parent relationship quality a revised version of the Conflict Tactics Scale (CTS, Strauss, 1979) was used (see Appendix F). The CTS is an 18-item measure consisting of three different subscales; reasoning, symbolic verbal aggression and physical aggression. This scale was used with another large cohort of twins and it was found that reports of violence between parents were not frequent enough to justify the use of the physical aggression scale (Plomin, Reiss, Hetherington & Howe, 1994). Therefore, the items relating to physical aggression were not used in the study, resulting in eight responses to conflict. The current study therefore uses the same shortened version of the CTS used by Plomin et al. (1994). Parents were asked to consider how often they engaged in each of the eight responses to conflict and how often their partner did. Items one to four and nine to 12 were summed and then subtracted by eight (so that the scores started at zero) to produce a reasoning score for the couple. Items five to eight and 13 to 16 were summed and subtracted by eight to produce a verbal aggression score. They were also asked the same questions about each of their two twins, but for the purposes of the current study, only the partner ratings were used. Alpha internal consistencies in the current study for the reasoning and verbal aggression scales were .85 and .86 respectively.

Sample Size and Power Calculation

A power analysis was carried out using G*Power software. In order to detect an association between parenting and adolescent attachment equivalent to an R^2 value of .08 (the estimate from Vaughn et al., 2016) with 80% power in a regression analysis, a sample of 93 would be needed. There were no comparable studies investigating the effect of parental couple conflict on adolescent attachment above and beyond that of parenting. Therefore, a sensitivity power analysis was carried out to identify the size of the effect required given 80% power, a sample size of 329 and an alpha level of .05. The results showed that the current study has enough power to detect an effect size of $R^2 = .02$ or above.

Procedure

Participants who took part in the study investigating genetic and environmental contributions to adolescent attachment (Fearon et al., 2014) completed the CAI either at their home or at one of two testing sites. Adolescents and their parents also completed the hot topics conflict resolution task and a battery of questionnaires. The CAIs were coded as part of the 2014 study, however the hot topics task was not. The CAIs were coded by research assistants trained by one of the authors of the measure. The inter-rater reliability (intra-class correlation co-efficient) for coherence was .72.

For the purposes of a separate research project, trainees KG and NA used the adapted coding system to assess parenting characteristics for 100 twin pairs using the hot topics task (Glazebrook, 2015). One twin from each of these pairs was randomly selected and included in the current study sample.

The current study. The author and a research assistant, MK, used the adapted coding system to code a further 229 videos, selecting one child randomly from each twin pair. The author coded 100 videos and MK coded 129 videos. They were blind to the adolescent's attachment style and demographic information. This resulted in a total sample of 329 when combined with the 100 participants coded by KG and NA.

Inter-rater reliability. In order to make scoring reliable, the author and MK viewed randomly selected videos from the sample of videos that had already been coded by researchers KG or NA. These were discussed and scored according to the adapted framework, before comparing this to the scores of the original coders to check for consistency.

After this process, 45 different videos were selected from this sample and coded by the author and MK independently for the purpose of establishing inter-rater reliability. To ensure that ratings did not drift, the author and MK also coded additional videos at regular intervals while they were coding the final sample (n=10). Across the total 55 videos, inter-rater reliability between the author, MK and KG/NA reached acceptable levels with six of the intra-class correlations (ICCs) $\geq .70$ and four ICCs $\geq .60$ (Table 2). The mean ICC was .67, a similar value to other studies using the Family Interaction Coding System (Dietz et al., 2008; Hetherington et al., 1999; Kim, Hetherington & Reiss, 1999). Therefore, although three of the scales fell below .60, all 13 scales were included in analysis.

Table 2

Inter-rater Reliability for Parenting Scales (Intra-class Correlation Coefficients)

| Scale | r (n=55) |
|------------------------|----------|
| Anger/rejection | .71 |
| Warmth | .74 |
| Support | .62 |
| Coercion | .54 |
| Assertiveness | .57 |
| Involvement | .75 |
| Transactional Conflict | .71 |
| Communication | .52 |
| Depressed mood | .64 |
| Positive Mood | .66 |
| Problem Solving | .63 |
| Sensitivity | .74 |
| Mutuality | .83 |

Ethics

Kings College London ethics committee provided ethical approval for the original TEDS study. The second study investigating adolescent attachment (Fearon et al., 2014) received ethical approval from the University of Reading Research Ethics Committee.

Data Analysis

The large number of parenting variables obtained from the hot topics task were reduced using parallel analysis of principal components. This is a validated procedure widely recommended by statisticians to determine the number of factors to retain from principal components analysis (O'Connor, 2000). Typically, factors are extracted from principal components analysis if they have an eigenvalue greater than one. However, this rule can both over and under estimate the number of significant factors as well as producing unreliable factors. Parallel analysis is a statistical method that assesses the

significance of factors by checking whether they account for more variation than that expected from random data.

The significance of correlations between measured variables was then tested to understand relationships between predictor variables and coherence, as well as the relationships between predictors. Following this, a hierarchical regression was carried out (using listwise deletion for cases with missing data) to assess the proportion of variation in adolescent attachment (as measured by the coherence scale of the CAI) explained by parenting, and whether parental couple relationship quality (as measured by the revised CTS) accounts for any additional variance in attachment. In step one of the hierarchical regression, ethnicity (1=White or White British, 0=Any other ethnicity), family income and gender were added in order to control for demographic variables. Maternal and paternal education was not added due to the high percentage of 'other' and missing values present in the data. In the second step, all parenting variables from the APQ and the factors drawn from coding the hot topics task were entered. In order to test whether parental relationship quality explained additional variance in coherence, the two variables from the CTS were entered in the final block.

Results

Descriptive Statistics

The means and standard deviations of major study variables are presented in Table 3. Male adolescents scored slightly lower in coherence than females $t(323)=-2.96$, $p=.003$ and had less monitoring and supervision (measured by the APQ) than females $t(322)=3.68$, $p<.001$. Parents of male adolescents showed greater levels of depressed mood (coded from the hot topics task) than those of female adolescents

($t(327)=10.92$, $p=.001$). After applying Bonferroni corrections for multiple comparisons, the gender difference in coherence was no longer significant.

Table 3

Means and Standard Deviations for Study Variables

| Scale | All Participants (n=329) | Male Participants (n=152) | Female Participants (n=177) |
|---|-----------------------------|------------------------------|--------------------------------|
| <i>Parenting Scales</i> | | | |
| Family Interaction Coding System | | | |
| Anger/rejection | 1.98 (.97) | 1.91 (.94) | 2.03 (.99) |
| Warmth | 3.36 (.97) | 3.24 (1.00) | 3.27 (.94) |
| Support | 3.62 (1.01) | 3.57 (.98) | 3.66 (1.04) |
| Coercion | 1.59 (.91) | 1.64 (.93) | 1.55 (.89) |
| Assertiveness | 4.07 (.80) | 4.03 (.77) | 4.10 (.82) |
| Involvement | 4.53 (.63) | 4.54 (.62) | 4.53 (.62) |
| Transactional conflict | 1.83 (.94) | 1.74 (.87) | 1.91 (.87) |
| Communication | 4.23 (.75) | 4.21 (.71) | 4.25 (.79) |
| Depressed mood | 1.17 (.50) | 1.22 (.61) | 1.13 (.37) |
| Positive mood | 3.44 (.88) | 3.38 (.90) | 3.49 (.86) |
| Problem solving | 4.02 (.98) | 4.07 (.95) | 3.98 (1.00) |
| Coding of Attachment Related Parenting | | | |
| Sensitivity | 4.86 (1.35) | 4.75 (1.34) | 4.95 (1.36) |
| Mutuality | 4.95 (1.22) | 4.78 (1.24) | 5.10 (1.19) |
| Alabama Parenting Questionnaire | | | |
| Involvement | 28.38 (4.83) | 27.91 (5.10) | 28.78 (4.56) |
| Positive parenting | 18.02 (3.22) | 17.69 (3.32) | 18.31 (3.12) |
| Poor monitoring and supervision | 8.39 (4.69) | 9.40 (5.19) | 7.51 (4.01) |
| Inconsistent discipline | 7.60 (3.89) | 7.66 (4.15) | 7.55 (3.67) |
| Corporal punishment | 1.99 (1.56) | 2.06 (1.61) | 1.93 (1.52) |
| <i>Attachment Scale</i> | | | |
| Child Attachment Interview | | | |
| Coherence | 5.24 (1.74) | 4.94 (1.68) | 5.50 (1.76) |
| <i>Parental Couple Relationship Variables</i> | | | |
| Conflict Tactics Scale | | | |
| Reasoning | 17.89 (7.92) | 17.84 (7.41) | 17.94 (8.36) |
| Verbal aggression | 10.03 (7.14) | 9.81 (6.69) | 10.22 (7.55) |

Data Reduction

To reduce the number of parenting variables from the hot topics task, the 13 items were subjected to parallel analysis of principal components. Three factors had eigenvalues > 1 . However, only two eigenvalues exceeded those corresponding to the 95% percentile of the distribution of random data eigenvalues (see Appendix G, Table 1). Therefore, only the first two factors were retained. Principal components analysis was performed, with the number of factors to be extracted set to two (see Appendix G, Table 2). An oblique rotation (direct oblimin) was performed on the data to increase the interpretability of the two factors (see Appendix G, Tables 3, 4 and 5). The rotated solution showed that sensitivity, support, warmth and positivity loaded positively onto factor one and conflict, anger/rejection, and coercion loaded negatively. Therefore, this factor was labelled as high empathy, low hostility. Involvement, communication, problem solving, assertiveness and mutuality all loaded positively onto the second factor, therefore this was labelled as communication and engagement. Scores on these factors were saved as new variables to be used in the next stage of analysis.

Univariate Analysis

Correlations between measured variables are presented in Table 4 for descriptive purposes. Coherence was correlated with two of the five parenting variables; communication and engagement and APQ involvement. By Cohen's (1992) criteria these were small to moderate. As would be expected, many of the parenting variables showed small to moderate correlations with each other. Scores on the CTS reasoning and verbal aggression scales showed small to moderate correlations with some parenting variables, however they did not correlate with coherence.

Table 4

Correlations between Study Variables

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|--|------|-------|------|-------|------|-------|------|------|------|------|-------|-----|----|
| 1. Coherence | - | | | | | | | | | | | | |
| 2. High empathy/low hostility | .08 | - | | | | | | | | | | | |
| 3. Communication and engagement | .23* | .42* | - | | | | | | | | | | |
| 4. APQ Involvement | .24* | .12 | .14 | - | | | | | | | | | |
| 5. APQ Positive parenting | .13 | .07 | .03 | .52* | - | | | | | | | | |
| 6. APQ Poor monitoring and supervision | -.01 | -.11 | -.04 | -.32* | -.17 | - | | | | | | | |
| 7. APQ Inconsistent discipline | -.04 | -.32* | -.11 | -.20* | -.06 | .25* | - | | | | | | |
| 8. APQ Corporal punishment | -.02 | -.23* | -.12 | -.19 | -.05 | .13 | .45* | - | | | | | |
| 9. CTS Reasoning | .08 | -.08 | .10 | .22* | .17* | .04 | .10 | .12 | - | | | | |
| 10. CTS Verbal aggression | -.01 | -.15 | -.01 | .01 | .00 | -.10 | .19* | .34* | .21* | - | | | |
| 11. Ethnicity | .08 | -.08 | -.02 | .12 | .11 | .05 | .05 | .00 | .12 | -.01 | - | | |
| 12. Family income | .04 | -.08 | -.01 | .10 | .10 | .09 | .05 | -.02 | .10 | -.03 | .75** | - | |
| 13. Gender | .16* | .02 | .06 | .09 | .10 | -.20* | -.01 | -.04 | .01 | .03 | .08 | .03 | - |

Notes. APQ = Alabama Parenting Questionnaire, CTS = Conflict Tactics Scale, * = Correlation is significant at the 0.001 level (2-tailed)

Hierarchical Regression

Scatterplots did not demonstrate the presence of any curvilinear relationships between the dependent and independent variables suggesting that the data met the assumption of linear relationships. A histogram of standardised residual scores from the regression analysis showed that the distribution was close to normal, meeting the assumption of multivariate normality. A scatterplot of residuals against predicted values showed that the data met the assumption of homoscedasticity. Finally, correlations showed only small to moderate relationships between independent variables and Variance Inflation Factor (VIF) scores were < 2.5 , suggesting the data met the assumption of no multicollinearity.

The first block of the hierarchical multiple regression, with coherence as the dependent variable, revealed that demographic variables alone produced a significant model ($R^2 = .03$, $F(3,274)=2.68$, $p=.047$); see Table 5). Child gender was the only significant independent predictor in this model ($\beta=.57$, $p=.007$). When parenting variables were entered in the second block, this accounted for an additional 10.7% of the variance in adolescent attachment, which was highly statistically significant ($F(7,267)=4.71$, $p<.001$). The significant predictors in this model were observed communication and engagement ($\beta=.45$, $p <.001$) and APQ involvement ($\beta=.09$, $p=.002$). Communication and engagement uniquely explained 4.4% of the variance in coherence scores and APQ involvement uniquely explained 3.3%. Adding CTS scores to the model did not explain any additional variance ($F(2,265)=.24$, $p=.79$). It was notable that the measures of parent relationship quality were not correlated with coherence in the earlier univariate analysis. They were correlated with some APQ dimensions including involvement, which was linked to coherence. However, the lack of correlation between CTS scores and coherence mean that the results of the

regression analysis are not taken as evidence of the hypothesised mediating pathway between parental conflict and coherence via parenting behaviour.

Table 5

Regression Analysis Predicting Coherence Scores

| Predictor | Step 1 | | Step 2 | | Step 3 | |
|--|---------|------|---------|------|---------|------|
| | β | Sig. | β | Sig. | β | Sig. |
| Demographic variables | | | | | | |
| Ethnicity | .000 | .555 | .000 | .750 | .000 | .742 |
| Family income | .000 | .731 | .000 | .546 | .000 | .545 |
| Gender | .569 | .007 | .544 | .009 | .543 | .009 |
| Parenting variables | | | | | | |
| Empathy/low hostility | - | | -.074 | .638 | -.084 | .582 |
| Communication and engagement | - | | .439 | .000 | .449 | .000 |
| APQ Involvement | - | | .083 | .002 | .087 | .002 |
| APQ Positive parenting | - | | .015 | .783 | .016 | .773 |
| APQ Monitoring and supervision | - | | .026 | .100 | .026 | .105 |
| APQ Inconsistent Discipline | - | | .016 | .749 | .018 | .708 |
| APQ Corporal punishment | - | | .041 | .456 | .052 | .390 |
| Parent-partner relationship variables | | | | | | |
| Reasoning | - | | - | | -.008 | .601 |
| Verbal aggression | - | | - | | -.004 | .745 |
| R ² Change | .028 | .047 | .107 | .000 | .002 | .791 |
| Total R ² | .028 | | .135 | | .137 | |

Discussion

The first aim of this study was to find out what aspects of parenting were associated with adolescent attachment. Using mixed-method, multi-informant measures of parenting and a narrative measure of attachment, the current study estimated that 11% of the variation in adolescent attachment was accounted for by

parenting. This is at the higher end of the range of some previous estimates (e.g. Allen & Hauser, 1996; Matsuoka et al., 2016) and could indicate that less robust measures used in these studies may lead to a slight underestimation of the impact of parenting. Significant predictors amongst the parenting variables were an observational measure of communication and engagement (consisting of involvement, communication skills, problem solving, assertiveness and mutuality) and a parent-reported measure of involvement.

The second aim of the study was to see whether parenting mediated the impact of parental couple relationship quality on attachment security. The idea behind this was that the quality of the parental relationship might impact the parent-child relationship by reducing parental sensitivity and subsequently attachment security (e.g. Feinberg et al., 2007; Martin et al., 2017). The results of this were inconclusive. There were correlations between parental couple relationship measures and self-reported parenting, but not between parental relationship measures and coherence. This suggests that the parental relationship could impact on parenting, although no firm conclusions can be drawn about the direction of this relationship. However, relationship quality does not appear to be linked to attachment security. Therefore, even though parental couple relationship measures did not account for additional variance in attachment above and beyond that of parenting variables, this is not considered to be evidence of mediation. This may indicate that the quality of the parental relationship does not influence adolescent security in this population, contrary to associations found in other studies (e.g. Martin et al., 2017). However, it could also signify an issue with measurement. There may have been a reporting bias with parents choosing more socially desirable answers about conflict with their partner. Additionally, the revised CTS measured the relationship between the parent

completing the form and their partner, which may or may not have been the child's other parent. This will only have impacted a small number of participants as at least 68% of participants reported living with both parents. It is likely that number would be even higher if there was less missing data for this variable. However, to reduce even small measurement error it may be helpful to specify this in future research as adolescents may be more affected if there are problems in the parental couple (Martin et al., 2017). In their study that investigated the link between parenting, marital conflict and adolescent attachment, Martin and colleagues (2017) used the Childrearing Disagreements Questionnaire (Jouriles et al., 1991). This is a measure that asks specifically about childrearing disagreements, which may be a better predictor of child adjustment than global marital discord (Jouriles et al., 1991) and may therefore be preferable in future research. Using multiple informants or observational measures might also improve the validity of the measurement of the parental couple relationship in future.

The results of the current study may indicate a developmentally sensitive shift in attachment related parenting behaviours from infancy to adolescence. In infancy, parental sensitivity and mutuality are considered key determinants of attachment security (De Wolff & van IJzendoorn, 1997). However, the needs of an adolescent differ dramatically from those of an infant and the parenting behaviours linked to security in this study fit with key tasks of adolescence, such as increased independence and autonomy from parents (Christie & Viner, 2005).

The observed communication and engagement score described parents who expressed their needs, wants, and opinions through clear, appropriate and positive avenues, while exhibiting self-confidence, persistence and patience with the responses of their child. They indicated genuine involvement and responsiveness in the

conversation and encouraged the adolescent's involvement. They would clearly state their own points of view, listen to their child, use explanations and clarifications to make their point clear and solicit their child's views. They would also demonstrate the ability to problem solve as a dyad, defining the problem, listening to each other's viewpoints, offering solutions or compromises and reach a resolution agreed by both parties. They engaged in interactive and reciprocal dialogue, shared attention, mirroring, fluid conversation and shared body orientation. These elements would be demonstrated by both their verbal and non-verbal behaviours.

These results are similar to those of Scott, Briskman, Woolgar et al. (2011) who also found that assertiveness, communication and involvement were linked to attachment. However, combined with a measure of warmth they collectively defined these variables as parental positivity. The parenting factor that emerged in the current study included problem solving and mutuality and it is argued that rather than just positivity, these collective behaviours characterize a parent who promotes psychological autonomy in their adolescent, in the context of a positive and engaged relationship. This adds to the body of research that has found a link between 'autonomous relatedness' from parents towards teenagers, and attachment (Allen & Hauser, 1996; Van Petegem et al., 2013). The importance of promoting autonomy is unsurprising given the developmental stage of adolescents. Developing autonomy is a key task for teenagers and manifests itself in the presence of positive psychological phenomena, such as self-regulation, psychosocial maturity and self-efficacy (Noom, Dekovic & Meeus, 2001). As children become adolescents the balance of relationships is expected to shift from parental authority to greater equality and this has been linked to ego development and higher self-esteem (Allen, Hauser, Bell, & O'Connor, 1994). Perhaps adolescent attachment is a mediating variable explaining this effect, as greater

security has been linked to more positive outcomes for adolescents including greater psychological wellbeing (Allen et al, 2007; Kobak et al., 1991; Kobak et al., 2009; Rosenstein & Horowitz, 1996).

Whilst autonomy and relatedness may seem to lie at opposite ends of a spectrum, they have been characterised as dual aspects of human nature that require coordination and integration as part of healthy identity development (Guisinger & Blatt, 1994). This allows individuals to form relationships with others, contribute collectively, but also pursue self-interest and self-development. If the child fails to grasp these skills within the parent-child relationship, this may go on to influence the formation and handling of other close relationships (Oudekerk, Allen, Hessel & Molloy, 2015). Poor quality parent-child relationships can then lead to a legacy of relationship disturbances and act as a pathway to psychopathology (Sroufe, Duggal, Weinfield & Carlson, 2000).

As well as evidencing a parent who encourages autonomy whilst remaining engaged, these parenting qualities could be a sign of good reflective functioning. Reflective function is a developmental acquisition allowing individuals to understand the behaviour of self and other in the context of individual thoughts, feelings, beliefs and intentions (Fonagy & Target, 1997). It is essentially interchangeable with the concept of 'Theory of Mind, defined as the ability to see oneself and others in terms of mental states that result in actions (Wellman, Cross & Watson, 2001). In order to be motivated to promote autonomy, parents must first be aware that their adolescent has a mind separate from their own. Reflective function has been closely linked to attachment and is similarly connected to aspects of self-organisation, such as affect regulation, self-agency and monitoring (Fonagy & Target, 1997). In their study linking parental attachment to adolescent attachment, Steele et al. (2016) suggested that

parents model reflective functioning through their communication with their adolescent, promoting these capabilities in their children. The communication and engagement factor may therefore be picking up on the communication style of parents high in reflective function, whose children then demonstrate greater security in the CAI, which takes into account appropriate conversational skills, both verbal and non-verbal.

The continuous measure of coherence was selected to quantify attachment security due to its validity and reliability (Target et al., 2003; Shmueli-Goetz et al., 2008) and the fact that it provides a continuous measure of attachment that may be more sensitive to individual differences than broad classifications (Crowell et al., 2016). Individuals high in coherence present their experiences with their parents in a consistent, logical and reflective way, able to shift between the interpersonal demands of the interview and also reflect on parenting experiences. It is therefore considered a measure of a secure or insecure state of mind in relation to attachment experiences (George, Kaplan & Main, 1996). Research suggests that the ability to understand the mental states of the self and others is important in order to develop coherent personal narratives, allowing individuals to understand and make sense of past events (Lind, Vanwoerden, Penner, & Sharp, 2019). Coherent narratives about the attachment relationship may therefore be closely linked to the concept of reflective function or Theory of Mind, perhaps explaining why parents who identify and name their own feelings and those of their child build these skills in their adolescent, resulting in greater coherence.

Involvement, as reported by parents on the APQ, was also a significant predictor. This scale describes a parent who has discussions with their child about their interests and is practically involved with their activities. This was not correlated with

the observed communication and engagement score, suggesting it is measuring something distinct. Perhaps this measure is describing the frequency with which parents connect with their teenage children, whilst the observed communication and engagement measure is describing the quality of these connections and the pattern of parent-adolescent communication. Almost all parents will be very involved in their child's life in early to middle childhood, but there may be greater range of parental involvement as independence increases in adolescence, making this factor more influential for the attachment relationship.

These findings have clinical implications as they suggest that interventions focusing on developing parents' autonomous but related communication styles and maintaining involvement in middle adolescence may improve attachment relationships. As greater attachment security has been linked to psychological wellbeing (e.g. Allen et al, 2007), these interventions could be useful in clinical settings. However, the extent to which these parenting behaviours are distinct from earlier parenting was not tested in this study and requires further research. It is likely that current communication patterns stem from the foundation of earlier parenting despite developmental shifts in communication with parents (Branje, Laursen & Collins, 2012). Teenagers tend to disclose less information to their parents and seek more autonomy, but previously high-quality relationships may be able to withstand ruptures whilst already poor relationships may lead to a growing dissatisfaction. Using similar research methods to the current study, it was found that parental sensitivity in early childhood was the only significant predictor in a model that included current parenting variables (O'Connor et al., 2018). This may be evidence that earlier parental sensitivity is more important than current parenting for adolescent attachment, or that early sensitivity captures most of the variation in current parenting. It is unclear

whether the same would be true for the current study population as O'Connor et al. (2018) used a higher-risk group, a smaller sample size and younger participants. It is likely that autonomous communication has greater significance amongst 15-year-olds than 12-year-olds. This is an area that would benefit from further research utilising longitudinal samples. Resolving the degree to which patterns of parenting in adolescence are linked to earlier caregiving is important when considering the likely impact of intervention. If early sensitivity naturally develops into adolescent appropriate parenting, interventions should be implemented during a child's earlier years where possible. However, if autonomous but related communication styles require significant adaptation from previous parenting styles, earlier interventions may be insufficient. Further research across the full age range of adolescence, along with measures of early caregiving could help to tailor interventions to better support secure attachment.

Despite the negative outcomes associated with adolescent attachment (e.g. Allen et al., 2007), insecure attachment is a risk factor rather than a deterministic pathway to poorer psychological wellbeing. The clinical utility of these results would be even greater if future research could link parenting, attachment and potential protective factors to adjustment outcomes. This could identify whether specific parenting variables are associated with both attachment and poorer adjustment, or whether the negative impact of insecure attachment is mediated by other resilience factors. This could include individual resilience factors such as IQ or systemic factors such as school and non-parent relationships.

An important limitation that needs to be considered when interpreting these results is the demographics of participants. This community sample was predominantly white and relatively middle class, preventing generalisability to more

disadvantaged populations and minority ethnicities. Furthermore, the majority of participants were classified as secure or dismissing with a low representation of preoccupied and disorganised classifications, which may be more prevalent in high-risk samples. However, even in high-risk samples of adolescents there is a low proportion of preoccupied classifications and a trend for disorganised infants to be classified as dismissing adolescents, as measured by the AAI (Weinfield, Sroufe, & Egeland, 2000; Weinfield, Whaley & Egeland, 2004). Despite this, further research with more diverse groups is needed to check whether these factors are equally important in other populations. The similarities between the results of the current study and that of Scott, Briskman, Woolgar and colleagues (2011) who used a more diverse sample suggest that they might be. Autonomy is more valued and encouraged in Western cultures (e.g. Phinney, Kim-Jo, Osorio & Vilhjalmsson, 2005) so these research questions should be tested in collectivist cultures, as well as in high-risk, economically and ethnically diverse Western populations.

The cross-sectional design of the study is another limitation, as firm conclusions cannot be drawn about the direction of the relationship between parenting characteristics and adolescent attachment. It may be that adolescents who show greater security are more likely to seek out their parents, allowing them to be more involved, facilitating communication and engagement and explaining the relationship between the two. Despite this, there is complementary research using longitudinal study designs or controlling for earlier attachment that demonstrate the importance of parental involvement (Vaughn et al., 2016) and autonomous but engaged parenting styles (Allen & Hauser, 1996) for adolescent attachment. Future research using longitudinal designs would allow firmer conclusions to be drawn about the direction of the relationship between parenting and adolescent attachment.

In conclusion, there was no evidence that parental couple relationship quality influenced adolescent attachment security or that parenting mediated this relationship. It was unclear whether this was a true effect or a result of measurement error and requires further investigation. There was evidence supporting the idea that elements of parenting in adolescence are linked to adolescent attachment security. Developmentally sensitive parenting behaviours such as good communication, engagement and involvement may promote autonomous but connected relationships appropriate to the tasks of adolescence. This is a tentative suggestion, as the design of the study does not allow for firm conclusions about the direction of causality. Further research will be necessary to provide certainty about this, and also the extent to which these findings generalise to other populations. If true, these findings add to our understanding of attachment beyond infancy and its precursors and can inform parenting-based interventions for teenagers.

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Part 3: Critical Appraisal

Introduction

This appraisal summarises my personal reflections on the empirical paper. It considers the ways in which the use of secondary data impacted on the study and how this afforded both strengths and weaknesses. I reflect on the process of coding parent-child interactions and review the advantages and disadvantages of the measurement tools used. I consider the design of the study more generally and how this could be improved in future research. Finally, I consider the clinical implications of these results.

Reflections on the Research Process

While deliberating the topic of my research, I decided to focus on an aspect of developmental psychology and I also was motivated to find a project using an already existing dataset. I had a clinical interest in working with young people and their families and I also wanted to draw on the benefits of using a secondary dataset. These benefits were the power it afforded the data analysis, the quality of the measures that had already been completed, and the time and resource efficiency of secondary data.

Using an Existing Dataset

The dataset in question was drawn from the Twins Early Development Study (TEDS), a large, longitudinal cohort of twins born in England and Wales between 1994 and 1996 (Trouton, Spinath & Plomin, 2002). From this large dataset, Fearon, Shmueli-Goetz, Viding, Fonagy & Plomin (2014) selected 551 same-sex twin pairs for their study into genetic influences on adolescent attachment. The current study used 329 of these children, one from each twin pair. The number of participants in this study was only possible through the use of secondary data due to the time limitations of the

research project. This number of participants gave the study a good amount of power to detect even a small effect. Additionally, the participants had gone through an extensive research protocol already, completing a narrative interview to measure attachment and a recording of parent-child interactions. The time and resource intensity of these measures meant they were only possible through the use of secondary data.

However, the completed research protocol could also be considered a disadvantage of using existing data as it meant I was constrained by the measures and methods that had already been selected. Whilst I believe that the Child Attachment Interview (CAI; Target, Fonagy & Shmueli-Goetz, 2003), the hot topics task (Pike, McGuire, Hetherington, Reiss & Plomin 1996; Scott, Briskman, Woolgar, Humayun & O'Connor, 2011) and adapted coding paradigm (Glazebrook, 2015) were good measures to answer my research questions, the measure used to quantify parent relationship quality may not have been as well suited. The relative strengths and weaknesses of these measures will be discussed later in this appraisal.

An additional consideration about the dataset is that it used a sample of twins, from which one child from each family was selected. The participants were then treated like a typical population of adolescents with similar demographic variables. However, the experience of twins may be different to those of 'singleton' siblings, whose developmental stages and needs are staggered by a period of time. In a review of differences between twins and singletons, Rutter and Redshaw (1991) reflect on the biological risk factors and rearing patterns that may lead to language, socio-emotional and behavioural differences in twins. Biologically, twins (especially identical twins) are more likely than singletons to experience obstetric and perinatal complications and congenital anomalies. They are more likely to have some language delay and poorer

verbal cognitive performance, although this is typically mild and it may reduce by middle childhood (Thorpe, 2006). Raising twins can cause greater parental stress and requires the parent to divide their attention between two children with similar needs. It can also lead to greater comparisons between children, which may have a negative impact on parent-child relationships. This raises a concern that the results of the current study may not be as generalisable to singleton children. Despite this, the use of twins is common in behavioural genetic research and evidence suggests that any differences in outcomes are negligible. A large study comparing twins to singletons in late childhood to early adolescence found no differences in externalising behaviours, depression, peer relationships or relationships with mothers (Barnes & Boutwell, 2013). This allows some confidence that the results of the current study are likely to generalise to the wider population of non-twins with similar demographic variables. However, if the study had been designed specifically for the current research aims, recruiting participants from a range of families rather than specifically families with twins would have been preferable.

Reflections on Video Coding

Despite the fact that using secondary data did not require new ethics applications or participant recruitment, there was a significant amount of work to complete before the data was ready for analysis. Previous researchers (KQ and NA) had coded 100 pairs of videos, from which 100 participants could be included in the current study. There were 441 remaining videos that could possibly be included as well, depending on how many could be coded in time for analysis. The first step to this was ensuring that coder MK and I were reliably coding parenting variables with the previous researchers (KG and NA). We had a detailed coding protocol but were

unable to meet with the original coders face to face due to their location and working schedule. Coder MK and I spent time watching videos together, discussing our thoughts and referencing the scores of KG and NA to check for consistency. This in itself was a very interesting process as we thought about our own cultures and how these influenced our ratings of the parenting we saw. We coded more videos for reliability analysis than we had originally planned, because we felt the reliability levels (ICCs) could be improved. With time and experience of discussing and coding videos, reliability improved to acceptable levels. Coding more videos also introduced greater range of scores within each scale, further improving reliability and allowing us to move forward to coding for analysis.

It was fascinating to see the diversity of interactions, communication styles and child temperament in the videos. The hot topics task appeared to genuinely spark discussion and draw out unique relationships. Some dyads struggled to take on the task or seemed disinterested or dismissive, but it felt as though this in itself provided information relevant to the purpose of the study and was not simply a case to be excluded. However, whilst the majority of dyads did their best to ignore the camera and genuinely appeared to forget it was present, a small number were preoccupied by it, causing me to reflect on the effect of being observed. It may be that for a small number of dyads, anxiety or an attempt to present a socially desirable impression may have altered their behaviour. Despite this, the way that the parent and teenager interacted to overcome any anxiety or awkwardness was considered an indicator of the quality of their relationship. For example, parents who picked up on their child being uncomfortable, named this and supported them to persevere would score highly on sensitivity. Some parents used humour to manage the situation and this was an indicator of warmth and positive mood.

Reactivity to being observed can be affected by multiple factors, such as visibility of the observer or camera and the opportunity to habituate to its presence (Couteur & Gardner, 2008). The camera was placed in front of the dyad and set up by a researcher who then instructed the pair to start the task once they had left the room. To optimise these conditions, the task could have been conducted in rooms already set up with a camera discretely in the corner to minimise its obtrusiveness. In terms of having time to habituate to the setting and the task, it might have been helpful to have a short warm up task before the hot topics task began. The eight minutes during the task may not have been enough for all participants to get used to the environment and experience of being observed.

The limited time of the hot topics task also made it difficult to assess all 13 different scales. Each video was viewed multiple times, but some interactions simply did not provide evidence of aspects of the scales in that time. For example, part of the criteria for sensitive responding is responding to the child's verbal and non-verbal behaviour, such as signs the child is 'stuck' during the task and does not know how to continue. Another example of sensitive responding is when the parent picks up on difficult emotions expressed verbally or non-verbally and responds in a sensitive manner. Both of these were easy to assess when the teenager gave these verbal or non-verbal signals, but much harder when the child appeared relatively self-confident and comfortable.

Strengths and Weaknesses of Measurement Tools

Reflecting on the process of coding the hot topics task identified some of the difficulties of using this form of observational measurement. However, despite concerns about observer reactivity, this does not seem to pose a substantial threat to

the validity of this type of measurement (Gardner, 2000). Instead, the artificial setting of the laboratory and the structured nature of the task are more likely to reduce ecological validity (Gardner, 2000). The majority of observations were carried out in laboratory type conditions, although a small number were conducted at home. Even those carried out at home were structured interactions with pre-determined options of topics and suggested conversation structure. This was necessary, as naturalistic observation would have required much longer periods of measurement and may not have produced enough interactive material to assess the scales. Despite the possible reduction in ecological validity, observational measurement allows for the measurement of social behaviours that can be hard for individuals to access and report themselves without bias (Couteur & Gardner, 2008). It is susceptible to observer bias, although ensuring adequate reliability between coders can control this. It is the only way of assessing social interactions independently of the perceptions of participants and is therefore considered overall to be a strength of the study.

Similarly, I consider the use of the Child Attachment Interview (CAI; Target et al., 2003) a strength of the study. The varied methods for assessing attachment in adolescence and the benefits of the CAI have been discussed in detail in the conceptual introduction and empirical paper (pages 36 and 54). Alongside good psychometric properties (Shmueli-Goetz, Target, Fonagy & Datta, 2008; Venta, Shmueli-Goetz & Sharp, 2014), the CAI was specifically designed for young people and is developmentally sensitive. Additionally, narrative measures such as the CAI are able to pick up unconscious aspects of attachment and are not clouded by the subjectivity of the reporter.

The Alabama Parenting Questionnaire (APQ, Shelton, Frick & Wootton, 1996) was used to supplement the information provided by observational measures of

parenting. Self-report measures are susceptible to reporting biases, however observational measures cannot measure behaviours that occur too infrequently or are inhibited under observation (Morsbach & Prinz, 2006) and adding this measure provided multi-method, multi-informant information about parenting practices. The APQ involvement scale is an example of a factor that could not be easily assessed in the observed hot topics task, as the task required parents to engage with their child. This may mask their typical level of ‘spontaneous’ involvement, lacking ecological validity as a measure of general involvement. Adding this measure therefore did seem to enrich the parenting information provided from the observational task and the results confirmed this.

In order to measure parent relationship quality, parents completed a revised version of the Conflict Tactics Scale (CTS; Plomin, Reiss, Hetherington & Howe, 1994; Strauss, 1979). As outlined in the discussion (page 75) measures that ask specifically about childrearing disagreements, may be a better predictor of child adjustment than global marital discord (Jouriles et al., 1991). If I was not constrained by the measures already used, this type of measure might have been preferable for the purposes of the study.

Study Design

Aside from the revised CTS, the measurement tools used were generally considered strengths of the study. However, there were other elements of the study design that limited conclusions, covered in the discussion (page 79). These included the cross-sectional design and the demographics of participants. Ideally, future research should utilise high quality measures such as the ones used in the current study at multiple time-points with a large number of families from diverse backgrounds. This

would allow some temporal order of change in parenting and security to be identified and the direction of causality could be more confidently inferred. It would also identify whether these findings generalise to clinical, socio-economically disadvantaged or minority ethnicity groups and clarify what stage of parenting explains most variation in adolescent attachment, informing intervention timing.

Overall this is a difficult area to research that requires time and resource intensive study designs to maximise confidence in the results. This is an expensive, lengthy process that is rarely feasible, and therefore the current study is a viable, economical way to add to our understanding about adolescent attachment. Independently, the results should be considered with the study limitations in mind but there is complementary research that suggests that involvement (Vaughn et al., 2016) and autonomous but engaged parenting styles (Allen & Hauser, 1996) may have a causal influence on adolescent attachment and that similar parenting factors may be linked to attachment in higher-risk, more diverse populations (Scott et al., 2011).

Clinical Implications

If these parenting variables do indeed influence adolescent attachment, this has clinical implications. It suggests that when parent-child relationship difficulties are part of a clinical presentation, interventions that help parents remain involved and communicate well to promote autonomous relatedness could be effective. Attachment security in adolescence has been linked to better peer relationships, lower levels of depression and externalising behaviours (Allen, Porter, McFarland, McElhaney & Marsh, 2007). Improving attachment relationships may therefore have an impact on teenager wellbeing. There are a number of evidence-based interventions for parents of adolescents that draw on factors related to involvement, communication, engagement

and autonomy promotion. Not only is it promising that these factors linked to security are being included in interventions, this strengthens the idea that these results may have clinical utility. However, parenting interventions are not always considered in the context of adolescent mental health difficulties or do not emphasise these parenting factors, therefore these results could help inform clinical decision-making and the development and evaluation of new and existing interventions.

Parenting interventions are generally considered when adolescents exhibit externalising behaviours. A systematic review of randomised controlled studies (Medlow, Klineberg, Jarrett & Steinbeck, 2016) found that the majority of interventions for risky behaviours and conduct problems use behavioural parent training derived from the Parent Management Training Oregon Model (PMTO) (Patterson, 2005). Parents are supported to break patterns that are reinforcing negative behaviours and instead reinforce positive behaviours. Although this does not draw on the parenting factors identified in the empirical paper, there are other components of the intervention to enhance relationships. These aim to improve communication, including strategies such as promoting active listening and making neutral requests (Irvine, Biglan, Smolkowski, Metzler & Ary, 1999). However, there is not a specific focus on fostering autonomy as well as connection. This may be because externalising behaviours make parents fearful about promoting further autonomy in their child. There is evidence to suggest that lack of supervision and parental monitoring are linked to externalising problems (Beyers, Bates, Pettit & Dodge, 2003), which provides a rationale for the focus on involvement and relatedness over autonomy for these teens. This may also be justification for earlier intervention for at-risk children, promoting involvement, communication and autonomous relatedness to try to alter the trajectory of these young people as they transition into adolescence.

There are fewer parent-based interventions for depression in adolescence, as individual therapy is considered effective (Klein, Jacobs & Reinecke, 2007; Mufson et al., 2004). Teenagers tend to be offered versions of adult treatment models despite evidence to link depression in childhood to family interactions (Kaslow, Deering & Racusin, 1994). An alternative family treatment is Attachment Based Family Therapy (ABFT), which has shown promise in treating low mood and suicidal ideation (Diamond et al., 2002; Diamond et al., 2010). The underlying assumption of ABFT is that poor parent-child relationships stop children from developing the interpersonal skills required to buffer against psychosocial stressors linked to depression. The goals of ABFT are to repair the attachment relationship and promote autonomy through five treatment tasks. ABFT appears to reduce parental psychological control over adolescents and increase autonomy granting, leading to adolescents reporting better parental care and closeness (Shpigel & Diamond, 2012). This supports the findings of the empirical paper in terms of the importance of promoting psychological autonomy for attachment security in adolescence. The efficacy of ABFT for adolescent depression also supports the idea that the findings may have clinical utility. They suggest that a treatment such as ABFT should be considered when parent-child relationship difficulties are linked to adolescent low mood and that further research into parent-based interventions such as ABFT for co-morbid relationship difficulties and adolescent depression could be warranted.

Parenting interventions are quite widely used when children present with anxiety disorders. Family based interventions for children and adolescents have shown equal, if not greater success than individual interventions (Northey, Wells, Silverman & Bailey 2003). These interventions tend to draw on cognitive behavioural principles, the majority of which include communication and problem solving skills (Ginsberg &

Schlossberg, 2002). Evidence suggests they may be particularly important for parents who have high anxiety levels themselves (Cobham, Dadds & Spence, 1998) as anxious parents may demonstrate behaviours such as overprotection and over control towards their children (Ginsberg & Schlossberg, 2002). Considering the results of the current study and the increased desire for autonomy in adolescence, these behaviours may become more problematic for teenagers and supporting anxious parents to promote autonomous relatedness could be vital to promote security and wellbeing.

Overall, there are evidence-based parenting interventions currently in use to treat adolescent mental health difficulties that include elements of communication skills, engagement, autonomy promotion and involvement. This suggests that the findings of the current study might apply to clinical groups and be able to inform the use of these interventions, increasing attachment security and therefore improving wellbeing. However, further research is needed to identify whether these are the active ingredients in these interventions and whether these factors are more important when parent-child relationship difficulties are identified. The results of the current study would indicate that interventions promoting autonomous relatedness would be specifically indicated where there were disruptions to the parent-child relationship, and further research into this population would help to confirm whether this was the case.

Considering the community sample used in the study, this approach could also be used in a preventative way for early help outside of clinical settings. Parents could be offered short-term groups, written or online information about developing these skills if they are concerned about their relationship with their adolescent.

Conclusions

In conclusion, using secondary data allowed the current study to be highly powered, with high quality measurement tools to examine the relationship between parenting and adolescent attachment. However, the methodology was not designed specifically for the aims of the study limiting the ability to draw firm conclusions from the results. Further research should use longitudinal designs with diverse populations to provide clearer, generalisable results. Despite its limitations, the study adds to our understanding of adolescent attachment and has generated hypotheses about the importance of involved parents who facilitate autonomous relatedness through their communication styles. These elements are already present in some parenting interventions for adolescent mental health difficulties, but it is unclear whether these are active ingredients. Where parent-child relationship difficulties are identified, future research could examine the effectiveness of parenting interventions to promote involvement, communication and engagement. If these improve adolescent security and subsequently adjustment, this would support the current findings in clinical populations and provide a tool to improve adolescent outcomes.

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Appendices

Appendix A: Adapted Warmth Scale

Warmth

Rate: Parent and child separately

This scale measures the degree to which the target is warm, enthusiastic, affectionate and kind towards the other. This can be demonstrated through *friendliness* towards the other and *general positive affect*.

NON-VERBAL COMMUNICATION e.g. touching, kissing, hugging, holding hands; **EMOTIONAL EXPRESSION** e.g. smiling, laughing, happy or good humoured.

1. The target RARELY OR NEVER displays examples of warmth for the other. He/she maybe MINIMALLY RESPONSIVE to the other and/or OVERLY COLD AND UNFRIENDLY and does not appear to be enjoying the interaction or the other's company. He/she does not go out of his/her way to be nice to the other.
2. The target displays SOME EVIDENCE of warmth. He/she is OCCASIONALLY caring AND/OR displays some evidence of enjoying the other's company. There is some evidence that the target is nice to the other.
3. The target displays MORE FREQUENT AND INTENSE warmth. He/she is ATTENTIVE to the other and displays more POSITIVE EMOTIONAL EXPRESSIONS (i.e. smiles, frequent eye contact and touching).
4. The target is USUALLY warm. He/she USUALLY displays high warmth and/or the target may display a high degree of touching, smiling, eye contact or laughing. The target is USUALLY NICE and FRIENDLY to the other.
5. The target is HIGHLY and CONSISTENTLY warm. He/she CONSISTENTLY offers a high degree of warmth; maintains eye contact, FREQUENTLY touches, smiles at or laughs with the other. The target is GENUINELY NICE and FRIENDLY to the other, even if the other is angry, rejecting or coercive.

Appendix B: Adapted Support Scale

Support

Rate: Parent and child separately

This scale measures the degree to which the target is actively interested in and concerned for the other's difficulties and needs. Attention is paid to what is communicated by the other and concern is shown to apparent difficulties the other may be facing. The parent/child appears to be invested in the other's wellbeing and holds the other's best interest in mind.

BODY POSTURE (relaxed, sitting close, facing the other) **SUPPORT** such as responsiveness, showing concerns for the other's welfare, offering encouragement and help, offering to change behaviour for the other **CONTENT** of the statements such as "I'm concerned about..." or "you're doing much better"

1. The target **RARELY OR NEVER** displays examples support for the other. He/she maybe **MINIMALLY RESPONSIVE** to the other and/or **OVERLY REJECTING OR DISMISSING** and does not appear to be interested in the interaction or the other's company.
2. The target displays **SOME EVIDENCE** of support. He/she is **OCCASIONALLY** concerned or encouraging; is **RESPONSIVE** to the other and displays **SOME INTEREST** in the other (i.e. solicits other's opinions or concerns) or makes an occasional encouraging, enthusiastic or helpful remark.
3. The target displays **MORE FREQUENT AND INTENSE** support. He/she is **RESPONSIVE** and **INTERESTED** in the other and may offer to change his/her behaviour after hearing the other's needs. He/she displays more **SUPPORT** (i.e. interested in other's concerns, low level sympathy, some helpful advice or eliciting other's point of view even if it is in conflict with his/her own).
4. The target is **USUALLY** supportive. He/she **USUALLY** displays high support, actively soliciting information about the other's concerns, offering a high degree of encouragement and validation. The target usually appears to be invested in the other's wellbeing and holds the other's best interest in mind.
5. The target is **HIGHLY** and **CONSISTENTLY** supportive. He/she offers a high degree of support, help, encouragement, validation and approval; actively solicits the other's opinions and concerns. He/she consistently appears to be invested in the other's wellbeing, holds the other's best interest in mind and is able to offer to change their behaviour.

Appendix C: Adapted Problem-Solving Scale

Problem Solving

Rate: Parent and child separately

This scale assesses the degree to which the members of the dyad are able to progress toward the accomplishment of the task, i.e., the resolution of disagreements or problems under discussion. Take into account how clearly the target defines important aspects of the problems; the quality of suggested solutions; offers to compromise; and agreements on solutions. The target is rated based on how high up he/she progresses on the scale below. Assess process by which they work towards accomplishing the task as well as the outcome. The targets' scores are based on the highest level they reach in the interaction on any of the issues discussed (see clarification (a)).

1. Clear definition of the Problems(s):

Score "1" if he/she does no more than clearly define the problem or topic of disagreement.

2. Defining Aspects of the Problem(s)

Score "2" for the target is he/she goes beyond the definition of the topic to give reasons for why the problem developed or to describe aspects of the problems discussed, or solicits this information from the other. OR a suggested solution may be rejected or not acknowledged by target without offering an alternative. The dyad may not have listened to and discussed each other's view-points, tried to generate solutions or agreed on an outcome.

3. Offering a Solution or Solutions to the Problems(s):

Score a "3" for the target if he/she offers an APPROPRIATE and PLAUSIBLE SOLUTION to the disagreement or the problem, but may not have fully identified the problem, discussed the other's viewpoint, or tried to generate more than one solution. This can include reasonable arguments for why the status quo is acceptable. During problem-solving process target may subjugate own needs and/or appear to hold other's viewpoint as superior. OR a solution is agreed but the process of problem-solving was one sided (one person acquiesces).

4. Offering a Compromise OR Reaching a Vague or Unclear Resolution:

Score "4" if the target may have identified the problem, understood the issues (discussed each other's view points), tried to generate solutions but if he/she OFFERS TO YIELD IN PART to a solution offered by the other or OFFERS TO COMPROMISE with the other, but in either case the other does not agree. OR Both targets receive "4's" if they identified the problem, understood the issues (discussed each other's view points), tried to generate solutions but agree to a solution that is very VAGUE (e.g. agreeing that the child will "do better"), or if one agrees that the other's solution is plausible but it is UNCLEAR whether he/she has agreed to actually try it.

5. Reaching a Resolution to the Problem(s):

Score "5" for both members of the dyad when they have identified the problem, understood the issues (discussed each other's view points), tried to generate solutions, and agreed on an outcome or a compromise. BOTH HAVE AGREED TO TRY A SOLUTION to a problem or have agreed to a compromise.

Clarification: Problem Solving:

- a. The targets score is based on the highest level he/she demonstrates across the whole tape. For example: A target offers solutions for one problem but is unable to move beyond describing aspects of other problems introduced. In this instance, the target would receive a “3” as it is assumed that if the target is able to find appropriate and plausible solutions to one problem, he/she possesses the skills necessary to find solutions to other problems.
- b. If the targets are discussing a problem that they have already resolved, they may be scored 5’s even if they did not decide on the solution during the eight minute interaction. In order to be scored “5’s”, however, they must discuss what that solution was. They do not get credit if they just read the paper and state they have solved the problem already.

Appendix D: Adapted Sensitive Responding Scale

Sensitive responding

Rate: Parent only

Responsiveness emphasises the parent's awareness of the child's needs in the room and regarding topics discussed and sensitivity to his/her signals (verbal and non-verbal). Ideal sensitive responding involves initially noticing the child's cues/ signals; appropriate interpretation of these cues; responding in a timely manner and this response fitting the needs of the child.

Consider here *how* and *when* the parent responds to verbal and/or non-verbal cues elicited by the child during the course of the interaction.

Operationalisation Examples

a) **Responsiveness to child's non-verbal seeking-behaviour**

This category is used if the child gets "stuck" in the conversation and doesn't know what to say or how to continue the task, and sends clear behavioural cues/signals that he/she may need the parent's assistance. In these situations, a responsive parent will offer verbal help in a prompt, contingent, warm, supportive, empathic, and/or interested manner.

b) **Responsiveness to child's needing behaviour (emotional needs)**

This behaviour relates to situations where there is no clear agenda and the child doesn't send signals seeking any help from his/her parent, either verbally or non-verbally e.g. if child is unhappy, frustrated, lost and/or hurt; parent picks up on emotional needs and responds, e.g. by comfort, reassurance or validation.

Or, if child comments on physical need; e.g. they are hungry, a responsive parent will promptly and appropriately offer the child a solution to the need.

c) **Responsiveness to child's verbal seeking behaviour**

If a child verbally refers to the parent asking for help and/or assistance or comments how difficult a certain task might be, a responsive parent will offer either verbal or instrument help in a prompt, contingent, warm, supportive, empathic and/or interested manner (e.g. looking at sheet and trying to help child with task)

d) **Responsive Engagement**

Responsive parents will make enthusiastic comments and praise the child's ideas. Responsive parents will keep an attentive attitude towards child's conversation. This attitude on the part of the parent is basically a child-focused one: letting child take lead/direction of conversation, "following" the child.

e) **Sensitive Child Mindedness – Mentalization**

Sensitive parents are aware of the child's emotional/affective states. They can recognise the child's internal mental state and use mental state language that shows awareness of what the child might be thinking and feeling, e.g. suggesting that the child is bored, worried, sad, excited. These assertions may also appear in the form of linkages the parent makes between a past event in the child's life that has an obvious relation to the child's current affective state- i.e. validating current feelings

and feelings relating to past events. Responsive parents are not entrenched in their position regarding a topic and are able to ‘shift’ perspective during a conversation upon discussion. In the task, they are able to revise their thinking having acquired new understanding from their child; in effect understanding another’s position but not cancelling out their own perspective. This skill also relies on following and responding to a child’s cues.

f) Responsive Facilitation

Responsive/ facilitative parent will “pick up” that child is stuck with not knowing what to do (e.g. with task itself or in issues raised by the task), and will provide assistance to the child even if not directly requested.

g) Encouraging/Promoting Autonomy

Responsive parents will perform behaviours and/or make verbalisations in order to encourage their children to carry out tasks by themselves. They can encourage autonomy by asking the child’s opinion and providing solutions that promote autonomy.

Scores

1. Unresponsive/Insensitive Parent

Note: There has to be: a) clear pervasiveness (i.e. presence for most of the time) of absence of responsive behaviours displayed by the parent as defined above; or b) one modest example of responsiveness against a background of pervasive and intense non-responsiveness. Specific examples are shown below:

- a) *Parent does not respond to the child’s verbal or non-verbal seeking behaviours. Example: child directly requests help with task and the parent does not make a responsive comment or does not offer responsive instrumental help attuned to the child’s needs.*
- b) *Disengaged parent. Example: during the task, parent is silent most of the time, is passive towards the task; not taking the initiative to interact with the child and, if child does not “invite” the parent to complete the task with her/him, the parent will accept this type of “arrangement” keeping himself/herself distanced and dismissed from what the child is doing. On the other hand, the parent can be very talkative but nevertheless is still unresponsive to the child.*
- c) *Absence of child mindedness (mentalization). Example: In a situation where the child shows obvious signs of frustration or boredom with regards to the task, his/her parent does not comment on this emotional state.*
- d) *No facilitation: Example: The parent does not encourage the child to perform a task if it’s obvious to the observer that the child is able to do it alone. Also, if the child presents the parent with some ideas as to how to move the task along, the parent will not provide support to the child’s ideas.*

2. Minimally Responsive/Sensitive Parent

Note: There may be e.g. one or two examples of responsiveness. However, the degree of pervasiveness and degree of intensity indicates predominantly non-responsive behaviours towards the child. A ‘2’ differs from a ‘1’ in showing at least two modest examples of responsive behaviours amidst a general pattern of non-responsive behaviours.

3. **Somewhat Responsive/Sensitive Parent**

Note: To score a 3, the parent will show some scattered evidence of responsiveness, but this will not constitute a strong/obvious sign of responsiveness on their part. Overall, he/she is more non-responsive than responsive; or he/she shows two strong examples of sensitive responsiveness amidst a strong pattern of insensitive responsiveness.

4. **Moderately Responsive/Sensitive Parent**

Note: The intensity/frequency in which responsive behaviours are displayed is balanced by the intensity/frequency by which non-responsive behaviours are displayed. Thus, several examples of responsive behaviours will be balanced with several examples of non-responsive behaviours. The overall impression would be that this is a parent that is partly responsive and partly non-responsive; neither style dominates.

5. **Good Responsive/Sensitive Parent**

Note: There is an overall pattern in which responsive behaviours are greater/more prominent than non-responsive behaviours. Thus, the general style is responsive. These examples of responsive behaviours are clear examples and unambiguous. This is offset by modest and infrequent examples of non-responsive behaviours.

6. **Very Good Responsive/Sensitive Parent**

Note: There is a consistent pattern where episodes of responsive behaviour are displayed. The parent/child consistently shows signs of responsiveness as defined above. However, although consistently exhibiting signs of responsiveness, there may be at least one example where responsive behaviour might be expected but is not seen.

7. **Extremely Responsive/Sensitive Parent**

Note: The parent/child either displays all the above criteria or those that are displayed must be extreme manifestations of responsive behaviour. The various types of responsive behaviour are pervasive and unambiguous to the observer.

Appendix E: Adapted Mutuality Scale

Mutuality

Rate: Parent and child DYADICALLY

This code is a dyadic-based one. The intention is to code the quality of the interaction between parent and child but seeing both of them as a unique feature of the relationship (i.e. parent and child interacting are not separate things).

Operationalisation Examples

a) **Seeking parent's involvement in the task**

There has to be clear evidence that as the child initiates a conversation, he/she will spontaneously "invite" the parent in order to allow them to be part of the process of the task and their thinking. The child will feel comfortable if the parent gets involved in the conversation (e.g. they may allocate a task for the parent to complete).

b) **Both parent and child interacting together**

Through interactive-reciprocal dialogue/turn-taking, the parent and child are able to have a cooperative conversation. It is clear that the purpose of their conversation is to find a solution to the specified problem; not for them to simply get their view point across/ have their own way. Despite having different viewpoints, they are able to have some "give and take", allowing them to cooperate on the task.

c) **Shared attention**

Through appropriate eye contact and/or attentiveness to each other's comments and actions regarding the task. They are able to respond accordingly and maintain a joint attention on the topic.

d) **Reciprocated positive affect**

e.g. if child looks at the parent smiling, the parent reciprocates this same behavior immediately or with a complimentary behaviour such as shared laughter.

e) **Mirroring/ matching**

Parent and child are observed to be oriented towards each other, and not mismatched in positioning. They are working as a team to embellish the discussion and achieve the goal (the task is based on an area of disagreement so the focus is not about having "fun", but the parent and child are seen to be on the same level, with a sense of being "in it together"). They are not shutting each other down, but working together to reach conclusions.

f) **Fluid conversation**

This is the opposite of "dead air" (i.e. moments of silence). Both parent and child keep a joint conversation on the task. Comments made by parent not ignored by the child and vice-versa; or the parent and the child do not follow "different directions" in discussion.

g) Coordinated Shared Body Orientation

Parent and child keep closeness to each other, their bodies are coordinated/oriented towards one another during the task. They appear to be engaged in a shared task rather than separate activities.

Scores

1. No Mutuality

Note: There has to be clear pervasiveness of absence of mutual behaviours elicited by the dyad as defined above. Specific examples are shown below:

- a) *No child initiated activity with parental involvement.*
- b) *There is no interactive-reciprocal dialogue/turn-taking. Example: The parent and child do not co-ordinate their efforts in order to move the task along.*
- c) *No shared attention. There is no eye contact and/or there is a lack of attentiveness to each other's comments and actions regarding the task.*
- d) *No reciprocated positive affect. e.g. if child looks at the parent smiling, the parent does not reciprocate with the same behaviour or complimentary behaviour.*
- e) *No mirroring/ matching. Parent and child do not match/imitate each other's behaviours and/or verbalisations during the task.*
- f) *No fluid conversation. The interaction is infused with "dead air".*
- g) *No coordinated/shared body orientation*

2. Minimal Mutuality

Note: There is pervasive non-mutuality, but slight evidence of mutuality. A '2' differs from a '1' in showing at least one clear but modest example of mutual behaviours amidst a general pattern of non-mutual behaviours. However, the degree of pervasiveness and degree of intensity indicates predominantly non-mutuality.

3. Some Mutuality

Note: Generally, this dyad is more non-mutual than mutual.

4. Moderate Mutuality

Note: The intensity/frequency in which mutual behaviours are displayed is balanced by the intensity/frequency by which non-mutual behaviours are displayed. Thus, several examples of mutual behaviours will be balanced with several examples of non-mutual behaviours. The overall impression would be that this is a dyad that is partly behaving mutually and partly non-mutually; neither style dominates.

5. Good Mutuality

Note: There is an overall pattern in which more mutual behaviours are displayed than non-mutual behaviours. Thus, the general style is mutual. These examples of mutual behaviours provide strong evidence of mutuality. However, there are also modest signs of non-mutual behaviours.

6. Very Good Mutuality

Note: There is a consistent pattern where episodes of mutual behaviour are displayed. This is a dyad that consistently shows signs of mutuality as defined above. However, although consistently exhibiting signs of mutuality, there may be at least one example where mutual behaviour is expected but not seen; or despite pervasive and clear evidence of mutuality, there is a slight indication of non-mutuality.

7. Extreme Mutuality

Note: This dyad must either display all the above criteria or those mutual behaviours that are displayed must be extreme manifestations of mutuality. The various types of mutual behaviours are pervasive and unambiguous to the observer.

Appendix F: Revised Conflict Tactics Scale

Parent to partner section

Finally, we are also interested in how parents deal with conflicts or arguments between each other. Again, taking all the disagreements you've had in the last year, how often did you and your **partner** do the following.... (using the following scale)

| | |
|--|---|
| Never | 1 |
| Once or twice a year | 2 |
| Several times a year (but less than monthly) | 3 |
| Once or twice a month | 4 |
| Several times a month | 5 |
| One or more times a week (but less than daily) | 6 |
| Daily | 7 |

ME TO MY PARTNER (PLEASE WRITE NAME HERE)

- I tried to discuss the issue relatively calmly..... 1 2 3 4 5 6 7
- I did discuss the issue relatively calmly..... 1 2 3 4 5 6 7
- I got information to back up my side of things..... 1 2 3 4 5 6 7
- I brought in someone else to help settle things (or tried to)..... 1 2 3 4 5 6 7
- I argued heatedly but short of yelling..... 1 2 3 4 5 6 7
- I yelled and/or insulted him/her..... 1 2 3 4 5 6 7
- I sulked and/or refused to talk about it..... 1 2 3 4 5 6 7
- I stomped out of the room..... 1 2 3 4 5 6 7

MY PARTNER TO ME

- He/she tried to discuss the issue relatively calmly with me..... 1 2 3 4 5 6 7
- He/she did discuss the issue relatively calmly with me..... 1 2 3 4 5 6 7
- He/she got information to back up his/her side of things..... 1 2 3 4 5 6 7
- He/she brought in someone else to help settle things (or tried to).. 1 2 3 4 5 6 7
- He/she argued heatedly but short of yelling..... 1 2 3 4 5 6 7
- He/she yelled and/or insulted me..... 1 2 3 4 5 6 7
- He/she sulked and/or refused to talk about it..... 1 2 3 4 5 6 7
- He/she stomped out of the room..... 1 2 3 4 5 6 7

Appendix G: Parallel analysis of principal components

Table 1

Raw data eigenvalues, mean and percentile random data eigenvalues produced by parallel analysis

| Root | Raw Data | Means | Percentile |
|-------|----------|-------|------------|
| 1.00 | 6.28 | 1.34 | 1.42 |
| 2.00 | 1.45 | 1.25 | 1.30 |
| 3.00 | 1.08 | 1.19 | 1.24 |
| 4.00 | .80 | 1.13 | 1.17 |
| 5.00 | .73 | 1.08 | 1.12 |
| 6.00 | .55 | 1.03 | 1.07 |
| 7.00 | .46 | .99 | 1.02 |
| 8.00 | .41 | .94 | .97 |
| 9.00 | .35 | .90 | .94 |
| 10.00 | .29 | .85 | .89 |
| 11.00 | .24 | .81 | .85 |
| 12.00 | .22 | .76 | .81 |
| 13.00 | .13 | .70 | .75 |

Table 2

Eigenvalues from principal components analysis set to extract two factors

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings ^a |
|-----------|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|--|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total |
| | 1 | 6.283 | 48.334 | 48.334 | 6.283 | 48.334 | 48.334 |
| 2 | 1.451 | 11.162 | 59.496 | 1.451 | 11.162 | 59.496 | 4.206 |
| 3 | 1.082 | 8.321 | 67.817 | | | | |
| 4 | .804 | 6.181 | 73.998 | | | | |
| 5 | .726 | 5.581 | 79.579 | | | | |
| 6 | .548 | 4.216 | 83.795 | | | | |
| 7 | .465 | 3.577 | 87.371 | | | | |
| 8 | .414 | 3.181 | 90.553 | | | | |
| 9 | .351 | 2.701 | 93.253 | | | | |
| 10 | .290 | 2.231 | 95.484 | | | | |
| 11 | .241 | 1.854 | 97.338 | | | | |
| 12 | .216 | 1.659 | 98.997 | | | | |
| 13 | .130 | 1.003 | 100.000 | | | | |

Table 3

Direct Oblimin Rotation – two factor solution specified (Component matrix)

| | Component | |
|-------------------------|-----------|------|
| | 1 | 2 |
| Parent Sensitivity | .896 | |
| Parental Support | .822 | |
| Mutuality | .801 | |
| Parent Anger/Rejection | -.744 | .451 |
| Parental Warmth | .734 | |
| Parental Assertiveness | .718 | |
| Parent Coercion | -.711 | .378 |
| Parental Communication | .682 | .393 |
| Parent Positive Mood | .672 | |
| Transactional Conflict | -.664 | .489 |
| Parent Problem Solving | .551 | .357 |
| Parental Depressed Mood | -.469 | |
| Parental Involvement | .409 | .689 |

Table 4

Direct Oblimin Rotation – two factor solution specified (Pattern matrix)

| | Component | |
|-------------------------|-----------|------|
| | 1 | 2 |
| Parent Anger/Rejection | -.914 | |
| Transactional Conflict | -.887 | |
| Parent Coercion | -.829 | |
| Parental Warmth | .655 | |
| Parent Sensitivity | .634 | .420 |
| Parent Positive Mood | .568 | |
| Parental Support | .541 | .434 |
| Parental Depressed Mood | | |
| Parental Involvement | | .878 |
| Parental Communication | | .702 |
| Parent Problem Solving | | .607 |
| Parental Assertiveness | .325 | .558 |
| Mutuality | .475 | .486 |

Table 5

Direct Oblimin Rotation – two factor solution specified (Structure matrix)

| | Component | |
|-------------------------|-----------|-------|
| | 1 | 2 |
| Parent Anger/Rejection | -.864 | |
| Parent Sensitivity | .811 | .687 |
| Transactional Conflict | -.805 | |
| Parent Coercion | -.803 | |
| Parental Warmth | .731 | .456 |
| Parental Support | .724 | .662 |
| Parent Positive Mood | .654 | .443 |
| Parental Depressed Mood | -.407 | -.388 |
| Parental Communication | .463 | .772 |
| Parental Involvement | | .761 |
| Parental Assertiveness | .561 | .695 |
| Mutuality | .680 | .687 |
| Parent Problem Solving | .357 | .650 |