AN EXAMINATION OF THE ATTACHMENT SCRIPT ASSESSMENT (ASA), MENTORING SCRIPT ASSESSMENT (MSA), AND THE RELATIONSHIP BETWEEN SECURE BASE SCRIPT KNOWLEDGE AND MENTORING SCRIPT KNOWLEDGE

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Dedication

To Harry, who has taught me more than anyone else.

Abstract

Background There is a need for research underpinned by sound theoretical perspectives to inform research into the improvement of mentoring relationships. This doctoral thesis uses the Attachment Script Assessment (ASA) and Mentoring Script Assessment (MSA) to improve understanding about both assessments and the influence of implicit secure base expectations and previous mentoring engagement on implicit and explicit mentoring expectations.

Methods Study 1: fifty-four undergraduates were recruited from Birmingham City University, UK. They completed the ASA, MSA, and a questionnaire. Their data was used to examine relationships between their secure base assumptions, mentoring relationship expectations, and mentoring engagement. Study 2a-2c: ASA and MSA transcripts from Study 1 were combined to form a 81,792 word corpus. AntConc and SEANCE were used to examine transcript language features and sentiment content. Study 3: transcripts specific to two ASA stories were compared with secondary data, which consisted of transcripts of the same stories from eighty-nine mothers from a US community sample. Scores, sentiment and language features of the 55,300 word corpus were examined using AntConc and SEANCE.

Results Study 1: implicit secure base assumptions and engagement in mentoring influenced unconscious assumptions about mentoring interactions. Reducing the MSA by one third improved its relationship with explicitly reported variables. Studies 2a-2c: greater script knowledge was associated with longer transcripts, broader vocabulary, mentor name use, and increased levels of sadness and/or joy expressed in ASA transcripts. Study 3: both datasets containing greater script knowledge had longer transcripts and broader vocabulary.

Conclusions Insights were gained about ASA and MSA population reliability, relationships between secure base and mentoring assumptions, and transcript features. Proposals were made for adaptation of the ASA and MSA for research and applied settings.

Key words:
Attachment Script Assessment, ASA, Mentoring Script Assessment, MSA, attachment, mentor, help seeking, help providing, relationship, corpus linguistic, AntConc, sentiment analysis, SEANCE

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Table of contents

List of tables

Chapter 1 Literature review

1.1 The influence of attachment on implicit assumptions about mentoring

1.1.1 The relevance of assumptions about mentoring to the present thesis

Researchers claim that student mentoring improves student retention, success, and satisfaction in the Higher Education (HE) sector (Crisp & Cruz, 2009; Jacobi, 1991). However, reviews consistently highlight the lack of a standard definition of student mentoring (e.g., Clark & Andrews, 2009; Crisp et al., 2017; Crisp & Cruz, 2009; Jacobi, 1991). Clark and Andrews, (2009) suggest traditional mentoring might be defined as *"a dyadic relationship in which a senior or more experienced individual (the mentor) offers career and psychosocial support to a less experienced or junior colleague (the mentee)"* (p. 36). Other definitions range from an experienced colleague providing career developing guidance, to multi-faceted relationships that include friendship, emotional support, and protection (Jacobi, 1991). Jacobi's analysis succeeds in revealing five core features of mentor-mentee relationships:

- they are achievement focussed, helping relationships;
- they serve variable functions which may include emotional and psychological support, career assistance, and role modelling;
- there is tangible or emotional reciprocity between mentor and mentee;
- they go beyond imparting professional information; and
- the mentor has greater experience, influence and achievement within the environment, or field of expertise, than the mentee.

A subsequent examination of mentoring literature by Crisp and Cruz (2009) reinforces concerns about the lack of a definition of mentoring, and suggests it is a consequence of the lack of theory guiding the area. There has since been a wealth of research investigating the various facets of higher education mentoring, academic performance, persistence, transitions, dealing with specific challenges, and supporting underrepresented students (Lunsford et al., 2017). However, mentoring definitions and outcomes are varied, and there have been repeated requests for (and a growing interest in) research specific to the relational aspects of formal and informal mentoring (Garvey et al., 2014).

Regardless of the type of mentoring, it is always situated in a relationship. Clutterbuck (2004), views the relationship as a context for the shared goal of skill and personal development. Fundamental to a productive mentoring relationship is the ability of the mentee to seek and respond to mentor help appropriately, and the ability of the mentor to be consistent, sensitive to mentee needs, set goals and limits, and provide feedback and guidance in a way that is effective in overcoming obstacles, whilst enabling exploration and development (Garcia-Melgar et al., 2021). It is often assumed people instinctively know how to perform these roles. For instance, an analysis of 187 postsecondary school mentoring program websites in Texas found only 37.4% of schemes clarified the mentoring role and 18.7% explained the mentee role, which perhaps suggests an assumed lack of need for an explanation (Black & Taylor, 2018). But a study examining the experiences of 124 first year undergraduate students in a British University found 55% were no longer having contact with mentors 10 weeks into their first semester because the mentor had ceased contact, and 45.5% of those whose mentoring continued wanted more support than they were receiving (Collings et al., 2016). Whilst this may be, at least partly, accounted for by time

constraints or operational issues, it might also suggest a disparity between individuals' implicit understandings, expectations, and application of mentoring relationship behaviours.

Authentic leadership theory incorporates the assumption that leader-follower relationships are influenced by the personal relationship histories of both parties (Hinojosa et al., 2014). Amongst other things, the theory suggests an ideal of authentic leaders fostering developments in self-awareness and relational transparency. If this model is correct, it would not be unreasonable to assume that effective help seeking and help providing abilities are related to past mentoring and other relationship experiences, and that examination of the underlying psychological and linguistic processes involved could lead to better understanding of mentoring relationships and inform effective improvement interventions.

Overall, the examined literature suggests that mentoring relationship success depends partly on the mentor's social skills, their previous relationship experiences, self-awareness, and awareness of their mentee's needs. It appears these factors in conjunction with their mentee's ability to ask for and engage with their help may effectively facilitate their ability to adapt to meet mentee needs, set goals and limits, and to support mentees to overcome obstacles whilst encouraging their independence.

The present thesis is concerned with a particular set of implicit assumptions guiding the help seeking and help providing behaviours in mentoring; the examination of mentoring theories is beyond its scope. An attachment perspective arising from the developmental and cognitive psychology traditions are used to examine:

1. Whether implicit assumptions informing effective mentoring specific goal-oriented help seeking and help providing behaviours are related to implicit assumptions about similar secure base interactions.

2. Whether the outcomes of an assessment of implicit goal-oriented help providing and help seeking assumptions specific to secure base and mentoring relationships are correlated with engagement in mentoring and explicitly reported positive attitudes toward mentoring.

3. The assessments used to assess implicit secure base and mentoring script assumptions in detail.

1.1.2 The relevance of attachment theory to implicit assumptions about mentoring

The notion that attachment behaviours are organised by a control system (similar to the biological homeostatic process) is a central concept in attachment theory (Bowlby, 2005c). The control system is hypothesized to develop in early childhood with capacity for adaptation across the lifespan. It is involved in the process of forming beliefs and assumptions about the role of the self and others within close relationships. These beliefs inform the direction of an individual's attention to, accessibility within, distance needed, and motivation in interpersonal interactions. Attachment theory is therefore an appropriate basis for the examination of mentoring relationships because of its constructs around self-image, images of others, and transference of these onto collaborative interactions (Bowlby, 1977; Mikulincer & Shaver, 2018b). It is possible this process informs the degree of trust and confidence the mentee has in the mentor and the ability of the mentor to respond

sensitively to mentee signals for help. The relevance of attachment theory to mentoring is apparent in the writings of John Bowlby who formulated the theoretical foundations of attachment theory between the 1950s and 1990s. For example:

> *When any two people are interacting with each other and each is capable of making plans, a prospect arises of their sharing a common goal and a common plan. When they so do, the interaction resulting takes on new properties, properties altogether different from those of an interaction based say, on chains of interdigitating fixed action patterns. The new style of interaction is best spoken of as a partnership. By sharing a common set-goal and participating in a joint plan to achieve it, partners have a rewarding sense of common purpose; and they are likely also to identify with one another.* (Bowlby, 1997a, p. 355)

Trained in psychoanalysis, Bowlby became frustrated by the lack of attendance to the role of environmental factors in psychological well-being and disorders (Holmes, 2011; Petters & Waters, 2017). Taking a pragmatic approach, he adopted scientific methods used in ethology to examine proximity-seeking behaviour in humans and other animals. The development of attachment theory was informed by his proposal that the quality of each interaction in repeated dealings with significant others are held in long-term memory and result in the formation of mental representations of interactions. These representations form an Internal Working Model (IWM) of the self and others in close relationships that influence expectations and perceptions of how people interact in close relationships (Bretherton, 1985). The expectations of individuals guide current and future behaviours, for instance, a child who has learned their carers get angry when they express a need for care is

likely to form the expectation that needs should not be explicitly shared in other close relationships. On the other hand, early caregiving which is sensitive and responsive to the child's needs is likely to result in the expectation that future relationships will include mutual sensitivity and responsiveness. Bretherton (1987) explains that if attachment signals are repeatedly overlooked, or misunderstood, the IWMs of both parties will be ineffectual because neither party will receive error-correcting feedback and ineffective communication will result. Of course, attachment representations are not the only factor in the development of relationship representations, but for the purpose of the examinations to be conducted in this thesis it is the attachment IWM aspect which is of interest. If attachment theory is correct, in the context of mentoring the consequent use of ineffective strategies by either mentor or mentee may reduce motivation in the other party to collaborate, present further barriers to their effective communication, induce mentor-mentee interpersonal conflict, and obstruct progress.

Although attachment theory appears to offer a sound theoretical basis for the exploration of mentoring relationships, the literature and application of attachment theory are not entirely straightforward. Bowlby's work inspired a range of professional and lay-person interest which led to divergence in the research and application of attachment theory. This, in turn, resulted in marked differences between public understanding, application by vocational specialists, and between (and sometimes within) research traditions (Duschinsky et al., 2021). This has, in some instances, had severe consequences and has been of such concern that it prompted over 50 prominent attachment researchers to collaborate on a statement piece about the appropriate use of attachment theory in child protection and custody cases (Forslund et al., 2021). Other notable problems of the theory

are the assumptions that secure attachment is the optimum state rather than one of several evolved states which are suited to different contexts, the mistaken beliefs that attachment measures are interchangeable, and the belief that standardised assessments can be used across all cultures and contexts (Thompson et al., 2022; van IJzendoorn & Bakermans-Kranenburg, 2021).

In summary, the application of attachment to mentoring has potential to inform mentor recruitment, the development of mentor-mentee relationship specific training, and highlight where potential interpersonal difficulties may emerge. However, the application of attachment theory is not without its issues. The present thesis attempts to mitigate these by providing an overview of measures from different schools of psychology and highlighting the most significant differences between the concepts underpinning each. The information presented will inform and justify the selection of appropriate tools for the assessment of implicit attachment assumptions. This has scope to inform future work examining implicit assumptions relevant to mentor and mentee behaviours.

1.1.3 Assessing attachment

1.1.3.1 The Strange Situation Procedure (SSP)

Whilst it is not directly relevant to the context of mentoring, if the ideas expressed above are accurate, the Strange Situation Procedure (SSP) is an important part of attachment theory which helps to contextualise the methods used for the present research. Bowlby, (1997b) views attachment to primary caregivers as a normative, evolutionary adaptation, that provides the infant with felt security, facilitates exploratory behaviours, and encourages close proximity and protection when vulnerable. Ainsworth et al., (1969)

laboratory-based SSP is a widely used, reliable assessment of proximity-seeking and interaction behaviours in early life. Ainsworth's work originated with an observational study conducted in villages near Kampala, Uganda (Bretherton, 2013). Local chiefs helped her recruit 26 families with young infants; she observed the families in the homes during bi-monthly 2-hour visits over a period of 9 months with an English-speaking Ganda social worker as an interpreter. Based on her observations, she devised the SSP; which involves exposing an infant to an unfamiliar environment and a stranger, with and without their mother's (or other primary caregiver's) presence. Observations of the infant's responses to eight three-minute episodes are conducted. It is the reunion behaviours that reveal most about the infant's state of mind regarding their attachment relationship with that adult and which guides classification. Behaviours were originally categorised into one of three groups (code A: avoidant, code B: secure, code C: resistant-ambivalent), with a fourth category (code D: disorganised) being added later (Main, 1996). Ainsworth suggests secure responses toward mother are associated with maternal sensitivity (Bretherton, 2013). Her summary of these responses has been extended to adult interactions as follows (Main et al., 2005):

1. Adult perception of child's (or close relationship adult in need) signal of distress.
2. Accurate interpretation of child's (or adult's) signal.
3. Prompt response.
4. Appropriate response.

Early meta-analysis of SSP data from the US, UK, Netherlands, Sweden, Israel, Japan, West Germany, and China suggest the secure classification is the most common in each population; avoidant classifications are more prevalent in Western European countries than resistant-ambivalent, and resistant-ambivalent classifications are more common than

avoidant classifications in Israel and Japan (van IJzendoorn & Kroonenberg, 1988). There is also evidence to suggest that SSP coding is consistent across six cultures for infants under 20 months (van IJzendoorn & Kroonenberg, 1990). However, this research is now old, and with increased globalisation and access to media (including films) from around the world the balance of attachment patterns may have changed. For instance, a preliminary investigation found a significant relationship between higher romantic TV watching in childhood and adolescence with higher attachment anxiety in peer relationships (McNallie, 2022). Another consideration is that the cultures examined in the attachment cross-cultural studies are often limited to the examination of maternal relationships with their own infant and fail to include populations varying significantly from Western ones. This raises the issue of the appropriateness of extrapolating views based on historical research outcomes to people globally and to non-maternal relationships.

1.1.3.2 The Adult Attachment Interview (AAI)

The next significant phase of attachment theory concerns the retrieval and assessment of internal representations of early attachment through autobiographical drawings, narratives, and discourse. This led to the creation of the Berkeley Adult Attachment Interview (AAI) (George, Kaplan & Main, 1985, 1996). There are two versions of the AAI assessment; the Berkeley version was primarily validated for use with normative samples, whilst the Crittenden (DMM) version is a variation based on clinical samples and is used to identify clinical disorders, such as psychopathy (Farnfield et al., 2010; Minghetti, 2017). Whilst the SSP is considered the gold standard in the assessment of infant attachment, many consider the Berkeley AAI to be the gold standard assessment of adult attachment; the reason being its relationship with the SSP (to be explained in due course)

which the DMM does not share. Berkeley's AAI has been widely used by attachment researchers, whereas the DMM tends to be used in clinical settings. A comparison of the two approaches found they differ in their attachment classifications, to the extent some transcripts categorised as secure using the Berkeley approach would be categorised as insecure using the DMM (Baldoni et al., 2018). They appear not to measure the same phenomena and therefore their outcomes should not be used interchangeably. For this reason, the information that follows is specific to the Berkeley AAI.

The AAI uses participant descriptions and evaluations of autobiographical events to categorise their current state of mind about attachment relationships (code Ds: dismissing, code E: preoccupied, code F: secure-autonomous code CC: cannot classify, code U: unresolved-disorganised) (Hesse, 2016; Main, 1996). The interview is fast paced and involves cross-checking certain aspects of the participant's experience and attitudes by asking questions from different perspectives. Transcripts are assessed for attentional flexibility and adherence to Grice's (1989) four maxims for coherent cooperative conversation: Quantity (saying neither too much, nor too little); Quality (honest interaction which can be supported with evidence); Relation (relevant information, despite any changes in the direction of conversation); and Manner (orderly, clear, non-ambiguous contributions). The interview structure of the AAI makes it difficult for someone to produce a high quality, relevant, and coherent narrative which is distant from reality.

When adults are asked to recall childhood events, those with a dismissing attachment pattern tend to use deactivating strategies that mask their vulnerabilities (Dozier & Kobak, 1992). This manifests in the interview as a diversion of attention away

from sharing attachment related thoughts, feelings, and memories. Preoccupied individuals tend to use hyperactivating strategies. These display as exaggerated emotional responses, protest, and obsession with attachment-related needs (Dykas et al., 2014). Deactivating strategies are believed to result from an inability to rely upon felt security and sensitivity due to fear of disapproval or punishment. Whereas hyperactivating strategies are thought to arise from a history of inconsistent responses from attachment figures. Main et al., (1985) suggest attentional processes developed through repeated attachment interactions are key to the emergence of behaviours associated with attachment patterns. For instance, children with avoidant behaviour attend to aspects of the environment which are unlikely to cause distress but are likely to distract from difficult emotions. They therefore engage in less eye-to-eye contact with caregivers and with greater deflection of attention to objects of interest (Duschinsky, 2020b). Secure children can be flexible in their attention because they are secure in the knowledge their needs will be satisfied and they will not experience hostility. Whereas resistant ambivalent children focus their attention entirely on the attachment figure at the cost of attending to other aspects of the environment. Thus, an insecure attachment history lacking in sensitivity is associated with specific unconscious shifts in attention and defensive behaviour patterns aimed at managing stress associated with the anticipated unsatisfactory responses of others (Crowell, 2021; Dozier & Kobak, 1992; Dykas & Cassidy, 2011; Mikulincer et al., 2010). An individual's relationship history shapes expectations, influences how interactions are interpreted, and forms the foundation for the concept of self across attachment relationships (Epstein, 1994; Waters et al., 2013). These habitual tendencies are apparent in discourse and are accessible for assessment via the AAI methodology. The influence of attachment patterns on discourse may therefore

extend to mentoring relationships and indirectly sway mentor-mentee interactions, behaviours, and effectiveness.

In summary, the AAI methodology assumes secure-autonomous participants generally adhere to Grice's (1989) maxims of coherent cooperative discourse (Main, 2000). Their dialogue shows they value their attachment relationships; this is evident through mainly coherent, honest, relevant, concise, but sufficiently detailed explanations about positive and difficult attachment relevant experiences. In contrast, transcripts categorised as dismissing violate the maxims of quantity and quality. Those statements are vague and may be contradictory or lack suitable examples to support positive or idealised statements about caregivers, which participants may attribute to memory lapses. Preoccupied transcript dialogue violates the maxims of quantity, relation, and manner with long narratives containing anger about, and preoccupation with, relationships which may contain psychological jargon or childlike speech. Transcripts categorised as unresolved-disorganised use language marked by lapses in discourse monitoring or reasoning, silences, and long discussions of loss or eulogistic speech about their attachment figures. A proportion of transcripts cannot be classified because they contain both idealisation of, and angry preoccupation with, attachment figures. Linguistic and sentiment patterns in AAI transcripts, and their relevance to the thesis are examined in Chapter 1: Literature review, section 1.2.1 and Chapter 2: Methodology, section 2.5.3.

A particular strength of the AAI lies in its association with SSP outcomes. Researchers predicted with 75% accuracy how an infant's response would be coded using the SSP based on prenatal AAIs with their parents (Fonagy, Steele, & Steele, 1991). A longitudinal study

examining data for 42 participants found attachment security at 1 year was predictive of secure reunion behaviours at 6 years old, secure-autonomous AAI responses at 19 years, and that changes in security status found between the SSP and the AAI were attributable to intervening trauma (Main et al., 2005). This claim was supported by the outcomes of a twenty-year longitudinal study which studied 50 participants and found attachment stability between the SSP and AAI was 72% for those whose mothers reported no attachment related trauma in the intervening years (Waters et al., 2000). The researchers also found a 66% chance of participant attachment pattern changing from secure to insecure if their mother reported one or more attachment related stressful life events during that period. The authors note the findings were from a middle-class sample, which may mean some protective support structures were in place that may have been unavailable to people with low social economic status (SES). For instance, a separate meta-analysis found although there were often high parental expectations and home involvement for children from low SES backgrounds, these parents faced more limitations with their time and resources than other parents (Yong Tan et al., 2019). They were therefore less able to become formally involved with their children's schooling, take on governance, volunteering, and to attend meetings. The AAI meta-analysis outcomes are based on small samples and are therefore subject to low statistical power. However, meta-analysis which include participants from low SES groups and examined data collected from 1,243 participants reveals a 75% concordance between AAI and SSP categories (van IJzendoorn, 1995). Although there is a strong statistical relationship between the two measures, the authors highlighted that attachment theory fails to explain how parental attachment representations are transmitted to their children and refer to this as the transmission gap.

Despite the strong (but imperfect) relationship between the SSP and AAI, there is an important distinction to be made between them (Main et al., 2005). SSP attachment status is specific to the child's relationship with the person they are observed with. In contrast, the allocated AAI category is specific to an individual's current state of mind about attachment relationships overall. It is therefore possible for an adult without any current close relationships to be categorised as secure-autonomous and to subsequently raise a child to be secure-autonomous. This is pertinent to the present research because it suggests attachment security is transferable across relationship types and that language can be used to predict secure attachment behaviours. This notion is supported by the examination of 56 patients receiving individual psychotherapy in Padua, Italy and 36 from New York (Talia et al., 2014). Each patient was assessed using the AAI and the discourse with their therapist from two sessions assessed. Analysis found secure and preoccupied patient AAI scores were most commonly associated with patients who were likely to seek emotional closeness with their therapist. Patients with dismissing AAI outcomes were the most likely to avoid emotional closeness with the therapist, and patients with preoccupied AAI outcomes were most likely to resist support or correction. Further work examining 50 psychodynamic therapists from various regions in Italy, found secure-autonomous therapist AAI scores correlated with productive attunement to clients (i.e., the ability to support clients with understanding their own internal state) (Talia et al., 2020). If these implicit tendencies are transferred to mentoring relationships, the outcomes imply mentees with a secure-autonomous state of mind may be more likely than others to engage and be open to mentor feedback, and mentors with a secure-autonomous state of mind may have an advantage when it comes to understanding and responding to their mentees' needs. However, caution needs to be exercised in extrapolating findings specific to therapeutic relationships to

mentoring relationships because of the considerable differences in the nature of the relationships and the training mentors and psychodynamic therapists receive.

Despite its advantages there are some barriers to widespread use of the AAI (Ravitz et al., 2010). Relevant to this thesis, are the issues of it being a time-consuming interview, taking anywhere between 45 minutes and two hours, with interviewers recording and transcribing the interview before they analyse the content (George, Kaplan & Main, 1996). Accredited interviewer training consists of two weeks of intensive daily sessions, after which booklets of additional work are completed in preparation for three certification tests to ensure inter-rater reliability. One test is taken every six months over an 18-month period (Sroufe & Sroufe, 2018). This time is necessary to ensure interviewers are thoroughly trained in the use of questions and prompts to gather and probe participant responses, assess conversational collaboration and coherence, and to ensure their assessment decisions are based on attachment related material, rather than participant habitual language use, general intelligence, or interviewer factors (Bakermans-Kranenburg & van IJzendoorn, 1993; George et al., 1996). Analysing the transcripts requires a high level of training and understanding of attachment; an exploratory study found that AAI coding conducted by attachment experts can be reliably distinguished from linguists, higher-educated, and lower educated non-attachment experts despite them all attending the same fortnight long AAI coding training (Beijersbergen et al., 2006). In addition to these barriers, it is also unclear to what extent AAI outcomes would be pertinent to mentoring specific relationships.

1.1.3.3 Self-report measures

A possible solution to the assessment of mentoring patterns is to adapt a self-report attachment assessment. The Experiences in Close Relationships (ECR) scale is a simple to use, widely available, and popular self-report measure resulting from a principal component analysis of 60 self-report attachment measures in use in the late 1990s (Ravitz et al., 2010). Factors were categorised as related to either "attachment-anxiety" or "attachment-avoidance" and questions were devised to capture where participant conceptions about close relationships were situated on both these scales. The ECR-R is a revised version of the ECR (Sibley et al., 2005). It is a reliable and valid measure that provides stable indicators of attachment anxiety and avoidance. The ECR-RS is a relationship structures version of the ECR that was created to address 4 key criticisms of self-report attachment measures: specifically, ambiguity in the relationship being assessed, specificity to one domain, lengthy questionnaires, and an assumption that the IWM is consistent across relationships (Fraley et al., 2011).

However, Jacobvitz, Curran, and Moller (2002) argue a participant's attachment pattern may reduce the accuracy of their self-reports. They share an example of a participant who reported his parents to be very loving, but one of the few examples of parenting he could recall was of his father severely beating him. They suggest his reframing of actual experiences would lead to the incorrect allocation of secure on a self-report questionnaire. Shaver and Mikulincer (2002) dispute this assumption and suggest participant attachment-related anxiety and avoidance effects the way self-report measures are approached and are therefore reflected in questionnaire responses. They claim those

using deactivating strategies will be unaware and unconcerned about their own hostility. Whereas those using hyperactivating strategies will readily access and emphasise negative emotional memories. Relevant to this thesis is the recent finding of significant negative correlations at the $p<.05$ level between undergraduate mentee ECR attachment anxiety and their perception of the effectiveness of mentoring, mentor availability, the mentor's ability to listen carefully to concerns, and the mentor's concern for their well-being (Goodman-Wilson, 2021). In contrast, ECR avoidance only shared significant negative correlations at the $p<.05$ level with mentor availability and participant comfort with seeking advice about personal matters. Except for the negative association between ECR -R avoidance and mentee comfort with seeking advice, the associations are aligned with negative perceptions about mentors rather than being directly associated with mentee behaviours. Unfortunately, these outcomes suggest there may be difficulties with using it to predict mentoring behaviours alongside attitudes toward mentoring. Furthermore, use of this assessment outside of research scenarios risks mentors and mentees taking the assessment being subject to value judgments because of the language associated with the categorisation process (for instance attachment-avoidance and attachment-insecurity).

The use of observations and autobiographical discourse in the SSP and the AAI to assess implicit states of mind about attachment relationships is consistent with a developmental perspective (Jones et al., 2017). Whereas, the self-report assessment of explicit thoughts, feelings, and behaviours used by social psychologists, lends itself to trait measurements of attachment. There is a difference in underlying assumptions and language informing the methodology of both approaches which can be problematic when conducting or interpreting research (Waters & Petters, 2021). For instance, there are differences in

assumptions about the extent to which attachment patterns and styles are fixed. Fraley (2002) applied computational modelling techniques to compare predictions based on two contradictory sets of assumptions from a meta-analysis of longitudinal attachment outcomes. The revisionist perspective assumes that attachment specific expectations are formed in childhood, are revised on encountering attachment specific experiences that differ from previous interactions, and consequently posits that attachment patterns can vary across the lifespan. The prototype perspective also assumes that cognitive representations are formed in response to early attachment experiences and that they are continuously updated. However, this perspective assumes that early experiences continue to be influential and that this means early attachment patterns are relatively consistent across the lifespan. Fraley's model supported the argument for the prototype process and argued that the revisionist model could not account for the observed stability of attachment across the lifespan. The model also demonstrated the potential for individuals to become more secure if exposed to a highly positive and persistent source of influence.

However, a meta-analysis found early childhood attachment as assessed by the SSP was moderately stable across childhood when patterns were examined at the level of attachment pattern (that is, secure, avoidant, resistant, and disorganised) and when examined at the insecure / secure level. The most stable pattern was secure, and the least was resistant (Opie et al., 2021). The authors also found that children with avoidant and disorganised patterns were least likely to develop secure patterns without interventions (Paquette et al., 2024). More recently, the stability of attachment patterns to mothers and fathers, and the influence of parental well-being during several periods of childhood as assessed by the SSP and a variety of well-being measures was assessed. The authors found

changes in family environments and parental well-being influenced changes in patterns and concluded the changes were more likely to happen during sensitive periods such as early childhood or adolescence. When assessing continuity of attachment pattern, they found no statistically significant relationship between secure or insecure pattern to fathers or mothers between the infancy or preschool period. During this phase, 55.9% of attachments were stable with mothers and 58.7% with fathers.

Further longitudinal research is necessary to fully understand the factors contributing to attachment stability and change. However, the scope for change is reflected in the approach to categorising the AAI. For example, someone's transcript can be rated as "earned-secure", despite the participant having a difficult attachment history if they can provide coherent descriptions and recall relevant memories of attachment-related experiences (Roisman et al., 2002).

A review of 29 attachment measures notes the previously summarised variations in the application and underlying assumptions between state and trait approaches (Ravitz et al., 2010). The application of self-report measures differs from the AAI because self-report measures assume participant self-reports to be free from defensive mechanisms, they are vulnerable to social desirability bias, and do not explore the underlying internal representations accessed by the AAI. Importantly, defensive states of mind about attachment relationships are triggered during times of anxiety or threat; this may not occur in response to completing a questionnaire, but they are intentionally invoked by the AAI interview process. Participant self-report responses are measuring something equally worthwhile but different to the AAI. ECR-R avoidance, anxiety, and security correlate well

with outcomes from other relationship based self-reports (Waters et al., 2002). For instance, ECR-R avoidance and anxiety are both significantly associated with low marital satisfaction, low passion, low commitment, marital discord, and depression as assessed by a range of self-report measures.

Current versions of the AAI or self-report measures are impractical for use by mentoring services. Notably, the AAI is too specialist, costly, and time-consuming for mentoring services and non-attachment specialist researchers to implement. Whereas self-report measures would be reliant on honest mentor and mentee responses to personal questions about relationships, and do not assess underlying attachment representations. The knowledge that tutors or senior members of staff would be analysing questionnaire or interview responses may reduce mentor and mentee honesty during the assessments. The AAI and self-report measures lead to categorisation, and if used outside of a research context could result in tutors or staff members attributing value judgements to staff being assessed. Therefore, neither the AAI nor self-report measures are suitable for the present research. However, examination of different attachment assessments has resulted in the decision to use an assessment of implicit relationship-specific assumptions, rather than relying on a self-report measure for the present thesis.

Bretherton, Prentiss, and Ridgeway (1990) suggest cognitive scripts inform the aspect of the attachment Internal Working Model (IWM) relevant to use of the secure base to get needs met. The secure base knowledge aspect of the IWM is of central importance to the search for a measure of attachment appropriate for mentoring relationships. It informs a core aim of study 1, which is to investigate the relationship between attachment-related

secure base script knowledge and expectations about mentoring behaviours. It is also of interest because of the conceptual overlap with the AAI, which will be explored in detail later.

1.1.3.4 Assessing secure base script knowledge

All of us, from the cradle to the grave, are happiest when life is organised as a series of excursions, long or short, from the secure base provided by our attachment figure(s)

(Bowlby, 1988, p. 62)

Bretherton suggests the term 'Internal Working Model' emphasises the dynamic and developmental nature of the representation (Bretherton, 1985). However, over time it has become an all-encompassing explanation, rather than a reference to specific embodied representations or cognitive structures (Duschinsky, 2020a; Hinde, 1988; Petters, 2016). Fivush, (2006) suggests similarities between assumptions underlying both the IWM and attachment specific cognitive scripts; both are said to arise from repeated experiences, are elaborated over time to account for an increasing number of specific scenarios and are relatively stable. Waters & Waters, (2006) suggest re-interpreting the IWM concept in terms of architectures (including attachment specific cognitive scripts) could improve the precision of analysis and inform theoretical developments.

Cognitive scripts were initially conceptualised in response to the desire to understand how people know what constitutes appropriate behaviour for any given situation (Schank & Abelson, 1977). It is suggested episodic and semantic memories provide the structures for anticipating, interpreting, and participating in familiar events with

reduced need for cognitive processing. This knowledge is referred to as a script. Scripts are relatively fixed and can be applied to comparable situations. The restaurant script is a commonly used illustration of this phenomena (Schank & Abelson, 1977). Experience of eating in restaurants results in the formation of a restaurant script. The people in the scenario act out each part of the sequence fully before engaging in the next. They understand the roles of all those involved, know how to order food, assume desert will follow the main course, they should pay and leave a tip, and they behave accordingly. This script is followed with little deviation and little conscious thought. The script is inferred, activated, and acted out; thus, script knowledge contains a group of inferences and informs script-related behaviours (Abelson, 1981). The strength and influence of the restaurant script was highlighted when the covid-19 pandemic resulted in the implementation of new measures in restaurants, which necessitated the revision of existing scripts (e.g., Xiang et al., 2022). Cognitive scripts are seen by some as part of a cognitive-experiential system contributing to an individual's self-theory (Epstein, 1973, 1994). Individual differences in the cognitive-experiential system described by self-theory are seen as partly accountable for individual differences in perception, understanding, and engagement across scenarios. Scripting is seen to play a role in shaping caregiving processes and family dynamics across generations (Byng-Hall, 1985, 1986). It is possible that attachment relevant scripts inform mentoring type relationships. Therefore, research identifying attachment relevant scripts and the possibility of the scripts influencing mentoring relationship interactions are explored further in this chapter and inform the design of Study 1.

Bretherton et al., (1990) suggested children draw on script-like representations to inform their understanding of social relationships, and that a narrative task could be used to

assess their representations. Waters, Rodrigues, and Ridgeway (1998) followed up this suggestion and ranked children's narrative stories for attachment security content at 37 and 54 months of age. Each child's attachment pattern was assessed at 25 months of age using Q-sort. They found greater attachment security was correlated with longer, more detailed stories containing more secure base content. Secure base content became more detailed over time. This reinforces the proposition that a history of reliable secure base support results in the formation of an implicit secure base script, and the expectation that needs should be expressed and effective help and caring will be available within close relationships (Mikulincer & Shaver, 2020). The secure base script forms part of the attachment IWM and therefore contributes to secure attachment behaviours but do not comprise attachment security on their own. The assumption that attachment relevant scripts influence individual interpretations of, and responses to relevant threats, and enable or restrict subsequent affect regulation is now well established in attachment theory (Mikulincer & Shaver, 2016; Waters & Waters, 2021).

The original description of the elements comprising the secure base script has since been restructured and presented as (Waters & Waters, 2006, 2021):

1. Child and significant caregiver (or two adult relationship partners) are constructively occupied.

2. An interruption by event/actor results in distress (i.e., in the child or in one of the adult partners).

3. The child (or one of the adult relationship partners) signals the need for help from the other.

4. The other person recognises the signal and responds with an offer of appropriate help.

5. The offer of help is accepted.

6. The help is effective in resolving the challenge.

7. Help includes effective comforting and results in affect regulation in the person needing help.

8. Constructive interaction resumes or new constructive activity is initiated.

It is worth noting the relationship between the secure base script, Bowlby's original conceptualisation of attachment, the SSP assessment, and Main's suggestion about the overall aim of the attachment system at this point:

1 Bowlby's original conceptualisation of attachment was of individuals internalising a history of reliable, effective, nurturing secure base support, constructing an IWM of this, and subsequently acting out secure interactions.

2 There is a similarity between the elements of the secure base script and the summary of secure attachment behaviours assessed through the SSP: 1. Adult perception of child's signal of distress, 2. Accurate interpretation of child's signal, 3. Prompt response, and 4. Appropriate response (Main et al., 2005).

3 Main (2000) is careful to point out that attachment patterns only refer to states of mind arising from a process; all individuals have the aim of ensuring proximity to an attachment figure when distressed, but an individual with a current state of mind that is something other than secure is compelled to behave in ways which disrupts the process. A narrative containing secure base script content suggests the storyteller is compelled to act out a coherent, reliable response that is likely to reduce tension when in a distressing situation.

Despite Bowlby's original conceptualisation and the acknowledged distance between attachment itself and the assessment of observable phenomena, most attachment research involves the categorisation of participant attachment patterns. This is helpful in many instances, for example when investigating correlates between people with particular implicit attachment assumptions and specific health outcomes. However, it can lead to value judgements particularly in applied scenarios. The secure base script concept is worthy of further investigation because:

1. Most participants embed their secure base script knowledge in attachment relevant stories if they are primed to do so. This means their implicit knowledge of the secure base script is evident to those trained to recognise it.

2. Categorising attachment patterns and styles can be taken to infer a value judgement of normal or abnormal etc. The advantage of assessing the secure base script is that transcripts either contain complete or incomplete script knowledge. For some scenarios (such as mentoring) this is enough information and further categorisation is unnecessary. The approach avoids the use of terminology which may be misunderstood or unappreciated by

service users such as ‘avoidant’, or ‘preoccupied’ and highlights specific script omissions which could provide opportunities for targeted training.

The Attachment Script Assessment (ASA) assesses participant implicit knowledge of the secure base cognitive script and informs each study of the present thesis (Waters et al., 1998; Waters & Waters, 2006). In contrast to the other assessments already described, the ASA assesses whether participants have complete implicit secure base script knowledge and does not allocate their state of mind about attachment or traits to one of several attachment patterns, or make judgements such as ‘secure’ or ‘insecure’.

The methodological contrast between the ASA and the other examined attachment measures makes their comparison interesting. Outcomes from the AAI, ECR, and Attachment Script Assessment (ASA) with adolescent participants have been compared (Dykas et al., 2006). Secure-autonomous AAI categorisation is associated with higher ASA scores (and therefore greater secure base script knowledge) for mothers, fathers, and non-specific others. Higher adolescent ECR romantic attachment anxiety and avoidance (i.e., lower security) was negatively associated with secure base script knowledge for mothers and non-specific others. The ASA therefore appears to offer the advantage of accessing implicit assumptions specific to goal directed help seeking and help providing behaviours, which is something the AAI assesses (but self-report measures do not). It has the advantage of being easier to administer than the AAI, avoids the need to ask personal relationship-based questions inappropriate to mentoring scenarios, and does not result in a categorisations that are open to mis-use or misinterpretation.

With the aim of understanding the relationship between the AAI, self-report questionnaire outcomes, and ASA outcomes, a subsample of data from a well-respected longitudinal Study of Early Child Care and Youth Development (SECCYD) was examined in detail (Steele et al., 2014). The relationship between secure base script knowledge and attachment related experiences in childhood, adolescence, parental sensitivity, and adult attachment related discourse was scrutinised. A variety of attachment related measures, including the ASA, SSP, Attachment Q-Set, direct observations of maternal and paternal sensitivity, AAI, AAI Q-Set, ECR-R, and Relationship Scales Questionnaire (RSQ), were used to do this. Secure base script knowledge, assessed at the age of 18 years, is strongly associated with AAI coherence of mind and negatively with AAI dismissing states of mind at the $p<.01$ level. However, the ASA only has a small to moderate negative association with the AAI preoccupied state of mind and RSQ anxiety and avoidance. It has a trivial negative association with ECR avoidance and there is no significant negative correlation with ECR anxiety. More frequent reporting of childhood security is predictive of secure base script knowledge at age 18, but parental sensitivity is a stronger predictor. The findings suggest early caregiving experiences are abstracted into a cognitive script and attachment relevant autobiographical knowledge. This proposal is supported by additional research which concludes early attachment experiences are represented in the form of a secure base script that facilitates the development of an autobiographical narrative (Waters et al., 2017). Later research suggests the frequency of secure base script knowledge in both mothers and their children exists at a rate of 69.5% and the way mothers frame discussions with their children about events and emotions partially accounts for this association (Apetroaia & Waters, 2018). Overall, repeated attachment-relevant experiences seem to have a direct influence on the language participants use in ASA stories and AAI interview responses; whilst self-

report questionnaires appear to access a different set of representations. This assumption directly informs each study forming part of this thesis.

To examine whether ASA outcomes from the growing number of studies are attributable to secure base script knowledge (rather than other factors) an alternative assessment was devised and outcomes of eight studies combined (Mikulincer et al., 2009). Findings support the argument that secure base script knowledge at least partly underpins attachment behaviours and is consistent with low scores of attachment-related anxiety and avoidance on the ECR. They also confirm secure base script knowledge informs attachment related expectations (e.g., related to partner support) and behaviour appraisals (e.g., interpretation of intimacy promoting behaviours). These associations extend to dream content and are generalised across different types of relationship. Although story length is significantly correlated with verbal ability, a regression shows neither verbal ability nor general narrative skills account for insecure attachment patterns. Later research examined adolescent and adult attachment scripts and suggests secure base script knowledge is continuously distributed and generalised across relationships (Waters, Fraley, et al., 2015).

The relationship between AAI coherence and ASA outcomes and the finding that secure base script knowledge is transferred from attachment to other close relationships and across situations makes it a useful assessment of implicit attitudes toward mentoring relationships. There is already a body of work examining secure base use in a variety of relationships. For instance, children with trust in maternal availability and support assimilate experiences in accordance with a secure base script, even when an event is incongruent with it (Bosmans et al., 2014). Secure base script knowledge supports caregiver secure base

behaviours even in difficult circumstances (e.g., Chen & Bailey, 2018; Huth-Bocks et al., 2014). Research with participants aged between 8 and 12 years suggests secure base script knowledge specific to interactions with parents is predictive of secure base type interactions with close friends (Psouni & Apetroaia, 2014). Banse et al., (2013) suggests implicit secure base script knowledge exists alongside explicit knowledge about relationship partners, and Selterman et al., (2012) explain secure base scripts extend to dream content about relationship partners. Several researchers have found secure base script knowledge to be a cross-cultural phenomenon (e.g., Coppola et al., 2006; Mikulincer et al., 2009; Umemura et al., 2018; Waters, Bosmans, et al., 2015). A longitudinal adoption study found maternal sensitivity in early and middle childhood influenced (rather than determined) secure base script knowledge at age 23 years in genetically unrelated families (Schoenmaker et al., 2015).

This combination of results and the potential to use a non-intrusive, cost effective, and relatively quick to use measure makes the secure base script concept an attractive prospect for the examination of mentoring relationships. But mentoring scenarios are real-world situations, and it is therefore important to ensure the concept of cognitive scripts extends to applied situations, and to use an assessment of secure base script knowledge suitable for adaptation for use in applied contexts, if necessary.

Real world application of scripts has attracted the interest of a variety of professionals. For example, highly effective salespeople are found to use more elaborate scripts than those who are less effective (Meng et al., 1989). The comparison of cognitive scripts specific to the research processes gathered from psychology undergraduates,

graduate students, assistant professors, and full professors reveals a high level of agreement across groups about content, but differences in the depth of understanding about script components and in the ordering of factors (Hershey et al., 1996). Psychology undergraduate research method scripts became 37% more like expert scripts if they were exposed to, and referred to, the expert script over the course of a term (Wilson & Hershey, 1996). A team of Educational Psychologists has developed scripts to support their joint goals of professionalism and change (Kerslake & Roller, 2000). Schema Therapy aims to teach clients and therapists how to change their scripts of past traumatic experiences (Rafaeli et al., 2011b).

These applied examples provide further support for the proposition that secure base script knowledge informs expectations and behaviours within mentoring relationships. Both the AAI and self-report measures (e.g., ECR-R) involve asking for the recall of information about close personal relationships; it would be too intrusive for most mentoring services to ask this information when assessing potential mentors or mentees. The ASA is a cost-effective, unobtrusive assessment of implicit secure base script type mentoring expectations which would avoid the bias of self-report methods. However, the current version involves the use of prompt words centred around close relationships between adults and children or romantic relationships. These would be inappropriate for use in some mentoring scenarios, for instance mentoring schemes providing peer or professional support to people who may have had children taken into care or who have experienced intimate partner violence. There is a Mentoring Script Assessment (MSA) which is derived from and mirrors the ASA but uses mentoring-specific prompt word lists. However, to the thesis author's knowledge no research using this has been published to date. Therefore, Study 1 compares ASA and MSA

outcomes with one another and with explicit reports of attitudes toward, and engagement in mentoring (see section 2.2.1 for full list of aims). If MSA outcomes are reliably and significantly correlated with the ASA and explicitly reported engagement in and constructive attitudes toward mentoring, it would have the advantage of accessing underlying assumptions about mentoring goal orientated help seeking and help providing behaviours.

The notion that a person's implicit secure base script informs their attachment expectations and relationship behaviours led to the construction of the Attachment Script Assessment (ASA) (Waters & Waters, 2006). This is of central importance to the present PhD thesis which is centred around:

1. Examination of ASA transcripts beyond the usual scoring process.

2. The relationship between ASA outcomes and its derivative assessment of implicit expectations of mentoring behaviours (the Mentoring Script Assessment, also referred to as the MSA).

3. The examination of MSA transcripts beyond the usual scoring process.

4. The relationship between ASA and MSA outcomes with explicitly reported attitudes toward and engagement in mentoring.

In summary, having evaluated different means of assessing whether participants have secure base type mentoring goal-oriented help seeking and help supporting assumptions, the MSA (derived from the ASA) has been chosen. The assessment is more practical and cost effective to administer than the AAI, is specific to mentoring, and is not associated with the

issue of self-report questionnaire bias. Use of the measure requires less exploration of intimate relationships than the AAI and self-report measures. It can be adapted and applied to various domains and removes the need to explore potentially difficult attachment relationships. There is potential to adjust the word prompt lists to make them appropriate to individual settings, and it may also be possible for non-attachment specialists to be trained to administer the assessment in the future. This could make it available to educational, mental health, business, and other settings, where it may be useful for the assessment of mentoring relationship expectations with a view to using it for recruitment and training purposes. However, the MSA has not been used in any published research, and therefore its selection is based on the presumption of a positive significant relationship with explicit positive attitudes towards (and constructive engagement in) mentoring relationships. However, there are 2 unpublished research poster summaries which cite these relationships (Bianchini et al., 2011; Zevallos et al., 2009).

Study 1 adapts the unpublished work to examine the ASA and MSA in novel ways and examines whether the unpublished findings are replicable. This will involve examining to what extent ASA and MSA outcomes are correlated, identifying whether they assess the same or different constructs, and to what extent the MSA is associated with explicitly reported constructive attitudes toward mentoring and engagement with mentoring. Studies 2a - 2c are concerned with the examination of specific language and sentiment features contained in ASA and MSA transcripts, and Study 3 compares specific features of two ASA datasets; dataset 1 gathered in the UK and used for Studies 1 – 2b, and dataset 2 comprising secondary data gathered by researchers in the US for a previous study (Bost et al., 2006). The research already summarised informed the selection of the ASA and MSA, the research

summarised from this point onwards informs the examination of transcripts conducted in Studies 2a-2c.

1.2 The language of secure base script knowledge

Bowlby suggests that children develop an IWM of attachment before they can speak. Their subsequent language development enables interactions which, in conjunction with secure base behaviours, leads to modification of their IWM (Bretherton & Munholland, 2016). The language content of ASA transcripts outside of listing the secure base script has not been examined to date. However, researchers devised and validated a means of observing and assessing secure base support behaviours in adult romantic relationships, called the Secure Base Scoring System (SBSS) (Crowell et al., 2002). They found AAI transcript discourse coherence is reflected in actual secure base help seeking and providing behaviours.

This is particularly interesting because secure base use and support and the secure base script are not referred to in the AAI manual and do not form part of the analysis. However, examination of AAI transcripts has revealed responses to three AAI questions are most likely to contain secure base script relevant expectations and memories (Waters et al., 2013). This led to the development of the Secure Base Script Knowledge Scale (AAI_{SB}); a nine-point scale used to assess secure base script content in the responses to those three questions. Traditional AAI analysis involves the evaluation of discourse coherence, cooperation, and other features to assess the speaker's most likely current state of mind about attachment relationships. In contrast, the AAI_{SB} assesses to what extent the speaker is retelling personal experiences of secure base behaviours and to what extent their

expectations are consistent with the secure base script (Waters & Facompré, 2021). The transcript is assessed for secure base script content taking the form of expectations and scenes. Expectations are explicit or implied but consistent with the secure base script, and scenes are memories of interactions consistent with the entire secure base script or fragments of it.

Analysis of 60 participant AAI transcripts and observations of partner interactions suggests that AAI_{SB} scores correlate with a total of 30.3% laboratory observed caregiving behaviours, whereas AAI coherence (AAI_{COH}) correlate with a total of 28.5%; around 22.8% of caregiving components are shared with both the AAI_{SB} and AAI_{COH} (Waters et al., 2013). The AAI_{SB} correlates with a total of 25.3% of laboratory observed care seeking behaviours whilst AAI_{COH} correlates with 25.1%; approximately 19.6% of both these care seeking components were shared by both AAI_{SB} and AAI_{COH}. The relationship between AAI coherence, secure base script knowledge, and caregiving and seeking behaviours is an important one. It may partially account for the relationship between AAI and ASA outcomes and contributes to the suggestion that secure base script knowledge may account for at least part of the transmission gap identified between attachment representations and caregiving behaviours (van IJzendoorn & Bakermans-Kranenburg, 2019; Waters et al., 2013).

Although the AAI_{SB} scale is not part of the AAI process, it has potential to contribute to the improvement of understanding the cognitive underpinnings of attachment behaviours. Research aimed at developing our understanding of the linguistic features associated with AAI secure base script content could lead to the development of more fine-grained theories about the secure base script concept. Findings could also inform the simplification of ASA

and MSA transcript scoring which can sometimes be difficult for those on the borderline of 3 and 4 (where complete script knowledge emerges). This could reduce the time spent scoring and make the assessment suitable for use by non-attachment specialists in applied settings (e.g., mentoring, mental health, or educational settings). The semi-automated analysis of AAI transcripts has been examined to find whether the outcomes can be used to inform a similar approach which could be taken with ASA and MSA transcripts.

1.2.1 Computerised analysis of the emotional tone and language of AAI transcripts & the implications for secure base script analysis

Given the specialised and time-consuming nature of AAI transcript analysis, it is understandable the advent of computerised language assessment has inspired some researchers to seek typical language markers for each AAI category, with a view to automating at least part of the process. Their findings inform Study 2a onwards of this thesis, which examine the linguistic and sentiment features of secure base script knowledge embedded in ASA and MSA story transcripts.

The Linguistic Inquiry and Word Count (LIWC) has already been used to identify the linguistic features of secure-autonomous and insecure attachment patterns evident in AAI transcripts (Borelli et al., 2013; Cassidy et al., 2012; Waters et al., 2016). Devised in 2001, LIWC is a pay-to-use tool which counts content and style words within text files (Chung & Pennebaker, 2007; Pennebaker et al., 2001). Content words express the content of communication and are usually nouns, regular verbs, adjectives, and adverbs. Style words, also referred to as particles or function words, are generally pronouns, prepositions, articles, conjunctions, and auxiliary verbs and give the passage meaning (Merriam-Webster, n.d.; Pennebaker et al., 2003). Function words account for more than half of native English

speakers' daily speech despite there being fewer than 400 function words in their average vocabulary of over 100,000 words (Chung & Pennebaker, 2007).

Function word use varies according to an individual's linguistic style and is revealing of the speaker or writer's psychological state (Chung & Pennebaker, 2007). For instance, a review of psychological features assessed using various computer text analysis noted an overall tendency for those who are depressed to use the word 'I' more frequently than those who are not (Pennebaker et al., 2003). People telling lies have been found to refer to themselves less frequently and use a lower rate of first-person singular pronouns (such as, I, my, me, mine, myself) than those telling the truth. More exclusion words (for instance, but, without,exclude) are also used more in truthful speech, and when they are combined with a high use of conjunctions (for example, and, also, although) result in high coherence (Tausczik & Pennebaker, 2010). The use of prepositions (for example, to, with, above) correlates with the individual providing concrete information.

A comparison of manually scored AAI transcripts with computer automated examination of Emotional Tone (defined as affective experiencing) and Abstraction (defined as cognitive mastery) revealed those transcripts categorised as dismissing scored low on both, preoccupied transcripts scored high on both, and those categorised as secure-autonomous were situated between the two extremes (Buchheim & Mergenthaler, 2002). Reflective functioning (RF) is the ability to understand the influence of one's own emotional and mental state or behaviour, and to be able to modulate this at the same time as understanding the influence of others emotional and mental states on their behaviour (Borelli et al., 2012). The RF skill of reflection and adaptation is associated with parental

identification of, and sensitivity to, their child's needs and is associated with attachment security. Transcripts about negative parenting experiences taken from RF interviews (the Parent Development Interview-Revised) with a small clinical population of mothers were examined using LIWC. When asked about negative parenting experiences, positive feelings on the self-focussed RF section were associated with lower self-focussed RF, greater self-reported recent substance use, and lower parenting sensitivity.

Early use of LIWC to examine AAI transcripts found those categorised as secure-autonomous contained more words derived from the word 'feel' (for example, feeling, touch) than transcripts scored dismissing or preoccupied (Cassidy et al., 2012). Secure-autonomous transcripts contained the lowest number of words derived from the word 'say'. Preoccupied transcripts contain the highest word count whilst those categorised as dismissing contain the lowest. This is consistent with the tendency for preoccupied transcripts to contain embroiled responses and for dismissing transcripts to contain restricted responses to emotionally challenging questions. Negation (for example, no, can't, don't) and use of numbers are used with greater frequency in dismissing than secure-autonomous transcripts, whereas use of 'feel' derivatives, conjunctions (for example, and, but, through) and derivatives of 'inclusive' (for example, both, close, we) is lower. These findings reflect the tendency for dismissing transcripts to avoid engagement with attachment related subject matter and for claims of memory loss about attachment related experiences. As expected from the research into attachment, preoccupied transcripts contain the highest number of words from the anger category (for example,obnoxious, nag), certainty (for example, absolute, never) derivatives, and inhibition (such as, stop, keep) words when compared with secure-autonomous and dismissing transcripts. Preoccupied

transcripts contain more swear words, time related words (such as, today, early), and space words (for instance, among, near) than dismissing transcripts. Preoccupied transcripts contain more causation (for example, reason, why) words than secure-autonomous ones, perhaps this is partly due to the tendency for some preoccupied transcripts to contain psychobabble, anger, or blame. Use of the present tense was found to share a negative association with coherence (this association may be due to most AAI questions being focussed on the past).

LIWC has since been used to compare the linguistic features of transcripts categorised as secure-autonomous, preoccupied, dismissing, and disorganised (the disorganised category included transcripts belonging to the groups unresolved/disorganised or cannot classify) (Borelli et al., 2013). Transcripts categorised as secure-autonomous contained more affect words than dismissing, preoccupied, or disorganised transcripts. Dismissing transcripts contained fewer negative emotion words than preoccupied and secure- autonomous transcripts, which reflects the trend for dismissing transcripts to lack emotional transparency. As expected from the attachment literature, preoccupied transcripts were most likely to contain words associated with anger. Disorganised transcripts contained a higher frequency of second-person pronouns when discussing loss or trauma.

Two large AAI corpora, obtained from the Study of Early Childcare and Youth Development (SECCYD N=875) and the University of Illinois at Urbana-Champaign (UIUC N=826) were examined using LIWC and the outcomes compared (Waters et al., 2016). Some features were observed in one of the two samples (e.g., the preoccupied subset of

transcripts in the SECCYD sample contained fewer first-person plural pronouns whereas the UIUC transcripts did not). However, there were some outcomes that were consistent between both samples. Notably, transcripts categorised as dismissing were associated with a lower word count, more words indicating tentativeness, and fewer prepositions, conjunctions, and fillers. Whereas transcripts reflecting a currently preoccupied state of mind were associated with a higher word count and contained more words indicative of anger. Both dismissing and preoccupied transcripts contained more negations than secure-autonomous ones. A recent word count completed using the Linguistic Inquiry Word Count (LIWC) computer programme accurately allocated transcripts to the same one of the three organised attachment patterns as human coders in 71% of cases; the authors highlighted that human coder agreement for the AAI typically ranges between 78% and 84% (Pennebaker, 2023). Findings have therefore identified some typical patterns of language associated with each AAI category alongside some contradictions.

The features of language in AAI transcripts associated with each attachment pattern are interesting, have potential for application in therapeutic settings, and to inform sophisticated computational models of factors influencing the development of attachment patterns, which in turn act as control states and influence personality (Petters & Coyne-Umfreville, 2017). However, it is important to note that the data analysed are clinical style in-depth interview transcripts. The intensity of AAI training and current methods of analysis render it unsuitable for use by non-specialists and therefore in most mentoring scenarios. Even if it were possible to automate AAI transcript analysis, a trained specialist would be required to conduct and transcribe the interviews. Those gathering the data ask specific questions about attachment relevant material and are trained to minimise experimenter

effects and the pollution of transcript analysis by factors irrelevant to participant attachment representations. Therefore, the outcomes cannot be extrapolated to natural speech or to other attachment relevant transcripts, such as those obtained using the ASA.

However, identifying patterns of language use and sentiment expressed in ASA and MSA transcripts across varying degrees of script knowledge might enable non-attachment specialists to score transcripts more quickly and accurately. Therefore, this is something that has been examined in Studies 2a-3. Findings could be useful:

1. In the recruitment of mentors with an intrinsic understanding of the elements of supportive, productive mentoring relationships.

2. In the identification of mentor training needs specific to their implicit assumptions about goal-oriented help seeking and help providing in mentoring relationships.

3. To provide targeted support to mentees to help them overcome specific barriers to effective engagement in mentoring.

1.3 Literature review summary and research questions

1.3.1 Assessing implicit assumptions underpinning mentoring relationships

Mentoring in education is an area of interest to many researchers, education professionals, and increasingly to businesses and professional mentoring services (e.g., Berger, 2022; Crockford, 2023). As a result, many have tried to identify specific relationship features associated with successful outcomes (e.g., Bell-Ellison & Dedrick, 2008; Elshaw et al., 2018; Schäfer et al., 2015; Scholz et al., 2023). However, the field of mentoring is ill-

defined and detrimentally impacted by the lack of sound theory underpinning approaches, which makes the application of outcomes difficult across different contexts (Crisp et al., 2017; Garvey et al., 2014). Therefore, a standardised definition of mentoring does not exist, and any examination of mentoring must begin by defining what is meant by the term (Jacobi, 1991). The mentoring-specific assumptions underpinning the approach of this thesis are reflected in elements of research examining a peer education mentoring scheme (Garcia-Melgar et al., 2021). The thesis draws on aspects of this and other work to suggest productive mentoring relationships depend partly upon the ability of the mentee to seek and respond appropriately to mentor help, and partly on the mentor's social skills, past relationship experiences, and self-awareness which enables mentors to adapt their approach to meet mentee needs, set goals and limits, and to support them to overcome obstacles whilst encouraging their independence.

Questionnaires are commonly used to monitor mentoring relationships or inform mentoring research (e.g., Chen et al., 2016; Heeneman & De Grave, 2019; Schäfer et al., 2015). Nuis et al. (2023) highlights that not all mentoring questionnaires are informed by robust theories, some have not been validated, and those that are validated tend not to be underpinned by sound theory and are only applicable to situations with a definition of mentoring that is consistent with the context the measure was validated for.

The present thesis is therefore concerned with examining a particular set of implicit assumptions guiding the help seeking and help providing behaviours in mentoring and not with features of, or approaches toward, mentoring. An attachment perspective arising from the developmental and cognitive psychology traditions are used to examine:

1. Whether implicit assumptions informing effective mentoring specific goal-oriented help seeking and help providing behaviours are significantly related to implicit assumptions about similar secure base interactions.

2. Whether the outcomes of an assessment of implicit goal-oriented help providing and help seeking assumptions specific to secure base and mentoring relationships are correlated with engagement in mentoring and explicitly reported positive attitudes toward mentoring.

3. The assessments used to assess implicit secure base and mentoring script assumptions in detail.

4. Whether feature of ASA and MSA transcripts can be identified to simplify the transcript scoring process.

The Mentoring Script Assessment (MSA) is a derivative of the previously examined Attachment Script Assessment (ASA) but has not been used in published research to date. Therefore, this thesis is concerned with a deep examination of these two assessments, their relationship and the transcripts participants have produced during the assessment process. Importantly, the studies underpinning the chosen measures (i.e., the Attachment Script Assessment and Mentoring Script Assessment) have robust theoretical underpinnings, have been validated, and are applicable across mentoring scenarios.

1.3.2 Theoretical underpinnings of the approach taken

Central to the thesis is that the mentoring stance chosen reflects elements of the secure base concept central to Bowlby's theory of attachment (Waters & Cummings, 2000).

Bowlby (1988a) positions primary caregivers as a secure base from which their children can explore and return to for comfort or when in need. The relevance of the concept to mentor and mentee behaviours becomes clear in his account of secure base interactions between adolescents and their caregivers. In it, he positions parents as a secure base from which adolescents explore the outside world but return to when in need of physical or emotional nourishment, comfort, or reassurance, that the parents are responsive, but only intervene when absolutely necessary.

Importantly, Bowlby hypothesised secure base interactions between infants and their primary caregivers become stable at around two to three years of age, and that infants assimilate their experience into a set of unconscious biases which inform their approach to, and expectations within, other relationships (including those with teachers, friends, romantic partners, and therapists) (Bowlby, 2005b, 2005c). Therefore, the literature review informing this thesis scrutinises a range of attachment assessments to find which is most appropriate for examining the relationship between early attachment experiences and assumptions about mentoring interactions. The review results in selection of the Attachment Script Assessment (ASA) and its derivative Mentoring Script Assessment (MSA) (Waters & Waters, 2006). The ASA is an assessment of an individual's implicit secure base script assumptions arising from their personal history of interactions within attachment relationships. Longitudinal examinations of ASA outcomes suggest an individual's secure base script is relatively stable across time, influenced by experiences across the lifespan and predictive of observed parent-child attachment behaviours (Waters & Roisman, 2019). The ASA and MSA assessments for the present thesis are comprised of a set of three participant transcripts, each the result of a primed story-telling task. The stories used for the ASA were

called *Baby's Morning, Doctor's Office,* and *The Party.* The three stories contributing to the MSA score were *Writer's Block, Not Enjoying University,* and *Choosing Specialist Modules*

The Adult Attachment Interview (AAI) is considered the gold standard assessment of adult attachment patterns because of its predictive ability. But its use is time consuming and requires extensive specialist training (Ravitz et al., 2010). An important reason for selecting the ASA and MSA is that ASA outcomes share a large significant relationship with AAI coherence of mind and dismissing states of mind, and a small to moderate significant relationship with preoccupied states of mind. The ASA is quicker to administer and score than the AAI and requires less specialist knowledge (Steele, Waters, Bost, Vaughn, Truitt, Waters, Booth-LaForce, et al., 2014). In addition, previously unpublished research found a statistically significant relationship between the ASA and MSA, and some significant relationships between the MSA and explicitly reported constructive attitudes toward mentoring (Bianchini et al., 2011; Zevallos et al., 2009) Therefore, the present thesis is rooted in two academic perspectives; one being cognitive psychology because of the examination of transcript content assumed to result from primed cognitive scripts, and the other being developmental psychology through the application of attachment theory derived from the developmental and cognitive psychology traditions originating in the work of Bowlby.

1.3.3 Thesis research questions

In conclusion, the review of attachment literature (particularly the relevance of implicit attachment assumptions to mentoring, methods of assessing implicit assumptions, and

differences in language use between people with different attachment patterns) have informed five research questions:

1. Are implicit assumptions about mother-child secure base interactions transferred to unconscious assumptions about support-seeking and support-providing behaviours in mentoring relationships?

2. Is the MSA specific to implicit and explicitly reported assumptions about mentoring and engagement in mentoring?

3. Are specific language or sentiment patterns associated with the level of secure base or mentoring script knowledge transcripts contain?

4. Are there patterns within ASA and MSA transcripts which could be used to simplify the transcript scoring process?

5. Are patterns identified in UK ASA transcripts also apparent in independent secondary data obtained from the US?

Research questions 1 and 2 inform Study 1; research question 3 informs Studies 2a – 2c; research question 5 informs Study 3; and question 4 informs the identification of patterns throughout Studies 1 – 3.

Chapter 2 Methodology

2.1 Overview

The present thesis presents an in-depth examination of the Attachment Script Assessment (ASA) and Mentoring Script Assessment (MSA), the relationships they share with each other, explicitly reported engagement in mentoring, attitudes toward mentoring and the sentiment and language used in the transcripts produced during both assessments. This chapter provides the ontological position and outlines the two broadly different approaches taken (i.e., use of attachment script-based measures and computer assisted linguistic approaches). It will also identify how the thesis research questions are approached for each study. Additional methodological information is included in each study chapter.

A quantitative approach was taken to scrutinise both assessment outcomes at the mean score and individual story level. Computer assisted text analysis in the form of corpus linguistics and sentiment analysis techniques were used to provide quantitative data about language and sentiment expressed in participants' ASA and MSA transcripts. As previously explained in Chapter 1, the identification of quantifiable relationships between transcripts scores or groups and specific language or sentiment expression has potential to simplify the scoring of ASA and MSA transcripts on the boarder of scores 3.5 and 4, which could make the assessment easier to use for those without attachment theory expertise. The investigations used in this thesis are almost entirely novel and therefore, rather than reflecting the belief that a positivist approach is somehow superior to others, it is intended to be an initial exploration to inform further research. Using quantitative and qualitative approaches at different stages or concurrently during research brings the advantage of triangulating outcomes, identifying errors, and finding different types of meaning within the

dataset or process (Sechrest & Sidani, 1995). Future qualitative analysis of the transcripts has potential to identify trends missed by the current approach, which could be used to inform further quantitative and qualitative analyses.

2.2 Design

Study 1 adapts previously unpublished work by Bianchini et al. (2011) and Zevallos et al. (2009) to examine the ASA and MSA in novel ways and to find whether their results were replicable. This involved examining to what extent ASA and MSA outcomes were correlated, identifying whether they assessed the same or different constructs, and to what extent the MSA was associated with explicitly reported constructive attitudes toward mentoring and engagement with mentoring gathered. Study 2a used the AntConc corpus linguistics tool to examine specific language features contained in ASA and MSA transcripts. Study 2b used the Sentiment Analysis and Cognition Engine (SEANCE) to quantify sentiment expressed in ASA transcripts; the same approach was taken in Study 2c with MSA transcripts. Study 3 used AntConc and SEANCE to quantify the language and sentiment of two ASA datasets; dataset 1 gathered in the UK and used for Studies 1 – 2b, and dataset 2 comprised of secondary data gathered by researchers in the US for a previous study (Bost et al., 2006). Each study uses a different approach, therefore specific details are included in each study chapter and an overview is provided in this methodological chapter.

2.3 Participants

2.3.1 Dataset 1 participants, ethics and demographic information

Dataset 1 was the source of data for Studies 1 to 2c. Participants volunteered for this lab-based study through an English university research participant scheme (RPS). They were informed of research details and their right to withdraw. Their informed consent was gained

as part of the ethical research approach (Appendix A). Once they completed the session they were thanked and debriefed (Appendix B). The study and researcher adhered to the British Psychological Study Code of Ethics and Conduct (The British Psychological Society, 2021) and gained ethical approval from Birmingham City University Ethics Committee. The prompt words used with participants have been discussed in detail in section 2.5.1 of this chapter. Of relevance to ethical considerations is that the prompt words used for the scenario in the MSA story Not Enjoying University, were changed to make them culturally appropriate from a safeguarding perspective (Waters & Waters, 2006). This means that instead of inferring the mentor invited the student to visit their family, the revised version inferred the mentor invited the student to attend a Journal Club. British safeguarding guidelines make it unlikely for mentors in the UK (who may be university members of staff) to invite undergraduate mentees to their home.

54 undergraduates, 46 of whom identified as females and 8 as males participated and were free to state their own gender identification; however, each participant chose a binary option of either male or female. Participant ages ranged between 18 and 38 years, their mean age was 20.98 years, SD = 2.92. Pre-determined ethnic categories, as recommended by the Office for National Statistics (2016) were offered alongside the opportunity for all participants to freely state how they identified their ethnicity (Bunglawala, 2019). The most frequently identified ethnic group was White English / Welsh / Scottish / Northern Irish / British (42.59%). 8 participants (14.81%) described their ethnicity rather than use the categories set by the Office for National Statistics. 75% of participants had always lived in the UK. Residency duration ranged from 1 year to 18 years in the remaining 25 % of the research population. See Appendix C for further details of participant ethnicity. The initial

intention to examine differences and similarities between demographic groups with a view to examining the suitability of set prompt words for each group was discarded because of low participant numbers within each category (except for female: N=46).

2.3.2 Dataset 2 participants, ethics and demographic information

Study 3 used data comprised of the Doctor's Office and Baby's Morning transcripts from dataset 1 and dataset 2. Dataset 2 consists of 89 Baby's Morning and 89 Doctor's Office transcripts that were collected and provided by a research team for a previous study in the USA (Bost et al., 2006). Professor Everett Waters obtained the data from Professor Kelly Bost, and confirmed in writing that the SUNY Committee on Research Involving Human Subjects has deemed the data as posing no risk to participants (Waters, 2021). Confirmation that participants were given a written description of the proposed procedures, the opportunity to ask questions, and gave their written agreement to participate was provided. An important distinction between the two datasets is the instruction not to include names in stories issued to US participants (dataset 2) whereas UK participants (dataset 1) were not issued this instruction. An application for ethical approval to use this dataset 2 as secondary data was submitted to, and approved by, the Birmingham City University Ethics Committee (Brown, 2021). The dataset is entirely anonymised; it contains no demographic information or names. The only information that was provided is that the participants were a community sample of adult mothers. It would prove impossible to identify the participants from the information provided.

2.4 Restrictions on participant recruitment

The target sample size for the correlation and regression analyses in Study 1 was 78 and was calculated using G*power (Faul et al., 2017). It was determined by the number of

participants necessary to achieve a power of .7 with an α of .05, assuming a medium effect size as defined by Cohen (1988) with small being defined asabove .2; medium above .5; and large above .8 (Coolican, 2019e). As this was an exploration of the measures, rather than a traditional evaluation of an intervention, a minimum of .7 was deemed appropriate and consistent with previous examinations of assessments and studies in the area (Apetroaia & Waters, 2018; Bianchini et al., 2011; Dykas et al., 2006; Guttmann-Steinmetz et al., 2003; Waters et al., 1998; Waters & Hou, 1987; Waters, Bosmans, et al., 2015b; Zevallos et al., 2009). However, an upper target of 115 participants would have been needed to achieve a power of .95, which would be more fitting for examination of an intervention. Due to events such as the pandemic and issues with changing the available mode of data collection (from face to face to online) this upper target was not practical within the scope of the PhD when the time taken for transcription and analysis is taken into account (greater details about the barriers are provided below).

An a priori test was also used to estimate the target sample size for Mann-Whitney U tests with equal groups assumed, and an α of .05. It identified 74 participants would be needed to achieve a power of .7. Unfortunately, the Coronavirus pandemic of 2020 disrupted participant recruitment for face-to-face laboratory sessions. Therefore, a post-hoc calculation of power for the 54 participants using G*Power 3.1 was completed with the effect size .3 (see below for reported effect sizes), and α was set at .05. This has reduced the power to .6, which is considered medium (and is therefore still consistent with the original power calculation which was .7). Low power has been identified as a common issue in attachment research (Schuengel et al., 2021; van IJzendoorn & Bakermans-Kranenburg, 2021). Post-hoc power analyses for each statistically significant correlation and regression

are contained in Appendix X for transparency. Whilst this is a small participant group for Study 1, this is not the case for studies 2a – 3, which rely on computerised text analysis methods (Evison, 2010). It has been suggested that corpora analysed using these approaches that are too large produce too much data which must then be adjusted and that reliable results can be obtained from datasets that are as small as 1000 words. Dataset 1 consisted of a corpus of 81,792 words and dataset 2 of 24,032 words. The full dataset 1 corpus was used for Study 2a, the ASA dataset used for Study 2b was comprised of 36,715 words, whereas the MSA dataset used for Study 2c was comprised of 45,077 words. Dataset 2 was combined with an additional 24,034 words from dataset 1 for Study 3, giving a corpus of 55,200 words for Study 3. The issue with low participant numbers for Study 1 was addressed as far as possible by using Study 3 to find whether results specific to Baby's Morning and Doctor's Office transcripts could be replicated using an independent dataset. It was not possible to obtain independent datasets relevant to the remaining prompt word sets, largely because other findings using the mentoring prompt word sets have not been published. Therefore, the novelty of the present thesis in examining the MSA transcripts limited the ability to replicate findings.

Data collection coincided with the onset of the Covid-19 pandemic. Therefore, despite the power being reduced, the decision was made not to recruit the additional participants that would have provided the original target number via video or audio conferencing because at that point of the pandemic mixed outcomes were being reported regarding the suitability of online participant interviews in comparison with face-to-face interviews. For instance, a review of 11 health studies that engaged 545 participants, suggested online responses were generally shorter, more concise, and contained less

contextual information (Davies et al., 2020). A small study suggested that video counselling could intensify emotional responses (Schaarschmidt &Koehler, 2021). It was felt that some of these effects may be directly applicable to the ASA and influence outcomes. These tendencies were considered a risk for the integrity of the present research because script-based narratives may differ between online and face-to- face participants, which had potential to skew the combined outcomes. There was also the ethical risk that online participation may have had a detrimental emotional impact on participants who were already vulnerable due to anxiety about the pandemic. In addition, they may have been socially isolated due to lockdown restrictions and those restrictions would have prevented them receiving face to face support. In addition to these concerns, the reliability of ASA and MSA assessments conducted via video or audio conferencing had not been assessed. Only one study could be found that included participants completing the ASA via the telephone (Steele et al., 2014). In that study, 170 of the 857 participants completed the AAI by telephone. However, except for three participants, the researchers decided not to completed the ASA remotely but did not specify a reason. Another concern is that the administration of secure base script assessments is controlled by using a standardised procedure which would have differed between participants seen in the laboratory and those taking part on-line. However, the persistence of the 2020 pandemic means online data collection has become more commonplace and assessing the reliability of the ASA and MSA using video conferencing is now an important step, but beyond the scope of this study.

2.5 Materials

2.5.1 Attachment Script Assessment (ASA) and Mentoring Script Assessment (MSA)

Justification for use of the ASA was provided in Chapter 1 (see section 1.1.3.4). it is a validated measure that has been used in a range of studies and the MSA is a derivative

assessment (Waters & Waters, 2021). The notion that a person's implicit secure base script informs their attachment expectations and relationship behaviours led to the construction of the Attachment Script Assessment (ASA) (Waters & Waters, 2006). This is of central importance to the present thesis, which is centred around examination of:

1. ASA transcripts beyond the usual scoring process.

2. The relationship between ASA outcomes and its derivative assessment of implicit expectations of mentoring behaviours (the Mentoring Script Assessment, also referred to as the MSA).

3. MSA transcripts beyond the usual scoring process.

4. The relationship between ASA and MSA outcomes with explicitly reported attitudes towards, and engagement in, mentoring.

The ASA uses a prompt word method to elicit participant recall of their implicit knowledge of the secure base script (Crowell et al., 2016; Waters & Waters, 2006). The prompt-word set usually consists of 12 words to one page, with 4 words in each column, each typed in font size 18. Each list infers a story centred around a collaboration between two people and contains an implied constructive interaction, distressing event, and opportunity for resolution. Participants are given up to two minutes to look at the prompt words and construct their story containing the words in a specified order. They have access to the prompt words throughout the process and are digitally recorded telling their story. Recording the stories means literacy difficulties do not restrict story content, participants

are unlikely to self-edit once they begin their storytelling, and therefore the likelihood of narratives reflecting implicit secure base script knowledge is maximised. Delivery of researcher instructions to participants is standardised to minimise experimenter effects (Vaughn et al., 2007). The resulting stories vary considerably in length, detail, and secure base script knowledge content.

A variety of script prompt word sets have been created, each being relevant to different participant experiences, for instance, mother-child relationships, father-child relationships, mentor-mentee relationships, friendships, and romantic relationships. Each has a unique title which helps to identify the topic (Waters & Waters, 2021). The prompt word sets used in this thesis are *Baby's Morning, Doctor's Office,* and *The Party*. Baby's Morning is a mother-baby attachment story; Doctor's Office is a mother-child attachment story; and The Party is a mother-teenager attachment story. Maternal specific story prompts have been used deliberately because 32% of the variance in adolescent secure base script knowledge relevant to 'nonspecific others' has been attributed to their secure base script scores relevant to their mother (Dykas et al., 2006). The same effect was not observed for their secure base script scores specific to their fathers. Furthermore, the secure base script score specific to mothers accounted for 13% of the variance for AAI coherence of mind scores when examined with secure base mean scores for fathers and nonspecific others. Secure base script knowledge specific to fathers were also associated with secure AAI attachment classification, whereas secure base script knowledge specific to nonsignificant others was not. Adolescents scoring high on ECR avoidance tended to produce transcripts about maternal relationships with low scores. This effect was not observed for paternal or nonsignificant other secure base knowledge. Neither maternal nor

paternal secure base script scores were associated with ECR anxiety scores, but nonspecific other scores were. Given these outcomes, selecting a combination of ASA word prompt sets centres around relationships with mothers seems appropriate to the present thesis which aims to examine the relationship between assumptions specific to secure base relationships and assumptions specific to mentoring relationships because mentoring relationships may be akin with nonspecific others.

Brown, Rodgers, & Kapadia, (2008) make an important point about the impact of culture on attachment relationships and explain cultural practices influence the norms in terms of attachment patterns for any given culture. Research outcomes and conclusions are obtained using culturally embedded measures which do not reflect, understand, or take account of these differences. Criticism that caregiver sensitivity is a Western phenomenon which cannot be extrapolated to other cultures is now being re-examined; it is apparent that sensitivity is not always evident in caregiver language but is apparent in differing forms across cultures (Mesman et al., 2020). The ASA seems well positioned to assess sensitive caregiving assumptions, regardless of their type because a particular strength of the ASA is the ability to adapt the word prompt lists so they can reflect behavioural interactions that are appropriate to the culture, context, and age of the research population (e.g., Umemura et al., 2018; Waters & Waters, 2006; Waters, Bosmans, et al., 2015). New prompt word lists designed to be sensitive to particular cultural contexts would need to be validated to ensure they assess the secure base script rather than other constructs, such as pro-social knowledge.

Rather than allocating participants to one of four attachment patterns, story

transcripts are grouped according to whether, or not, the participant is likely to have drawn on complete secure base script knowledge in the telling of their story. So, analysis of the stories is relatively quick (Waters & Waters, 2006). As previously discussed, secure base script knowledge is associated with secure attachment as assessed by AAI coherence and the ECR (Dykas et al., 2006; Mikulincer et al., 2009). Confirmatory factor analysis (CMF) of ASA data suggests that secure base script knowledge is generalised across stories used in the assessment and manifests in a variety of attachment relationships (Waters et al., 2015).

The MSA materials and delivery procedure mirror that of the ASA. Each MSA prompt word set suggests the scenario of a student in a distressing situation that prompts them to seek support from their mentor, the situation is resolved and normality resumes. The prompt word lists used for the present thesis were Writer's Block, Not Enjoying University, and Choosing Specialist Modules. Like the ASA, the original word lists were adapted to ensure familiarity for a UK university population (US versions: Appendix D, UK versions: Appendix E, explanation of changes Appendix F). During translation, the scenario for each prompt word list was kept as similar as possible. However, the scenario in the MSA story Not Enjoying University, was changed from the mentor inviting the student to visit their family to an invitation to a Journal Club. This was to adhere to British safeguarding guidelines that make it unlikely for mentors in the UK (who may be university members of staff) to invite undergraduate mentees to their home.

Chapter 1: Literature review, section 1.1.3.4 provides an in-depth explanation about cognitive scripts. In summary, script knowledge is informed by semantic and episodic memory and can be applied across comparable situations (Schank & Abelson, 1977). They

enable the understanding of the roles of each person in a particular type of scenario and the ordering of events. Scripts are relatively fixed but can be revised with changes in experience and/or conscious effort (Bost et al., 2006; Bower et al., 1979; Byng-Hall, 1986; Chen & Bailey, 2018; Erskine, 2009; Fivush, 2006; Hesni, 2024; Light & Anderson, 1983; McLean et al., 2014; Meng et al., 1989; Nivison et al., 2021; Schank & Abelson, 1977; Schoenmaker et al., 2015; Wilson & Hershey, 1996; Xiang et al., 2022). The changes made to the prompt word sets for the purpose of the present study have been carefully considered so that the scenarios are comparable to the originals (see Appendix F for details). The nature of scripts is that they are applied to stereotypical scenarios that are contextually similar, which suggests that even if participants were faced with a prompt word set containing an unfamiliar situation or a scenario they would not perceive to be problematic, the unconscious mentoring script could still be communicated if they possessed the mentoring script relevant to a student mentee facing a difficult choice and seeking guidance from a mentor (Eickers, 2024). The mentor/mentee scenarios all focused on a relationship with a nonsignificant other (the mentor), and the central purpose of the thesis is to examine to what extent nonsignificant other mentoring relationship script knowledge is associated with secure base script knowledge and whether features of transcripts are similar across both types of relationship script knowledge.

The ASA and MSA word prompt word lists were combined into six counterbalanced booklets and given to participants in rotation to mitigate potential order effects. Training to administer and score the assessments was received from Professor Harriet Waters prior to data collection, and the Instructions for use with Adult Participants (ASA and MSA) (Appendix G) were adhered to during data collection. Stories were digitally recorded and

transcribed for analysis. The MSA recording, transcribing, and coding protocol was identical to that of the ASA. Secure base type mentoring expectations are said to mirror the secure base script, with the mentee taking on the role of the care-receiver and the mentor taking the role of significant other acting as a secure base. Further details about the training cannot be reproduced in the thesis as they are part of the proprietary copyrighted training programme. This further highlights the potential impact of an automated process which circumnavigates the need for this training.

2.5.1.1 Scoring the Attachment Script Assessment (ASA) and Mentoring Script Assessment (MSA)

The researcher and an independent coder received ASA and MSA coding training by Professor Harriet Waters (see Appendix I). Training involved attending several online sessions with Professor Waters to discuss coded examples and how secure base script content may manifest in transcripts. Test sets of transcripts were completed and sent to Professor Waters for her to score and each scored transcript was subsequently discussed by the group in depth. For the present study, each story was coded by the researcher and an independent coder on a scale of 1 – 7, scores were not restricted to whole numbers. Narratives were scored according to the standardised convention; 1 contained content that was contrary to the secure base script, those scoring 7 contained rich examples of secure based content. 4 is the point at which weak but complete examples of secure base content became apparent. The independent coder was not otherwise involved in the research, or given any information other than uncoded, anonymous transcripts to score. All transcripts were scored by both coders and 42 transcripts were also coded by Professor Harriet Waters as a quality assurance safeguard. The mean of scores that differed by 1 or less across coders were used and greater differences were discussed and resolved.

Cohen's K was run to determine if there was agreement between the researcher and moderator judgement on whether 54 individuals had complete secure base script knowledge or not (i.e., whether their mean ASA scores were 4 and above or less than 4). The full outputs are available in appendix J: SPSS output I2. In summary, for mean ASA scores of 4 and above, there was 89.7% agreement between the two sets of judgements and for mean scores of less than 4 there was 100% agreement, k = .889, p<.001. Cohen's K was also run to determine if there was agreement between the researcher and moderator judgement on whether 54 individuals had complete mentoring script knowledge or not (i.e., whether their mean MSA scores were 4 and above or less than 4). For mean MSA scores of 4 and above, there was 95.7% agreement between the two sets of judgements and for mean scores of less than 4 there was 80% agreement, k = .742, p<.001. Kappa scores between .61 and .8 are considered substantial and .81 – 1 are considered almost perfect (Sim & Wright, 2005).

For thoroughness, a Fleiss multirater examination was conducted to calculate the overall agreement for each individual story type at the level of each score (the full output is available in Appendix J: SPSS output I1. Across the six story types, k ranged from .319 to .586. with all significance levels being at the p<.001 level. Whilst these levels are fair to moderate, it is work noting that this is for each score at the level of decimal points (so a score of 3.1 differs from a score of 3.2). Kappa scores between .21 and .4 are considered fair, and scores between .41 and 6 are moderate. Therefore, even with this fine-grained analysis agreement was fair.

2.5.2 Questionnaire

Qualtrics was used to design and deliver a questionnaire to ask participants about senior school and undergraduate mentoring experiences and expectations (each question is detailed in Appendix H). It was based upon the questionnaire used in the two unpublished studies being extended. However, there were few demographic questions in the original studies. Therefore, additional questions were asked regarding participant ethnicity, length of residence the UK, and gender identification was not restricted to binary options. American specific terminology (e.g., Sophomore) was changed to terms used by universities in the UK.

Feeling understood by informal mentors leads to greater feelings of connection to the community and to greater academic engagement (Ben-Eliyahu et al., 2021). Therefore. the questionnaire is designed to include informal mentors (e.g., family members, academic staff, church leaders, youth group leaders, and coaches) from childhood onwards. Some questionnaire responses were totalled to give an overall insight into specific aspects of explicit knowledge, attitudes, and behaviour. Specific details of the analysis, reverse coding, and recoding are also contained in Appendix H; a summary has been provided in Table 1, pre- and post-standardisation coding is available in Appendix I, and the final data set containing questionnaire data is available in Appendix J: Study_1_final_data.

Table 1: Summary of how variables were calculated

New variable	Contributing questions totalled to obtain new variable	Example statement or question
Overall attitudes toward BCU mentoring	Q9_1 - Q9_5 (some parts were reverse coded)	Re BCU mentoring: I'd be interested in such arelationship (scale 1-8)
Total personal attitudes towardmentoring	Q10_1 – Q10_11 (some parts were reverse coded)	Mentoring relationships are easy to arrange(scale 1-8)
Number of pre-university mentors	Q12_1 – Q12-5, Q13, Q14, Q15, Q16, Q17 (includes recoded values)	Senior school: Worked closely with non-parent onschool projects (yes or no)
Overall pre-university experiences of mentoring	Number of pre-university mentors and Q18 (includes recoded and reversed coded values)	How important were your mentors to you? (scale1-8)
Number of university mentors	Q19, 20, 21 (includes recoded values)	Uni: Have an academic mentor (yes or no)
Overall experience of universitymentoring	Q19, 20, 23_1-23_4	Uni: Importance of academic mentors (scale 1-8)
Uni social experiences: Total score	Q24_1 – Q24_9	Uni social: I participate in community service(e.g., volunteering for charity) (scale 1-8)
Uni academic experiences: Total score	Q25_1 – Q25_14	Uni academic: I speak with a tutor when thecourse is challenging (scale 1-8)
Total number of mentors	Total pre-uni mentors and total uni mentors	-
Total positive attitudes to mentoring (current experience)	Overall attitudes toward BCU mentoring, total personal attitudes towards mentoring, overall experience of university mentoring	-
Positive mentoring expectations	individual questions Q9_1- Q10_11 (some were recoded)	-

Note. Detailed notes specifying each individual variable, reverse coding and recoding are available in the codebook, Appendix H

2.5.3 Computer assisted text analysis

A growing number of studies combine traditional critical discourse analysis (CDA) with corpus linguistics (CL) (Almaged, 2016; Baker et al., 2008; Hyland, 2009). There are exceptions, but CDA ordinarily involves the application of qualitative methods to examine a small corpus in depth. This approach has the benefit of being able to examine the context and content of each individual transcript and produces rich data which commonly includes information about opaque dynamics and social practices made apparent through language (e.g., structural features such as dominance, discrimination, and power).

In contrast, CL is associated with quantitative analysis and usually uses computer software such as a concordancer to retrieve lists of linguistic data to enable examination of the way language is structured, used, varies, and changes across a large body of naturally occurring text (Kennedy, 1998). CL has the benefit of being able to provide statistical information which would prove too time consuming for CDA, for example word frequency, keyness (i.e., whether a specific word is used with statistically significant higher or lower frequency than it is in another specified corpus), and colocation (i.e., a statistically significant frequent occurrence of words in a specified word span around the target word) for a large body of text.

Combining CDA and CL allows researchers to examine statistically significant features of many texts whilst also attending to one or more specific features that concordancers are currently unable to recognise, such as context, symbolism, irony, or sarcasm (Chung & Pennebaker, 2007). Meta-analysis of 121 studies found the combined approach, referred to

as corpus based CDA, to be a robust way to examine social issues and to identify emerging public discourse (Nartey & Mwinlaaru, 2019). Recently, researchers used keywords identified using CL as an initial step in the analysis of the efficacy of three different communication styles of online undergraduate peer mentors (Culpeper & Qian, 2020).

It is unlikely CL could reliably identify the degree to which secure base script content is evident in transcripts. However, the identification of specific linguistic features of transcripts associated with complete secure base script knowledge (or lack of it) could be a first step toward the eventual introduction of computer aided analysis of ASA and MSA transcripts alongside the existing scoring process. This would prove most useful to inexperienced coders, those without expertise in attachment theory, and when difficulty arises in deciding whether a transcript ought to be scored 3.5 or 4. Importantly it could reduce coder bias when scoring small numbers of transcripts or transcripts provided by people known to the scorer and moderator (for example, in applied settings, such as a small-scale mentoring scheme scenarios).

2.5.3.1 Corpus linguistics

Study 2a – 2c uses open-source packages to conduct semi-automated computerized text and sentiment analysis of ASA and MSA transcripts collected as part of Study 1. Study 3 uses the same packages to compare the sentiment and language contained in some transcripts collected for Study 1 with secondary data sourced from the USA. To date, the Linguistic Inquiry Word Count (LIWC) has been used to analyse AAI transcripts. Instead, this thesis takes the novel approach of using AntConc and the Sentiment Analysis and Social Cognition Engine (SEANCE) to examine whether specific linguistic features or sentiments are associated with individual ASA or MSA prompt word sets, changes in levels of secure base

script knowledge, or in mentoring script knowledge. Insights of this nature have potential to inform subsequent research and inform progress toward the semi-automated analysis of ASA and MSA stories. This, in turn, has potential to make the assessment available to non-attachment specialists and for its adaptation for applied settings. The decision to use AntConc and SEANCE instead of LIWC is based on the following evaluation of the three tools.

2.5.3.1.1 AntConc

AntConc is an open-source CL tool that can be used on a home computer (Anthony, 2005, 2019; Tang, 2011). Originally devised for classroom use, and now often applied to research, it can provide various forms of information, including Key Words in Context (how words are commonly used in the studied text), Clusters of words (the words to the left or right of a target word), Word Lists (a list of words from the corpus ordered by frequency) and Keywords (low or high frequency of word use in the target corpus in comparison with a reference corpus) (Gabrielatos, 2018; Muchnik-Rozanov & Tsybulsky, 2020).

LIWC uses a 'bag of words' approach which means its analysis is unbound by grammatical features and is driven by the frequency of words within linguistic categories (Windsor et al., 2019). This makes it useful for the examination of social media posts, such as tweets. In contrast, the features in AntConc makes it possible to examine the way in which words are used. AntConc has therefore been used to examine word use in a variety of contexts, including an analysis of the way science teachers use language about technology, and whether anonymity, duration of membership, and frequency of posting are predictors of online extremism (Awan et al., 2019; Muchnik-Rozanov & Tsybulsky, 2020; Sutch &

Carter, 2019). The ability to compare the ways words are used across two corpora would allows the examination of statistically significant differences in word use between transcripts containing complete secure base script/mentoring script knowledge (i.e., transcripts scored 4 or higher) and those with partial or no secure base/mentoring script knowledge. It also enables the comparison of word use between story type, and the examination of differences between language features associated with secure base script and mentoring script content. Of particular interest, based on the previously summarised findings relevant to attachment patterns, are word count and pronoun use (see section1.2.1). However, it is possible the transcripts of those with different types of insecure attachment patterns will contain patterns that negate each other and therefore mask features of interest that differ between transcripts containing complete script knowledge and those which do not. For instance, those who would be assessed as dismissing using the AAI may produce short ASA transcripts with low emotional content, whilst those who would be assessed as preoccupied may produce long ASA transcripts containing a high level of emotional expression.

2.5.3.2 Sentiment Analysis and Cognition Engine (SEANCE)

Originally used in marketing to assess peoples' impressions of products, sentiment analysis involves identifying whether responses are positive or negative (Carter & Kondor, 2020). The Sentiment Analysis and Social Cognition Engine (SEANCE) is freely available to download and uses word categories as defined by pre-existing source databases of emotional and specialist lexicons to give comments either a positive or negative value to assess the sentiment, cognition, and social order of transcript content (Crossley et al., 2018; Kristopher & Crossley, 2018). For instance, the use of SEANCE resulted in the finding that

public anger expressed via social media was significantly higher in response to the Shamima Begum case than it was for the Christchurch terrorist attack (Awan et al., 2019).

Unlike LIWC, SEANCE has a negation feature which scans for negation words (for example, not) in the three words before a target word. This is an important feature because it prevents statements such as “she was not sad” being categorised as negative and thereforeprovides a more accurate reflection of actual expressed sentiment than non-negated statements. Overall, it reports on more than 3,000 micro and 20 macro indices relevant to sentiment cognition and social order (Crossley et al., 2017). LIWC’s inability to identity negations may account for some of the contradictory findings found by different researchers using it to assess AAI transcripts. Which suggests some of the previously summarised findings may benefit from re-examination using SEANCE (e.g., Borelli et al., 2012). Previous research suggests words associated with anger, positivity, negativity, and tentativeness are worthy of examination. However, as already identified, transcripts not containing complete script knowledge are likely to be produced by people with different insecure type attachment patterns and their language features may cancel one another out.

The EmoLex dictionary database in SEANCE was selected for the present thesis because of its previous use in email and fiction texts; the ability to use it with a relatively small corpus; the information it provides about social positioning; cognitive perspective; semantic categories and polarities; and because it was trained on large corpora (Mohammad & Turney, 2010; Weismayer et al., 2021). It assesses the frequency of words aligned with Plutchick’s basic emotions: anger, anticipation, disgust, fear, joy, sadness, surprise, and trust, plus groups of words belonging to those sentiments that can be

categorised as either negative or positive emotions (Crossley et al., 2017; Mohammad & Turney, 2013; Plutchik, 2001). For instance, the word loveable belongs to the categories joy, trust, and positive; so the statement 'she told her she was loveable' would receive a score for each of those categories. Mohammad & Turney (2013) argue this approach ensures the emotions assessed are a mix of positive and negative, the underlying theory is well-founded in psychological research, and the selection is a superset of emotions proposed by other researchers.

For the present research, the positive and negative group options were used wherever possible, rather than individual sentiments, because examination of each individual emotion with the small sample size risks increasing the likelihood of a Type I error (i.e., incorrect rejection of the null hypothesis) (Coolican, 2019c). Importantly, the SEANCE negation feature was used in all examinations, so that negations in the three words before a word suggesting a feeling were accounted for. This prevented statements such as 'she was not sad' being categorised as negative, and means the resulting negated score was a more accurate assessment of the sentiment expressed than the score for the sentiment alone, or for components of sentiments.

2.6 Procedures

2.6.1 The research questions and their relevance to each study

The five research questions introduced in Chapter 1 inform the procedures adopted in each study and are as follows:

1. Are implicit assumptions about mother-child secure base interactions transferred to unconscious assumptions about support-seeking and support-providing behaviours in mentoring relationships?

2. Is the MSA specific to implicit and explicitly reported assumptions about mentoring and engagement in mentoring?

3. Are specific language or sentiment patterns associated with the level of secure base or mentoring script knowledge transcripts contain?

4. Are there patterns within ASA and MSA transcripts which could be used to simplify the transcript scoring process?

5. Are patterns identified in UK ASA transcripts also apparent in independent secondary data obtained from the US?

Research questions 1 and 2 inform Study 1; research question 3 informs Studies 2a – 2c; research question 4 informs the identification of patterns throughout Studies 1 – 3; and research question 5 informs Study 3. Each study takes a different approach, therefore more specific information can be found in chapter relevant to each study than has been contained in this chapter.

2.6.2 Study 1 procedure

The aims of study 1 were to extend a previously unpublished study to see whether the statistically significant relationships between mean ASA and MSA scores, explicitly reported attitudes toward mentoring and reported engagement in mentoring could be replicated. In addition, the novel approach of examining the relationship between ASA and MSA component scores was taken in the hopes of understanding the assessments and their relationship in greater detail.

Each participant attended a 1-hour laboratory session individually with the researcher. The researcher explained the nature of informed consent, ensured the participant understood the nature of the research, was happy to continue, understood how to withdraw, and then gained their written consent for participation. The experimenter adhered to the Instructions for Working with Adult Participants, the ASA and MSA process and procedure was explained and administered, the stories were counterbalanced to minimise the likelihood of order effects, this resulted in 6 versions of the prompt word booklets being used in rotation. In summary, this involved showing participants a prompt word outline, explaining they were being asked to tell the best story they could using the prompt words in turn going down each column from left to right, giving them 2 minutes to consider their story, and the researcher making a digital recording of the resulting story. The process was repeated for each prompt word list in turn.

Following this, participants completed an on-line questionnaire to gather information about demographics, their beliefs about mentoring relationships, engagement with academic and social opportunities, and their pre-university and university mentoring experiences. Participants were verbally de-briefed and given a de-brief sheet that contained the researcher's contact details in case they wished to withdraw from the study or ask questions retrospectively. A small number of participants asked to complete the questionnaire online from home. Where this happened, they were debriefed after the ASA/MSA task, and then completed the questionnaire off-site within 24 hours (using a unique link to the questionnaire which was provided by the researcher).

The researcher and an independent coder received ASA coding training by Professor Harriet Waters (see Appendix I). Each story was coded by the researcher and an independent coder on a scale of 1 – 7, scores are not restricted to whole numbers. Narratives scored 1 contained content that is contrary to the secure base script, those scoring 7 contained rich examples of secure based content. 4 is the point at which weak but complete examples of secure base content became apparent. The independent coder was not otherwise involved in the research, or given any information other than uncoded, anonymous transcripts to score. All transcripts were scored by both coders and 42 transcripts were also coded by Professor Harriet Waters as a quality assurance safeguard. Narrative scores that differed by 1 or less across coders were averaged and greater differences were discussed. All anomalies were resolved.

Data were analysed for correlations that were significant at least at the $p<.05$ level. 2-tailed analysis was used throughout the present research, whereas the original studies examining similar relationships used 1-tailed analysis (Bianchini et al., 2011; Zevallos et al., 2009). Relationships between mean ASA and MSA scores, individual story scores, and with explicitly reported attitudes toward and engagement in mentoring were examined. A multiple regression was performed to find whether the mean ASA and total number of mentors made a significant contribution to the mean MSA score. Another multilinear regression was used to test the assumption that all three ASA story scores were equal contributors to the mean MSA score.

2.6.3 Study 2a procedure

The aim of Study 2a was to take the novel approach of examining language features of ASA and MSA transcripts to find whether statistically significant relationships exist

between the level of script knowledge and transcript features outside of the usual scoring process. It was hoped that insights of this nature could be used to inform semi-automated scoring and the scoring of transcripts on the boarder of 3.5 and 4.

The ASA and MSA transcripts collected for Study 1 were prepared for analysis by removing the comments created during the scoring process but leaving the unique participant identifier and score on the transcript using the format 'story initial-score-participant number', e.g., BM-2-34 would represent the story Baby's Morning, scored 2, told by the participant with the ID 34. Stop lists were created for the ASA and MSA transcripts (Appendices K, L, and M). Particular words were removed from participant transcripts and replaced with abbreviations. This meant the analysis was applied to the person's role the word represented rather than a personalised label individual to each participant. For instance, Cxx was used to represent the care receiver because it replaced names participants allocated to the child in ASA stories and the mentee in MSA stories. Appendix N contains the list of abbreviations, Appendix H contains the study codebook, and Appendix O contains the text version of ASA and MSA transcripts.

The numbers of words used were examined first. Following this, four keyness analysis were conducted to find whether specific words were used with statistically significant higher or lower frequency in a target corpus than in a reference corpus (Anthony et al., 2004). The comparisons were:

1. ASA transcripts scored 4 or more with the reference corpus of ASA transcripts scored less than 4 (i.e., ASA transcripts containing complete secure base script knowledge in comparison with ASA transcripts containing partial or no secure base script knowledge) (see

Table 11 and Appendix Q, sheet 1).

2. MSA transcripts scored 4 or more with the reference corpus of MSA transcripts scored less than 4 (i.e., MSA transcripts containing complete mentoring script knowledge compared with MSA transcripts containing partial or no mentoringscript knowledge) (see Table 12 and Appendix Q, sheet 2)

3. ASA transcripts scored 4 or more with the reference corpus of MSA transcripts also scored 4 or higher (i.e., ASA transcripts containing complete secure base script knowledge compared with MSA transcripts containing complete mentoringscript knowledge) (see Table 13 and Appendix Q, sheet 3).

4. ASA transcripts scored less than 4 with the reference corpus of MSA transcripts also scored less than 4 (i.e., ASA transcripts that contain partial or no secure base script knowledge compared with MSA transcripts that contain partial or no mentoring script knowledge) (see Table 14 and Appendix Q, sheet 4).

The first two comparisons use well matched corpora because they are essentially two halves of the same data set obtained using identical prompt words. Whereas the comparisons between ASA and MSA corpora, although gathered in identical conditions at the same time, result from the use of different prompt words making differences in language use inevitable. Caution must therefore be applied about drawing conclusions from the last two comparisons (Kilgarriff, 2009).

Findings informed an examination of patterns of care receiver name use in ASA transcripts and mentee/mentor names in MSA transcripts (see Tables 15 - 17) and their significance (see Tables 18 - 22). Frequency of pronoun use in the transcripts was compared with their use in the British National Corpus (see Table 23) (BNC,2022).

2.6.4 Study 2b procedure

Study 2b used SEANCE to quantify the level of sentiment expressed in ASA transcripts from dataset 1 to find whether there were statistically significant relationships between changes in sentiment level and a change in the amount of secure base script knowledge. This was done by:

1. Comparing the grouped negative and positive sentiments and individual sentiments contained in each ASA story type.

2. Finding whether the level of any specific sentiment (or group of sentiments) expressed in transcripts was associated with an increase or decrease in transcript score.

3. Comparing the level of negative and positive sentiment groups in transcripts containing complete secure base script knowledge with those that do not.

This approach was taken in an attempt to identify trends which could be used to inform the ASA scoring process. Information of this kind could make the ASA accessible for those without experience as attachment researchers but who are involved in relevant therapeutic occupations. For instance, it would be used to improve the relational skills of those training to be mental health workers, social workers, early years professionals,

medical professionals, carers, and counsellors.

The option 2 ASA transcripts from Study 2a were adapted for use in this study (Appendix T). They were prepared for SEANCE analysis by changing the file names to the participant number. The txt files were run through the SEANCE programme per story type with the EmoLex dictionary and Negation Control selected. The SEANCE excel spreadsheets showing the output is contained in each relevant story file in Appendix T.

Appendix U contains the study codebook, Appendix J: Study 2b and 2c final data contains the SPSS variable details, and Appendix J: D12 contain the descriptive statistics carried out for this study. Pearson correlations were used to examine the relationship between the level of secure base script knowledge and transcript sentiment score. Following this a regression was used to find whether specific sentiments (or groups of sentiments) were predictors of secure base script knowledge. The original intention was to use *t*-tests to compare the means of the ASA groups with mean sentiment scores. However,several of the tests of normality indicated the assumption about normal distribution could not be fully met. This might be because word use frequency is distributed along a Zipfian curve rather than a bell curve (Brezina, 2018). Therefore, the decision was taken to run the non-parametric Mann-Whitney U test. A Bonferroni correction was applied and the fewest number of examinations possible were chosen to reduce the risk of a Type I error (that is, incorrect rejection of the null hypothesis) resulting from the repeated tests (Coolican, 2019b, 2019c). This process required the *p* value of .05 to be divided by six because six comparisons were made. The calculation resulted in the revised *p* value of <.0083. Whilst this approach brought the advantage of reducing the risk of a Type I error it increased the

risk of Type II (that is, incorrect rejection of the hypothesis) (Coolican, 2019d).

2.6.5 Study 2c procedure

The aim of Study 2c was to find whether an increase in particular sentiments expressed in MSA transcripts were associated with a statistically significant increase or decrease in mentoring script knowledge.

The procedure mirrored that of Study 2b but used MSA transcripts in place of ASA transcripts. Transcript preparation and the procedure are described in Study 2b procedure section 2.6.4; the only exception being that MSA transcripts gathered for Study 1 were used in place of the ASA transcripts. Appendix J: D13 contains the descriptive statistics carried out for this study, Appendix J: Study 2b and 2c final data contains the SPSS variable details, and Appendix U contains the codebook.

2.6.6 Study 3 procedure

Each hypothesis was examined in turn using the procedures already described in Studies 1 – 2b. The examinations were conducted on Baby's Morning and Doctors Office transcripts from dataset 1 and on all dataset 2 transcripts and the outcomes of each set of transcripts compared. Word tokens, unique words, and Baby's Morning and Doctor's Office scores and mean scores were examined first. Following this, a Pearson R corelation was used to examine whether comparable statistically significant correlations existed between Baby's Morning and Doctor's Office transcript scores in both datasets. Care receiver name use in Baby's Morning transcripts was counted for each score band and compared across datasets. This was followed by an AntConc Keyness analysis to find whether there was statistically significant greater use of care receiver names in transcripts scored more than 4.

Transcripts were converted to txt files and processed using SEANCE per story type with the EmoLex dictionary and Negation Control selected. The excel spreadsheets containing the output are contained in each relevant story file in Appendix X. Output D14 in Appendix J contains the descriptive statistics for the transcript scores. Pearson correlations were used to examine the relationship between the transcript scores and expressed sentiment. The SPSS visual binning tool was used to divided each of the relevant datasets into two groups. Transcripts scored less than 4 were allocated to Group 1 and those scored 4 or more were in Group 2. The groups were subject to non-parametric independent samples Mann-Whitney- U tests to find whether they differed in the amount of sentiment the relevant transcripts contained. Mann-Whitney-U tests were used instead of *t*-tests to compare the medians because the distribution of individual words does not commonly follow a bell curve distribution. This approach is consistent with that taken in Study 2b. A Bonferroni correction was made because 6 sentiments were examined. Therefore, the target of $p<.0083$ exists for the Mann-Whitney-U tests but remains $p<.05$ for all other hypotheses in Study 3.

Chapter 3 Study 1: The relationship between secure base script knowledge, mentoring script knowledge and explicitly reported attitudes toward and engagement in mentoring

Study 1 is an examination of the supposition that an individual's implicit assumptions about secure base interactions informs their implicit and explicit assumptions about help-seeking and help-providing behaviours in mentoring relationships, and will be associated with their reported engagement in mentoring: The research questions informing the examinations in Study 1 are:

1. Are implicit assumptions about mother-child secure base interactions transferred to unconscious assumptions about support-seeking and support-providing behaviours in mentoring relationships?

2. Is the MSA specific to implicit and explicitly reported assumptions about mentoring and engagement in mentoring?

Of the attachment and secure base script knowledge assessments presented in Chapter 1, the Attachment Script Assessment (ASA) appears to be the one with the greatest potential for the examination of implicit secure base assumptions. Early caregiving experiences appear to be abstracted into both a cognitive script and attachment relevant autobiographical knowledge which informs caregiving behaviours. The cognitive constructs are tapped by the ASA and AAI, but unlike the AAI only a short period of training is required before using the ASA and it is quicker to administer and analyse. In contrast to self-report measures, the ASA assesses implicit knowledge about relationship interactions. This makes it suitable for scenarios where it would be inappropriate to explore explicit personal attitudes about the close relationships of the person being assessed. Therefore, there is

potential for its adaptation to make it suitable for use in applied settings (for instance, education, business, counselling, and mental health mentoring scenarios).

If mentoring script knowledge (assessed using the MSA) is found to significantly correlate with secure base script knowledge (assessed using the ASA), and with explicit positive attitudes toward, and actual engagement with mentoring it could be a valuable tool for the training and recruitment of mentors. In addition, it could inform the provision of targeted support to vulnerable mentees. Importantly, use of the MSA by mentoring schemes would exclude the need for potential mentors and mentees to construct stories about parent-child or romantic relationships, both of which could be too intrusive for use with some vulnerable individuals.

3.1 Study 1

The present study is an adaptation of another unpublished study, conducted in two phases by researchers based in the USA who have provided access to research posters (Bianchini et al., 2011; Zevallos et al., 2009). Their aim was to examine whether secure base script knowledge leads to positive mentoring-specific expectations and goals in undergraduate students. In the first phase, Zevallos et al., (2009) recruited 79 participants to complete the ASA, MSA, and a questionnaire surveying their pre-university and university mentoring experiences and attitudes about mentoring. The outcomes suggest mentees with complete secure base script knowledge are more receptive to close mentoring relationships with adults from high school onwards and are more likely to rate mentoring positively. In the second phase Bianchini et al., (2011) asked 50% of the original participants to rate statements about academic and social related university experiences, to list mentors, and to repeat the MSA. They found mentoring script knowledge is associated with greater

likelihood of engagement in university activities, greater use of available academic resources, and is stable during the interval between studies.

The present study adopts a different approach from the original two (Bianchini et al., 2011; Zevallos et al., 2009); some of the questions used across the two studies have been combined into one questionnaire and some questions have been omitted. In addition, the word-prompt lists and questionnaire questions used in the previous study have been adapted to make the language more appropriate for UK English speaking participants, whilst keeping meanings as similar as possible to the original versions.

To summarise, research examining correlational relationships between secure base script knowledge, mentoring expectations, positive explicit attitudes towards mentoring, and reported engagement in mentoring has potential to inform future tools used to target mentor recruitment and training, mentee support, and to advance the design of inclusive attachment measures. This would increase the likelihood of mentoring experiences being accessible, positive, and fruitful for mentees and mentors, whilst also being cost-effective and beneficial for institutions.

3.2 Method

Additional methodological information for this correlational study has been included in Chapter 2: Methodology.

3.2.1 Design

The variables of particular interest are the Attachment Script Assessment (ASA) scores, Mentoring Script Assessment (MSA) scores and to what extent they correlate with past and current experiences of mentoring, and explicitly reported positive attitudes toward mentoring (evidence for these two points are obtained through questionnaire responses).

Four aims have been created to address the research questions; in each instance the population referred to are undergraduate students attending a university in the United Kingdom. Implicit secure base script knowledge is measured using the ASA, whilst mentoring script knowledge (i.e., implicit expectations of secure base type behaviours within mentoring relationships) is assessed using the Mentoring Script Assessment (MSA). Questionnaire responses have been used to assess engagement in mentoring type relationships prior to and during university, explicit assumptions about mentoring, and use of social and academic sources of support at university. Some questionnaire responses have been combined (details are provided in Chapter 2: Methodology, Table 1).

In order to address the research questions, Study 1 has been designed to:

1. Examine whether secure base script knowledge is correlated with similar levels of implicit secure base type expectations in mentoring relationships (as assessed by the ASA and the MSA).

2. Explore whether implicit secure base script knowledge and mentoring expectations are correlated with explicit beliefs about mentoring relationship behaviours (as assessed by the ASA, MSA, and questionnaire responses).

3. Gauge whether implicit secure base script knowledge and secure base type mentoring expectations are correlated with engagement in past and current mentoring relationships (as assessed by the ASA, MSA, and questionnaire responses).

4. Identify the script score or mean script score which shares the greatest number of correlates with positive explicit beliefs about mentoring and engagement in mentoring relationships.

3.2.2 Participants

Additional information about participants and ethics are available in Chapter 2: Methodology, section 2.3.1. Participants volunteered for this lab-based study through an English university research participant scheme (RPS). They were informed of research details and their right to withdraw. Their informed consent was gained as part of the ethical research approach (Appendix A). Once they completed the session they were thanked and debriefed (Appendix B).

Participant ages ranged between 18 and 38 years, their mean age was 20.98 years, SD = 2.92. Pre-determined ethnic categories, as recommended by the Office for National Statistics (2016) were offered alongside the opportunity for all participants to freely state how they identified their ethnicity (Bunglawala, 2019). The most frequently identified ethnic group was White English / Welsh / Scottish / Northern Irish / British (42.59%). 8 participants (14.81%) described their ethnicity rather than use the categories set by the Office for National Statistics. 75% of participants had always lived in the UK. Residency duration ranged from 1 year to 18 years in the remaining 25 % of the research population. See

Appendix C for further details of participant ethnicity. It was originally intended to examine differences and similarities between demographic groups to examine the suitability of the set prompt words for each, but low numbers within each category (except for female: N=46) rendered this inappropriate.

3.2.3 Materials

3.2.3.1 The Attachment Script Assessment (ASA)

Additional information about the ASA and MSA is available in Chapter 1: Literature review, section 1.1.3.4 and Chapter 2: Methodology, sections 2.5.1 and 2.5.2.

The research was conducted in an English university psychology research laboratory. Three prompt word outlines were issued (i.e., Baby's Morning, Doctor's Office, and The Party) (Waters & Waters, 2006). This narrative-based measure originates from the USA, several prompt word sets are available to choose from. Detailed information about the ASA and the reason for selecting the three word sets which centre around mother-child interactions is included in Chapter 2: Methodology, section 2.5.1.

Some of the terminology used in the word prompt lists were more appropriate for US based participants than they were for those based in the UK (e.g., shot rather than injection). The prompt word lists were therefore adapted for a UK audience (US versions: Appendix D, UK versions: Appendix E, explanation for each change: Appendix F). Although specific words were changed the story themes and meanings were retained. The prompt word outlines were printed in font 18 and grouped into three columns. Each word list suggests a scenario that includes a mildly upsetting situation designed to provoke the child to seek support from their mother so that the situation can be resolved, and normality

resumed. The sequence of individual ASA and MSA story presentation was counterbalanced to avoid order effects.

3.2.3.2 The Mentoring Script Assessment (MSA)

Additional information about the ASA and MSA is available in Chapter 1: Literature review, section 1.1.3.4 and Chapter 2: Methodology, sections 2.5.1 and 2.5.2. The MSA materials and delivery procedure mirror that of the ASA. Each MSA prompt word set suggests the scenario of a student in a distressing situation that prompts them to seek support from their mentor, the situation is resolved and normality resumes. The prompt word lists used were Writer's Block, Not Enjoying University, and Choosing Specialist Modules. Like the ASA, the original word lists were adapted to ensure familiarity for a UK university population (US versions: Appendix D, UK versions: Appendix E, explanation of changes Appendix F). During translation, the scenario for each prompt word list was kept as similar as possible. However, the scenario in the MSA story Not Enjoying University, was changed from the mentor inviting the student to visit their family to an invitation to a Journal Club. This was to adhere to British safeguarding guidelines that make it unlikely for mentors in the UK (who may be university members of staff) to invite undergraduate mentees to their home.

The ASA and MSA word prompt word lists were combined into six counterbalanced booklets and given to participants in rotation to mitigate potential order effects. Training to administer and score the assessments was received from Professor Harriet Waters prior to data collection, and the Instructions for use with Adult Participants (ASA and MSA) (Appendix G) were adhered to during data collection. Stories were digitally recorded and transcribed for analysis. The MSA recording, transcribing, and coding protocol was identical

to that of the ASA. Secure base type mentoring expectations are said to mirror the secure base script, with the mentee taking on the role of the care-receiver and the mentor taking the role of significant other acting as a secure base.

3.2.3.3 Questionnaire

Additional information about the questionnaire and how the grouped variables were calculated is available in Chapter 2: Methodology, section 2.5.2. Qualtrics was used to design and deliver a questionnaire to ask participants about senior school and undergraduate mentoring experiences and expectations (each question is detailed in Appendix H). It was based upon the questionnaire used in the two unpublished studies being extended. However, there were few demographic questions in the original studies, and so additional questions were asked regarding participant ethnicity and length of residence in the UK; and unlike the original studies gender identification was not restricted to binary options. American specific terminology (e.g., Sophomore) was changed to terms used by universities in the UK.

3.2.4 Procedure

Additional information is included in Chapter 2: Methodology, section 2.6.2. Each participant attended a 1-hour laboratory session individually with the researcher. The researcher explained the nature of informed consent, ensured the participant understood the nature of the research, was happy to continue, understood how to withdraw, and then gained their written consent to participation.

The experimenter adhered to the Instructions for Working with Adult Participants, the ASA and MSA process and procedure was explained and administered, the stories were counterbalanced to minimise the likelihood of order effects, this resulted in 6 versions of

the prompt word booklets being used in rotation. In summary, this involved showing participants a prompt word outline, explaining they were being asked to tell the best story they could using the prompt words in turn going down each column from left to right, giving them 2 minutes to consider their story, and the researcher making a digital recording of the resulting story. The process was repeated for each prompt word list in turn.

Following this, participants completed an on-line questionnaire to gather information about demographics, their beliefs about mentoring relationships, engagement with academic and social opportunities, and their pre-university and university mentoring experiences. Participants were verbally de-briefed and given a de-brief sheet that contained the researcher's contact details in case they wished to withdraw from the study or ask questions retrospectively. A small number of participants asked to complete the questionnaire online from home. Where this happened, they were debriefed after the ASA/MSA task, and then completed the questionnaire off-site within 24 hours (using a unique link to the questionnaire which was provided by the researcher).

The researcher and an independent coder received ASA coding training by Professor Harriet Waters (see Appendix I). Additional information about scoring, moderation and inter-rater reliability is available in Chapter 2: Methodology, section 2.5.1.1. Each story was coded by the researcher and an independent coder on a scale of 1 – 7, scores are not restricted to whole numbers. Narratives scored 1 contain content that is contrary to the secure base script, those scoring 7 contain rich examples of secure based content. 4 is the point at which weak but complete examples of secure base content become apparent. The independent coder was not otherwise involved in the research, or given any information

other than uncoded, anonymous transcripts to score. All transcripts were scored by both coders and 42 transcripts were also coded by Professor Harriet Waters as a quality assurance safeguard. Narrative scores that differed by 1 or less across coders were averaged and greater differences were discussed. All anomalies were resolved.

3.3 Results

The research questions informing the design of Study 1 were:

1. Are implicit assumptions about mother-child secure base interactions transferred to unconscious assumptions about support-seeking and support-providing behaviours in mentoring relationships?

2. Is the MSA specific to implicit and explicitly reported assumptions about mentoring and engagement in mentoring?

Data were analysed for correlations significant at the $p<.05$ level. 2-tailed analysis was used throughout the present research, whereas the original studies examining similar relationships used 1-tailed analysis (Bianchini et al., 2011; Zevallos et al., 2009). The information for the original studies has been gathered from research posters.

3.3.1 Pearson Correlations: Replicated findings

Table 2 shows the correlation between the mean ASA/MSA and factors representing undergraduate attitudes to, and experiences of, mentoring for the present study and unpublished research (Zevallos et al., 2009). Three of the five original significant outcomes were supported. Both the previous and present research revealed a significant strong

positive correlation between the mean ASA score and the mean MSA score across all participants. This was r (54) =.71, *p*<.01, accounting for 50.4% of the variance when rounded to two places in the present research using a two-tailed test (the variance was 49.7% when it was left as three decimal places in Table 3). Furthermore, both studies found positive significant correlations between Total personal attitudes towards mentoring and the mean ASA, and the mean MSA. The present research found r (54) =.28, *p*<.05, accounting for 7.8% of the variance and r (54) =.37, *p*<.01, accounting for 13.7% of the variance, respectively. Whereas the original work found r (79) =.3, *p*<.01, accounting for 9% of the variance and r (79) =.34, *p*<.01, accounting for 11.6% of the variance, respectively.

Table 2: Comparison of findings by Zevallos et al., and the present research

Correlation	Zevallos et al. (2009) N=79	Present research N=54
Mean ASA and mean MSA	.44††	.71**
Mean ASA and number of pre-university mentors	.27†	.05
Mean MSA and number of pre-university mentors	.18	.26
Mean ASA and Overall pre-university experiences of mentoring [a]	.31††	.09
Mean MSA and Overall pre-university experiences of mentoring [a]	.12	.25
Mean ASA and Total personal attitudes towards mentoring [b]	.30††	.28*
Mean MSA and Total personal attitudes towards mentoring [b]	.34††	.37**

Note. * p<.05, two tailed. ** p<.01, two tailed. † p<.05, one tailed. †† p<.01, one tailed.

Results from the present research have been rounded to 2 decimal places in this instance for consistency with the original research. However, figures have been rounded to 3 decimal places when a comparison is not being drawn.

Post-hoc G*Power analyses are reported in Appendix X, Table 37.

[a] Labels for the comparable variables used by Zevallos et al. (2009) are Mean ASA and High school experiences and Mean MSA and High school experiences.

[b] Labels for the comparable variables used by Zevallos et al. (2009) are Mean ASA and Positive attitudes towards mentoring relationships and Mean MSA and Positive attitudes towards mentoring relationships

The present study replicates the previously unpublished statistically significant relationship between the mean ASA and mean MSA scores and their relationship with explicit positive attitudes toward mentoring (see Table 2). In the present research a greater effect size exists between Total personal attitudes towards mentoring and mentoring script knowledge than with attachment script knowledge. This suggests the MSA has greater specificity toward mentoring than with attachment relationships for the UK based study.

Bianchini et al. (2011) found 9 instances of ASA scores, 3 instances of the MSA scores, and 10 instances of Positive mentoring experiences being significantly correlated with Academic related experiences (Q25 of the present study). They also found 5 significant correlations between the ASA scores, 3 instances of the MSA scores and 2 instances of Positive mentoring expectations being significantly correlated with university social experiences (Q24 of the present study). Their outcomes seem to suggest the ASA is a more reliable predictor than the MSA of university social and academic support engagement, which are not direct assessments of attitudes toward (or engagement in) mentoring. Their multiple regression analysis indicates attachment scripts and pre-college mentoring experiences independently contributed to the Positive attitudes towards mentoring variable (Zevallos et al., 2009). None of the significant correlations with academic and social experiences were replicated by the present study (Appendix J: C7 and C8 contain the relevant SPSS outcomes). However, the replicated positive correlation between the mean ASA and MSA is of interest; it offers some support for the theory that assumptions about secure base type behaviours in mentoring relationships are informed by implicit secure base script knowledge.

3.3.2 Pearson correlations: Relationships between individual and mean story scores

Table 3 shows each correlation between individual ASA and MSA stories for the present research. There were significant positive correlations at the $p<.01$ level between the mean MSA and each individual ASA and MSA story, except for the story Doctor's Office where no significant correlation existed. Distributions were normal for each mean score and the individual story scores, apart from Doctor's Office.

A Test of Normality, conducted for Doctor's Office and Not Enjoying University, reveals Doctor's Office had a significance of .006 using Shapiro-Wilk. Although there had been concerns about Not Enjoying University based on visual inspection of the histogram, there was a significance of .093. Both stories resulted in distributions that were slightly platykurtic and with a positive skew (Appendix J: D1 and Distribution test DO NEU). This is perhaps a contributing factor to the lack of significant relationship between Doctor's Office and the MSA. The Mean ASA was significantly correlated with each individual ASA and MSA story.

Examination of individual ASA and MSA stories (see Table 3) reveals the majority are positively correlated at the $p<.01$ level, for instance, Not Enjoying University and Baby's Morning r (54) =.686, $p<.01$, accounting for 47.1% of the variance. The exceptions to this being the story Doctor's Office, which is significantly correlated with Not Enjoying University and The Party at the $p<.05$ level (i.e., Not Enjoying University: r (54) =.279, $p<.05$, accounting for 7.8% of the variance, and The Party r (54) =.278), $p<.05$, accounting for 7.7% of the variance). In addition, there was no significant correlation between Doctor's Office and the mean MSA score, Doctor's Office and Writer's Block, or Doctor's Office and Choosing Specialist Modules. This is interesting considering the positive correlations obtained between Doctor's Office (but not any other ASA stories) and explicit mentoring expectations, discussed later, and presented in Table 4. Throughout the thesis the variance for each statistically significant correlation is listed in Appendix X with a corresponding post hoc G*Power analysis.

Of all the individual stories, only Baby's Morning is positively correlated at the $p<.01$ level with all the other stories and the ASA and MSA mean scores.

Table 3: Correlations between individual ASA stories, MSA stories, and the ASA and MSA mean scores

Pearson correlation

	Mean ASA	Baby's Morning	Doctor's Office	The Party	Mean MSA	Writer Block	Not Enjoying University	Choosing Specialist Modules
Mean ASA	1	.882**	.703**	.798**	.705**	.603**	.678**	.583**
Baby's Morning	-	1	.455**	.610**	.726**	.642**	.686**	.588**
Doctor's Office	-	-	1	.278*	.263	.233	.279*	.179
The Party	-	-	-	1	.661**	.535**	.625**	.595**
Mean MSA	-	-	-	-	1	.892**	.863**	.887**
Writer Block	-	-	-	-	-	1	.623**	.692**
Not Enjoying University	-	-	-	-	-	-	1	.682**
Choosing Specialist Modules	-	-	-	-	-	-	-	1

*Note. * p*<.05. ** *p*<.01 (2-tailed).

See Appendix J: C1a for SPSS output

Post-hoc G*Power analyses and variances for statistically significant correlations are reported in Appendix X, Table 37.

The high incidence of significant positive relationships between the ASA and MSA stories lends support to the suggestion that implicit secure base script knowledge is associated with the development of implicit mentoring support script knowledge. However, it could also suggest both assessments are measuring the same construct. Therefore, the next stage of analysis explores whether participants' explicit mentoring attitudes and behaviours before and during university are specifically correlated with mentoring script scores or both mentoring and secure base script scores.

3.3.3 Pearson correlations: Relationships between ASA scores, MSA scores and explicitly reported positive attitudes toward mentoring and active engagement in mentoring relationships

Table 4 shows the significant correlations identified between participant implicit secure base knowledge (ASA) and mentoring script knowledge (MSA) with explicit assumptions about mentoring (questionnaire responses). It is followed by Table 5 which contains the significant correlations between implicit secure base and mentoring script knowledge and active engagement in mentoring relevant behaviours. All non-significant findings have been omitted to make it as easy as possible for readers to see how frequently individual ASA and MSA stories correlate with other variables and to bring clarity to the accompanying narrative. All significant and non-significant correlations relevant to these two tables are available for scrutiny in Appendix J: C2 – C8, and C10, and the power analyses are contained in Appendix X. Some tables contain story initials instead of full story names for ease of layout (i.e., Baby's Morning is referred to as BM, Doctor's Office as DO, The Party as TP, Writer's Block as WB, Not Enjoying University as NEU, and Choosing Specialist Modules as CSM). A visual check of the distributions reveals some of the individual questionnaire responses are not normally distributed, but the totals obtained by combining

them were (see Appendix J: D2 for distributions). The variables which are significantly correlated with the individual and mean ASA and MSA scores are normally distributed, although not necessarily with an ideal kurtosis or skew.

Table 4: Significant correlations between explicit assumptions about mentoring and secure base script and mentoring script knowledge

	Mean ASA	DO	Mean MSA	WB	NEU	CSM
The university mentoring statement is accurate [a]	-	-	-	-	.284*	-
Mentoring relationships are easy to arrange	-	-	-	.276*	-	-
Establishing mentoring relationships depends on luck	-	-	-.317*	-.361**	-	-
I'd be willing to adapt my style in order to develop a mentoring relationship	-	.313*	-	-	-	-
I wouldn't participate in mentoring for long if it meant significantly limiting my social life or interests	-	-.430**	-	-	-	-
I wouldn't participate in mentoring unless the faculty, graduate student or staff member approached me	-	-	-.299*	-	-.283*	-
Total personal attitudes toward mentoring [b]	.281*	-	.367**	.365**	-	.352**
Total positive attitudes toward mentoring (current experience) [b]	-	-	-	.269*	-	-
Positive mentoring expectations [c]	-	-	.396**	.372**	.312*	.360**
Mentoring is mainly available to C, D, E & F students	-	-.276*	-	-	-	-

*Note. * p*<.05. ** *p*<.01 (2-tailed).

Post-hoc G*Power analyses and variances are reported in Appendix X, Table 37.

[a] participants agree with the phrase "mentoring encourages students to take advantage of peer-to-peer support by offering students the opportunity to gain academic support from more experienced students, under the guidance of academic staff".

[b] Variable calculated by combining the scores for Positive mentoring expectations and Overall experience of university mentoring. See Table 1 and Appendix H for further details.

[c] Variable calculated by combining the scores from Q9_1 – Q10_ 11. See Table 1 and Appendix H for further details.

Table 5: Significant correlations between engagement in mentoring and secure base script and mentoring script knowledge

Pearson correlation		
	WB	NEU
Uni academic: Ask questions in class	-	.300*
Number of pre-university mentors	.269*	-
Total number of mentors	.278*	.274*

*Note. * p*<.05.

Post-hoc G*Power analyses and variances are reported in Appendix X, Table 37.

See Appendix J: C5 – C8 and C10 for SPSS outputs showing all significant and non-significant correlations relevant to mentoring behaviours

Table 4 shows Choosing Specialist Modules was only correlated with *Total personal attitudes toward mentoring* and *Positive mentoring experiences* (both of which contain many of the same items, see table 1 for details) (r (54) =.352, *p*<.01, accounting for 12.9% of the variance and r (54) =.360, *p*<.01, accounting for 13% of the variance respectively). Writer's Block is the story-based assessment with the greatest number of significant correlations with explicit attitudes to mentoring; greater even than the MSA. There is a greater degree of overlap between the MSA and Writer's Block than with other stories. Despite there being no significant correlation between The Doctor's Office and the mean MSA score, Writer's Block, Choosing Specialist Modules, and its correlations with Not Enjoying University and The Party at only the *p*<.05 level, it is the only attachment script story to correlate with explicit attitudes toward mentoring. In relation to the variables contained in Table 4, it shares as many correlations with items identifying explicit knowledge about mentoring expectations as the mentoring specific story Not Enjoying University; only the mean MSA and Writer's Block have a greater number.

There is a significant positive correlation between Doctor's Office and a willingness on the part of the participant to adapt their own style to develop a mentoring relationship (r (54) =.313, *p*<.05, accounting for 9.8% of the variance) and a significant negative correlation with both the belief that mentoring is only for students with lower scores (r (54) =.276, *p*<.05, accounting for 7.6% of the variance) and the attitude they would not participate in mentoring for long if it meant significantly limiting their social life or interests (r (54) =.430, *p*<.01, accounting for 18.5% of the variance). Despite its significant correlation with the explicit belief that mentees should be open to adapting their approach and personal commitments, and that mentoring is suitable for students achieving higher grades, examination of Table 5 reveals that, like the other ASA stories, and the mean ASA, it is not correlated with engagement with mentoring during university or pre-university years.

Table 4 also suggests the Total personal attitudes to mentoring variable was the explicit assumption most often correlated with implicit secure base script and mentoring script knowledge. This was evident through significant positive correlations with the mean ASA, MSA, and the mentoring script stories Writer's Block and Choosing Specialist Modules (r (54) =-.281, *p*<.05, accounting for 7.9% of the variance, r (54) =-.367, *p*<.01, accounting for 13.5% of the variance, r (54) =-.365, *p*<.01, accounting for 13.3% of the variance, r (54) =-.352, *p*<.01, accounting for 12.4% of the variance respectively). The only mentoring script assessment not positively correlated with it was Not Enjoying University.

Of all the individual and mean attachment and mentoring script assessments, Writer's Block was the measure most often correlated with explicit positive attitudes about mentoring relationships; the mean MSA was the next most common, followed by Doctor's

Office and Not Enjoying University. Doctor's Office has already been discussed. The mean MSA and Doctor's Office differed in the significant correlations they shared. Specifically, the MSA has significant negative correlations with the attitudes that *Establishing mentoring relationships depends on luck* and *I wouldn't participate in mentoring unless the faculty, graduate student or staff member approached me*, and significant positive correlations with *Total personal attitude toward mentoring* and *Positive mentoring expectations* (r (54) =.317, p<.05, accounting for 10% of the variance, r (54) =.299, p<.05, accounting for 8.9% of the variance, r (54) =.367, p<.01, accounting for 13.5% of the variance and r (54) =.396, p<.01, accounting for 15.7% of the variance respectively).

Writer's Block has a significant negative correlation with the belief that *Establishing mentoring relationships depends on luck* (r (54) =.361, p<.01, accounting for 13% of the variance). There were significant positive correlations with *Mentoring relationships are easy to arrange, Total personal attitudes towards mentoring, Total positive attitudes towards mentoring (current experiences),* and *Positive mentoring expectations* (r (54) =.276, p<.05, accounting for 7.6% of the variance, r (54) =-.365, p<.05, accounting for 13.3% of the variance, r (54) =.269, p<.05, accounting for 7.2% of the variance, and r (54) =.372, p<.05, accounting for 5.1% of the variance respectively). Findings suggest an increase in Writer's Block score is associated with the explicit attitude that mentoring relationships are possible, can be positive, the mentee is required to put some effort into arranging them, and that these overall attitudes are relevant to current mentoring experiences and to positive mentoring expectations.

Not Enjoying University is less frequently significantly correlated with explicit assumptions about mentoring relationships, but when there is a correlation, it differs from those shared with Writer's Block. Table 5 shows the only script-based assessments to share a significant correlation with mentoring type behaviours are Writer's Block and Not Enjoying University. Both are normally distributed and share significant positive correlations with Total number of mentors (Writers Block: r (54) =.278, p<.05, accounting for 7.7% of the variance and Not Enjoying University: r (54) =.274, p<.05, accounting for 7.5% of the variance). Not Enjoying University has a significant positive correlation with Uni academic: Ask questions in class (r (54) =.300, p<.05, accounting for 9% of the variance). Writer's Block also has a positive significant correlation with Number of pre-university mentors (r (54) =.269, p<.05, accounting for 7.2% of the variance). Therefore, of all the stories and story means, Writer's block is the most robust indicator of actual mentoring engagement.

3.3.3.1 Combined analysis

Table 6: The number of significant correlations per implicit script assessment for the variables shown in Tables 4 and 5

Script based assessment	Table 4: Explicit assumptions about mentoring	Table 5: Mentoring engagement	Total
Baby's Morning	-	-	-
Doctor's Office	3	-	3
The Party	-	-	-
Mean ASA	1	-	1
Writer's Block	5	2	7
Not Enjoying University	3	2	5
Choosing Specialist Modules	2	-	2
Mean MSA	4	-	4
Total	18	4	-

Table 6 shows the two script assessments Writer's Block and Not Enjoying University were most frequently correlated with explicit assumptions and behaviours, and more so than the mean MSA was. Therefore, the stories Writer's Block and Not Enjoying University have been combined and the mean used to create a new variable (mean: WB & NEU) to explore: 1. The extent to which it correlates with secure base script and mentoring script knowledge (Table 7); and 2. Whether it correlates significantly with explicit assumptions about, and engagement with, mentoring (Table 8). The mean MSA has been included on Tables 7 and 8 so its relationship with individual stories can be compared with the correlations they share with the new variable.

Table 7: Significant correlations between the mean MSA and mean: WB & NEU with secure base script knowledge and mentoring script knowledge

Pearson correlation		
	Mean: WB & NEU	Mean MSA
Baby's Morning	.735**	.726**
Doctor's Office	.282*	.263
The Party	.639**	.661**
Writer's Block	.917**	.892**
Not Enjoying University	.883**	.863**
Choosing Specialist Modules	.762**	.887**
Mean ASA	.707**	.705**
Mean MSA	.975**	1

*Note. * p*<.05, ** *p*<.01 (2-tailed).

Appendix J: C11 contains the SPSS output relevant to this table

Post-hoc G*Power analyses and variances are reported in Appendix X, Table 37

The mean: WB & NEU is normally distributed. This new variable and the mean MSA are both positively correlated at the *p*<.01 level with five of the six ASA and MSA individual stories and their means. It is interesting to note the significant correlation between the new variable and Doctor's Office (r (54) =.282, *p* <.05, accounting for 8.1% of the variance), whereas there is no significant correlation between Doctor's office and the mean MSA.

Table 8: Significant correlations between the mean MSA, WB, NEU, and mean: WB & NEU with explicit assumptions about, and reported engagement with, mentoring

Pearson correlation				
	WB	NEU	mean: WB & NEU [d]	Mean MSA
1. BCU mentoring statement is accurate	-	.284*	.277*	-
2. Mentoring relationships are easy to arrange	.276*	-	-	-
3. Establishing mentoring relationships depends on luck	-.361*	-	-.343*	-.317*
4. I wouldn't participate in mentoring unless the faculty, graduate student or staff member approached me	-	-.283*	-.290*	-.299*
5. Total personal attitudes toward mentoring	365**	-	.345*	.367**
6. Positive mentoring expectations	.372**	.312*	.382*	.396**
7. Positive attitudes to mentoring (current experience)	.265*	-	-	-
8. Number of pre-university mentors	.269*	-	.297*	-
9. Overall pre-university experiences of mentoring	-	-	.270*	-
10. Uni academic: Ask questions in class	-	.300*	-	-
11. Total number of mentors	.278*	.274*	.306*	-
Total attitudinal correlations [a]	4	3	5	4
Combined attitudinal and behavioural correlation [b]	1	0	0	0
Total behavioural correlations [c]	2	2	3	0
Overall number of correlations	7	5	8	4

Note. * p<.05, ** p<.01 (2-tailed).

Post-hoc G*Power analyses and variances for this table are reported with information relevant to Table 4, Table 5 and Table 8 in Appendix X, Table 37.

[a] Variables 1 – 6

[b] Variable 7

[c] Variables 8 – 11

[d] SPSS outputs showing all relevant significant and non-significant correlations for this variable are available in Appendix J: C1b and C12 – 19

Table 8 shows, for this study, mean: WB & NEU was associated with the highest number of significant correlations with assumptions conducive to mentoring relationships in conjunction with active engagement in mentoring. This outcome is worthy of further

exploration to see whether it is replicated because it has potential to reduce the current mentoring script assessment from three stories to two. Even using Writer's Block alone was a more reliable predictor of engagement in mentoring than the mean MSA and, in terms of the number of significant correlations with explicit reporting, it was only slightly less predictive than mean: WB & NEU. Unfortunately, the research population for this study is small, increasing the likelihood of a Type I error (i.e., the mistaken rejection of the null hypothesis and acceptance of the hypothesis) (Coolican, 2019c). Therefore, larger studies are required to improve normality of the distributions for all variables and examine whether it is possible to reduce the mentoring script assessment to one or two stories.

3.3.4 Regression analyses: Factors influencing mean MSA score variance

Having considered the number of variables that could reasonably be examined within a sample of this size the decision was made to reduce the number of regressions as far as possible, running multilinear regressions initially rather than individual regressions, to minimise issues around Type I error (i.e., incorrect rejection of the null hypothesis) and statistical power (Coolican, 2019c).

The MSA was significantly correlated with the mean ASA (.705) at the p <.01 level but was not significantly correlated with Total number of mentors (.060). However, both these variables were chosen despite the lack of significant relationship between the MSA and number of mentors because attachment theory would suggest secure base script knowledge in conjunction with mentoring experiences informs mentoring script knowledge. Understanding whether both factors influence mentoring script knowledge has potential to inform relationship-specific mentoring research and mentor recruitment and training.

Normality assumptions were not violated. A multiple regression was performed using the 'enter' method, with the mean MSA as the dependent variable and the mean ASA and Total number of mentors as the independent variables (Appendix J: R1 The unstandardised regression coefficients (*B*) were .809 for the constant, .717 for the mean ASA, and .096 for the Total number of mentors, whilst the Beta values were .694 for the mean ASA and .223 for the Total number of mentors. There were no outliers among the residuals more than 3 standard deviations from the mean. Collinearity was satisfactory with both values being .998. Heteroscedasticity was not problematic. A regression coefficient of R =.739 was found, with R^2 = .546 and R^2 adjusted = .528. R for regression was significantly different from zero, F (2,51) = 30.688. Due to the small population the adjusted $R2^2$ value was selected rather than R^2 because it provides a slightly less optimistic, corrected predictive value (Pallant, 2020a). Both the mean ASA and total number of mentors were significant contributors to the model (mean ASA p<.01 and number of mentors p<.05) with the mean ASA score and number of mentors accounting for 52.8% of the mean MSA score in combination and the ASA accounting for the greater amount of variance.

Another multilinear regression was used to test the assumption that all three ASA story scores (i.e., Baby's Morning, Doctor's Office, and The Party) are equal contributors to MSA score and to find whether one is significantly more predictive of mentoring script level (see Appendix J: R2 for the SPSS output). The mean MSA was the dependent variable and each of the three ASA stories were independent variables. There were no outliers in the residuals more than 1.39 standard deviations from the mean. Collinearity tolerance was satisfactory with values for Baby's Morning of .539, Doctor's Office of .739, and The Party

.628. The VIF values for these stories were 1.854, 1.262, and 1.593. Heteroscedasticity was not an issue. The unstandardised regression coefficients (*B*) were 1.372 for the constant, .418 for Baby's Morning, -.077 for Doctor's Office, and .289 for The Party. Whilst the Beta value was .553 for Baby's Morning, -.085 for Doctor's Office, and .347 for The Party. A regression coefficient of R = .780 was found with R^2 = .608, and adjusted R^2 of .585. R for regression was significantly different from zero, F (3,50) = 25.881, p <.01. Due to the small population the adjusted $R2^2$ value was selected rather than R^2 because it provides a slightly less optimistic, corrected predictive value (Pallant, 2020a). Baby's Morning score was a significant contributor to MSA score (p<.001), The Party was also a significant contributor ($p.$<.005), but Doctor's Office was not a significant contributor. In summary, the model accounts for 58.5% of the variance in MSA score, with Baby's Morning and The Party scores making significant contributions.

The Pearson R correlations and regression outcomes suggest secure base script knowledge, as assessed by Baby's Morning and The Party in combination with the number of mentors is a statistically significant predictor of mentoring script knowledge. Outcomes support the arguments that: 1. Implicit assumptions about secure base interactions inform implicit assumptions about mentoring interactions; 2. Having more mentoring experiences is associated with more complete mentoring script knowledge; and 3. MSA scores are specific to mentoring scenarios, whereas ASA scores are specific to secure base interactions. However, there are differences between the contribution made by different transcripts, e.g., Doctor's Office and Choosing Specialist Modules are distinct in their relationships with the other stories. Examination of linguistic and sentiment features of participant ASA and MSA stories are conducted in Studies 2a – 2c in an attempt to understand the properties of

each transcript type and identify factors that could simplify the scoring process (particularly when scoring transcripts on the border of 3 and 4, where incomplete script knowledge becomes complete script knowledge). The G*Power analyses for the significant regression findings can be found in Appendix X, Table 37.

3.4 Discussion

The following research questions informed Study 1:

1. Are implicit assumptions about mother-child secure base interactions transferred to unconscious assumptions about support-seeking and support-providing behaviours in mentoring relationships?

2. Is the MSA specific to implicit and explicitly reported assumptions about mentoring and engagement in mentoring?

A significant positive correlational relationship at the $p < .01$ level exists between most of the individual ASA and MSA stories, the individual stories and mean ASA and MSA scores, and between the ASA and MSA means. The only exceptions to this are the lack of significant correlation between Doctor's Office and the mean MSA, Writer's Block, and Choosing Specialist Modules, and the significant correlation at the $p < .05$ level with The Party and Not Enjoying University. The relationship between the ASA and MSA is consistent with the original studies (Bianchini et al., 2011; Zevallos et al., 2009). However, unlike the original work, a greater relationship exists between the MSA and constructive assumptions about mentoring than between the ASA and mentoring attitudes; neither the mean ASA nor the mean MSA are significantly correlated with variables relevant to mentoring

participation. Regression outcomes suggest secure base script knowledge (as assessed by the mean ASA) combined with the number of mentoring experiences account for 52.8% of mentoring script knowledge (as assessed by the MSA). When individual ASA stories were examined, only Baby's Morning and The Party made significant contributions to the MSA score (R^2 adjusted was 58.5%).

Further studies are needed to find whether they are also associated with effective mentoring behaviours and outcomes. This is important because neither story score was associated with explicit reporting of attitudes considered conducive to mentoring, or with explicit mentoring behaviours. The literature review highlighted the need for research into the relational aspect of mentoring and the positive potential impact of mentors who have a good relationship with their mentees. This study contributes important knowledge about the influence of secure base scripts on implicit attitudes about help seeking and help providing behaviours in mentoring relationships. Participant numbers for this study are small, not all variables are normally distributed and therefore caution must be employed in making assumptions based on these findings. Relevant to research question 1, findings suggest the secure base script informs (rather than determines) other support-relevant relationship scripts and that previous mentoring interactions also influence a mentoring specific cognitive goal-oriented script.

Relevant to research question 2, the present study outcomes suggest mentoring script knowledge is more specific to explicit mentoring relationship assumptions than attachment script knowledge is and provides novel insights into the features of individual stories. The MSA stories Writer's Block and Not Enjoying University are the ones sharing the

greatest number of significant positive correlations with explicit positive mentoring assumptions and reported engagement in mentoring. The results led to the creation of a new variable (the mean of Writer's Block and Not Enjoying University scores referred to as mean: WB & NEU). Significant correlations between new variable with explicit mentoring attitudes and reported engagement with mentoring were compared with the significant correlations shared with the MSA. All individual ASA and MSA stories were correlated with the new variable (mean: WB & NEU) at the $p<.01$ level, except for Doctor's Office, which was corelated at the $p<.05$ level. Whereas the MSA was not significantly correlated with Doctor's Office but was significantly correlated at the $p<.01$ level with the other stories and mean scores. Doctor's office is the ASA story most frequently associated with constructive mentoring attitudes, but it does not share a significant correlation with participation in mentoring before or during university.

Another important question to ask is why the third MSA story, Choosing Specialist Modules, is only significantly correlated with Total personal attitudes toward mentoring and Positive mentoring experiences (both of which contain many of the same items) but not with other questionnaire items. This is perhaps results from the changes made to the Choosing Specialist Modules prompt word list (see Appendix F for rationale). Perhaps the adaptations were too extreme which prevented suitable script recall during the priming process. It might also be the case that the term *specialist* modules would have been better replaced with *optional* modules. However, participants did not raise issues with the use of the word specialist during dissemination of the MSA. Furthermore, the story correlated with all other ASA and MSA scores as the $p<.01$ level. Further studies would benefit from checking whether they observe similar effects, and if necessary, devising and validating a

replacement story for UK populations which triggers participant recall of their implicit mentor script and correlates with explicit attitudes and behaviours relevant to mentoring.

Doctor's Office is an interesting phenomenon. Despite the unusual distribution and the anomaly in the relationship it shares with some of the other stories (the mean MSA score in particular) it is the only ASA story to share significant correlations with explicit attitudes to mentoring and yet is the only ASA story score not making a significant contribution to MSA score. However, like the other ASA stories it shares no relationship with variables assessing engagement in mentoring behaviours. The explicit attitudes it correlates with, are not correlated with any other script relevant measures. Anecdotally, a number of participants seemed to get anxious about telling this story and reported it being difficult to come up with something. It is tempting to speculate that perhaps Doctor's Office induced anxiety unrelated to attachment in some participants, (e.g., related to discomfort with blood, injections, or doctors) and that their anxiety is evident in the stories they told and correlates with specific questionnaire responses. More specifically, the finding can be explained in terms of Schank & Abelson's (1977) argument that distractions from a script that infer a new goal which can lead to people responding with heightened emotions or to them aborting the script entirely. To use their restaurant script as an example, a person may become angry if their food is given to someone else and to focus on the new goal of leaving the restaurant. Alternatively, they could have a new goal of collecting the food and might disregard the part of the script specific to leaving a tip. Perhaps the participants contributing to the present thesis experienced an intrusion of a script for 'seeking medical help' alongside the secure base script. For some, this may have initiated emotional responses and/or redirected the attention to a medical script-specific goal, leading to neglect of the

secure base script and influencing Doctor's Office transcript scores. Or perhaps the inclusion of the doctor within the prompt words led to transcripts containing script knowledge for nonsignificant others rather than (or alongside) maternal script knowledge. This would account for it being the only ASA story to share an association with any explicit mentoring variables (because mentor transcripts are likely to include scripts for non-significant others – as highlighted in the literature review). These possibilities are worthy of further investigation. However, it is worth bearing in mind the data was collected pre-covid and attitudes toward vaccinations and interacting with doctors may have changed since the present dataset was collected. Doctor's Office data collected now may differ as a result. Previous researchers have highlighted that cognitive scripts become more elaborate over time (Waters et al., 1998). It's therefore possible the peculiarities associated with Doctor's Office transcripts arose because the undergraduate participants had experienced fewer lived secure base scenarios relevant to caregiving in emergency and medical scenarios, than in scenarios relevant to Baby's Morning and The Party.

Participant spontaneous comments during the research process were interesting. However, they were not formally recorded and so there is no potential to explore this. Future researchers may gain some insights from gathering spontaneous participant comments about each story. Participants were not informed this was a cognitive script assessment or that it was relevant to attachment relationships, however many of them informally referred to events perhaps related to relevant script construction. For instance, some spontaneously said, "I had a situation just like that" and went on to describe past experiences, which contained similarities with the fictional story they had told. Whilst others shared comments about finding it difficult to know what a character would do in

such a situation. It appeared from the informal comments and non-verbal communication (e.g., grimacing and gripping the desk) that several participants found it more difficult to construct some stories than others. It may prove interesting for future researchers to gain ethical approval and participant permission to video the entire research process and examine participant informal verbal and non-verbal features. This would also allow examination of the researcher's influence on the process and whether (or to what degree) they unwittingly influence participant stories.

The research has its limitations; the research population for this study is small and the demographic features were restricted (particularly in terms of education, parental status, age, and gender) and therefore it would be inappropriate to examine ASA and MSA outcomes across gender, age, ethnicity, or education. In addition, the discussion has also highlighted the possible impact of medical or nonsignificant other script intrusions on outcomes, and of changes to *the Choosing Specialist Modules* prompt word set on outcomes. These are important consideration for future studies to consider. Clearly, further exploration and replication of the present outcomes are necessary. Deeper understanding of story content could be a valuable step toward improved understanding of underlying cognitive scripts relevant to specific relationships, lead to simplifying the ASA and MSA assessments, and the creation and validation of script prompt words that reflect the diversity of people but still reliably assess the relevant script.

3.5 Conclusion

The research questions informing the examinations conducted in Study 1 were:

1. Are implicit assumptions about mother-child secure base interactions transferred to unconscious assumptions about support-seeking and support-providing behaviours in mentoring relationships?

2. Is the MSA specific to implicit and explicitly reported assumptions about mentoring and engagement in mentoring?

Four aims were devised to answer the questions. The first aim was to examine whether a correlational relationship existing for unpublished research outcomes in a US study would be replicated in the UK data collected for Study 1. Outcomes suggest a positive correlational relationship between ASA and MSA assessment outcomes exists. The majority are at the $p<.01$ level, but some exceptions exist for the individual story Doctor's Office.

The second and third aims were to examine whether secure base script knowledge and mentoring script knowledge are correlated with 1. explicit beliefs about mentoring and 2. engagement in mentoring. Regression results suggest secure base script knowledge (as assessed by the mean ASA) and the number of mentors accounts for 52.8% of the variance in mentoring script knowledge (as assessed by the MSA). Only Baby's Morning and The Party were found to make a significant contribution, but these stories were not associated with explicit beliefs about mentoring or engagement in mentoring. Four significant relationships were identified between the MSA and explicit attitudes conducive toward mentoring, whereas only one significant relationship exists between the ASA and mentoring attitudes. Neither the mean ASA nor MSA scores were significantly correlated with engagement in mentoring.

The fourth aim was to examine which story, or combination of stories, is the most reliable predictor of constructive attitudes towards mentoring and engagement in mentoring. The mean score of Writer's Block and Not Enjoying University (mean: WB & NEU) is the variable most frequently correlated with both explicit attitudes and reported mentoring engagement. It shared 5 significant correlations with explicit attitudes conducive to mentoring and 3 significant correlations with incidences of reported mentoring engagement. The new variable was therefore a more reliable predictor of positive attitudes toward mentoring and actual mentoring engagement than the mean MSA (i.e., the current assessment of mentoring script knowledge).

Therefore, in answer to the two research questions:

1. Implicit assumptions about mother-child secure base interactions and previous mentoring experiences appear to be transferred to unconscious assumptions about support-seeking and support-providing behaviours in mentoring relationships. However, the only ASA story scores contributing to this effect are Baby's Morning and The Party.

2. The MSA is specific to implicit and explicitly reported assumptions about mentoring and engagement in mentoring; the same relationships are not observed for ASA scores.

Participant numbers for this study are small, there are some distributions outside of the normal range, and effects have not been examined by demographic groups. Therefore, caution must be employed in making assumptions based on these findings. However, findings support the unpublished claim made by previous researchers that secure base

scripts and previous experiences of mentoring relationships inform other supportive relationship scripts. In addition, it contributes novel information about the specificity of mentoring script knowledge to explicit attitudes about mentoring relationships when compared with attachment script knowledge, provides novel insights into relationships between individual stories and explicit mentoring specific attitudes and engagement, and makes the novel suggestion of streamlining the MSA to improve its ability to predict positive attitudes toward, and engagement in, mentoring relationships.

Future research to validate the ASA and MSA methodology using on-line platforms has become more pressing in recent times, and the outcomes of the MSA would benefit from being examined with observational data of mentoring engagement because participant reporting may be misleading. For instance, more reported mentors could be an indication of trying out a few relationships until a good fit is found or could reflect a tendency to find relationship engagement or maintenance difficult. Further research supporting the strength and reliability of correlations between the mean: WB & NEU and explicit mentoring behaviours and attitudes could inform the reduction of the number of stories used to assess mentoring script knowledge from three to two. This would make the assessment less onerous for researchers. The main barrier to non-specialist applied use of the assessment would then be the transcript scoring process. Simplifying the assessment and transcript processes could make the assessment more cost-effective to implement and suitable for use to inform training, support, or recruitment of mentors and mentees in applied education, mental health, or business settings.

Study 1 outcomes therefore led to the construction of three further research questions, they are:

3. Are specific language or sentiment patterns associated with the level of secure base or mentoring script knowledge transcripts contain? (Studies 2a – 2c)

4. Are there patterns within ASA and MSA transcripts which could be used to simplify the transcript scoring process? (Studies 2 – 3)

5. Are patterns identified in UK ASA transcripts also apparent in independent secondary data obtained from the US? (Study 3)

Chapter 4 Study 2a: The relationship between language patterns, secure base script knowledge, and mentoring script knowledge

4.1 Study 2

Research questions 3 and 4 inform Study 2:

3. Are specific language or sentiment patterns associated with the level of script knowledge transcripts contain? (Studies 2a – 2c)

4. Are there patterns within ASA and MSA transcripts which could be used to simplify the transcript scoring process? (Studies 2 – 3)

To investigate this, Study 2 is cross-sectional and uses secondary ASA and MSA data collected for Study 1. It is divided into three parts (2a – 2c). Two overarching approaches are taken to explore the differences between transcripts. One compares content according to whether transcripts contain complete secure base and mentoring script knowledge (i.e., ASA and MSA stories scored 4 and above) or no / incomplete secure base and mentoring script knowledge (i.e., transcripts scored less than 4). The other approach examines emerging differences as transcript scores increase or decrease along the transcript scoring scale of 1-7. AntConc is used in study 2a to identify differences in word use. The Sentiment Analysis and Cognition Engine (SEANCE) is used in Study 2b to assess differences in emotional salience of ASA data, and in Study 2c to make the same assessment of MSA data.

The overall word count for ASA transcripts is 36,716 words. 23,402 of those words were associated with scores of 4 and above and 13,313 with scores less than 4. The word count for all MSA transcripts is 45,077. 29,548 of those words belong to transcripts scored 4

or above and 15,529 words were contained in transcripts scored less than 4. Therefore, the whole corpus consists of 81,792 words.

4.1.1 Study 2a

4.2 Method

4.2.1 Design

Study 2a is cross-sectional and uses secondary ASA and MSA data collected for Study 1. AntConc is used to:

1. Conduct exploratory comparisons of word use to find candidate key items (CKI) for comparison with data from a larger dataset from another culture (USA) (see Chapter 7: Study 3).

2. Find whether there are any trends that could be used to simplify the ASA and MSA scoring process thereby making use of the measures more accessible to non-attachment specialist researchers and for use in applied settings, such as educational, mentoring, or counselling settings.

4.2.2 Participants

Additional information about participants and research ethics has been included in Chapter 2: Methodology, section 2.3.1. Secondary data was used from Study 1. 54 volunteer participants were recruited through an English university research participant (RPS) scheme, 46 identified as females, and 8 as males, no participants took advantage of the opportunity to describe how they identify their gender. Ages ranged between 18 and 38 years with a mean of 20.98 years, SD = 2.92. Pre-determined ethnic categories, as recommended by the Office for National Statistics (2016) were offered alongside the opportunity for all participants to state how they identify their ethnicity (Bunglawala, 2019). The most

frequently identified ethnic group was White English / Welsh / Scottish / Northern Irish / British (42.59%). 8 participants (14.81%) described their ethnicity rather than use the categories set by the Office for National Statistics. 75% of participants had always lived in the UK. Residency duration ranged from 1 year to 18 years in the remaining 25% of the research population. See Appendix C for further details of participant ethnicity.

4.2.3 Materials

Information about the ASA and MSA has already been provided in Chapter 1: Literature review, section 1.1.3.4, Chapter 2: Methodology, sections 2.5.1 and 2.5.1.1, and Chapter 3: Study 1, sections 2.2.31. and 2.2.3.2.

The ASA and MSA transcripts collected for Study 1 were converted to txt documents and then grouped using Sanjeevani, which converts word documents into text documents and counts words (Desai & Gentle, 2023). Analysis has been conducted using AntConc version 3.5.8. (Macintosh OS X) 2019 on a MacBook air. Information about computer assisted text analysis is provided in Chapter 2: Methodology, section 2.5.3 and 2.5.3.1. Information about AntConc is provided in Chapter 2: Methodology, section 2.5.3.1.1. Stop word lists were created for ASA and MSA AntConc analysis (see Appendices K, L, and M). A comparison was conducted between the outcomes where the stop list included the story prompt words and where the script prompt words were not excluded. A stop list is a list of words loaded into AntConc which ensures those words are excluded from the search and statistical analysis (Anthony, 2019). Appendices K and M contain the stop lists that include the script prompt words, and Appendix L contains the stop list used for the ASA and MSA. Appendix N lists the abbreviated terms used to replace certain words from participant transcripts so analysis could be conducted for an overall meaning rather than a personalised

name or label. For instance, Cxx was used to replace names participants allocated to the care receiver (i.e., the child in ASA stories and the mentee in MSA stories) and Mexx was used to replace mentor names used in MSA stories.

4.2.4 Procedure

4.2.4.1 AntConc analysis: ASA and MSA transcripts

The ASA and MSA transcripts collected for Study 1 were prepared for analysis by removing the comments created during the scoring process but leaving the unique participant identifier and score on the transcript using the format 'story initial-score-participant number', e.g., BM-2-34 would represent the story Baby's Morning, scored 2, told by the participant with the ID 34. Stop lists were created for the ASA and MSA transcripts (Appendices K, L, and M). Particular words were removed from participant transcripts and replaced with abbreviations. This meant the analysis was applied to the person's role the word represented rather than a personalised label individual to each participant. For instance, Cxx was used to replace names participants allocated to the child in ASA stories and the mentee in MSA stories. Appendix N contains the list of abbreviations, Appendix H contains the study codebook, and Appendix O contains the text version of ASA and MSA transcripts.

The numbers of words used were examined first; findings suggest a greater range of vocabulary and longer transcripts was associated with scores of 4 and above (Tables 9 and 10). Following this, four keyness analysis were conducted to find whether specific words were used with statistically significant higher or lower frequency in a target corpus than in a reference corpus (Anthony et al., 2004). The comparisons were:

1. ASA transcripts scored 4 or more with the reference corpus of ASA transcripts scored less than 4 (i.e., ASA transcripts containing complete secure base script knowledge in comparison with ASA transcripts containing partial or no secure base script knowledge) (see Table 11 and Appendix Q, sheet 1).

2. MSA transcripts scored 4 or more with the reference corpus of MSA transcripts scored less than 4 (i.e., MSA transcripts containing complete mentoring script knowledge compared with MSA transcripts containing partial or no mentoring script knowledge) (see Table 12 and Appendix Q, sheet 2)

3. ASA transcripts scored 4 or more with the reference corpus of MSA transcripts also scored 4 or higher (i.e., ASA transcripts containing complete secure base script knowledge compared with MSA transcripts containing complete mentoring script knowledge) (see Table 13 and Appendix Q, sheet 3).

4. ASA transcripts scored less than 4 with the reference corpus of MSA transcripts also scored less than 4 (i.e., ASA transcripts that contain partial or no secure base script knowledge compared with MSA transcripts that contain partial or no mentoring script knowledge) (see Table 14 and Appendix Q, sheet 4).

The first two comparisons use well matched corpora because they are essentially two halves of the same data set obtained using identical prompt words. Whereas the comparisons between ASA and MSA corpora, although gathered in identical conditions at the same time, result from the use of different prompt words making differences in

language use inevitable. Caution must therefore be applied about drawing conclusions from the last two comparisons (Kilgarriff, 2009).

It is apparent from the keyness lists that a care receiver name was allocated and used statistically more frequently in ASA transcripts containing complete secure base script knowledge than ASA transcripts without. The same was true of mentor names in MSA transcripts containing complete mentoring script knowledge when compared with MSA transcripts without complete script knowledge. This finding informed an examination of patterns of care receiver name use in ASA transcripts and mentee/mentor names in MSA transcripts (see Tables 15 - 17) and their significance (see Tables 18 - 22). It seemed likely pronouns were used with unusual frequency; therefore, frequency of pronoun use in the transcripts was compared with their use in the British National Corpus (see Table 23) (BNC, 2022).

4.3 Results

Transcripts containing secure base script knowledge contained greater vocabulary and were longer than those containing partial or no secure base script knowledge as illustrated by the data in Tables 9 and 10.

4.3.1 Frequencies and means: Language use

Table 9: A comparison of word counts for ASA and MSA transcripts scored less than 4 and 4 and above

Corpus type and score	Total words (i.e., word tokens)
Total corpus word count	81,792
ASA and MSA transcripts scored less than 4	28,842
ASA and MSA transcripts scored 4 or more	52,950
ASA less than 4	13,313
ASA 4 or more	23,402
MSA less than 4	15,529
MSA 4 or more	29,548

Note. Transcripts scored less than 4 contain partial or no secure base or mentoring script knowledge and those scored 4 or more contain varying degrees of complete secure base or mentoring script knowledge.

Table 10: A comparison of mean total words and types of words used per participant for ASA and MSA transcripts scored less than 4 and 4 and above

Corpus type and score	Mean Score	Mean unique words (word type)	Mean total words (word tokens)
ASA transcripts scored less than 4	2.7	107.8	195.1
ASA transcripts scored 4 or more	4.9	139.2	269.2
Baby's Morning scored less than 4	2.6	81.6	142.5
Baby's Morning scored 4 or more	4.9	140.4	278
Doctor's Office scored less than 4	2.8	105.2	190.5
Doctor's Office scored 4 or more	4.9	153.6	303.4
The Party scored less than 4	2.8	95.4	156.6
The Party scored 4 or more	4.9	145.9	280.9
MSA transcripts scored less than 4	2.8	119.4	219
MSA transcripts scored 4 or more	4.7	157.1	311.7
Writer's Block scored less than 4	2.8	113	204.9
Writer's Block scored 4 or more	4.9	166	333.2
Not Enjoying University scored less than 4	2.8	121.3	220.8
Not Enjoying University scored 4 or more	4.7	180.5	362.1
Choosing Specialist Modules scored less than 4	2.8	116	213.9
Choosing Specialist Modules scored 4 or more	4.6	148.8	302.6

Note. Transcripts scored less than 4 contain partial or no secure base or mentoring script knowledge and those scored 4 or more contain varying degrees of complete secure base or mentoring script knowledge.

The mean scores for both script types were similar; where scores were less than 4, the mean ASA score was 2.7 and the mean MSA was 2.8. Whereas ASA transcripts with scores of 4 or higher were a mean of 4.9 and the MSA 4 or higher transcripts scored a mean of 4.7. There is also a higher word count and greater vocabulary for ASA and MSA transcripts scored 4 or higher when compared to those scored less than 4. This is to be expected, because longer cognitive scripts containing a greater number of actions are

associated with individuals who have been exposed to a higher number of relevant experiences, rather than general cognitive and language functioning in infancy (Waters et al., 1998). However, the possibility of adult transcript scores for the present thesis being partially determined by the way participants use language (rather than their expression of script knowledge) is a concern worthy of attention.

An examination of individual word use along the scale of transcript scores was therefore conducted. The wordlist comparisons (Appendix O: Option 8, sheets 5 & 6) show that in ASA stories scored 4 or above, the care receiver's name (denoted by Cxx) is used 196 times and is the 23rd most used word. Whereas care receiver names are only used 31 times across all ASA transcripts scored less than 4 and are the 78th most used words in this subset of transcripts. In MSA stories, transcripts scored 4 or above contain mentee names a total of 138 times, with mentee name being ranked the 40th most used word. Whereas transcripts scored less than 4 contain mentee names a total of 65 times and mentee name is ranked the 45th most used word. Prompt words were excluded in each case. These outcomes suggest care receiver name use is more likely to occur in transcripts containing complete script knowledge.

4.3.2 Keyness analyses: General word use

This difference in name use across both sets of transcripts is interesting because those participants with complete secure base script and mentoring script knowledge use the names of those seeking help more frequently than those without and this trend is unlikely to be the result of vocabulary or other linguistic skills. This difference led to a keyness analysis, using AntConc, to explore whether care recipient name use in the corpus

containing complete secure base script knowledge occurs at an unusual rate which is statistically significant when compared with the corpus not containing secure base script knowledge. The Keyword Statistic Threshold was set to $p<.05$ (with Bonferroni adjustment). A series of comparisons were run, in each instance the corpus of interest and the reference corpus have been identified on the relevant table. AntConc automatically calculates the Log-Likelihood and the DICE scores. The Log-Likelihood has been used in this study as the keyword statistic and the DICE score as the effect score. Both are reported in the appropriate tables. Log-likelihood is preferable to other statistical analysis (e.g., Pearson correlation) because word frequency is distributed along a Zipfian curve rather than being normally distributed along a bell curve. Tables 11 and 12 contain the analyses in their entirety.

Table 11: Keyness analysis showing the significance of difference in the use of specific words between two corpora. ASA transcripts scored 4 or more form the target corpus and ASA transcripts scored less than 4 form the reference corpus.

Rank	Frequency		Keyness	Effect (DICE)	Keyword
1	196	+	58.57	0.0161	Cxx
2	439	+	31.6	0.0354	her
3	719	+	25.98	0.0571	she
4	46	-	42.03	0.0038	crying
5	58	-	32.82	0.0048	doctor
6	436	-	30.04	0.0349	he
7	6	-	27.34	0.0005	leg
8	155	-	27.34	0.0126	mother
9	32	-	27.22	0.0026	toy
10	205	-	22.39	0.0167	him
11	358	-	21.07	0.0288	his
12	11	-	19.02	0.0009	riding
13	198	-	18.57	0.0161	tommy
14	26	-	18.26	0.0021	stop
15	55	-	17.66	0.0045	bike

Note. Cxx denotes the participant allocated the care receiver (i.e., the child central to the story) a name

Grey shading indicates the word is a prompt word for at least one of the three ASA stories and so the participants were encouraged to use it, rather than it being a naturally occurring word

Table 11 presents a keyness analysis for the corpora of ASA transcripts scored 4 or higher (i.e., containing complete secure base script content) with those scored less than 4 (i.e., containing no or incomplete secure base script content) as the reference corpus. The AntConc output is presented in its entirety. Each keyness statistic for the words contained on the table are above 15.13, which is the equivalent of $p<.0001$ (Rayson, 2014). The most notable difference is care receiver name use (denoted using Cxx), which is significantly higher in transcripts containing complete secure base script knowledge than it is in

transcripts without. In light of the literature review, this suggests those with complete secure base script knowledge are more likely to position the care receiver as a distinct individual and have them as the subject of the story.

Transcripts containing secure base script knowledge contain a significantly higher use of third person female pronouns but significantly lower use of third person male pronouns. This may be an effect of the prompt word lists because the stories all contain a mother as the secure base and the story Doctor's Office centres around a boy named Tommy. The use of female third person pronouns in the context of these transcripts is likely to refer to maternal interaction and comfort, which may account for the higher use by those with secure base script knowledge; the use of male third person pronouns and the name Tommy refer to the care receiver. Transcripts containing complete secure base script knowledge are also less likely to contain the word 'crying'. This appears to contrast with the expectation that people with complete secure base script knowledge would be more likely to acknowledge a distressed child's state. However, it is possible participants with complete secure base script knowledge are predisposed to structuring their stories so that issues are addressed early before care receivers cry. Or their primed story is focussed on communicating caregiver response to the child's need and addressing the need, rather than expressing the child's distress. This would be consistent with caregiver behaviours in those with complete secure base script knowledge.

It is interesting to note the highlighted prompt words comprise half of the Doctor's Office story prompt word set. Use of these prompt words was significantly lower in the transcripts containing complete secure base script knowledge. Apart from the word

‘mother’ which is a prompt word in Baby’s Morning and Doctor’s Office, the highlighted prompt words are all from the Doctor’s Office list. Transcripts containing complete secure base script knowledge do not contain the other prompt words at a rate which is significantly different from those without complete script knowledge. It seems, as in Study 1, there is something distinguishing the Doctor’s Office story prompt word use from the other ASA stories.

As highlighted in Chapter 1: Literature review, section 1.2.1, previous research using LIWC has identified lower use of conjunctions in AAI transcripts categorised as dismissing, than in transcripts categorised as secure or preoccupied. However, Study 2a keyness analysis found no significant difference in the use of conjunctions (e.g., and, also, although) between both groups. There is a lack of statistically significant difference between those transcripts containing secure base script knowledge and those which do not. This might be because transcripts containing incomplete script knowledge encompass features specific to both dismissing and preoccupied language which cancel each other out.

There is also no significant difference in the use of exclusion words (e.g., but, without, exclude) or prepositions (e.g., to, with, above). As explained in Chapter 1: Literature review, section 1.2.1, a high rate of use of exclusion words is associated with more truthful speech and when used with a high rate of conjunctions (e.g., and, also, although) they are associated with a high level of coherence, whilst a high rate of preposition use is associated with concrete information.

Table 12: Keyness analysis showing the significance of difference in the use of specific words between two corpora. MSA transcript scored 4 or more form the target corpus and MSA transcripts scored less than 4 form the reference corpus

Rank	Frequency		Keyness	Effect (DICE)	Keyword
1	37	+	31.65	0.0024	mexx
2	435	+	19.41	0.0281	he
3	30	+	18.93	0.002	essay
4	214	-	33.54	0.0139	s
5	24	-	26.44	0.0016	don
6	129	-	25.22	0.0084	just
7	79	-	20	0.0052	there
8	1	-	19.15	0.0001	fxx
9	13	-	19.05	0.0009	obviously

Note. mexx denotes the mentor was allocated a name by the participant
Fxx denotes a friend was included and named by the participant

Table 12 contains a keyness analysis showing the statistically significant differences between word use frequency in MSA transcripts scored 4 or higher (i.e., containing complete mentoring script content) and those scored less than 4 (i.e., containing no or incomplete mentoring script content). The table presents the AntConc output in its entirety. All keyness statistics are above 15.13, which is the equivalent of $p<.0001$ (Rayson, 2014). In contrast with the ASA stories, the greater use of 'he' by people with complete mentoring script knowledge was the only significant difference in gendered third person pronoun use. The statistical difference in care receiver name use found in the comparison of ASA transcripts was not a feature of the MSA transcripts. However, the allocation of a name to the mentor (denoted by Mexx) occurred statistically more often in transcripts containing complete mentoring script knowledge. Name allocation and use is therefore done across relationship types but varies according to whether it is a secure base or mentoring

relationship. In secure base relationships it was care receiver names that were more likely to be allocated and used, whereas in mentoring relationships it was the names of support providers that were used. The difference may be due to the way the prompt words are constructed because use of the term 'mother' as caregiver is seldom replaced with a name. In contrast people do refer to their mentors by name. It may also have something to do with the undergraduate research population; the majority of whom are unlikely to be care givers but are likely to either be mentees, or to receive encouragement to become a mentee or mentor.

Table 13: Keyness analysis showing the significance of difference in the use of specific words between two corpora. ASA transcripts scored 4 or more form the target corpus and MSA transcripts scored more than 4 form the reference corpus

Rank	Frequency		Keyness	Effect (DICE)	Keyword[1]
18	346	+	69.08	0.028	s
25	1220	+	57.06	0.0919	the
31	1279	+	50.45	0.0959	and
48	50	+	32.39	0.0041	happy
62	78	+	25.73	0.0064	back
68	81	+	23.01	0.0067	got
72	112	+	22.41	0.0092	out
73	86	+	21.27	0.0071	when
100	212	-	75.41	0.017	of
108	55	-	46.92	0.0045	what
121	222	-	28.49	0.0179	in
128	101	-	22.52	0.0082	about
136	110	-	17.56	0.009	really

Note. See appendix Q, sheet 3 for the full list

[1] Story prompt words and words unlikely to have been used across both story types (e.g., crying) have been excluded

Table 13 contains a keyness analysis showing the statistically significant differences between word use frequency in ASA and MSA transcripts scored 4 or higher. Therefore, the ASA transcripts contain complete secure base script content and the MSA transcripts contain complete mentoring script knowledge. All keyness statistics are above 15.13, which is the equivalent of $p<.0001$ (Rayson, 2014). Story prompt words and other words that are unlikely candidates for inclusion in both ASA and MSA stories (e.g., his, crying, riding, shop) have been excluded from this table; the full analysis is available in Appendix Q: Sheet 3.

Drawing conclusions by comparing these two different corpora is difficult because many of the differences are due to differences in the prompt words and the subsequent words they lead to the use of. Despite this, Table 12 suggests that both sets of transcripts vary little in the way words are used. Table 13 shows the definite article ‘the’ (used to describe a noun e.g., a person, place, thing, or idea) and the conjunction ‘and’ (used to combine words, phrases, or clauses) appears more frequently in ASA transcripts containing secure base script knowledge than in stories containing secure mentoring scripts (Merriam-Webster, 2021b, 2021a). There is also greater use of the word ‘happy’ in transcripts related to secure base relationships rather than mentoring relationships which is perhaps the result of the more intimate nature of the interaction and the difference in the type of distress and outcome experienced. The sentiment expressed in transcripts will be examined using sentiment analysis in Studies 2b - 3.

Table 14: Keyness analysis showing the significance of difference in the use of specific words between two corpora. ASA transcripts scored less than 4 form the target corpus and MSA transcripts also scored less than 4 form the reference corpus

Rank	Frequency		Keyness	Effect (DICE)	Keyword
3	292	+	231.15	0.0415	his
7	188	+	128.67	0.0269	him
8	365	+	125.97	0.0512	he
12	738	+	92.36	0.0985	the
28	338	+	37.25	0.0472	was
70	7	-	32.9	0.001	or
73	25	-	27.06	0.0036	what
74	4	-	26.57	0.0006	people
75	115	-	25.02	0.0163	of
76	10	-	24.77	0.0014	them
78	26	-	24.23	0.0038	there
79	6	-	21.04	0.0009	re
80	6	-	20.11	0.0009	are
81	2	-	19.61	0.0003	soon
82	39	-	19.34	0.0056	about

Note. See appendix Q, sheet 4 for the full list

[1] Story prompt words and words unlikely to have been used across both story types (e.g., crying) have been excluded

Story prompt words, words likely to appear in either ASA or MSA stories, and first-person pronouns (e.g., mentor, riding, I) have been excluded from Table 14. The full keyword analysis is available in Appendix Q, sheet 4. It is worth noting that each keyness level on the table is above 15.13, which is the level at which the significance is equivalent to $p<.0001$ (3.84 is the level at which $p<.05$)(Rayson, 2014). The first three statistical differences can be seen in the use of gendered third person pronouns i.e., his, him, he). The reason for this may be that the Doctor's Office prompt words contained the name Tommy,

which is likely to be interpreted as a male name, whereas the mentoring stories are gender neutral. As with the ASA and MSA comparison for transcripts scored 4 or higher, the function word 'the' is used statistically significantly more in ASA stories scored less than 4 than in similar scoring MSA stories. This may result from the common practice of using 'the' to introduce a mother, baby, or doctor whereas a mentor name would not be preceded by 'the'. The difference in use of the word 'was' is more interesting as it has potential for use equally following a name or role (e.g., baby, doctor, mother, Cxx, mentor, Mexx).

The significantly higher use of care recipient names in ASA transcripts scored 4 and above when compared with lower scoring transcripts (see keyword analysis in Table 11) led to a comparison of care recipient name use across ASA stories at each of the seven scores (see Table 15). The keyness analysis did not find a significant difference between the use of mentee names in MSA transcripts when comparing those scored 4 and above with those scored less than 4. But this was explored at the individual story level in case the outcomes differed between stories (see Table 16). The keyness analysis (Table 12) highlighted a significant difference in the way mentor names were used in MSA transcripts and this has therefore been explored across MSA stories (Table 17). The outcomes highlight areas of interest to pursue with a larger number of transcripts and have been used to inform analyses conducted in Study 3.

4.3.3 Frequency: Name use

The ASA story Doctor's Office assigns 'Tommy' as the child's name, therefore this story has not been included in the analysis shown in Table 15. The prompt words provided for Baby's Morning result in most people referring to the child as 'baby'. However, some

participants have named the baby and therefore name use has been examined for this story. The Party is therefore the ASA story most likely to contain a name for the recipient of care. Of the 34 ‘The Party’ transcripts containing complete secure base script knowledge (i.e., were scored 4 or higher) 73.53% contained care recipient names. In contrast 35% of the 20 ’The Party’ transcripts not containing complete secure base script knowledge (i.e., were scored less than 4) contained care recipient names. Examination of Baby’s Morning also reveals greater care recipient name use in transcripts scored 4 or more, when compared with those scored less than 4, despite the relatively infrequent use of names in this story type.

Table 15: Breakdown, by secure base script score, of the number of Baby's Morning & The Party transcripts containing children's names

	ASA scale score	No of 'Baby's Morning' transcripts containing care receiver names / total number of Baby's Morning transcripts for this score	% of 'Baby's Morning' transcripts for this score	Number of 'The Party' transcripts containing care receiver names / total number of 'The Party' transcripts for this score	% of 'The Party' transcripts for this score
Complete secure base script knowledge	7	1/1	100%	0/1	0%
	6	2/4	50%	1/2	50%
	5	3/9	33.33%	10/13	76.92%
	4	2/14	14.29%	14/18	77.78%
Totals	4-7	8/28	28.57%	25/34	73.53%
No or incomplete secure base script knowledge	3	2/14	14.29%	4/11	36.36%
	2	0/9	0%	2/8	25%
	1	0/3	0%	1/1	100%
Totals	1-3	2/26	7.69%	7/20	35%

Note: [1]Doctor's Office transcripts have been excluded because the child's name, Tommy, is pre-determined by the story prompt words

Table 16: Breakdown, by mentoring script score, of mentee name use in MSA transcripts

	MSA scale score	No of 'Writer's Block' transcripts containing mentee names / total number of Writer's Block transcripts for this score	% of 'Writer's Block' transcripts for this score	Number of 'Not Enjoying University' transcripts containing mentee names / total number of 'Not Enjoying University' transcripts for this score	% of 'Not Enjoying University' transcripts for this score	Number of 'Choosing Specialist Modules' transcripts containing mentee names / total number of 'Choosing Specialist Modules transcripts for this score	% of 'Choosing Specialist Modules transcripts for this score
Complete mentoring script knowledge	7	2/2	100%	0/0	0%	0/0	0%
	6	2/3	66.67%	1/2	50%	0/1	0%
	5	1/6	16.67%	7/9	77.78%	3/9	33.33%
	4	7/14	50%	12/21	57.14%	8/23	34.78%
Totals	**4-7**	**12/25**	**48%**	**20/32**	**62.5%**	**11/33**	**33.33%**
No or incomplete mentoring script knowledge	3	4/14	28.57%	3/13	23.08%	5/11	45.45%
	2	2/12	16.67%	3/11	27.27%	3/9	33.33%
	1	1/2	50%	0/0	0%	1/1	100%
Totals	**1-3**	**7/28**	**25%**	**6/24**	**25%**	**9/22**	**40.91%**

Table 17: Breakdown, by mentoring script score, of mentor name use in MSA transcripts

	MSA scale score	No of 'Writer's Block' transcripts containing mentor names / total number of Writer's Block transcripts for this score	% of 'Writer's Block' transcripts for this score	Number of 'Not Enjoying University' transcripts containing mentor names / total number of 'Not Enjoying University' transcripts for this score	% of 'Not Enjoying University' transcripts for this score	Number of 'Choosing Specialist Modules' transcripts containing mentor names / total number of 'Choosing Specialist Modules transcripts for this score	% of 'Choosing Specialist Modules transcripts for this score
Complete mentoring script knowledge	7	2/2	100%	0/0	0%	0/0	0%
	6	2/3	66.67%	1/2	50%	0/1	0%
	5	0/6	0%	2/9	22.22%	3/9	3.33%
	4	1/14	7.14%	1/21	4.76%	1/23	4.35%
Totals	**4-7**	**5/25**	**20%**	**4/32**	**12.5%**	**4/33**	**12.12%**
No or incomplete mentoring script knowledge	3	0/14	0%	0/13	0%	0/11	0%
	2	0/12	0%	0/11	0%	0/9	0%
	1	0/2	0%	0/0	0%	0/1	0%
Totals	**1-3**	**0/28**	**0%**	**0/24**	**0%**	**0/22**	**0%**

33.33% of Choosing Specialist Modules transcripts scored 4 or higher contained mentee names whereas 40.91% of those scored less than 4 contained names (see Table 17). This is the only instance of a higher rate of name use in transcripts scored less than 4 across the 6 stories. Only 25% of Writer's Block and Not Enjoying University transcripts scored less than 4 contained mentee names. This is interesting, because Study 1 (see Tables 4 and 6) found Choosing Specialist Modules was only significantly correlated with Total personal attitudes toward mentoring and Positive mentoring experiences (both of which contain many of the same items, see table 1 for details) and not with actual engagement in mentoring.

In contrast, Table 17 contains a comparison of the rate of mentor name use across each story for each score and shows that no transcripts scored below 4 contained mentor names and that only 14.44% of transcripts scored 4 or above did. The story transcripts containing complete mentoring script knowledge that was most likely to contain mentor names was Writer's Block. However, only 20% of Writer's Block transcripts contained mentor names.

This combination suggests if the mean of Writer's Block and Not Enjoying University were used in place of the mean MSA, mentor and mentee name use may be used to assist the scoring process in instances where transcripts are difficult to score. Examination of the statistical significance of the relationship between story transcripts scores and care receiver, mentee, and mentor name use was therefore conducted.

4.3.4 Pearson correlations: Examining name use frequency

Table 18: Correlations between the level of secure base script content and care receiver name use in ASA transcripts

Pearson correlation[1]				
	Baby's Morning	The Party	BM Cxx[2]	TP Cxx
Baby's Morning	1	.610**	.411**	.271*
The Party	-	1	.386**	.254
BM Cxx	-	-	1	.201

*Note. * p*<.05. ** *p*<.01 (2-tailed).

Post-hoc G*Power analyses and variances for this table are reported in Appendix X, Table 38.

[1] See Appendix J: C21 for SPSS outputs showing Pearson correlations between individual story transcript scores and use of Cxx

[2] Cxx denotes care receiver name use

Following on from the analysis in Table 15, a Pearson correlation was conducted to examine the significance of the trend for increased care receiver name use as individual ASA story score increases (see Table 18). Implicit secure base script knowledge as assessed by Baby's Morning is significantly correlated at the *p*<.01 level with frequency of care receiver name use in Baby's Morning transcripts, and at the *p*<.05 level in The Party transcripts (r (54) =.411, *p*<.01, accounting for 16.89% of the variance and r (54) =.271, *p*<.05, accounting for 7.34% of the variance respectively). Whereas The Party scores are only significantly correlated with care receiver name use in Baby's Morning (r (54) =.386, *p*<.01, accounting for 14.9% of the variance) and not with name use in The Party transcripts. Therefore, an increase in secure base script knowledge in Baby's Morning transcripts is more reliably

correlated with care receiver name use across both stories than the increasing mentoring script knowledge in The Party transcripts is.

Table 29: Correlations between the amount of mentoring script knowledge and mentee name use

Pearson correlation[1]					
	Not Enjoying University	Choosing Specialist Modules	WB Cxx[2]	NEU Cxx	CSM Cxx
Writer's Block	.623**	.692**	.269*	.191	.101
Not Enjoying University	1	.682**	.176	.359**	.171
Choosing Specialist Modules	-	1	.149	.166	-.077
WB Cxx	-	-	1	.454**	.559**
NEU Cxx	-	-	-	1	.489**

*Note. * p*<.05. ** *p*<.01 (2-tailed).

Post-hoc G*Power analyses for this table are reported in Appendix X, Table 38.

[1] See Appendix J: C21 for SPSS outputs showing Pearson correlations between individual story transcript scores and use of Cxx

[2] Cxx denotes mentee name use

Following the analysis in Table 16, the significance of the correlation between the amount of implicit mentoring script knowledge as assessed by individual MSA stories and mentee name use was examined (see Table 19). The keyword analysis (see Table 12) shows no significant difference in mentee name use across the MSA but was not used to examine significance at the level of individual stories and so this was explored. An increase of

mentoring script knowledge in Writer's Block was predictive of an increased use of mentee names in Writer's Block transcripts (r (54) =.269, *p*<.05, accounting for 7.24% of the variance) (see Table 19). Whereas an increase in mentoring script knowledge evident in Not Enjoying University transcripts was associated with an increased use of mentee names in Not Enjoying University transcripts (r (54) =.359, *p*<.05, accounting for 12.89% of the variance). There is no such effect for mentee name use in Choosing Specialist Module transcripts. Once again, there is an interesting difference between Choosing Specialist Modules transcripts and the other two MSA story types.

Table 3: Correlations between the amount of mentoring script knowledge and mentor name use

Pearson correlation[1]					
	Not Enjoying University	Choosing Specialist Modules	WB mexx[2]	NEU mexx	CSM mexx
Writer's Block	.623**	.692**	.536**	.358**	.451**
Not Enjoying University	1	.682**	.240	.334*	.350**
Choosing Specialist Modules	-	1	.188	.219	.285*
WB mexx	-	-	1	.398**	.641**
NEU mexx	-	-	-	1	.460**

*Note. * p*<.05. ** *p*<.01 (2-tailed).

Post-hoc G*Power analyses and variances for this table are reported in Appendix X, Table 38.

[1]See Appendix J: C21 for SPSS outputs showing Pearson correlations between individual story transcripts and use of mexx

[2] Mexx denotes mentee name use

An examination of the correlations between implicit mentoring script knowledge and the allocation of a name to the help-providing mentor (Table 20) was conducted. The mentoring script knowledge in Writer's Block transcripts shared significant positive correlations with the use of mentor names across all three MSA stories: Writer's Block r (54) =.536, p<.01, accounting for 28.73% of the variance, Not Enjoying University r (54) =.358, p<.01, accounting for 12.82% of the variance, and Choosing Specialist Modules r (54) =.451, p<.01, accounting for 20.34% of the variance. Mentoring script knowledge in Not Enjoying University transcripts was only significantly correlated with Not Enjoying University and Choosing Specialist Modules (r (54) =.334, p<.05, accounting for 11.16% of the variance and r (54) =.350, p<.01, accounting for 12.25% of the variance respectively). Whilst mentoring script knowledge in the Choosing Specialist Modules transcripts was only significantly correlated with mentor names appearing in Choosing Specialist Module transcripts r (54) =.460, p<.01, accounting for 21.16% of the variance.

The outcomes presented in Tables 16 - 20 suggest stronger relationships between mentor and mentee name use and mentoring script knowledge as assessed by Writer's Block and Not Enjoying University transcripts, than with Choosing Specialist Module transcripts. This led to an exploration of the relationship between the variable created during Study 1 (mean: WB & NEU) and mentee / mentor name use.

Table 41: Correlations between the amount of mentoring script knowledge (using mean: WB & NEU) and mentee name use

Pearson correlation[1]			
	WB Cxx[2]	NEU Cxx	CSM Cxx
mean: WB & NEU	.251	.297*	.026
WB Cxx	1	.454**	.559**
NEU Cxx	-	1	.489**

*Note. * p*<.05. ** *p*<.01 (2-tailed).

Post-hoc G*Power analyses and variances are reported in Appendix X, Table 38.

[1] See Appendix J: C21 for SPSS outputs showing Pearson correlations between individual story transcripts and use of mexx

[2]Cxx denotes mentee name use

Table 21 shows the mean: WB & NEU score was only significantly correlated with the use of mentee names in the Not Enjoying University transcripts r (54) =.297, *p*<.05, accounting for 8.8% of the variance.

Table 22: Correlations between the amount of mentoring script knowledge (using mean: WB & NEU) and mentor name use

Pearson[1]			
	WB mexx[2]	NEU mexx	CSM mexx
mean: WB & NEU	.444**	.385**	.449**
WB mexx	1	.398**	.641**
NEU mexx	-	1	.460**

*Note. * p*<.05. ** *p*<.01 (2-tailed).

Post-hoc G*Power analyses and variances are reported in Appendix X, Table 38.

[1] See Appendix J: C21 for SPSS outputs showing Pearson correlations between individual story transcripts and use of mexx

[2] mexx denotes mentor name use

In contrast, Table 22 shows the variable mean: WB & NEU is significantly correlated with the use of mentor names in all three mentoring story types: Writer's Block r (54) =.444, *p*<.01, accounting for 19.71% of the variance, Not Enjoying University r (54) =.385, *p*<.01, accounting for 14.82% of the variance, and Choosing Specialist Modules r (54) =.449, *p*<.01, accounting for 20.16% of the variance. Mean: WB & NEU is therefore a better predictor of mentor name use than scores for the individual stories *Not Enjoying University* and *Choosing Specialist Modules* but not as robust as *Writer's Block*: Writer's Block r (54) =.536, *p*<.01, accounting for 28.73% of the variance, Not Enjoying University r (54) =.358, *p*<.01, accounting for 12.82% of the variance, and Choosing Specialist Modules r (54) =.451, *p*<.01, accounting for 20.34% of the variance.

4.3.5 Frequency: Pronoun use

The keyness analysis results led to examination of the relative frequency of pronouns as subjects: I, you, he, she, they, it, we, you (Merriam-Webster, 2022). Pronouns were selected only if they had already featured as differing significantly between corpus examined in the keyness tests. This was because the aim was to gain insights into variations of language content between transcripts containing complete script knowledge and those which do not. Therefore, the two ASA and two MSA sets of transcripts (i.e., those scored less than four and those scored four or more) were used in turn as the target corpus and the British National Corpus (BNC) was chosen each time as the reference corpus. The BNC was used because it was constructed from a wide range of sources (including academic, media, spoken, and fiction) by Oxford University Press between the 1980s and the 1990s (BNC, 2022). It is a balanced corpus, meaning it is considered representative of British English because it contains a wide variety of registers and genres (Foll, 2020). The Lancaster University Log-Likelihood and Effect Size Calculator was used to compare relative frequency of pronouns in the keyness outputs (Tables 11 – 14) with the BNC (Rayson, 2014). The outcomes are presented in Table 23.

Table 23: Comparison of the relative frequency of pronouns between ASA and MSA transcripts scored less than 4, and 4 or more, compared with the BNC

Target word[1]	Target corpus	Frequency in target corpus	%1	Frequency in BNC	%2	+ / -	LL	%DIFF	Bayes	ELL	RRisk	LogRatio	OddsRatio
her	ASA 4 or more	439	1.88	301315	3.01	-	115.93	-37.74	99.81	0.00000	0.62	-0.68	0.62
her	ASA less than 4	150	1.13	301315	3.01	-	206.95	-62.61	190.83	0.00000	0.37	-1.42	0.37
her	MSA 4 or more	464	1.57	301315	3.01	-	427.22	-47.88	231.10	0.00000	0.52	-0.94	0.51
her	MSA less than 4	211	1.36	301315	3.01	-	177.56	-54.91	161.44	0.00000	0.45	-1.15	0.44
she	ASA 4 or more	719	3.07	350294	3.50	-	12.90	-12.29	-.3.22	0.00000	0.88	-0.19	0.87
she	ASA less than 4	290	2.18	350294	3.50	-	77.12	-37.81	61.00	0.00000	0.62	-0.69	0.61
she	MSA 4 or more	810	2.74	350294	3.50	-	52.79	-21.74	36.67	0.00000	0.78	-0.35	0.78
she	MSA less than 4	381	2.45	350294	3.50	-	54.48	-29.96	38.36	0.00000	0.70	-0.51	0.69

he	ASA 4 or more	436	1.86	633413	6.33	-	1023.77	-70.59	1007.65	0.0001	0.29	-1.77	0.28
he	ASA less than 4	365	2.72	633413	6.33	-	344.84	-56.72	382.72	0.00001	0.43	-1.21	0.42
he	MSA 4 or more	435	1.47	633413	6.33	-	1600.50	-76.76	1584.38	0.00002	0.23	-2.11	0.22
he	MSA less than 4	156	1.00	633413	6.33	-	1079.66	-84.14	1063.54	0.00002	0.16	-2.66	0.15
his	ASA 4 or more	358	1.53	404811	4.05	-	481.10	-62.21	464.98	0.00001	0.38	-1.40	0.37
his	ASA less than 4	292	2.19	404811	4.05	-	135.00	-45.82	119.68	0.00000	0.54	-0.88	0.53
his	MSA 4 or more	166	0.56	404811	4.05	-	1402. 00	-86.12	1385.88	0.00002	0.14	-2.85	0.13
his	MSA less than 4	51	0.33	404811	4.05	-	898.21	-91.89	822.09	0.00001	0.08	-3.62	0.08
him	ASA 4 or more	205	0.88	152045	1.52	-	75.42	-42.39	59.30	0.00000	0.58	-0.80	0.57
him	ASA less than 4	188	1.41	152045	1.52	-	1.07	-7.12	-15.05	0.00000	0.93	-0.11	0.93

him	MSA 4 or more	93	0.31	152045	1.52	-	418.75	-79.30	402.63	0.00001	0.21	-2.27	0.20
him	MSA less than 4	41	0.26	152045	1.52	-	246.42	82.64	230.30	0.00000	0.17	-2.53	0.17

Note. The output was calculated using Lancaster University Log-likelihood effect size calculator (Rayson, 2014)

[1] Only pronouns identified in the keyness comparisons in tables 11 – 14 were examined

01 is the frequency of target pronoun use in the target corpus

02 is the frequency of target pronoun use in the BNC

%1 and %2 show the relative frequencies in the target corpus and the BNC

+shows a relative overuse of the target pronoun in the target corpus (when compared with the BNC)

- shows a relative underuse of the target pronoun in the target corpus (when compared with the BNC)

The keyness lists may be taken to suggest pronouns are used unusually frequently. However, the results presented in Table 23 show they are used with less frequency in all four sets of transcripts (i.e., ASA and MSA scored less than 4, ASA and MSA scored more than 4) than they are in the BNC. This means the chosen pronouns are used with greater frequency in naturally occurring British speech regardless of whether people have complete script knowledge. This is perhaps surprising, given each story prompt word list positions people and a relationship at the centre of the story. Therefore, the information gleaned about specific name use is specific to ASA and MSA transcripts and may be irrelevant to the use of pronouns in naturally occurring speech in secure base or mentoring interactions. That said, although the results cannot be extrapolated to naturally occurring speech, they provide a marker of the measure.

Significant correlations from Study 1 and 2a have been logged on a spreadsheet for ease of comparison (Appendix S). It shows the mean: WB & NEU is the score which shares the greatest number of significant correlations with actual mentoring engagement, constructive attitudes to mentoring, mentee name use, and mentor name use. Therefore, in combination, the Study 1 and 2a outcomes suggest mean: WB & NEU is partially influenced by implicit attachment scripts, that it is an effective assessment of an implicit mentoring script which influences engagement in mentoring, constructive attitudes toward mentoring, and language use about mentoring relationships. In addition, MSA transcripts on the borderline of 3 and 4 which are difficult to score and contain a mentor name are more likely to be scored 4 than 3, particularly if they are longer transcripts containing a broad range of vocabulary. If replicated and applied to the scoring process, these findings have potential to reduce the MSA measure by one third and contribute new approaches to scoring borderline

transcripts. These new and novel findings could make the scoring process easier for non-attachment specialists and therefore make the MSA available to professional mentoring schemes and education contexts, taking it into the realm of applied mentoring.

4.4 Discussion

Research questions 3 and 4 inform Study 2, the questions are:

3. Are specific language or sentiment patterns associated with the level of script knowledge transcripts contain?

4. Are there patterns within ASA and MSA transcripts which could be used to simplify the transcript scoring process? (Studies 2 – 3)

Study 2a comprises the examination of language patterns of ASA and MSA data; sentiment patterns are examined in the next two studies (Studies 2b and 2c). The tendency for transcripts containing complete script knowledge to be longer than those without was unexpected. Based on computerised analysis of AAI transcripts (see Chapter 1: Literature review, section 1.2.1) it was anticipated transcripts containing complete script knowledge would be of medium length in comparison to a mix of long and short transcripts scored less than 4. Had this been the case, the set of transcripts containing complete script knowledge and the set without would have been of roughly equivalent length. However, the result supports the finding of previous researchers that longer, more detailed transcripts are associated with a greater number of experiences and therefore complete script knowledge. ASA and MSA scores may be (at least partly) determined by verbal literacy skills; although a regression cited in the literature review found neither verbal ability nor general narrative

skills accounted for transcript length (Mikulincer et al., 2009). Further analysis of individual word use was conducted to find whether this was the case. It led to the consideration of differences in name use between participants with and without secure base and mentoring script knowledge, because name allocation and use is unlikely to be determined by vocabulary or verbal literacy.

The keyness analysis identified significantly greater use of care receiver names by those with complete secure base script knowledge. There was not the same relationship between mentee name use and complete mentoring script knowledge. This was surprising considering one third of ASA stories contain no participant allocated care recipient names (Doctor's Office) and so was discounted, one third of the stories were unlikely to contain care recipient names (Baby's Morning), but all three of the MSA stories were conducive to the inclusion of mentee name use. The effect was therefore examined at individual story level to find whether outcomes were consistent across them.

At the individual story level, an increase in secure base script knowledge as assessed by Baby's Morning was significantly correlated at the $p<.01$ level with increased frequency of care receiver name use in Baby's Morning transcripts. It was correlated at the $p<.05$ level in The Party transcripts. Whereas an increase in The Party scores was only significantly correlated with increased care receiver name use in Baby's Morning and not with name use in The Party transcripts. Therefore, secure base script knowledge in Baby's Morning transcripts was more reliably correlated with the amount of explicit care receiver name use across both stories than the script knowledge in The Party transcripts. An increase in mentoring script knowledge in Writer's Block and Not Enjoying University transcript was

predictive of a significant increase in the use of mentee names in the corresponding story type. However, there was no such effect for mentee name use in Choosing Specialist Module transcripts. Interestingly, the use of mentee names in Choosing Specialist Module transcripts was more likely in transcripts scored less than 4 than those scored 4 or more.

These variations could be because the more intimate nature of attachment relationships increases the likelihood of name use, particularly of someone who is in a vulnerable state and in need of caregiving. However, although complete secure base script knowledge was associated with more frequent allocation and use of care receiver names (denoted by Cxx in Baby's Morning and The Party) there was less frequent use of the care receiver name (Tommy) allocated in the Doctor's Office prompt word set. This suggests some participants with complete secure base script knowledge have an implicit bias toward the personalisation of support in attachment relationships. Perhaps the anomalies with Doctor's Office across studies 1 and 2a suggest interference from another script (e.g., medically related), which disrupts the emphasis on name use. Or perhaps the pre-allocation of care receiver name reduces personalisation by participants, and therefore the likelihood of participants using the name unless instructed to by the prompt word list.

Outcomes suggest people with complete secure base script knowledge are more likely to use names in ASA transcripts, than those with complete mentoring script knowledge are in MSA transcripts. The transference of this to naturally occurring interactions would be an interesting investigation. The reason for the differences in name use between assessment type is unknown but might be attributable to the difference in intimacy between the relationship types. Interestingly, ASA transcripts without secure base

script knowledge are less likely to contain care receiver names than MSA transcripts not containing mentoring script knowledge. Importantly, no mentors were named by participants with incomplete secure base script knowledge; however more mentees were named in Choosing Specialist Module transcripts if they were scored less than 4. So, less differentiation in mentee name use occurred in mentoring relationships than occurred with care receiver name use in attachment relationships; but mentor name use only occurred in transcripts containing complete mentoring script knowledge.

The anomaly in mentee name use seen in Choosing Specialist Module transcripts may be indicative of a wider issue with the prompt words used to prime mentoring scripts. As discussed in Chapter 3: Study 1, section 3.4, there were changes made to this list of prompt words for cultural reasons which may have reduced the reliability of the prompt word set. The higher rate of mentee name use in Choosing Specialist Modules transcripts containing incomplete mentoring script knowledge, when compared to those with complete script knowledge, is interesting because: 1. This is the only instance of a higher rate of participant allocated name use in transcripts scored less than 4 across the 6 stories; and 2. because in Study 1, Choosing Specialist Modules was only significantly correlated with Total personal attitudes toward mentoring and Positive mentoring experiences (both of which contain many of the same items) and not with actual engagement in mentoring. The spreadsheet in Appendix S highlights Study 1 also found excluding this story and using the variable mean: WB & NEU was associated with the highest number of significant correlations with assumptions conducive to mentoring relationships and active engagement in mentoring. Also evident from Appendix S is that mean: WB & NEU is significantly correlated with the use of mentor names in all three mentoring story types, and that it is a

better predictor of mentor name use than Not Enjoying University and Choosing Specialist Modules.

Previous analysis of pronoun use in AAI transcripts found inconsistent outcomes across studies (see sections 1.2.1 and 1.2.3). Although Study 2 found differences in the way some pronouns (i.e., her, she, he, his, him) were used in transcripts scored either less than 4, or 4 or more, when a comparison was done with the content of these transcripts and the BNC, they were used with less frequency in the transcripts than in natural British speech.

As with Study 1, the research population for this study is small and the demographic features were restricted (particularly in terms of education, parental status, age, and gender). However, the overall corpus was 81,792 words, which is not small for a corpus linguistics study (see Chapter 2: Methodology, section 2.4 for greater detail). As a result of the small participant numbers, the suggested reduction of the MSA to two stories would need to be examined using a larger population, with greater diversity and recruited from settings outside of universities. Using AntConc to examine ASA and MSA transcripts is a novel approach. Therefore, no benchmark for outcomes exists. Further studies should therefore be conducted to find whether the results are replicated and to confirm validity and reliability of the changes to prompt word sets for UK participants.

4.5 Conclusion

Research questions 3 and 4 informed Study 2:

3. Are specific language or sentiment patterns associated with the level of script knowledge transcripts contain? (Studies 2a – 2c)

4. Are there patterns within ASA and MSA transcripts which could be used to simplify the transcript scoring process? (Studies 2 – 3)

Study 2a used AntConc for an initial exploration of whether significant differences exist between the language used in ASA and MSA transcripts scored 4 or above and less than 4. Subsequent examinations of sentiment will be conducted in Studies 2b and 2c.

The following examinations were made:

1. A total word count and an examination of mean word tokens and types contained in transcripts scored below 4 and 4 and above, and differences between individual story types.

2. Four keyness analysis to assess whether any words are used with significantly higher or lower frequency according to score and transcript type.

3. Examination of care receiver name use across ASA stories, and the use of mentee and mentor names across MSA stories.

4. Examination of the correlations between mentee and mentor name use with an increase in mentoring script knowledge as assessed by the variable mean: WB & NEU.

5. Comparison of the frequency of pronoun use in transcripts scored less than 4 and 4 or more with frequency in the BNC.

In summary, a greater range of vocabulary and longer transcripts were associated with transcripts scored 4 and above. This raised the question of whether greater script knowledge was at least partially accounted for by linguistic skills. However, examination of the statistical difference in how individual words are used between those with and without complete script knowledge revealed few differences and seemed not to be attributable to linguistic skills.

The keyness analysis revealed statistical differences in the way names were allocated and used and this prompted an analysis at the individual story level. Baby's Morning and The Party transcripts scored 4 or above were significantly more likely to contain care receiver names. In contrast, the pre-allocated care receiver name, Tommy, in Doctor's Office was used significantly less by those with complete secure base script knowledge. Perhaps participants with complete secure base script knowledge were more likely to construct care recipients as lifelike individuals and the pre-allocated name disrupted that process. An alternative explanation is that there were intrusions from a script other than a secure base relevant one (e.g., a medical script) which caused interference in the recall of the secure base script during the telling of Doctor's Office stories.

It is striking mentor names were not used in any MSA transcripts scored less than 4. MSA transcripts scored 4 or above were more likely to contain mentee names in Writer's Block and Not Enjoying University transcripts than those scored less than 4. Oddly, Choosing Specialist Modules transcripts scored less than 4 were more likely to contain mentee names than those scored 4 or above. This may be due to adjustments made to the prompt word list for cultural reasons. However, it follows a trend from Study 1, where removing Choosing

Specialist Modules from the MSA score improved the correlations with engagement in mentoring and constructive attitudes toward mentoring.

The mean of the Writer's Block and Not Enjoying University scores (mean: WB & NEU) was significantly correlated with the use of mentor names in all three mentoring story types. It was a better predictor of mentor name use than the mentoring script knowledge embedded in the individual stories Not Enjoying University and Choosing Specialist Modules. In Study 1 the mean: WB & NEU was a more reliable predictor than the mean MSA of engagement in mentoring and constructive attitudes toward mentoring relationships. Therefore, further investigations are recommended to ascertain whether this novel version could be validated and used as a mentoring script assessment.

Overall, findings suggest complete secure base script and mentoring knowledge are both correlated with transcripts containing higher wordcounts (word tokens) and containing a greater number of unique words (word types). There was a greater likelihood of participants allocating and using care receiver names if they had complete secure base script knowledge. Whereas complete mentoring script knowledge was more strongly associated with the use of mentor names and, in some instances, was correlated with use of mentee names. Anomalies with Doctor's Office and Choosing Specialist Modules explored in Study 1 have been reflected in Study 2a outcomes and have been discussed in Chapter 3: Study 1, sections 3.4, Chapter 4: Study 2a, sections 4.3.2, 4.3.3, and 4.4. A comparison of pronoun use (specifically, her, she, he, his, him) in the BNC with ASA and MSA transcripts revealed they were used with less frequency in the transcripts than in natural speech, regardless of score and transcript type. Therefore, this avenue was not pursued.

When viewed together Study 1 and 2a outcomes suggest the mean: WB & NEU is:

1. Partially influenced by the secure base script.

2. Likely to be an effective assessment of an implicit mentoring script.

3. Associated with engagement in mentoring, constructive attitudes toward mentoring, a greater likelihood of mentor name use in all three types of mentoring stories, and mentee name use in Not Enjoying University transcripts.

Application of these findings could reduce the MSA assessment by one third and be used to develop the current approach to scoring to include the examination of name use. This would:

1. Help reduce the time taken to complete the assessment.

2. Assist in the scoring of transcripts on the boarder of scores 3.5 and 4, thereby making the scoring process easier for non-attachment specialists.

3. Be a step toward making the MSA available to applied settings, such as professional mentoring schemes, counselling, and education settings.

4. Be a step toward making the measure a useful tool for the recruitment of mentors, and the identification of their specific training needs. It also offers the potential to support mentees with targeted mentoring script training.

Chapter 5 Study 2b: The relationship between the level of sentiment expressed in transcripts and secure base script knowledge

Research questions 3 and 4 inform Study 2b:

3. Are specific language or sentiment patterns associated with the level of script knowledge transcripts contain? (Studies 2a – 2c)

4. Are there patterns within ASA and MSA transcripts which could be used to simplify the transcript scoring process? (Studies 2 – 3)

This study (2b) applied the use of SEANCE to the ASA data collected for Study 1 to find whether the amount of negative or positive sentiment in transcripts (having taken negation into account) was significantly associated with the level of secure base script knowledge and/or with story type. This was done by:

1. Comparing the grouped negative and positive sentiments and individual sentiments contained in each ASA story type.

2. Finding whether the level of any specific sentiment (or group of sentiments) expressed in transcripts was associated with an increase or decrease in transcript score.

3. Comparing the level of negative and positive sentiment groups in transcripts containing complete secure base script knowledge with those that do not.

This approach was taken in an attempt to identify trends which could be used to inform the ASA scoring process. Information of this kind could make the ASA accessible for

those without experience as attachment researchers but who are involved in relevant therapeutic occupations. For instance, it could be used to identify gaps in the implicit knowledge of the secure base script and provide targeted training to improve the relational skills of those training to be mental health workers, social workers, early years professionals, medical professionals, carers, and counsellors.

5.1 Study 2b

5.2 Method

5.2.1 Design

The following analyses were conducted to achieve the three stated aims of Study 2b:

1. Pearson correlations to compare the level of negative and positive grouped and individual sentiments expressed in each story type as ASA scores increase.

2. The outcome of aim 1 informed a regression analysis. The aim of this cross-sectional part of the study was to identify to what degree particular sentiments contribute to the ASA score.

3. ASA transcripts were combined into two groups: those containing a mean score of less than 4 (Group 1) and those with a mean score of 4 or more (Group 2). The amount of expressed groups of positive and negative sentiment in each group was compared. This was repeated using the mean: BM & TP in place of the mean ASA score. This element of the study was a between subject design with the independent variable being group type and the dependent variable being negated sentiment score. The data did not meet the assumption of normal distribution and therefore the non-parametric Mann-Whitney U test (with Bonferroni applied) was used to find whether the medians across the two groups differed significantly.

The following hypotheses were created:

1. An increase in secure base script scores will be associated with a significant decrease in positive and negative groups of sentiment expressed in all ASA transcript types.

2. Regression analysis will reveal sentiment expressed in transcripts makes a significant negative contribution to secure base script knowledge.

3. Transcripts categorised into Group 2 using mean ASA scores will contain significantly less sentiment than those belonging to Group 1.

5.2.2 Participants

Secondary data was used from Study 1 and therefore participant details remain the same as Studies 1 and 2a. See Chapter 2: Methodology, section 2.3.1 for detailed participant and ethics information.

5.2.3 Materials

Sentiment analysis of option 2 ASA transcripts from Study 2a were adapted for use in this study (Appendix T), see Chapter 4: Study 2a, sections 4.2.3, 4.2.4 and 4.2.4.1. They were analysed using the Sentiment Analysis and Cognition Engine (SEANCE) version 1.2.0 (Macintosh OS X) on a MacBook air. Computer assisted text analysis is discussed in Chapter 2: Methodology, section 2.5.3 and sentiment analysis using SEANCE is described in Chapter 2: Methodology, section 2.5.3.2.

In summary, SEANCE uses word categories to give comments either a positive or negative value as a means of quantifying words suggesting the sentiment, cognition, and social order of transcript content (Crossley et al., 2018; Kristopher & Crossley, 2018). No

domain specific dictionary was available in SEANCE, so The National Research Council Canada (NRC) Word-Emotion Association Lexicon (referred to as EmoLex in SEANCE) was chosen (Crossley et al., 2017, 2018; Kristopher & Crossley, 2018). The EmoLex dictionary database is suitable because of its previous use in email and fiction texts; the ability to use it with a relatively small corpus; the information it provides about social positioning; cognitive perspective; semantic categories and polarities; and because it was trained on large corpora (Mohammad & Turney, 2010; Weismayer et al., 2021). It assesses the frequency of words aligned with Plutchick's basic emotions: anger, anticipation, disgust, fear, joy, sadness, surprise, and trust, plus groups of words belonging to those sentiments that can be categorised as either negative or positive emotions (Crossley et al., 2017; Mohammad & Turney, 2013; Plutchik, 2001). For instance, the word loveable belongs to the categories joy, trust, and positive; so the statement 'she told her she was loveable' would receive a score for each of those categories. Mohammad & Turney (2013) argue this approach ensures the emotions assessed are a mix of positive and negative, the underlying theory is well-founded in psychological research, and the selection is a superset of emotions proposed by other researchers. The SEANCE analysis was presented in Excel and SPSS was used to conduct each statistical analysis

For the present research, the positive and negative group options were used wherever possible, rather than individual sentiments, because examination of each individual emotion with the small sample size risks increasing the likelihood of a Type I error (i.e., incorrect rejection of the null hypothesis) (Coolican, 2019c). Importantly, SEANCE has a negation feature which scans for negation words (e.g., not) in the three words before a word suggesting a feeling. The negation tool was used in each sentiment examination. This

prevented statements such as ‘she was not sad’ being categorised as negative, and means the resulting negated score was a more accurate assessment of the sentiment expressed than the score for the sentiment alone, or for components of sentiments.

5.2.4 Procedure

The option 2 ASA transcripts from Study 2a were adapted for use in this study (Appendix T). They were prepared for SEANCE analysis by changing the file names to the participant number. The txt files were run through the SEANCE programme per story type with the EmoLex dictionary and Negation Control selected. The SEANCE excel spreadsheets showing the output is contained in each relevant story file in Appendix T.

Appendix U contains the study codebook and Appendix J: D12 contains the descriptive statistics carried out for this study. Pearson correlations were used to examine the relationship between the level of secure base script knowledge and transcript sentiment score. Following this a regression was used to find whether specific sentiments (or groups of sentiments) were predictors of secure base script knowledge. The original intention was to use *t*-tests to compare the means of the ASA groups with mean sentiment scores. However, several of the tests of normality indicated the assumption about normal distribution could not be fully met. This might be because word use frequency is distributed along a Zipfian curve rather than a bell curve (Brezina, 2018). Therefore, the decision was taken to run the non-parametric Mann-Whitney U test. A Bonferroni correction was applied and the fewest number of examinations possible were chosen to reduce the risk of a Type I error (i.e., incorrect rejection of the null hypothesis) resulting from the repeated tests (Coolican, 2019b, 2019c). This process required the *p* value of .05 to be divided by six because six

comparisons were made. The calculation resulted in the revised *p* value of <.0083. Whilst this approach brought the advantage of reducing the risk of a Type I error it increased the risk of Type II (i.e., incorrect rejection of the hypothesis) (Coolican, 2019d).

5.3 Results

Data analysis was conducted in three stages (sentiment negation was accounted for at each stage):

1. Pearson correlations to find whether an increase in individual story scores, the mean ASA scores, or the mean of Baby's Morning and The Party correlated significantly with a change in the level of expressed sentiment.

2. Two multi-linear regressions to find to what extent each sentiment of interest contributed to ASA scores.

3. Mann-Whitney U tests to compare whether the amount of grouped (positive and negative) sentiment differed according to whether mean ASA scores were within the Group 1 or 2.

5.3.1 Pearson correlations: ASA sentiment analysis

Table 24 contains each significant correlation between positive and negative grouped sentiment expressed in all three transcript types with mean ASA scores, the mean: BM & TP, and individual ASA story scores. It was initially decided to examine the correlations with terms grouped according to whether they were positive or negative because the number of transcripts was relatively small and doing this greatly reduced the number of tests run (thereby reducing the risk of a Type I error). Following this, variables were created for the mean ASA story SEANCE scores for the negated sentiments joy, trust,

positive, anger, disgust, fear, sadness, and negative. These were also examined to find whether it would be advisable to explore the influence of individual sentiment types in a regression (see Table 25). The transcript scores for the correlations lie along a scale from 1 – 7; with 1 being unusual secure base assumptions, complete secure base script knowledge emerging at 4 and rich descriptions of secure base scripts at 7. Group 1 ASA and mean: BM & TP contains transcripts per participant with a mean score lower than 4. Group 2 contains means transcript scores of 4 and above.

Table 24: Significant correlations between an increase in secure base script scores and the level of sentiment expressed in transcripts

Pearson					
	Transcript scores scaled from 1 – 7[1]				
Sentiment	Mean ASA	Baby's Morning	Doctor's Office	The Party	Mean: BM & TP
BM[2] neg 3[3] negative	-.557**	-.550**	-.436**	-.339*	-.501**
BM neg 3 positive	-.390**	-.475**	-	-.354**	-.465**
DO neg 3 negative	-.463**	-.351**	-.537**	-	not examined
DO neg 3 positive	-	-	-	-	not examined
TP neg 3 negative	-	-	-	-	-
TP neg 3 positive	-	-	-	-	-

*Note. * p*<.05. ** *p*<.01 (2-tailed).

Post hoc G*Power analyses and variances are contained in Appendix X, Table 38

[1]See Appendix J: C24 for SPSS output

[2]BM indicates that the sentiment was analysed in Baby's Morning transcripts, DO refers to Doctor's Office, and TP to The Party transcripts, mean: BM & TP is the mean of Baby's Morning and The Party transcript scores

[3]neg 3 indicates that negation was accounted for

Each significant correlation on Table 24 is negative, regardless of whether the sentiments are negative or positive. Each significant correlation is at the $p<.01$ level except for the relationship between an increase in the level of negative sentiment in Baby's Morning transcripts and a reduction of secure base script knowledge in The Party transcripts. The level of negative sentiment in Baby's Morning transcripts shares significant negative correlations with secure base script knowledge in each of the ASA scores examined. The relationship with the Mean ASA scores ($r(54) = -.557$, $p<.01$, accounting for 31.02% of the variance) and with Baby's Morning secure base scores ($r(54) = -.550$, $p<.01$, accounting for 30.25% of the variance) are moderate. The relationship with Doctor's Office secure base score ($r(54) = -.436$, $p<.01$, accounting for 19.01% of the variance), The Party secure base script score ($r(54) = -.339$, $p<.05$, accounting for 11.49% of the variance) and the Mean: BM & TP score ($r(54) = -.501$, $p<.01$, accounting for 25.1% of the variance) are weak (Coolican, 2019a). Positive sentiment content in Baby's Morning transcripts also share significant weak correlations with each type of secure base script score. The exception being Doctor's Office transcript scores, where no significant correlation existed. In each instance the relationship is weak: Mean ASA $r(54) = -.390$, $p<.01$, accounting for 15.21% of the variance; BM $r(54) = -.475$, $p<.01$, accounting for 22.56% of the variance; TP $r(54) = -.354$, $p<.01$, accounting for 12.53% of the variance; and mean: BM & TP $r(54) = -.465$, $p<.01$, accounting for 21.62% of the variance.

In summary, both positive and negative sentiment content of Baby's Morning transcripts shared significant negative correlations with an increase in script score (and therefore an increase in secure base script knowledge). Therefore, as secure base script knowledge increases across ASA story types the level of positive and negative sentiment

expressed in Baby's Morning transcripts and the level of negative sentiment in Doctor's Office transcripts decreases. There was no significant relationship between Doctor's Office scores and the level of positive sentiment expressed in Baby's Morning transcripts. The two correlations between the amount of negative sentiment in Baby's Morning transcripts and the mean ASA score and Baby's Morning transcript score had moderate variance. Each of the other relationships were weak.

The level of negative sentiment in Doctor's Office transcripts also shared significant negative correlations with an increase in the following transcript scores: mean ASA, Baby's Morning, and Doctor's Office (mean ASA r (54) =-.463, p<.01, accounting for 21.44% of the variance; BM r (54) =-.351, p<.01, accounting for 12.32% of the variance; and DO r (54) =-.537, p<.01, accounting for 28.84% of the variance). Each of these variances were weak. However, there were no significant correlations between positive sentiment in Doctor's Office and any transcript scores. There were no significant correlations between positive or negative sentiment expressed in The Party transcripts with an increase in secure base script knowledge in any ASA transcript type.

The outcomes suggest as secure base script knowledge specific to some transcript types increases, some sentiment expression decreases. The greatest effect was observed in transcripts specific to mother-baby interactions and to a lesser extent with an older child and not observed in stories specific to a teenager. This is consistent with emotional regulation when acting as a secure base and is explored further in the discussion. Further research using the Baby's Morning prompt word set but replacing 'mother' with terms denoting other family members and non-family members (e.g., father, grandfather, aunt,

nanny, key worker) could enable comparison of secure base assumptions about main caregivers and significant others.

Variables were created for the mean SEANCE scores for each ASA story for the negated sentiments joy, trust, positive, anger, disgust, fear, sadness, and negative. These were used to find whether it would be worthwhile to explore the influence of individual sentiment types in a regression (see Table 25 for sentiment types).

Table 25: Significant correlations between an increase secure base script score and the mean level of individual sentiments across the ASA transcripts

Pearson					
		Transcript scores scaled from 1 - 7			
Sentiment	Mean ASA	Baby's Morning	Doctor's Office	The Party	Mean of Baby's Morning and The Party
Mean[2] ASA negated[3] joy	-.515**	-.545**	-	.415**	not examined
Mean ASA negated trust	-.441**	-.448**	-.334*	-	not examined
Mean ASA negated positive	-.428**	-.492**	-	-.292*	not examined
Mean ASA negated anger	-.296*	-.279*	-.373**	-.274*	not examined
Mean ASA negated disgust	-.439**	-.418**	-.354**	-.274*	not examined
Mean ASA negated fear	-	-	-	-	not examined
Mean ASA negated sadness	-.614**	-.572**	-.519**	-.377**	not examined
Mean ASA negated negative	-.591**	-.526**	-.566**	-.328*	not examined

*Note. * p*<.05. ** *p*<.01 (2-tailed).

Post hoc G*Power analyses are presented in Appendix X, Table 38

[1]See Appendix J: C24 for SPSS output

[2]Mean indicates the mean sentiment scores for BM, DO, and TP transcripts was used

[3]negated indicates negation was accounted for

The mean sentiment score of all three ASA story types was calculated to give the mean ASA sentiment score. Of all the sentiments examined, it is only fear which shared no significant correlations with any ASA transcript score (see table 25). Each significant correlation is negative, and Doctor's Office is the transcript score least likely to be associated with a significant change in sentiment content score. Of the six significant correlations The Party transcript score shares with sentiments, only two of those are at the $p<.01$ level (i.e., joy and sadness). Only negated anger, disgust, sadness, and negative are negatively associated with an increase in all the examined score types at a significant level. Each of these is a negative sentiment, except for negative, which is a collection of negative sentiments. The relationship between expressed sentiment and the Mean: BM & TP score was not examined. This was because the variable was created to enable examination of the potential to exclude Doctor's Office from the mean ASA, and therefore examining it alongside the mean sentiments containing outcomes from Doctor's Office would be inappropriate. Furthermore, an increase in Doctor's Office transcript score was more likely to share a significant negative correlation at the $p<.01$ level with mean sentiment scores than The Party transcript score for the correlations contained in Tables 24 and 25.

The variances for each significant score on Table 25 is contained in Table 26. Examination of these reveals moderate significant negative relationships between the mean ASA sadness content with the mean ASA score and Baby's Morning transcript score (Coolican, 2019a). Therefore, there was a moderate relationship between the decrease in sadness across a participant's three ASA transcripts with an increase in their mean ASA score (accounting for 37.7% of the variance) and Baby's Morning transcript score (accounting for 32.72% of the variance). This suggests that a decrease in the sadness

expressed across the three ASA transcripts was associated with an increase in secure base script knowledge in Baby's Morning transcripts.

There were moderate significant negative relationships between the mean negative sentiment calculated from scores across the transcript types with the mean ASA scores and Doctor's Office transcript scores. Therefore, as the mean amount of negative sentiment across a participant's three ASA transcripts decreased their ASA and Doctor's Office scores increased (accounting for 32.04% of the variance). All other significant relationships were weak.

Table 26: Variances for the significant correlations contained in Table 25

Pearson					
	Transcript scores scaled from 1 - 7				
Sentiment	% Mean ASA	% Baby's Morning	% Doctor's Office	% The Party	Mean of Baby's Morning and The Party
Mean[1] ASA negated joy	26.52**	29.7**	-	17.22**	not examined
Mean ASA negated trust	19.44**	20.07**	11.16*	-	not examined
Mean ASA negated positive	18.32**	24.21**	-	8.53*	not examined
Mean ASA negated anger	8.88*	7.78*	13.91**	7.51*	not examined
Mean ASA negated disgust	19.27**	17.47**	12.53**	7.51*	not examined
Mean ASA negated fear	-	-	-	-	not examined
Mean ASA negated sadness	37.7**	32.72**	29.94**	14.21**	not examined
Mean ASA negated negative	34.92**	27.67**	32.04**	10.76*	not examined

Note. The significance of the Pearson correlation is denoted for each variance (* p<.05. ** p<.01 (2-tailed). All significant correlations are negative.

[1]This score is the mean of the relevant negated sentiment score in BM, DO and TP transcripts

Hypothesis 1 predicted an increase in secure base script knowledge would be significantly correlated with decreasing levels of positive and negative sentiment across story types and the mean ASA. This was supported to some extent, although the effect was inconsistent across story and sentiment types. Fear was the only sentiment not subject to any change. Based on these findings, a regression analysis was conducted to explore to what extent sentiments act as predictor variables for secure base script knowledge. Table 26 highlights sadness is the sentiment with the highest variance scores across all stories and it is therefore of particular interest.

5.3.2 Regression analysis: Sentiment contributions to Mean ASA score variance

The significant correlations led to two regression analyses with the aim of determining to what extent, individual sentiments contribute to secure base script knowledge. Understanding the influence of sentiment content in ASA transcripts on secure base script knowledge has potential to inform relationship-specific training for those working in therapeutic or family scenarios. The mean ASA score was chosen as the measure of secure base script knowledge because it is the standardised and accepted measure of secure base knowledge and because the mean ASA and Baby's Morning are the variables most often correlated with sentiment at the $p<.01$ level (see Tables 24 to 26).

The ASA was significantly correlated with both the mean level of negated joy (-.515) and trust (-.441) across ASA story transcripts at the $p.<.01$ level. Both sentiments were selected for the first regression examining the linear relationship between the level of expressed sentiment and ASA score because they are considered positive sentiments (negative sentiments will be examined in the next regression), share a significant negative

correlation with the mean ASA score, and provide a way of examining the assumption arising from attachment theory that attachment relevant script knowledge is associated with affect regulation (see section 1.2.3.4).

Normality assumptions were not violated. A multiple regression was performed using the 'Enter' method, with the mean ASA as the dependent variable and the mean ASA sentiment scores for joy and trust (having taken negation into account) as the independent variables (Appendix J: R3 and R4 contains the SPSS outputs). The unstandardised regression coefficients (*B*) were 6.244 for the constant, -29.753 for the mean ASA negated joy score, and -15.025 for the mean ASA negated trust score. Whilst the Beta values were -.400 for the joy score and -.167 for the trust score. There were no outliers among the residuals more than 1 standard deviation from the mean. Collinearity was satisfactory with both values being .532. Heteroscedasticity was not problematic. A regression coefficient of *R*.529 was found, with R^2 = .280 and R^2 adjusted = .252. *R* for regression was significantly different from zero, *F* (2,51) = 9.906. For consistency with previous regressions the R^2 value was selected due to its slightly less optimistic, corrected predictive value (Pallant, 2020a). Only the negated mean level of joy was a significant contributor to the model (mean joy *p*<.02, mean trust *p*<.3). The model accounted for 25.2% of the mean ASA score with only joy making a significant contribution.

Another multilinear regression analysis specific to the contribution of negative sentiment was conducted to complete the investigation of the contribution sentiment expressed in transcripts makes to mean ASA score. The mean ASA shared significant negative correlations with sadness (-.614) and disgust (-.439) at the *p*.01 level, and anger (-

.296) at the p<.05 level, but it shared no significant correlation with fear. Fear was included despite its lack of significant relationship with the mean ASA in case it made a significant contribution to the mean ASA score as part of a group of negative sentiments.

Normality assumptions were not violated. A multiple regression was performed using the 'Enter' method, with the mean ASA score as the dependent variable and the negated mean ASA sentiment scores for sadness, fear, disgust, and anger as the independent variables (Appendix J: R3 and R4 contains the SPSS outputs). The unstandardised regression coefficients (B) were 5.372 for the constant, 2.827 for anger, -54.615 for disgust, 10.427 for fear, and -34.724 for sadness, whilst the Beta values were .21 for anger, -.233 for disgust, .095 for fear, and -.536 for sadness. There were no outliers among the residuals more than 1 standard deviation from the mean. Collinearity was satisfactory with values for anger being .557, disgust .720, fear .790, and sadness being .727. Heteroscedasticity was not problematic. A regression coefficient of R = .654 was found, with R^2 = .427 and R^2 adjusted = .381. R for regression was significantly different from zero, F (4,49) = 9.146. In keeping with previous regressions the adjusted R^2 value was selected. Only sadness made a significant contribution to the model (p.<001). The model accounted for 38.1% of the mean ASA score with only sadness making a significant contribution.

The Pearson R correlations and regression outcomes suggest the sentiments sadness and joy as assessed by SEANCE sentiment scores made statistically significant contributions to secure base script knowledge as assessed by the mean ASA score. Specifically, a reduction in joy and trust accounted for 25.2% of the variance in mean ASA score (only joy made a significant contribution), and a reduction in anger, disgust, fear, and sadness accounted for

38.1% of the mean ASA score (only sadness made a significant combination). This partially supports hypothesis 2; that an increase of positive and negative sentiment expressed in transcripts would be significantly associated with a decrease in secure base script knowledge. However, the significant effect is specific to only two sentiments rather than across all of them.

For completeness, the next stage assesses whether transcripts allocated to Group 1 contain significantly more sentiment than those in Group 2.

5.3.3 Mann-Whitney U Tests: Comparison of sentiment expressed in grouped ASA transcripts

Mann-Whitney U tests were conducted to find whether the two ASA groups differ in the amount of sentiment contained in transcripts. A between studies examination was completed to compare the median sentiment values of transcripts in ASA Group 1 with those contained in Group 2 (see Table 27). The same test was repeated using the mean: BM & TP group means (see Table 28). For the examination of ASA groups the application of Bonferroni reduced the *p* value to <.0083 to protect against Type I errors arising from repeated examinations for this small sample group. The independent variable was the ASA group type, and the dependent variables were the sentiment scores denoting the amount of positive or negative sentiments contained in each type of transcript. The transcripts examined were Baby's Morning, Doctor's Office, and The Party.

Table 27: A comparison of median sentiment scores for ASA Group 1 and Group 2 transcripts

Mann-Whitney U						
Story & sentiment (accounting for negation)	Mann-Whitney U	Z score (Standardised Test Statistic)	Asymptoic Sig. (2-sided test)	Median values for Group 1 (with Mean ASA scores of less than 4) (significant results only)	Median values for Group 2 (with Mean ASA scores of 4 or more) (significant results only)	Effect size (r = z / square root of N) (for significant results only)
BM neg 3 positive	288.0	-1.323	.186	-	-	-
BM neg 3 negative	250.0	-1.981	.048	-	-	-
DO neg 3 positive	386.0	.372	.710	-	-	-
DO neg 3 negative	229.0	-2.344	.019	-	-	-
TP neg 3 positive	269.0	-1.652	.098	-	-	-
TP neg 3 negative	229.0	-2.344	.019	-	-	-

Note. Only significant findings are displayed, the significance level is .0083 due to Bonferroni correction for 6 comparisons

See Appendix J: MWU1 for SPSS output

Table 27 contains all the Mann-Whitney U test outcomes. None of which were significant when .0083 was used as cut off point for the *p* value. Therefore, the median scores were not compared. A further Mann-Whitney U test was run to find whether an increase in sentiment in Baby's Morning or The Party were associated with secure base script knowledge (or its absence) as assessed by the mean: BM & TP group. The Bonferroni adjustment for four examinations resulted in a *p* value of .0125. A greater likelihood of a significant result was anticipated because most significant relationships between transcript sentiment level and script scores were observed in Baby's Morning Transcripts).

Table 28: A comparison of median sentiment scores in mean: BM & TP Group 1 and Group 2 transcripts

Mann-Whitney U						
Story & sentiment (with negation accounted for)	Mann-Whitney U	Z score (Standardised Test Statistic)	Asymptoic Sig. (2-sided test)	Median sentiment values for Group 1 (with mean: BM & TP scores less than 4) (n=27)[2]	Median sentiment values for Group 2 (with mean: BM & TP scores 4 or more) (n=27)[2]	Effect size (r = z / square root of N)[1]
BM neg 3 positive	257.0	-1.860	.063	-	-	-
BM neg 3 negative	215.0	-2.587	.010	.056	.430622010	-.35
TP neg 3 positive	284.0	-1.393	.164	-	-	-
TP neg 3 negative	386.0	.372	.710	-	-	-

See Appendix J: MWU1 for SPSS output

[1]Only significant findings at the $p<.0125$ level have been displayed

The Mann-Whitney U Test reveals transcripts in Group 2 contain more negative sentiment than those in Group 1. The effect size is .35 and is therefore moderate according to Cohen's classification of effect sizes (Pallant, 2020b; Sullivan & Feinn, 2012). According to this classification .1 is small, .3 is moderate, and .5 and above is large. There were no other significant findings. Therefore, secure base script knowledge as assessed by inclusion in Group 2 using the mean of Baby's Morning and The Party scores was associated with greater negative sentiment content at the $p<.01$ level (when negated sentiments have been removed from the analysis).

The third hypothesis (that mean ASA scores belonging to Group 2 would have lower levels of sentiment than those belonging to Group 1) was unsupported. There were no

significant effects other than higher levels of negative sentiment in Baby's Morning transcripts in Group 2 of mean: BM & TP. This is an interesting finding because the correlations and regressions identified the amount of sentiment in transcripts increases as ASA scores decreases; it is explored further in the discussion.

5.4 Discussion

This study examined sentiment contained in ASA transcripts as a contribution to answering research questions 3 and 4:

3. Are specific language or sentiment patterns associated with the level of script knowledge transcripts contain? (Studies 2a – 2c)

4. Are there patterns within ASA and MSA transcripts which could be used to simplify the transcript scoring process? (Studies 2 – 3)

The following outcomes were hypothesised (negation was taken into account in each instance):

1. An increase in secure base script scores will be associated with a significant decrease in positive and negative groups of sentiment expressed in all ASA transcript types.

2. Regression analysis will reveal sentiment expressed in transcripts makes a significant negative contribution to secure base script knowledge.

3. Transcripts categorised into Group 2 using mean ASA scores will contain significantly less sentiment than those belonging to Group 1.

The outcomes are presented here sequentially and followed by an overarching discussion of the combined findings. The level of negative and positive grouped sentiment in Baby's Morning transcripts shared significant negative correlations with secure base script knowledge across most of the scores examined (i.e., Mean ASA, mean: BM & TP, Baby's Morning, Doctor's Office, and The Party). The one exception was the lack of statistically significant relationship between positive sentiment in Baby's Morning transcripts and Doctor's Office transcript score. There were no significant relationships between grouped positive and negative sentiment in The Party transcripts and secure base script scores for any of the ASA variables. Grouped negative sentiment in Doctors Office transcripts shared a correlation with the scores for mean ASA, Baby's Morning, and Doctor's Office. This effect therefore appears to be a feature most strongly associated with the interactions between mother and baby in Baby's Morning.

Following this, mean sentiment scores were calculated for all three ASA Stories to give a mean ASA sentiment score for each sentiment. An examination was conducted to find whether changes in individual positive and negative sentiments were significantly correlated with changes in transcript scores. The positive sentiments examined were joy and trust, and the negative ones were anger, distrust, fear, and sadness. The mean for negative and positive groups were also examined. Of these, only fear shared no significant correlations with any ASA transcript score. Baby's Morning transcript scores and the mean ASA score shared significant negative correlations with all the remaining sentiments. Doctor's Office

transcript scores were not significantly correlated with joy or the positive component in transcripts, and The Party transcript scores were not significantly correlated with trust. Higher levels of joy, trust, anger, distrust, sadness, positive affect, and negative affect were significantly associated with lower Baby's Morning transcript and mean ASA scores. Sadness stood out as having the highest variance for significant values across all stories (see Table 26).

A decrease in anger, disgust, sadness, and negative sentiment expressed in transcripts was associated with a significant increase in all the examined ASA score types. An increase in mean ASA score was associated with a reduction in all sentiments except fear. Fear was the only sentiment to share no significant relationships with any transcript scores. Therefore, the first hypothesis was partially supported; the effect was inconsistent across sentiments and transcript types.

These outcomes led to a regression being conducted to find the degree to which individual sentiments contributed to secure base script knowledge. This revealed a statistically significant relationship between a reduction of the expression of combined joy and trust in transcripts and an increase in secure base script knowledge. A decrease in these two sentiments accounted for 25.2% of the variance in mean ASA scores. However, only joy made a statistically significant contribution. This reinforced the previous finding that an increase in the amount of joy expressed in ASA transcripts was significantly associated with a reduction of secure base script knowledge. Examination of negative sentiments (anger, disgust, fear, and sadness) produced a similar outcome. There was a statistically significant relationship between a decrease in these sentiment scores as a group and an increase in

secure base script knowledge; they accounted for 38.1% variability. However, only sadness made a significant contribution. Therefore, reductions in joy and/or sadness were associated with a significant increase of secure base script knowledge as assessed by the mean ASA. Thus, the second hypothesis was partially supported; the significant effect was only observed for joy and sadness.

The next step was to find whether there were significant differences in sentiment content for participants with mean ASA scores according to whether they belonged to Group 1 or Group 2. Mann-Whitney U tests were conducted to find whether the two groups differed in the amount of sentiment they contained. Transcripts were grouped according to their mean ASA score. No significant differences were found between the amount of sentiment expressed in transcripts and group allocation. The same test was repeated using the mean: BM & TP groups in place of the ASA groups. The Mann-Whitney U Test revealed Baby's Morning transcripts in Group 2 contained significantly more negative sentiment than those in Group 1. Therefore, in contrast with previous findings, complete secure base script knowledge was significantly correlated with more negative sentiment content at the $p<.01$ level when using mean: BM & TP. The third hypothesis was therefore rejected, the null hypothesis was also rejected because of the contradictory outcomes between both groups.

Results specific to the relationship between the amount of secure base script knowledge and expressed sentiment in Baby's Morning transcripts are interesting. However, the relationships are not mirrored in other story transcripts. This partially explains why mean: BM & TP Group 2 was associated with a statistically significant result with sentiment whereas mean ASA Groups were not.

Setting aside the group difference temporarily, the correlations and regressions suggest transcripts containing more secure base script knowledge were associated with lower levels of sentiment content. Previous computerised analysis of AAI transcripts using LIWC found secure-autonomous transcripts contained a higher level of general emotion and negative emotion words than other transcripts (see Chapter 1: Literature review, section 1.2.1). However, preoccupied transcripts contained more anger than dismissing or secure autonomous transcripts and dismissing transcripts contained the least emotion. The difference may arise from the different nature of the AAI and ASA transcripts. In summary, AAI transcripts are the result of a semi-structured interview about particular life experiences and explores events which may have been the source of trauma for some participants. In contrast the ASA primes a participant's secure base script and prompts them to tell a fictitious story which contains the script.

Perhaps participants producing ASA transcripts containing more secure base script knowledge were more matter of fact about addressing adverse situations. It is possible they concentrated on the process of getting the child back on track with their emotions, rather than over-emphasising the emotional aspect or neglecting it altogether. This mirrors caregiving behaviours, for instance greater childhood comprehension of their own emotional state is associated with maternal ability to identify their child's emotional state accurately, to discuss emotion, and with greater competence in emotional regulation (Waters et al., 2010). It is also supported by the finding that secure mothers are more likely than insecure ones to engage with their infants when co-constructing negative stories (Guttmann-Steinmetz et al., 2003). Furthermore, complete maternal secure base script

knowledge has been found to share significant positive correlations with their child's participation in a shared memory narrative task, and an increased number of references to positive and negative emotional states by mother and child during the task (Bost et al., 2006). These combined outcomes suggest complete secure base script knowledge may be associated with maternal ability to identify and moderate their own emotional state, and to teach the skill to their children.

The difference may therefore be the result of unconscious or conscious emotional regulation (or a combination of both). For instance, those with less secure base script knowledge may be more susceptible to emotional reactions arising from the ASA priming task, or equally susceptible but less able to moderate their emotions during the task and therefore they are expressed in transcripts. The only sentiment not significantly correlated with any secure base script score is fear. This might be because the obstacles faced in stories did not invoke fear in participants, whereas the other assessed emotions were triggered. Emotional regulation requires the ability to attend to emotionally laden environmental factors (including language) to understand one's own response, their causes, potential consequences, the most likely emotional reaction and actions of others, and then to take appropriate action (Eisenberg et al., 2005). ASA participants may need to regulate any arising emotions in this way during the experimental procedure alongside telling stories containing complete script knowledge. The combined cognitive load may partially account for the less extensive vocabulary and reduced length of transcripts associated with incomplete script knowledge (see Chapter 4: Study 2a, sections 4.3 and 4.3.1).

Parental meta-emotion refers to an individual's awareness of their own and their child's emotional state, acceptance of those emotions and the ability to coach the child to understand their own emotions (Hooven et al., 1995). In this context, coaching refers to discussing emotions with the child, the circumstances leading to the emotions experienced, and strategies for dealing with them. Of interest is the finding that parents who are aware of their own sadness and coach their children when they are angry have children who are physiologically less stressed than those who do not (e.g., lower baseline heart rates, better vagal tone, and lower levels of cortisol) (Hooven et al., 1995). Longitudinal examination of the relationship between parental meta-emotion and their child's health has potential to inform current understanding about the significant relationship between having difficulty identifying one's own and others' emotional states and an increased likelihood of experiencing a range of conditions including physical, mental, and psychosomatic symptoms, substance use disorders, and clinical eating disorders (Martins et al., 2010; Stellern et al., 2023; Wallis et al., 2018).

The level of participant meta-emotion may account for the significant relationship between lower levels of expressed sadness and higher secure base script knowledge. Participants with complete secure base script knowledge may have an inclination toward greater self-awareness and emotional regulation, particularly in the expression of sadness when mentally positioning themselves as a secure base. If so, this effect may be akin to the relationship between greater participant meta-cognition and secure AAI scores. This could partially account for the increased likelihood of those with complete secure base script knowledge also producing AAI transcripts categorised as secure (George et al., 1996). In this

context metacognition refers to the participant's ability to be aware of their own thinking and avoid lapses in their ability to self-monitor during the AAI interview.

This account is aligned with the suggestion that secure caregivers reflect a child's emotions back at them in a moderated form which facilitates the development of the child's reflective functioning (Fonagy & Target, 1997). Reflective functioning can be reliably assessed in AAI transcripts and has been found to predict the quality of attachment, emotional reasoning, and mental health in infants yet to be born to the AAI participants (Fonagy, Steele, Steele, et al., 1991; Steele & Steele, 2008) However, it doesn't explain the variation in relationships between the level of sentiment and transcript scores according to the ASA stories used. This is because the emotional containment associated with reflective functioning should be expected across each age range of the care receiver in the three mother-centred ASA stories. It might be because stories centred around babies provoke a stronger (and therefore more difficult to manage) reaction than those specific to older children. This would reflect the adaptations to responses secure bases make as those they care for age and need greater independence. Another reason may be that the inclusion of a doctor in the Doctor's Office prompt word set and friends in The Party prompt dilute the response by introducing a nonspecific other role (Dykas et al., 2006). Either or both of these factors could account for the graduated reduction in sentiment across the stories according to child age range. Research assessing the impact of care receiver age and the inclusion of nonsignificant others has potential to inform the design of new prompt word sets. It would also inform the creation of differentiated guidance regarding the use, strengths, and limitations of each prompt word set.

A regression analysis of factors included in the Difficulties in Emotion Regulation Scale (DERS), found parental impulsivity (i.e., the extent to which parents report feeling overwhelmed by emotions), accounts for up to 54% of their school aged children's emotional regulation (Aguilera et al., 2021). This suggests greater parental emotional regulation is associated with greater emotional regulation in school age children. However, a significant relationship was not found between parental impulsivity and adolescent children. It's possible the direction of emotion regulation is not just from parent to child and the child becomes less responsive with age, but it may also be the case that parents feel less emotional about routine difficulties as their children age. This may partially account for the change in expressed sentiment observed as care receiver age increases across prompt word sets (see Table 24). Perhaps participants feel less concern, and therefore less emotion, when the prompt word set contains a teenager rather than a baby. This would align with the need of caregivers to facilitate infant exploration as they age and develop. It may also partially explain why negative sentiment in Doctor's Office transcripts share significant negative correlations with Baby's Morning, Doctor's Office, and the mean ASA scores, but not The Party. The Doctor's Office story centres around a school aged child who sustains an injury and needs medical attention, the significant correlations suggest participants were managing negative sentiments during the story telling procedure.

The contradictory finding, that negative sentiment expressed in Baby's Morning transcripts was significantly associated with inclusion in Group 2 when the mean BM &TP scores were used in place of the mean ASA, is particularly interesting. It may be due to one of several reasons, such as:

1. The mean: BM & TP score is the mean of Baby's Morning and The Party transcript scores. If one transcript score is less than 4 it could contain higher levels of sentiment than the other score. This distribution effect could skew the outcome.

2. Research suggests talking about negative withdrawal emotions (i.e., the negative emotions apart from anger, because anger is an approach emotion) at the same time as experiencing the emotion changes the experience from withdrawal to approach (Gottman et al., 1996). This results in a greater sense of control and improves parasympathetic control of autonomic reactions. Participants with transcripts producing mean scores that are around the border scores of 3 and 4 may require greater effort to do so than participants with higher scores. They may therefore unwittingly express negative emotions as a means of managing them.

3. The outcome may simply be an effect of the relationship between Baby's Morning and sentiment.

The outcomes raise interesting questions about whether participant unconscious and/or conscious responses to the various ASA prompt word sets differ. And, if so, whether the variations are consistent across participants. If future research finds this to be the case, it could inform the story prompt word sets researchers select for their studies. For instance, some studies may benefit from a mean ASA score most relevant to pre-school age children and so use prompt word sets purely reflecting that age range but with different types of carers. Whilst other studies may need to have a mean ASA score reflective of attachment

relationships across the lifespan which exclude nonspecific others from the prompt word set. This flexibility is unusual for one measure and is a strength of the ASA.

A further point for consideration is the impact of the 7-point scale and the process used to score the secure base script content of ASA transcripts. A 7-point scale is not particularly fine grained but decimal points can be used during the ASA scoring process (conventionally they increase at .25 of a point). This increases the number of potential scores for each story from 7 to 28. Scores of 4 contain weak evidence of secure base script knowledge and may vary little from scores of 3.5; it is occasionally difficult to score transcripts around this point. The moderation process requires the mean score to be calculated if there is a difference of less than 1 between the original scorer and the moderator. So potentially, a score of 4 and another of 3 could be moderated at 3.5. This would influence the mean ASA score and change the Group the participant is allocated to, thereby influencing group correlation with sentiment level. Also, the ASA score of 4 is specific to the secure base script knowledge construct, and sentiment level may have a different tipping point between those who have complete secure base script knowledge and those who do not. For instance, differences between sentiment level and groups of ASA transcripts scored 1-3, 3-5, and 5-7. For these reasons analysing the relationship between sentiment level and transcript scores would not produce reliable insights and has not been conducted.

It appears from the regressions that high levels of joy and sadness are predictors of lower scores. Study 2a and 2b outcomes suggest low levels of joy and sadness, longer

transcripts, broader vocabulary, and care receiver name use are all associated with higher transcript scores. This will be explored further in Study 3 using a fresh data set.

Some questions arise from Study 2b which are beyond the scope of this thesis but are recommended for future research:

- What happens in the minds of participants when they are primed using the ASA methodology? Are they self-moderating or taking up defensive positions to manage stress or anxiety caused by the task? Or do they take on a parental perspective and manage their own stress for the sake of the care receiver in the scenario? Does the type of caregiver impact on scores in ways that can be identified for each set of ASA prompt word set? Does the age or gender identification of the care receiver or care giver in the scenario effect participant responses? Are differences consistent across cultural, geographical, socioeconomic, gender, and other self-identified participant groups?

- It is important to remember the sentiment contained in transcripts is not necessarily reflective of felt sentiment but a verbal response to storytelling task. Study outcomes cannot be used to make inferences about felt sentiment. It is important to note there may be variations in the relationship between felt and expressed emotions across different populations. An examination of the relationship between felt and expressed sentiment and ASA outcomes could provide insights into participant experiences of the ASA process. This is an important consideration if it is to be applied outside of research settings because vulnerable groups may be affected in unexpected ways.

Like the previous study, this one was limited by low participant numbers and lack of diversity in the research population, however this was a large corpus, appropriate to this study (see Chapter 2: Methodology, section 2.4 for details). There is also the issue that this was the first exploration of sentiment in ASA transcripts meaning there was no scope for identifying whether the findings are unique to the population studied or reliable. To address this as far as possible, the same exploration of the relationship between expressed sentiment and script knowledge will be presented using MSA transcripts and will form the next chapter. In addition, replication of some thesis findings relevant to Baby's Morning and Doctor's Office transcripts will form the basis for Study 3 in Chapter 7.

5.5 Conclusion

Study 2 has been designed to address research questions 3 and 4, which are:

3. Are specific language or sentiment patterns associated with the level of script knowledge transcripts contain? (Studies 2a – 2c)

4. Are there patterns within ASA and MSA transcripts which could be used to simplify the transcript scoring process? (Studies 2 – 3)

The aims and outcomes of Study 2b will be presented, followed by potential theoretical explanations for the combined outcomes. There were three parts to this study: The first compared negative and positive collections of sentiments contained in each ASA story type. The comparison revealed Baby's Morning transcripts were most likely to share a significant correlation with the amount of sentiment expressed in transcripts. In each instance the correlation was negative, regardless of whether sentiment was positive or

negative. Examination of the correlations between the amount of individual sentiment in transcripts (i.e., joy, trust, anger, distrust, fear, and sadness) and secure base script knowledge, show that only fear shared no significant correlation. The other sentiments each shared a significant negative correlation. The greatest variance of all sentiments was observed for sadness. Contrary to expectations, an increase in secure base script knowledge was reliably associated with a significant reduction of positive and negative sentiments expressed only in Baby's Morning transcripts. A significant reduction in negative sentiment expressed in Doctor's Office transcripts was associated with an increase in transcript scores (except The Party), and there were no significant correlations between The Party transcript sentiment content and transcript scores.

The second aim was to identify trends in sentiment level which could be used to simplify the ASA scoring process, with a view to informing the scoring of borderline 3.5 and 4 transcripts. Regression analysis suggested lower levels of sadness and joy expressed in ASA transcripts were associated with higher secure base script knowledge. Therefore, as the level of sadness and joy decreased there was a significant increase in the mean ASA score.

The third aim was to compare the level of negative and positive groups of sentiments in Group 1 and Group 2 transcripts. Transcripts were grouped according to their mean ASA score. Group 1 contained transcripts with mean scores of less than 4, and Group 2 contained transcripts with mean scores of 4 or more. The same test was repeated using the mean: BM & TP group means. Mann-Whitney U tests were conducted but found the median of neither ASA group were associated with significant changes in sentiment level. However, mean: BM & TP Group 2 was associated with a statistically significant increase in

negative sentiment in Baby's Morning transcripts. This means Baby's Morning transcripts containing complete secure base script knowledge contained more negative sentiment than those not containing script knowledge. This finding contrasts with the previous ones in this study.

Several potential reasons for these outcomes have been presented in the discussion. In summary, it may be that participants with a greater level of secure base script knowledge have higher levels of meta-emotion associated with an inclination toward self-awareness and emotional regulation. This is worthy of further investigation. It is also possible that differences in sentiment levels seen across stories arise from cognitive bias toward greater discomfort at a baby's observable distress than an older child's expressed distress. The association between a higher level of negative sentiment in Baby's Morning transcripts and Group 2 of the mean: BM & TP group was unexpected and may be due to score distribution or borderline score effects. However, there was no significant effect for groups when the standard measure of secure base script (the mean ASA) was examined for sentiment.

The combination of outcomes from Study 2a and 2b suggest transcripts containing the following features are more likely to contain complete secure base script knowledge and therefore be scored 4 or more:

1. Low levels of joy.

2. Low levels of sadness.

3. Longer transcripts: ASA transcripts scored 4 or more contain a mean of 269.2 words, compared with 195.1 words in transcripts scored less than 4.

4. Broader vocabulary: ASA transcripts scored 4 or more contain a mean of 139.2 unique word types, compared with 107.8 in transcripts scored less than 4.

5. Care receiver name use in Baby's Morning and The Party transcripts (although care receiver name is not necessarily to be expected).

The studies conducted to date also suggest an increase in mean ASA score is:

1. Significantly less likely to be associated with reported positive attitudes to mentoring than the mean MSA score.

2. Not associated with actual mentoring experiences in the same way the mean: WB & NEU score is.

3. Associated with longer transcripts containing broader vocabulary.

4. Associated with a greater likelihood of care receiver name use in Baby's Morning and The Party transcripts.

5. Associated with a decrease in expressed joy and sadness.

This confirms the ASA is specific to assessing secure base script knowledge. In contrast, the MSA is specific to assessing mentoring script knowledge, is predictive of positive attitudes to mentoring, and is associated with actual mentoring experiences. Of the ASA stories examined, Baby's Morning transcripts have become a point of interest in their own right, because:

1. The correlational relationship between Baby's Morning transcript scores and Doctor's Office, The Party, and the mean ASA scores have a higher variance than other combination of score types (Chapter 3, Study 1).

2. Despite the distinction between the ASA and MSA outcomes, the mean ASA and number of previous mentoring relationships accounts for 52.8% of the variability in MSA score. Of the three ASA scores, Baby's Morning and The Party make significant contributions to the mean MSA score, with Baby's Morning making the greatest contribution (Chapter 3, Study 1).

3. An increase in Baby's Morning transcript score is more reliably correlated with the amount of explicit care receiver name use across Baby's Morning and The Party transcripts than other story scores (Chapter 4, Study 2a).

4. The Baby's Morning transcript score is the ASA story score most likely to share a significant negative correlation with positive and negative groups of sentiment and with individual sentiment (Chapter 5, Study 2b).

5. When mean: BM & TP is used in place of the ASA to categorise participant transcripts into Groups 1 and 2, Baby's Morning transcripts are associated with higher levels of negative sentiment in Group 2 (Chapter 5, Study 2b).

These points of interest will be explored using novel Baby's Morning transcripts, obtained from the USA to find whether the features are consistent across different researchers and cultures; this exploration will form Study 3. Study 2c will be an examination of the relationship between mentoring script knowledge and sentiment. It will mirror the analyses conducted in the present chapter but will use the MSA data already analysed in Study 1.

Chapter 6 Study 2c: The relationship between the level of sentiment expressed in transcripts and mentoring script knowledge

6.1 Study 2c

Sentiment analysis using The Sentiment Analysis and Social Cognition Engine (SEANCE) is described in Chapter 2: Methodology, section 2.5.3.2 and explored further in Chapter 5: Study 2b, section 5.2.3. Study 2c has been designed to find whether any specific sentiment patterns are associated with mentoring script knowledge as a contribution to addressing research questions 3 and 4, which are:

3. Are specific language or sentiment patterns associated with the level of script knowledge transcripts contain? (Studies 2a – 2c)

4. Are there patterns within ASA and MSA transcripts which could be used to simplify the transcript scoring process? (Studies 2 – 3)

In order to answer research questions 3 and 4, Studies 2a and 2b were conducted with a view to identify trends which could be used to inform the scoring process and make the ASA of use to applied situations. This study will apply the same methodology to the examination of MSA data. Outcomes specific to the MSA could provide insights into the differences between the expressed sentiment in transcripts according to prompt word features and provide further evidence for the specificity of the ASA and MSA.

Consistent with Study 2b, sentiment negation has been taken into account for each examination. The aims are to:

1. Compare the negative and positive collections of sentiments contained in each MSA story type.

2. Examine whether expressed sentiment contributes to mentoring script knowledge.

3. Compare the level of negative and positive sentiments in transcripts containing mentoring script knowledge with those that do not.

6.2 Method

6.2.1 Design

Study 2b outcomes found significant relationships between the levels of expressed sentiment and transcript scores to be associated with younger care recipients. It was suggested this could be due to recipient age or the inclusion of nonspecific other in the prompt word lists. The MSA care receivers are undergraduate students and the mentors may be categorised as nonspecific others. These propositions have informed the following hypotheses:

1. There will be no significant relationship between a change in MSA scores and a change in expressed sentiment level.

2. Regression analysis will not identify a significant relationship between any sentiment and mentoring script knowledge.

3. Fluctuation in sentiment level will not be predictive of which MSA group mean scores are allocated to This is reflective of the finding in Study 2b, which found no significant relationship between sentiment level and ASA group.

6.2.2 Participants

Secondary data was used from Study 1 and therefore participant details remain the same as Studies 1, 2a, and 2b. See Chapter 2: Methodology, section 2.3.1 and Appendix C for detailed participant information.

6.2.3 Materials

Sentiment analysis using The Sentiment Analysis and Social Cognition Engine (SEANCE) is described in Chapter 2: Methodology, section 2.5.3.2 and explored further in Chapter 5: Study 2b, section 5.2.3. The materials are identical to those used for Study 2b; the only exception being that MSA transcripts gathered for Study 1 were used in place of the ASA transcripts (see Chapter 5: Study 2b, section 5.2.3).

6.2.4 Procedure

Transcript preparation and the procedure are the same as that used for Study 2b; the only exception being that MSA transcripts gathered for Study 1 were used in place of the ASA transcripts. A description of transcript preparation is provided in Chapter 5: Study 2b, section 5.2.4. Appendix J: D13 contains the descriptive statistics carried out for this study and Appendix U contains the codebook.

6.3 Results

Data analysis was conducted in three stages (in each instance sentiment negation was accounted for):

1. Pearson correlations to find whether an increase in individual story scores, the mean MSA score, or mean: WB & NEU correlated significantly with the level of sentiment expressed in transcripts.

2. Two multi-linear regressions to find to what extent each sentiment of interest contributed to MSA scores.

3. Mann-Whitney U tests to compare whether the amount of expressed sentiment differed according to whether transcripts belonged to Group 1 or 2.

6.3.1 Pearson correlations: MSA sentiment analysis

Consistent with Study 2b, grouped sentiment and mean sentiment scores were examined with each MSA story and the mean MSA. There were no significant outcomes, and the results have therefore not been presented. However, the SPSS output is available in Appendix J: C25. The lack of significant outcome is interesting considering the results obtained in Study 2b which found the sentiment contained in the ASA story relevant to a teenager (The Party) shared no significant correlations with any ASA transcript score. Outcomes therefore appear to reinforce at least one of the following propositions posed under the influence of Study 2b outcomes:

1. Participant emotional response and regulation results in higher sentiment scores in transcripts containing younger care receivers and reduces as the care receiver increases in age.

2. The inclusion of significant others in prompt word sets is associated with lower emotional responses than those solely focussed on interactions between mothers and their children.

To ensure consistency with Study 2b, two regression analyses were conducted to explore whether specific sentiments act as predictor variables for mentoring script knowledge.

6.3.2 Regression analysis: Sentiment contributions to Mean MSA score variance

Two regression analyses were conducted with the aim of finding whether, and to what extent, any sentiments contribute to mentoring script knowledge. The mean MSA score was chosen as the measure of mentoring script knowledge. This was because it is the standardised measure of mentoring script knowledge and to ensure consistency of approach with Study 2b (which used the mean ASA). It is hypothesised sentiment will not be an influential factor in mentoring script knowledge. Nonetheless, individual and grouped positive and negative sentiments were examined to be certain. The sentiment variables were the mean sentiment scores for each transcript type for each variable (having taken negation into account).

Two multi-linear regressions were performed using the 'Enter' method, with the mean MSA as the dependent variable and groups of mean sentiment scores calculated across each of the sentiment types as the independent variables (see SPSS outputs in Appendix J: R3 and 4). A regression was selected because a linear relationship between the amount of sentiment expressed in transcripts and transcript score is under investigation. In the first instance, the positive sentiments of joy and trust were examined, in the second instance the negative sentiments anger, disgust, fear, and sadness were examined. Negation was accounted for in all instances. Neither of these examinations revealed statistically significant relationships (*p*s>.05). This provides further support for the argument that the

ASA and MSA assess distinct constructs and supports the hypothesis that individual sentiment level would not make a significant contribution to MSA group allocation.

For completion, the next stage assessed whether participant transcripts with mean MSA scores belonging to Group 1 contain more sentiment than those in Group 2. This examination was repeated to find whether group allocation based on the mean: WB & NEU score was associated with a significant change in sentiment level.

6.3.3 Mann-Whitney U tests: Comparison of sentiment expressed in grouped MSA transcripts

Mann-Whitney U tests were conducted to find whether the two MSA groups differed in the amount of sentiment contained in transcripts. A between studies examination was completed to compare the medians of those transcripts in the mean MSA Group 1 and Group 2. Initially, these were examined with the positive sentiment group and negative sentiment group for each MSA transcript type (see Study 2b Table 27 for the ASA version of this examination). A Bonferroni adjustment was made because six groups were examined, this reduced the *p* value to .0083 (as it did in Study 2b). In keeping with the hypothesis there were no significant results. The same test was repeated using the mean: WB & NEU group means. As hypothesised, there were no significant results. The SPSS output containing these examinations is available in Appendix J: MWU2.

These two outcomes provide additional evidence suggesting the ASA and MSA are distinct assessments. It also suggests the significant relationship between sentiment content in Baby's Morning and complete secure base script knowledge when the mean: BM & TP was used may result from:

1. A distribution effect.

2. A feature specific to Baby's Morning transcripts.

3. The age of the care recipient.

4. Differences in emotional responses to priming about difficulties addressed within mentoring relationships compared with attachment relationships.

6.4 Discussion

Study 2c has been designed to find whether any specific sentiment patterns are associated with mentoring script knowledge as a contribution to addressing research question 3 and 4:

3. Are specific language or sentiment patterns associated with the level of script knowledge transcripts contain? (Studies 2a – 2c)

4. Are there patterns within ASA and MSA transcripts which could be used to simplify the transcript scoring process? (Studies 2 – 3)

This chapter presents the final analysis completed using MSA data for this thesis. Therefore, the outcomes relevant to the measure have been collated to provide an overview of MSA outcomes in Study 2. No other work has examined the MSA at the individual story level, or the relationship between MSA transcripts and sentiment level. This thesis is the first publication examining the relationship between ASA and MSA outcomes in

such depth. What follows is a summary of the novel findings about the MSA gleaned from Studies 1, 2a, 2b, and 2c, followed by a discussion of the potential reasons for the outcomes and possible application of them to research and applied contexts.

The present study (2c) aimed to conduct analyses comparable with those carried out of ASA transcripts in Study 2b. The aim being to provide novel information about the relationship between mentoring script knowledge and sentiment content in MSA transcripts. Studies 1 and 2b informed the hypotheses for the present study (2c). The hypotheses were:

1. There will be no significant relationship between a change in MSA scores and a change in expressed sentiment level.

2. Regression analysis will not identify a significant relationship between any sentiment and mentoring script knowledge.

3. Fluctuation in sentiment level will not be predictive of which MSA group mean scores are allocated to This is reflective of the finding in Study 2b, which found no significant relationship between sentiment level and ASA group.

The three hypotheses were supported. Study 2c outcomes are particularly interesting when viewed in the context of Studies 1, 2a, and 2b, and make novel contributions to current understanding about the ASA and MSA. Study 2b concluded with the suggestion that the following features are individually associated with an increase in ASA transcript scores: low levels of joy, sadness, longer transcripts, broader vocabulary, and care receiver names in

Baby's Morning and The Party transcripts. Of these features, transcript length and broader vocabulary are applicable to MSA transcripts (see Chapter 4: Study 2a). An important finding is mentor name use (whilst unusual in transcripts) only occurred in transcripts containing complete mentoring script knowledge.

In summary, Studies 1, 2a, 2b, and 2c have identified the following:

1) The mean MSA score:

a) Shared a significant correlation with the mean ASA score at the $p<.01$ level (Chapter 3: Study 1).

b) Shared four significant correlations with explicitly reported assumptions about mentoring and none with mentoring engagement. (Chapter 3: Study 1).

c) Did not share a statistically significant correlation with the mean Doctor's Office score. (Chapter 3: Study 1).

d) The mean ASA score and previous engagement in mentoring accounted for 52.8% of the mean MSA score. Of the three ASA stories, only Baby's Morning and The Party made significant contributions. (Chapter 3: Study 1).

2) Mean MSA scores of 4 or more (i.e., which contain complete mentoring script knowledge):

a) Tended to be longer than those scored less than 4 (those scored 4 or more contain a mean of 311.7 words, whereas those with mean scores less than 4 contain a mean of 219 words) (Chapter 4: Study 2a).

b) Tended to contain a greater number of unique words than those scored less than 4 (those scored 4 or more contain a mean of 157.1 unique words, compared with a mean of 119.4 for those scored less than 4) (Chapter 4: Study 2a).

3) Mentee name use in MSA transcripts was:

a) Highest in Not Enjoying University transcripts scored 4 or more than in any other transcript type (62.5% in those Not Enjoying University transcripts scored 4 or more versus 25% of those scored less than 4) (Chapter 4: Study 2a).

b) Unusual in Choosing Specialist Module transcripts because it was higher in transcripts scored less than 4 (40.91%) than it was in those scored 4 or more (33.33%) (Chapter 4: Study 2a).

c) An increase of mentee name use in Writer's Block and Not Enjoying University transcripts was predictive of a significant increase of transcript score in their respective transcripts. This was at the $p<.05$ level in Writer's Block transcripts accounting for 7.24% of the variance, and the $p.01$ level in Not Enjoying University transcripts accounting for 12.89% of the variance. (Chapter 4: Study 2a).

4) Mentor name use in MSA transcripts:

a) Seldom occurred, but when it did names were only used in MSA transcripts scored 4 or more and never in those scored less than 4 (Chapter 4: Study 2a)

b) An increase of mentor name use in Writer's Block transcripts was significantly correlated with an increase of transcript score in all MSA story types at the $p<.01$ level. The greatest variance in these relationships existed for the relationship with Writer's Block (28.73%), then Choosing Specialist Modules (20.34%), and then Not Enjoying University (12.82%). The same effect existed between an increase in mentor name use in Not Enjoying University transcripts and Choosing Specialist Module scores (the variance is 12.25%). It existed at the $p<.05$ level between Not Enjoying University scores and Choosing Specialist Module scores and name use in their corresponding transcripts (11.16% variance in the case of Not Enjoying University and 21.16% in the case of Choosing Specialist Modules) (Chapter 4: Study 2a).

5) The mean: WB & NEU score was created in response to the observation that:

a) An increase in Choosing Specialist Module scores was not significantly correlated with mentoring engagement, whereas increases in Writer's Block and Not Enjoying University scores were.

b) An increase in Choosing Specialist Module scores was only significantly correlated with two explicit assumptions about mentoring. Whereas an increase in Not Enjoying University and Writer's Block scores were significantly correlated with three and five respectively. These factors influenced the mean MSA; an increase in this score was not significantly correlated with actual mentoring engagement but was significantly correlated with 4 explicit assumptions about mentoring (Chapter 3: Study 1).

6) An increase in the mean: WB & NEU score:

a) Was significantly correlated with 5 explicit attitudes about mentoring and three types of actual mentoring behaviours (Chapter 3: Study 1).

b) Shared a significant correlation with Doctor's Office scores, whereas the mean MSA score did not (Chapter 3: Study 1).

c) Was significantly correlated with an increase in mentee name use in Not Enjoying University transcripts at the $p<.05$ level, accounting for 8.8% of the variance (Chapter 4: Study 2a).

d) Was significantly correlated with an increase in mentor name use in all three types of MSA transcript at the $p<.01$ level (accounting for 19.71% of the variance with Writer's Block; 14.82% of the variance with Not Enjoying University; and 20.16% of the variance with Choosing Specialist Modules) (Chapter 4: Study 2a).

Outcomes suggest the ASA and MSA are related by the transference of secure base script knowledge pertinent to the transcripts Baby's Morning and The Party and previous mentoring experiences. The significant associations between Writer's Block and Not Enjoying University transcript scores with actual mentoring experiences was not evident in any ASA story transcript scores. This lends support to the claim by those devising the measure that the two assessments measure distinct constructs. This notion is further supported by the difference in sentiment content between ASA and MSA transcripts (see Chapter 5: Study 2b for a discussion relevant to sentiment expressed in ASA transcripts). In combination, the outcomes reinforce the validity of the ASA and MSA assessments, their underlying attachment influenced relationship, and the claim the ASA can be adapted to

reflect various secure base script informed dyad types (Waters & Waters, 2021). Novel information is provided about the ASA and MSA's population validity in the UK, their distinct functions, the component stories, and linguistic and sentiment features expressed in transcripts.

This knowledge is useful to research and applied contexts. To the author's knowledge the MSA has not been used in any other published research to date despite the mentoring research community's interest in examining the interaction between attachment security and mentoring relationships factors. The relevance of attachment theory to mentoring research has been highlighted throughout each section of Chapter 1: Literature review, but particularly in sections 1.1.1, 1.1.2, 1.1.3.4, 1.3.1, 1.3.2, and 1.3.3. Researchers often rely on questionnaire-based assessments of attachment, such as the ECR-R or adaptations of it. The problems this brings were discussed at length in Chapter 1: Literature review, sections 1.1.3.3, 1.1.3.4 and 1.3.1. In summary, interviewees may give responses they feel appropriate which distort their genuine ability to engage in mentoring relationships and adapted versions of the ECR-R are unlikely to have been validated. In contrast, the MSA provides an assessment which reliably correlates with positive attitudes to mentoring, and use of mean: WB & NEU corresponds with engagement in mentoring behaviours and participant verbal responses are less open to manipulation by participants in ways that would influence the outcome, particularly because they are unlikely to be familiar with the assessment.

The MSA therefore appears to be a valuable predictive tool with potential for use in applied settings. For instance, trained senior staff of applied services, such as mentoring,

counselling, social work, or teaching, could use MSA outcomes to identify occasional or regular gaps in the mentor's mentoring script knowledge and then deliver brief, bespoke training to address them. This would be a cost-effective alternative to delivering large scale generalised training to all staff. This approach was discussed to some extent in the script writing research section of Chapter 1: Literature review, section 1.1.3.4. The impact of this is worthy of further research. Similarly, mentees could be assessed, and bespoke training delivered with a view to enhancing their ability to engage with the mentoring process.

A distinct advantage of using the MSA to assess mentors and mentees instead of other attachment-based assessments is the flexibility it provides. It is less onerous, less expensive to use and more context relevant than the AAI (see Chapter 1) and is less likely to be associated with problems such as the inaccurate reporting faced when using self-report measures, such as the ECR-R (see Chapter 1). Amongst other advantages, the MSA assesses participant implicit assumptions about mentoring relationships. The current word prompt lists have been constructed so participants can be assessed without the need to consciously explore family relationships. This can add an unnecessary burden for some people, for example those who have recently suffered the loss of a child or abusive close relationships. Exploring familial relationships during an assessment can add inappropriate burdens to people who are already vulnerable. For example, mental health settings may be working with individuals who have had children taken into care or who have been bereaved. The prompt word sets used for the present research were relevant to situations commonly found in universities because participants were undergraduates, but it could be adapted to suit any mentoring scenario, provided the resulting prompt word sets are validated. This means, unlike most other assessments, it can be adjusted to represent the people it

assesses whilst avoiding triggering scenarios, whether that be the setting, socio-economic factors, culture, mentee activities etc.

Despite its advantages, using the MSA also has some draw-backs. For instance, users of the assessment require training and their assessment scores will need moderation by another trained person. Once trained, they will need to allocate more time to recording participants, transcribing their stories, and scoring them than a questionnaire would take. However, some features of the MSA have been identified which may help slightly with the scoring process, particularly for transcripts on the borderline of 3.5 and 4. Those being:

1. MSA transcripts with a mean of 311.7 words are associated with a score of 4 or more (whereas those with a mean of 219 are associated with a score of less than 4).

2. MSA transcripts with a mean of 157.1 unique words are associated with a score of less than 4 (whereas those with a mean of 119.4 unique words are associated with a score less than 4).

3. Mentee name use is more likely to occur in Not Enjoying University transcripts and Writer's Block transcripts if the score is 4 or above. However, this is not always the case, and the effect was reversed in Choosing Specialist Module transcripts.

4. Mentor name use is associated only with scores of 4 and above.

As with previous studies, there was a small research population that lacked diversity (particularly in terms of education, age, gender, and geographical location). Whilst

participant numbers are small the corpus is an appropriate size for the study (see Chapter 2: Methodology, section 2.4 for details). Although the listed effects were identified in the present research, they are novel findings and therefore previously unexamined. It would be prudent to replicate these in more diverse populations before applying them. The investigations carried out have provided a set of novel information about features of the MSA and have raised as yet unexplored questions, such as what effect does mentoring script priming have on the participants? How long do they last? And does priming influence their engagement in mentoring behaviour once participants leave the laboratory?

6.5 Conclusion

This study is the last examination of the MSA. Therefore, the outcomes relevant to the measure have been collated to provide an overview of MSA outcomes in Study 2. Research questions 1 to 3 informed Studies 1, 2a, 2b, and 2c. Each of these studies contributed novel findings and suggest the MSA has value in research and applied settings. These were presented in detail in the discussion.

Outcomes were pertinent to research questions 1 – 4, which were:

1. Are implicit assumptions about mother-child secure base interactions transferred to unconscious assumptions about support-seeking and support-providing behaviours in mentoring relationships? (Study 1)

2. Is the MSA specific to implicit and explicitly reported assumptions about mentoring and engagement in mentoring? (Study 1)

3. Are specific language or sentiment patterns associated with the level of script knowledge transcripts contain? (Studies 2a - 2c)

4. Are there patterns within ASA and MSA transcripts which could be used to simplify the transcript scoring process? (Studies 1 – 3)

Relevant to research questions 3 and 4, four features of MSA transcripts were associated with an increase of mentoring script knowledge. They may support inexperienced coders with scoring transcripts along the border of 3.5 and 4. They are:

1. MSA transcripts with a mean of 311.7 words are associated with a score of 4 or more (whereas those with a mean of 219 are associated with a score of less than 4).

2. MSA transcripts with a mean of 157.1 unique words are associated with a score of less than 4 (whereas those with a mean of 119.4 unique words are associated with a score less than 4).

3. Mentee name use is more likely to occur in Not Enjoying University transcripts and Writer's Block transcripts if the score is 4 or above. However, this is not always the case. The effect was reversed in Choosing Specialist Module transcripts.

4. Mentor name use is associated only with scores of 4 and above. But mentor names are not included in all transcripts scored 4 or more.

Whilst these findings may support the current mentoring script scoring process, they are insufficient to change the practice but are amongst the factors recommended for

investigation in future research. Unlike the ASA, MSA scores are not associated with statistically significant changes in expressed sentiment.

Relevant to research questions 1 and 2: The ASA and MSA were found to be related by the transference of secure base script knowledge pertinent to the transcripts Baby's Morning and The Party. However, both measures assessed distinct types of implicit script knowledge and previous mentoring experiences were also found to make a contribution to MSA scores. These outcomes reinforce the validity of the ASA and MSA tools and the claim that the ASA is suitable for adaptation across contexts. The association between scores for two MSA stories (Writer's Block and Not Enjoying University) with actual mentoring engagement and positive attitudes toward mentoring is a particular strength. This is because asking mentors about their relationship experiences in a questionnaire is likely to result in responses which may not translate into practice. This makes the MSA a desirable assessment tool for use in applied settings. Another strength is the ability to change the prompt words to reflect client groups, context, and avoid scenarios that are potentially difficult for vulnerable groups. However, any changes to the MSA would need to be validated.

The main disadvantages of using the MSA in applied settings are the training people would be required to complete before conducting the assessment, the need for another trained coder to moderate the results, and the amount of time it takes to conduct and score the assessment. It would also create the potential for prompt word sets, instructions, and ideal stories to be posted online so that individuals could learn desirable outcomes by rote. Furthermore, when assessment tools used by a small number of specialists are made

available to a wider audience there are inevitable problems with quality control. That said, the MSA is an underused resource with potential for use in research and applied settings to identify peoples' strengths and gaps in mentoring script knowledge. This could be of use in mentor recruitment and used to inform the creation of targeted training.

Chapter 7 Study 3 A replication of findings

Studies 1 and 2 have been informed by research questions 1 – 4, and the present study is informed by research questions 4 and 5, which are:

4. Are there patterns within ASA and MSA transcripts which could be used to simplify the transcript scoring process? (Studies 1 – 3)

5. Are patterns identified in UK ASA transcripts also apparent in independent secondary data obtained from the US? (Study 3)

Studies 1 to 2c used one data set to examine relationships between, and the language and sentiment content of, transcripts containing implicit secure base script and mentoring script knowledge to varying degrees, as assessed using the ASA and MSA. Transcript Properties of individual ASA and MSA stories were also analysed, and two new variables (mean: BM & TP and mean: WB & NEU) were created and scrutinised.

The aim of Study 3 is to use additional independent Baby's Morning and Doctor's Office data sets to find whether the two share a similar significant correlational relationship to the one they shared in Study 1, and whether similar language and sentiment features exist across the transcripts from both populations. The outcomes from Studies 1 to 2b led to a focus of interest on Baby's Morning and Doctor's Office transcripts. The findings of interest pertinent to Baby's Morning transcripts are as follows (negation has been accounted for in each examination of sentiment):

1. The statistically significant correlational relationship between Baby's Morning transcript scores and Doctor's Office, The Party, and the mean ASA scores have higher variances than other significant relationships between score types (e.g., than between Doctor's Office and The Party or MSA stories) (Chapter 3: Study 1, Table 3).

2. An increase in secure base script knowledge in Baby's Morning transcripts is more reliably correlated with the amount of explicit care receiver name use across Baby's Morning and The Party transcripts, than the script knowledge in The Party transcripts is. This suggests secure base script assumptions specific to receiving care in mother baby interactions are more likely to be personalised than those specific to interactions between teenagers and mothers. An alternative hypothesis is the inclusion of nonspecific others in prompt word sets dilutes personalisation of the care receiver (Chapter 4: Study 2a, Tables 15 and 18).

3. An increase in the grouped negative and grouped positive sentiment in Baby's Morning transcripts is significantly correlated with a decrease in transcript score in each ASA story type, and the mean ASA. The only exception to this is the lack of statistically significant correlation between an increase in grouped positive sentiment in Baby's Morning transcripts and changes to the Doctor's Office transcript score. This suggests as mother-baby specific secure base script knowledge increases there is greater regulation of positive and negative sentiment. However, emergency situations or the inclusion of nonsignificant others in prompt word sets (e.g., the friends and doctor) may interfere with the regulation of emotional expression (Chapter 5: Study 2b, Table 24).

4. An increase in Baby's Morning transcript score is significantly correlated with a decrease in grouped negative sentiments, grouped positive sentiments, and the individual sentiments joy, trust, anger, disgust, and sadness when mean sentiment content is calculated from all three ASA stories. No other ASA story score shares as many significant correlations with sentiment. This suggests as secure base script knowledge specific to mother baby interactions increases, the expression of words suggesting joy, trust, anger, disgust, and sadness generally decreases across the mean sentiment content of mother-baby, mother-junior, and mother-teenager transcripts (Chapter 5: Study 2b, Table 25).

5. When mean: BM & TP is used in place of the mean ASA to categorise participant transcripts into two groups. Baby's Morning transcripts belonging to Group 2 contain significantly more negative sentiment. This contrasts with the other findings relevant to sentiment expressed in transcripts. The potential reasons for this have been discussed in sections 5.4 and 5.5. (Chapter 5: Study 2b, Table 28).

The findings of interest relevant to Doctor's Office transcripts from Studies 1 to 2b contrast with the findings associated with Baby's Morning. As before, negation has been accounted for in each examination of sentiment. The findings of interest are:

1. Each ASA and MSA story score shared a statistically significant correlation with Baby's Morning scores. However, the relationship between Doctor's Office scores and Baby's Morning is the one sharing the lowest variance (lower even than the relationship between Baby's Morning transcript score and each MSA story transcript score). This was unexpected because both Doctor's Office and Baby's Morning stories are specific to assessing the secure

base script, whereas the MSA stories are specific to assessing the mentoring script (see Chapter 3: Study 1, Table 3).

2. There was no significant correlation between Doctor's Office transcript scores and the scores for Writer's Block or Choosing Specialist Modules. This meant Doctor's Office scores are the only ASA or MSA story scores not significantly correlated with all other story transcript scores (see Chapter 3: Study 1, Table 3).

3. The significant correlations between Doctor's Office transcript scores and The Party and Not Enjoying University transcript scores were the only significant correlations at the $p<.05$ level (all other significant correlations were at the $p<.01$ level) (see Chapter 3: Study 1, Table 3).

4. An increase in Doctor's Office transcript scores is significantly correlated with an increase in three positive attitudes toward mentoring. It is the only ASA story score to share a significant correlation with attitudes toward mentoring (see Chapter 3: Study 1, Table 4).

5. Regression analysis found Doctor's Office was the only transcript score not associated with the variability of MSA score. This was unexpected because of the relationship between Doctor's Office and three positive attitudes toward mentoring (Chapter 3: Study 1).

6. Anecdotal observations suggest some participants exhibited body language suggestive of tension when primed using the Doctor's Office prompt word set. This was not observed for any other prompt word set. However, it was not formally assessed and therefore ought to be examined formally by further research before drawing any conclusions (Chapter 3: Study 1).

7. Prompt words are significantly less likely to be included in Doctor's Office transcripts scored 4 or above. This was not the case with any other stories. (Chapter 4: Study 2a, Table 11).

8. A decrease in grouped negative sentiments in Doctor's Office transcripts was significantly associated with an increase in Baby's Morning and Doctor's Office transcript scores, and an increase in the mean ASA score. However, there was no statistically significant relationship between grouped positive sentiment in Doctor's Office transcripts and transcript scores. Therefore, as the level of secure base script knowledge specific to mother-junior interactions in emergency situations increases there was an increase in the regulation of expressed negative emotions (Chapter 5: Study 2b, Table 24).

7.1 Study 3

The present study uses pre-existing Baby's Morning and Doctor's Office transcripts and scores originally used in another published study (Bost et al., 2006). Once received, the raw data was cleaned and converted to datasets suitable for the purposes of analysis using AntConc and SEANCE (see Chapter 2: Methodology, section 2.3.1 and 2.3.2 for details). From herein the cleansed and converted data is referred to as dataset 2. Whereas dataset 1 was gathered from undergraduates attending a university in England, dataset 2 was collected in the USA and is a maternal population. The data received was entirely anonymous, no participant demographic data was provided, and it would be impossible to identify participants using the information provided.

The aim of Study 3 is to use dataset 2 to test whether the findings from studies 1 to 2b are replicable using an entirely independent dataset, collected from another country,

and moderated by researchers prior to commencement of the present thesis. No known studies using the MSA have been published to date; it was therefore impossible to source data using this measure and compare results with those presented in Study 2c.

7.2 Method

7.2.1 Design

The present study is a comparison of specific qualities of Baby's Morning and Doctor's Office transcripts from datasets 1 and 2. The aim being to examine whether the findings in Studies 1 – 2b relevant to these two transcript sets are replicated in an independent dataset. Both datasets were collected, scored, and moderated in different countries, at different times, and by individuals unknown to one another. Whilst most instructions were identical, some terms were adapted for the UK population and US participants were instructed not to allocate names to characters in the stories they told. UK participants were not given this instruction. Appendix V contains the study codebook, Appendix W contains a link to the dataset and SEANCE output, and Appendix X, Table 39 contains the post hoc power analyses for this study. The design for previous relevant studies is contained in Chapter 2: Methodology sections 2.2, Chapter 3: Study 1, section 3.2.1, Chapter 4: Study 2a, section 4.2.1, and Chapter 5: Study 2b, section 5.2.1.

Based on the outcomes from Studies 1 to 2b, the following hypotheses were formulated for dataset 2:

1. The overall word count for Baby's Morning and Doctor's Office transcripts will be higher for those scored 4 or above, than for those scored less than 4.

2. The number of unique words in Baby's Morning and Doctor's Office transcripts will be higher for those scored 4 or above than for those scored less than 4.

3. A significant positive correlation will exist between Baby's Morning transcript scores and Doctor's Office transcripts scores.

4. There will be a significantly greater use of care receiver names in Baby's Morning transcripts scored 4 or more than in those scored less than 4.

5. An increase in the grouped and individual sentiments (except fear) in Baby's Morning transcripts will be significantly associated with a reduction in transcript scores.

6. An increase in the grouped negative and positive sentiments in Baby's Morning transcripts will be significantly associated with a reduction in transcript scores.

7. An increase in the grouped negative sentiment in Doctor's Office transcripts will be significantly associated with a decrease in transcript scores.

8. A comparison of Doctor's Office transcripts scored 4 or more with those scored less than 4 will reveal no significant difference in the amount of expressed individual sentiments.

9. A comparison of Baby's Morning transcripts scored 4 or more with those scored less than 4 will reveal those scored 4 or more will contain significantly more grouped negative sentiment.

7.2.2 Participants

Information about participants and ethical approval is contained in Chapter 2: Methodology, sections 2.3.1 and 2.3.2. In summary, dataset 2 consists of 89 Baby's Morning and 89 Doctor's Office transcripts. They were collected and provided by a research team for a previous study in the USA (Bost et al., 2006). An important distinction between the two datasets is the instruction not to include names in stories issued to US participants (dataset 2) whereas UK participants (dataset 1) were not issued this instruction. An application for ethical approval to use this dataset 2 as secondary data was submitted to, and approved by, the Birmingham City University Ethics Committee (Brown, 2021). The data is entirely anonymised.

7.2.3 Materials

7.2.3.1 Transcript versions

Baby's Morning and Doctor's Office transcripts gathered from an English university for Study 1 – 2b (see Chapter 2: Methodology, sections 2.5.1, 2.5.1.1, and Chapter 3: Study 1, sections 3.2.3 and 3.2.3.1) are compared with Baby's Morning and Doctor's Office transcripts gathered by researchers from Stony Brook University, New York. Language differences between both geographical locations resulted in the adaptation of the original prompt word sets for Study 1, but the original versions were used for the present study. For instance, the UK based Doctor's Office prompt word set contains the term injection as a replacement for the term shot in the American dataset. Appendix D contains the original US prompt word lists used for the present study, Appendix E contains the UK version created for Studies 1 – 2c, and Appendix F contains an explanation for each change. Participants contributing to dataset 2 were instructed not to include names in their Baby's Morning stories, whereas participants contributing to dataset 1 were not given this instruction.

7.2.3.2 AntConc analysis

The Baby's Morning and Doctor's Office transcripts in dataset 2 were prepared for analysis in the same way as those used in Study 2a (see Chapter 4: Study 2a, section 4.2.4.1 for further details). Comments created during the scoring process were removed, the unique participant identifier and transcript score were inserted on the transcript using the format 'story initial-score-participant number'. For instance, BM-2-303 would represent the story Baby's Morning, scored 2, told by the participant with the ID 303. The transcripts were converted to txt documents and the words counted using Sanjeevani (Desai & Gentle, 2023). Appendix O contains the transcripts and wordcounts for dataset 1 and Appendix W contains comparable information for dataset 2. AntConc version 3.5.8 (Macintosh OS X) 2019 was used to conduct keyness analyses, each of which is presented in its entirety. Appendix N lists the abbreviated terms used to replace certain words from participant transcripts (e.g., Cxx was used to replace care receiver names in Baby's Morning transcripts).

7.2.3.3 Sentiment analysis

Sentiment analysis was completed using the Sentiment Analysis and Cognition Engine (SEANCE) version 1.2.0 (Macintosh OS X) on a MacBook air. There is no domain specific dictionary available, therefore the National Research Council Canada (NRC) Word-Emotion Association Lexicon (referred to as EmoLex in SEANCE) was chosen (Crossley et al., 2017, 2018; Kristopher & Crossley, 201). The SEANCE analysis was presented in Excel and SPSS was used to conduct statistical analyses.

7.2.4 Procedure

Each hypothesis is examined in turn using the procedures already described in Studies 1 – 2b (see Chapter 2: Methodology, sections 2.6.2 – 2.6.4, Chapter 3: Study 1,

section 3.2.4, Chapter 4: Study 2a, section 4.2.4, and Chapter 2b, section 5.2.4). The first four hypotheses are relevant to general language use, such as transcript length, name use and the relationship between Baby's Morning and Doctor's Office scores. In summary, hypotheses 1 and 2 were examined by comparing total word counts (word tokens) and mean word types (unique words) per transcript for those scored less than 4 (Group 1) and for those scored 4 or more (Group 2) (see Tables 29 and 30). Following this, a Pearson R correlation was used to examine whether a statistically significant correlation exists between Baby's Morning and Doctor's Office transcript scores (hypothesis 3). Hypothesis 4 required care receiver name use in Baby's Morning transcripts to be counted for transcripts within each score band. This was followed by an AntConc Keyness analysis to find whether there was statistically significant greater use of care receiver names in Group 2 (Table 32). The outcomes of these four hypotheses using dataset 2 were compared with the relevant outcomes from dataset 1 (Tables 29-33).

Hypothesis 5 to 9 are specific to sentiment use. Transcripts were converted to txt files and processed using SEANCE per story type with the EmoLex dictionary and Negation Control selected. The excel spreadsheets containing the output are contained in each relevant story file in Appendix X. Output D14 in Appendix J contains the descriptive statistics for the transcript scores. Pearson correlations are used to examine the relationship between the transcript scores and expressed sentiment levels for hypotheses 5 to 7. Hypotheses 8 and 9 required transcript scores to be divided into two groups using the SPSS Visual Binning tool. Transcripts scored less than 4 comprised Group 1 and those scored 4 or more were in Group 2. The groups were subject to non-parametric independent samples Mann-Whitney-U tests to find whether they differed in the amount of sentiment the relevant transcripts

contained. Mann-Whitney-U tests were used instead of *t*-tests to compare the medians and because the distribution of individual words does not commonly follow a bell curve distribution. This approach is consistent with that taken in Study 2b. A Bonferroni correction was made for hypothesis 8 because 6 sentiments were examined. Therefore, the target of $p<.0083$ exists for hypothesis 8 but remains $p<.05$ for all other hypotheses in Study 3.

7.3 Results

Examination of hypothesis 1: The overall word count for Baby's Morning and Doctor's Office transcripts will be higher for those scored 4 or above, than for those scored less than 4 in dataset 2.

7.3.1 Comparison: Corpus word counts and mean scores

Table 29: A comparison of dataset 1 and 2 word counts for Baby's Morning and Doctor's Office transcripts

Corpus type	Total words (i.e., word tokens)	
	dataset 1 (UK data used for studies 1 – 2c)	dataset 2 (US data used for study 3 only)
Number of participants	54	89
Total corpus word count	24,034	31,266
Mean words per participant for transcripts scored 4 or more	445.07	351.2
BM[1] and DO[2] transcripts scored less than 4 - total words	9,773	14,198
BM and DO transcripts scored 4 or more - total words	14,261	17,068
BM less than 4 – total words	3705	6967
BM 4 or more – total words	7784	7626
DO less than 4 – total words	6068	7231
DO 4 or more – total words	6477	9442

Note. Transcripts scored less than 4 contain partial or no secure base or mentoring script knowledge and those scored 4 or more contain varying degrees of complete secure base or mentoring script knowledge

[1] BM denotes Baby's Morning transcripts

[2] DO denotes Doctor's Office transcripts

Hypothesis 1 was accepted, and the null hypothesis rejected. The word count for Baby's Morning and Doctor's Office transcripts was higher for those scored 4 or above, than for those scored less than 4 in dataset 2 (see Table 29). Comparison of datasets 1 and 2 reveals comparable tendencies across both research populations. Notably the reliable outcome that transcripts scored less than 4 have lower word counts than those scored 4 or more, regardless of story type. There is, however, a difference per story type, with greater variation between word counts for Baby's Morning transcripts scored less than 4 when

compared with those scored 4 or more in dataset 1 and a greater difference for the two groups of Doctor's Office transcripts for dataset 2.

Examination of hypothesis 2: The number of unique words in Baby's Morning and Doctor's Office transcripts will be higher for those scored 4 or above than for those scored less than 4 in dataset 2.

Table 30: Comparison of dataset 1 and 2 mean total words and types of words used

	Dataset 1 N=54			Dataset 2 N=89		
	Mean Score	Mean unique words (word types)	Mean total words (word tokens)	Mean Score	Mean unique words (word types)	Mean total words (word tokens)
BM[1] and DO[2] transcripts scored less than 4	2.7	107.8	195.1	2.7	186.8	330
BM and DO transcripts scored 4 or more	4.9	139.2	269.2	4.9	258	581.4
Baby's Morning scored less than 4	2.6	81.6	142.5	2.6	81.56	141
Baby's Morning scored 4 or more	4.9	140.4	278	4.5	105.46	195.54
Doctor's Office scored less than 4	2.8	105.2	190.5	2.1	85.73	147.57
Doctor's Office scored 4 or more	4.9	153.6	303.4	4.8	125.43	236.05

Note. Transcripts scored less than 4 contain partial or no secure base or mentoring script knowledge and those scored 4 or more contain varying degrees of complete secure base or mentoring script knowledge.

[1] BM denotes Baby's Morning transcripts

[2] DO denotes Doctor's Office transcripts

Hypothesis 2 was accepted, and the null hypothesis rejected. The number of unique words in Baby's Morning and Doctor's Office transcripts is higher for those scored 4 or

above than for those scored less than 4 in dataset 2 (Table 30). Examination of the raw data for Baby's Morning and Doctor's Office transcripts from datasets 1 and 2 reveals comparable effects. Perhaps the most striking similarities are the identical mean scores for grouped Baby's Morning and Doctor's Office transcripts regardless of whether transcripts are scored less than 4 or 4 and above. In both datasets, Baby's Morning mean transcript score was 2.6 for those scored less than 4. Each of the other means was also similar, varying only between .1 and .7. This suggests both these ASA stories have population validity for use in the UK, despite the adjustments made to the Doctor's Office prompt word list for cultural reasons. This is an important novel finding because it is the first time the ASA has been used in a published study in the UK.

Examination of hypothesis 3: A statistically significant positive correlation will exist between Baby's Morning transcript scores and Doctor's Office transcripts scores in dataset 2. Hypothesis 3 is accepted, and the null hypothesis rejected. A significant positive correlation of .622 exists between dataset 2 Baby's Morning and Doctor's Office transcript scores. The relationship was therefore, r (98) =.622, $p<.01$, accounting for 38.69% of the variance. Whereas, in dataset 1 the relationship was r (54) =.455, $p<.01$ accounting for 20.7% of the variance. Therefore, the effect was stronger in dataset 2 than dataset 1. Appendix J: C1a contains the SPSS output for dataset 1 and Appendix J: C26 contains the SPSS output for dataset 2.

Examination of hypothesis 4: There will be a statistically significant greater use of care receiver names in Baby's Morning transcripts scored 4 or more than in those scored

less than 4 in dataset 2. Doctor's Office transcripts were not subject to this examination. This is because the prompt word set determines the use of Tommy as care receiver name.

7.3.2 Comparison: Frequency of care receiver name use

Table 31: Comparison of baby's name use in dataset 1 and 2 Baby's Morning transcripts

	ASA scale score	Dataset 1 N=54 No of 'Baby's Morning' transcripts containing care receiver names / total number of Baby's Morning transcripts for this score	% of 'Baby's Morning' transcripts for this score	Dataset 2 N=89 No of 'Baby's Morning' transcripts containing care receiver names / total number of Baby's Morning transcripts for this score	% of 'Baby's Morning' transcripts for this score
Complete secure base script knowledge	7	1/1	100%	0/0	n/a
	6	2/4	50%	0/1	0%
	5	3/9	33.33%	1/8	12.5%
	4	2/14	14.29%	6/30	20%
Totals	4-7	8/28	28.57%	7/39	17.9%
No or incomplete secure base script knowledge	3	2/14	14.29%	5/24	20.8%
	2	0/9	0%	4/18	22.2%
	1	0/3	0%	1/8	12.5%
Totals	1-3	2/26	7.69%	10/50	20%

Note: Doctor's Office transcripts have been excluded because the child's name, Tommy, is determined by the story prompt words

Examination of the raw data suggests the hypothesis ought to be rejected and the null hypothesis accepted, because the percentage of dataset 2 Baby's Morning transcripts is

lower in those scored 4 or more than in those scored less than 4 (Table 31). It is interesting to note, that despite receiving the instruction not to include names in stories it appeared not to reduce the rate of name use (19% of dataset 2 transcripts contained names, whereas 18.5% of dataset 1 transcripts contained them). Comparing an AntConc keyness analysis of name use according to score group in both datasets highlights the difference between the two corpora (see Tables 32 and 33).

7.3.3 Comparison: Keyness analysis of general word use

Table 32: Dataset 2 keyness analysis showing the significance of difference in the use of specific words. BM and DO transcripts scored 4 or more form the target corpus and BM and DO transcripts scored less than 4 form the reference corpus

Rank	Frequency		Keyness	Effect (DICE)	Keyword
1	57	+	17.85	0.0065	looked
2	90	-	19.89	0.0101	we
3	5	-	19.51	0.0006	shots
4	21	-	18.73	0.0024	your

Note. Grey shading indicates the word is a prompt word for at least one of the two ASA stories. Participants were encouraged to use these words at specific points in the story. In this instance shot was a prompt word for dataset 2 Doctor's Office transcripts

Table 33: Dataset 1 keyness analysis showing the significance of difference in the use of specific words between two corpora. BM and DO transcripts scored 4 or more form the target corpus and BM and DO transcripts scored less than 4 form the reference corpus

Rank	Frequency		Keyness	Effect (DICE)	Keyword
1	69	+	44.47	0.0096	Cxx
2	43	-	25.92	0.006	crying
3	6	-	20.5	0.0008	leg
4	58	-	17.77	0.008	doctor

Note. Grey shading indicates the word is a prompt word for at least one of the two ASA stories. Participants were encouraged to use these words at specific points in the story. In this instance doctor was a prompt word for all Doctor's Office transcripts

Table 32 presents a keyness analysis for dataset 2 corpora of Baby's Morning and Doctor's Office transcripts scored 4 or higher when using those scored less than 4 as the reference corpus. The AntConc output is presented in its entirety. Table 33 contains the results of the same analysis using Baby's Morning and Doctor's Office transcripts from dataset 1 to ensure a fair comparison was made (the previous Keyness analyses conducted for Study 2a contained The Party transcripts). This comparison is also shown in full.

For both datasets, each keyness value is above 15.13, which is the equivalent of $p<.0001$ (Rayson, 201). The most notable difference when comparing these outcomes is the lack of significant difference in care receiver name use (denoted using Cxx) in dataset 2. In addition, there is significantly lower use of the pronouns 'we' and 'your' in transcripts containing complete secure base script knowledge. This contrasts with the significantly higher use of care receiver name use in dataset 1 transcripts containing complete secure base script knowledge.

This finding led to two further keyness comparisons to examine differences in word use between datasets 1 and 2. The first used dataset 2 Baby's Morning and Doctor's Office transcripts scored less than 4 as the target corpus and the same two story transcripts from dataset 1 scored less than 4 as the reference corpus (Table 34). The second examination made the same comparison using transcripts scored 4 or more from dataset 2 as the target corpus and dataset 1 as the reference corpus (Table 35). Once again, the outputs are shown in their entirety and each keyness value is above 15.13, which is equivalent to $p<.0001$.

Table 34: Keyness analysis showing the significance of difference in the use of words between datasets 1 and 2. Dataset 2 BM and DO transcripts scored less than 4 form the target corpus and dataset 1 BM and DO transcripts scored less than 4 form the reference corpus

Rank	Frequency		Keyness	Effect (DICE)	Keyword
1	136	+	107.87	0.0184	we
2	88	+	95.09	0.0119	mom
3	103	+	79.56	0.014	you
4	60	+	56.33	0.0082	shot
5	50	+	53.97	0.0068	your
6	46	+	49.65	0.0063	mommy
7	34	+	36.69	0.0046	okay
8	26	+	28.05	0.0035	shots
9	237	+	21.7	0.0316	they
10	96	+	20.14	0.013	get
11	31	+	18.4	0.0042	good
12	31	+	18.4	0.0042	re
13	6	-	43.92	0.0008	an
14	3	-	29.5	0.0004	pain
15	239	-	27.71	0.0315	his
16	32	-	23.5	0.0043	as
17	50	-	20.85	0.0068	crying
18	10	-	18.35	0.0014	from
19	1	-	18.25	0.0001	quite

Note. Grey shading indicates the word is a prompt word for at least one of the two ASA stories. Participants were encouraged to use these words at specific points in the story. In this instance shot was a prompt word for dataset 2 Doctor's Office transcripts

When compared with dataset 1 of the same score band (Table 34), dataset 2 transcripts scored less than 4 are significantly more likely to contain references to the first-person plural pronoun 'we' (suggesting those referred to are the subject), and the word 'you' (which may be used as subject or object in the 2nd person singular or plural forms) (Merriam-Webster, 202). Similarly, a comparison of both datasets scored 4 or more (Table 35) reveals dataset 2 transcripts are significantly more likely to contain the 1st and 3rd

person plural pronouns ‘they’ and ‘we’. Pronouns are replacements for either a noun already mentioned or one not requiring a name. So, whilst there is no statistically significant difference in dataset 2 pertinent to care receiver name use according to score group (Table 32) there is a greater use of pronouns. This may suggest a strategy employed to adhere to the instructions to exclude names. Participants providing transcripts for dataset 2 were a community sample of mothers whereas undergraduate psychology participants provided transcripts for dataset 1. The majority of undergraduates are unlikely to be parents. Therefore, participant experiential differences may also contribute to the variations in language and name use.

Regardless of score banding, dataset 2 transcripts were significantly more likely to use the terms mom, mama, or mommy but no significant difference was found for the term mother (a prompt word), mum, or mummy. Therefore, it appears more frequent derivatives from the prompt word ‘mother’ occurred in the US population than the UK population. Of note is the lower frequency of care receiver name use (denoted by Cxx) in dataset 2 transcripts scored 4 or more when compared with the UK transcripts in the same score band (Table 35). These two effects may have arisen from cultural differences in frequency of use of the term ‘mother’ or its derivatives. Or it may be the result of dataset 2 participants avoiding the allocation and use of character names. Further research is required before drawing a firm conclusion.

Table 5: Keyness analysis showing the significance of difference in the use of specific words between datasets 1 and 2. Dataset 2 transcripts scored 4 or more form the target corpus, and dataset 1 BM and DO transcripts scored 4 or more form the reference corpus

Rank	Frequency		Keyness	Effect (DICE)	Keyword
1	124	+	148.08	0.014	mom
2	365	+	70.93	0.0404	they
3	68	+	66.14	0.0077	shot
4	46	+	54.84	0.0052	mommy
5	43	+	51.26	0.0049	okay
6	90	+	40.87	0.0102	we
7	81	+	37.4	0.0092	said
8	24	+	28.6	0.0027	mama
9	153	+	27.19	0.0172	doctor
10	22	+	26.21	0.0025	favorite
11	92	+	25.49	0.0104	time
12	33	+	20.39	0.0038	played
13	49	+	18.85	0.0056	riding
14	563	+	18.78	0.061	he
15	72	+	18.77	0.0082	you
16	21	+	18.49	0.0024	your
17	31	+	18.47	0.0035	end
18	15	+	17.87	0.0017	realized
19	1	-	43.55	0.0001	Mxx
20	269	-	39.88	0.0296	she
21	2	-	38.49	0.0002	favourite
22	24	-	33.06	0.0027	Cxx
23	7	-	27.86	0.0008	d
24	29	-	21.75	0.0033	back
25	2	-	21.05	0.0002	park
26	5	-	20.25	0.0006	quite
27	43	-	18.83	0.0049	as
28	3	-	17.83	0.0003	its

Note. Grey shading indicates the word is a prompt word for at least one of the two ASA stories. Participants were encouraged to use these words at specific points in the story. In this instance doctor was a prompt word for Doctor's Office transcripts and shot was a prompt word for dataset 2 Doctor's Office transcripts.

7.3.4 Sentiment analysis

Examination of hypothesis 5: An increase in individual sentiments (except fear) expressed in Baby's Morning transcripts will be associated with a statistically significant reduction in the mean transcript scores in dataset 2. This hypothesis was not fully supported, and the null hypothesis was therefore partially accepted. This was because the

only statistically significant relationship existed with the sentiment disgust (see Appendix J: C26 for the SPSS output). There was a statistically significant correlation between an increase in the amount of secure base script knowledge in Baby's Morning transcripts and a reduction in the level of disgust expressed in Baby's Morning transcripts ($r(89) = -.233$, $p<.05$, accounting for 5.4% of the variance). This suggests as the level of disgust expressed in Baby's Morning transcripts decreased the amount of secure base script knowledge increased. It is worth noting the variance is small.

Further examinations were conducted in case an unpredicted effect not observed in Study 2b exists for dataset 2. The output for each is contained in Appendix J: C26. As anticipated when formulating the current list of hypotheses, the ave: BM & DO shared no statistically significant relationship with any individual or grouped sentiments in Baby's Morning transcripts. Furthermore, Baby's Morning transcript scores shared no statistically significant correlations with the amount of individual or grouped sentiment expressed in Doctor's Office transcripts.

Examination of hypothesis 6: An increase in the grouped sentiments in Baby's Morning transcripts will be associated with a statistically significant reduction in transcript scores in dataset 2. This hypothesis was rejected, and the null hypothesis accepted, because there was no such significant relationship (see Appendix J: C26 for the SPSS output). Therefore, an increase in secure base script knowledge expressed about mother-baby interactions was not associated with significant changes in the amount of sentiment expressed in dataset 2 transcripts.

Examination of hypothesis 7: An increase in the grouped sentiments (i.e., negative and positive) in Doctor's Office transcripts will be associated with a statistically significant decrease in transcript scores. Hypothesis 7 was rejected, because there was no such relationship (see Appendix J: C26 for the SPSS output). Therefore, an increase in secure base script knowledge expressed in transcripts about mother-junior interactions was not associated with significant changes in the amount of sentiment expressed in dataset 2 transcripts.

Examination of hypothesis 8: There will be no statistically significant difference in the amount of individual sentiment expressed in Doctor's Office transcripts in Group 1 or Group 2. A Bonferroni correction was applied because 6 types of sentiment were examined (i.e., anger, disgust, fear, joy, sadness, and trust). This reduced the target *p* value from .05 to .0083. Hypothesis 8 was accepted, and the null hypothesis rejected because there was no statistically significant relationship (see SPSS output in Appendix J: MWU3). Therefore, complete secure base script knowledge was not associated with significantly higher or lower expressed sentiment in dataset 2 transcripts specific to mother-junior interactions.

Examination of hypothesis 9: A comparison of Baby's Morning transcripts scored 4 or more with those scored less than 4 will reveal those scored 4 or more will contain significantly more grouped negative sentiment. Hypothesis 9 was rejected, and the null hypothesis accepted because there was no statistically significant relationship (see SPSS output in Appendix J: MWU3). Therefore, complete secure base script knowledge was not associated with significantly higher or lower expressed sentiment in Baby's Morning transcripts.

7.4 Discussion

Study 3 was designed to answer research questions 4 and 5:

4. Are there patterns within ASA and MSA transcripts which could be used to simplify the transcript scoring process? (Studies

5. Are patterns identified in UK ASA transcripts also apparent in secondary data obtained from the US?

The outcomes from Studies 1 and 2 resulted in Baby's Morning and Doctor's Office being identified as the two stories of interest for Study 3, and a series of hypothesis were proposed based on those findings. Study 3 results will be examined for each hypothesis in turn and followed by an overarching discussion. Hypotheses 1 and 2 were accepted. Both word types (total words in a transcript) and word tokens (individual words) were greater in transcripts grouped according to score, regardless of dataset or story type. Therefore, this effect was consistent between the UK and USA populations. Whilst this is useful to some extent, it is a trend relevant to score groups rather than a reliable factor at the individual participant level. That said, the information may be useful in supporting scoring decisions where transcripts are on the boarder of 3 and 4.

Hypothesis 3 was also accepted. A statistically significant correlational relationship between the transcript scores for Baby's Morning and Doctor's Office was

found in both the UK and US populations. The variance was 38.69% for the American population and 20.7% for the UK population.

Hypothesis 4 was rejected, and the null hypothesis accepted. The predicted statistically significant greater use of care receiver names in Baby's Morning transcripts scored 4 or more dataset 2 did not exist. There is a contrast between the findings pertinent to care receiver name use in dataset 2 (Tables 31 and 32) and those for dataset 1 (Tables 31 and 33). The differing outcomes could be due to several reasons, for instance cultural differences or because the effect in dataset 1 is not a reliable one but a random pattern within the data. Despite dataset 2 participants receiving instructions specific to name use, marginally more stories from dataset 2 include care receiver names (i.e., 18.5% of Baby's Morning transcripts in dataset 1 and 19% of transcripts in dataset 2). However, current ASA (and therefore MSA) procedure instructions include the requirement to instruct participants not to include names when telling stories and suggest transcripts containing names should be disregarded (Waters & Waters, 2021). This is because the inclusion of names may signal participant autobiographical recall of one specific interaction rather than a generalised autobiographical script.

It is possible participants who received the instruction to exclude names and did not have complete secure base script knowledge were less able to follow the name relevant instruction during the ASA procedure and were more likely to include names when they told their stories. This would be congruent with the suggestion made in chapter 4; that the language of participants without complete secure base script knowledge is influenced by additional cognitive load during the process, resulting in shorter transcripts containing

fewer unique words than those with complete secure base script knowledge. This possibility should be investigated further because it has potential to influence the instructions given to participants. If a reliable effect is found for participants receiving and not receiving the instruction to omit names in the stories they tell, it has potential to simplify the current story scoring process. In the absence of further research, the effect in dataset 1 of higher care receiver name use in transcripts containing complete secure base script knowledge should be interpreted with caution.

The first-person plural pronoun ‘we’, and the possessive adjective ‘your’ are used with significantly less frequency in transcripts scored 4 or more than in those scored less than 4 in dataset 2; there was no such effect in dataset 1 (Merriam-Webster, 2022, 2023). First person plural pronouns are used in place of names, and possessive adjectives indicate who owns or experienced something. It raises the question of whether this effect arises from participants adjusting their language because they were instructed not to include names in stories. Or whether there is a for those without complete secure base script knowledge to become enmeshed in the story rather being able to maintain an objective distance, remain outside of the events and report them in a third person style. If so, this would support the suggestion formed in Chapter 5: Study 2b, sections 5.4 and 5.5; that participant meta-emotion skills influence the length and content of transcripts and corresponds with the AAI relevant concepts of coherence and meta-cognition.

Hypotheses 5 and 6 were partially rejected; only an increase in the amount of disgust in Baby’s Morning transcripts was associated with a statistically significant reduction in Baby’s Morning transcript scores. Although this effect was statistically significant the

variance was small (5.4%). Nonetheless it suggests as the level of disgust expressed in Baby's Morning transcripts decreases the amount of secure base script knowledge increases. Hypothesis 7 was also rejected; there was no statistically significant relationship between either positive or negative groups of sentiment in Doctor's Office transcripts and an increase in secure base script score. The one statistically significant relationship between sentiment and amount of secure base script knowledge should be interpreted with caution. Having found only one it may be due to a random feature of the transcripts and accepting the hypothesis on this basis carries the risk of being a Type I error.

Hypothesis 8 was accepted because there was no difference between the amount of sentiment in Doctor's Office transcripts and Group. This lack of statistically significant relationship between group allocation and sentiment level also existed for Baby's Morning transcripts for the present study. Therefore hypothesis 9 was rejected and the null hypothesis accepted.

The findings relevant to hypotheses 5, 6, 7, and 9 contrast with Study 2b outcomes. Study 2b found the amount of grouped negative and positive sentiment in Baby's Morning transcripts shared significant negative correlations with script knowledge across the mean ASA, Baby's Morning, Doctor's Office, and The Party. This relationship was observed with grouped negative sentiment in Doctor's Office transcripts and each of the transcript type scores (except The Party).

Examination of individual sentiment levels in Baby's Morning and Doctor's Office transcripts carried out in preparation for Chapter 4 are presented in Table 36. These

outcomes were not presented as part of Study 2b because the mean sentiment scores across the three transcript types were used. These highlight the contrast between the one significant correlation relevant to sentiment expression in dataset 2 and those found in dataset 1.

Table 36: Implicit secure base script knowledge and the level of expressed sentiment in dataset 1 Baby's Morning and Doctor's Office transcripts

Pearson correlation[1]		
	Transcript scores scaled from 1 – 7 (dataset 1)	
Sentiment	Baby's Morning	Doctor's Office
BM negated joy	-.506** (25.6%)[2]	-
BM negated trust	-.554** (30.69%)	-.325* (10.56%)
BM negated surprise	-.341* (11.63%)	-
BM negated positive	-.475** (22.56%)	-
BM negated anger	-.336* (11.29%)	-.326* (10.63%)
BM negated anticipation	-	-
BM negated disgust	-.511** (26.11%)	-.349** (12.18)
BM negated fear	-	-
BM negated sadness	-.539** (29.05%)	-.398** (15.84%)
BM negated negative	-.550** (30.25%)	-.436** (19.01%)
DO negated joy	-	-
DO negated trust	-	-
DO negated surprise	-	-
DO negated positive	-	-
DO negated anger	-	-
DO negated anticipation	-	-
DO negated disgust	-	-
DO negated fear	-	-
DO negated sadness	-.477** (22.75%)	-.527** (27.77%)
DO negated negative	-.321** (10.3%)	-.527** (27.77%)

*Note. * p*<.05. ** *p*<.01 (2-tailed).

[1]See Appendix J: C24 for SPSS output

[2]The variance for each significant correlation is contained in ( )

A reduction in the level of negated disgust expressed in Baby's Morning transcripts from both datasets is significantly associated with an increase in secure base script knowledge in Baby's Morning transcripts. This result needs to be interpreted with caution because it is the only one to be replicated and does not exist in other story types in either dataset. The variations between the two research population outcomes may arise from the different number of participants, variations in participant demographics, or may highlight an important variation attributable to another factor, such as experimenter effect. Experimenter effects seem unlikely, given the comparable outcomes in terms of longer transcripts and broader vocabulary being associated with higher scores, the similarities between mean scores for the two score bandings, and the statistically significant relationship between Baby's Morning and Doctor's Office transcript scores (Tables 29 and 30).

The Keyness analysis showing the variation between datasets 1 and 2 in combination with the difference in name and pronoun use perhaps point to more sentiment being expressed in transcripts containing incomplete secure base script knowledge if there was no instruction to exclude names from their stories. This raises the question 'why?'. Perhaps asking participants not to use names in their stories primed them to do so. The difficulties associated with instructed thought suppression is sometimes referred to as the white bear effect (Wegner et al., 1987). This might have caused the unexpected inclusion of names combined with an increase in the frequency of pronoun use in a bid to avoid name use. It is possible, the resulting additional cognitive load meant participants with secure base script knowledge were less likely to monitor and subsequently reduce the sentiment they expressed. It is also possible the parental experiences of dataset 2 participants meant the

prompt words carried less emotional weight because they had acted out relevant secure base interactions regularly as parents.

Study 3 highlights the need for additional research into the effects of name use and sentiment in ASA and MSA stories. These effects are previously unexamined. Therefore, it is impossible to ascertain whether the observed effects can be expected to differ between the two datasets, or whether one dataset contains anomalous findings. The differences in instructions the participants from both datasets received and the differences in participant demographics limited this study to some extent because the approach was only partially replicated. It is therefore uncertain as to whether differences in transcript content between the two datasets exist because findings are not replicated or because the instructions differed or because dataset 1 participants were undergraduate psychology students and dataset participants were drawn from a community of mothers.

7.5 Conclusion

Study 3 was designed to answer research questions 4 and 5:

4. Are there patterns within ASA and MSA transcripts which could be used to simplify the transcript scoring process? (Studies 1 – 3)

5. Are patterns identified in UK ASA transcripts also apparent in independent secondary data obtained from the US? (Study 3)

There are several findings consistent between the UK and US population. This is despite slight differences in prompt word content and US participants being asked to exclude names from Baby's Morning stories. In addition, different research teams collected, scored, and moderated the data. Importantly, both datasets shared statistically significant correlations between Baby's Morning and Doctor's Office transcript scores at the $p<.01$ level. The variance being 38.69% for dataset 2 and 20.7% for dataset 1. In addition, grouping transcripts into those scored less than 4 and those scored 4 or more revealed:

1. Higher word counts for the Baby's Morning and Doctor's Office transcripts belonging to the group scored 4 or more.

2. A higher number of unique words for the Baby's Morning and Doctor's Office transcripts belonging to the group scored 4 or more.

3. A reduction in the level of disgust expressed in Baby's Morning transcripts from both datasets was significantly associated with an increase in secure base script knowledge in Baby's Morning transcripts. However, the numerous sentiment effects, assumed to arise from affect regulation, observed in dataset 1 were not replicated in dataset 2.

Chapter 4 explored why transcripts scored 4 or more tend to be longer and contain a broader range of vocabulary than those scored less than 4. It suggested complete secure base script knowledge enables flexibility in the use of language in the ASA and MSA tasks. This could be because those with incomplete script knowledge experience greater cognitive load as a result of processing emotional experiences and need to work out the appropriate steps to resolve the care receiver's difficulty. This was assumed to be more likely than the

differences being attributed to intelligence. The reasons being that dataset 1 participants were undergraduate students and increasing script knowledge was associated with higher likelihood of care receiver name use, and lower levels of sentiment content in Baby's Morning dataset 1 transcripts. However, examination of dataset 2 shows no significant difference in the regularity of care receiver name use or in the levels of sentiment content akin to those seen in dataset 1.

The reason for the lack of statistically significant sentiment effects and name use in dataset 2 is unclear. It is unlikely to arise from experimenter effects because of the similarity in mean scores, and differences in word tokens and word types according to Group scores. These similarities suggest the ASA was administered with relative consistency. The obvious difference is in the omission of the instruction to dataset 1 participants to avoid the allocation of character names. Including names may have personalised the story events for participants producing stories scored 4 or more. This may have enhanced their own feeling of security and resulted in the emotional regulation observed in secure individuals in applied situations. This would be compatible with the association between a reduction of sentiment and an increase in secure base script score in dataset 1. It would also be congruent with the proposition that memory retrieval (in this instance retrieval of the implicit secure base script) is more effective if the participant's emotional state is the same at memory formation and memory recall (Bower, 1981). An alternative hypothesis is the parental status of dataset 2 participants.

The result regarding the sentiment disgust should be interpreted with caution because it is the only sentiment effect to be replicated across both datasets and it does not

exist in other transcript types in either dataset. In addition to the potential causes for difference between findings for both datasets, the lack of difference in sentiment level in dataset 2 might also arise from an even balance of participants with avoidant and preoccupied patterns contributing transcripts scored less than 4. A summary of research pertinent to responses to emotional stimuli highlights people with attachment insecurities tend to have difficulty disentangling themselves from emotions when exposed to emotional stimuli and require greater control to attend to other information (Mikulincer & Shaver, 2018a). Those with attachment anxiety tend to become embroiled in their emotional reactions, whilst those with attachment avoidance tend to be skilled at regulating their attention unless they are reminded of rejection, separation, or loss. If these contrasting reactions translate into the sentiment of transcripts, it is possible the balance is such that the two effects cancel each other out in dataset 2. Alternately, the different outcomes could be due to cultural differences between the UK and US populations. Further experimental work should be conducted to find whether consistent results are found according to whether participants are instructed to exclude names. It would also be interesting to examine the potential impact of instructing participants to include names. These explorations have potential to simplify the scoring of borderline transcripts and to contribute novel information relevant to the ASA. Unfortunately, the time it would take to collect enough transcripts to investigate these effects, in combination with the complications associated with the onset of the global Covid pandemic (see Chapter 2: Methodology, section 2.4 for details) means it is beyond the scope of the present thesis.

The next chapter will present the overarching results, with reference to the five research questions, and propositions made for how the findings are relevant to current and

potential practices in applied scenarios (e.g., education, mentoring, homebased, business and therapeutic settings).

Chapter 8 Conclusion

8.1 Background

The present thesis began by explaining the importance of mentoring and highlighted that all mentoring is founded in a help-seeking and help-providing relationships. A review of attachment literature suggested there is a potential relationship between implicit secure base assumptions and assumptions about help-seeking and help-providing interactions in mentoring relationships. Unpublished research had already produced a preliminary examination of this relationship using the Attachment Script Assessment (ASA) and the Mentoring Script Assessment (MSA). It examined the relationship between the two sets of assumptions and explicitly reported outcomes and actual engagement in mentoring relationships (Bianchini et al., 2011; Zevallos et al., 2009).

8.1.1 Research questions

The literature review and unpublished research informed the following five research questions:

1. Are implicit assumptions about mother-child secure base interactions transferred to unconscious assumptions about support-seeking and support-providing behaviours in mentoring relationships?

2. Is the MSA specific to implicit and explicitly reported assumptions about mentoring and engagement in mentoring?

3. Are specific language or sentiment patterns associated with the level of secure base or mentoring script knowledge transcripts contain?

4. Are there patterns within ASA and MSA transcripts which could be used to simplify the transcript scoring process?

5. Are patterns identified in UK ASA transcripts also apparent in independent secondary data obtained from the US?

8.1.2 Studies

Three overarching studies were developed to answer the above five research questions. Study 2 was divided into three parts to reduce the number of outcomes reported at one time, thereby making the presentation of outcomes as comprehensive as possible:

- Study 1 was devised to investigate research questions 1 and 2.
- Study 2a – 2c were designed to investigate research questions 3 and 4.
- Study 3 was created to investigate research question 5.

8.2 Summary of novel and replicated findings

The literature reviewed in Chapter 1: Literature review, highlighted a number of issues that informed the above research aims and questions. Notably, that there is a lack of established theories guiding research into mentoring, outcomes are varied and there is a necessity to rigorously research the relational aspect of mentoring (Clutterbuck, 2004; Crisp & Cruz, 2009; Garvey et al., 2014; Lunsford et al., 2017). Fundamental to the present thesis is the assumption that productive mentoring relationships rely on the ability of the mentee to seek and respond to mentor help appropriately, and the ability of the mentor to be consistent, sensitive to mentee needs, set goals and limits, and provide feedback and guidance in a way that is effective in overcoming obstacles, whilst enabling exploration and development (Garcia-Melgar et al., 2021). This assumption is relevant to the secure base

script aspect of attachment theory (Bowlby, 1988b; Chen et al., 2013; Roque et al., 2013; Waters & Cummings, 2000; Waters & Waters, 2006). Preliminary, previously unpublished work examined the relationship between unconscious attachment secure base script knowledge and a mentoring script that contains a related set of implicit assumptions (Bianchini et al., 2011; Zevallos et al., 2009). The ASA and MSA are measures used to assess the secure base and mentoring scripts and are previously unused in published research originating from the UK and, to the author's knowledge, no published work has examined these assessments at the individual story level. Therefore, the present thesis takes the novel approach of conducting a deep examination of the component parts of the assessments.

Broadly speaking, this series of questions was addressed by the thesis. The relationship between secure base and mentoring script knowledge was clarified, the validity of the ASA and MSA for a UK population established, patterns within transcripts examined, and features of ASA and MSA transcripts that may help to inform the scoring process for transcripts on the borderline of 3.5 and 4 identified. Each of the three studies produced a series of novel findings, and some of those novel findings were replicated. In addition, some outcomes from the previously unpublished studies were replicated. The large number of findings means that it would be easy to overlook some of them. Therefore, they have been summarised below for each study with a brief explanation of how they contribute to answering the relevant research question. Explanations about how the findings are relevant to existing literature is contained in each relevant study chapter and in section 8.3 of this chapter.

8.2.1 Study 1

The research questions informing the examinations conducted in Study 1 were:

1. Are implicit assumptions about mother-child secure base interactions transferred to unconscious assumptions about support-seeking and support-providing behaviours in mentoring relationships?

2. Is the MSA specific to implicit and explicitly reported assumptions about mentoring and engagement in mentoring?

Relationships between transcript scores and features were examined at the story level. This was a novel approach because the mean ASA or MSA scores are ordinarily used to identify correlates and individual story scores are not reported. However, examination of individual story scores revealed interesting patterns which were discussed at length in Chapter 3: Study 1, sections 3.3 – 3.5. A positive correlational relationship between ASA and MSA assessment outcomes was found with the majority being at the $p<.01$ level. Regression results suggested secure base script knowledge (as assessed by the mean ASA) in combination with the number of previous mentors accounts for 52.8% of mentoring script knowledge (as assessed by the MSA). Baby's Morning and The Party scores made significant contributions to this model, but Doctor's Office did not. Four significant relationships were identified between the MSA and explicit attitudes conducive toward mentoring, whereas only one significant relationship existed between the ASA and mentoring attitudes. These outcomes suggest secure base script knowledge informs mentoring script knowledge but both sets of knowledge are distinct from one another. The distinction between the ASA and MSA correlations shared with explicitly reported attitudes toward mentoring is an important

finding, it replicates and extends previous findings (Bianchini et al., 2011; Zevallos et al., 2009). Without this, the strong significant correlation between the ASA and MSA score would suggest both were assessing the same construct (i.e., secure base script knowledge).

The novel examination of individual transcript scores in Study 1 resulted in the suggestion that mean: WB & NEU may be an effective alternative to the mean MSA. It was the variable most frequently correlated with explicit positive attitudes toward mentoring and reported mentoring engagement. It shared 5 significant correlations with explicit attitudes conducive to positive mentoring experiences and 3 significant correlations with incidences of reported mentoring engagement. In contrast, the mean MSA shared 4 significant correlations with explicit attitudes conducive to positive mentoring experiences and none with mentoring engagement. The new variable was therefore a more reliable predictor of positive attitudes toward mentoring and actual mentoring engagement than the MSA.

Therefore, in answer to the two research questions:

1. Implicit assumptions about mother-child secure base interactions appear to be transferred to unconscious assumptions about goal-oriented support-seeking and support-providing behaviours in mentoring relationships; however the effect is seen to varying degrees across story types. Previous mentoring experiences also contribute to more complete mentoring script knowledge.

2. The MSA is specific to implicit and explicitly reported assumptions about mentoring and engagement in mentoring. The same relationships are not observed for ASA data.

To summarise, in addition to answering the research questions and replicating the relationship between mean ASA and MSA scores, and some previously reported relationships between explicitly reported attitudes toward mentoring and the MSA, novel insights were gained into the features of individual ASA and MSA story transcripts. A novel alternative to the mean MSA was also proposed (mean: WB & NEU).

8.2.2 Study 2

8.2.2.1 Study 2a

Each element of Study 2 was informed by research questions 3 and 4, which were:

3. Are specific language or sentiment patterns associated with the level of script knowledge transcripts contain? (Studies 2a – 2c)

4. Are there patterns within ASA and MSA transcripts which could be used to simplify the transcript scoring process? (Studies 2 – 3)

Study 2a used AntConc to conduct a series of novel examinations to explore whether significant differences existed between the language used in ASA and MSA transcripts scored 4 or above and less than 4. A greater range of vocabulary and longer transcripts were associated with transcripts scored 4 and above. Keyness analyses revealed statistical differences in the way names were allocated and used. When this was examined at the individual story level, Baby's Morning and The Party transcripts scored 4 or above were statistically significantly more likely to contain care receiver names. In contrast, the pre-allocated care receiver name, Tommy, in Doctor's Office was used significantly less by those

with complete secure base script knowledge. Potential reasons for this were explored in Chapter 4: Study 2a, sections 4.4 and 4.5.

Mentor names were not used in any MSA transcripts scored less than 4. MSA transcripts scored 4 or above were more likely to contain mentee names in Writer's Block and Not Enjoying University transcripts than those scored less than 4. A peculiarity was that Choosing Specialist Modules transcripts scored less than 4 were more likely to contain mentee names than those scored 4 or above. This may be due to adjustments made to the prompt word list for cultural reasons. However, it followed a trend from Study 1, where removing Choosing Specialist Modules from the MSA score improved the correlations with engagement in mentoring and constructive attitudes toward mentoring.

The mean: WB & NEU was significantly correlated with the use of mentor names in all three mentoring story types. It was a better predictor of mentor name use than the mentoring script knowledge embedded in the individual stories Not Enjoying University and Choosing Specialist Modules, but not as robust as Writer's Block. Taken in conjunction with the findings in Study 1, where this new variable was the most reliable predictor for actual engagement in mentoring and constructive attitudes toward mentoring relationships, further investigations would be worthwhile to find whether this streamlined version of the measure could be validated and used as an alternative to the mean MSA. The streamlined version would be less time-consuming to transcribe and score, and scoring could take account of mentor name use for scoring transcripts on the boarder of 3 and 4 if there was some doubt about script content.

To summarise, the combined outcomes from Study 1 and 2a suggest the mean score of Writer's Block and Not Enjoying University are partially influenced by implicit attachment script knowledge and an effective assessment of implicit mentoring scripts. All Study 2a findings were novel, with the exception of longer transcripts with greater vocabulary being associated with transcripts containing more secure base script knowledge.

ASA transcripts containing complete script knowledge were more likely to contain names than MSA transcripts containing complete script knowledge. Novel examinations suggested mean: WB & NEU was significantly correlated with engagement in mentoring, constructive explicit attitudes toward mentoring, greater likelihood of mentor name use in all three types of mentoring stories, and increased likelihood of mentee name use in Not Enjoying University transcripts. As a result, it is suggested all three stories are administered to participants as though they were all to be analysed. This would maintain the current level of script priming, but only Writer's Block and Not Enjoying University would be transcribed and scored. Using this novel approach and taking note of mentor name use for transcripts on the borderline of scores 3 and 4 would reduce the transcription and scoring process by one third and simplify the scoring process. This could be a step toward making the assessment more attractive for use in mentoring research where researchers may not be attachment specialists. It also has scope to inform further developments of the MSA for use as a recruitment and training needs analysis tool in applied scenarios such as mentoring schemes (see Chapter 8: Conclusion, section 8.3 for further details).

8.2.2.2 Study 2b

Study 2a outcomes contributed to answering research questions 3 and 4, specific to language patterns in ASA and MSA transcripts. Whereas Study 2b used a novel approach to

contribute information about sentiment patterns in ASA transcripts. This informed the answers to both these research questions. Research questions 3 and 4 were:

3. Are specific language or sentiment patterns associated with the level of script knowledge transcripts contain? (Studies 2a – 2c)

4. Are there patterns within ASA and MSA transcripts which could be used to simplify the transcript scoring process? (Studies 2 – 3)

All findings in Study 2b were novel because it was the first exploration of ASA transcript sentiment content undertaken. Baby's Morning transcripts were most likely to share a significant correlation with the amount of sentiment expressed in transcripts. In each instance the correlation was negative, regardless of whether sentiment was positive or negative. Examination of the correlations between the amount of individual sentiment in transcripts (i.e., joy, trust, anger, distrust, fear, and sadness) with secure base script knowledge, showed only 'fear' shared no significant correlation. The other sentiments each shared a significant negative correlation. The greatest variance of all sentiments was observed for sadness. Contrary to expectations, an increase in secure base script knowledge was reliably associated with a significant reduction of positive and negative sentiments expressed only in Baby's Morning transcripts. An increase in the mean ASA, Baby's Morning, and Doctor's Office scores was also associated with a significant reduction of negative sentiment expressed in Doctor's Office transcripts. There were no significant correlations between The Party transcript sentiment content and secure base script knowledge in any transcript types. In summary, as secure base script knowledge in Baby's Morning transcripts increased the expression of grouped and individual sentiments decreased.

Of all the sentiments explored, sadness shared the strongest variance with transcript scores (37.7% of the mean ASA score and 32.72% of the Baby's Morning transcript score). These outcomes informed a regression analysis to examine the contribution sentiment expressed in transcripts made to ASA transcript scores. Regressions found a reduction in joy and trust expressed in transcripts accounted for 25.2% of the variance in mean ASA score (only joy made a significant contribution, which was at the $p<.02$ level). Whilst reduction in anger, disgust, fear, and sadness accounted for 38.1% of the mean ASA score (only sadness made a significant combination, which was at the $p<.001$ level). This confirms that as the level of expressed joy and/or sadness increases in transcripts the mean ASA score decreases.

Following these findings, transcripts were grouped according to their mean ASA score: Group 1 contained transcripts with mean scores of less than 4. Group 2 contained transcripts with mean scores of 4 or more. ASA group allocation was unrelated to sentiment level. However, mean: BM & TP Group 2 was associated with a statistically significant increase in negative sentiment in Baby's Morning transcripts. This finding contrasted with the previous ones specific to sentiment. Several potential reasons for the contradictory outcome were presented in Chapter 5: Study 2b, sections 5.4 and 5.5.

In summary, the combination of outcomes from Study 2a and 2b suggest transcripts containing the following features were most likely to contain complete secure base script knowledge and therefore to be scored 4 or more:

1. Low levels of joy expressed in transcripts.

2. Low levels of sadness expressed in transcripts.

3. Longer transcripts (ASA transcripts scored 4 or more contain a mean of 269.2 words, compared with 195.1 words in transcripts scored less than 4).

4. Broader vocabulary (ASA transcripts scored 4 or more contain a mean of 139.2 unique word types, compared with 107.8 in transcripts scored less than 4).

5. Care receiver name use in Baby's Morning and The Party transcripts (although care receiver name is not necessarily to be expected).

The studies conducted to date also suggest an increase in mean ASA score is:

6. Significantly less likely to be associated with reported positive attitudes to mentoring than the mean MSA score is (as identified in Chapter 3: Study 1).

7. Not associated with actual mentoring experiences in the same way the mean: WB & NEU score is (as identified in Chapter 3: Study 1).

8. Associated with longer transcripts containing broader vocabulary (as identified in Chapter 4: Study 2a).

9. Associated with a greater likelihood of care receiver name use in Baby's Morning and The Party transcripts (Chapter 4: Study 2a).

10. Associated with a decrease in expressed joy and sadness (as identified in Chapter 5: Study 2b).

This suggests the ASA is specific to assessing secure base script knowledge. In contrast the MSA is specific to mentoring script knowledge, is predictive of positive attitudes to mentoring, and associated with mentoring engagement. Of the ASA stories examined, Baby's Morning transcripts have become a point of interest in their own right, because:

1. The correlational relationship between Baby's Morning transcript scores and Doctor's Office, The Party, and the mean ASA scores had a higher variance than other combinations of score types (Chapter 3: Study 1, novel finding).

2. Despite the distinction between the ASA and MSA outcomes, the mean ASA (with previous mentoring experiences) accounted for 52.8% of the variability of the MSA score. Of the three ASA story scores Baby's Morning transcript made the largest contribution and was therefore the most influential story with respect to informing mentoring script knowledge (Chapter 3: Study 1, the ASA and MSA relationship is a replicated finding, the remaining findings are novel).

3. An increase in secure base script knowledge in Baby's Morning transcripts is more reliably correlated with the amount of explicit care receiver name use across Baby's Morning and The Party transcripts than the amount of secure base script knowledge in The Party transcripts is (Chapter 4: Study 2a, novel finding).

4. The Baby's Morning transcript score was the ASA story score most likely to share a significant negative correlation with positive and negative groups of sentiment and with individual sentiment (Chapter 5: Study 2b, novel finding).

5. When the mean of Baby's Morning and The Party is used in place of the ASA to categorise participant transcripts into two groups, Baby's Morning transcripts are associated with higher levels of negative sentiment in Group 2 (mean scores of 4 and above) (Chapter 5: Study 2b, novel finding).

8.2.2.3 Study 2c

Study 2c was a novel examination of MSA data designed to contribute to addressing research questions 3 and 4, which were:

3. Are specific language or sentiment patterns associated with the level of script knowledge transcripts contain?

4. Are there patterns within ASA and MSA transcripts which could be used to simplify the transcript scoring process? (Studies 2 – 3)

Some findings pertinent to MSA transcripts were presented in the summary of Studies 1, and 2a. They and the other additional novel findings from Study 2c have potential to support inexperienced coders with scoring transcripts on the border of 3 and 4. They also contribute information to the research community's current understanding of the ASA and MSA transcript features. In summary, the findings are:

1. MSA transcripts with a mean of 311.7 words were associated with a score of 4 or more (whereas those with a mean of 219 were associated with a score of less than 4).

2. MSA transcripts with a mean of 157.1 unique words were associated with a score of 4 or more (whereas those with a mean of 119.4 unique words were associated with a score less than 4).

3. Mentee name use was more likely to occur in Not Enjoying University transcripts and Writer's Block transcripts if the score is 4 or above. However, this was not always the case, and the effect was reversed in Choosing Specialist Module transcripts.

4. Mentor name use was associated only with scores of 4 and above.

5. Sentiment level expressed in MSA transcripts did not influence the mean MSA score.

Potential reasons for Study 2c outcomes were suggested in Chapter 6: Study 2c, sections 6.4 and 6.5. Study 2c was the final examination of the novel features of dataset 1. Studies 1 to 2c provided a series of replicated and novel features of English undergraduate ASA and MSA transcripts (presented in this chapter). For completion, an independent dataset was sourced to compare the findings and to comprise Study 3. Unfortunately, at the time of writing no published MSA datasets were available, this restricted the comparison to ASA data.

8.2.3 Study 3

Study 3 was designed to contribute to answering research question 4 and to answer research question 5; the questions were:

4. Are there patterns within ASA and MSA transcripts which could be used to simplify the transcript scoring process? (Studies 1 - 3)

5. Are patterns identified in UK ASA transcripts also apparent in independent secondary data obtained from the US? (Study 3)

Dataset 1 was collected specifically for Studies 1 and 2 by the author of this thesis. The 54 participants were undergraduate students attending an English University based in the West Midlands. Dataset 2 was anonymised historical secondary data collected in the US and is independent of this study. The 89 participants were adult mothers. Dataset 2 participants were instructed not to include names in their stories, whereas dataset 1 participants did not receive that instruction. Study 3 comprised a comparison of the Baby's Morning and Doctor's Office transcripts from both datasets. A slight adjustment was made to the dataset 1 Doctor's Office prompt word set to make it more appropriate to a UK population (the word *shot* was replaced by *injection*) (see Appendix F for changes and reasons for changes).

Some findings from Study 1 were replicated in Study 3, they were:

1. Statistically significant correlations between Baby's Morning and Doctor's Office transcript scores at the $p<.01$ level. The variance being 38.69% for dataset 2 (the US dataset) and 20.7% for dataset 1 (the UK dataset).

2. Higher word counts for the Baby's Morning and Doctor's Office transcripts belonging to the group scored 4 or more than in the group scored less than 4.

3. A higher number of unique words for the Baby's Morning and Doctor's Office transcripts belonging to the group scored 4 or more than in the group scored less than 4.

4. A reduction in the level of disgust expressed in Baby's Morning transcripts from both datasets was significantly correlated with an increase in secure base script knowledge in Baby's Morning transcripts. However, the numerous sentiment effects observed in dataset 1 were not replicated in dataset 2.

5. Despite dataset 2 participants being instructed not to include names, the transcripts contained them at a comparable rate to dataset 1. 36.2% of dataset 1 Baby's Morning transcripts contained baby names and 37.2% of dataset 2 transcripts contained them. However, in contrast to dataset 1 there was no significant relationship between the regularity of care receiver name use with Baby's Morning transcript score in dataset 2.

Potential reasons for the differences between the datasets are suggested in Chapter 7: Study 3, sections 7.4 and 7.5.

8.3 Discussion: Situating the ASA and MSA: Benefits, risks and suggestions for applied use

A variety of approaches toward assessing implicit and explicit attachment-based attitudes and behaviours were explored in depth in Chapter 1: Literature review, sections

1.1.3 – 1.3.1 Each tool has its own strengths and limitations, and rather than one being 'best' each is suited to a different need. The outcomes from the present thesis suggest the ASA and MSA are useful research tools, provides evidence for their suitability for use with UK based populations, and makes suggestions for their adaptation for research and applied settings.

The ASA is already in regular use as a research tool, but the MSA has yet to be used in published research. The present thesis suggests it would be useful for use in research specific to the examination of implicit mentoring help seeking and help providing assumptions. Suggestions for adaptation of the assessments have been made on the basis of the combined outcomes. Of all the language features the novel findings associated with patterns of name use proved most interesting, particularly when compared with name use in the independent dataset obtained from the US. The similarity in frequency of name use, the different usage across the score types, and differences in levels of expressed sentiment suggest the contradictory instructions to participants may have influenced participant meta-emotion and cognitive load (see Chapter 5: Study 2b, sections 5.4 and 5.5 and Chapter 7: Study 3, section 7.4). Further investigation is needed to examine whether name use outcomes are reliably associated with the instructions given before making a decision about changing the current instructions.

Sentiment analysis of dataset 1 suggested participants with complete secure base script knowledge as assessed by the mean ASA may have an inclination toward greater self-awareness and emotional regulation. This was particularly evident in the expression of sadness when mentally positioning themselves as a secure base. If so, this effect may be

akin to the relationship between greater participant meta-cognition and secure AAI scores (Crowell, 2021; Dykas & Cassidy, 2011). This could partially account for the increased likelihood of those with complete secure base script knowledge also producing AAI transcripts categorised as secure (Waters et al., 2013). This effect was not observed in dataset 2 and therefore should be examined in other datasets to identify whether the effect was an anomaly or attributable to a specific factor. Given recent developments in Artificial Intelligence, it would have been interesting to put the transcripts through a tool such as ChatGPT. However, ethical approval for this had not been sought and so it was not possible. AI generated content is known to have contain considerable gender and racial biases (Fang et al., 2024). However, future research investigating whether AI can be used to reliably assess the language content of ASA and MSA transcripts accurately regardless of race and gender may prove useful in streamlining the standardised scoring process.

Study outcomes reinforce the validity of the ASA and MSA assessments, their underlying attachment influenced relationship, and the claim the ASA can be adapted to reflect various secure base script relevant dyad types (Waters & Waters, 2021). They add novel information about the distinct functions and features of individual stories, the language and sentiment feature of transcripts, and inform suggestions for ways to streamline the assessments and adapt them for use in applied settings. Further examination of individual transcript features could provide important information if the measures are to be adapted. For instance, research assessing the impact of aspects such as care receiver age, the inclusion of nonsignificant others, different contexts, and extended family members has potential to inform the design of new ASA and MSA prompt word sets. It would also inform the creation of differentiated guidance regarding the use, strengths, and limitations of each

prompt word set. This would enable researchers to make considered decisions about which to select. For instance, some studies may benefit from a mean ASA score most relevant to pre-school age children and may therefore choose to use validated prompt word sets purely reflecting that age range but with different types of carers. An examination of the experience of participating in the ASA and MSA process is also important if the assessments are to be used in applied settings because vulnerable people may be affected in unanticipated ways. The ability to adapt the ASA and its derivatives is unusual for an assessment of implicit assumptions and is a strength (Waters & Waters, 2006). In addition to supporting the usefulness of the ASA and MSA in research contexts, and the potential for reducing their size and streamlining the instructions, the present findings suggest they may have other uses in applied settings.

Bowlby himself highlighted the applied relevance of the secure base concept. For example, he noted the role of a therapist is to provide the patient with a secure base from which to explore and the similarities between the role of a child's secure base and the role of an army officer as secure base for an expeditionary force (Bowlby, 1988a, 2005c, 2005a). Research included in the literature review suggested providing ideal scripts helps individuals to adjust and improve their own scripts. Examples specific to therapeutic relationships, research, educational psychology, and salespeople were provided (i.e., Hershey et al., 1996; Kerslake & Roller, 2000; Meng et al., 1989; Rafaeli et al., 2011; Wilson & Hershey, 1996).

This approach has potential for use in mentoring and other professional scenarios (e.g., education and counselling) where relationship quality is an important contributor to success. For example, the Attachment Aware Schools (AAS) programme has been reliably

associated with a range of positive outcomes for pupils and staff (e.g., Dingwall & Sebba, 2018; Kelly et al., 2020; Rose et al., 2017, 2019; Rose, McGuire-Snieckus, Wood, & Vatamanides, 2016; Rose & Gilbert, 2017). At its core is the UK-based attachment and trauma informed Emotion Coaching UK approach (e.g., emotioncoachinguk, 2020; Gilbert, 2017; Gilbert et al., 2021b, 2021a; Gus et al., 2015; Rose, Temple, et al., 2016). Advantages of the Emotion Coaching and AAS approaches to implementation include the standardisation of attachment and trauma relevant language, methods of working with recipients, and the absence of labelling. The coaching approach is adapted from Gottman's original identification of the emotion coaching parenting style. It is taught to professionals and caregivers with the aim of replicating the emotion coaching parenting style (Gottman et al., 1996; Hooven et al., 1995). Recent work examining the efficacy and staff perception of an AAS project found the programme was associated with statistically significant improvements in academic attainment, behaviour, staff practice and staff and pupil emotional well-being (Gentle et al., in preparation). Qualitative analysis of case studies provided by staff found differences in several relational attitudes and approaches between those who perceived the pupils as progressing and those who did not; amongst other factors, staff who inferred dissatisfaction had a lower likelihood of providing statements that identified they worked as a team to provide consistent reliable secure base experiences (Gentle, in preparation). Like parents, some professionals use an Emotion Coaching approach naturally. An adapted version of the MSA to make it specific to school-based scenarios could be used pre and post training to find whether secure base script knowledge had improved and to target any gaps in that knowledge. This has potential to reduce the stress levels of staff finding it difficult to apply the approach and improve outcomes for them and their pupils.

An important point to note, is that the ASA and MSA are not constructed of fixed stories. There is a range of ASA stories to select from and (if validated) further prompt word sets could be suggested, making the assessments relevant to any dyad type. Therefore, both assessments have the unusual advantage of being flexible enough for adjustment to reflect any research scenarios and participant experiences. However, the assessments in their current form have been validated for use and any new versions would need to go through the same process by the ASA assessment creators to ensure their construct validity (Waters & Waters, 2021). It is also important to consider the potential impact of using different caregiver types in the prompt words (see Chapter 2: Methodology, section 2.5.1).

The examinations of individual stories conducted throughout each thesis chapter produced findings to suggest each set of prompt words results in different, and to some extent unique, trends across participants and these outcomes were considered within each study chapter discussion and conclusion section within the context of the literature review. Differences were seen in predictive value, sentiment content, name use, and possibly participant comfort during storytelling. The variability led to the suggestion of two novel assessments (i.e., mean: BM & TP and mean: WB & NEU) which are worthy of further investigation to find whether they are suitable substitutions for the mean ASA and mean MSA scores. Whilst this would reduce the transcribing and scoring process by one third, if each current story is priming a different aspect of the secure base script it would be wise to continue to use three sets of primes for each respective assessment and transcribe and score only two.

The need for research examining the influence of mentoring relationships factors on mentoring outcomes has been previously explored cited (see Chapter 1: Literature review, sections 1.1, 1.1.1 and 1.2). The issues associated with mentoring researcher use of questionnaire-based assessments of attachment were discussed at length in Chapter 1: Literature review, sections 1.1.3.3, 1.1.3.4 and 1.3.1, and Chapter 6: Study 2c, section 6.4. Not least, interviewees may give responses which distort their genuine ability to engage in mentoring relationships. In contrast, the MSA provides an assessment which reliably correlates with positive attitudes to mentoring, and the use of mean: WB & NEU corresponds with engagement in mentoring behaviours. The literature reviewed in Chapter 1 supports the notion that the ASA is suitable for adaptation for use across age groups, with high and low risk populations, negates the need for those being assessed to write, and has the advantage of accessing implicit relationship assumptions. Therefore, adapted versions of the ASA and MSA may be useful in applied settings. For instance, mentoring schemes could use the MSA to assess the extent to which mentors and mentees have complete secure base script knowledge and provide training aimed at improving script knowledge. If, for example, a participant omitted one aspect of the mentoring script across each assessment or included one aspect sporadically across story types, one-to-one training sessions could be used to discuss the complete mentoring script and to negotiate practical tasks designed to help them practice behaviours associated with the omitted parts of the script to increase their comfort and familiarity with them. Alternatively, the outcomes could remain unknown to participants and group, or individualised, activities aimed at reinforcing all parts of the script delivered. In both instances the script assessment could be repeated after training and opportunities to practice the script to find whether the omissions remain.

As explained in the literature review, script training has previously been used to train psychology undergraduates, educational psychologists, therapists, and therapy clients (Hershey et al., 1996; Kerslake & Roller, 2000; Rafaeli et al., 2011b, 2011a; Wilson & Hershey, 1996).

Trainers of professionals requiring a deeper relational approach could use the ASA to identify training needs in the way already described with prompt word sets devised to be specific to the situation (e.g., counselling, early years settings, nannying scenarios, education scenarios, and medical scenarios). Many employers now use personality assessments during staff recruitment activities despite the problem of response distortion which may result in flawed recruitment (Girsang et al., 2023). The ability of the ASA and MSA to access implicit knowledge would circumnavigate this issue and could be used by recruiters to identify potential training opportunities and pre-existing strengths of people applying for mentoring, mental health or education related positions.

There are practical steps for consideration before this could be done. A particular concern of making any assessment widely available is the maintenance of construct validity and ensuring reliability between scorers. As identified in Chapter 1: Literature review, section 1.1.3.2, AAI validity is reduced when analysed by individuals who are not attachment specific experts (even if they are educated to the same degree as the attachment experts but in another field) (Beijersbergen et al., 2006). Unlike the AAI, ASA and MSA data have not been collected online and it is unknown whether results would be comparable with face-to-face data collection (see Chapter 2: Methodology, section 2.4). Therefore, future research

ought to be conducted to ensure ASA and MSA assessment outcomes are reliable across scorers and for online or face to face data collection.

Chapter 3: Study 1, section 3.4 presented anecdotal information about participant spontaneous comments during the research process. Future researchers may gain some insights from gathering spontaneous participant comments about each story and from videoing and observing participant and researcher interactions to find whether (and if so, to what extent) different prompt word sets and different researchers influence outcomes.

The AAI list of coders is carefully managed and limited to those who have completed accredited training and validation examinations (Crowell, 2021). In addition, access to the interview questions and guidance for administration are tightly restricted. The relative simplicity of the ASA and MSA protocol, prompt word lists, and scoring would make it easy to share widely online and this risks people creating prompt word lists without their validation and also risks inappropriate use of the tools and their outcomes. A solution may be to take a similar approach to that taken with the AAI and restrict use of the tools to a core group of approved people which services can bring into their settings. In addition, it is important trainers emphasise the ASA is not an assessment of attachment pattern, but of the secure base script element of the attachment internal working model. Similarly, the MSA is an assessment of a mentoring script which is informed by (but distinct from) the secure base script. It is important not to use the ASA or MSA assessment as a diagnostic tool to label individuals as ‘secure’ or otherwise. Finally, any new prompt word sets must be validated before use.

8.3.1 Limitations

There are several factors limiting the present research. The research population for Study 1 was smaller than originally planned due to the restrictions brought by the covid-19 pandemic which made it impossible to continue sourcing data face to face (an in-depth consideration of this is contained in Chapter 2: Methodology, section 2.4). However, the data collected for that study was converted to a reasonable sized corpus for Studies 2a-c and additional data was sourced, cleansed, and combined with some of the data collected for Study 1 to provide a larger corpus for Study 3. Participant demographic features were restricted, so it would be inappropriate to draw conclusions from this thesis about ASA and MSA outcomes specific to gender, age, or ethnicity. Most notably, all of dataset two and 46 out of 54 participants from dataset one identified as female. Contradictory evidence about the extent to which demographic factors influence emotion regulation and approach withdraw behaviour exists (Huerta et al., 2022; Ritschel et al., 2015; Wan et al., 1999; Weiss et al., 2022). It is therefore recommended that research is conducted with sufficient participant numbers so that outcomes can be examined across different demographic groups and the thesis outcomes either replicated or refuted.

In addition, the thesis provides the first exploration of word keyness, name use, and sentiment content of ASA and MSA transcripts. This means no previous benchmark exists to assess whether the findings were unique to the population studied or are reliable. To address this as far as possible the same explorations were conducted using an independent dataset. However, this comparison of outcomes may have been influenced unduly by marginally different instructions about name inclusion. In addition, only two of the ASA transcript types and none of the MSA transcripts were available for comparison. It is

therefore recommended that further investigation into the suggested streamlined versions of the ASA and MSA, sentiment content, and name use be conducted.

8.4 Conclusion

In summary, the novel and replicated findings from each of the three studies (listed per study at the outset of this chapter) have potential to make the following theoretical and practical contributions to existing knowledge about the secure base script, mentoring script, and use of the ASA and MSA assessments:

1. New information about the ASA and MSA assessments. The thesis replicated the relationship between the mean ASA and MSA. It provided novel information about the contribution individual stories make to the mean ASA and MSA scores, the relationship between different story scores, and the relationship between these and a series of factors (e.g., explicit attitudes toward and engagement in mentoring).

2. This information provides novel evidence for ASA and MSA population reliability between the UK and US populations.

3. The novel findings have led to the identification of potential alternatives to the mean MSA and mean ASA (i.e., mean: WB & NEW and mean: BM & TP) which would reduce the transcription and scoring process of each assessment by ⅓. This requires further investigation.

4. The findings provide the foundation for research into the use of the MSA in applied settings to support the recruitment of mentors and to identify their potential training needs. It may also be possible to use the ASA in the same way with professionals in relevant therapeutic and social work contexts. This would require the validation of sets of prompt words suited to each context (e.g., primary schools, professional mentoring schemes, etc).

5. The findings provide the foundation for research into whether instructing participants not to use names influences the amount of emotion expressed in Baby's Morning and Doctor's Office transcripts, and whether the frequency of name use is associated with particular scores in ASA and MSA transcripts. The outcomes could be used to inform the scoring process and to inform further research into optimum name use in relational interactions. For instance, whether name use in a mentoring scenario leads to an unconscious bias in the other party to be open to the revision of their mentoring script or whether is it more likely to trigger defence mechanisms in those without complete script knowledge.

The thesis therefore has theoretical relevance to several types of professionals and scenarios. For example, attachment researchers may be particularly interested in the literature review, the detailed examination of ASA and MSA transcripts, the examination of the language and sentiment expressed in transcripts, and the suggestions made for adaptations to the ASA and MSA for different types of research. Mentoring researchers may be more interested in the outcomes specific to the MSA and in the information provided about devising and validating prompt word sets relevant to their research projects.

Linguistic researchers may find the language and sentiment features associated with primed narratives useful and be interested in the validation of prompt word sets specific to their research projects. Whilst professional mentors' primary interest may be the potential to use a streamlined version of the MSA to inform recruitment of mentors with implicit assumptions conducive to constructive attitudes toward (and constructive behaviours within) mentoring relationships. They may also be interested in the potential to use the MSA to identify targeted training for mentors and mentees, and to create sets of prompt words validated for use in their unique scenario.

Overall, the findings provide new information about the ASA, MSA and their component parts. The outcomes suggest the MSA is a useful resource which is worthy of further investigation to ensure the outcomes are replicable. An important consideration raised by the present work is that the ASA and MSA are worthy of examination in new ways, with a view to their adjustment for research use and use in applied settings. These changes would streamline the assessments, making them more time and cost-effective as research tools and reposition the assessments outside of the research community, but potentially in therapeutic, educational, mentoring and business settings. There would need to be an inevitable adjustment in the approach taken to train individuals who may have limited or inaccurate understanding of attachment theory. Further research examining the suitability of these suggestions would be necessary.

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List of Appendices

Appendix A: Participant information & informed consent form

You are invited to participate in research investigating how people tell stories about different types of relationship.

Please read this information carefully and ask for clarification if necessary, so that you can make an informed decision about whether to participate.

Research aim
To investigate the story telling.

Can I take part?
You must be at least 18 years old and a higher education student.

Is taking part compulsory?
No, participation is voluntary.

What does taking part involve?
You will be asked to complete some written questionnaires and tell some stories using lists of words that you will be provided with.

Will my responses be anonymous?
Yes, you will be issued an anonymised numerical participant ID number, and your name will not be written anywhere. It will not be possible to match your identity to your questionnaire responses or to reveal your identity through publications of the study.

Are there any risks or discomfort associated with participating in this study?
There is minimal risk of discomfort.

What will happen if I agree to participate but change my mind later?
You are free to withdraw from the study during the written tasks by telling the researcher.

Once the tasks are completed you have 2 weeks to inform the researcher that you wish to have your data withdrawn. To do this, contact the researcher and state your participant ID number. They will then delete your data.

What will happen to the results of the study?
The anonymised results will be grouped, analysed, and used to construct a research report for publication in an academic journal. It will not be possible for your individual results to be identified.

Who has reviewed this study?
Birmingham City University's Faculty of Business, Law and Social Sciences Research Ethics Committee (FREC) reviewed this study and granted it ethical approval

Who should I contact for more information?
If you require any further information or have any queries about this research, please contact Lisa Gentle: lisa.gentle@mail.bcu.ac.uk

Informed Consent

1. I have read the attached information regarding my participation in this research. I have had the opportunity to discuss it and ask any questions. All my questions have been answered in a satisfactory way.

2. I understand my participation is voluntary and that I will not be paid.

3. I understand that all my responses are anonymous.

I hereby give my consent to take part in this research:

Signature: Date:

Study number:

Appendix B: Participant debrief

Thank you for taking time to participate in this study.

Your recordings will be analysed to examine how adults construct stories.

Your data is anonymous, and your name has not been used. It will not be possible to match your identity to your questionnaire responses, stories, or to reveal your identity through publications of the study. Your stories will be stored on a secure, password protected university system. They will be deleted once they have been transcribed.

If you change your mind about being included in this study, you have 14 days to inform the researcher. To do this, please contact Lisa Gentle lisa.gentle@mail.bcu.ac.uk and state your participant ID code and study number. Your data will then be deleted.

If you believe you are experiencing ill effects from the study, please contact Lisa Gentle lisa.gentle@mail.bcu.ac.uk and support will be arranged for you.

Appendix C: Participant ethnicity

Participant self-identified ethnicity against the Office for National Statistics (2016) *Ethnicity Categories for face to face and electronic surveys in England*

		Column A	Column B	Column C	Column D
Participant ethnicity category		**Original ethnic category chosen by participants**	**Additional ethnic descriptions given by participants**	**Final number of participants in each ethnicity category**	**Broad analysis used to maximise participant numbers in each group**
White	**1. English / Welsh / Scottish / Northern Irish / British**	23 (42.59%)		23 (42.59%)	28 (51.85%) White British or White European
	2. Irish	0		0	
	3. Gypsy or Irish traveller	0		0	
	4. Any other white background, please specify	5 (9.26%)	White Polish (N=1, 1.85%) Romanian (N=1, 1.85%) White European (N=1, 1.85%) Eastern European (N=1, 1.85%) Portuguese (N=1, 1.85%)	5 (9.26%) White Polish Romanian White European Eastern European Portuguese	
Multiple ethnic groups	**5. White and Black Caribbean**	1 (1.85%)		0	3 (5.56%) Multiple Ethnic Groups
	6. White and Black African	0		0	
	7. White and Asian	1 (1.85%)		0	
	8. Any other Mixed / Multiple ethnic background, please describe	1 (1.85%)	Asian & Black Caribbean (N=1, 1.85%)	3 (5.56%) White & Black Caribbean White & Asian Asian & Black Caribbean	

Asian / Asian British	**9. Indian**	4 (7.41%)		4 (7.41%)	17 (31.48%) Asian/Asian British
	10. Pakistani	8 (14.81%)		8 (14.81%)	
	11. Bangladeshi	2 (3.7%)		0	
	12. Chinese	2 (3.7%)		0	
	13. Any other Asian background, please describe	1 (1.85%)	Filipino (N=1, 1.85%)	4 (7.41%) Bangladeshi Chinese	
Black / African / Caribbean / Black British	14. African	3 (5.56%)		4 (7.41%) Includes Mauritian	4 (7.41%) Black / African / Caribbean / Black British
	15. Caribbean	0		0	
	16. Any other Black / African / Caribbean background, please describe	1 (1.85%)	Mauritian (N=1, 1.85%)	0	
Another ethnic group	17. Arab	2 (3.7%)		0	2 (3.7%) Arab
	18. Any other ethnic group, please describe	0		3 (5.56%) Filipino (N=1, 1.85%) Arab (N=2, 3.7%)	

Note. % denotes the % of research population represented by the number stated

Appendix D: Script Assessment: US version of ASA & MSA prompt words

(Bianchini et al., 2011; Zevallos et al., 2009)

The following scrips should be used to make 6 A4 booklets. Each booklet should have one script on each A4 page, and the participant number must be written on the front of the booklet. The order of scripts in each booklet should be as follows to minimise order bias:

Booklet number	Script order
1	a, b, c, d, e, f
2	b, c, a, e, f, d
3	c, a, b, f, d, e
4	d, e, f, a, b, c
5	e, f, d, b, c, a
6	f, d, e, c, a, b

a. Baby's Morning

mother	hug	teddy bear
baby	smile	lost
play	story	found
blanket	pretend	nap

b. The Doctor's Office

Tommy	hurry	mother
bike	doctor	toy
hurt	cry	stop
mother	shot	hold

c. The Party

Friday night	sulk	blockbuster
party	couch	movie
uninvited	mom	popcorn
miserable	talk	smile

d. Writer's Block

term paper	mentor	library
due soon	telephone	draft
blank paper	office	discuss
worried	suggestion	sleep

e. Not Enjoying University

homesick	library	visit
dorm	mentor	mentor's family
bored	talk	relax
bad food	invitation	new friends

f. Choosing a Major

sophomore	can't decide	new plan
choose major	mentor	courses
science	lunch	mentor
art	questions	confident

Appendix E: Script Assessment: UK version of ASA & MSA prompt words

The following scrips should be used to make 6 A4 booklets. Each booklet should have one script on each A4 page, and the participant number must be written on the front of the booklet. The order of scripts in each booklet should be as follows to minimise order bias:

Booklet number	Script order
1	a, b, c, d, e, f
2	b, c, a, e, f, d
3	c, a, b, f, d, e
4	d, e, f, a, b, c
5	e, f, d, b, c, a
6	f, d, e, c, a, b

a. Baby's Morning

mother	hug	teddy bear
baby	smile	lost
play	story	found
blanket	pretend	nap

b. The Doctor's Office

Tommy	hurry	mother
bike	doctor	toy
hurt	cry	stop
mother	injection	hold

c. The Party

Friday night	sulk	blockbuster
party	couch	film
uninvited	mum	popcorn
miserable	talk	smile

d. Writer's Block

assignment	mentor	library
due soon	telephone	draft
blank paper	office	discuss
worried	suggestion	sleep

e. Not Enjoying University

homesick	library	attend
halls of residence	mentor	journal club
bored	talk	relax
bad food	invitation	new friends

f. Choosing Specialist Modules

second year	can't decide	new plan
choose modules	mentor	courses
assessed by exam	lunch	mentor
assessed by assignment	questions	confident

Appendix F: Explanations for changes to the original prompt words

(Bianchini et al., 2011; Zevallos et al., 2009)

The following shows the original prompt words, highlights the words that were changed, states what the change was and the justification for it. All changes were approved by Professor Harriet Waters.

prompt word list	**original prompt word**	**replacement term**	**reason for change**
Baby's Morning	no changes		
The Doctor's Office	shot	injection	replacement terms are synonyms of the original terms and are commonly used in the UK
The Party	mom	mum	
	movie	film	
Writer's Block	term paper	assignment	
Not Enjoying University	dorm	halls of residence	
	visit	attend	The original story suggested the mentor invited the mentee to visit their family and that the mentee went on to befriend them. Some mentors are university members of staff, so it would be inappropriate for this story line to be followed due to safeguarding guidelines. Therefore, the storyline was changed to suggest the mentor invited the mentee to attend a journal club.
	mentor's family	journal club	
Choosing a Major (USA version) was renamed Choosing Specialist Modules (UK version)	sophomore	second year	Sophomore is not a term used in the UK; it was therefore replaced with second year
	choose major	choose modules	Undergraduate students from the UK are more likely to choose modules than a major in their second year of university
	science	assessed by exam	Once undergraduates from the UK are on the second year of their degree, they may be faced with choosing modules assessed in different ways but are unlikely to face the decision of deciding between studying art or science
	art	assessed by assignment	

Appendix G: Instructions for use with Adult Participants (ASA & MSA)

1. Adapted from the American English version (H. S. Waters & Rodrigues-Doolabh, 2012)er

2. Check which version of the secure script story booklet the participant should be given

3. Ask the participant to read and sign the consent form and give them a copy to keep that contains their participant ID number (in case they wish to withdraw consent later)

4. Tell participants that:
- We are interested in seeing how different people tell stories
- This procedure has already been used with children and we are trying to see if we get the same results with adults

5. Show the participant the first prompt word outline in their booklet. Tell them:
- We have six story outlines in total to help you make up stories
- Three stories deal with children and three are about adults [tell the participant whether it is the first or second set of three that are about adults and which set is about children]
- For each story, you will be given the title and then lists of words to help you make up a story
- Look at the words and go down the first column, then move from the first column to the next, and then to the next. The words give a general outline, or guide, of what the story is supposed to be about. So, for example [use whichever outline is first e.g., "in Baby's Morning, the basic outline is that the mother and baby are playing on the blanket."]
- The story will be recorded so that you don't need to write it down

6. This procedure is often understood quickly, but do go through the whole story if the participant looks, or says they are, confused

7. Prior to beginning story 1:
   Once the participant understands the procedure tell them:
- What we have in the booklet is meant to give you a brief outline of the story. So, I would like you to use it as a starting point to try and come up with the best possible story for [say the title of the first story e.g., Baby's Morning]
- Clarify whether this is a story involving children or a story about adults
- You don't have to use all the words if you don't want to, you can change the order around, or change the words themselves
- The main thing to do is to make sure you tell the best story you think you can tell
- I'd like it to be about a page long if it were written down, so you should put in as much information, and as many details, as you can
- You'll have a few minutes to look at the words, so you can put together your story. Let me know when you feel you're ready to tell the story and I will start the recording
- Once the stories are finished, they will be transcribed. So, it's no problem if you need to stop in the middle of a story to think about it, or if you would like to start again

8. Prior to beginning each story:
- Say the participant ID number and the story name at the start of each recording
- Stop the recording at the end of each story whilst they take time to look at the next set of words

9. Having recorded the first set of words follow this procedure for each subsequent set:
- Make sure the recording is properly labelled with participant ID number and the story title

- Before starting to record the story say “here is [story title], it is the same procedure as before. Look down the column of words, it gives you the basic outline of a story. So, [e.g., Tommy is riding his bike outside and he falls and gets hurt]. Again, I’d like you to come up with what you think is the best possible story you can tell about [name of story]. So, have a look at the words, and let me know when you have come up with a story and we’ll start recording.”

Appendix H: Codebook link Study 1 and 2a

Please see the *Supplementary appendices* file for this appendix or access the appendix using this link: https://mailbcuac-my.sharepoint.com/:x:/r/personal/lisa_gentle_mail_bcu_ac_uk/Documents/PhD%20template/Linked%20appendices/Supplementary%20appendices/Appendix%20H%20PhD%20Codebook%20Study%201%20and%202a.xlsx?d=w09860ce0052f4f4b82c87002ce290799&csf=1&web=1&e=4k3GAx

Appendix I: Pre- and post-standardisation coding link

Please see the *Supplementary appendices* file for this appendix or access the appendix using this link: https://mailbcuac-my.sharepoint.com/:x:/r/personal/lisa_gentle_mail_bcu_ac_uk/Documents/PhD%20template/Linked%20appendices/Supplementary%20appendices/Appendix%20I%20Study%201%20ASA%20MSA%20scores%20pre%20and%20post%20standardisation.xlsx?d=w51cda6fc2ab54434b127be392ea9e279&csf=1&web=1&e=Keqaar

Appendix J: SPSS file link

Please see the *Supplementary appendices* file for this appendix or access the appendix using this link: https://mailbcuac-my.sharepoint.com/:f:/r/personal/lisa_gentle_mail_bcu_ac_uk/Documents/PhD%20template/Linked%20appendices/Supplementary%20appendices/Appendix%20J%20SPSS%20outputs%20and%20pdf%20versions?csf=1&web=1&e=2Yr2Tm

Appendix K: AntConc stop word list for the ASA (includes prompt words)

0, 1, 2, 3, 4, 5, 6, 7, 8, 9, BM, DO, TP, mother, baby, play, blanket, hug, smile, story, pretend, teddy bear, lost, found, nap, Tommy, bike, hurt, hurry, doctor, cry, injection, toy, stop, hold, Friday night, party, uninvited, miserable, sulk, couch, mum, talk, blockbuster, film, popcorn, smile

Appendix L: AntConc stop word list for the ASA and MSA (does not contain prompt words)

0, 1, 2, 3, 4, 5, 6, 7, 8, 9, BM, DO, TP, WB, NEU, CSM

Appendix M: AntConc stop word list for the MSA (includes prompt words)

0, 1, 2, 3, 4, 5, 6, 7, 8, 9, assignment, due soon, blank paper, worried, mentor, telephone, office, suggestion, library, draft, discuss, sleep, homesick, halls of residence, bored, bad food, talk, invitation, attend, journal club, relax, new friends, second year, choose modules, assessed by exam, assessed by assignment, can’t decide, lunch, questions, new plan, courses, confident

Appendix N: Abbreviations used to annotate terms in Study 2a and Study 3

Caxx	Career aspiration
Cxx	Baby/child/teenager/student's name, central character of script prompt words
CCxx	Specific child carer name e.g., preschool worker, nanny, etc
Dxx	Father's name
Fxx	Friend's name (1 friend in the story), subsequent friends F2xx, F3xx, etc
FMxx	Flat mate's name (not friends with Cxx)
Hxx	Name of Cxx's home (town/county/city/country)
Mxx	Mother's name
Mexx	Mentor's name
Mtxx	Module/course/subject name/assignment title
PHxx	Party host's name
Rxx	Restaurant/café name
Sxx	Sister's name
SCxx	Story/film character name or specific story/film title
Uxx	University name
ULxx	University location (country/town/city)

Appendix O: Link to ASA Word and Txt files used for AntConc analysis (Study 2a)

Please see the *Supplementary appendices* file for this appendix or access the appendix using this link: https://mailbcuac-my.sharepoint.com/:f:/r/personal/lisa_gentle_mail_bcu_ac_uk/Documents/PhD%20template/Linked%20appendices/Supplementary%20appendices/Appendix%20O%20ASA%20and%20MSA%20transcripts?csf=1&web=1&e=1rKBRc

Appendix P: Link to ASA and MSA wordcount lists (Study 2a)

Please see the *Supplementary appendices* file for this appendix or access the appendix using this link: https://mailbcuac-my.sharepoint.com/:f:/r/personal/lisa_gentle_mail_bcu_ac_uk/Documents/PhD%20template/Linked%20appendices/Supplementary%20appendices/Appendix%20P%20MSA%20transcripts%20for%20AntConc%20analysis?csf=1&web=1&e=kLfhaI

Appendix Q: Link to keyness lists (Study 2a)

Please see the *Supplementary appendices* file for this appendix or access the appendix using this link: https://mailbcuac-my.sharepoint.com/:x:/r/personal/lisa_gentle_mail_bcu_ac_uk/Documents/PhD%20template/Linked%20appendices/Supplementary%20appendices/Appendix%20Q%20Keyness.xlsx?d=w65d8a1fce45b421c95293021bb6cfcb4&csf=1&web=1&e=n1PMxx

Appendix R: A comparison of word type use at the individual participant level

Table showing a comparison of word type use at the individual participant level

Corpus type and score	Number of participants included in the category	Range of mean unique words (word types)	Range of mean total words (word tokens)
3 ASA transcripts scored less than 4	12	50.4 (45.3-95.7)	106.4 (62.3-168.7)
1 ASA transcript scored less than 4	19	202 (67-269)	496 (114-610)
3 ASA transcripts scored 4 or more	11	137.4 (90.3-227.7)	323.7 (170.3-494)
1 ASA transcript scored 4 or more	11	100 (83-183)	235 (136-371)
3 MSA transcripts scored less than 4	15	212.7 (57-269.7)	557.3 (74-631.3)
1 MSA transcript scored less than 4	8	146 (89-235)	359 (144-503)
3 MSA transcripts scored 4 or more	21	185.7 (113.6-299.3)	527.7 (184-711.7)
1 MSA transcript scored 4 or more	10	144 (70-214)	394 (108-502)
All transcripts scored less than 4	7	ASA: 42.7 (45.3-88) MSA: 89 (57-146)	ASA: 47.7 (63.3-111) MSA:213.3 (74-287.3)
All transcripts scored 4 or more	8	ASA: 106.7 (121-227.7) MSA: 536 (189.7-243.3)	ASA: 237.3 (256.7-494) MSA: 237.6 (292.7-530.3)

Note. Transcripts scored less than 4 contain partial or no secure base or mentoring script knowledge and those scored 4 or more contain varying degrees of complete secure base or mentoring script knowledge

The table in Appendix R shows the range of word types and tokens used by individual participants according to how many of the ASA and MSA transcripts were scored 4 or above (see Appendix O, option 8, sheets 1, 2, 3, & 4). For example, the range for the mean unique words (word types) used across three ASA stories (where all three were scored less than 4) was 50.4, with the lowest mean for unique words used in three ASA stories being 45.3 and the highest 95.7. Where participants had only one transcript scoring less than 4 the range was higher at 202, with word types being between 67 and 269. Therefore,

some participants who had two transcripts scored 4 or higher were using a broader vocabulary than those consistently scoring below 4 on the ASA.

Where all 3 ASA stories were scored 4 or higher, the range of word types was 137.4 with the lowest mean range being 90.3 and the highest being 227.7. However, apart from one score of 90.3, the remaining scores are all above 110. The greatest variance between score types is seen where all six participant scores have been either 4 and above or all six were less than 4. Participant numbers in these categories are especially low; 8 participants consistently scored 4 or above in all ASA and MSA transcripts, and 7 consistently scored less than 4. In these cases, the ASA word types and tokens are always lower across those scoring less than 4 than those scoring more than 4 across the whole range. The same is true for the MSA transcripts. This suggests that participants with strong access to secure base and mentoring script knowledge use more unique words and use more overall words when primed to express this knowledge in a fictitious story. Overall, MSA transcripts tended to be longer than ASA transcripts. This might be due to participants encountering information about mentoring regularly as part of their studies and that the experience of being a parent or carer is unlikely to have been a part of everyday life for most participants.

Appendix S: Link to significance tracking across Pearson correlations (Studies 1 and 2)

Please see the *Supplementary appendices* file for this appendix or access the appendix using this link: https://mailbcuac-my.sharepoint.com/:x:/r/personal/lisa_gentle_mail_bcu_ac_uk/Documents/PhD%20template/Linked%20appendices/Supplementary%20appendices/Appendix%20S%20Significance%20tracking%20Studies%201%20and%202.xlsx?d=w68dd9759ab1349e9a5e19edb1f74a38e&csf=1&web=1&e=jRcBYj

Appendix T: Link to adapted txt files and SEANCE output Excel spreadsheets tracking across variables (Study 2b)

Please see the *Supplementary appendices* file for this appendix or access the appendix using this link: https://mailbcuac-my.sharepoint.com/:f:/r/personal/lisa_gentle_mail_bcu_ac_uk/Documents/PhD%20template/Linked%20appendices/Supplementary%20appendices/Appendix%20T?csf=1&web=1&e=Ykc5rk

Appendix U: Link to Excel Codebook for Study 2b and 2c

Please see the *Supplementary appendices* file for this appendix or access the appendix using this link: https://mailbcuac-my.sharepoint.com/:x:/r/personal/lisa_gentle_mail_bcu_ac_uk/Documents/PhD%20template/Linked%20appendices/Supplementary%20appendices/Appendix%20U%20PhD%20Codebook%20Studies%202b%20and%202c.xlsx?d=w4565b0d0449641559ca829a94e578309&csf=1&web=1&e=VoRmsO

Appendix V: Link to Excel codebook for Study 3

Please see the *Supplementary appendices* file for this appendix or access the appendix using this link: https://mailbcuac-my.sharepoint.com/:x:/r/personal/lisa_gentle_mail_bcu_ac_uk/Documents/PhD%20template/Linked%20appendices/Supplementary%20appendices/Appendix%20V%20PhD%20Codebook%20Study%203.xlsx?d=we4b24198e6704f229355c0752d61f619&csf=1&web=1&e=RCUttI

Appendix W: Link to dataset 2 Baby's Morning and Doctor's Office transcripts with SEANCE output

Please see the *Supplementary appendices* file for this appendix or access the appendix using this link: https://mailbcuac-my.sharepoint.com/:f:/r/personal/lisa_gentle_mail_bcu_ac_uk/Documents/PhD%20templa

te/Linked%20appendices/Supplementary%20appendices/Appendix%20W%20Study%203%20SEANCE%20data?csf=1&web=1&e=Ze29kg

Appendix X: Posthoc power analyses

*Table 37: Study 1 post-hoc power analyses for statistically significant findings in dataset 1 using G*Power*

Statistically significant relationship	Variance (%)	Power calculation
Statistically significant Pearson correlations reported in Table 2 (transcript scores and explicitly reported attitudes towards mentoring)		
Mean ASA and MSA**	50.4[1]	.98
Mean ASA and Total personal attitudes towards mentoring* (dataset 1 replication of original findings)	7.8	.09
Mean MSA and Total personal attitudes towards mentoring** (dataset 1 replication of original findings)	13.7	.17
Mean ASA and Total personal attitudes towards mentoring* (original findings)	9	.1
Mean MSA and Total personal attitudes towards mentoring** (original findings)	11.6	.13
Statistically significant Pearson correlations reported in Table 3 (transcript scores)		
Statistically significant relationship	Variance (%)	Power calculation
Mean ASA and Baby's Morning**	77.8	1
Mean ASA and Doctor's Office**	49.42	.97
Mean ASA and The Party**	63.68	1
Mean ASA and Mean MSA**	49.7[1]	.98
Mean ASA and Writer's Block**	36.36	.78
Mean ASA and Not Enjoying University**	45.97	.95
Mean ASA and Choosing Specialist Modules**	34	.72
Baby's Morning and Doctor's Office**	20.7	.31
Baby's Morning and The Party**	37.21	.8
Baby's Morning and Mean MSA**	52.71	.99
Baby's Morning and Writer's Block**	36.36	.78
Baby's Morning and Not Enjoying University**	47.1	.96
Baby's Morning and Choosing Specialist Modules**	34.57	.74
Doctor's Office and The Party*	7.73	.09
Doctor's Office and Not Enjoying University*	7.78	.09
The Party and Mean MSA**	43.69	.92
The Party and Writer's Block**	28.62	.56

The Party and Not Enjoying University**	39.06	.84
The Party and Choosing Specialist Modules**	35.4	.76
Mean MSA and Writer's Block**	79.57	.99
Mean MSA and Not Enjoying University**	74.48	.99
Mean MSA and Choosing Specialist Modules**	78.68	.99
Writer's Block and Not Enjoying University**	38.81	.84
Writer's Block and Choosing Specialist Modules**	47.89	.96
Not Enjoying University and Choosing Specialist Modules**	46.51	.95

Statistically significant Pearson correlations reported in Table 4 (secure base and mentoring script scores with explicitly reported assumptions about mentoring)

Statistically significant relationship	Variance (%)	Power calculation
Mean ASA and Total personal attitudes toward mentoring*	7.9	.09
Doctor's Office with 'I'd be willing to adapt my style in order to develop and mentoring relationship'*	9.7	.11
Doctor's Office with 'I wouldn't participate in mentoring for long if it meant significantly limiting my social life or interests'**	18.49	.27
Doctor's Office with 'Mentoring is mainly available to C, D, E & F students'*	7.62	.08
Mean MSA with 'Establishing mentoring relationships depends on luck'*	10.05	.11
Mean MSA with 'I wouldn't participate in mentoring unless the faculty, graduate student or staff member approached me'*	8.94	.99
Mean MSA with 'Total personal attitudes towards mentoring'**	13.47	.16
Mean MSA with 'Positive mentoring expectations'**	15.68	.2
Writer's Block with 'Mentoring relationships are easy to arrange'*	7.62	.08
Writer's Block with 'Establishing mentoring relationships depends on luck'**	13.03	.16
Writer's Block with 'Total personal attitudes toward mentoring'**	13.32	.16
Writer's Block with 'Total positive attitudes toward mentoring (current experience)'*	7.24	.08
Writer's Block with 'Positive mentoring expectations'**	13.84	.17
Not Enjoying University with 'The university mentoring statement is accurate'*	8.07	.09
Not Enjoying University with 'I wouldn't participate in mentoring unless the faculty, graduate student or staff member approached me'*	8.01	.09

Not Enjoying University with 'Positive mentoring expectations'**	9.73	.11
Choosing Specialist Modules with 'Total personal attitudes toward mentoring'**	12.39	.15
Choosing Specialist Modules with 'Positive mentoring expectations'**	12.96	.15
Statistically significant Pearson correlations reported in Table 5 (mentoring script scores with explicitly reported engagement in mentoring type behaviours)		
Statistically significant relationship	Variance (%)	Power calculation
Writer's Block with 'Number of pre-university mentors'*	7.24	.08
Writer's Block with 'Total number of mentors'*	7.73	.09
Not Enjoying University with 'Uni academic: Ask questions in class'*	9	.1
Not Enjoying University with 'Total number of mentors'*	7.51	.08
Statistically significant Pearson correlations reported in Table 7 (transcript scores with the newly created variable Mean: WB & NEU and with Mean MSA)		
Baby's Morning with Mean: WB & NEU**	54.02	.99
Baby's Morning with Mean MSA**	52.71	.99
Doctor's Office with Mean: WB & NEU*	7.95	.09
The Party with Mean: WB & NEU**	40.83	.88
The Party with Mean MSA**	43.69	.92
Writer's Block with Mean: WB & NEU**	84.09	.99
Writer's Block with Mean MSA**	79.57	.99
Not Enjoying University with Mean: WB & NEU**	77.97	.99
Not Enjoying University with Mean MSA**	74.48	.99
Choosing Specialist Modules with Mean: WB & NEU**	58.06	.99
Choosing Specialist Modules with Mean MSA**	78.68	.99
Mean ASA with Mean: WB & NEU**	49.98	.98
Mean ASA with Mean MSA**	49.7	.97
Mean MSA with Mean: WB & NEU**	95.06	.99
Statistically significant Pearson correlations reported in Table 8 relevant to the newly created variable Mean: WB & NEU (all other statistically significant variables have been reported above in the sections relevant to Tables 4 and 5)		
Statistically significant relationship	Variance (%)	Power calculation

Mean: WB & NEU and 'BCU mentoring statement is accurate'*	7.67	.09
Mean: WB & NEU and 'Establishing mentoring relationships depends on luck'*	11.76	.14
Mean: WB & NEU and 'I wouldn't participate in mentoring unless the faculty, graduate student or staff member approached me'*	8.41	.09
Mean: WB & NEU and 'Total personal attitudes toward mentoring'*	11.9	.13
Mean: WB & NEU and 'Positive mentoring expectations'*	14.59	.18
Mean: WB & NEU and 'Number of pre-university mentors'*	8.82	.1
Mean: WB & NEU and 'Overall pre-university experiences of mentoring'*	7.29	.82
Mean: WB & NEU and Total number of mentors*	9.36	.1
Regression analysis (factors making a statistically significant contribution to Mean MSA score)		
Statistically significant relationship	Variance	Power calculation
Mean ASA score and number of mentors**	52.8	.8
Regression analysis (ASA stories making a statistically significant contribution to the Mean ASA score)		
Statistically significant relationship	Variance (%)	Power calculation
Baby's Morning transcript score and The Party transcript score*	58.5	.9

Note. * p<.05. ** p<.01 (2-tailed).

[1] These figures differ despite referring to the same finding because the correlation was reported to two decimal places in Table 2 and to 3 decimal places in Table 3.

*Table 6: Study 2a-c post-hoc power analyses for statistically significant findings in dataset 1 using G*Power*

Statistically significant relationship	Variance (%)	Power calculation
Statistically significant Pearson correlations reported in Table 18 (secure base transcript scores with frequency of care receiver name use in the specified story type)		
Statistically significant relationship	Variance (%)	Power calculation
Baby's Morning transcript score with care receiver name use in Baby's Morning transcripts**	16.89	.23
Baby's Morning transcripts score with care receiver name use in The Party transcripts*	37.21	.8
The Party transcript score with care receiver name use in Baby's Morning transcripts**	7.34	.08

Statistically significant Pearson correlations reported in Table 19 (mentoring transcript scores with frequency of mentee name use in the specified story type)		
Statistically significant relationship	Variance (%)	Power calculation
Writer's Block transcript score with mentee name use in Writer's Block transcripts*	7.24	.08
Not Enjoying University transcript score with mentee name use in Not Enjoying University transcripts**	12.89	.15
Statistically significant Pearson correlations reported in Table 20 (mentoring transcript scores with frequency of mentor name use in the specified story type)		
Statistically significant relationship	Variance (%)	Power calculation
Writer's Block transcript score with mentor name use in Writer's Block transcripts**	28.73	.57
Writer's Block transcript score with mentor name use in Not Enjoying University transcripts**	12.82	.15
Writer's Block transcript score with mentor name use in Choosing Specialist Module transcripts**	20.34	.32
Not Enjoying University transcript score with mentor name use in Not Enjoying University transcripts*	11.16	.13
Not Enjoying University transcript score with mentor name use in Choosing Specialist Module transcripts**	12.25	.14
Choosing Specialist Modules transcript score with mentor name use in Choosing Specialist Module transcripts*	8.12	.09
Statistically significant Pearson correlations reported in Table 21 (Ave: WB &NEU score with frequency of mentee name use in the specified story type)		
Statistically significant relationship	Variance (%)	Power calculation
Mean: WB & NEU score with mentee name use in Not Enjoying University transcripts*	8.82	.1
Statistically significant Pearson correlations reported in Table 22 (Ave: WB &NEU score with frequency of mentor name use in the specified story type)		
Statistically significant relationship	Variance (%)	Power calculation
Mean: WB & NEU with mentor name use in Writer's Block**	19.71	.3
Mean: WB & NEU with mentor name use in Not Enjoying University**	14.82	.19
Mean: WB & NEU with mentor name use in Choosing Specialist Modules**	20.16	.3
Statistically significant Pearson correlations reported in Table 24 (relationship between the amount of grouped sentiment expressed in named transcripts with specified transcript scores)		
Statistically significant relationship	Variance (%)	Power calculation
Grouped negative sentiment expressed in Baby's Morning transcripts with Mean ASA scores**	31.02	.67

Grouped negative sentiment expressed in Baby's Morning transcripts with Baby's Morning transcript scores**	30.25	.61
Grouped negative sentiment expressed in Baby's Morning transcripts with Doctor's Office transcript scores**	19.01	.28
Grouped negative sentiment expressed in Baby's Morning transcripts with The Party transcript scores*	11.49	.13
Grouped negative sentiment expressed in Baby's Morning transcripts with Mean: BM & TP scores**	25.01	.45
Grouped positive sentiment expressed in Baby's Morning transcripts with Mean ASA scores**	15.21	.2
Grouped positive sentiment expressed in Baby's Morning transcripts with Baby's Morning transcript scores **	22.56	.38
Grouped positive sentiment expressed in Baby's Morning transcripts with The Party transcript scores**	12.53	.15
Grouped positive sentiment expressed in Baby's Morning transcripts with Mean: BM & TP transcript scores**	21.62	.35
Grouped negative sentiment expressed in Doctor's Office transcripts with Mean ASA scores**	21.44	.35
Grouped negative sentiment expressed in Doctor's Office transcripts with Baby's Morning transcript scores**	12.32	.14
Grouped negative sentiment expressed in Doctor's Office transcripts with Doctor's Office transcript scores**	28.84	.57

Statistically significant Pearson correlations reported in Table 25 (relationship between the amount of individual sentiment expressed as a mean across the ASA transcript types with specified transcript score)

Statistically significant relationship	Variance (%)	Power calculation
ASA joy with Mean ASA score**	26.52	.5
ASA joy with Baby's Morning transcript score**	29.7	.6
ASA joy with The Party transcript score**	17.22	.24
ASA trust with Mean ASA score**	19.44	.29
ASA trust with Baby's Morning transcript score**	20.07	.31
ASA trust with Doctor's Office transcript score*	11.16	.13
ASA positive with Mean ASA score**	18.32	.27
ASA positive with Baby's Morning transcript score**	24.21	.43
ASA positive with The Party transcript score*	8.53	.09
ASA anger with Mean ASA score*	8.88	.1
ASA anger with Baby's Morning transcript score*	7.78	.09

ASA anger with Doctor's Office transcript score**	13.91	.17
ASA anger with the Party transcript score*	7.51	.08
ASA disgust with Mean ASA score**	19.27	.29
ASA disgust with Baby's Morning transcript score**	17.47	.24
ASA disgust with Doctor's Office transcript score**	12.53	.15
ASA disgust with The Party transcript score**	7.51	.08
ASA sadness with Mean ASA score**	37.7	.82
ASA sadness with Baby's Morning transcript score**	32.7	.69
ASA sadness with Doctor's Office transcript score**	29.94	.6
ASA sadness with The Party transcript score**	14.21	.18
ASA negative with Mean ASA score**	34.92	.75
ASA negative with Baby's Morning transcript score**	27.67	.5
ASA negative with Doctor's Office transcript score**	32.04	.67
ASA negative with The Party transcript score*	10.76	.12

*Note. * p*<.05. ** *p*<.01 (2-tailed).

Each sentiment analyses took account of sentiment negation

*Table 39: Study 3 post-hoc power analyses for statistically significant findings using G*Power*

Statistically significant relationship	Variance (%)	Power calculation
Statistically significant Pearson correlations between Baby's Morning and Doctor's Office transcript scores (reported in the examination of hypothesis 3)		
Statistically significant relationship	Variance (%)	Power calculation
Dataset 2 Baby's Morning and Doctor's Office transcript scores**	38.67	.98
Dataset 1 Baby's Morning and Doctor's Office transcript score**	20.7	.31
Statistically significant Pearson correlation between individual sentiment and mean transcript scores in dataset 2 (reported in Chapter 6, for examination of hypothesis 5)		
Statistically significant relationship	Variance (%)	Power calculation
The amount of disgust expressed in Baby's Morning transcripts with Baby's Morning transcript score* (with sentiment negation accounted for)	5.4	.08

*Note. * p*<.05. ** *p*<.01 (2-tailed).