Singing play songs and lullabies: Investigating the subjective contributions to maternal attachment constructs.

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Abstract

The aim of this study was to examine how the experience of singing play songs and lullabies contributes to early mother-infant attachment. A total of twenty-three healthy mother-infant dyads were recruited. Twelve were interviewed about their subjective experience of singing interactions. Eleven were interviewed about their subjective experience of non-singing play interactions. The interviews were transcribed and analysed using an adapted phenomenologically inspired analysis process (Grocke, 1999) then compared to Condon and Corkindale's (1998) four maternal attachment constructs or domains including: (1) pleasure in proximity, (2) tolerance/acceptance, (3) need gratification and protection, and (4) knowledge acquisition. The findings reveal that the mothers' experience of singing interactions primarily impacted the pleasure in proximity, need gratification and tolerance/acceptance constructs. The mothers' experience of non-singing interactions primarily impacted the pleasure in proximity, need gratification and knowledge acquisition constructs. The experience of singing was distinctly different from the experience of non-singing interactions in multiple ways. The findings reveal that singing facilitated a flow of interconnections between positive mental and emotional states. Furthermore, it appears that the therapeutic potential of singing to impact attachment lies within the positivity and flow of the mothers' intrinsic experience of singing. Overall, the findings expand current understanding

of how singing play songs and lullabies may contribute positively to maternal constructs of attachment in the first year of life.

Keywords: Singing, play songs, lullabies, mother-infant attachment, attachment constructs

The emotional or affectional bond between caregiver and child is known as *attachment* (Bowlby, 1969; Cassidy, 2008) and is developed and reflected through patterns of parent-child interaction (Beebe et al., 2010; Campbell & Taylor, 1980; Cassidy, 2008; Schore, 2001, 2003; Woodhouse, 2010). The emotional availability, appropriateness, sensitivity and consistency of a parent's response to infant cues and signals determines the style or quality of attachment that is developed (Bowlby, 1969; Egeland & Erickson, 1999). Parents who are emotionally available and provide prompt, sensitive and appropriate responses to infant cues facilitate a *secure* or high quality type of attachment, whereas parents who are emotionally unavailable, imperceptive and provide inconsistent, insensitive, rare, intrusive or inadequate responses facilitate *insecure* types of attachment (Boris, Aoki, & Zeanah, 1999; Steele, Steele, & Croft, 2008; Ziv, Aviezer, Gini, Sagi, & Koren-Karie, 2000).

The key to developing a positive and secure attachment involves the modulation of emotional states or *emotional communication* (Schore, 2001, 2003; Siegel, 1999a, 1999b, 2001) including: (1) sharing and amplifying positive emotions, (2) soothing distress or negative emotional states, and (3) taking joy in the child. *Play songs* and *lullabies* are two types of songs known to facilitate emotional communication. Each serves an emotional regulatory purpose: play songs arouse and engage the infant in play whereas lullabies soothe and relax the infant (Bargiel, 2004; Trainor, 1996; Trehub, Hill, & Kamenetsky, 1997; Trehub & Schellenberg, 1995). They also have distinctive musical and expressive features (Rock, Trainor, & Addison, 1999; Trainor, 1996; Trehub & Schellenberg, 1995). Play songs are playful, tend to be sung with a 'smiling tone', capture the lyrics by exaggerating the rhythm and rhythmic groupings and impart feelings of joy. In contrast, lullabies are soothing, sung with a breathy tone, capture a sense of flow or 'smoothness' and convey affection and tenderness. Despite contrasting musical characteristics, there is one feature that both play songs and lullabies share: both are accompanied by rhythmical movements such

as swaying and knee jogging (Rock, et al., 1999; Trainor, 1996; Trehub & Schellenberg, 1995). This suggests that play songs and lullabies facilitate a multi-modal interaction which may assist in the development of mother-infant attachment (Edwards, 2011a, 2011b; Vlismas, 2007; Vlismas, Malloch & Burnham, 2012).

Play songs and lullabies are viewed as "... musical analogues of soothing and playful 'baby talk' or 'motherese'" (Trehub, et al., 1997, p. 385). Infant-directed versions of play songs and lullabies are sung in a more engaging manner and soothing or playful tone of voice than non-infant-directed versions (de, l'Etoile, 2006b; Milligan, Atkinson, Trehub, Benoit, & Poulton, 2003; Trainor, 1996; Trainor & Heinmiller, 1998; Trehub, et al., 1997). Infants also demonstrate distinctive infant behaviours when listening to play songs and lullabies, for example, infants demonstrate more outward focus of attention (to their caregiver) when listening to play songs and more inward focus of attention during lullabies (Rock, et al., 1999). Presumably, the distinctive features of play songs and lullabies convey different emotional messages and infants decode their mother's singing and respond accordingly (de l'Etoile, 2006a).

Although a variety of research explores the musically communicative components of early mother-infant vocalisations (Aitken & Trevarthen, 2001; de l'Etoile, 2006b; Dissanayake, 2000; Malloch & Trevarthen, 2009; Trainor, 1996; Trehub, 2001; Trevarthen & Malloch, 2000), there are few studies that examine singing or song-based interactions specifically in regard to attachment in the first year of life. Overall, there appears to be little recent literature that attempts to expand upon earlier research regarding play songs, lullabies, attachment and emotional communication.

One empirical study examined the effect of singing play songs and lullabies on mother-infant reciprocity and the mother's perception of attachment (Vlismas, et. al., 2012). Healthy first-time mothers with their healthy infants, aged two to four months old, participated in a music and movement program. The mothers learnt a variety of play songs and lullabies as well as various ways to hold and move with their baby. The quality and frequency of the mother-infant interactions and the mother's perception of attachment to her infant was analysed quantitatively using an observation play scale and self-report questionnaire. The results of the experimental and control groups were compared. Mothers who participated in the program demonstrated a *positive change* in (1) maternal perception

of the mother-infant attachment bond, (2) mother-infant reciprocity and (3) frequency and enjoyment of musical interactions. Mothers who did not participate in the program demonstrated a *negative change* in (1) the mother's perception of attachment, (2) mother-infant reciprocity, and (3) frequency and enjoyment of musical interactions (Vlismas, et. al., 2012). In other words, the oppositional results demonstrated that play songs and lullabies were effective vehicles of emotional communication in the first year of life and that the experience of singing positively impacted the mother's perception of attachment. However, there is little understanding of *how* or what infant-directed songs specifically contribute to the attachment bond. Such understanding would provide further insight into the intrinsic therapeutic value of singing and enable music therapists to better intervene and strengthen the security of mother-infant relationships (Edwards, 2011a, 2011b; Hatch & Maietta, 1991).

The self-report *Maternal Post-Natal Attachment Questionnaire* (Condon & Corkindale, 1998) used by Vlismas et al., (2012) is designed for use during the first year of the infant's life and examines the mother's own perception of attachment. It is based on four indicators or constructs of attachment, including (1) *Pleasure in proximity* – desire to interact with the infant, pleasure in interaction, (2) *Tolerance/acceptance* – sense of baby as own, the ability to tolerate frustrating/irritating behaviours, level of resentment due to personal sacrifice or degree of 'burdensome', (3) *Need-gratification and protection* – a desire to identify and meet the infant's physical and emotional needs. This includes the notion of being 'available' and 'responsive' to infant needs, and (4) *Knowledge acquisition* – a desire to understand the infant, curious about 'what goes on' inside the infant.

The results from the Vlismas et al. study (2012) suggest that all attachment constructs are associated with the experience of singing play songs and lullabies in some way. However, the questionnaire quantified the weighted responses to provide an overall summary or overview of a mother's perception of attachment. Consequently, each individual attachment construct could not be explored qualitatively. For example, the reasons behind the mother's ratings could not be examined. Further research is required to better understand the experience of singing and determine (1) whether the constructs are associated with singing experiences for mothers with infants above four-months old, (2) if specific constructs are more effected by singing interaction than others, (3) if there are thoughts and feelings unique to either play songs or lullabies, and (4)

how the experience of singing interactions differs to other non-singing interactions or uniquely impacts the attachment constructs.

Thus, the purpose of this study was to investigate how singing play songs and lullabies contributes to mother-infant attachment in the first year of life. A qualitative interview method within an experimental-control framework was employed to examine (1) thoughts and feelings experienced during *singing interactions* and how they relate to Condon and Corkindale's (1998) attachment constructs, (2) thoughts and feelings experienced during *non-singing play interactions* and how they relate to the attachment constructs, (3) how the experience of singing *differs* from non-singing interactions, and (4) the *therapeutic potential* of singing to positively contribute to attachment.

Method

Participants

This study was approved by the human ethics committee of the University of Western Sydney. Twenty-three healthy mother-infant dyads participated in the study. Eligibility criteria included: (1) mothers aged between 23 and 39 years old, (2) score of below 12 on the Edinburgh Post-Natal Depression Scale (indicating unlikely depression), (3) English speaking, (4) completed a minimum of high school education, and (5) healthy full-term infants aged between 5-9 months old.

The participating mothers were aged between 25 and 39 years old (mean age of 32.4 years). All the mothers were married, the primary caregiver of the infant, reported English as their first language and scored $\leq$ 8 on the Edinburgh Post-Natal Depression Scale. The infants were aged between 5.2 - 7.9 months old (mean age of 6.3 months) and all were reported to be born full-term without disability or hearing impairment.

Mothers were recruited through a research institute database, screened, provided written informed consent for participation then randomly allocated to the experimental (singing) or control (non-singing) group. Mothers were aware that the basic aim of the study was to examine how singing songs contributes to the emotional bond between mother and infant. Mothers were also aware that they would be randomly assigned to either an experimental or control group and interviewed about the experience of singing or non-singing interactions accordingly.

Procedure

Each mother participated in a semi-structured interview focussed on their experience of singing or non-singing play interactions. The mothers did not participate in any music program in this study. However, immediately before the interview, the mother and infant participated in a recording session for another component of the principal author's research conducted at the university[1]. Mothers in the experimental group were recorded singing songs with their infant whereas mothers in the control group were recorded interacting with toys (without singing) for 20-25 minutes. The interview discussions were not limited to what was experienced during the preceding recording session. However, the recording session provided a recent experience of singing or non-singing interaction for the mothers to reflect upon during the interview.

Each interview began with the same open-ended question. Mothers in the experimental group were asked "what is your experience of singing songs with your infant?" Mothers in the control group were asked "what is your experience of playing and interacting with your infant?" Discussion focussed on the thoughts and feelings that the mothers experienced during interactions with their infant. The interviewer referred to, but was not limited to, a set of pre-prepared questions/prompts to encourage mothers to expand on their responses and ensure consistency across the interviews (see Appendix A). These questions were deliberately open-ended to prompt mothers to consider various aspects of their experience such as: how the mother feels during play songs and lullabies specifically, whether the mother is conscious of any thoughts or decision-making processes while interacting and what these thoughts are, the reason behind choosing/continuing/changing a particular song or play activity, how the experience of interacting impacts on the mother and what the experience of interacting provides the mother-infant relationship. The interviewer reflected back/summarised responses and asked for clarification of meaning throughout each interview to ensure the mother's experience was properly understood.

Since the mothers were aware of the basic aims of the study and had recently interacted with their infant, the mothers instinctively focused their responses on either singing or non-singing interactions. They also distinguished between singing and non-singing interactions. Mothers in the experimental group would talk about non-singing interactions and the

[1] The video footage will not be discussed in the current article.

mothers in the control group would talk about singing interactions with the purpose of outlining how each type of interaction was perceived and experienced distinctly.

Each interview was video recorded for future transcription and analysis. Within three weeks of the interview, each mother verified her interview analysis by reading and commenting on the transcript and summary of her interview.

The interview data was analysed using a twelve-step phenomenologically informed process adapted from Grocke (1999). It involved an individual, group and comparison analysis as outlined in the steps below:

1. Each interview transcript was read through to gain a sense of the overall experience.
2. The transcript was read again, and *key statements* were underlined.
3. The key statements were placed together and grouped into themes, termed *meaning units*. Each unit was given a *category heading.*
4. The meaning units for each transcript were transformed into a *summary* (also known as a *distilled essence)* of experience.
5. The interview transcript (with key statements underlined) and the summaries were verified by the participant.
6. Any changes, omissions, additions comments made by the participant were noted. If necessary, editions were made to the analysis and the mother was asked to verify the summary again. When the mother determined the summary was accurate this step of the analysis was deemed complete.
7. The meaning units were compared and grouped according to Condon and Corkindale's (1998) attachment constructs e.g. meaning units related to pleasure in proximity were grouped under the heading 'Pleasure in Proximity'. The new groupings clearly demonstrated which constructs were associated to the mother's experience of interaction. Any meaning units not related to the attachment constructs or the mother's perception of her relationship with the infant (e.g. comments about her relationship with an older child or how the experience of parenting in general have changed the mother's perspective on life) were grouped under the heading 'Other'.
8. Once step 6 and 7 had been completed for each participant, the common meaning units across all interviews (per sample) were paralleled to complete a group comparison analysis, also known as a

horizontal distilling process. Any meaning units under the heading 'Other' were not relevant to the research aim and therefore not included in the analysis.

9. The meaning units from each participant were compared. The common meaning units were grouped together and transformed into *composite themes.*
10. The composite themes were distilled into four *composite essences* - one essence/summary for each attachment construct (Condon & Corkindale, 1998)
11. The composite themes/essences were then transformed into a *final global description* of the experience of mother-infant singing or non-singing interaction.
12. Finally the composite themes for the experimental and control group were compared to determine how the experience of singing interactions differs to non-singing interactions.

For the purpose of this article, only the final global descriptions and comparison analysis will be presented (step 11 and 12). See Appendices B and C for the experimental and control group composite themes from which the descriptions were distilled (step 10).

Findings

In this section the final global descriptions of the experimental and control group will be presented. In line with the singing-focussed research aim, the discussions will describe the mothers' experience of both singing and non-singing play interactions. However, the discussions will primarily focus on the experience of singing.

Final global description of the group experience of singing songs with their infant

The mothers experienced singing to be fun, enjoyable and affectionate. Singing was also perceived to facilitate emotional modulation by creating a spiral of happiness shared between mother and infant; singing made the mother and infant feel happy and this happiness was enhanced when mother and infant reflected and shared in each other's happiness. By extension, singing was believed to reverse a spiral of grumpiness/distress or modulate negative emotional states by facilitating these happy emotional states.

The mothers believed singing interactions would capture the infant's attention as well as focus their own attention. Singing was described as involving both the mother and infant in a shared activity or focussed quality one-on-one time. Consequently, the mothers experienced a pleasurable sense of connection and togetherness while singing to their infant. In other words, the sense of togetherness or bond impacted the tolerance/acceptance construct by reinforcing the mother's perception of the infant as her own baby.

Concurrently, the focus of attention experienced by both mother and infant seemed to facilitate a more receptive state or context for recognising the infant's cues and signals. The focus of attention created an opportunity for the mother to be aware of and shape the interaction according to the infant's behaviours. In other words, while the infant focused on the mother's singing, the mothers described focusing on responding to the infant's behaviours and cues to sustain the pleasurable flow of interaction. In this way, the pleasure in proximity and need gratification/protection constructs influence each other. By providing a positive emotional context that involves and focuses the attention of both parties, the mother may feel connected to her infant and facilitate a potentially optimal and emotionally available interaction. In turn, by seeing the infant's continual positive responses, the mother may sustain her pleasure and joy in the interaction with her child. Additionally, the portable nature of singing allowed the mothers to sing songs spontaneously at any location and any time of day. Thus, the mothers were able to experience pleasurable focussed one-on-one time and meet the infant's physical and emotional needs anytime and anywhere.

The experience of fun-focussed quality time was described as having a consequential influence on the mother's tolerance/acceptance construct. The mothers expressed feeling very satisfied, pleased and proud when singing effectively made her baby happy, calm, relaxed, or likely to fall asleep. The achievement of settling her baby reinforced the perception of being 'mum' or 'good mother' and validated the sense of being significant to her infant. This validation of a mothering identity in turn, helped the mothers to feel that the baby she cares for is indeed, her own baby.

Upon further reflection, the mothers' experience of singing does not simply impact on individual attachment constructs, it appears to facilitate interconnections between the pleasure in proximity, need gratification and tolerance/acceptance constructs. Mothers described a pleasurable and

successful modulation of emotions leading to a happy baby. Observing the baby's happiness in turn, enhanced the mothers' own happiness. Simultaneously, the focus of attention promoted feelings of connection to the baby. This pleasurable companionship of togetherness reinforced the mothers' sense of the baby being her own baby. Furthermore, the achievement of settling her baby validated the sense of being 'mum' and 'good mother' which also enhanced that sense of baby being her own baby. The contributions of these interconnections to attachment constructs are shown in Figure 1.

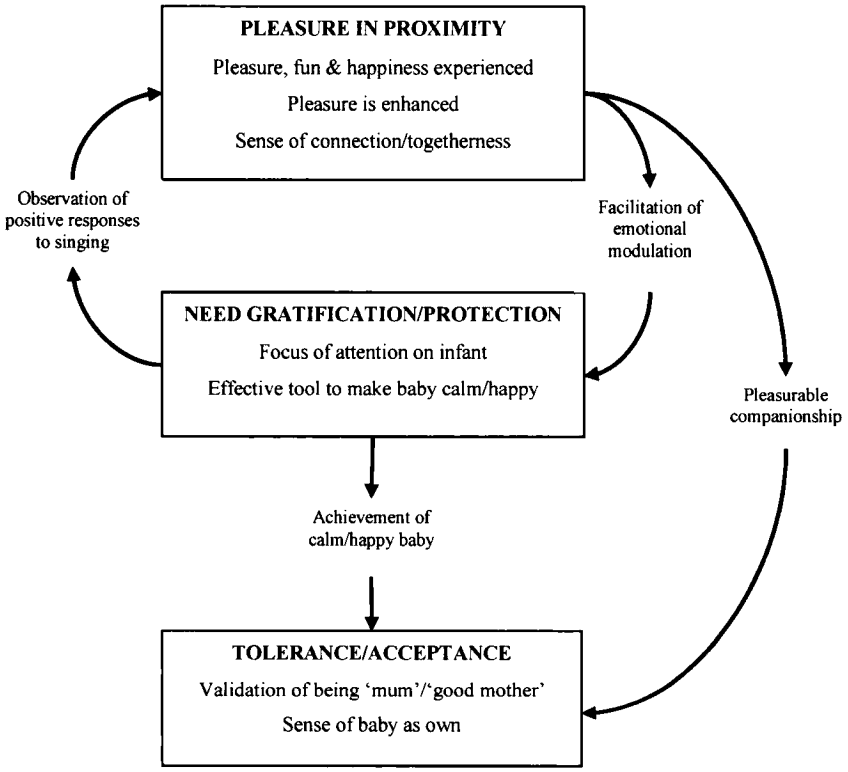

Figure 1 Diagram outlining the interconnections between the pleasure in proximity, need gratification and tolerance/acceptance constructs experienced by mothers during singing interactions.

The tolerance/acceptance and need gratification constructs also appear to interrelate when singing calmed the mother down. This was a particularly important aspect of the experience of singing if the infant became distressed/hysterical and had trouble falling asleep. Mothers described feeling calmer and less helpless by singing lullabies. Also, once the mother was calm she felt better able to calm her infant. Subsequently, mothers

experienced satisfaction and pleasure when they saw the success of their calming efforts and validation of the sense of being significant to the infant and 'good mother'. Similarly, mothers expressed experiencing relief and a reduction of stress once the crying and screaming stopped. By reducing negative feelings the mother's sense of burden in caring for her infant was minimised. Figure 2 shows the interconnections between the tolerance/acceptance and need gratification/protection constructs.

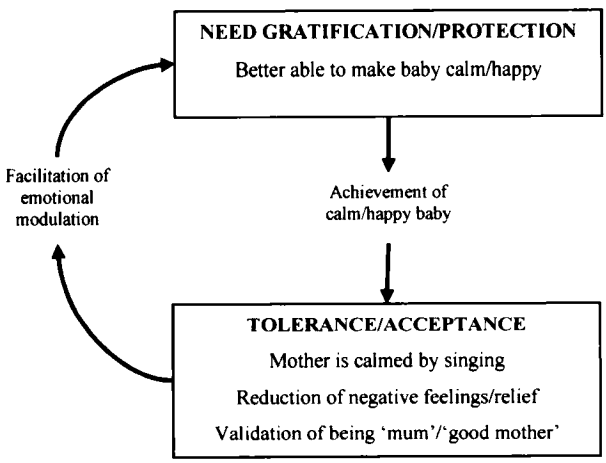

Figure 2 Diagram outlining additional interconnections between the need gratification and tolerance/acceptance constructs experienced by mothers during singing interactions.

Essentially, the mothers' experience of singing play songs and lullabies contributes to attachment by creating a variety of positive emotional and mental states that relate to the pleasure in proximity, need gratification/protection and tolerance/acceptance constructs. Interestingly, these states interconnect. The mother's experience of singing therefore, is better understood as a flow of consequential and concurrent thoughts and feelings or 'flow of influence'.

One may also postulate that the potential therapeutic value of singing play songs and lullabies lies within the positivity of these interconnections. Hypothetically, the 'flow of influence' illustrates that the more a mother experiences singing interactions which successfully modulate the infant's emotions, the more she will observe her infant's positive response to her singing which would create greater feelings of pleasure, a stronger sense of connection and validation of being 'mum'. In other words, a preventative attachment therapy seems to be intrinsically embedded into the positivity of the 'flow of influence'. Continuing to experience the positive states

facilitated by singing would repeatedly contribute to the maternal attachment constructs and thus, maintain a positive perception of attachment.

Importantly, the need-gratification construct acts as a catalyst which extends the 'flow of influence' to the pleasure in proximity and tolerance/acceptance constructs. The subsequent benefits (e.g. of validation, reduction of stress etc) are contingent on effectively meeting the infant's needs and maintaining the baby's happiness and calm. Therefore, any intervention (prevention or treatment) aiming to impact maternal attachment constructs by promoting the 'flow of influence' would logically target the need-gratification construct. Conveniently, the focus of attention that mothers described experiencing during singing appears to provide a potential platform for singing-based therapeutic intervention. If a mother were to learn about facilitating successful emotional modulation, presumably, the focus of attention that singing was described to demand would create a good opportunity to consciously practice new skills.

Furthermore, the catalyst relies on successful emotional modulation. It is logical to assume therefore, that mothers currently experiencing unsuccessful singing interactions would be experiencing an entirely different variety of emotional and mental states to the current sample or an 'impeded flow' of positivity. The 'flow of influence' represents the experience of a particular group of mothers. It is impossible to know what the subjective experience of singing would be like for mothers currently not experiencing successful singing interactions (perhaps due to circumstances such as mental illness). However, the catalytic nature of the 'flow of influence' experienced by the present sample, suggests that optimising mother-infant singing interactions could establish the 'flow of influence' in other mothers, at least in similarly healthy mothers. Therefore, it is interesting to consider how a therapist may promote the 'flow of influence' in mothers currently not experiencing the 'flow'.

Potentially, an intervention which optimises singing interactions would increase the success of emotional modulation and enable a mother to feel reassurance, a sense of achievement and validation as 'good mother'. These emotional and mental states, in turn, may help to prevent a spiral of negative feelings potentially leading to post-natal depression and mother-infant detachment. Previous studies have identified low sense of self-esteem, self-worth and parenting competence as risk factors of maternal postnatal depression (Beck, 2001; Denis, Ponsin, Callahan, 2013).

Potentially, promoting positive emotional and mental states related to these factors through the 'flow of influence' may help to minimise the risk of postnatal depression. Instead of building up negative and hostile thoughts toward herself and her infant for being so demanding or 'difficult', a mother who sings successfully to her infant may experience positive thoughts and feelings to help balance out the negativity and stress that comes with caring for an infant. In this way, the 'flow of influence' illustrates a type of ideal experience of singing that therapists may aim to promote. Further research is required to support this idea and to determine whether mothers in other clinical populations have the capacity to experience a similar 'flow of influence'. However, the findings suggest that experiencing the positivity of the 'flow of influence' necessitates a mother's facilitation and recognition of successful modulation of infant emotions. Thus, optimising interactions may promote the 'flow of influence' in other mothers.

Final global description of the group experience of playing and interacting (non-singing) with their infant

The mothers experienced non-singing play interactions to be fun, enjoyable and affectionate. It was also described as an observational activity that tended to focus on the baby's development. Mothers expressed observing and thinking about how their babies are learning and progressing through developmental milestones. As a result of these thoughts, the mothers experienced feelings of amazement and pride in addition to fun and joy.

Non-singing interactions were experienced as focused on meeting the infant's needs. Mothers endeavoured to make their babies happy in any way possible. This desire motivated the mothers to interact with their babies to learn more about the infant's likes and dislikes. As a result of getting to know her baby better, a mother believed she (1) had an expanded reference of play ideas or repertoire to help keep the infant happy and (2) was better able to recognise and respond to the baby's cues and signals. As a result of successfully making the baby happy by what was learnt about the infant, a mother also experienced feelings of pleasure, fun, happiness and affection. Simultaneously, it was by getting to know her infant, that a mother felt better able to notice changes in her baby's development and experience the accompanying feelings of pride, happiness, excitement and amazement. Overall, the pleasure in proximity, need gratification/protection and knowledge acquisition constructs inter-

relate during the experience of non-singing interaction, as shown in the Figure 4.

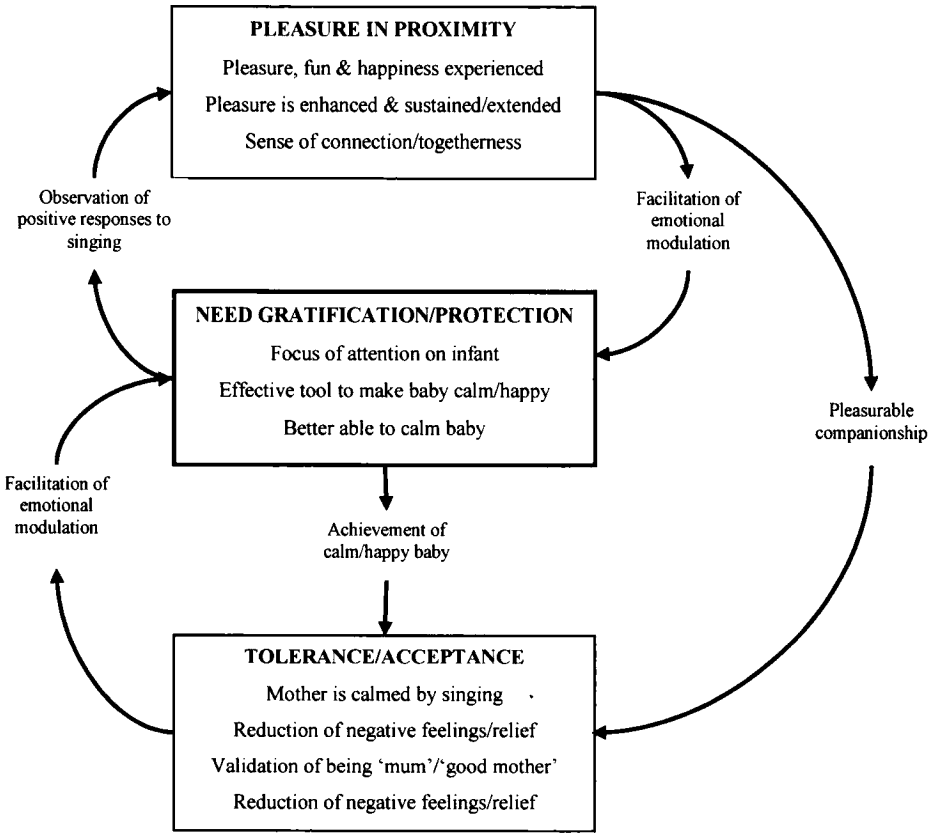

Figure 3 Diagram outlining the full 'flow of influence' ideally experienced by mothers during singing interactions.

The mothers' experience of non-singing play interaction contributes to attachment by creating positive emotional and mental states that relate to the pleasure in proximity, need gratification/protection and knowledge acquisition constructs. The experience is focused on getting to know the baby and tracking the baby's development which sparks particular thoughts and feelings. Notably, the experience of non-singing play interactions is distinctly different to singing interactions.

It is also concerning that no common impact upon the tolerance/acceptance construct was found in this group[2]. This finding leads

[2] Although common themes were identified none were shared by $\leq 50\%$ of the participants and therefore not included in the final global description.

to questions such as: what is a mother potentially missing by not singing to her infant? What does singing offer that non-singing interactions don't? In order to address these questions it was necessary to compare the results of the experimental and control group. The findings of the comparison are presented in the following discussions.

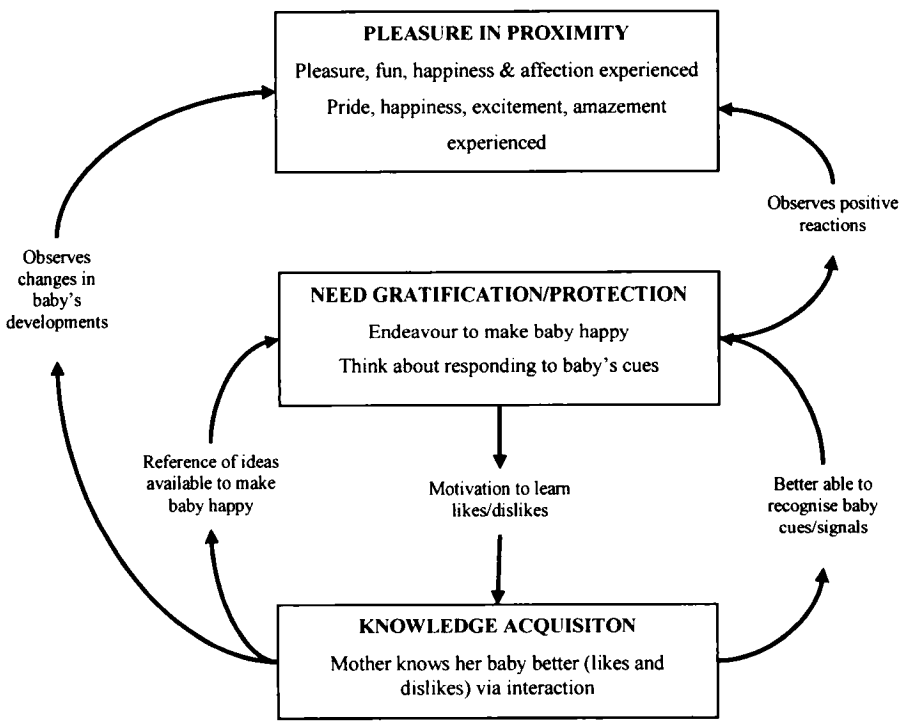

Figure 4 Diagram outlining the interconnections between the pleasure in proximity, need gratification and knowledge acquisition constructs experienced by mothers during non-singing interactions.

Commonalities

Three commonalities between the experience of singing and non-singing interactions were identified. Firstly, in both the experimental and control group the mothers aimed to make their babies happy. Mothers described thinking about meeting the emotional and physical needs of the infants during interactions. In this way, both types of interactions commonly impact on the need gratification construct.

Secondly, mothers were conscious of responding to infant cues and signals during both singing and non-singing interactions. At the very least, mothers thought about and tried to follow the infant's cues and signals.

This finding is not surprising considering a mother aimed to make her baby happy. Since infants cannot verbally articulate needs and wants, mothers are required to recognise and respond to their infant's cues and signals to achieve the goal of baby happiness.

Thirdly, both singing and non-singing interactions were experienced as fun and enjoyable for the mother and commonly impact the pleasure in proximity attachment construct.

Differences

Overall, the mothers' experience of singing play songs and lullabies contributed primarily to three attachment constructs: pleasure in proximity; need gratification/protection; and tolerance/acceptance. In contrast, the mothers' experience of non-singing play interactions contributed primarily to the pleasure in proximity, need gratification and knowledge acquisition constructs. The types of thoughts and feelings that were characteristically experienced during singing interactions differ to non-singing interactions. More specifically, eight differences between the mothers' experience of singing and non-singing interactions were identified.

First, during singing interactions, mothers described experiencing emotional modulation for example, feeling a spiral of happiness and feeling calmed by singing. However, there was an absence of such comments for non-singing interactions suggesting mothers did not experience modulation during non-singing play interactions in the same way as singing.

Second, mothers expressed an expectation of play songs and lullabies to effectively modulate infant emotions. During the interviews mothers communicated feeling confident that singing would make the baby happy and relaxed. However, no such expectation emerged for a particular non-singing activity.

Third, portability was expressed to enhance the perceived value of singing as a parenting tool. The ability to sing spontaneously anytime and anywhere added elements of convenience and usefulness to songs that did not emerge for other non-singing interactions.

Fourth, mothers experienced validation from successfully modulating the infant's emotions. When a mother observed her infant to be happier or calmer as a result of singing, the perception of being significant to the infant, that is being 'mum', was reinforced. This validation strengthened the perception of the baby she cares for as being her own baby. However, mothers in the control group did not describe experiencing

this validation. Perhaps this is because there is no specific non-singing tool that mothers expected to effectively modulate the infant's emotions with a reliable degree of consistency. Without a consistent tool, there would be no consistent or prominent experience of validation to report during the interview. The findings suggest, therefore, that the consistent reinforcement of the perception of self as 'mum' was unique to the experience of singing play songs and lullabies.

Fifth, mothers reported that singing songs would capture the infant's attention and engage him/her. However, there was an absence of similar comments for non-singing interactions. In other words, play songs and lullabies were perceived to be a particularly effective tool for engaging the infant whereas there was no particular non-singing tool that was perceived to consistently capture an infant's attention in the same way that singing did.

Sixth, the mother's focus of attention was found to differ when singing or not singing to her infant. Mothers described their mind being cleared of previous thoughts and attention focussed during the act of singing. Mothers also believed that the focus of attention was reciprocal. In contrast, mothers did not mention a focus of attention during non-singing interactions but rather multi-tasking or being distracted by chores. Singing appears to demand the mother's focus of attention and capture the infant's attention in a way that non-singing interactions do not.

Seventh, the control mothers described non-singing play interactions as a way of getting to know the infant (e.g. learning likes and dislikes). However, no similar theme emerged for the experience of singing. Instead, singing was described to encapsulate a feeling of togetherness.

Eighth, mothers expressed observing and considering the developmental progress of the infant during non-singing play interactions. These observations were accompanied by feelings of amazement and pride during non-singing interactions. However, there was an absence of such developmental observations and accompanying feelings in the experience of singing.

To clarify, it is not being suggested the experimental mothers never felt proud of their infant while singing or that the control mothers never felt a sense of togetherness during toy-based play. The findings reveal that certain thoughts and feelings were *more prominently experienced* during

singing and non-singing interactions[3]. In other words, the feelings of togetherness were more prominently experienced during singing interactions whereas the feelings of amazement and pride were more prominently experienced during non-singing interactions.

Discussion

A Matter of Balance

The findings suggest that experiencing only singing or non-singing interactions would provide an unbalanced impact on the attachment constructs. According to what was experienced by the present sample, if a mother were to only experience positive singing interactions with her infant, she may experience prominent feelings of happiness, fun, consistent validation of being 'mum', emotional modulation, a strong focus of attention on her infant and a sense of connection and togetherness. However, she may not experience prominent feelings of amazement and pride, or opportunities to explore what sorts of things her infant likes/dislikes to the same extent as during non-singing interactions. Similarly, if a mother were to only experience positive non-singing interactions she may experience prominent feelings of happiness, fun, pride, amazement and curiosity about her infant's mind and personality but not emotional modulation, focused quality time with her infant, sense of togetherness and consistent validation of being 'mum' to the same extent as during singing interactions.

All of the emotional and mental states outlined in the global descriptions of both groups were positive in nature. Also, between the two experiences, mothers experienced positive contributions to all four attachment constructs. Therefore, the findings suggest that the ideal way for the mothers in this sample to experience the full variety of impacts to all four attachment constructs would be to frequently practice both types of interaction. In other words, singing appears to be intrinsically better at facilitating particular emotional and mental states in the same way that non-singing play interactions appear to be intrinsically better at facilitating particular emotional and mental states. Both types of interaction have their distinct contributions to attachment constructs.

[3] It is logical to assume that mothers did not mention every single thought or feeling they experienced during the interview. Instead they would have discussed what 'stood out' or characterised the experience of singing/non-singing interactions. Considering this, the findings demonstrate what was *prominently* (as opposed to only) experienced during singing and non-singing interactions.

Clinical Relevance of Singing

No intervention or music program was examined in this study. The effect of an applied singing intervention on maternal attachment constructs has yet to be examined. The present study examined the natural experience of singing and non-singing interactions of a small group of healthy mothers as reported by the mothers. More specifically, the study examined what the intrinsic, that is, uninfluenced by intervention, experience of singing may contribute to the attachment constructs. The findings reveal that within the experience lies a flow of positive emotional and mental states that relate to the attachment constructs.

What is interesting for therapists to consider is the therapeutic potential embedded in the positivity of the 'flow of influence'. First, the way that the emotional and mental states interconnect suggests that negativity may be 'balanced out' or possibly replaced by the positivity of the 'flow of influence'. If this is true there is potential for singing to treat mothers experiencing hostility and negativity toward the infant. Second, the flow of positivity is contingent on a catalyst, that is, the successful modulation of infant emotions. The existence of a catalyst suggests there is a possibility of establishing a similar experience of positivity in other mothers. In other words, there is a possibility that incorporating the catalyst into a mother's experience (that is, by educating/empowering her to implement and recognise successful singing interactions) will establish or 'set off' the 'flow of influence' in other mothers.

It is important to remember that the findings are based on healthy mothers and infants not impacted by disability or mental illness. It is unknown whether other mothers in different circumstance are capable of experiencing the 'flow of influence' or facilitating successful singing interactions in the same way as the mothers in this sample. Therefore, it can not be assumed that it is possible to establish the 'flow of influence' in mothers of all clinical populations or circumstances. However, the findings offer insight into the possible potential of singing to facilitate positive contributions to attachment constructs.

Future considerations

The 'flow of influence' combines composite themes experienced by the majority of the participants. It was conceptualised by examining what most of the women prominently experienced during singing interactions. In

other words, not every mother experienced the full flow of emotional and mental states; most of the participants experienced most of the 'flow of influence'. The 'flow of influence' therefore, does not demonstrate what all healthy mothers will automatically experience. Instead it demonstrates an *ideal* experience that hopefully, other mothers may also experience.

Considering this, the findings may be useful as a reference or type of 'baseline' for future studies that examine the experience of singing in relation to attachment constructs in other clinical populations. For example, do mothers with post-natal depression or mental illness have the capacity for experiencing the 'flow of influence'? What is the subjective experience of singing with and without intervention? Is it similar or entirely different to the 'flow of influence' discovered in this study? If/how does illness or circumstance impair/block the potential 'flow of influence'? Better understanding of how circumstance affects the attachment constructs would better inform therapy interventions aiming to promote positive impacts to attachment in specific populations (Edwards, 2011b).

Future studies may also examine the experience of singing during specific circumstances that promote hostility, such as when the infant is having difficulty sleeping or is going through a demanding 'clingy' phase. Since the positivity of the 'flow of influence' may balance out or replace negative thoughts and feelings, it would be interesting to compare the mother's perception of attachment before and after a singing intervention to examine if/how any changes in negativity occur.

Future studies may also create a questionnaire, based on the composite themes, to examine the experience of singing in relation to the attachment constructs. Such a questionnaire would be a particularly useful pre and post evaluation tool to identify the specific effects of a singing intervention on maternal constructs.

Furthermore, the findings in this study suggest that there is potential to establish the 'flow of influence' in other mothers and that this would necessitate successful meeting of infant needs and emotional modulation. Future studies could examine specific strategies or methods of optimising singing interactions to better understand how therapist may most effectively promote positive contributions to attachment constructs.

Limitations

The results of this study can not be generalised to all healthy mothers. Also, analysing the interviews with another researcher and

striving for inter-researcher agreement would strengthen the reliability of the findings, although it may strain time management and financial budget.

Another limitation is the narrow participant demographic. All of the mothers volunteered their participation and may have shared certain characteristics or values that motivated them to voluntarily participate in research. For example, perhaps the mothers were more socially oriented than those who would shy away from voluntary participation or valued education more than those who would not even consider participation. Also, most of the mothers lived within a particular region of Sydney in which the university was situated. The combination of geographical limitation and voluntary-based recruitment therefore, could have resulted in a selection bias and thus, influenced the type of responses provided in the interview and by extension, the findings.

The open-ended nature of the interview may also have limited the type of data collected. Open questions encouraged the mothers to consider their own unique experience of singing. However, it is possible that that there were aspects of experience those mothers did not think to discuss. For example, if mothers were provided with a questionnaire, perhaps their responses would have differed by considering aspects of their experience that they otherwise would not have thought about.

The use of the attachment constructs as pre-prepared categories of analysis served to focus the research analysis. However, it also forced a particular grouping and perspective on the findings. Employing a more traditional phenomenological analysis which involves the derivation of themes and categories without pre-determined constraint may have allowed the data to be viewed and interpreted in a different light and by extension, possibly altered the findings.

An important limitation of the design of this study is that only the mother's subjective experience of interaction was examined. For example, without a behavioural analysis the quality of the mothers' interaction is undetermined. In other words, the research relied on the mother's truthful self-reports of successful modulation during the interview such as descriptions of infants becoming still, silent and calm from singing. A behavioural analysis would have provided (1) more concrete information about the quality of interaction of each mother-infant dyad, and (2) provided an opportunity to reveal potential correlations between quality of interaction and subjective experience of singing. Combining a behavioural

and interview analysis is recommended for future studies examining the experience of singing and attachment.

Conclusion

The mothers' experience of singing and non-singing interactions was characterised by a variety of positive emotional and mental states related to maternal constructs of attachment. Notably, the mothers' experience of singing interactions was distinctly different to non-singing play interaction; the experience of singing contributed positively to attachment constructs in a way that non-singing play interactions did not.

The potential of singing as a therapeutic tool was found to be embedded in the experienced 'flow of influence' in three ways. First, the positive states experienced in the 'flow of influence,' suggests singing provided benefits to the mothers' perception of attachment. Second, the focus of attention that mothers described singing to demand may provide a good platform to consciously practise new skills and understanding of modulating infant emotions. Third, the 'flow of influence' was contingent on a catalyst; successful emotional modulation. Potentially, establishing the catalyst via programs and intervention may enable other mothers to also experience the 'flow of influence'. This possibility opens new directions for singing and attachment research and program development/evaluation within various contexts of health and circumstance.

Overall, the 'flow of influence' provides a new perspective on the experience of singing within the context of attachment. It also offers a means of conceptualising *how* the intrinsic experience of singing may contribute positively to maternal attachment constructs.

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Appendix A
Pre-prepared prompts/questions for use during the interviews

"What is your experience of singing songs with your child?"
OR
"What is your experience of playing and interacting with your child?"

Prompts:
"How do you feel when you interact/speak/play/use [song title] with your child?"
"How do you feel toward your infant when singing/playing?"
"Are you aware of your baby's behaviour and responses while singing/ playing?"
"How does this affect you?"
"What does musical/playful interaction provide for you and your infant?"
"How does it impact on you?"

Appendix B

Experimental group composite themes, grouped according to Condon & Corkindale's (1998) attachment constructs.

Table 1

The experimental group composite themes related to Condon & Corkindale's (1998) pleasure in proximity attachment construct.

COMPOSITE THEMES – PLEASURE IN PROXIMITY	No. of participants
Singing is a fun, enjoyable, happy and affectionate experience, particularly when I see my baby's positive responses (e.g. smiles)	12
Singing is quality one-on-one time together i.e. it involves each other – it creates a sense of connection/communication/bonding and/or togetherness	11
Singing play songs creates a spiral of happiness. It makes me and my baby feel happy and seeing my baby happy (positive responses) makes me feel happier	10
I feel I share my baby's happiness/excitement when singing play songs	2
There is something special about singing because it's something only I do with my baby	2
I feel a sense of peacefulness when I sing	2

Table 2

The experimental group composite themes related to Condon & Corkindale's (1998) tolerance/acceptance attachment construct.

COMPOSITE THEMES – TOLERANCE/ACCEPTANCE	No. of participants
Singing calms and settle me down	8
Singing makes a connection/bond with my baby	8
Being able to change songs (having a larger range of songs to choose from) and/or creating variations of songs minimises feelings of boredom from singing the same thing over and over again	6
I feel satisfied, pleased, happy and proud that I can help my baby to relax, get to sleep and feel happier (as opposed to another adult). This validates and strengthens my sense of being 'mum' and a significant person to my baby	6
Singing calms my baby down, stops his/her screaming and lulls my baby to sleep which provides me feelings of relief	5
Singing makes me feel less helpless – I feel I am doing something to help my baby feel better	3
Singing breaks up the monotony of baby routines and housework – it provides something else to do during the day	2
Having quality one-on-one time via singing prevents/minimises feelings of guilt that I'm not spending enough time with my baby	2

Table 3

The experimental group composite themes related to Condon & Corkindale's (1998) need gratification attachment construct.

COMPOSITE THEMES – NEED GRATIFICATION/PROTECTION	No. of participants
I sing to my baby spontaneously during the day – there is no set 'singing time'; it just depends on what we're doing at the time – it is integrated into day-to-day life	12
The choice of song and direction of the singing interaction is based on my baby's reactions and current behaviour (e.g. levels of enjoyment, degree of interest/attention and mood) as well as what has worked well in the past	12
Singing songs is an effective tool to help my baby relax, settle and calm down	12
Singing songs captures my baby's attention, engages him/her and makes him happy/calm	12
Singing keeps my baby calm and happy even when I am physically separated from him/her (e.g. in the car or in different rooms)	11
I am focussed on my baby when I sing. Singing pushes other thoughts out of my head (for 1 mum this is more so during play songs, for another mum, this is more so during lullabies)	10
Songs are portable – they can be used anywhere, anytime	9
I believe/hope that singing teaches my baby something and encourages his/her development	7
Singing will help to calm me down which then helps my baby to calm down[a]	4
I sing particular songs during particular activities to create a sense of routine for my baby	3
Singing turns a disliked routine into a happy fun activity for my baby	2
Singing works faster than anything else to settle my baby and put him/her to sleep	2

a Composite themes shared by $\leq$ 50% of the participants were included in the final global description with the exception of this theme. Although shared by a minority of participants, it was noted to be a very important and prominent aspect of the mothers' singing experience and thus, was included in the following final global description.

Table 4

The experimental group composite themes related to Condon & Corkindale's (1998) knowledge acquisition attachment construct.

COMPOSITE THEMES – KNOWLEDGE ACQUISITON	No. of participants
NONE	11
Singing provides a way for me to learn what things my baby likes and dislikes (only related meaning unit)	1

Appendix C

Control group composite themes, grouped according to Condon & Corkindale's (1998) attachment constructs.

Table 5

The control group composite themes related to Condon & Corkindale's (1998) pleasure in proximity attachment construct.

COMPOSITE THEMES – PLEASURE IN PROXIMITY	No. of participants
Interacting with my baby is a fun happy, positive and affectionate experience, particularly when I see my baby's reactions, smiles and giggles (for 2 mums this includes singing)	10
I feel pride, happiness, excitement, amazement and/or satisfaction when I think how my baby is his/her own little person and I see my baby learn, do something new or different and reach developmental milestones	10
I feel happy when I see my baby is happy	4
Playing and interacting offers something other than mechanical caregiving routines. It's time to have fun together	2
Play can sometimes be boring and repetitive	2
Interacting with my baby is an interesting experience (especially when comparing children and thinking about development)	2

Table 6

The control group composite themes related to Condon & Corkindale's (1998) tolerance/attachment construct.

COMPOSITE THEMES – TOLERANCE/ACCEPTANCE	No. of participants
I feel frustrated when I have difficulty working out why my baby is upset (what he/she is communicating) or nothing seems to make my baby happy or nothing seems to be wrong	4
I feel close to my baby during interactions (e.g. when he/she gives me direct eye contact and responds positively to me)	3
I feel my baby prefers me over other adults (because I spend more time with my baby than other adults)	3
I feel relief when I see when baby progress developmentally and become less clingy – it marks greater independence, personal space and freedom	2
Seeing my baby being happy during interactions provides reassurance that he/she is healthy and everything is alright.	2
Because my baby is easy going I don't feel as exhausted or stressed as when my eldest was a baby	2
Getting positive reactions from my baby and the feelings of satisfaction and gratification (from seeing my baby grow and development) help me cope with the challenging moments of parenthood	2

Table 7

The control group composite themes related to Condon & Corkindale's (1998) need gratification construct.

COMPOSITE THEMES – NEED GRATIFICATION/PROTECTION	No. of participants
The direction of the interaction is shaped by my baby's reactions and behaviours.	11
I try to make my baby happy when interacting with him/her	10
I do not have many opportunities for one-on-one time with my baby (e.g. due to the demands of caring for an older child or children, as well)	5
I often think about why my baby is upset and what I can do to keep my baby happy/amused	4
Incorporating play into caregiving routines makes it fun and helps to get through a job more easily e.g. baby is less fidgety (for 1 mum this involves singing)	4
I sometimes think about the things that need to be done or am multi-tasking when interacting with my baby	4
I sing to keep my baby calm and happy and when toys won't do	4
I am conscious of dividing my attention between my two children and planning one-on-one time with each child	3
I particularly notice new developments and think about whether my baby is on par for her age	3
I think about whether I am giving my baby a good variety of activities, the right amount of stimulation and if I'm doing the right thing	3
I am motivated to learn more rhymes and songs etc to help my baby be happy and calm	2
Interacting with my baby is focussed on and good for my baby's development (for 1 mum this includes singing)	2
Keeping my baby happy helps the day to run smoothly and keeps the peace in my household	2

Table 8

The control group composite themes related to Condon & Corkindale's (1998) knowledge acquisition construct.

COMPOSITE THEMES – KNOWLEDGE ACQUISITON	No. of participants
Interacting is a way of getting to know my baby's personality and working out what he/she likes or doesn't like (includes a curiosity about what the infant will be like when older)	6
I am curious and fascinated by what goes on in my child's mind. I like to think about what makes him/her tick	2