Does mothers' Expressed Emotion, assessed by the Three Minute Speech Sample during pregnancy, predict resistant behavior at 14 months of age? A pilot study within the Generation R study

Master's Thesis by
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GENERATION

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Abstract

In this study the possible relationship between mothers' Expressed Emotion (EE) during pregnancy and their children's resistant behavior at 14 months of age is investigated (n = 50). It was expected that children whose mothers scored high on Expressed Emotion would be more likely to display resistant behavior during the Strange Situation than children whose mothers scored low on Expressed Emotion.

A short version of the Five Minute Speech Sample (FMSS), the Three Minute Speech Sample (TMSS), was used to measure Expressed Emotion and resistant behavior was observed during a short version of the Strange Situation Procedure. A simple linear regression analysis showed no predictive value for Expressed Emotion regarding resistant behavior, however, it was significantly related to whether the pregnancy was planned or not.

These results could be due to the relatively small sample size of 50. It could also mean that the TMSS is not the right instrument to measure EE. However, the results obtained in this study do not give reason to worry about high Expressed Emotion in pregnant women.

Introduction

There are many factors that can possibly influence an infant's health or behavioral outcomes during pregnancy. A few examples of those factors are genes, intrauterine factors (e.g. smoking and drugs (Choo, Huestis, Schroeder, Shin, & Jones, 2004)), and psychological factors such as maternal anxiety levels during pregnancy (O'Connor, Heron, Golding, & Glover, 2003). Prenatal nicotine exposure has been proven to increase the risk of lower birth weight, preterm births, intrauterine growth retardation, smaller head circumference (Choo et al., 2004) and may lead to dysregulation in neurodevelopment (e.g. Ernst, Moolchan, & Robinson, 2001; Bauman, Flewelling, & LaPrelle, 1991). Research by O'Conner et al. (2003) showed that children whose mothers experienced higher levels of anxiety during the last weeks of their pregnancy were more likely to show behavioral and emotional problems at 81 months of age.

Also, mothers' representations of their infants assessed prenatally has been found to predict infants' attachment at 12 months of age (Benoit, Parker, & Zeanah, 1997). They used the Working Model of the Child Interview (WMCI) to assess mothers' representations of their unborn children.

Another method to assess someone's representations of a relative is the Five Minute Speech Sample (FMSS), which measures Expressed Emotion (EE) of the assessed person (e.g. Kazarian, 1992; Magaña, Goldstein, Karno, Miklowitz, Jenkins, & Falloon, 1986). Now the aim of the current study is to examine whether prospective parents' Expressed Emotion (EE) during pregnancy is predictive of the subsequent attachment pattern the child will develop postnatally.

Expressed Emotion:

EE was originally used to measure affective attitudes and behaviors like criticism, hostility and emotional over-involvement of relatives toward a family member with a psychiatric illness (Kazarian, 1992). The FMSS is a shortened version of the Camberwell Family Interview (CFI), which is a semi-structured interview conducted with a key relative shortly after the patient's admission to hospital (Kazarian, 1992). In the FMSS, the relative is asked to talk about the patient for five minutes. As the CFI, the FMSS is audiotaped and later the relative's feelings and attitudes are rated by a qualified rater.

According to Malla, Kazarian, Barnes, & Cole (1991) the FMSS is valid as a brief screening device for measuring expressed emotion, even though Magaña et al. (1986) state that if a person scores as low on the FMSS, there is a chance he or she would be classified as high EE on the CFI. This could be due to the shorter time the relative has to express his or her feelings and attitudes toward the patient in the FMSS compared to the CFI.

So far, however, EE assessed by the Five Minute Speech Sample has never been assessed prenatally. In the current study the FMSS is shortened to three minutes, and is called the Three Minute Speech Sample (TMSS). In the TMSS the parents are asked for their expectations and hopes regarding their unborn child. TMSS and EE are discussed in more detail in the method-section of this manuscript.

Attachment:

Infants depend solely on their caregivers for everything they need. The infant will have to bond with its caregivers to make sure they will actually provide it with its every need. Bowlby described this kind of bonding in his Attachment Theory (1969). Bowlby was actually the first to develop a theory of how attachment develops. He stated that attachment behavior of the infant will keep it close to the caregiver and in that way protect it from danger, which would be more important in the development and maintenance of attachment behavior than providing food (Bowlby, 1969). The caregiver operates as a "secure base" for the infant. According to Bowlby the infant's attachment to its caregivers is based on its internal working models of the environment and the people in it. The infant soon learns that if it might need anything, the caregiver is the person to turn to.

The quality of the attachment is very important (e.g. Carlson & Sroufe, 1995; O'Beirne & Moore, 1995, in Bee, 2000). According to Bowlby it is primarily the caregiver who determines the quality of attachment. If the parent has a sensitive way of parenting, that is, responding when the child seems to need anything, the quality of the attachment will be high and the infant is securely attached. Ainsworth also studied attachment in her Baltimore study (e.g. Ainsworth, Blehar, Waters & Wall, 1978). Based on her research, she suggested three distinctly different types of attachment. Type A attachment (insecure-avoidant), type B attachment (secure), and type C attachment (insecure-ambivalent).

These three types of attachment are based on the behaviors the children display in the Strange Situation laboratory procedure (Ainsworth et al., 1978).

The behavior that is characteristic for a secure attachment pattern (Type B) is minimal resistant and avoidant behavior towards the adult, but active seeking and maintaining contact when distressed. This contact is effective in terminating distress. When the infant is not distressed during a short separation from the caregiver, it actively greets him or her on return and strongly initiates contact (Mayseless, 1998).

The core behavior of avoidant attached (Type A) infants differs from that of the securely attached in that they do not try to get near to or in contact with the caregiver after a short separation, but instead display active avoidance when the caregiver returns (Mayseless, 1998).

The ambivalent attached (Type C) infants typically display contact seeking behavior when the caregiver returns after a short separation, but at the same time resist contact with the caregiver (Mayseless, 1998). The resistant behavior also characteristic for this attachment pattern can vary from a little kick of the feet when picked up to persistent temper tantrums (Ainsworth et al., 1978).

According to several researchers in this area, insecure attachment (either avoidant or ambivalent) in childhood can lead to problems later in life. Children who are not securely attached have more difficulties in their relationships with peers than children who are securely attached (Carlson & Sroufe, 1995). In puberty, children who are insecurely attached are more likely to display risky sexual behavior than children who are not. They also have less positive and supporting friendships than their securely attached peers (O'Beirne & Moore, 1995, in Bee, 2000).

It appears, however, that attachment patterns are not always stable over time. That is, they can be changed, e.g. if the interaction between parent and child changes (Bowlby, 1991, in Bar-Haim, Sutton, Fox, & Marvin, 2000). However, the longer a certain interaction pattern is applied, the stronger the internal working models of both parent and child about the interaction partner are likely to be, and the harder it will probably be to change this pattern. Therefore, it is of great importance to recognize an insecure attachment pattern in an early stage to allow for early intervention. Ideally, one would like to be able to predict an insecure attachment pattern before birth, e.g. detect some

indicators during the pregnancy, since it is always better to prevent something than to cure it.

As stated above, the aim of the current study is to examine whether prospective parents' Expressed Emotion (EE) during pregnancy is predictive of the subsequent attachment pattern the child will develop postnatally. Since the current study is a pilot-study the outcome measure will not be the quality of attachment, but one of its subscales, namely resistant behavior, which is indicative for an ambivalent attachment pattern (Cassidy & Berlin, 1994). If the results of this study will show that resistant behavior at 14 months can be reliably predicted by high EE of the parents during pregnancy, it would be very interesting to look at the attachment patterns of these children, since resistant behavior is indicative (but not the only characteristic) of the ambivalent attachment pattern.

There is reason to believe that EE during pregnancy will be related to resistant behavior of the child at 14 months. For example, research by Benoit et al. (1997) has shown that mother's representations of their infants assessed prenatally, predicts infant 12-month attachment patterns in 74% of cases (54% expected by chance). Benoit et al. (1997) found that infants who's mothers had distorted representations of them, where at higher risk of developing an insecure attachment pattern. Distorted representations were characterized by for example the caregiver seeming "preoccupied or distracted by other concerns, confused and anxiously overwhelmed by the infant, self-involved" or expecting the child "to please or be excessively compliant" (Benoit et al., 1997, p.308). They did not measure EE, however, but used the Working Model of the Child Interview (WMCI) to measure mothers' representations of their unborn children.

EE of the parents measured *after* birth also predicts children's attachment patterns at age six (Jacobsen, Hibbs, & Ziegenhain, 2000). Results of their study indicated that children who's mothers scored as high Expressed Emotion were more likely to be classified as insecurely attached at age six.

Another factor that has been indicated to predict infant attachment is behavior of mother. Research by Mayseless (1998) indicated that mothers of ambivalent attached children are more likely to be overprotective towards their children than mothers of differently attached children. A seeming paradox arises considering the review paper by Cassidy and Berlin (1994), where they state that low or inconsistent availability of the mother leads to

ambivalent attachment in children. A possible explanation for this apparent paradox might be that the parenting task overwhelms the overprotective mother, since the excessively close protection she wants to provide is simply not maintainable. This might lead to frustration or depression in the mother, which in turn could lead to inconsistent availability.

Considering the fact that EE measured after birth predicts attachment classification at age six (Jacobsen et al., 2000) just as mothers' representations of the unborn child assessed by the WMCI predicts attachment pattern one year later, and mothers of ambivalent attached children are more likely to be overprotective towards their children than mothers of differently attached children, it is not unlikely that if a parent scores high on EE during pregnancy, that the infant will display a resistant behavior pattern during the Strange Situation, assessed at 14 months.

Hypothesis:

The above introduction leads to the following hypothesis:

H0: There is no significant relation between mothers' high Expressed Emotion (EE) during pregnancy and resistant behavior pattern during the Strange Situation procedure of the child at 14 months of age.

H1: Mothers who score as "high" on Expressed Emotion (EE) during pregnancy are significantly more likely to have children who display a resistant behavior pattern during the Strange Situation procedure at 14 months of age than mothers who score as "low" EE during pregnancy.

Method

Participants

The sample consists of 50 children from a cohort of about 1000 Dutch children from a longitudinal study, the Generation R study (Hofman, Jaddoe, Mackenbach, Moll, Snijders, Steegers, Verhulst, Witteman, & Büller, 2002), which started in 2002 and aims to study the physical and psychological development of about 10.000 children in the city of Rotterdam, the Netherlands . A child was considered Dutch when both parents and all four of the grandparents were originally born in The Netherlands. This, in this respect, ethnical homogonous group was chosen to prevent possible confounders of ethnicity.

In order to participate in the study, prospective children did not only have to meet the above criterion, but also the parents had to meet a number of criteria. Below is a list of criteria parents had to meet in order to participate:

For pregnant women:
- Less than 24 weeks of pregnancy
- Probable resident of the city of Rotterdam at the time of birth
- Expected date of birth of the child between June 2002 and July 2004
- Legal resident of The Netherlands
- Partner should live in The Netherlands
- Both parents were originally born in The Netherlands
- Both parents of the partner were originally born in The Netherlands

During pregnancy:
- Foetal growth measured by at least two ultrasounds

At time of baby's birth:
- Mother is resident of the city of Rotterdam at the time of birth
- Date of birth between June 2002 and July 2004
- Written informed consent was given by at least one of the parents

Parents who met the inclusion criteria described above *and* whose children were due between April 2003 and April 2004 were invited to participate. How they were approached is described below.

<u>Demographic participant variables</u>

Information about Socio-Economic Status (SES), marital state, whether this pregnancy was planned or not, whether this child is their first, age of mother and week of gestation was gathered through questionnaires that were sent to the parents during pregnancy.

<u>Contacting participants and obtaining consent</u>

Midwives gave pregnant women who met the criteria verbal and written information about the study (see www.generationr.nl). All these women received a phone call from one of the members of the Generation R research team for more information and in an attempt to get them to participate. The women who agreed to participate, were invited for their first ultrasound (at around 12 weeks of gestation).

 Measures

<u>Three Minute Speech Sample</u>

Procedure

EE is measured by the Three Minute Speech Sample (TMSS) at around 30 weeks of gestation. The TMSS is a three-minute monologue during which a parent talks about his/her unborn child in the presence of one interviewer. The (verbal) instructions that the interviewer gave the parent are:

"In the next three minutes, I would like you to tell me about your unborn child. What I would like to hear from you is your expectations and hopes you have for your child, what you would like your child will be like and how you would like your relationship with the child to be. Once you've started, I'd rather not answer any more questions until the three minutes are over. Have you got any questions before you start? [parent's reply]. Then, could you please tell me what you expect or hope your child will be like and how you would like your relationship with the child to be."

Then the parent starts with his/her three minute monologue. The monologue is taped by a memo recorder [Sony].

Scoring and classification

To measure EE, statements of the parent made during the TMSS that show critical expectations, over-involvement, or over-protectiveness, are scored. These statements result in a score on the TMSS-CRIT scale (for expressed criticism) or on the TMSS-

EOI scale (for expressed over-involvement or over-protectiveness). If the score on one or both of these scales is high, the parent is classified as High EE.

Reliability & validity

The longer version of the TMSS, the Five Minute Speech Sample (FMSS), has a good interrater-reliability (κ = .6 to 1.0; Asarnow, Goldstein, & Guthrie, 1994). Also the test-retest reliability (over five weeks time) has proven to be good (ρ = .64, p < .000; Leeb, Hahlweg, Goldstein, Feinstein, Mueller, Dose & Magaña-Amato, 1991). The reliability of the TMSS is currently unknown, since this is the first time it is being used. For the current study, it was decided to use a shorter version of the FMSS, because it was expected that parents would find it difficult to talk for five whole minutes about their unborn child.

Strange Situation

Procedure

Attachment is measured with a short version of Ainsworth's Strange Situation (SS) developed in her Baltimore study (Ainsworth, Blehar, Waters & Wall, 1978). The procedure that is used is as follows: the parent and child are invited to enter a waiting room. First, toys are being brought into the room by the experimenter, while the parent is asked to read a magazine and then the experimenter leaves the room. After a while a female 'stranger' (an interne, a Ph.D. student, a nurse or an office employee), who is instructed on how to play this role, enters the room and starts reading a magazine for 40 seconds, after which she starts a short conversation with the parent. After yet another 40 seconds, the stranger starts interacting with the child (play with him/her with the toys that are in the room) and yet another 40 seconds later the parent leaves the room inconspicuously. The parent is allowed to watch or observe the child after he/she has left the room, through a one-way screen. Within two minutes, the parent returns to the room, after first calling the child's name while standing outside in front of the door and subsequently giving a short knock on the door. After the parent has entered the room, the parent is allowed to give the child some attention if and how long needed in case the child is upset. After the child has calmed down, the parent is requested/asked to resume reading the magazine and let the child continue playing. After three minutes, the parent leaves the room for the second time, and this time he/she *is* allowed to say goodbye to the child. Again the parent can watch/observe the child through a one-way screen. Two minutes later, the

parent returns after having given a short knock on the door and is allowed to comfort the child if and when necessary. Then the parent resumes reading the magazine again and the child continues to play. This lasts for three more minutes, and this concludes the short version of the Strange Situation

Scoring and Classification

In the Strange Situation, children are known to display different kinds of behaviour, which can be divided into five observational scales. These scales are A: Proximity- and contact-seeking behaviour, B: Contact-maintaining behaviour, C: Resistant behaviour, D: Avoidant behaviour, and E: Distance interaction.

The observer will rate the child's behaviour on a 1-7 Likert scale for every scale (A through E), in which a high score in a specific scale represents a strong display of the core behaviour of that scale. Ultimately the combination of scores on the different scales leads to a classification into one of the four attachment categories (Secure, Insecure-Ambivalent, Insecure-Avoidant, and Disorganized).

In the current study, for reasons explained in the introduction of this manuscript, only the behaviour in the C-scale (resistant behaviour) will be used for analysis.

The C-scale indicates resistant behaviour against the person who seeks contact with or proximity to the infant, or who tries to initiate interaction or play with the infant. The behaviour is angry: pushing away, throwing away, hitting, kicking, dropping itself on the ground or stamping its feet. Less severe expression of resistant behaviour would be rejecting toys, drop, push, or throw toys away. There is a resistance against physical contact or interaction with the adult. It is thought that this resistance stems from anger at the parent for having left him or her alone. This angry behaviour may alternate with active efforts to achieve or maintain contact with the person who is being rejected. Resistance to contact or interaction with the stranger could be a redirection of the anger at the parent or frustration that the stranger is not the parent. As stated above, resistant behaviour can be rated on a 1-7 Likert scale. A score of 1 indicates no resistant behaviour, whereas as score of 7 indicates very intense and persistent resistance like hitting the adult and full-blown temper tantrums (Ainsworth, Blehar, Waters, & Wall, 1978). Appendix 1. contains a list of behaviours with their corresponding rank.

Results

Descriptives:

Expressed Emotion (EE)

Trained raters with an interraterreliability of 86% have rated the speech samples obtained in the TMSS. As can be seen in Table 1., 30% of the 50 participants scored as high on Expressed Emotion (n = 15). Nine participants scored high on the criticism scale (18%) and six scored high on the emotional over-involvement scale (12%).

Table 1.

Expressed Emotion (EE)

EE	
Total % Low *(n)*	Total % High *(n)*
70 *(35)*	30 *(15)*

Nobody scored high on both criticism and emotional over-involvement (See Table 2.). A high score on at least one of the two scales (criticism or emotional over-involvement) is needed and enough to obtain a high score on Expressed Emotion.

The mean age of the mothers in this study was 32 (SD = 3,573), with the youngest mother being 22 and the oldest being 39 years old.

Table 2.

Expressed Emotion (EE), Split Into the Criticism Scale
and the Emotional Over-involvement Scale

	EE	
	% Low *(n)*	% High *(n)*
CRIT*	82 *(41)*	18 *(9)*
EOI**	88 *(44)*	12 *(6)*
Both CRIT and EOI	70 *(35)*	0 *(0)*

* criticism scale
** emotional over-involvement scale

Resistant Behavior

In the rating of resistant behavior, two raters agreed on four out of five ratings, where a difference of one point on the seven point Likert-scale was still considered an agreement. There were 26 boys and 24 girls in the study, (52% boys, 48% girls).

The infants' behaviors were scored on the C-scale for resistant behavior. The obtained scores varied from 1 to 5 on a 7-point Likert-scale.

As can be seen in Table 3., 28 infants obtained a score of 1 on resistant behavior ('no resistance'), which is 56%. A score of 2 ('very slight resistance') was obtained by five children (10%). Another nine children (18%) were rated with a score of 3 ('slight resistance') and six children (12%) received a score of 4 ('isolated but definite instances of resistance in the absence of a pervasive angry mood'). Only two children (4%) obtained a score of 5 ('some resistance, either less intense, or, if intense, more isolated and less persistent than in 6 or 7'). None of the children obtained a score above 5.

Table 3.

Resistant Behavior of Infants in the Strange Situation Procedure at 14 Months of Age

Score	% Obtained score *(n)*
1 'no resistance'	56 *(28)*
2 'very slight resistance'	10 *(5)*
3 'slight resistance'	18 *(9)*
4 'isolated but definite instances of resistance in the absence of a pervasive angry mood'	12 *(4)*
5 'some resistance, either less intense, or, if intense, more isolated and less persistent than in 6 or 7'	4 *(2)*
6 'intense and/or persistent resistance'	0 *(0)*
7 'very intense and persistent resistance'	0 *(0)*

In Table 4. variables that were used as control variables are shown. As can be seen, most mothers had a planned pregnancy (91,7%) and had had a university education (48,9%). For little over half of the mothers this child was their first (54,3%). Education level was chosen as a measure of Socio-Economic Status (SES).

Table 4.

       Descriptive Statistics of Control Variables

Variable		**% (n)**
Pregnancy planned	Yes	91.7 *(44)*
	No	8.3 *(4)*
Education level	Secondary education low	4.3 *(2)*
	Secondary education high	19.1 *(9)*
	Higher vocational	27.7 *(13)*
	University	48.9 *(23)*
First Child	Yes	54.3 *(25)*
	No	45.7 *(21)*

Analyses:

Table 5. shows the results of the regression analyses performed on the data. A linear regression analysis, with Expressed Emotion of mother as predictor and resistant behavior of the infant as dependent variable, showed that there was a slight tendency for children who's mothers scored low on EE to be more resistant than children who's mothers scored high on EE, but this relation was not significant ($p = 0,684$).

When the EE was split up in a high score on either the criticism or the emotional over-involvement scale, a regression analysis showed that infants who's mothers scored high on criticism were slightly more resistant than infants who's mothers scored low on EE, but the difference was not significant ($p = 0,166$). Infants who's mothers scored high on emotional over-involvement, however, where slightly, but not significantly, less likely to display resistant behavior than infants who's mothers scored low on EE ($p = 0,667$).

Another linear regression analysis with gender of the infant as independent and resistant behavior of the infant as dependent variable showed that girls were slightly more resistant than boys, but again, this difference was not significant (p = 0,586).

Table 5.

Summary of Simple Linear Regression Analysis for Variables Predicting Resistant Behavior at 14 Months of Age (n=50)

Variable	α	B	SE B	β	p
EE of Mother[a]	2.029	-0.162	0.395	-0.059	0.684
High critical vs. Low EE[b]	1.886	0.670	0.475	0.213	0.166
High Emotional Over-involved vs. Low EE[c]	1.886	-0.110	0.252	-0.069	0.667
Gender of Child[d]	1.686	0.199	0.362	0.079	0.586

a 0 = Low EE, 1 = High EE
b 0 = Low EE, 1 = High Critical
c 0 = Low EE, 2 = High Emotional Over-involved
d 0 = Boy, 1 = Girl

Several simple linear regression analyses have been performed on different demographic variables, with resistant behavior used as dependant variable. Table 6. shows the results of these analyses. As can be seen, none of the demographic variables significantly predicts resistant behavior.

Table 6.

Summary of Simple Linear Regression Analysis for Demographic Variables Predicting Resistant Behavior at 14 Months of Age (n=50)

Variable	α	B	SE B	β	p
Pregnancy planned[a]	2.250	-0.250	0.675	-0.055	0.713
Education level	2.757	-0.170	0.210	-0.120	0.422
Age of mother	1.778	0.006	0.051	0.018	0.904
First child[b]	2.238	-0.518	0.359	-0.212	0.156

a 0 = pregnancy was not planned, 1 = pregnancy was planned

b 0 = not the first child, 1 = the first child

The demographic variables used in Table 6. are also used as independent variables with Expressed Emotion as dependent variable in some more linear regression analyses. Results of these analyses can be seen in Table 7. It turned out that whether this pregnancy was planned or not was the only independent variable to significantly predict Expressed Emotion ($p = 0.05$). This means that mothers who did not plan this pregnancy scored significantly higher on EE than mothers who had planned this pregnancy. None of the other demographic variables could significantly predict Expressed Emotion.

Table 7.

Summary of Simple Linear Regression Analysis for Demographic Variables Predicting Expressed Emotion (EE) during pregnancy (n=50)

Variable	α	B	SE B	β	p
Pregnancy planned[a]	0.750	-0.477	0.237	-0.285	0.050
Education level	0.629	-0.078	0.075	-0.154	0.300
Age of mother	-0.333	0.019	0.018	0.151	0.296
First child[b]	0.333	-0.013	0.142	-0.014	0.926

a 0 = pregnancy was not planned, 1 = pregnancy was planned

b 0 = not the first child, 1 = the first child

Discussion

The hypothesis of this study was that mothers who scored as 'high' on Expressed Emotion during pregnancy, would be significantly more likely to have children who display resistant behavior during the Strange Situation procedure at 14 months of age than mothers who scored as 'low' on Expressed Emotion during pregnancy.

As can be seen in the results section of this manuscript about 1/3 of the mothers scored high on Expressed Emotion (EE). If EE is split up in the two subscales (criticism and emotional over-involvement), it can be seen that nine mothers scored high on criticism en 6 mothers scored high on emotional over-involvement.

Resistant behavior was rated on a 7-point Likert-scale, and as can be seen in the results, scores varied between 1 and 5, with a score of 1 being the most frequent.

Results of a simple linear regression analysis on these data did not support the hypothesis of this study. This leads to the conclusion that H_0 cannot be rejected based on the obtained results of this study.

A possible explanation for the results of this study could be that parents' expectations of their child (as measured in the TMSS during pregnancy) might not be comparable to parents' opinion about their child once it is born. This would lead to the conclusion that Expressed Emotion measured during pregnancy cannot be considered the same as EE measured when the child has already been born.

It is also possible that the Three Minute Speech Sample (TMSS) used in this study was too short to properly measure Expressed Emotion. One of the critics on the Five Minute Speech Sample (FMSS) was that it would be too short for parents to fully express their emotions, compared to the Camberwell Family Interview (CFI), from which it was derived. This could lead to an underestimation of EE (Kazarian, 1992; Magaña et al., 1986). Of course, the TMSS is even shorter than the FMSS, so this point of criticism would apply to the TMSS just as well. Nevertheless, good results have been obtained with the FMSS in the past and the experience in this study was that even if the FMSS had been used in the current study, most women probably would not have completed the

whole five minutes, since they already found it rather difficult to complete the required three minutes.

As can be seen in the results, EE is significantly related to whether the pregnancy was planned or not. Now this could be a statistic artifact, because the more correlations one computes, the more likely it is that at least one of them will be significant. However, it is also possible of course that this relation does actually exist, in which case it would be interesting to look at it again in a larger sample.

Another explanation for the obtained results could be that most expectations mothers had, were too far in the future (e.g. "I want my child to perform well at school and in sports."), so that they could not have influenced the relation between mother and child yet (a 14 month old child does not go to school yet, neither does it play any sports). There is a possibility that these expectations will be of influence as soon as it turns out that the child cannot live up to them.

However, it is also interesting to look at the difference between the criticism scale and the emotional over-involvement scale. Children whose mothers scored high on the criticism scale scored higher on resistant behavior than children whose mothers scored high on the emotional over-involvement scale, albeit not significantly. Also, the children whose mothers scored high on the criticism scale displayed more resistant behavior than children whose mothers scored low on EE. Again, this is not significant, but it does point in a certain direction.

Of course, there are more possible explanations for the results found in this study. As can be seen in the results. only 6 mothers scored high on the Emotional Over-involvement subscale. Only one of them got this score due to a statement that indicated over-protectiveness. This could be a reason no relation between EE and resistant behavior was found in this study, considering one of the main reasons for assuming that there would be a relation between EE and resistant behavior, were the results of research by Mayseless (1998). He stated that overprotective mothers were more likely to have ambivalent attached children. As stated earlier, resistant behavior is specific for the ambivalent attachment pattern.

Another explanation for the obtained results, methodological in nature, is that there has been no training for rating resistant behavior in the Strange Situation procedure.

Therefore, it is possible that ratings of resistant behavior would have been different if rated by a trained rater. Yet, two untrained raters agreed on four out of five ratings (80%), which could mean that resistant behavior can be scored relatively objectively.

A second methodological explanation for the results of this study is that the sample size of 50 could have been too small. As can be seen in the results, the gender of the child does not significantly predict resistant behavior. It would have been logical to expect gender to predict behavior, since research indicates that men are more physically aggressive than women (Helgeson, 2002). This difference is probably even more pronounced in children (Helgeson, 2002) and is most likely associated with the sex-hormone testosterone (Finkelstein, Susman, Chinchilli, Kunselman, D'Arcangelo, Schwab, Demers, Liben, Lookingbill, & Kulin, 1997). This would lead to expect differences in resistant behavior between boys and girls, which were not found in the current study. However, all these studies used a sample size of at least one hundred participants, which is considerably more than the fifty used in this study. It is very well possible that with a larger sample size, the expected results would have been found. Another possible explanation for the results found in this study can be found in the fact that research on socio-economic status (SES) indicated that mothers with a higher SES were more sensitive toward their children than mothers with a lower SES. This sensitivity influenced the attachment security of the children (more sensitive mothers had more securely attached children) (Bakermans-Kranenburg, van IJzendoorn, & Kroonenberg, 2004). The fact that most of the mothers in this study had had a university education, and will probably have a high socio-economic status (SES), as can be seen in the results, could explain why so little infants showed resistant behavior during the Strange Situation procedure in this study.

Limitations

As mentioned above, there are sound arguments for assuming the sample size in this study was too small. Also, the fact that an untrained rater was used to score resistant behavior in the Strange Situation procedure, might have influenced the obtained results. As far as the TMSS is concerned, it is possible that three minutes is not sufficient time to properly measure EE and could therefore lead to an underestimation of EE.

Strong points of this study are, however, that the TMSS is a relatively cheap, short, non-invasive instrument to test Expressed Emotion. This means that most mothers were willing to cooperate and the interviewers needed relatively little training. Also, rating the speech samples does not take as much time as the original CFI or FMSS.

Another advantage of the TMSS is that the participants are asked only one question and can then say whatever they want during the next three minutes.

Implications and suggestions for future research

The results of this study do not give reason to worry about high EE in pregnant women in relation to attachment behavior in their future children. However, if it would be true that, as stated above, expectations could not have influenced the relation between mother and child yet, because the child is still to young to have disappointed the parent regarding these expectations, it is possible that a relation between EE and attachment will appear when attachment was to be tested again in a few years.

If EE during pregnancy can indeed not be used to predict resistant behavior, this would implicate that future research should use instruments like the Working Model of the Child Interview (WMCI). As research by Benoit et al. (1997) indicated, this instrument does predict future attachment behavior.

Also, future research should look at the relation between EE and attachment behavior in a larger sample. Even though results of this study do not lead to think there would be a relation, there is reason to believe that a larger sample would lead to significant results. Also, as stated in the introduction of this manuscript, resistant behavior is not the only characteristic of the ambivalent attachment type. For example, ambivalent attached children also score high on proximity- and contact-seeking behavior and low on avoidant behavior (see method-section). It is very well possible that if the actual attachment types would be used as outcome measures, the expected relation between EE and attachment would occur, since EE assessed after birth was also found to reliably predict attachment classification at age six (Jacobsen et al., 2000).

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Appendix I

7. Very Intense and Persistent Resistance

The infant shows two or more of the following behaviours in the episode being coded:

a.   Repeated hitting of the person, or other similar directed aggressive behaviour;

b.   Strong resistance to being held, shown by pushing away strongly, struggling, or strongly squirming to be put down;

c.   A full blown temper tantrum, with angry screaming, the infant being either rigid and stiff or throwing itself about, kicking the floor, batting its hands up and down, and the like;

d.   Angry resistance to attempts of the adult to control the infants posture, location or action;

e.   Strong and repeated pushing away, throwing away, or hitting at toys that are offered.

6. Intense and/or Persistent Resistance

Any one of the following behaviours:

a.   Repeated or persisted temper tantrum, with throwing self about, kicking,and/or rigid, stiff, angry screaming;

b.   Very strong and/or persistent struggle against being held;

c.   Definite and repeated rejection of the person, even in the absence of directed aggression or angry screaming;

d.   Repeated, strong rejection of toys, pushing away, throwing down, accompanied by an angry cry or fuss;

e.   A combination of less intense manifestations of resistance, including squirming to be put down, resistance to interference, refusal of contact, rejection of toys, and petulance.

5. Some Resistance, Either Less Intense, or, if Intense, More Isolated and Less Persistent Than the Above.

Any of the following:

    a.   Repeated rejection of toys (e.g., dropping or throwing down) but with no strong pushing away or batting away. The rejection does not seem as angry as in scores of 6 or 7. At least three such behaviours;

    b.   Persistent resistance to the adult when he/she seeks interaction, but without the intensity of struggling, pushing away, hitting and so on of the higher scores. An example would be a fuss or increased intensity of crying whenever the adult approaches, offers a toy, and the like;

    c.   Resistance to being held by the parent, shown by squirming immediately to be put down, but without the intense struggle implied in the higher scores;

    d.   Persistent low-intensity pouting or cranky fussing, with at least one other manifestation of rejection, such as protesting to interference, rejection of a toy and the like.

4. Isolated but Definite Instances of Resistance in the Absence of a Pervasive Angry Mood

Any one of the following:

    a.   Refusal of contact with the stranger. One definite, initial refusal, but without any implications of intense struggle;

    b.   Two refusals of toy, or kicking movements, or resistance to interference, accompanied by a cry, but without any other manifestations of rejection or angry mood;

    c.   One strong but isolated behaviour, accompanied by a cry, for example, angry stepping when put down, one strong refusal of toy (strong push or batting away), stiff steps when approaching (as though showing bodily resistance), and the like;

    d.   One manifestation of resistance to being held by the parent, less definite than above for example, a slight jerk or push away in the context of apparent

'wanting to be held', or a definite squirm to be put down after accepting contact for at least 15 seconds.

3. Slight Resistance

Any one of the following:

a. Two instances of resistant (or aggressive) behaviour that is neither intense nor strong and is not accompanied by crying, for example, little kicks of the feet, dropping toys, and the like;

b. One instance of resistant (or aggressive) behaviour if accompanied by a pout or protest, or in itself fairly intense (and not yet covered by higher scoring categories);

c. A marked pout, not prolonged enough to warrant a score of 5 and not accompanied by other manifestations of resistance or aggression.

2. Very Slight Resistance.

Any one of the following, with no other manifestations of resistance:

a. One isolated instance of nonintense resistance, for example, a little kick of the legs when being picked up;

b. One brief, slight protest noise when the adult enters, or advances, or picks the baby up.

1. No Resistance

None of the above behaviours. The infant either accepts or is unresponsive to proximity, contact, or interaction offered by the adult or it may merely avoid it. It may be occupied with other things, or it may be crying and not increase the intensity of its cry when approached by the adult. Note: Because infants nearly always resist having their noses wiped, such behaviour will not be scored as resistant.

The contents of this scale are derived from Ainsworth, Blehar, Waters, & Wall (1978).