

**PARENTAL DIFFERENCES IN INFANT-DIRECTED EMOTIONAL  
COMMUNICATION**

An Honors Fellow Thesis

by

LYNNEL CHARLENE GOODMAN

Submitted to Honors and Undergraduate Research  
Texas A&M University  
in partial fulfillment of the requirements for the designation as

HONORS UNDERGRADUATE RESEARCH FELLOW

May 2012

Major: Psychology

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## **ABSTRACT**

Parental Differences in Infant-Directed Emotional Communication. (May 2012)

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Past research on parent- infant communication has failed to examine how parents communicate emotions differently and the relationships that infant sex and infant attachment may have with parental communication. The present research examines how the emotional intensity, duration and frequency of eye contact, and duration of emotional expression are effected by their infant's sex and the emotion expressed and correlated with the infant's attachment to their primary caregiver. 25 parents of infants between 7 and 12 months old filmed videos in which they looked in two boxes in each of four trials and displayed positive/neutral, fearful/neutral, disgust/neutral, and neutral/neutral emotions toward the unseen contents of the boxes. Infant attachment was measured by the Waters (1987) 90-item parent questionnaire. The results suggest sex or attachment do not affect parent communication. However parents expressed a greater emotional intensity and gave eye contact more frequently in the emotion trials as compared to neutral. Findings also suggest that parents spend the most time emoting the positive emotion.

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## CHAPTER I

### INTRODUCTION

At the end of the first year, infants show not only an understanding of underlying meaning behind an emotional vocal and/or verbal expression, but an ability to use these cues given by adults to then alter their reaction to a novel situation, called social referencing. This emotional communication facilitates infant learning about their surroundings, and infants receive most of these cues from their own parents. In the current research, we examined the differences in infant directed communication of the parents to determine how and why parent differ when delivering emotional cues.

The initial social referencing study, the visual-cliff study, revealed that 12 month-old infants could use their mother's facial expressions to determine their behavior when faced with an uncertain, ambiguous context, in this case a cliff (Gibson & Walk, 1960). Most infants did not cross the cliff when their mothers showed fear or anger expressions, but many crossed the cliff when their mothers displayed facial expressions of joy or interest (Sorce, Emde, Campos, Klinnert, 1985). Following this study, researchers have used novel toys as opposed to a visual cliff as the ambiguous social referencing situation. These studies examine how infants, when faced with novel toys, reference an adult who presents an emotional cue. They also look at how the baby approaches (Mumme, Fernald, & Herrera, 1996; Walden & Baxter, 1989 ), plays with(Moses, Baldwin,

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This thesis follows the style of *Developmental Psychology*.



Rosicky, Tidball, 2001; Mumme & Fernald, 2003), or looks at the toys. Using this procedure, Mumme, Fernald, & Herrera (1996) also indicated that at 1 year old, infants can interpret the emotional expressions of adults and determine the relevance of the cues to an unfamiliar event. But, they argued that facial cues alone may not be strong enough emotional signals to alter a one year olds behavior. Verbal and facial cues together more constantly elicit signaling effects. A novel toy study also investigated and confirmed the ability of 12 month-old infants to understand that an adult's emotional signal refers to a specific event or object (Moses et al., 2001).

Likewise, attachment is the enduring emotional bond formed between an infant and a caregiver that determines whether the infant uses the mother as a secure base for exploration (secure attachment) or has a less positive, insecure/resistant or insecure/ambivalent, attachment to their caregiver (Ainsworth, Blehar, Waters, Wall, 1978; Thompson & Goodvin, 2005). Attachment affects social referencing in that avoidant infants reference their caregiver less in a strange situation, resistant infants referenced their caregiver more, and secure infants referenced their caregiver an amount in-between the other two (Dickstein, Thompson, Estes, Malkin, Lamb, 1984). Bradshaw et al. (1987) attempted to link individual differences in social referencing with temperament and attachment, but did not find any significant results. Kelley, Slade, & Grienberger (2005) coded strange situation videos to analyze parent behavior and communication in comparison with the infants' attachments. Results indicated that the more atypical parent behavior and communication, the more insecurely attached the infant. This finding suggest that the effectiveness of parent communication and infant

attachment are related, but only evaluates the parents in a situation of infant distress instead of other more typical daily interactions.

Sex differences in parental communication have also been studied using free- play observations and the results indicate that fathers interact faster than mothers in the temporal structure of play of a parent with their infant (Arco, 1983). Other research shows mothers vocalized more, fathers touched more and engaged in more object play (Brundin, Rijdhholm, & Larson, 1986; Hunter, McCarthy, MacTurk, & Vietze, 1987), and that overall parents communicated more with babies of the opposite sex. Research has also discovered age differences (older parents vocalize more and young parents gesture more) and social economic status differences (low SES parents gesture most). They did not find communication differences in relationship to the parent's level of education (Feenstra, 1996). This research suggests that differences in parent sex, age, and socioeconomic status do affect infant-directed parent communication. However, there other variables could potentially affect parent-infant communication, such as the sex of the infant and the emotion that the parent expresses that have not yet been explored.

### **The present research**

The present research design examines the individual differences in parental communication as it relates to the attachment of their infants, the sex of infants, and the emotion expressed. In doing this, parents filmed videos in which they looked in two boxes in each of four trials and displayed positive/neutral, fearful/neutral, disgust/neutral, and neutral/neutral emotions toward the unseen contents of the boxes

while reading a script. The videos were coded for frequency and duration of eye contact with the camera, emotional expression type, duration of each emotion. Infants' attachment score, based on the Waters (1987) 90-item parent questionnaire, was completed by the parents, measured, and correlated with the eye-tracking and coding data.

Because evolutionary theory suggests that male and female infants have different emotional needs to be addressed by parents and prior research indicates an interaction of parent-infant gender on parent communication (Feenstra, 1996), we hypothesized that parents will communicate differently to male infants as compared to female infants regardless of parent sex. Since research has shown that infant do attend to emotional cues, we expected parents to focus on the expression of emotional cues more than neutral cues since emotional cues carry important content for the infant. Therefore, we expected for parents to use higher emotional intensity, engage in more eye contact, and express emotion longer during disgust, fear, and positive trials than neutral trials. Lastly, Kelley, Slade, & Grienberger (2005) found that more typical parent communication directly related to the attachment of the infant. We expanded on this finding to hypothesize that parents who express emotion more effectively using higher emotional intensity, engaging in more eye contact, and expressing emotions longer will have more securely attached infants.

## CHAPTER II

### METHODS

#### Participants

24 parents and one grandparent (3 males, 22 females) and their 25 healthy full-term infants (15 males, 10 females) were recruited through commercially produced lists in the Bryan-College Station Area. The mean age of the infants was 9 months, 18 days (range = 7 months, 18 days to 12 months, 14 days). Parents reported infant ethnicity as predominantly Caucasian ( $n = 18$ ), followed by other or mixed race ( $n = 4$ ), Hispanic ( $n = 1$ ), and African American ( $n = 1$ ). The parents (mean age = 32 years, range = 20 years to 59 years) were also predominantly Caucasian and on average had a college education level. Thirteen parents and their infants were eliminated because they did not complete the attachment questionnaire.

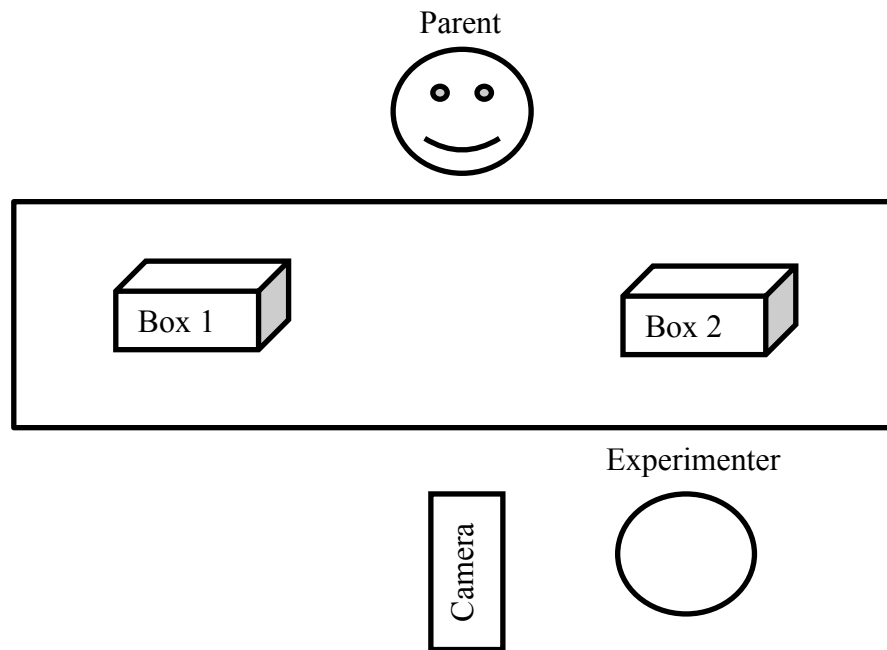
#### Procedures

The stimuli for this experiment were two rectangular, 18 X 13 X 10 cm, wooden boxes with hinged lids that open. The boxes were identical in appearance with the exception of color. These boxes were placed approximately 64 cm apart and 30 cm from the midline of the desk, in front of the parent. Stimuli were placed in each box based on emotion to help the parent act realistically. Office supplies were used as the neutral stimuli, plastic insect toys were placed in the box for fear and disgust trials, and a picture of a happy baby was in the box for the positive trial.

Before every trial, the parents watched a demonstration video of another parent performing the trial. They also reviewed the scripts. The scripts consisted of 14 words that make up three short sentences for each emotion in each trial (Table 1). Parents were instructed to act as if they were addressing their infant directly without using their infant's name. When filming, the parents sat at a desk with the two boxes so that only their head and shoulders were visible. The camera and experimenter were in front of them (Figure 1). The parents filmed two pre-trials and four test trials. In the first pre-trial, the parents had a rattle and a toy truck in front of them and directed the infants to watch as they placed one toy in each of the two boxes. The second pre-trial was identical to the first except that the rattle and truck were replaced with a lion and rolling bell toy. After the pre-trials, the parents filmed the four test trials in which they directed positive or neutral, fearful or neutral, disgust or neutral, and neutral and neutral emotional signals to the unseen contents of one of the two boxes. The parents' turned to the first box, opened it to a 90 degree angle, and looked inside. They then recited the script while displaying the facial expressions for the emotion assigned to that box for that condition. Next, they turned and repeated the procedure for the second box and its assigned emotion for the condition. The parent then looked into their lap for 5 seconds to allow the infant time to look at the boxes. The parents repeated this procedure for each of the four test conditions. The order in which the parents filmed the conditions and the side of each emotion and color of box was randomized.

**Table 1.**  
Examples of Verbal Test Scripts

	Emotion Script	Neutral Script
Disgust Trial	“Ewwwwww I do not like this toy! It’s disgusting! It makes me feel icky!!!!”	“Hmmmmmm I see this toy. It is right here. It is in the box.”
Fear Trial	“Ahhhhhhh this toy is scary. It makes me afraid! It makes me feel frightened!”	“Hmmmmmm I see this toy. It is right here. It is in the box.”
Positive Trial	“Oooooooooo I love this toy! It makes me so happy! It makes me smile!!!!”	“Hmmmmmm I see this toy. It is right here. It is in the box.”
Neutral Trial	“Hmmmmmm I see this toy. It’s right here. It is in the box.”	“Hmmmmmm here’s a toy. It’s in front of me. I’m looking at this toy.”



**Figure 1.** Video Set-Up

## Measures

The videos were coded using The Observer XT to measure the duration and frequency of parent looks to the camera indicating eye contact and the duration of each emotional expressions. Emotional intensity for the emotional expressions was coded on a 5-point scale (1- no vocal or facial emotional expression, 2- a little vocal or facial emotional expression, 3- a little vocal and facial emotional expression, 4- a lot of vocal or facial emotional expression and a little of the other, and 5- a lot of vocal and facial emotional expression). Approximately 50% of parent videos were coded by two independent observers. Inter-rater reliability was compared using Pearson's  $r$  for the measures of duration and frequency of eye contact and duration of emotional expression. Reliability ranged from .92 to 1.00 ( $M = .97$ ,  $SD = .02$ ). For emotional intensity, the proportion of agreements between the coding of the observers was compared. Agreements ranged from 77% to 100% ( $M = 85\%$ ,  $SD = .09$ ).

Attachment security data was collected using Waters (1987) 90-item parent questionnaire. Later, parent's answers on the attachment questionnaire were compared to the Waters (1987) criterion, and, subsequently, each baby was given an attachment security score, between -1.0 and 1.0, with -1.0 reflecting the most insecure attachment, and 1.0 reflecting the most secure attachment.

## CHAPTER III

### RESULTS

A 2 x 4 repeated measures analysis of variance (ANOVA) was conducted with frequency of eye contact as the independent variable and sex (male or female) as a between subjects independent variable and emotion trial (disgust, fear, positive, neutral) as a within subjects independent variable. The results indicated that there was a significant main effect of emotion trial (sphericity assumed for all calculations),  $F(3, 69) = 3.54, p < .05$ , partial  $\eta^2 = .13$ . Subsequent paired samples t-tests were performed and revealed that parents expressed eye contact significantly more frequently in fear trials than in neutral trials (all means and standard deviations are displayed in Table 2),  $t(24) = 3.15, p < .05, d = .63$ , and in positive trials than in neutral trials,  $t(24) = 3.04, p < .05, d = .61$ . A trend was also revealed that parents expressed eye contact more frequently in disgust trials than in neutral trials,  $t(24) = 1.94, p = .07, d = .39$ . No significant main effect for sex,  $F(3, 69) = 2.91, p > .05$ , partial  $\eta^2 = .11$ , or interaction between sex and emotion trial was observed,  $F(3, 69) = .98, p > .05$ , partial  $\eta^2 = .04$ .

A 2 x 4 repeated measures analysis of variance (ANOVA) was conducted on duration of eye contact as the independent variable and sex (male or female) as a between subjects independent variable and emotion trial (disgust, fear, positive, neutral) as a within subjects independent variable. The results indicated that there was no significant main effect of emotion trial,  $F(3, 69) = 1.51, p > .05$ , partial  $\eta^2 = .62$ , and no significant main



effect of sex,  $F(3, 69) = 1.50, p > .05$ , partial  $\eta^2 = .06$ . There was also no significant interaction between emotion trial and sex,  $F(3, 69) = 1.04, p > .05$ , partial  $\eta^2 = .04$ .

A 2 x 4 repeated measures analysis of variance (ANOVA) was conducted with duration of emotional expression as the independent variable and sex (male or female) as a between subjects independent variable and emotion trial (disgust, fear, positive, neutral) as a within subjects independent variable. The results indicated that there was a significant main effect of emotion trial,  $F(3, 69) = 3.67, p < .05$ , partial  $\eta^2 = .14$ . Subsequent paired samples t-tests were performed and revealed that positive emotion was expressed significantly longer than neutral  $t(24) = 3.99, p < .05, d = .80$ . There were no significant differences in the length of time disgust was expressed compared to neutral,  $t(24) = -.29, p > .05, d = .06$  or between fear and neutral  $t(24) = -.44, p < .05, d = .09$ . No significant main effect was observed for sex,  $F(3, 69) = .10, p > .05$ , partial  $\eta^2 = .004$ , and no interaction between sex and emotion trial was observed,  $F(3, 69) = 1.08, p > .05$ , partial  $\eta^2 = .05$ .

**Table 2**

Mean Emotional Communication Measures across Emotion Trials

	Disgust <i>M (SD)</i>	Fear <i>M (SD)</i>	Positive <i>M (SD)</i>	Neutral <i>M (SD)</i>
Frequency of Eye Contact	2.56 (1.96)	2.88 (1.47)	2.96 (1.64)	2.04 (1.36)
Duration of Eye Contact (sec)	2.41 (2.96)	2.47 (1.69)	3.00 (2.35)	1.99 (1.64)
Duration of Emotional Expression (sec)	10.19 (3.73)	10.19 (1.82)	11.49 (1.92)	10.34 (2.21)

A 2 x 4 repeated measures analysis of variance (ANOVA) was conducted with emotional intensity as the independent variable and sex (male or female) as a between subjects independent variable and emotion trial (disgust, fear, positive, neutral) as a within subjects independent variable. The results indicated that there was a significant main effect of emotion trial,  $F(3, 69) = 289.90, p < .05$ , partial  $\eta^2 = .93$ . Subsequent paired samples t-tests were performed and revealed that the intensity of disgust ( $M = 4.04, SD = .66$ ) was significantly greater than the intensity of neutral ( $M = 1.02, SD = .16$ ),  $t(24) = 23.39, p < .05, d = 4.69$ , the intensity of fear ( $M = 4.10, SD = .80$ ) was significantly greater than the intensity of neutral ( $M = 1.02, SD = .16$ ),  $t(24) = 18.87, p < .05, d = 3.78$ , and the intensity of positive ( $M = 4.38, SD = .62$ ) was significantly greater than the intensity of neutral ( $M = 1.02, SD = .16$ ),  $t(24) = 28.09, p < .05, d = 5.66$ . No significant main effect was observed for sex,  $F(3, 69) = .09, p > .05$ , partial  $\eta^2 = .004$ ,

and no interaction between sex and emotion trial was observed,  $F(3,69) = 1.25, p > .05$ , partial  $\eta^2 = .05$ .

A Pearson's correlation matrix was performed to determine if the infant's attachment security score was correlated with any differences in parent emotional communication. No significant correlations were observed. A Pearson's correlation revealed no correlation between infant attachment scores and the frequency of parent eye contact in the disgust trial,  $r(23) = .11, p > .05$ , fear trial,  $r(23) = .15, p > .05$ , positive trial,  $r(23) = -.15, p > .05$ , and neutral trial,  $r(23) = .08, p > .05$ . A Pearson's correlation also revealed no correlation between infant attachment scores and the duration of parent eye contact in the disgust trial,  $r(23) = .10, p > .05$ , fear trial,  $r(23) = .16, p > .05$ , positive trial,  $r(23) = -.14, p > .05$ , and neutral trial,  $r(23) = .16, p > .05$ . A Pearson's correlation revealed no correlation between infant attachment scores and the duration of the parental emotional expression in the disgust trial,  $r(23) = .13, p > .05$ , fear trial,  $r(23) = .10, p > .05$ , positive trial,  $r(23) = .17, p > .05$ , and neutral trial,  $r(23) = .23, p > .05$ . Lastly, a Pearson's correlation revealed no correlation between infant attachment scores and the frequency of parent eye contact in the disgust trial,  $r(23) = .25, p > .05$ , fear trial,  $r(23) = .17, p > .05$ , positive trial,  $r(23) = -.03, p > .05$ , and neutral trial,  $r(23) = .24, p > .05$ .

## **CHAPTER IV**

### **DISCUSSION AND CONCLUSIONS**

The results of this study suggest that parents do not communicate differently to male infants than they do to female infants. This finding is contrary to our hypothesis founded on differences in the communication of parent to infants of the opposite gender (Feenstra, 1996) suggesting that perhaps there is not a difference in communication to infants by gender across both parent genders.

Results also revealed no correlation of infant attachment across parent communication measures which did not support our hypothesis. These results contrast with previous research that discovered a relationship between infant attachment and atypical parent behavior and communication in situations of emotional distress (Kelley, Slade, & Grienberger, 2005). In the present research, the infant was not present in the room; therefore, infant attachment was not salient to the parent during filming.

Lastly the emotion trial did show an effect on parent communication in line with the proposed hypothesis. Parents gave eye contact more frequently in the emotion trials as compared with the neutral trial. This may indicate that parents are using eye contact as a way to emphasize the importance of emotional cues to the infant. This makes the aware that they need to attend to the cues more than they would a neutral cue. Parents also expressed the emotions more intensely than neutral. A neutral emotion by nature is less

intense than a disgust, positive, or fear emotion. This finding ensures that parents did express emotions properly.

Some of the emotion trial results did not support our hypothesis. Parents expressed positive emotions significantly longer than the disgust, fear, and neutral emotions. This finding could have a few implications. First, it may suggest that negative emotions intuitively have a need to be expressed quickly. In circumstances that parents express negative emotions to their infant, they typically need their infant to respond quickly in order to avoid danger or other undesirable situations. This finding may also suggest that parents are more comfortable expressing the positive emotion so they dedicated more time to expressing it. The finding that duration of eye contact did not differ across trials also failed to support our hypothesis.

These findings suggest that parents do not treat the communication of all emotions the same and that infant sex and attachment may not influence parent communication significantly. These findings allow us to see how parent communication differs and could, through further research, help direct parents to communicate effectively with their infants.

The current research is limited in its small sample size comprised of mostly Caucasian, college educated mothers. Also, the coding of the parent videos focused on westernized measures of emotions which may not be applicable to non-native English speakers and

the other cultural communication. Lastly, the highly artificial environment in which the videos were filmed limits the external validity of the study. Future research with a larger and more diverse sample is needed to explore population differences in parental communication and might find the hypothesized infant sex and attachment relationships. Further research is also necessary to explore cultural differences in parental communication as well as seek to study parent communication in a more naturalistic environment.

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