UNIVERSITY HONORS PROGRAM

SENIOR PROJECT - APPROVAL

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PROJECT TITLE: The Influence of Parental Background and Maternal Smoking on Infant Processing Speed

I have reviewed this completed senior honors thesis with this student and certify that it is a project commensurate ~~with honors~~ level undergraduate research in this field.

Signed: Tara [signature] Faculty Mentor

Date: 13 Dec 2004

Comments (Optional):

The Influence of Parental Background and Maternal Smoking on Infant Processing Speed

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Abstract

The current study examined the effects of maternal smoking and family demographic characteristics on infant information processing efficiency. Forty-five 3-month-old infants completed a visual fixation task in which a picture of a woman's face appeared until the infant accumulated 30 seconds of looking time. Infants were categorized as either short-lookers or long-lookers based on their average look duration. Mothers provided family demographic and basic infant health information. It was hypothesized that maternal smoking would be positively correlated with average look duration, indicating less efficient processing, and that maternal education and socioeconomic status would be negatively correlated with average look duration. Data from the study did not support the hypotheses. Smoking, maternal education, and socioeconomic status were not significantly related to infant performance. However, maternal age was associated with performance. Infants born to mothers who were 30 years of age or older were significantly more likely to be long-lookers than infants born to younger mothers. Results suggested that older maternal age may be a risk factor for slower information processing in infancy.

The Influence of Parental Background and

Maternal Smoking on Infant Processing Speed

One of the priorities of developmental psychology is explaining individual differences in later abilities, particularly intelligence. For many years, researchers have tried to predict intelligence later in life from infant behaviors. In the past, intelligence was thought to be a constant throughout development (DiLalla et al., 1990). Infant scores on the Bayley Scales of Infant Development (BSID) were explored as a means of predicting later intelligence as they are an indication of the infants' developmental status. This idea of intelligence as a constant throughout development was not supported by research using the BSID. Instead, BSID scores do not correlate with later intelligence. Overall, research suggests that the Bayley Scales of Infant Development is not a good predictor of later intelligence, because no strong correlations have been found (DiLalla et al., 1990).

After years of failing to predict later intelligence from infant performance on scales assessing developmental milestones, infancy researchers questioned whether processing speed, which can be measured across the lifespan, might finally provide the link between infant performance and later IQ. Historically, information processing speed and, more specifically, reaction time have been positively correlated with intelligence in adults (McCall & Carriger, 1993; Rose, Feldman, Wallace, & McCarnton, 1991), but recently researchers have begun to study these factors in infancy as well. In infants, processing speed measures how much time it takes for information to become boring to the infant or how much time it takes for the infant to become disinterested in the information. It is measured by mean fixation duration. In general, infants who tend to process information more quickly and have shorter reaction times tend to have higher IQs later in life (Cardon & Fulker, 1991; McCall & Carriger, 1993; Frick & Colombo, 1996).

The study of infant processing speed has helped researchers to better understand cognitive development across the life span, because it can be measured from very early in a person's life and seems to show a pattern of stability throughout development. Some researchers have demonstrated a positive correlation between infant processing speed and intelligence later in life (McCall, 1981, Rose & Feldman, 1997). Researchers have taken different routes in trying to assess processing speed in infants, but many have come to the same conclusion: faster processing speed in infancy is associated with higher IQ later in life (Rose & Feldman, 1995; DiLalla et al., 1990).

Processing speed can be assessed by many methods, although most researchers utilize infants' visual responses to assess this construct. The preference for novelty task introduced by Fantz (1964) is commonly used to assess processing speed during infancy, although it was not developed for that purpose. During these tasks an infant looks at a pair of objects for a certain time period that allows for them to become familiar with it. The infant is next shown pairs of objects that contain one familiar object that appeared in the previous set and one novel object. The percentage of test time that the infant looks at the novel stimulus is computed (DiLalla et al., 1990). Based upon research by Fantz (1964) and Fagan and McGrath (1981), it is expected that infants will attend longer to the novel pictures if they remember the familiar ones. Longer looking at the novel stimulus indicates that the object presented during the familiarization period was processed sufficiently, so that it is now less interesting than the novel stimulus. Thus, the infant is more inclined to look at the new stimulus. Infants typically attend more to the novel stimulus in the test condition, but this outcome is not always observed.

Mean fixation duration is one construct that researchers use to categorize infant processing speed. Mean fixation duration is defined as the average amount of time that an infant looks toward a stimulus, taking into account the looks away from the stimulus. Based on mean fixation duration, infants can be categorized as long looking infants or short looking infants (Jankowski, Rose, & Feldman, 2001, Frick & Colombo, 1996) Longer-looking infants tend to make very few looks to a stimulus with each look relatively long in duration. In contrast, shorter-looking infants make many looks with each look short in duration (Jankowski, Rose, & Feldman, 2001). In the familiarization task described in the previous paragraph, short- and long-lookers respond differently. At short familiarization times, long-lookers demonstrate a familiarity preference while short-lookers demonstrate a novelty preference. If however, the familiarization time is increased, both short- and long-lookers, demonstrate a preference for novelty. This suggests that long-lookers process the familiar stimulus more slowly and may still be processing it when the novel stimulus is presented (Courage & Howe, 2001).

Prior studies have suggested that individual differences in visual fixation duration reflect how quickly and efficiently infants process information (Frick & Colombo, 1996) Longer-looking infants need more exposure time than shorter-looking infants to process the same amount of information (Colombo, Mitchell, Coldren, & Freeseman, 1991; Frick & Colombo, 1996). This concept was illustrated by Frick and Colombo's experiment that observed how efficiently infants processed degraded stimuli. Longer-looking infants were less efficient in all of the tasks of the experiment, showing that they process information more slowly (Frick & Colombo, 1996). Mean fixation duration in infants has been correlated with later cognitive function in childhood and adolescence (Colombo, Frick, & Gorman, 1997). The correlation between the two is negative as longer-looking infants tend to have lower IQ scores than shorter-looking infants later in life (Rose, Feldman, Wallace, & McCarnton, 1991).

It is clear that there are considerable individual differences in infant fixation duration, although the source of these individual differences and the influence of environmental factors on infant fixation duration are understudied. Little research has explored how demographic, environmental, and biological factors that may influence individual differences in visual fixation duration. Research in these areas may help us to better understand factors that influence early cognitive functioning and later intelligence. Specifically, the current study focused on the contributions of maternal smoking, education, and socioeconomic status in the development of cognitive processing skills in infants.

Based upon previous studies, one would expect that maternal smoking would negatively impact processing speed (Trasti, Vik, Jacobsen, & Bakketeig, 1999). According to a surgeon general's report (2001), some of the poor outcomes associated with smoking during pregnancy are preterm delivery, lowered birth weight, and in some cases spontaneous abortion. Also, in light of the developmental problems that can occur when a mother smokes during pregnancy, such as learning difficulties and behavioral problems (Trasti, Vik, Jacobsen, & Bakketeig, 1999), it was hypothesized that negative effects would be observed in cognitive processing as well.

Another factor that may affect infant processing speed is maternal education. Higher maternal education has been associated with better outcomes for children including higher IQ scores during childhood (Kareken, Gur, & Saykin, 1995). This association may be explained by several factors. For example, mothers who are better educated may interact with their children in a different manner than less educated mothers. The activities they engage in with their children may promote learning and stimulate their infants to excel from the beginning of life better than those who are less educated. Better educated women also have a larger knowledge base with which to teach their children.

A third factor that could influence processing speed during early infancy is socioeconomic status (SES). It often takes into account several factors that include parental education, parental occupation, and family income. In previous studies, SES has been positively correlated with intelligence (Smith, Fagan, & Ulvund, 2002). This observation may be seen because higher SES enables parents to provide a more optimal environment for child development, including nutritious foods, medical attention, and home environment. Higher SES parents are able to provide more attentiveness, and they in many cases have a better knowledge base with which to educate their children. They may be more stimulating from even the first months based on their educational backgrounds. In the current study, the Hollingshead index (1975) was used to quantify participants' SES.

The current study examined three main demographic variables: maternal smoking during pregnancy, maternal education, and socioeconomic status of the family. These factors have been explored in other studies and are likely to be important in cognitive development. In the current study, the infant processing speed was indexed by mean fixation duration to a picture of a woman's face. Specifically, it was hypothesized that maternal smoking would be positively correlated with average fixation duration, meaning that infants exposed to cigarette smoke would more likely be long-lookers than non-exposed infants. In addition, it was hypothesized that both maternal education and family SES would be negatively correlated with mean fixation duration and, in turn, positively correlated with processing speed. This is because these two factors seem to have positive influences on children's development.

Method

Participants:

The Tennessee Department of Health provided the names of babies born in east Tennessee each month. Bulk mailings to new parents encouraged them to contact the lab via a reply postcard or other means if they were interested in participating in research. Only those parents who expressed interest were contacted to participate in the study.

The sample used for this study represents a sub-sample of the participants tested for a larger study. Forty-five full-term 13-week-old infants and their parents participated in this study. Infant participants were included if they contributed valid coded data on a visual fixation task at the time of the analyses. Infants were scheduled to participate within a fourteen day range between the time they were twelve weeks zero days and fourteen weeks zero days old. Demographic information and mean fixation duration for participants can be found in Table 1.

Apparatus:

The stimulus was presented to the infants inside a black box that was open on the bottom and in the front. A 43.18 cm color flat panel computer monitor was mounted at the top of the black box. Infants were placed in a supine position to view the pictures that appeared on the screen approximately 30.48 cm above them. A parent was present in the room at all times with the infant.

Throughout the testing, the infant's face was videotaped by a Panasonic closed circuit camera (model WV-BP130). The camera sent the image of the infant's face to a Panasonic WJ-810 time/date generator. This added a line of text that included the time and day of the test and some information about the stimulus. It did not have information about the infant's identity. Next, the film was sent into a vertical interval time code (VITC) generator before finally being fed through a Panasonic AG-6300 VCR. A Kodak Safelight (Model B) with a Kodak Safelight filter #11 and a 15-watt light bulb provided light for the child's face during the testing. This light was able to provide infrared light for filming that was invisible to the child, creating a safe and less distracting environment for presentation of the images.

Stimulus:

The stimulus was a digital image of a woman's face that subtended a visual angle of approximately 20°x 25° at the infant's visual center (See Figure 1). Similar face stimuli have been used in the past for other studies to obtain infants' visual fixation duration, and these stimuli elicit enough variability between infants for fixation duration in this age group. The stimulus used in this study was modeled after those used in other studies (Frick & Colombo, 1996). It was a brown-haired, smiling woman with a lighter background color.

Procedure:

A lab member explained the study and asked if the mother had any questions. The mother was then given a form to read and sign that indicated her informed consent. Next, a lab member completed the demographic questionnaire with the mother. All of her answers were recorded on a demographic interview form where they were only identified by a unique identification number. (See Appendix A).

After the demographic interview, the infant was placed facing upward onto a rolling crib with high sides to prevent him/her from falling. Then, he/she was rolled under the computer screen to view the image program. When the picture came on, a trained lab assistant determined when the infant was looking at the stimulus and held down a computer key during that time period. The accumulated time of looks was calculated, and the trial automatically ended when the total look duration exceeded thirty seconds.

This procedure is actually a part of a larger study in which infant heart rate and respiration as well as their responses in the Visual Expectation Paradigm were recorded. Those data were not included in the current analyses.

Data Reduction

At a later time, a trained lab member coded the videotape of the infant observing the woman's face using a VCR in single frame advance mode. (See Appendix 2) Infants' looks to and away from the stimulus were noted, and from these, the number of looks to the picture, the total fixation time, the fixation duration for each look, and the mean fixation duration were calculated. Looks away from the stimulus were defined as explicit looks away from the image, a blink that completely occluded the eye, and breaking the fixation by blocking the visual field usually by waving of the arm over the eye. Infants were categorized into short and long looker groups using their average fixation duration. Short-lookers (n=20) were defined as infants who had a mean fixation duration of less than 15.00 seconds, while long-lookers (n=25) had a mean fixation duration of 15.00 seconds or more.

Results

Correlation analyses examined the relationship between demographic variables and mean fixation duration. There were no significant direct relationships observed between mean fixation duration and maternal smoking, maternal education, or socioeconomic status. The only significant correlation found was between mean fixation duration and maternal age. Contrary to the hypothesis, fixation duration was not significantly correlated with socioeconomic status as measured by the Hollingshead.

Chi-square analyses assessed whether maternal smoking or maternal education (college degree vs. less than college degree) increased the risk of longer looking. Neither maternal smoking (see Figure 3) nor maternal education (see Figure 4) were associated with an increased risk of being a long looker. Thus the data did not support the hypothesis that maternal smoking would increase the likelihood of long looking or the hypothesis that higher maternal college education would decrease the likelihood of long looking.

An exploratory chi-square analysis assessed whether maternal age was evenly distributed across short-lookers and long-lookers. Although not hypothesized, a significant difference was observed, $\chi^2(1, N = 45) = 4.02$, $p<.05$. The data suggested that the infants of mothers over age 30 were at a higher risk than the infants of mothers under age 30 of less efficient processing during infancy.

Discussion

This study explored the relationships between demographic characteristics and information processing efficiency during infancy. The data did not support the hypotheses that maternal smoking would be positively correlated with mean fixation duration and that maternal education and socioeconomic status would be negatively correlated with mean fixation duration. The study cannot, however, conclude that these factors have no effects on processing speed. The study did find that maternal age was directly related to processing speed of three-month-old infants, as there were many more long-lookers in the group of infants born to mothers over thirty years old.

There are many possible reasons that we did not see the relationships expected in this study. Some of the data we included for analysis was pilot data, or data obtained when the experiment was still being tested and slightly modified. In using pilot data in our sample, error variance due to methodological changes could have been introduced. The main way that pilot data was different from the final data set was that the early participants in the study did not have a defined time limit for looking at the image on the screen. It was later decided that infants would look at the image for thirty seconds and then the program would shut off. Making this change made the data more uniform, and limited the skewness of the distribution.

A second factor that may have affected our ability to detect the hypothesized relationships was the relatively small sample size. Increasing the sample size typically increases the power that you have to detect effects. The small sample size limited our ability to detect small, but potentially meaningful effects. When taking data for analysis, typically, the larger the sample size, the lower the error and effects of outliers. A larger sample size increases the applicability of the data to be generalized to the public, as long as the sample is representative of the different types of people in the public domain (for example with relation to race, sex, educational status, etc.). Perhaps if more participants provided data, more women in each of the categories of educational status would have been represented, leading to an increase in our ability to find trends in these populations.

Another factor that may have led to the somewhat surprising results was that the study was not designed to test the hypotheses laid out for this paper. The data collected were part of a larger normative study that examined the development of attention, processing speed, and memory of infants at approximately three months of age. Demographic information was collected from the mothers to determine eligibility of the infant participants. This larger study had three main parts, and only one of these parts was analyzed in this smaller study: the visual fixation task. This study merely used the demographic information and the one visual fixation task to examine relationships between the demographic variables and infant processing speed. This is a problem, because the sample was not diverse enough to provide definitive correlations. In designing an experiment to specifically measure the relationships between processing spend and different demographic factors, we would have recruited for a specific type of sample that included mothers with the range of demographic values we were interested in measuring. For example, we would have oversampled smoking mothers, in order to have a more evenly distributed population and more of a basis for reliable correlation. We would have also made sure that the sample had an adequate representation of women with different educational backgrounds and SES statuses.

In addition to these reasons for unexpected results of the study, unpredictability of infants must also be recognized as a factor. Under ideal experimental conditions, infants would stare at the image when it was presented, moving their eyes exactly according to their habituation to the picture. However, this phenomenon is rarely observed during infant studies. Often, infants will cry or shake their head, and sometimes they just do not pay attention to the stimulus. This leads to the creation of data that is hard to code, which can also cause problems with coding reliability among the different lab assistants.

A final reasonable possibility that the results did not support the original hypotheses is that smoking, SES, and maternal education may not significantly influence infant processing speed at three months of age. At three months of age, infants mostly exhibit biological traits: their individual differences at very young ages may be largely attributed to genetics. As children grow, learning takes place, and environmental factors affect this learning. The relationships between smoking, SES, and maternal education and processing speed may become progressively clearer as children grow older. Other factors, such as parenting style and discipline skills, may also affect processing speed when children are older, and these should be explored in future studies.

Although none of the hypotheses were supported by the data, maternal age, a biological factor, was associated with infants' fixation duration category. Results suggested that older maternal age may represent a biological factor that places infants at risk for less efficient cognitive processing early in life. This result is not entirely surprising, however. According to the Trasti, Vik, Jacobsen, and Bakketeig, older women are at a higher risk of having infants with a variety of poor birth outcomes, such as Down's syndrome, preterm delivery, and low birth weight (1999). From this information, other poor outcomes associated with learning may also be expected. In recent years, researchers have become more interested in the effects of maternal age on infant development, as it is becoming more common for women to postpone marriage and childbearing to older ages in order to pursue careers

Although infants of older mothers may be at a slight biological risk for less efficient processing, the potential exists for certain environmental factors to lessen its impact. For example, a woman who has delayed childbearing to complete her education and explore career opportunities may provide a more cognitively stimulating environment for her child. Thus these data should not be interpreted as indicating that this mild risk will predispose infants of older women to diminished intelligence or cognitive processing later in life. Future studies should examine how different home environments may enhance or suppress the early risk identified in this study.

Table 1

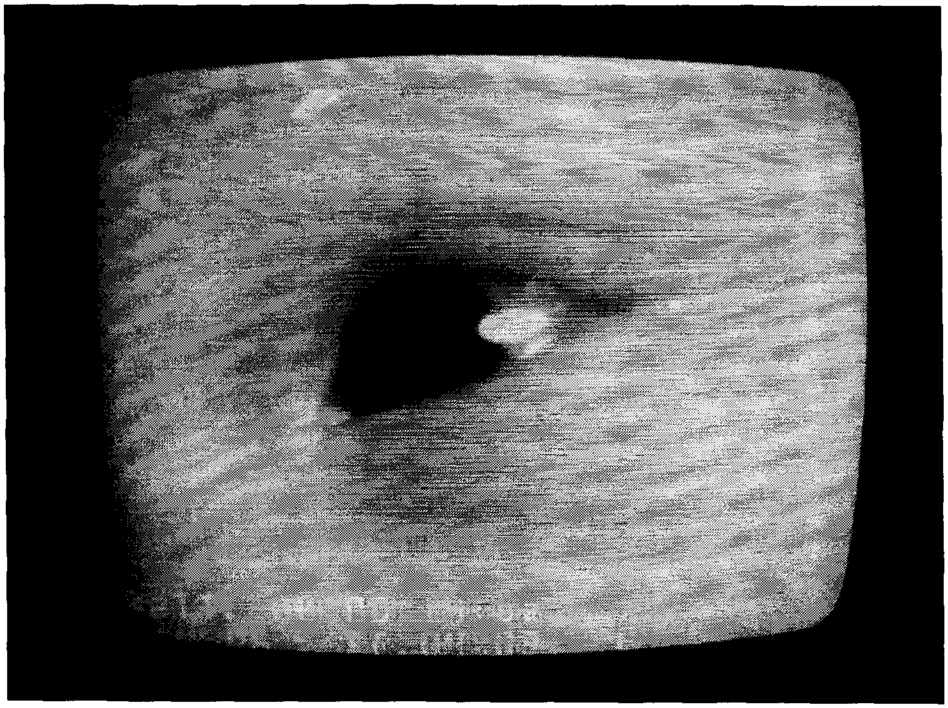
Mean (and Standard Deviation) Sample Demographic Characteristics

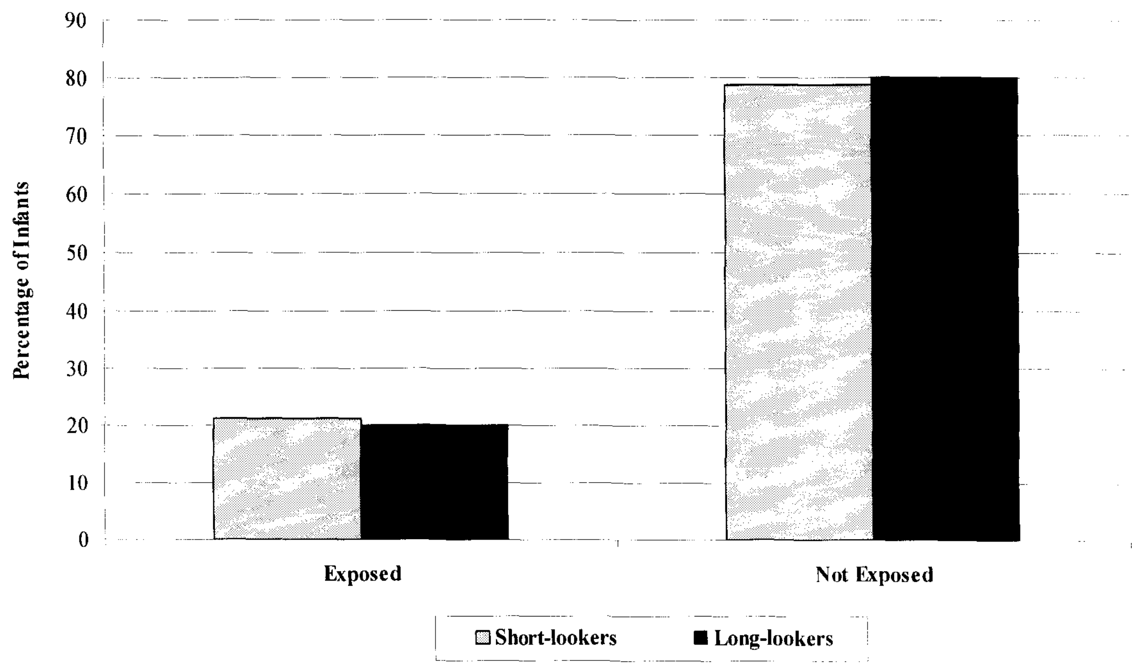
	Short-lookers	**Long-lookers**	**Overall**
N	20	25	45
Infant Age (days)	93.75 (5.15)	91.84 (4.56)	92.69 (4.88)
Gestational Age (wks.)	39.15 (0.96)	39.36 (1.20)	39.27 (1.07)
Maternal Age (yrs.)	27.50 (5.31)	30.60 (5.58)	29.22 (5.50)
Paternal Age (yrs)	30.45 (6.05)	33.20 (6.83)	31.98 (6.51)
Birth Weight (lbs)	7.86 (0.91)	8.13 (0.95)	8.01 (0.92)
Birth Length (in)	20.43 (1.10)	21.18 (1.81)	20.84 (1.51)
Hollingshead	43.55 (15.07)	44.36 (13.02)	44.00 (13.95)
Mean Fixation Duration (Sec.)	8.36 (2.88)	30.53 (10.21)	20.68 (13.59)

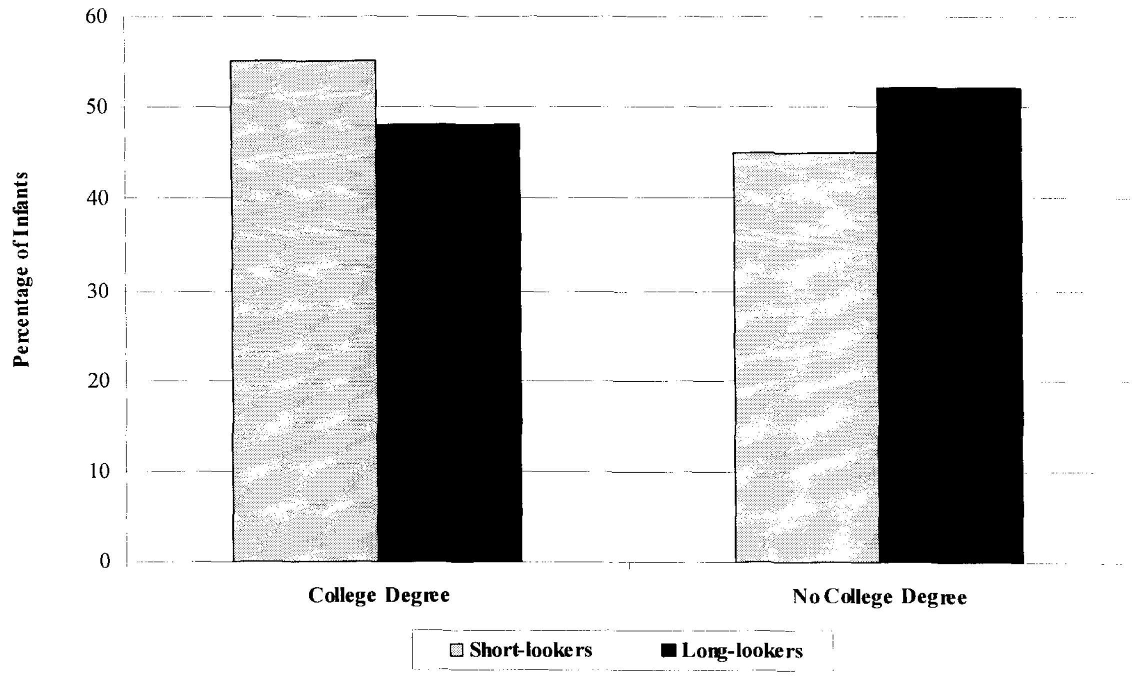
Table 2

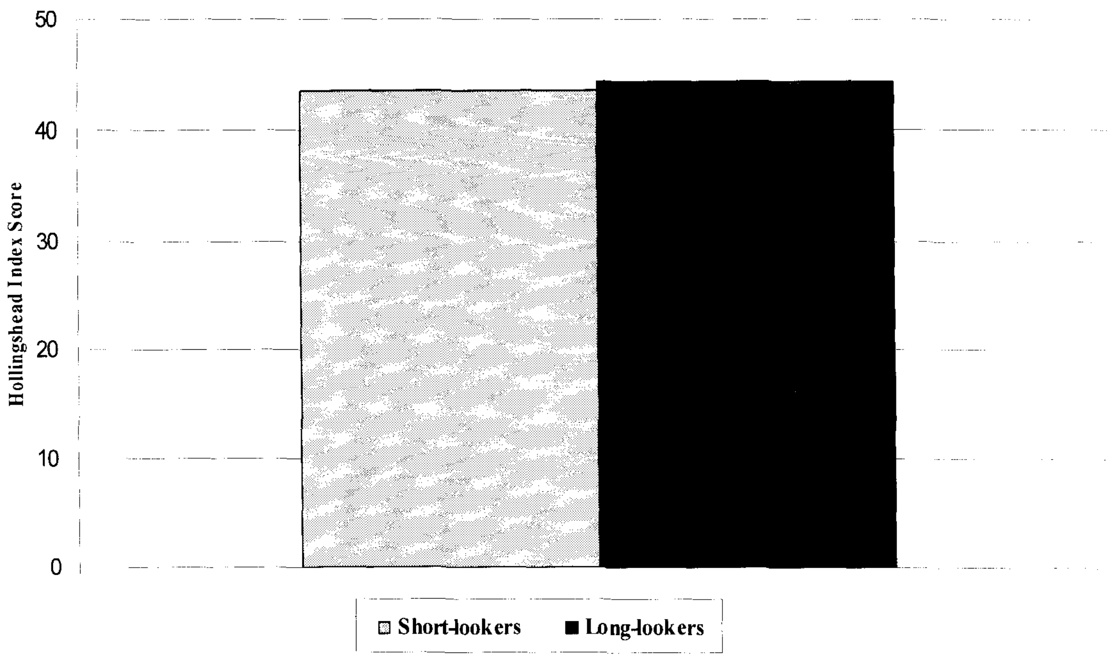
Sample Demographic Characteristics (cont.)

	Short-lookers	Long-lookers	Overall
Maternal Education (%)			
Less than College	45.00	52.00	48.90
4yr. Degree or More	55.00	48.00	51.10
Paternal Education (%)			
Less than College	60.00	48.00	53.30
4yr. Degree or More	40.00	52.00	46.70
Infant Ethnicity (%)			
Ethnic Minority	10.00	20.00	15.60
Caucasian	90.00	80.00	84.40
Cigarette Exposure (%)			
No Exposure	78.90	80.00	79.50
Pre/Postnatal Exposure	21.10	20.00	20.50
Marital Status (%)			
Unmarried	25.00	16.00	20.00
Married	75.00	84.00	80.00
Breastfeeding (%)			
Any Duration	75.00	88.00	82.20
12 weeks or Longer	40.00	44.00	42.20
Sex of Baby (n)			
Male	12	16	28
Female	8	9	17

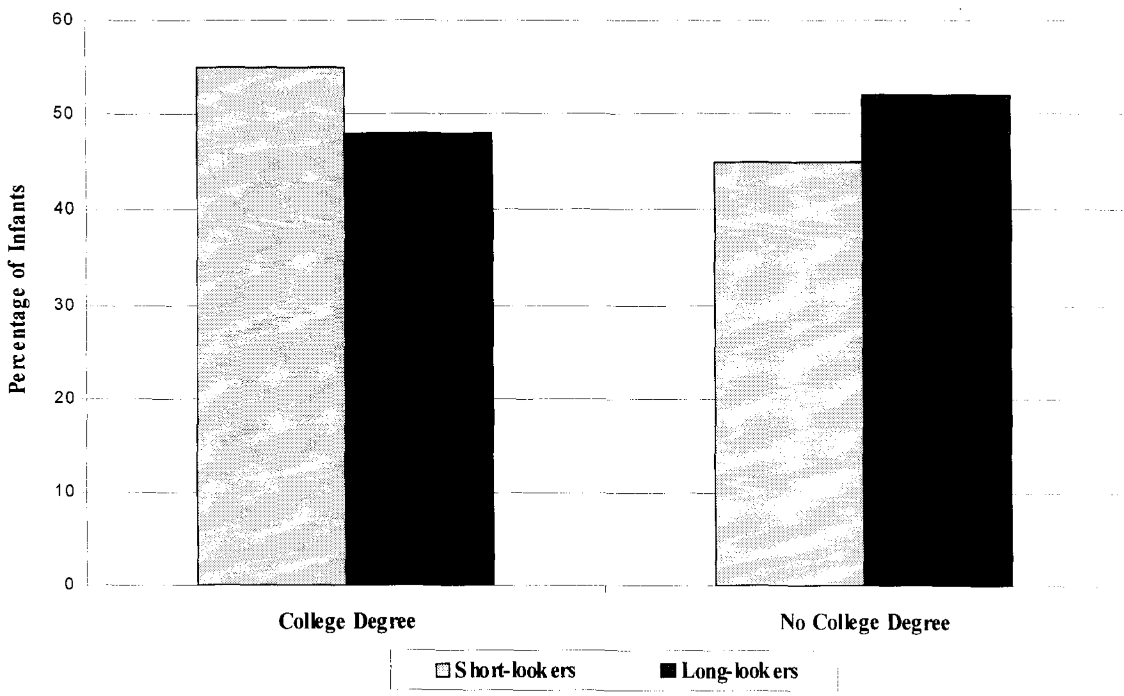



90
80
70
60
50
40
30
20
10
0
Percentage of Infants
Exposed
Not Exposed
Short-lookers
Long-lookers


60
50
40
30
20
10
0
Percentage of Infants
College Degree
No College Degree
Short-lookers
Long-lookers



50
40
30
20
10
0
Hollingshead Index Score
Short-lookers
Long-lookers


60
50
40
30
20
10
0
Percentage of Infants
College Degree
No College Degree
Short-lookers
Long-lookers

References

Bacharach, V. & Baumeister, A. (1998). Direct and indirect effects of maternal age, income, and home environment on intelligence of preterm, low-birth-weight children. *Journal of Applied Developmental Psychology, 19*, 3, 361-375.

Bradley, R., Burchinal, M., & Casey, P. (2001). Early intervention: The moderating role of the home environment. *Applied Developmental Science, 5*, 2-8.

Cardon, L. & Fulker, D. (1991). Sources of continuity in infant predictors of later IQ. *Intelligence, 15,* 279-293.

Colombo, J., Frick, J., & Gorman, S. (1997). Sensitization during visual habituation sequences: Procedural effects and individual differences. *Journal of Experimental Child Psychology, 67*, 223-235.

Colombo, J., Mitchell, D., Coldren, J., & Freeseman, L. (1991). Individual differences in infant visual attention: Are short lookers faster processors or feature processors? *Child Development, 62*, 1247-1257.

Courage, M., & Howe, M. (2001). Long-term retention in 3.5-month-olds: Familiarization time and individual differences in attention style. *Journal of Experimental Child Psychology, 79*, 271-293.

DiLalla, L., Thompson, L., Plomin, R., Phillips, K., Fagan, J., Haith, M., Cyphers, L., & Fulker, D. (1990). Infant predictors of preschool and adult IQ: A study of infant twins and their parents. *Developmental Psychology, 26,* 759-769.

Dougherty, T. & Haith, M. (1997). Infant expectations and reaction time as predictors of childhood speed of processing and IQ. *Developmental Psychology, 33,* 146-155.

Fagan, J. & McGrath, S. (1981). Infant recognition memory and later intelligence. *Intelligence, 5,* 121-130.

Fantz, R. (1964). Visual experience in infants: Decreased attention to familiar patterns relative to novel ones. *Science, 146,* 668-670.

Frick, J. & Colombo, J. (1996). Individual differences in infant visual attention: Recognition of degraded visual forms by four-month-olds. *Child* Development, *67*, 188-204.

Jankowski, J., Rose, S., & Feldman, J. (2001). Modifying the distribution of attention in infants. *Child Development, 72*, 339-351.

Kareken, D., Gur, R., & Saykin, A. (1995). Reading on the wide range achievement test-revised and parental education as predictors of IQ: Comparison with the Barona Formula. *Archives of Clinical Neuropsychology. 10*, 2, 147-157.

McCall, R. (1994). What process mediates predictions of childhood IQ from infant habituation and recognition memory? Speculations on the roles of inhibition and rate of information processing. *Intelligence, 18,* 107-125.

McCall, R. & Carriger, M. (1993). A meta-analysis of infant habituation and recognition memory performance as predictors of later IQ. *Child Development, 64,* 57-79.

Richards, J. & Cronise, K. (2000). Extended visual fixation in the early preschool years: Look duration, heart rate changes, and attentional inertia. *Child Development, 71*, 602-620.

Rose, S. & Feldman, J. (1995). Prediction of IQ and specific coginitive abilities at 11 years from infancy measures. *Developmental Psychology*, *31*, 685-696.

Rose, S. & Feldman, J. (1997). Memory and speed: Their role in the relation of infant information processing to later IQ. *Child Development, 68,* 630-641.

Rose, S., Feldman, J, & Jankowski, J. (2002). Processing speed in the 1st year of life: A longitudinal study of preterm and full-term infants. *Developmental Psychology, 38*, 895-902.

Rose, S., Feldman, J., Wallace, I., & McCarnton, C. (1991). Information processing at 1 year: Relation to birth status and developmental outcome during the first 5 years. *Developmental-Psychology, 27*, 723-737.

Smith, L., Fagan, J., & Ulvund, S. (2002) The relation of recognition memory in infancy and parental socioeconomic status to later intellectual competence. *Intelligence, 30*, 247-259.

Trasti, N., Vik, T., Jacobsen, G., & Bakketeig, L. (1999). Smoking in pregnancy and children's mental and motor development at age 1 and 5 years. *Early Human Development, 55*, 137-147.

U.S. Department of Health and Human Services. "Women and Smoking: A Report of the Surgeon General- 2001." (Retrieved on 2/10/04 from www.cdc.gov/tobacco)

Van Bakel, H. & Riksen-Walraven. (2002). Parenting and development of one-year-olds: Links with parental, contextual, and child characteristics. *Child Development, 73*, 256-273.

Child's Demographic Information

Gender:	________	**Age (Calculate):**	____ months ____ day
Birthdate:	___/___/____		
Gestational Age:	______ weeks	Sleeping thru Night? Age Began:	___ Yes ____ No _____ wks
Birth Weight:	_____ lbs ______ ozs	Birth Length:	_______ in.
Current Weight:	___ lbs ____oz	Current Length:	_______ in.
APGAR @ 1 min.	_________	APGAR @ 5 min.	_________
Last feeding?	________	Last Nap?	________

Maternal Demographic Information:		**Paternal Demographic Information:**	
Age:	______________	Age:	______________
Occupation:	______________	Occupation:	______________

Education:	________	High School/GED	________	Education:
	________	Some College	________	
	________	Bachelor's Degree	________	
		Graduate Degree		

Ethnicity:	________	Caucasian	________	Ethnicity:
	________	African American	________	
	________	Hispanic	________	
	________	Asian American	________	
	________	American Indian	________	
		Other (identify):		

Marital Status: ______________________________

How many other children are in the household? ______________ Ages: ______________

Is the child in daycare? _____ No _____ Yes _______ hours/week

Breast Feeding Ever? _____ No _____ Yes _______ Finished? Total Weeks BF: _____

Mom smoked since baby's birth?

_____ No _____ Yes If yes, how many per day ____________

Mom smoked during pregnancy?

_____ No _____ Yes

Is baby routinely exposed to cigarette smoke by anyone else? _____ No _____ Yes