

# **Knock Knock, Who's There?:**

**A Proposal to Explore the Acquisition of Sense of Humor in  
Premature Infants**

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## **Introduction**

Although there have been serious efforts to decrease the rates of premature infant births in the United States, such figures have stayed constant throughout the years (Blackwell-Sachs and Blackburn, 2003). As preventative measures have yielded few results, it is crucial for scientists, policy makers and physicians alike to focus their efforts on maximizing care once the premature infant has been born. Unfortunately, infants born before 28 weeks have a much lower rate of survival than babies born at full term (Kelly, 2006). By optimizing standardized care, there would be added benefits to alleviate both costly hospital stays, reduce familial stress and hopefully increase developmental outcomes for the newborn on a physical, emotional and psychological level. As more than 320,000 newborns are relegated to the care of a physician every year (Kelly, 2006) this issue is both vast and foreseeable, which entertains the notion that research can provide aid to possibly reduce some of these issues.

In order to carry out the current study, there would be an investigation with various in-hospital and at home protocols to increase the developmental outcomes in preterm births. There would be both a control group in which infants would receive standard NICU care as well as an intervention group that would receive the standard NICU care as well as the aforementioned protocols. However, although this study aims to increase overall care of preterm infants, there are also efforts to test children in both groups in various cognitive domains in order to investigate the scientific validity of the research at hand.

More specifically, this study will explore the rate at which infants in both groups acquire a sense of humor. A sense of humor is unique in that it reflects development on

several domains. Such a measure investigates an infant's temperament, cognitive abilities, socialization skills as well as level of intellect. As such, the hypothesis for this study is that infants who receive the nurture from the intervention group will acquire a sense of humor at earlier rates than those in the control group.

## **Background**

There is a good deal of literature investigating the psychological aspects of a sense of humor including studying a sense of humor from a cognitive, evolutionary, social and intellectual standpoint. Although there are studies that examine the acquisition of a sense of humor from a developmental perspective, the authors of these studies mostly focus on humor and laughter after infancy. The current study is thus unique as it utilizes previous findings, but examines the acquisition of a sense of humor from a much earlier starting point. This research is also pivotal as it delves into the intricacies involved with studying premature infants, and outlines a strict approach to conduct such research.

In his article, "Children's Humor: A Developmental View," Roy T. Tamashiro outlines what it is that children choose to laugh at from a developmental perspective. Tamashiro argues that there are various types of humor that cause children to initiate a response. Tamashiro bases his conceptual framework on Piaget's theory that there are distinct stages and milestones that an individual undergoes throughout his or her lifetime. This influences a child's cognitive ability, thus a child's idea of the world changes as he or she progresses developmentally. As such, a child's sense of humor also changes as he or she progresses through the various life stages. This notion is valid as humor is greatly dependent on an individual's thoughts and feelings (Tamashiro, 1979).

Tamashiro claims that there are 5 stages of humor development, closely tied to Kohlberg's stages of moral reasoning (Tamashiro, 1979). In terms of infant humor, Tamashiro explains that there comes a point in the infant's life in which he or she notices that objects are stable, this is known as object constancy and corresponds to Piaget's theory of sensorimotor intelligence. In this period, a sense of humor does not stem from words; rather, it is more closely tied to the child's body. As such, children laugh when their bodies are tickled or when large toys are brought into contact with their body. (Tamashiro, 1989).

The next stages are not necessarily related to infant development, but are important to mention as the foundation of humor development. The second stage is most closely related to motor control and competency over bodily functions. As such, children laugh at mostly physical, slapstick humor. The next stage is considered to be self-protective. Here, children laugh at mostly practical jokes as they mark the ability for infants to have control over others. The fourth stage is the conformist stage, in which social acceptability is crucial. It is at this stage in which children laugh at clichéd or unoriginal jokes. The next stage is referred to as the conscientious stage, which often comes about in later adulthood or adolescence. Individuals in this stage often find non-clichéd and good-natured humor enjoyable (Tamashiro, 1989).

Although Tamashiro makes certain strides in terms of the development of a sense of humor, his research still contains gaps. Firstly, he only manages to skim infant humor development. The current study is novel in that it delves into the very first stages of the acquisition of a sense of humor by observing humor in incremental stages in the very

beginning of a child's life. Furthermore, it portrays a comprehensive view by collecting measures related to both temperament as well as intellect. Lastly, it observes infant development from the standpoint of the premature infant across two subgroups, making for a unique set of data.

In "Cognitive Development and Children's Comprehension of Humor," Paul E. McGhee conducts a study to investigate milestones in humor. Similarly to Tamashiro, McGhee bases much of his conceptual framework around Piaget's theory of child development. McGhee defines humor along two distinct strands. "Incongruity" humor is humor that contains stimuli that doesn't violate physical expectancies. "Novelty" humor on the other hand, does violate visual expectancies, not just at an abstract level. (McGhee, 1971).

In order to conduct the study, children were divided along 3 age levels: 5, 7 and 9 years old. There were various cognitive tasks and classes of humor in which the children were tested against. Results demonstrated that in the case of incongruity humor, operational thinking was an important element in comprehension. In terms of age differences, there was an increase in the understanding of humor correlated with an increase in age (McGhee, 1971).

McGhee's work is important as he classified different types of humor and studied them on an experimental level. Furthermore, he took into account the importance of age as related to developmental milestones in the acquisition of a sense of humor, or a more refined sense of humor. However, there are still gaps in his research. This study deals with an older population, as such; there is not much room for investigation into the first signs of

the development of a sense of humor. Furthermore, this study does not test children along other cognitive measures as a basis for understanding such as temperament and/or intellect. Finally, unlike the current study, there is no mention of how preterm babies acquire a sense of humor differently or in comparison to babies in a standardized early care environment versus a nurturing intervention environment.

In “Joking and Appreciation of Humor in Nursery School Children,” Alice Gross assessed 3 forms of humor in nursery school aged children from ages 3-5. Firstly, Gross notes that a sense of humor mainly is constructed along 2 spectrums. There must be an element of the unexpected as well as the notion that the humorous stimuli shouldn’t take place. She defines a sense of humor as occurring along 3 dimensions: responsive, productive and hostile. Responsive humor is a smile or slight laugh that occurs after something surprising and or mildly unnerving occurs. Productive humor consists of an intentional defiance of meaning through jest or teasing. Hostile humor is a form of productive humor with a more negative intent (Groch, 1974).

In terms of her findings, Groch concluded that there were various sex differences that emerge in relation to the humor response. Girls demonstrated more signs of responsive humor whereas the young boys displayed more signs of hostile humor (Groch, 1974). From an evaluative perspective, Groch’s work is important in that she defines humor across multiple dimensions and tests children among a wide age span. However, she does not test at an age in which children are first acquiring a sense of humor. By the age of 3, a child has already experienced humor and laughter, and according to Tamashiro, would be along a much different stage of humor development than an infant. Furthermore, and

once again, the investigation fails to take other considerations such as intellect and temperament into account. Lastly, this study does not measure children brought up along two different developmental approaches such as seen in the current study in which there is a comparison between a control and an intervention group.

In "Occasions for Laughter: The Development of Humor in B from 24 to 36 Months," Betty Lou Dubois et. al. developed a naturalistic longitudinal study. The experimenters videotaped B for 8 hours for the first day of each month from the time B was 24 to 36 months of age. All of B's incidents of laughter were noted. Note taking occurred along three dimensions. Data was acquired through written records, systematic observations and periodic videotaping. Researchers found that social events, especially those involving siblings, helped the child acquire a sense of humor (Dubois et al., 1984).

Dubois et al. accomplishes some novel work as they use naturalistic observational techniques to investigate the acquisition a sense of humor. However, inherent with the naturalistic technique, there are some notable issues at hand, including the notion that the work is not generalizable. The current study on the other hand utilizes the experimental method and takes measures into account with high inter-rater reliability. Furthermore, this study only follows 1 child while the current study has a total of 150 participating children.

In conclusion, the present study expands on the current body of knowledge by adding data from a new vantage point. First and foremost, this study examines the acquisition of a sense of humor from its earliest stages by investigating the emergence of a sense of humor during infancy. Furthermore, the study looks into such development by examining a unique population of premature infants broken up into two empirically

varying groups: those who received high levels of nurture versus those that received standard NICU care. This study also has a large number of participants, which increases statistical power. Lastly, the study takes the intellectual functioning and temperament of the children into consideration in order to examine all facets of the acquisition of a sense of humor.

## **Research Design and Methods**

The current study will be carried out in association with the protocols in the Welch Lab at the Columbia University Medical Center. The study will consist of a 2.5-year study. There will be 150 babies, 75 of which will be in the control group and 75 of which will be in the intervention group. There will be 2 approaches. The control group will receive standard NICU care while the intervention group will receive standard NICU care in conjunction with the intervention.

Nurture specialists will work with mothers in the intervention group in order to carry out various techniques to improve mother-infant bonding and thus improve the infant's developmental outcomes. Such bonding is particularly important in the first weeks of life in order to continue to establish parent-child recognition. Daily visits will be encouraged as to bring mother and child closer together in which nurture specialists will coach the mother on the tasks required of the intervention group.

In terms of criterion for potential subjects, there will be various regulations for both mother and infant. The infant must be born prematurely, between 26 and 34 weeks upon admission. The lower limit remains at 26 weeks as infants born earlier than that would have the potential of introducing new variables to the study in terms of severity of health

defects and potential mortality rates. As such, the infant should also have no congenital anomalies. Furthermore, the infant's weight should also be matched to the correct corresponding gestational age. Both twins and singletons are accepted into the study. In terms of criteria for the mother, she must have at least one supporting person at home. This is to ensure she is capable of carrying out the intervention techniques with both physical and emotional supporters at her side. Lastly, the study guidelines would rule out mothers who have a known history of psychiatric illness, substance abuse or psychosis. This is important as the introduction of such variables into the study may alter the ways in which mothers are able to facilitate the intervention and comply with the study. Furthermore, with a history of psychiatric illness, a mother may be at greater risk for Postpartum Depression, which may impede her ability to care for the infant.

In terms of recruitment, there will be a study coordinator who will identify all possible subjects. This of course will all be carried out in compliance with IRB regulations. Once possible subjects have been identified, they will be screened with a research coordinator and physician to ensure they meet the aforementioned criteria. The participants will then randomly be assigned to either the control group that receives standard NICU care or the intervention group that receives standard NICU care in addition to the intervention protocols.

The intervention protocols will include 5 major areas intended to better the development of premature infants. These will include the following measures:

1. Odor Exposure

Rationale: Odor-based recognition could be a crucial component in the development of maternal-infant bonding. Through the exposure of pheromones and other odorants, the infant knows its mother's smell and is comforted by it. This particular intervention is also beneficial in terms of the time span in which it can be implemented. Although an infant may not be physically stable enough for interventions requiring touch, an odor cloth can easily be put under a child's head. Also, the mother's odors will stay with the child even when she is not present in the NICU, continuing the strong bonding principles involved in the nurture oriented intervention.

Method: In order to conduct this aspect of the study, the mother will be given a piece of cloth to wear for a few hours before she comes to visit her infant at the NICU. When she is at the NICU and spending time with her baby, the cloth will be placed under the baby's head or somewhere close to the baby in the isolette. This way, the baby can associate with the mother and her smell while she is present. Before the mother leaves, she will be given a piece of clothing the baby has worn such as a sock, and will one again be instructed to keep it close to her. The odor cloths will then be exchanged again the next time the mother is in the NICU with the infant.

## 2. Comfort Touch and Vocal Soothing

Rationale: There are cases in which the infant may not be in a healthy enough condition for holding. However, options such as comfort touch and vocal soothing can still be implemented. According to DeCasper and Fifer, the time span after an infant is born may be especially crucial for mother infant bonding as it is at this time

that the infant shows a preference for his mother's own voice (DeCasper and Fifer, 1980). By providing comfort touch along with vocal soothing, the infant will further associate the two.

Methods: In order to conduct this part of the intervention, the mother will hold either the infant's hand or foot through the isolette. This touch should be affectionate, but not overly stimulating- simple holding time. In terms of vocal soothing, the mother will be instructed to speak to her child in her native tongue, connecting to the baby by revealing that she is there for him and wants to provide a sense of comfort.

### 3. Kangaroo Care

Rationale: Kangaroo care is a practice that consists of skin-to-skin contact between mother and infant, most often in which the infant is held close to the mother's chest. Furthermore, according to Sizun and Westrup, kangaroo care increases the rate at which preterms grow and breast-feed as well as well as a decrease in nosocomial infections (Sizun and Westrup, 2003).

Methods: This aspect of the intervention will only be permitted once the physician has claimed that the infant is healthy enough to be removed from the isolette for parent-infant touch. The nurture specialist will guide the mother to hold her child on her chest so that there is skin-to-skin contact between both mother and baby.

### 4. Comfort Cycle Instruction

Rationale: Parents look forward to the day their child will be discharged with both excitement as well as fear. The idea of being the primary caretaker for a young infant with increasing needs can be scary. Mother's will have to feed their infant, bath it, help it go to sleep and provide it with endless amounts of nurture and care. The comfort-cycle thus helps the mother in gaining confidence that she can synchronize with her baby, which amends the infant's stress response through emotional regulation.

Methods: Close family members in the intervention group will meet with a nurture specialist in order to go over maternal support needed at home as well as how to best support the mother with the Comfort Cycle, which consists of the following:

- Recognizing that the infant is upset.
- Ability to tolerate the infant's distress while staying calm
- Determining what the baby needs at this particular moment
- Comforting the child through voice, touch, and thermoregulation

##### 5. Parenting Instructions for the Home

Rationale: Parents have basically no experience in taking care of their child outside of the NICU. Thus, it is important for them to have basic guideline available to them that will provide them with various techniques to care for their newborn as well as answer a slew of related questions. By having such information, the parents will be more confident in their ability to parent and take on the roles and responsibilities with greater attentiveness.

Methods: Before going home, the nurture specialist will review the material in the booklet with both parents. The book will come in both Spanish and English, and reinstate the importance of the daily Comfort Cycle. The manual will reassure parents that they can synchronize with their baby through the aforementioned techniques such as Kangaroo Care. The booklet will also have photos to make it more relatable and user-friendly.

After the baby goes home, the parents will be asked to bring him or her back in for a battery of tests that will be completed at the following 4 intervals: 9, 12, 15 and 18 months in order to follow up on the baby's acquisition of a sense of humor.

#### 1. Bayleys Scales of Infant Development

This exam tests children on their cognitive and motor development from age 1 through 42 months. The test is broken down into 2 parts. Through child interaction, it examines cognitive, motor and language skills and through parent questionnaires, it delves into social-emotional and adaptive behaviors ("Bayley Scale of", 2006). This is important to use in the investigation of a sense of humor, as humor requires high levels of cognition and intellect. The child must understand the word around him or her in order to know when something should be deemed out of the ordinary and thus humorous.

#### 2. Infant Behavior Questionnaire

This questionnaire is intended for the parents to report on their child's temperament over the past week. The scale is used for infants aged 3-12 months. Parents

are asked to rate their babies along various scales including soothability, smiling and laughter, activity level, fear, distress to limitations, rhythmicity, and periods of time it takes for them to get oriented or distracted (Rothbart, 2006). This test is important to use in the investigation of a sense of humor as humor can be often related to temperament. If a baby is more extroverted than introverted, he or she may be more likely to display signs of a sense of humor as he or she probably has a greater tendency to interact with the world around him or her.

### 3. Sense of Humor Test

In order to test for a sense of humor, an experimenter will display bizarre behavior (something that is out of the ordinary to the child) to evoke a response. An example may include putting a banana over the experimenter's head. If a child has a sense of humor, he or she will willingly laugh at this behavior. It is important to note that during the test, a primary care giver or someone the child is very close with will be in the room in order to avoid distress due to being left alone with a stranger. The Sense of Humor Test will be videotaped in order to compare the children's responses at the end and ensure high inter-rater reliability.

### 4. Parental Logs

Parents will also be instructed to keep logs to see if a baby displays a sense of humor at home. This would include instances of a joke or scene that defies normal behavior. The experimenter would review possible moments this could occur or "hotspots" to look out for such as when the baby is watching a comical television show. This will be an important

component to the experiment as a baby could easily begin to display a sense of humor between the two intervals in which the experimenters test them.

All data will be compared on SPSS using an ANOVA to test the variance between both the intervention as well as the control group. The analysis will compare results from the aforementioned test to detect any significant findings.

### **Predicted Results and Conclusion**

In terms of the final outcomes of the study, the researchers predict that infants in the high nurture intervention group as well as those who scored higher in terms of cognitive functioning and extroversion will acquire a sense of humor at a faster rate than the infants in the control group. This prediction takes into account the notion that infants in the high nurture group will have more contact with adults due to the nature of the aforementioned protocols and therefore be more socialized. Furthermore, infants who score higher on cognitive ability and intellect in the Bayleys Scales of Infant Development Assessment will most likely be more observant of the world around them and thus more likely to pick up on environmental cues related to jokes and a sense of humor. Similarly, infants who are more extroverted as determined by the Infant Behavior Questionnaire will be more likely to participate in social situations and pick up on the humor in their environment.

However, there are potential limitations associated with this study. For instance, it would be important to control for how long the infant stays in the NICU. As there is great variability in duration of time spent in the NICU, this could lead to potential differences in outcomes amongst participants. Also, it would be important to control for whether or not

the infant attends a daycare. This is crucial as daycare environments offer more socialization and stimulation and could possibly lead to earlier acquisitions of humor. Similarly, if a baby has siblings, such relationships could affect the rate at which the child is exposed to jokes or the rate at which he or she displays his or her temperamental qualities. Lastly, although there are many protocols in the nurture group that are supported by background research, it may be difficult to claim that these protocols directly affected the outcomes of these infants and thus their acquisition of a sense of humor. It is possible that the scientific validity of the study could be improved upon in terms of future studies.

In terms of future studies, there are ways in which the current study could be amended to allow for further research. It may be possible to increase scientific validity by allowing for more assessments in smaller increments. Although this would be costly and time consuming, it might allow for researchers to better monitor the outcomes of the infant and thus allow for more confidence in terms of correlating outcomes to specific protocols in the experimental group. Furthermore, future studies could incorporate other ways to nurture the premature infant in the experimental group such as by providing infant massage. It may also be beneficial to track the primary caretaker's well being as this undoubtedly affects the infant's mood and coregulation with the primary caretaker and thus the process that leads to the acquisition of a sense of humor. As such, measures such as the Postpartum Depression Screening Scale or the State-Trait Anxiety Inventory could be utilized. Furthermore, it may be interesting to also track infants from the time of conception to see if the mother smoked or drank alcohol. Such teratogens could affect the development of the child and possibly stunt the rate at which they acquire a sense of humor. These propositions could lead to greater findings in the scientific literature and

help individuals to better understand humor and its unique relationship to cognitive functioning, socialization and development.

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