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The association between maternal resiliency, perceptions of touch, and reports of infant touch

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THE ASSOCIATION BETWEEN MATERNAL RESILIENCY, PERCEPTIONS
OF TOUCH, AND REPORTS OF INFANT TOUCH

by

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A thesis submitted in partial fulfillment of the requirements
for the Honors in the Major Program in Nursing
in the College of Nursing
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Abstract

The purpose of this research study is to measure how mothers perceive and use touch with their infants, and its association with maternal resiliency, a measure of coping ability. This is important because the inability to cope causes increased stress, which increases negative perceptions of life events, making it even more difficult to cope. In addition, research has yet to uncover whether or not resiliency is increased in mothers by the same touch and interactions that has been proven to enhance development, attachment, and resiliency in infants. This study involved asking participants (mothers of infants <1 year of age) to complete demographic information and a survey composed of three questionnaires: the Mother-Infant Touch Survey, the Physical Contact Assessment, and the Resilience Scale. Although there were no statistically significant correlations between reported perceptions of touch, mother-infant touch and maternal resiliency, there were a couple of other findings that warrant further investigation. Hispanic mothers scored higher on the Resiliency Scale (RS-14) than Non-Hispanic mothers, and a linear trend was detected between mothers in the < 25 years of age group and higher scores on the RS-14. These findings may influence future research on the correlations between mother-infant touch and maternal coping ability.

Dedication

To Mom, Dad, Gina, and Dianna, you have always encouraged me to shoot for the stars, and have supported me endlessly throughout all of my endeavors. I believe that hard work will get me everywhere I want to go in life and that dreams are worth fighting for... and for that, I thank you.

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List of Abbreviations

CRF: Corticotropin-Releasing Factor

DF: Degrees of Freedom

DNA: Deoxyribonucleic Acid

EDD: Estimated Delivery Date

HPA: Hypothalamic-Pituitary-Adrenal

KC: Kangaroo Care

MIT: Mother-Infant Touch Survey

NICU: Neonatal Intensive Care Unit

RS: 25-Item Resiliency Scale

RS-14: 14-Item Resiliency Scale

T1: Physical Contact Assessment, Part 1

T2: Physical Contact Assessment, Part 2

Introduction to the Problem

Psychological stress results from negative life events. Stress and inadequate coping have been found to negatively interact with one another in a vicious cycle (Folkman & Lazarus, 1984). The inability to cope causes increased stress while stress increases the negativity of life events, making it even harder to cope resiliently (Karademas, Karamvakalis, & Zarogiannos, 2009). Unfortunately, many believe that our ability to cope is set at an early age, making it very difficult to break the cycle later in life (Gunnar & Quevedo, 2007). Current literature on this topic is more focused on the effects of bonding on the infant. Further research is needed to discover whether or not resiliency is increased in mothers by the same positive touch and interactions that enhance development, attachment, and resiliency in the infant.

Background

For decades, researchers have been trying to discover the psychosocial factors that shape an individual's level of resilience, a protective mechanism that provides humans with the ability to cope under stress (Folkman & Lazarus, 1984). The benefits of resilient coping are numerous. It is linked to a more positive affect, self-esteem, socialization, language fluency, better school performance, and health (Svanberg, 1998). Studies also show that successful coping is a keystone to productive aging and survival (Gooding, Hurst, Johnson, & Tarrier, 2012).

Evidence shows that a baseline for coping and resilience actually is developed in the mammalian brain during the first year of life (Kaffman & Meaney, 2007). In a study by Kaffman and Meaney (2007), primates and rats were used to determine factors that give rise to this infantile basis of coping. It was discovered that mother-infant bonding through touch in the first year of life launches a specific sequence of DNA methylation, which is central to normal physical and psychological development (Kaffman & Meaney, 2007). These and other animal studies lead researchers to believe that parent-infant touch is responsible for a similar coping framework in the human brain (Gunnar & Quevedo, 2007).

Gentle touch is a positive form of tactile stimulation that plays a significant role in human interaction and the process of bonding. It often is used to increase relaxation and decrease pain (Moyse, 2005). Studies show that parent-infant bonding through positive touch elicits a parasympathetic response in babies. Cuddled infants have a marked decrease in blood pressure, increased depth of breathing, and increased digestion. The opposite, sympathetic response, is elicited by infants who have been abused and neglected through increased heart rate, shallow breathing, and slower digestion (Benjamin, Werner, & Chellos, 2009). Increased caregiver

attentiveness and bonding promotes the level of attachment necessary to cope resiliently (Svanberg, 1998).

John Bowlby (1988), who developed Attachment Theory, defines attachment as a fundamental and instinctual desire that begins at birth to form strong connections between certain individuals. In his Attachment Theory, Bowlby defined four modifiable systems believed to determine infantile levels of attachment. Bowlby's theory proposes that triggering these systems through infant bonding within the first three years of life promotes secure parent-infant attachment (Boris, Aoki, & Zeanah, 1999).

In an effort to find relationships between touch, attachment, and resiliency, Anisfield, Casper, Nozyce, and Cunningham (1990) studied the effects of kangaroo care (KC) on attachment. KC is a form of bonding touch in which a parent maintains closeness by carrying his or her baby across the chest in a sling. Research showed a notable increase in the level of attachment between parents and infants, when babies were carried in slings as opposed to infant seats. In addition, parents who practiced KC were more attuned to their infant's needs than those who touched their baby less frequently. As determined by home observations and parent self-report questionnaires, KC babies were more securely attached by the end of the first year of life than babies whose parents did not practice KC (Anisfield, Casper, Nozyce, & Cunningham, 1990).

Even in light of the abundance of research supporting parent-infant bonding, many still give credence to the idea that touch does not promote resilience. For instance, the director of The Center for Pediatric Sleep Disorders, Richard Ferber (2004), still advises parents to practice less hands-on techniques, like letting the infant "cry-it-out" rather than holding the baby close and

cuddling them to sleep. This parenting technique developed from the 1940's finding that some newborns are "hypersensitive to touch," meaning that they actually elicit a stress response to physical stimulation. When this hypersensitivity phenomenon was discovered, even orphanages stopped utilizing touch in care of their infants (O'Brien & Lynch, 2011).

A 1940's study by Spitz, however, found that infants residing in such orphanages failed to thrive and died prematurely, even though their physiological needs were being met. In the study, surviving infants were placed into orphanages that utilized tactile stimulation. The infants were given the same amount of nutrition, yet the new feelings of safety and attachment that resulted from therapeutic properties of touch enabled them to gain weight and develop more successfully psychologically and physiologically (as cited in Richter, 2004). This study illustrated that denying bonding touch, which promotes secure attachment, directly affects an infant's ability to survive.

In addition to increased health risks and poor coping skills, insecure attachment in infancy can also lead to decreased self-esteem and trust issues. A comprehensive review of the literature concluded that the negative results of insecure attachment in infancy are associated with poor coping, lower levels of resiliency and psychosocial issues, which are exacerbated in adulthood (Segal & Jaffe, 2012).

The positive effects of touch on infant development are clearly documented in the literature. However, research has only begun to scratch the surface in discovering the effects of mother-infant touch on the mother. In 2010, a study found that mothers who participated in more frequent skin-to-skin contact with their infant experienced a shorter placental delivery time. These mothers also chose to breastfeed more frequently than those who had less physical contact

with their newborn after delivery (Marin, Llana, Lopez, Fernandez, Romero, & Touza). This study discussed how tactile stimulation positively affected a group of mothers physiologically and encouraged a stronger attachment to their newborn. However, it does not describe the effects of touch on the mothers' resiliency or mental state.

Dombrowski, Anderson, Santori, and Burkhammer (2001) found that kangaroo care helped reverse feelings of depression in postpartum women. Corticotropin-releasing factor (CRF) is a hormone normally released in the human body in response to stress. During the third trimester of pregnancy, the placenta begins increasing the release of this hormone, affecting the hypothalamic-pituitary-adrenal (HPA) axis. Delivery of the placenta suppresses the HPA axis, causing some new mothers to experience postpartum depression. These researchers believe that stimulation experienced during KC reactivates these hormones and the HPA axis, thereby reversing depression and increasing maternal resiliency.

From the wealth of information available, most researchers concluded that increased attention and bonding (which includes touch) in infancy promotes better resiliency in adulthood. However, research has failed to uncover whether or not resiliency is modified by life events; for example a mother bonding (or using touch) with her infant during adulthood. The same level of bonding that enhances an infant's resiliency may play a role in the resilience of the infant's mother as well.

Purpose

The purpose of this research study is to learn more about the correlation between touch, both in the mother's life and between mother and infant, and the mother's level of resilience. The major hypothesis to be tested will be: A high level of comfort with touch and reported infant touch will correlate with a high level of resiliency in mothers of children less than 1 year of age.

Method

A descriptive correlational study design was utilized with a cross-sectional sample. The study was conducted at a federally funded health center for the underserved located in an urban area in the southeastern United States. Institutional Review Board approval was obtained prior to start of the research study. Thirty mothers participated in the survey. As part of inclusion criteria, they were required to be able to speak and read English, to be at least 18 years old and to be accompanied by their infant (who had to be 12 months of age or younger).

Participation was completely voluntary. The researcher set up an informational area in the waiting room. Interested mothers could pick up a flyer about the study, and the researcher was available at all times to answer questions. Mothers agreeing to participate completed the consent process and were given a questionnaire.

The questionnaire was composed of three parts. The first part included demographic questions and the Mother-Infant Touch Survey (MITS), which was developed by the researcher and research mentor. There were 14 demographic questions and 17 questions on the MITS. The assessment assigns a score between 13 and 65, with a higher number indicating more positive touch between the respondent and her infant.

The second part includes parts I and II of the Physical Contact Assessment (Weiss, Wilson, Hertenstein, & Campos, 2000). This 20 item self report Likert-type questionnaire has three subscales. Subscale 1 “Attitudes toward Touch” and subscale 2 “Felt Security regarding Tactile Experience as a Child” were used in this study, totaling 17 questions. Each section of the Physical Contact Assessment is scored separately. Subscale I measured attitudes toward touch, and subscale II measured an individual’s felt security regarding the touch he or she received as a

child in the family of origin. We will refer to these two survey subscales as Touch 1 (T1) and Touch 2 (T2), respectively. Internal reliability for the Physical Contact Assessment in past research studies was calculated at 0.83 (Weiss et. al., 2000) and internal consistency was reported at 0.89 (Weiss & Wilson, 2006).

The third questionnaire, the Resilience Scale, has been used extensively in many research studies. It is also a self-report Likert-type scale composed of 14 questions. The Resiliency scale (RS) scores range from 14 to 98, with higher scores indicating a higher level of resilience. It has been used to test resiliency across many different demographics, including European Americans, African Americans, Hispanic-Latinos, American Indians, adolescent mothers, Irish immigrants, homeless adolescents, and military wives; young, middle-aged, and older adult participants with ages ranging from 16-103. The Resilience Scale has proven to be a reliable tool in other studies with adult participants (Cronbach's Alpha = 0.84-0.94). When used to measure depression, morale, life satisfaction, and perceived stress, the scale proved to be valid by coinciding with researchers' hypotheses regarding these factors' positive or negative relationships with resiliency 100% of the time (Wagnild, 2009).

Analysis included descriptive statistics and an investigation into possible correlations between scores on several surveys and scores on the RS.

Results

Demographics

In total, surveys were collected from 30 respondents, all mothers with infants < 1 year of age. The participants' ages ranged from 18 to 37 years, with ages 18-24 being the most highly represented group. The median age was 25 with a standard deviation of 5 years. Participants self-identified as African American, Hispanic, Caucasian, and Other. Three participants did not answer this question and were grouped into the "Other" category. Please refer to Appendix A, Table 1.

The Resiliency Scale

Scores on the RS-14 can range from 14 to 98 points, with higher scores indicating a higher level of resilience. In this research study, participants scored on the high end with a mean score of 85.6 and a standard of deviation of 10.8 points. Standard deviation is the greatest number of points some scores strayed from the average or mean.

Physical Contact Assessment

T1 scores range from 10 to 40, with higher scores indicating a more positive attitude toward touch. There were 10 questions with answers ranging from "I strongly disagree" for 1 point to "I strongly agree" for 4 points. On T1, the median score was 29.5, with a standard deviation of 4.7 points.

T2 scores ranged from 6 to 24, with a higher score indicating more positive feelings about the touch the respondent received as a child. T2 encompasses 8 questions. However, the

two qualitative questions in this section were not included in the scoring process. The answers to the remaining six questions ranged from “not at all”, “almost never”, or “very disappointed or angry” for 1 point to “a lot”, “almost always”, or “very content and satisfied” for 4 points. On T2, the median score was 22, with a standard deviation of 3.4 points.

Mother-Infant Touch Survey

The median score on the MITS was 53, with a SD of 4.9. This was the first time this survey was used in a study. A Cronbach’s alpha was calculated at 0.421. The Cronbach Alpha score is a metric used to assess the internal reliability of a survey method, which can in turn be used as evidence for or against the fact that all the questions in a survey are monitoring the same underlying construct. If all the questions are measuring the same construct and have the same range (i.e. 1-5) then it makes sense to treat them as individual pieces of evidence pointing to one overriding score. Put simply the Cronbach Alpha is a way of determining whether or not a given survey or test can be compressed into a summative score.

The alpha score is on a range from 0 to 1, with scores below 0.5 considered to be evidence of a lack of reliability. It was noted during analysis that the length of crying before intervention questions (#14-17) posed a difficulty because 4 out of 17 total questions were based on one behavior, perhaps unduly affecting a summative score. With these questions removed from the Cronbach Analysis, alpha drops to 0.323. This is expected as Cronbach’s Alpha is unduly affected by the number of factors (questions) in a survey.

Hypothesis Testing

Little correlation was found between scores on the RS-14 and T1, T2, or MITS. The significance of infant's age (≤ 24 weeks vs. > 24 weeks) and employment status (employed vs. unemployed) on scores on the RS-14 were also statistically insignificant. However, we cannot reject the null hypothesis or determine that the correlation between any of these variables is zero. Please refer to Appendix A, Table 2.

Demographics and Survey Results

Student T tests were also performed comparing different groupings of participants based on demographic characteristics to determine if there was any difference on resiliency results between groups. There were 16 mothers in the study aged 25 years or younger and 14 mothers over the age of 25. The median age in the over 25 group was 30 years with a standard of deviation of 3.5 years. The median age in the under 25 group was 22 with a standard of deviation of 2.3 years (Appendix A, Table 3-1). Although R-squared was low, a linear trend was detected between scores on T1 and the RS-14 for participants' ages 25 years or less (Appendix B, Figure 1). The R-squared was low, indicating statistically that the linear fit was not much better than guessing the mean. Please refer to Appendix A, Table 3-2.

There were also 16 mothers who reported Hispanic ethnicity and 14 mothers belonging to non-Hispanic ethnic groups. The mean Resiliency score amongst Hispanic mothers was 88.3, whereas the mean amongst the non-Hispanic mothers was 82.6. A Wilcoxon-Mann-Whitney test between the two populations yielded a p-value of .03, which indicates that the central location of the two distributions is different. Please refer to Appendix A, Table 5-2 and 5-3 as well as

Appendix B, Figures 2-1 and 2-2.

In addition, participants were grouped according to: Infant age: ≤ 24 weeks vs. > 24 weeks; 1st baby (Para = 1) vs. more than 1 baby (Para > 1); vaginal vs. cesarean; length of labor: ≤ 12 hours vs. > 12 hours; breast vs. bottle vs. both; NICU vs. no NICU; EDD: (within 1 wk of EDD and 2-4 wks before EDD) vs. (5-8 wks before EDD and > 8 wks before EDD); and infant bath: short (< 5 or 5-10 min.) vs. longer (11-15 or > 15 min.). None of these comparisons demonstrated statistically significant differences (Appendix A, Table 4-1, 4-2, and 4-3).

Discussion

As described previously, research has shown that stress affects humans negatively, decreasing their ability to cope with life events. The purpose of this research study was to find correlations between mother-infant touch and resiliency. We hypothesized that a more positive perception and more frequent use of touch would result in a higher level of resiliency in mothers of children less than 1 year of age. Surprisingly, results showed no correlations between resiliency and mother-infant touch. However, scores on the RS-14 suggested that Hispanic mothers of infants less than 1 year old are more resilient than Non-Hispanic mothers of the same. It also indicated a linear trend between age and scores on the RS-14.

This research study analyzed numerous variables. One concept under investigation was whether or not the number of children a mother has influences her resiliency. Although R-squared analysis deemed this information insignificant, a linear correlation suggested that resiliency is actually higher among mothers less than 24 years of age than mothers over 24 years old. One would hypothesize that younger mothers would feel more resilient than older mothers.

One research study, which utilized the RS-14, investigated the effects of age on resiliency. In a sample of rural/frontier residents (76 women and 17 men with a mean age of 40), the participants' mean score on the RS-14 was 78.6. Per scoring guidelines of the RS-14, a score ranging from 74-81 is considered a moderate level of resilience. In another study, 41 adolescent mothers (mean age 20.0) had a mean score of 146.6 on the RS. A score ranging from 145-160 on the RS is considered a moderately high level of resilience (Wagnild, 2011). These results correlate with the findings of this research study, as the mean score on the RS-14 of participants >25 years old was lower than that of younger participants.

It is also interesting to analyze inconsistencies between the results of this research study and others. The majority of the other research studies outlined in the Resiliency Scale User's Guide (2011) found an increase in scores on the RS and RS-14 with increases in age. For instance, a study involving resilience of pregnant adolescents and non-adolescents found that adolescents scored lower on the RS-14 than the latter. This is the reverse of the findings in this research study (Wagnild, 2011). There are many factors outlined in the limitations section below that may have influenced the results.

After separating participants based on age (≤ 25 and >25), a linear trend was detected between the T1 survey scores of mothers aged 25 years or less and resiliency scores for same. These results suggested that mothers age 25 years or less actually scored higher on the RS-14 than mothers over 25 years old. However, as described in the results section, the R-squared statistic suggested that there is no correlation. This can be interpreted to mean that there are several other factors outside what is being tested in T1 that contribute significantly to resiliency.

Findings also suggested that Hispanic mothers of infants < 1 year of age are more resilient than non-Hispanic mothers of the same. However, with only 14 and 16 data points in each group, respectively, it is hard to say whether this is true for the underlying populations or randomness occurring in a small sample.

There are many more variables and a plethora of avenues for research regarding this finding alone. In order to determine whether or not findings can be generalized, further research is needed with a larger sample size, and individuals from a broader geographic area. Researchers should consider cultural influences among Hispanic populations, looking for differences that make this group naturally more resilient than the rest.. It could be related to social support

systems, family culture, or even physiological variances of the group or results with a larger sample could confirm that there are no differences.

Limitations

Due to the limited number of participants per cross-cultural and various ethnic groups in this sample, we chose to analyze the relationship between the most highly represented group (Hispanics) and the remaining individuals. As discussed previously, findings suggest that Hispanic mothers are more resilient than non-Hispanic mothers. However, the fact that all ethnic populations were not equally represented should be considered when interpreting results.

Although results regarding maternal resiliency and perception of touch (T1 and T2) or reported touch with infant (MITS) came back non-correlational, it is difficult to say with one hundred percent certainty that there are no relationships between these variables. This is attributed to the fact that the MITS has never been utilized in any other study. This survey tool would benefit from further testing to help determine its internal consistency and test-retest reliability. Questions in the MITS were purposefully designed to generate unbiased responses. However, use of self-report from mothers regarding details about interactions with their infants makes answer bias more plausible. Low Cronbach's alpha could also be expected because of the rarity of a behavior being identified. For example, it is less likely that a respondent will self-report "never picking up the baby when he or she cries" because of social pressures to respond more positively.

In addition, recruitment of participants from one location may have caused results to be representative of individuals in the surrounding area alone, rather than individuals of the study population as a whole. Since the majority was of Hispanic ethnicity, we recognize that another barrier may include English as a second language. Although participants were required to be able to read English, it is important to understand that question interpretation may have been

influenced by language barriers when considering the results. This inclusion criterion also excluded participants with lower education and literacy levels from this study, possibly altering the results of this analysis

Conclusion

Further research is needed to determine the relationship between maternal resiliency and reported or perceived touch. Results supported the need to do further research on these variables including a larger and more diverse sample size. Readers should note that the non-correlational findings may vary in future research studies if, for instance, there is a larger sample size or broader recruitment techniques. For this reason, the null hypotheses of this research study can be neither accepted nor rejected with one-hundred percent certainty.

Appendix A

Appendix A

Table 1: Participant Age & Race

Age	# of Participants	Race	# of Participants
18-24	12	Caucasian	3
25-30	11	African American	5
30-40	7	Hispanic	16
		Other	6

Table 2: Hypothesis Testing

Variable	P-Value	Residual Standard Error (on 28 Degrees of Freedom [DF])	R-Squared	F-Statistic (on 1 and 28 DF)
RS vs. Touch 1	0.8176	4.757	0.001932	0.0542
RS vs. Touch 2	0.3143	10.76	0.03614	1.05
RS vs. MITS	0.2993	10.74	0.03841	1.118
RS vs. Infant Age	0.5859	12.39	0.01073	0.3038
RS vs. Employment	0.9795	16.024	---	---

Table 3- 1: Summary Statistics by Age Group

Age Group	Number in Group	Median Age	Age: Standard Deviation
Age >25	14	30	3.5
Age <= 25	16	22	2.3

Table 3- 2: Linear Regression Statistics by Age \leq 25

Variable	P-Value	Residual Standard Error (on 14 DF)	R-Squared	F-Statistic (on 1 and 14 DF)
RS vs. T1	0.03898	10.48	0.2703	5.187
RS vs. T2	0.5229	12.08	0.02976	0.4294
RS vs. MITS	0.08115	10.96	0.2015	3.533

Table 4- 1: Linear Regression Statistics RS-14 vs. T1

Variable	P-Value	Residual Standard Error (on 14 DF)	R-Squared	F-Statistic
Infant \leq 24 weeks	0.8994	11.32	0.0007099	0.01634 (1&23 DF)
Infant $>$ 24 weeks	0.8159	11.46	0.02105	0.06451 (1&3 DF)
1st Infant	0.4535	12.74	0.04763	0.6001 (1&12 DF)
Not 1 st Infant	0.736	9.294	0.008377	0.1183 (1&14 DF)
Delivery: Vaginal	0.6699	9.328	0.008824	0.1869 (1&21 DF)
Delivery: C-Section	0.05721	11.38	0.5476	6.053 (1&5 DF)
Labor: \leq 12 Hours	0.4273	7.934	0.04249	0.6656 (1&15 DF)
Labor: $>$ 12 Hours	0.05721	11.38	0.5476	6.053 (1&11 DF)
Feeding: Breast Only	0.8101	15.35	0.0224	0.06875 (1&15 DF)
Feeding: Bottle Only	0.368	12.33	0.08163	0.8888 (1&10 DF)
Feeding: Both Breast & Bottle	0.3066	8.944	0.09461	1.149 (1&11 DF)
NICU: Time Spent	0.8208	8.328	0.02418	0.07433 (1&3 DF)
NICU: No Time Spent	0.6062	11.45	0.01174	0.2731 (1&23 DF)
EDD: within 1 week - 4 weeks prior	0.8816	12.45	0.001322	0.02118 (1&16 DF)
EDD: 5+ weeks prior	0.3527	8.949	0.08676	0.95 (1&10 DF)
Bath: Short	0.8502	9.716	0.001926	0.03666(1&19 DF)
Bath: Long	0.2901	4.426	0.1832	1.346 (1&6 DF)

Table 4- 2: Linear Regression Statistics RS-14 vs. T2

Variable	P-Value	Residual Standard Error (on 14 DF)	R-Squared	F-Statistic
Infant \leq 24 weeks	0.3376	11.1	0.0007099	0.01634 (1&23 DF)
Infant $>$ 24 weeks	0.9447	11.58	0.001888	0.005675 (1&3 DF)
1 st Infant	0.4291	12.7	0.05287	0.6698 (1&12 DF)
Note 1 st Infant	0.3905	9.082	0.05312	0.7854 (1&14 DF)
Delivery: Vaginal	0.2454	9.067	0.06366	1.428 (1&21 DF)
Delivery: C-Section	0.8584	16.86	0.007008	0.03529 (1&5 DF)
Labor: \leq 12 Hours	0.1218	7.467	0.1521	2.69 (1&15 DF)
Labor: $>$ 12 Hours	0.1188	12.19	0.2064	2.862 (1&11 DF)
Feeding: Breast Only	0.28025	12.37	0.3651	1.725 (1&15 DF)
Feeding: Bottle Only	0.5662	12.64	0.034	0.352 (1&10 DF)
Feeding: Both Breast & Bottle	0.5017	9.201	0.04202	0.4824 (1&11 DF)
NICU: Time Spent	0.6215	6.594	0.3882	1.904 (1&3 DF)
NICU: No Time Spent	0.1883	11.09	0.07401	1.838 (1&23 DF)
EDD: within 1 week - 4 weeks prior	0.5444	12.31	0.02342	0.3836 (1&16 DF)
EDD: 5+ weeks prior	0.382	8.996	0.07718	0.8364 (1&10 DF)
Bath: Short	0.2602	9.398	0.0662	1.347 (1&19 DF)
Bath: Long	0.05967	3.557	0.4723	5.37 (1&6 DF)

Table 4- 3: Linear Regression Statistics RS-14 vs. MITS

Variable	P-Value	Residual Standard Error (on 14 DF)	R-Squared	F-Statistic
Infant <=24 weeks	0.1446	10.8	0.09021	0.06451 (1&23 DF)
Infant >24 weeks	0.9088	11.56	0.00514	0.0155 (1&3 DF)
1st Infant	0.08952	11.52	0.2214	3.412 (1&12 DF)
Not 1 st Infant	0.9911	9.333	0.000009	0.0001297 (1&14 DF)
Delivery: Vaginal	0.9202	9.367	0.0004891	0.01028 (1&21 DF)
Delivery: C-Section	0.1609	13.63	0.3511	2.706 (1&5 DF)
Labor: <=12 Hours	0.8128	8.093	0.00386	0.05812 (1&15 DF)
Labor: >12 Hours	0.0909	11.94	0.2379	3.433 (1&11 DF)
Feeding: Breast Only	0.632	14.84	0.08602	0.2823 (1&15 DF)
Feeding: Bottle Only	0.2	11.8	0.1585	1.883 (1&10 DF)
Feeding: Both Breast & Bottle	0.9347	9.397	0.0006387	0.00703 (1&11 DF)
NICU: Time Spent	0.156	5.705	0.5421	3.552 (1&3 DF)
NICU: No Time Spent	0.395	11.34	0.03163	0.7512 (1&23 DF)
EDD: within 1 week - 4 weeks prior	0.2331	11.9	0.08758	1.536 (1&10 DF)
EDD: 5+ weeks prior	0.888	9.355	0.002083	0.02087 (1&10 DF)
Bath: Short	0.2457	9.378	0.07022	1.435 (1&19 DF)
Bath: Long	0.1068	3.872	0.3746	3.595 (1&6 DF)

Table 5- 1: Hispanic, Non-Hispanic Sample Median Survey Scores

Ethnicity	RS	T1	T2	MITS
Hispanic	93	30	22	53.5
Non-Hispanic	82.5	28	20	51

Table 5- 2: Linear Regression Statistics Hispanics

Variable	P-Value	Residual Standard Error (on 14 degrees of freedom)	R-Squared	F-Statistic (on 1 and 14 degrees of freedom)
RS vs. T1	0.8313	12.93	0.003352	0.04709
RS vs. T2	0.288	12.42	0.08014	1.22
RS vs. MITS	0.1936	12.17	0.1176	1.865

Table 5- 3: Linear Regression Statistics Non-Hispanics

Variable	P-Value	Residual Standard Error (on 14 degrees of freedom)	R-Squared	F-Statistic (on 1 and 14 degrees of freedom)
RS vs. T1	0.6453	7.913	0.01823	0.2229
RS vs. T2	0.5918	7.887	0.02467	0.3036
RS vs. MITS	0.8918	7.98	0.001606	0.0193

Appendix B

Appendix B

Figure 1: Linear Trend, T1 vs. Resilience of Participants Age ≤ 25

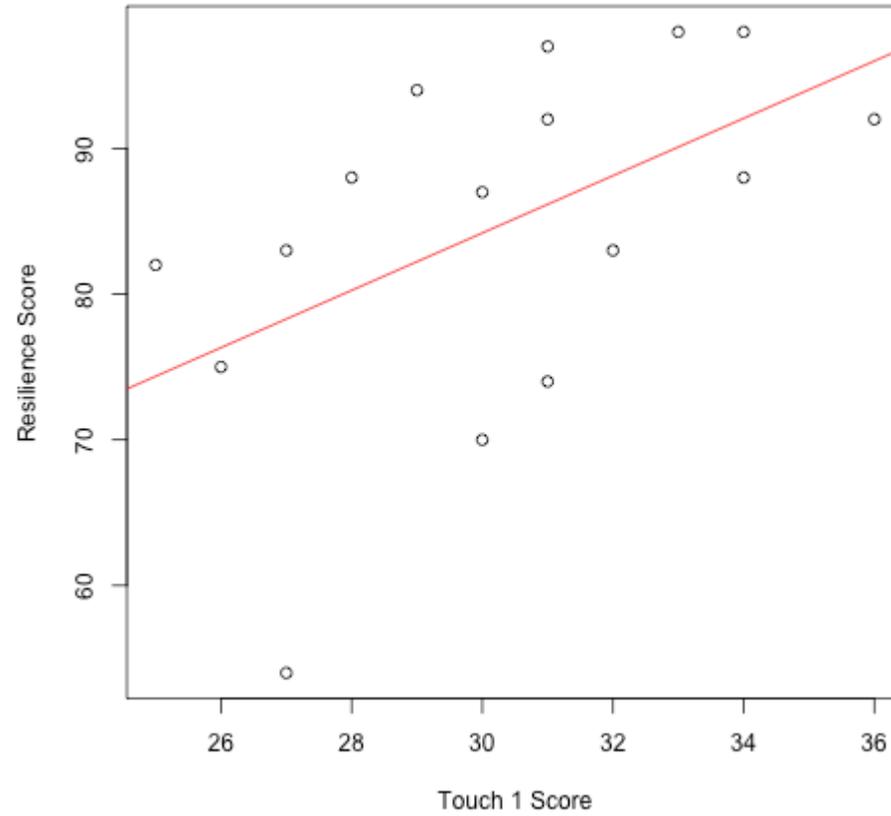


Figure 2- 1: Kernel Density Plot, Non-Hispanic RS-14 Scores

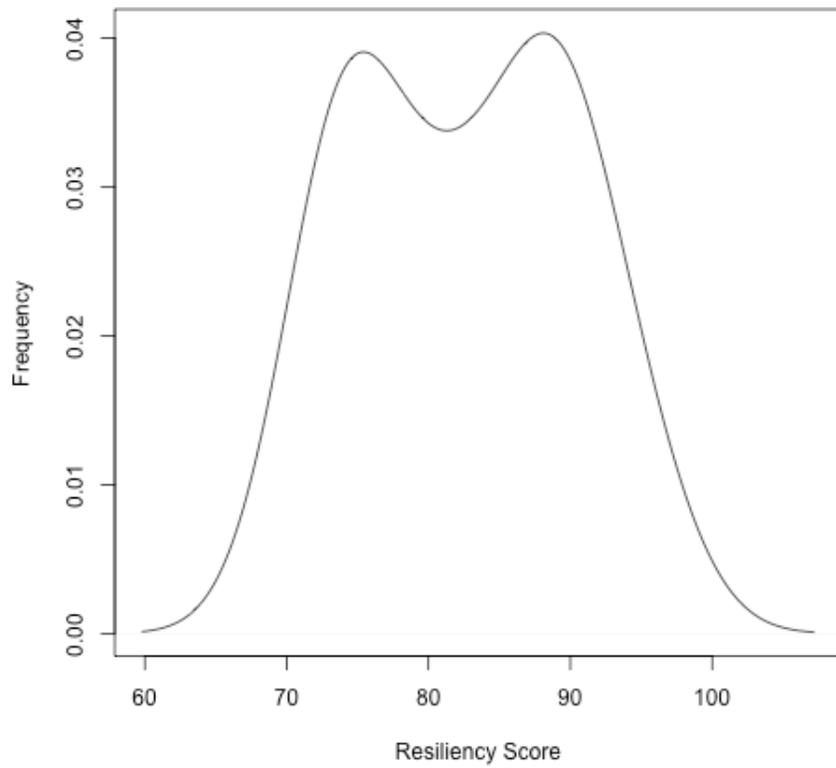
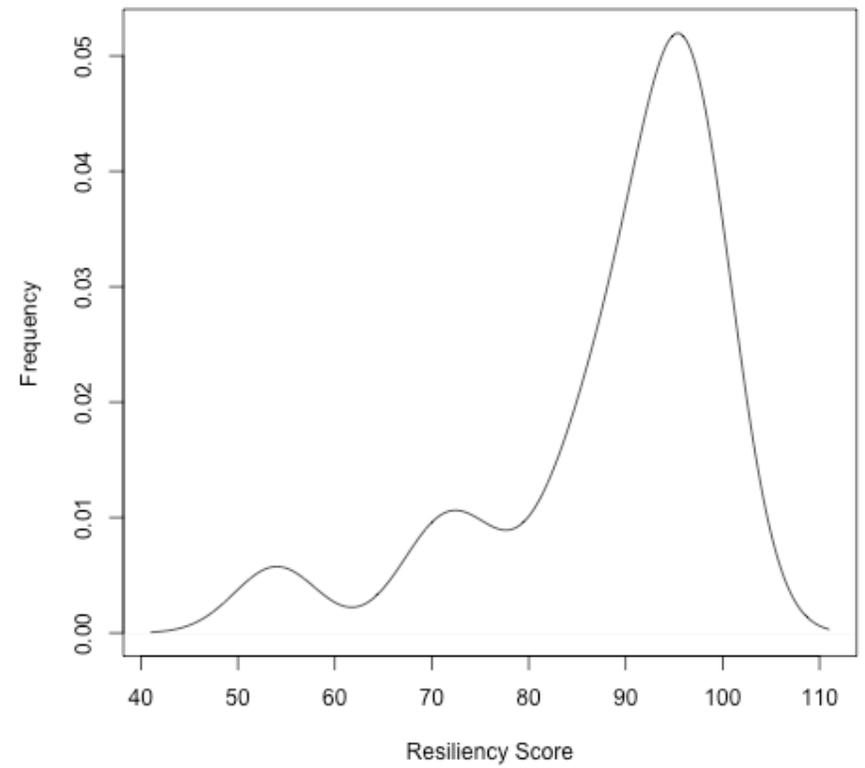


Figure 2- 2: Kernel Density Plot, Hispanic RS-14 Scores



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