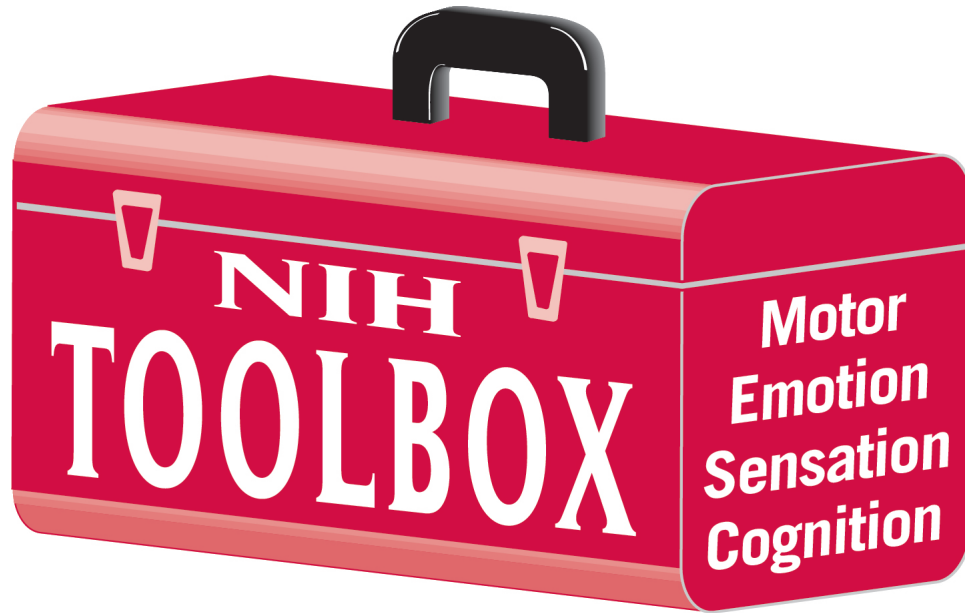


# NIH Toolbox



## Technical Manual

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# **NIH Toolbox Technical Manual**

**Domain:**

**COGNITION**

**Subdomain:**

**EXECUTIVE FUNCTION**

**Measure:**

**NIH Toolbox Flanker Inhibitory Control and Attention**

**Test**

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This Technical Manual contains the following informational sections:

**Section 1: Introduction to NIH Toolbox**

**Section 2: Validation**

**Section 3: Norming**

**Section 4: NIH Toolbox and the National Children's  
Study (NCS)**

**Section 5: Domain Definition**

**Section 6: Subdomain Definition**

**Section 7: Measure Description**

**Section 8: Post-Validation/Post-Norming Changes to  
the Measure**

**Section 9: The Measure's Scoring Model**

**Section 10: Measure Norms**

## **Section 1: Introduction to NIH Toolbox**

NIH Toolbox is a multidimensional set of brief measures assessing cognitive, emotional, motor, and sensory function from ages 3-85. This suite of on-line and royalty-free measures can be administered to study participants 3 to 85 years of age in two hours or less, across diverse study designs and settings.

### **What is the NIH Toolbox?**

The NIH Toolbox provides a standard set of royalty-free, brief, and comprehensive assessment tools that can be used by researchers and clinicians in a variety of settings, with a particular emphasis on measuring outcomes in longitudinal epidemiologic studies and prevention or intervention trials across the lifespan (ages 3-85). The battery ensures that assessment methods and results can be used for comparisons across existing and future studies and provides a “common currency” for the study of neurological research that promotes economies of scale and enhanced efficiency in measurement. The NIH Toolbox can be used to monitor neurological and behavioral function over time and measure key constructs across developmental stages. This facilitates the study of functional changes across the lifespan, including evaluating intervention and treatment effectiveness.

## **The NIH Toolbox Batteries**

The basic NIH Toolbox can be administered within two hours and divides tests into four domain batteries: Cognition, Emotion, Motor, and Sensation. In addition, within some domains, there are supplemental measures that are available to be administered.

## **Selection of the NIH Toolbox Domains and Subdomains**

Four domains were selected for the NIH Toolbox: Cognition, Emotion, Motor, and Sensation. Subdomain selection was based upon literature reviews, expert interviews, and multiple formal Requests for Information (RFI) of NIH-funded researchers. Initial literature and database reviews and an RFI identified the subdomains for inclusion in the NIH Toolbox, existing measures relevant to the project goals, and criteria for instrument selection. NIH Project Team members, external content experts, and contract scientists met at a follow-up consensus meeting to discuss potential subdomains along with the criteria affecting instrument selection, creation, and norming. Additional expert interviews were undertaken to gather more detailed information from clinical and scientific experts to help further refine the list of possible subdomains. A second consensus group meeting was held and results directed the decision for the final NIH Toolbox to assess four core domain areas (cognitive, emotional, motor, and sensory health and function).

## **Selection of Measures for the NIH Toolbox**

More than 1,400 existing measures were identified and evaluated for potential inclusion in the NIH Toolbox. The selection criteria included a measure's applicability across the life span,



psychometric soundness, brevity, ease of use, applicability in diverse settings and with different groups, and lack of intellectual property constraints. There was also a preference for instruments that were already validated and normed for use with individuals between 3 and 85 years old. Results of the instrument selection process yielded draft development plans established for the NIH Toolbox measures.

### **Early Childhood Use**

NIH Toolbox measure development focused special attention on assessing young children, to ensure that all tests given are developmentally appropriate for ages 3-7. A special team of early childhood assessment consultants was engaged to provide testing guidelines for the very young, to offer input on measure development, and to review all NIH Toolbox measures to ensure they fit the needs of young children. Advanced statistical methods were used to emphasize continuity of measurement, allowing Toolbox users to confidently conduct longitudinal measurement from age 3 through the life span while assessing the same domain constructs.

## **Section 2: Validation**

Validation studies were conducted for all NIH Toolbox Cognition domain measures, to assure that these important tools for research met rigorous psychometric standards. Studies were

conducted across the entire age range and were statistically compared against “gold standard” measures wherever available.

For specifics regarding Cognition domain measure validation, see Weintraub et al., Cognition Assessment Using the NIH Toolbox, *Neurology*, in press. This manuscript describes measure development studies undertaken (e.g., expert panels for content development and validation; cognitive interviews; small and large-scale pilot testing) and psychometric characteristics (e.g., internal consistency and test-retest reliability; convergent and divergent validity).

## **Section 3:     Norming**

NIH Toolbox conducted a large national standardization study in both English and Spanish languages to allow for normative comparisons on each assessment. A sample of 4,859 participants, ages 3-85 – representative of the U.S. population based on gender, ethnicity, race, and socioeconomic status – was administered all of the NIH Toolbox measures at sites around the country (n = 2,917 English-speaking children, ages 3-17; n = 496 Spanish-speaking children, ages 3-7; n = 1,038 English-speaking adults, ages 18-85; n = 408 Spanish-speaking adults, ages 18-85). NIH Toolbox normative scores are now available for each year of age from 3 through 17, as well as for age ranges 18-29, 30-39, 40-49, 50-59, 60-69, and 70-85, allowing for targeted and accurate comparisons to the U.S. population.

Specifics regarding NIH Toolbox norming sampling methods (e.g., stratification by age, gender, and language preference; sampling a minimum of 25-100 individuals per targeted demographic and language subgroup) and norming analytic methods (e.g., post-stratification adjustment using iterative proportional fitting, i.e., “raking”) can be found in the following publication: Beaumont et al., Norming Plans for the NIH Toolbox, *Neurology*, in press.

## **Section 4: NIH Toolbox and the National Children’s Study (NCS)**

In collaboration with NIH Toolbox scientists, NCS investigators selected measures from PROMIS and NIH Toolbox for a Maternal Health Profile, the Maternal Self-Reported Health Battery. This profile assesses Physical Health (Physical function, Fatigue, Sleep disturbance, Sleep-related impairment), Mental Health (Anger, Anxiety, Depression, Positive affect, Perceived stress, Self-efficacy), and Social Health (Social support and companionship, Social isolation). The Maternal Self-Reported Health Battery was field tested in fall 2011, using an online sample of 1000 women (200 pre-conception, 150 pregnant women (50 per trimester), and 650 mothers with a child between 0-36 months of age). In addition, NIH Toolbox norming was jointly sponsored by the NCS and included: 3,413 children in single-year age bands (from 3-17 years); 1,446 adults in seven age bands, including the mothers of children also being tested; and 105 pregnant women. The NIH Toolbox sampling plan matched distributions of race/ethnicity and level of education for each age band.

## Section 5: Domain Definition

### **Domain: COGNITION**

Cognition refers to the mental processes involved in gaining knowledge and comprehension. It includes processes such as thinking, knowing, remembering, judging, and problem-solving.

These higher-level functions of the brain encompass language, imagination, perception, and the planning and execution of complex behaviors. Measurement of cognition is essential to any study of health and well-being and should be included in large-scale epidemiologic studies and experimental studies of health and development, even when the target of the study is not cognition itself. The Cognition domain includes measures of:

#### **EXECUTIVE FUNCTION**

Measured by:

NIH Toolbox Flanker Inhibitory Control and Attention Test

NIH Toolbox Dimensional Change Card Sort Test

#### **ATTENTION**

Measured by:

NIH Toolbox Flanker Inhibitory Control and Attention Test

## **EPISODIC MEMORY**

Measured by:

NIH Toolbox Picture Sequence Memory Test

NIH Toolbox Auditory Verbal Learning Test (Rey) (Supplemental Measure)

## **LANGUAGE**

Measured by:

NIH Toolbox Picture Vocabulary Test

NIH Toolbox Oral Reading Recognition Test

## **PROCESSING SPEED**

Measured by:

NIH Toolbox Pattern Comparison Processing Speed Test

NIH Toolbox Oral Symbol Digit Test (Supplemental Measure)

## **WORKING MEMORY**

Measured by:

NIH Toolbox List Sorting Working Memory Test

## Section 6: Subdomain Definition

### **Subdomain: EXECUTIVE FUNCTION**

Executive Function is the capacity to plan, organize, and monitor the execution of behaviors that are strategically directed in a goal-oriented manner. NIH Toolbox focuses on set shifting (i.e., the capacity for switching among multiple aspects of a strategy or task) and the inhibition of automatic response tendencies that may interfere with achieving a goal. In NIH Toolbox, Executive Function is measured by:

NIH Toolbox Flanker Inhibitory Control and Attention Test

NIH Toolbox Dimensional Change Card Sort Test

### **Subdomain: ATTENTION**

Attention refers to the allocation of one's limited capacities to manage the abundance of environmental stimulation. It is the foundation for all mental processes. There are several forms of attention, including sustained, selective, and divided. Sustained attention is closely linked to the level of wakefulness or the maintenance of an alert state. Selective attention serves to direct sensory and thought processes to a particular stimulus or sector of the visual field so that action can be taken. Divided attention is the ability to attend to more than one stimulus, spatial sector, or modality simultaneously, and overlaps with Executive Function. In NIH Toolbox, Attention is measured by:

NIH Toolbox Flanker Inhibitory Control and Attention Test

## Section 7: Measure Description

### **COGNITION Core Measure**

The NIH Toolbox Flanker Inhibitory Control and Attention Test (Flanker) measures both a participant's attention and inhibitory control. The test requires the participant to focus on a given stimulus while inhibiting attention to stimuli (fish for ages 3-7 or arrows for ages 8-85) flanking it. Sometimes the middle stimulus points in the same direction as the "flankers" (congruent) and sometimes in the opposite direction (incongruent). Twenty trials are conducted for ages 8-85. For ages 3-7, if a participant scores  $\geq 90\%$  on the fish stimuli, 20 additional trials with arrows are presented. The test takes approximately three minutes to administer. This test is recommended for ages 3-85.

## **Section 8: Post-Validation/Post-Norming Changes to the Measure**

In addition to those changes previously reported on during the measure's development and validation phases (Weintraub et al., Cognition Assessment Using the NIH Toolbox, *Neurology*, in press), the following changes have been made to this measure:

Test scoring changes: A separate Attention score is no longer computed; the measure's single derived score therefore serves as an indicator of both Inhibitory Control and Attention.

## **Section 9: The Measure's Scoring Model**

Measurement theory applied for scoring:

Classical Test Theory (CTT)

CTT scoring approach employed:

Sum (Accuracy Score + Reaction Time Score)

Accuracy Score =  $0.125 * \text{Number of Correct Responses}$



40 possible accuracy points (Fish: 20 Points; Arrows: 20 Points). Individuals age 8 and up automatically receive 20 accuracy points for the Fish Trials (i.e., age 8 and up typically score at the ceiling on the Fish Trials).

$$\text{Reaction Time (RT) Score} = 5 - \left( 5 * \left[ \frac{\log RT - \log(500)}{\log(3000) - \log(500)} \right] \right)$$

Task-specific reaction time scores = individual's incongruent median reaction time (using only correct trials with reaction times  $\geq 100\text{ms}$  and  $\leq$  three standard deviations from the individual's mean per respective trial type). A log (Base 10) transformation is applied to the median reaction time score to create a more normal score distribution. Minimum reaction time is 500ms; maximum reaction time is 3,000ms. Individuals whose median reaction times fall outside of this range but within the allowable range of 100ms – 10,000ms are truncated (i.e., reaction times between 3,000ms and 10,000ms are set equal to 3,000ms).

If accuracy levels are  $\leq 80\%$ , the final "total" computed score = the accuracy score. If accuracy levels are  $> 80\%$ , reaction time score and accuracy score are combined.

Measure length:

Fixed (20 trials-Arrows, ages 8-85; 20 trials-Fish, ages 3-7. If a 3-7-year-old examinee scores  $\geq 90\%$  on the Fish trials, 20 additional Arrow trials are presented).

Response data:

Dichotomous (accuracy); Continuous (reaction time)

Scores computed/available\*:

Computed Accuracy + Reaction Time Score (range 0 to 10)

Age-Adjusted Scale Score (mean=100, standard deviation=15)

Fully Adjusted Scale Score (mean=100, standard deviation=15)

Unadjusted Scale Score (mean=100, standard deviation=15)

National Percentile Rank (corresponds to the Age-Adjusted Scale Score)

\*Details on these scores and their interpretations are available in the NIH Toolbox Scoring and Interpretation Guide.

## Section 10: Measure Norms

The following Tables and Figure present NIH Toolbox normative data associated with this measure:

- Table 1.** Measure Raw/Computed Score, Unadjusted Scale Score, and Fully Adjusted Scale Score Summary (N, Mean, Standard Deviation) by Age Group (3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18-29, 30-39, 40-49, 50-59, 60-69, 70-85, All)
- Table 2.** Measure Raw/Computed Score Statistics (N, Mean, Standard Deviation, Minimum/Maximum Observed, 25<sup>th</sup>/50<sup>th</sup>/75<sup>th</sup> Percentile) per Age Group (3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18-29, 30-39, 40-49, 50-59, 60-69, 70-85, All)
- Figure 1.** Measure Mean Unadjusted Scale Scores across All Age Groups (3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18-29, 30-39, 40-49, 50-59, 60-69, 70-85)

| Table 1. NIH Toolbox<br>Flanker Inhibitory Control<br>and Attention Test by Age<br>Group | Flanker Inhibitory<br>Control and<br>Attention Test<br>(0-10) |      |      | Flanker Unadjusted<br>Scale Score |        |       | Flanker Fully<br>Adjusted Scale Score |        |       |
|--|---|------|------|-----------------------------------|--------|-------|---------------------------------------|--------|-------|
|  | N   | Mean | SD   | N                                 | Mean   | SD    | N                                     | Mean   | SD    |
| Age Group  |   |      |      |                                   |        |       |                                       |        |       |
| 3  | 141   | 1.69 | 0.58 | 141                               | 71.84  | 3.91  | 128                                   | 97.46  | 7.96  |
| 4  | 223   | 2.81 | 0.93 | 223                               | 77.28  | 3.93  | 209                                   | 98.76  | 12.44 |
| 5  | 218   | 4.35 | 1.18 | 218                               | 82.23  | 3.93  | 195                                   | 102.70 | 14.52 |
| 6  | 218   | 5.88 | 0.94 | 218                               | 87.16  | 3.37  | 196                                   | 101.73 | 11.75 |
| 7  | 258   | 6.65 | 0.77 | 258                               | 90.23  | 3.40  | 233                                   | 101.56 | 9.83  |
| 8  | 212   | 7.41 | 0.52 | 212                               | 94.01  | 3.37  | 203                                   | 99.79  | 7.89  |
| 9  | 223   | 7.87 | 0.46 | 223                               | 97.72  | 3.76  | 209                                   | 99.50  | 6.75  |
| 10   | 235   | 8.06 | 0.48 | 235                               | 100.02 | 4.40  | 217                                   | 99.99  | 7.21  |
| 11   | 222   | 8.39 | 0.45 | 222                               | 103.73 | 5.15  | 210                                   | 99.58  | 6.62  |
| 12   | 220   | 8.59 | 0.39 | 220                               | 106.12 | 5.23  | 210                                   | 99.02  | 6.41  |
| 13   | 224   | 8.78 | 0.43 | 224                               | 109.53 | 5.60  | 216                                   | 99.47  | 6.63  |
| 14   | 234   | 8.88 | 0.33 | 234                               | 110.51 | 5.19  | 226                                   | 98.94  | 5.74  |
| 15   | 225   | 8.96 | 0.37 | 225                               | 112.36 | 6.38  | 218                                   | 98.85  | 6.27  |
| 16   | 216   | 9.02 | 0.43 | 216                               | 113.86 | 6.79  | 206                                   | 99.40  | 6.48  |
| 17   | 223   | 9.16 | 0.35 | 223                               | 116.31 | 6.60  | 215                                   | 98.75  | 5.40  |
| 18 - 29  | 266   | 8.95 | 1.44 | 266                               | 113.21 | 23.14 | 256                                   | 99.24  | 21.06 |
| 30 - 39  | 310   | 8.80 | 1.07 | 310                               | 109.78 | 16.19 | 294                                   | 99.02  | 16.36 |
| 40 - 49  | 255   | 8.67 | 1.27 | 255                               | 107.53 | 16.06 | 239                                   | 98.75  | 17.19 |
| 50 - 59  | 194   | 8.21 | 1.73 | 194                               | 101.85 | 16.33 | 175                                   | 98.97  | 20.97 |
| 60 - 69  | 165   | 8.16 | 1.60 | 165                               | 101.13 | 14.28 | 153                                   | 99.34  | 20.80 |
| 70 - 85  | 248   | 7.53 | 1.56 | 248                               | 96.22  | 11.21 | 215                                   | 100.95 | 19.86 |
| All  | 4730  | 8.23 | 1.52 | 4730                              | 104.71 | 13.10 | 4423                                  | 99.34  | 12.70 |

| Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – Age 3 |                          | English |         |       | Spanish |         |       | Total |         | All  |
|---|--------------------------|---------|---------|-------|---------|---------|-------|-------|---------|------|
|   |                          | Males   | Females | Total | Males   | Females | Total | Males | Females |      |
|   | N                        | 40      | 41      | 81    | 28      | 32      | 60    | 68    | 73      | 141  |
|   | Mean                     | 1.60    | 1.85    | 1.70  | 1.76    | 1.47    | 1.64  | 1.63  | 1.78    | 1.69 |
|   | Standard Deviation       | 0.63    | 0.68    | 0.66  | 0.57    | 0.29    | 0.45  | 0.61  | 0.55    | 0.58 |
|   | Minimum Observed         | 0.38    | 0.00    | 0.00  | 0.50    | 0.13    | 0.13  | 0.38  | 0.00    | 0.00 |
|   | 25th Percentile          | 1.25    | 1.25    | 1.25  | 1.13    | 1.00    | 1.13  | 1.25  | 1.13    | 1.25 |
|   | 50th Percentile (Median) | 1.50    | 1.50    | 1.50  | 1.50    | 1.38    | 1.38  | 1.50  | 1.50    | 1.50 |
|   | 75th Percentile          | 1.88    | 2.00    | 1.88  | 2.00    | 1.75    | 2.00  | 1.88  | 1.88    | 1.88 |
|   | Maximum Observed         | 5.00    | 4.50    | 5.00  | 8.37    | 4.25    | 8.37  | 8.37  | 4.50    | 8.37 |

| Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – Age 4 |                          | English |         |       | Spanish |         |       | Total |         | All  |
|---|--------------------------|---------|---------|-------|---------|---------|-------|-------|---------|------|
|   |                          | Males   | Females | Total | Males   | Females | Total | Males | Females |      |
|   | N                        | 64      | 67      | 131   | 44      | 48      | 92    | 108   | 115     | 223  |
|   | Mean                     | 2.74    | 3.07    | 2.87  | 2.44    | 2.57    | 2.50  | 2.69  | 2.99    | 2.81 |
|   | Standard Deviation       | 1.11    | 1.11    | 1.11  | 0.61    | 0.59    | 0.60  | 0.94  | 0.93    | 0.93 |
|   | Minimum Observed         | 0.13    | 0.88    | 0.13  | 0.50    | 0.38    | 0.38  | 0.13  | 0.38    | 0.13 |
|   | 25th Percentile          | 1.63    | 1.63    | 1.63  | 1.50    | 1.38    | 1.38  | 1.63  | 1.63    | 1.63 |
|   | 50th Percentile (Median) | 2.13    | 2.13    | 2.13  | 1.88    | 1.88    | 1.88  | 2.13  | 2.00    | 2.13 |
|   | 75th Percentile          | 4.43    | 4.13    | 4.38  | 2.25    | 3.88    | 3.75  | 4.38  | 4.13    | 4.25 |
|   | Maximum Observed         | 6.15    | 9.13    | 9.13  | 7.22    | 9.13    | 9.13  | 7.22  | 9.13    | 9.13 |

| Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – Age 5 |                          | English |         |       | Spanish |         |       | Total |         | All  |
|---|--------------------------|---------|---------|-------|---------|---------|-------|-------|---------|------|
|   |                          | Males   | Females | Total | Males   | Females | Total | Males | Females |      |
|   | N                        | 64      | 64      | 128   | 43      | 47      | 90    | 107   | 111     | 218  |
|   | Mean                     | 4.65    | 4.28    | 4.51  | 3.93    | 3.12    | 3.60  | 4.53  | 4.07    | 4.35 |
|   | Standard Deviation       | 1.44    | 1.29    | 1.37  | 0.90    | 0.64    | 0.79  | 1.26  | 1.08    | 1.18 |
|   | Minimum Observed         | 0.88    | 1.25    | 0.88  | 0.63    | 0.63    | 0.63  | 0.63  | 0.63    | 0.63 |
|   | 25th Percentile          | 2.25    | 2.00    | 2.13  | 1.75    | 1.50    | 1.75  | 2.13  | 2.00    | 2.00 |
|   | 50th Percentile (Median) | 4.88    | 4.63    | 4.88  | 4.75    | 2.00    | 2.25  | 4.88  | 4.50    | 4.88 |
|   | 75th Percentile          | 6.15    | 6.20    | 6.20  | 5.69    | 5.03    | 5.30  | 6.15  | 6.03    | 6.15 |
|   | Maximum Observed         | 9.13    | 9.13    | 9.13  | 7.69    | 7.10    | 7.69  | 9.13  | 9.13    | 9.13 |

| Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – Age 6 |                          | English |         |       | Spanish |         |       | Total |         | All  |
|---|--------------------------|---------|---------|-------|---------|---------|-------|-------|---------|------|
|   |                          | Males   | Females | Total | Males   | Females | Total | Males | Females |      |
|   | N                        | 62      | 62      | 124   | 42      | 52      | 94    | 104   | 114     | 218  |
|   | Mean                     | 5.98    | 5.99    | 5.98  | 5.23    | 5.69    | 5.43  | 5.85  | 5.93    | 5.88 |
|   | Standard Deviation       | 1.23    | 0.84    | 1.05  | 0.86    | 0.62    | 0.74  | 1.11  | 0.75    | 0.94 |
|   | Minimum Observed         | 1.75    | 1.25    | 1.25  | 1.63    | 1.50    | 1.50  | 1.63  | 1.25    | 1.25 |
|   | 25th Percentile          | 5.28    | 5.00    | 5.00  | 4.00    | 5.00    | 4.63  | 5.00  | 5.00    | 5.00 |
|   | 50th Percentile (Median) | 6.32    | 6.08    | 6.23  | 5.94    | 6.08    | 5.95  | 6.23  | 6.08    | 6.19 |
|   | 75th Percentile          | 7.19    | 7.07    | 7.12  | 6.99    | 7.06    | 6.99  | 7.12  | 7.07    | 7.10 |
|   | Maximum Observed         | 8.75    | 8.41    | 8.75  | 8.17    | 9.13    | 9.13  | 8.75  | 9.13    | 9.13 |

| Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – Age 7 |                          | English |         |       | Spanish |         |       | Total |         | All  |
|---|--------------------------|---------|---------|-------|---------|---------|-------|-------|---------|------|
|   |                          | Males   | Females | Total | Males   | Females | Total | Males | Females |      |
|   | N                        | 84      | 80      | 164   | 46      | 48      | 94    | 130   | 128     | 258  |
|   | Mean                     | 6.73    | 6.72    | 6.72  | 6.11    | 6.34    | 6.21  | 6.64  | 6.66    | 6.65 |
|   | Standard Deviation       | 1.05    | 0.62    | 0.87  | 0.68    | 0.41    | 0.56  | 0.94  | 0.55    | 0.77 |
|   | Minimum Observed         | 1.50    | 1.88    | 1.50  | 1.00    | 1.75    | 1.00  | 1.00  | 1.75    | 1.00 |
|   | 25th Percentile          | 6.31    | 6.12    | 6.20  | 5.68    | 5.77    | 5.73  | 6.20  | 5.90    | 6.12 |
|   | 50th Percentile (Median) | 7.06    | 7.00    | 7.03  | 6.55    | 6.63    | 6.57  | 7.03  | 6.97    | 6.97 |
|   | 75th Percentile          | 7.69    | 7.53    | 7.63  | 7.51    | 7.14    | 7.31  | 7.65  | 7.52    | 7.59 |
|   | Maximum Observed         | 9.51    | 8.69    | 9.51  | 8.44    | 8.51    | 8.51  | 9.51  | 8.69    | 9.51 |

| Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – Age 8 |                          | English |         |       | Spanish |         |       | Total |         | All  |
|---|--------------------------|---------|---------|-------|---------|---------|-------|-------|---------|------|
|   |                          | Males   | Females | Total | Males   | Females | Total | Males | Females |      |
|   | N                        | 108     | 104     | 212   | 0       | 0       | 0     | 108   | 104     | 212  |
|   | Mean                     | 7.40    | 7.42    | 7.41  |         |         |       | 7.40  | 7.42    | 7.41 |
|   | Standard Deviation       | 0.58    | 0.45    | 0.52  |         |         |       | 0.58  | 0.45    | 0.52 |
|   | Minimum Observed         | 4.00    | 4.00    | 4.00  |         |         |       | 4.00  | 4.00    | 4.00 |
|   | 25th Percentile          | 6.94    | 6.98    | 6.95  |         |         |       | 6.94  | 6.98    | 6.95 |
|   | 50th Percentile (Median) | 7.55    | 7.57    | 7.55  |         |         |       | 7.55  | 7.57    | 7.55 |
|   | 75th Percentile          | 8.15    | 8.05    | 8.07  |         |         |       | 8.15  | 8.05    | 8.07 |
|   | Maximum Observed         | 9.30    | 9.13    | 9.30  |         |         |       | 9.30  | 9.13    | 9.30 |

| Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – Age 9 |                          | English |         |       | Spanish |         |       | Total |         | All  |
|---|--------------------------|---------|---------|-------|---------|---------|-------|-------|---------|------|
|   |                          | Males   | Females | Total | Males   | Females | Total | Males | Females |      |
|   | N                        | 111     | 112     | 223   | 0       | 0       | 0     | 111   | 112     | 223  |
|   | Mean                     | 7.85    | 7.91    | 7.87  |         |         |       | 7.85  | 7.91    | 7.87 |
|   | Standard Deviation       | 0.51    | 0.41    | 0.46  |         |         |       | 0.51  | 0.41    | 0.46 |
|   | Minimum Observed         | 4.00    | 4.00    | 4.00  |         |         |       | 4.00  | 4.00    | 4.00 |
|   | 25th Percentile          | 7.56    | 7.55    | 7.55  |         |         |       | 7.56  | 7.55    | 7.55 |
|   | 50th Percentile (Median) | 7.93    | 8.04    | 7.98  |         |         |       | 7.93  | 8.04    | 7.98 |
|   | 75th Percentile          | 8.35    | 8.44    | 8.35  |         |         |       | 8.35  | 8.44    | 8.35 |
|   | Maximum Observed         | 9.76    | 9.37    | 9.76  |         |         |       | 9.76  | 9.37    | 9.76 |

| Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – Age 10 |                          | English |         |       | Spanish |         |       | Total |         | All  |
|--|--------------------------|---------|---------|-------|---------|---------|-------|-------|---------|------|
|  |                          | Males   | Females | Total | Males   | Females | Total | Males | Females |      |
|  | N                        | 118     | 117     | 235   | 0       | 0       | 0     | 118   | 117     | 235  |
|  | Mean                     | 8.10    | 8.00    | 8.06  |         |         |       | 8.10  | 8.00    | 8.06 |
|  | Standard Deviation       | 0.52    | 0.43    | 0.48  |         |         |       | 0.52  | 0.43    | 0.48 |
|  | Minimum Observed         | 3.88    | 4.41    | 3.88  |         |         |       | 3.88  | 4.41    | 3.88 |
|  | 25th Percentile          | 7.70    | 7.69    | 7.69  |         |         |       | 7.70  | 7.69    | 7.69 |
|  | 50th Percentile (Median) | 8.22    | 8.07    | 8.19  |         |         |       | 8.22  | 8.07    | 8.19 |
|  | 75th Percentile          | 8.62    | 8.62    | 8.62  |         |         |       | 8.62  | 8.62    | 8.62 |
|  | Maximum Observed         | 9.57    | 9.77    | 9.77  |         |         |       | 9.57  | 9.77    | 9.77 |



| Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – Age 11 |                          | English |         |       | Spanish |         |       | Total |         | All   |
|--|--------------------------|---------|---------|-------|---------|---------|-------|-------|---------|-------|
|  |                          | Males   | Females | Total | Males   | Females | Total | Males | Females |       |
|  | N                        | 114     | 108     | 222   | 0       | 0       | 0     | 114   | 108     | 222   |
|  | Mean                     | 8.38    | 8.40    | 8.39  |         |         |       | 8.38  | 8.40    | 8.39  |
|  | Standard Deviation       | 0.54    | 0.34    | 0.45  |         |         |       | 0.54  | 0.34    | 0.45  |
|  | Minimum Observed         | 3.75    | 4.00    | 3.75  |         |         |       | 3.75  | 4.00    | 3.75  |
|  | 25th Percentile          | 8.06    | 8.00    | 8.04  |         |         |       | 8.06  | 8.00    | 8.04  |
|  | 50th Percentile (Median) | 8.45    | 8.46    | 8.46  |         |         |       | 8.45  | 8.46    | 8.46  |
|  | 75th Percentile          | 8.96    | 8.86    | 8.94  |         |         |       | 8.96  | 8.86    | 8.94  |
|  | Maximum Observed         | 10.00   | 9.65    | 10.00 |         |         |       | 10.00 | 9.65    | 10.00 |

| Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – Age 12 |                          | English |         |       | Spanish |         |       | Total |         | All   |
|--|--------------------------|---------|---------|-------|---------|---------|-------|-------|---------|-------|
|  |                          | Males   | Females | Total | Males   | Females | Total | Males | Females |       |
|  | N                        | 103     | 117     | 220   | 0       | 0       | 0     | 103   | 117     | 220   |
|  | Mean                     | 8.57    | 8.61    | 8.59  |         |         |       | 8.57  | 8.61    | 8.59  |
|  | Standard Deviation       | 0.41    | 0.36    | 0.39  |         |         |       | 0.41  | 0.36    | 0.39  |
|  | Minimum Observed         | 4.13    | 4.00    | 4.00  |         |         |       | 4.13  | 4.00    | 4.00  |
|  | 25th Percentile          | 8.21    | 8.19    | 8.20  |         |         |       | 8.21  | 8.19    | 8.20  |
|  | 50th Percentile (Median) | 8.54    | 8.72    | 8.63  |         |         |       | 8.54  | 8.72    | 8.63  |
|  | 75th Percentile          | 9.04    | 9.05    | 9.05  |         |         |       | 9.04  | 9.05    | 9.05  |
|  | Maximum Observed         | 10.00   | 9.97    | 10.00 |         |         |       | 10.00 | 9.97    | 10.00 |

| Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – Age 13 |                          | English |         |       | Spanish |         |       | Total |         | All  |
|--|--------------------------|---------|---------|-------|---------|---------|-------|-------|---------|------|
|  |                          | Males   | Females | Total | Males   | Females | Total | Males | Females |      |
|  | N                        | 119     | 105     | 224   | 0       | 0       | 0     | 119   | 105     | 224  |
|  | Mean                     | 8.76    | 8.83    | 8.78  |         |         |       | 8.76  | 8.83    | 8.78 |
|  | Standard Deviation       | 0.46    | 0.39    | 0.43  |         |         |       | 0.46  | 0.39    | 0.43 |
|  | Minimum Observed         | 5.01    | 3.88    | 3.88  |         |         |       | 5.01  | 3.88    | 3.88 |
|  | 25th Percentile          | 8.52    | 8.44    | 8.52  |         |         |       | 8.52  | 8.44    | 8.52 |
|  | 50th Percentile (Median) | 8.87    | 9.02    | 8.91  |         |         |       | 8.87  | 9.02    | 8.91 |
|  | 75th Percentile          | 9.30    | 9.33    | 9.31  |         |         |       | 9.30  | 9.33    | 9.31 |
|  | Maximum Observed         | 9.90    | 9.79    | 9.90  |         |         |       | 9.90  | 9.79    | 9.90 |

| Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – Age 14 |                          | English |         |       | Spanish |         |       | Total |         | All   |
|--|--------------------------|---------|---------|-------|---------|---------|-------|-------|---------|-------|
|  |                          | Males   | Females | Total | Males   | Females | Total | Males | Females |       |
|  | N                        | 114     | 120     | 234   | 0       | 0       | 0     | 114   | 120     | 234   |
|  | Mean                     | 8.90    | 8.85    | 8.88  |         |         |       | 8.90  | 8.85    | 8.88  |
|  | Standard Deviation       | 0.38    | 0.28    | 0.33  |         |         |       | 0.38  | 0.28    | 0.33  |
|  | Minimum Observed         | 6.51    | 7.21    | 6.51  |         |         |       | 6.51  | 7.21    | 6.51  |
|  | 25th Percentile          | 8.57    | 8.57    | 8.57  |         |         |       | 8.57  | 8.57    | 8.57  |
|  | 50th Percentile (Median) | 9.07    | 8.96    | 8.99  |         |         |       | 9.07  | 8.96    | 8.99  |
|  | 75th Percentile          | 9.37    | 9.30    | 9.34  |         |         |       | 9.37  | 9.30    | 9.34  |
|  | Maximum Observed         | 9.85    | 10.00   | 10.00 |         |         |       | 9.85  | 10.00   | 10.00 |

| Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – Age 15 |                          | English |         |       | Spanish |         |       | Total |         | All   |
|--|--------------------------|---------|---------|-------|---------|---------|-------|-------|---------|-------|
|  |                          | Males   | Females | Total | Males   | Females | Total | Males | Females |       |
|  | N                        | 112     | 113     | 225   | 0       | 0       | 0     | 112   | 113     | 225   |
|  | Mean                     | 8.98    | 8.93    | 8.96  |         |         |       | 8.98  | 8.93    | 8.96  |
|  | Standard Deviation       | 0.40    | 0.34    | 0.37  |         |         |       | 0.40  | 0.34    | 0.37  |
|  | Minimum Observed         | 6.34    | 6.51    | 6.34  |         |         |       | 6.34  | 6.51    | 6.34  |
|  | 25th Percentile          | 8.73    | 8.58    | 8.61  |         |         |       | 8.73  | 8.58    | 8.61  |
|  | 50th Percentile (Median) | 9.08    | 8.97    | 9.04  |         |         |       | 9.08  | 8.97    | 9.04  |
|  | 75th Percentile          | 9.43    | 9.40    | 9.41  |         |         |       | 9.43  | 9.40    | 9.41  |
|  | Maximum Observed         | 10.00   | 10.00   | 10.00 |         |         |       | 10.00 | 10.00   | 10.00 |

| Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – Age 16 |                          | English |         |       | Spanish |         |       | Total |         | All   |
|--|--------------------------|---------|---------|-------|---------|---------|-------|-------|---------|-------|
|  |                          | Males   | Females | Total | Males   | Females | Total | Males | Females |       |
|  | N                        | 108     | 108     | 216   | 0       | 0       | 0     | 108   | 108     | 216   |
|  | Mean                     | 9.05    | 8.96    | 9.02  |         |         |       | 9.05  | 8.96    | 9.02  |
|  | Standard Deviation       | 0.49    | 0.37    | 0.43  |         |         |       | 0.49  | 0.37    | 0.43  |
|  | Minimum Observed         | 5.11    | 5.32    | 5.11  |         |         |       | 5.11  | 5.32    | 5.11  |
|  | 25th Percentile          | 8.71    | 8.70    | 8.70  |         |         |       | 8.71  | 8.70    | 8.70  |
|  | 50th Percentile (Median) | 9.19    | 9.10    | 9.15  |         |         |       | 9.19  | 9.10    | 9.15  |
|  | 75th Percentile          | 9.59    | 9.38    | 9.51  |         |         |       | 9.59  | 9.38    | 9.51  |
|  | Maximum Observed         | 10.00   | 9.97    | 10.00 |         |         |       | 10.00 | 9.97    | 10.00 |

| Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – Age 17 |                          | English |         |       | Spanish |         |       | Total |         | All   |
|--|--------------------------|---------|---------|-------|---------|---------|-------|-------|---------|-------|
|  |                          | Males   | Females | Total | Males   | Females | Total | Males | Females |       |
|  | N                        | 111     | 112     | 223   | 0       | 0       | 0     | 111   | 112     | 223   |
|  | Mean                     | 9.19    | 9.11    | 9.16  |         |         |       | 9.19  | 9.11    | 9.16  |
|  | Standard Deviation       | 0.42    | 0.26    | 0.35  |         |         |       | 0.42  | 0.26    | 0.35  |
|  | Minimum Observed         | 6.18    | 7.54    | 6.18  |         |         |       | 6.18  | 7.54    | 6.18  |
|  | 25th Percentile          | 8.90    | 8.82    | 8.87  |         |         |       | 8.90  | 8.82    | 8.87  |
|  | 50th Percentile (Median) | 9.35    | 9.21    | 9.28  |         |         |       | 9.35  | 9.21    | 9.28  |
|  | 75th Percentile          | 9.68    | 9.44    | 9.58  |         |         |       | 9.68  | 9.44    | 9.58  |
|  | Maximum Observed         | 10.00   | 10.00   | 10.00 |         |         |       | 10.00 | 10.00   | 10.00 |

| Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – Age 18-29 |                          | English |         |       | Spanish |         |       | Total |         | All   |
|---|--------------------------|---------|---------|-------|---------|---------|-------|-------|---------|-------|
|   |                          | Males   | Females | Total | Males   | Females | Total | Males | Females |       |
|   | N                        | 60      | 113     | 173   | 21      | 72      | 93    | 81    | 185     | 266   |
|   | Mean                     | 9.11    | 8.94    | 9.02  | 8.75    | 8.38    | 8.50  | 9.08  | 8.84    | 8.95  |
|   | Standard Deviation       | 1.83    | 1.41    | 1.57  | 1.05    | 0.99    | 1.01  | 1.67  | 1.30    | 1.44  |
|   | Minimum Observed         | 6.56    | 5.81    | 5.81  | 7.53    | 4.57    | 4.57  | 6.56  | 4.57    | 4.57  |
|   | 25th Percentile          | 8.63    | 8.67    | 8.67  | 7.99    | 7.95    | 7.98  | 8.52  | 8.63    | 8.63  |
|   | 50th Percentile (Median) | 9.23    | 9.15    | 9.18  | 8.84    | 8.60    | 8.64  | 9.23  | 9.04    | 9.13  |
|   | 75th Percentile          | 9.68    | 9.40    | 9.48  | 9.36    | 9.04    | 9.13  | 9.66  | 9.36    | 9.46  |
|   | Maximum Observed         | 10.00   | 10.00   | 10.00 | 10.00   | 9.66    | 10.00 | 10.00 | 10.00   | 10.00 |

| Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – Age 30-39 |                          | English |         |       | Spanish |         |       | Total |         | All   |
|---|--------------------------|---------|---------|-------|---------|---------|-------|-------|---------|-------|
|   |                          | Males   | Females | Total | Males   | Females | Total | Males | Females |       |
|   | N                        | 55      | 157     | 212   | 21      | 77      | 98    | 76    | 234     | 310   |
|   | Mean                     | 8.82    | 8.85    | 8.84  | 8.83    | 8.31    | 8.47  | 8.82  | 8.78    | 8.80  |
|   | Standard Deviation       | 1.64    | 0.94    | 1.16  | 0.96    | 0.71    | 0.79  | 1.48  | 0.90    | 1.07  |
|   | Minimum Observed         | 6.04    | 6.72    | 6.04  | 6.91    | 5.83    | 5.83  | 6.04  | 5.83    | 5.83  |
|   | 25th Percentile          | 8.43    | 8.48    | 8.48  | 8.25    | 7.81    | 8.00  | 8.43  | 8.44    | 8.44  |
|   | 50th Percentile (Median) | 8.99    | 8.94    | 8.95  | 9.01    | 8.38    | 8.63  | 8.99  | 8.91    | 8.94  |
|   | 75th Percentile          | 9.36    | 9.29    | 9.32  | 9.56    | 8.87    | 9.07  | 9.36  | 9.26    | 9.30  |
|   | Maximum Observed         | 10.00   | 9.95    | 10.00 | 9.91    | 9.56    | 9.91  | 10.00 | 9.95    | 10.00 |

| Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – Age 40-49 |                          | English |         |       | Spanish |         |       | Total |         | All   |
|---|--------------------------|---------|---------|-------|---------|---------|-------|-------|---------|-------|
|   |                          | Males   | Females | Total | Males   | Females | Total | Males | Females |       |
|   | N                        | 62      | 120     | 182   | 30      | 43      | 73    | 92    | 163     | 255   |
|   | Mean                     | 8.80    | 8.75    | 8.77  | 7.71    | 7.90    | 7.80  | 8.67  | 8.67    | 8.67  |
|   | Standard Deviation       | 1.29    | 1.02    | 1.12  | 1.55    | 1.09    | 1.29  | 1.53  | 1.11    | 1.27  |
|   | Minimum Observed         | 5.98    | 6.03    | 5.98  | 4.00    | 3.63    | 3.63  | 4.00  | 3.63    | 3.63  |
|   | 25th Percentile          | 8.38    | 8.38    | 8.38  | 6.88    | 7.41    | 7.11  | 8.37  | 8.36    | 8.37  |
|   | 50th Percentile (Median) | 8.91    | 8.83    | 8.84  | 8.09    | 8.14    | 8.10  | 8.81  | 8.81    | 8.81  |
|   | 75th Percentile          | 9.22    | 9.09    | 9.16  | 8.59    | 8.64    | 8.60  | 9.16  | 9.08    | 9.12  |
|   | Maximum Observed         | 9.76    | 9.81    | 9.81  | 10.00   | 9.64    | 10.00 | 10.00 | 9.81    | 10.00 |

| Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – Age 50-59 |                          | English |         |       | Spanish |         |       | Total |         | All  |
|---|--------------------------|---------|---------|-------|---------|---------|-------|-------|---------|------|
|   |                          | Males   | Females | Total | Males   | Females | Total | Males | Females |      |
|   | N                        | 57      | 85      | 142   | 25      | 27      | 52    | 82    | 112     | 194  |
|   | Mean                     | 8.26    | 8.32    | 8.29  | 7.73    | 7.29    | 7.55  | 8.20  | 8.23    | 8.21 |
|   | Standard Deviation       | 2.12    | 1.36    | 1.70  | 1.81    | 1.44    | 1.63  | 2.05  | 1.46    | 1.73 |
|   | Minimum Observed         | 4.75    | 5.10    | 4.75  | 4.88    | 3.88    | 3.88  | 4.75  | 3.88    | 3.88 |
|   | 25th Percentile          | 8.02    | 8.00    | 8.00  | 6.94    | 6.30    | 6.89  | 7.97  | 7.99    | 7.99 |
|   | 50th Percentile (Median) | 8.39    | 8.49    | 8.41  | 8.07    | 7.49    | 7.97  | 8.34  | 8.40    | 8.38 |
|   | 75th Percentile          | 8.75    | 8.82    | 8.80  | 8.58    | 8.40    | 8.43  | 8.75  | 8.81    | 8.80 |
|   | Maximum Observed         | 9.52    | 9.70    | 9.70  | 9.74    | 9.46    | 9.74  | 9.74  | 9.70    | 9.74 |

| Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – Age 60-69 |                          | English |         |       | Spanish |         |       | Total |         | All  |
|---|--------------------------|---------|---------|-------|---------|---------|-------|-------|---------|------|
|   |                          | Males   | Females | Total | Males   | Females | Total | Males | Females |      |
|   | N                        | 49      | 71      | 120   | 20      | 25      | 45    | 69    | 96      | 165  |
|   | Mean                     | 8.33    | 8.22    | 8.28  | 7.02    | 6.77    | 6.91  | 8.20  | 8.11    | 8.16 |
|   | Standard Deviation       | 1.36    | 1.41    | 1.39  | 1.87    | 1.50    | 1.66  | 1.68  | 1.55    | 1.60 |
|   | Minimum Observed         | 6.76    | 4.88    | 4.88  | 3.63    | 3.75    | 3.63  | 3.63  | 3.75    | 3.63 |
|   | 25th Percentile          | 7.88    | 8.03    | 7.91  | 6.00    | 5.12    | 5.12  | 7.80  | 7.91    | 7.82 |
|   | 50th Percentile (Median) | 8.34    | 8.34    | 8.34  | 7.44    | 7.53    | 7.44  | 8.32  | 8.33    | 8.32 |
|   | 75th Percentile          | 8.88    | 8.63    | 8.83  | 8.22    | 8.05    | 8.16  | 8.85  | 8.63    | 8.72 |
|   | Maximum Observed         | 9.33    | 9.59    | 9.59  | 9.53    | 9.38    | 9.53  | 9.53  | 9.59    | 9.59 |

| Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – Age 70-85 |                          | English |         |       | Spanish |         |       | Total |         | All  |
|---|--------------------------|---------|---------|-------|---------|---------|-------|-------|---------|------|
|   |                          | Males   | Females | Total | Males   | Females | Total | Males | Females |      |
|   | N                        | 98      | 106     | 204   | 25      | 19      | 44    | 123   | 125     | 248  |
|   | Mean                     | 7.65    | 7.55    | 7.61  | 6.25    | 5.73    | 6.07  | 7.57  | 7.47    | 7.53 |
|   | Standard Deviation       | 1.81    | 1.33    | 1.58  | 1.10    | 1.04    | 1.07  | 1.74  | 1.35    | 1.56 |
|   | Minimum Observed         | 4.00    | 4.25    | 4.00  | 3.38    | 3.38    | 3.38  | 3.38  | 3.38    | 3.38 |
|   | 25th Percentile          | 7.13    | 7.29    | 7.13  | 4.88    | 4.38    | 4.63  | 7.04  | 7.09    | 7.05 |
|   | 50th Percentile (Median) | 7.85    | 7.86    | 7.86  | 6.43    | 5.38    | 6.09  | 7.76  | 7.84    | 7.82 |
|   | 75th Percentile          | 8.52    | 8.21    | 8.39  | 7.19    | 6.89    | 7.15  | 8.45  | 8.20    | 8.36 |
|   | Maximum Observed         | 9.72    | 9.61    | 9.72  | 9.27    | 9.36    | 9.36  | 9.72  | 9.61    | 9.72 |

| <b>Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – NCS Sample of Mothers</b> |                          | <b>English</b> | <b>Spanish</b> | <b>All</b> |
|--|--------------------------|----------------|----------------|------------|
|  | N                        | 80             | 35             | 115        |
|  | Mean                     | 8.77           | 8.28           | 8.62       |
|  | Standard Deviation       | 0.70           | 0.80           | 0.77       |
|  | Minimum Observed         | 6.03           | 6.63           | 6.03       |
|  | 25th Percentile          | 8.46           | 7.74           | 8.23       |
|  | 50th Percentile (Median) | 8.88           | 8.39           | 8.76       |
|  | 75th Percentile          | 9.25           | 8.88           | 9.16       |
|  | Maximum Observed         | 9.95           | 9.56           | 9.95       |

| <b>Table 2. NIH Toolbox Flanker Inhibitory Control and Attention Test (0-10) – NCS Sample of Pregnant Women</b> |                          | <b>English</b> | <b>Spanish</b> | <b>All</b> |
|---|--------------------------|----------------|----------------|------------|
|   | N                        | 82             | 44             | 126        |
|   | Mean                     | 8.92           | 8.26           | 8.69       |
|   | Standard Deviation       | 0.51           | 1.07           | 0.81       |
|   | Minimum Observed         | 6.56           | 3.63           | 3.63       |
|   | 25th Percentile          | 8.66           | 7.86           | 8.38       |
|   | 50th Percentile (Median) | 8.95           | 8.37           | 8.82       |
|   | 75th Percentile          | 9.31           | 8.86           | 9.23       |
|   | Maximum Observed         | 9.83           | 9.66           | 9.83       |



Figure 1  
Least Squares Means

