

SUPPLEMENTAL APPENDIX 1

OPTICAL PARAMETERS FOR BRAIN DEVELOPMENT PARTICIPANT SURVEY

Participant code: _____
Date: _____
Guardian (parent, next of kin etc)
Name: _____
Relationship to child: Parent/guardian specify: _____
Languages: _____
Phone number: _____
Address: _____

Child

Name: _____
Age (years, months): _____ Date of birth: _____
Gender: Male Female.
Languages: _____
Participant code: _____

Characteristics

Years of school completed: No school 0–6 months 6–12 months 1–2 years 2 years+

HIV status: Known positive Nonreactive Unknown.

Did the participant's mother have any medical problems during pregnancy (preeclampsia, gestational diabetes, bleeding, and early contractions): Yes No Unknown

If yes, describe:

Was the participant's mother hospitalized before or after the pregnancy?

Yes No Unknown.

If yes, what was she hospitalized for:

Does the child have any other medical conditions (If none, write none. If unknown, write UNK):?

Anthropometric measurements

Height (cm): Weight (kg): Head circumference (cm):

Comments:

SUPPLEMENTAL APPENDIX 2

Kenya

Current or previous malaria n = 12

Itchy/watery/red eyes n = 7

Persistent cough n = 4

Three or fewer children reported the following conditions:

Ear infection/pain

Stomach pains

Asthma

Jigger (*Tunga penetrans*) infection

Sores

Sickle cell anemia

Previous sepsis

Headaches

Diarrhea

Scabies

Renal incontinence

Rash

Anal warts

Vocal cord issue

Chest pain

Nose bleeds

Opportunistic infections

Bhutan

Three or fewer children reported the following conditions:

Headaches/migraine

Previous pneumonia

Previous meningitis

Kidney stones

Ear pain

Leg pain

Dental caries

SUPPLEMENTAL TABLE 1
Retinal parameters

		Age, years											Total
		3	4	5	6	7	8	9	10	11	Total		
All	OD	Average RNFL, μm	NA	109.7 \pm 11.9	108.3 \pm 13.0	107.1 \pm 8.3	108.5 \pm 10.7	109.2 \pm 10.9	107.1 \pm 7.8	111.6 \pm 7.3	110 (N = 1)	108.3 \pm 10.0	
		Superior	NA	113.4 \pm 14.5	109.6 \pm 15.5	108.2 \pm 10.4	110.1 \pm 12.8	110.0 \pm 12.7	111.1 \pm 6.5	114.6 \pm 6.5	111 (N = 1)	109.8 \pm 11.9	
		Inferior	NA	106.6 \pm 11.2	107.2 \pm 12.7	106.2 \pm 8.5	107.3 \pm 10.3	108.2 \pm 11.1	103.1 \pm 10.9	109.2 \pm 8.8	109 (N = 1)	106.9 \pm 10.1	
	OS	Nasal	NA	89.3 \pm 13.9	86.6 \pm 14.3	84.3 \pm 13.8	87.3 \pm 17.7	85.3 \pm 20.3	80.5 \pm 9.7	96.4 \pm 17.4	86 (N = 1)	85.9 \pm 16.1	
		Temporal	NA	71.3 \pm 8.2	79.6 \pm 9.1	80.1 \pm 11.0	77.7 \pm 13.0	84.1 \pm 18.3	85.2 \pm 10.5	74.0 \pm 7.8	84 (N = 1)	79.8 \pm 13.0	
		Average GCC, μm	92.0 \pm 6.6	98.3 \pm 6.4	95.8 \pm 8.4	98.3 \pm 5.8	98.8 \pm 6.3	97.7 \pm 5.8	97.2 \pm 5.7	100 \pm 3.9	97 (N = 1)	98.0 \pm 6.4	
	OS	Superior	94.0 \pm 6.2	97.8 \pm 6.6	95.1 \pm 8.6	97.4 \pm 6.0	98.6 \pm 6.8	97.7 \pm 5.9	98.8 \pm 5.5	99.3 \pm 3.6	96 (N = 1)	97.3 \pm 6.6	
		Inferior	89.3 \pm 6.5	99.0 \pm 6.7	96.0 \pm 8.6	98.5 \pm 6.8	99.7 \pm 5.9	99.4 \pm 6.0	98.9 \pm 6.1	100.8 \pm 5.1	99 (N = 1)	98.5 \pm 6.9	
		Average RNFL, μm	114 (N = 1)	104.3 \pm 9.3	109.2 \pm 9.7	107.3 \pm 10.9	110.2 \pm 10.5	108.7 \pm 9.6	106.3 \pm 8.4	110.8 \pm 5.0	112 (N = 1)	108.6 \pm 10.0	
	OS	Superior	114 (N = 1)	106.5 \pm 9.7	112.8 \pm 10.8	110.1 \pm 10.6	113.1 \pm 11.4	111.2 \pm 8.3	108.6 \pm 10.6	115.8 \pm 7.0	119 (N = 1)	111.5 \pm 11.6	
		Inferior	115 (N = 1)	101.8 \pm 9.7	106.2 \pm 10.8	104.7 \pm 10.6	107.0 \pm 11.4	106.2 \pm 8.3	103.9 \pm 10.6	106.4 \pm 7.0	106 (N = 1)	105.7 \pm 10.2	
		Nasal	70 (N = 1)	77.5 \pm 9.8	86.3 \pm 19.8	83.5 \pm 11.5	87.4 \pm 14.5	84.1 \pm 15.0	80.6 \pm 9.2	84.4 \pm 12.7	82 (N = 1)	84.5 \pm 14.0	
	OS	Temporal	79 (N = 1)	74.3 \pm 9.3	74.9 \pm 15.7	78.2 \pm 9.7	75.2 \pm 8.0	76.6 \pm 11.2	77.1 \pm 9.5	79.6 \pm 2.8	84 (N = 1)	76.6 \pm 10.2	
		Average GCC, μm	90.0 \pm 4.2	97.5 \pm 5.1	97.7 \pm 5.9	98.6 \pm 6.0	99.3 \pm 5.9	98.5 \pm 6.1	97.4 \pm 7.4	101.0 \pm 4.2	96 (N = 1)	98.4 \pm 6.0	
		Superior	89.0 \pm 6.4	97.1 \pm 5.4	98.1 \pm 6.2	98.9 \pm 5.9	99.0 \pm 5.4	98.8 \pm 6.1	97.1 \pm 8.0	101.3 \pm 4.2	99 (N = 1)	98.5 \pm 6.3	
OS	Inferior	90.5 \pm 6.4	97.5 \pm 5.4	97.5 \pm 6.2	98.4 \pm 5.9	99.2 \pm 5.4	98.1 \pm 6.1	97.4 \pm 8.0	101.0 \pm 4.2	99 (N = 1)	98.2 \pm 6.0		
	Average RNFL, μm	NA	115.0 \pm 9.9	107.6 \pm 18.9	108.1 \pm 8.9	110.1 \pm 13.0	107.5 \pm 12.2	106.0 \pm 6.4	111.0 \pm 9.2	NA	108.6 \pm 11.5		
	Superior	NA	124.0 \pm 12.7	102.4 \pm 22.5	109.6 \pm 12.4	113.6 \pm 16.4	108.8 \pm 14.4	111.0 \pm 6.7	115.7 \pm 7.5	NA	110.6 \pm 14.5		
OS	Inferior	NA	106.0 \pm 7.1	112.8 \pm 16.9	106.9 \pm 9.8	108.0 \pm 11.9	106.1 \pm 11.8	101.0 \pm 7.6	107.3 \pm 11.5	NA	106.9 \pm 11.2		
	Nasal	NA	102.5 \pm 16.3	83.0 \pm 8.2	78.8 \pm 10.8	88.7 \pm 20.4	80.5 \pm 12.9	76.8 \pm 7.9	98.7 \pm 19.8	NA	83.8 \pm 15.2		
	Temporal	NA	65.5 \pm 12.0	81.6 \pm 9.5	82.8 \pm 13.7	75.5 \pm 14.3	83.2 \pm 12.9	85.3 \pm 9.6	73.0 \pm 8.7	NA	79.8 \pm 12.9		
OS	Average GCC, μm	92.0 \pm 6.6	96.4 \pm 6.0	95.0 \pm 9.6	97.5 \pm 4.5	96.8 \pm 5.3	98.4 \pm 5.8	96.3 \pm 5.7	98.7 \pm 3.5	NA	96.7 \pm 6.5		
	Superior	94.0 \pm 6.2	95.9 \pm 6.5	94.5 \pm 9.4	97.4 \pm 5.6	96.4 \pm 5.3	98.5 \pm 6.4	96.1 \pm 5.9	98.3 \pm 3.8	NA	96.5 \pm 6.7		
	Inferior	89.3 \pm 6.5	95.8 \pm 6.4	94.9 \pm 9.5	96.3 \pm 4.9	97.5 \pm 5.4	98.3 \pm 5.5	98.2 \pm 5.4	99.0 \pm 4.6	NA	96.5 \pm 6.6		
OS	Average RNFL, μm	114 (N = 1)	NA	113.3 \pm 8.8	110.4 \pm 10.7	110.5 \pm 9.7	105.9 \pm 9.3	104.0 \pm 7.6	108.7 \pm 5.7	NA	108.8 \pm 9.2		
	Superior	114 (N = 1)	NA	116.6 \pm 6.7	113.5 \pm 7.0	115.4 \pm 12.4	105.4 \pm 8.8	105.4 \pm 8.8	114.0 \pm 8.3	NA	111.7 \pm 12.1		
	Inferior	115 (N = 1)	NA	111.4 \pm 6.7	107.5 \pm 7.0	105.2 \pm 12.4	104.5 \pm 8.4	102.6 \pm 8.8	103.7 \pm 9.0	NA	106.1 \pm 9.0		
OS	Nasal	70 (N = 1)	NA	95.7 \pm 22.6	82.4 \pm 12.9	81.4 \pm 10.7	82.3 \pm 18.0	76.8 \pm 5.0	82.7 \pm 9.3	NA	83.0 \pm 15.3		
	Temporal	79 (N = 1)	NA	73.0 \pm 15.7	75.6 \pm 14.5	74.4 \pm 9.1	75.7 \pm 9.7	77.6 \pm 10.5	79.7 \pm 3.1	NA	75.6 \pm 10.9		
	Average GCC, μm	90.0 \pm 4.2	96.8 \pm 4.4	96.8 \pm 5.6	96.8 \pm 5.7	97.7 \pm 4.5	98.3 \pm 0.3	94.7 \pm 5.2	100.3 \pm 4.9	NA	97.1 \pm 5.3		
OS	Superior	89.0 \pm 6.4	96.5 \pm 4.7	97.0 \pm 6.1	96.9 \pm 5.2	97.8 \pm 4.6	98.7 \pm 5.4	94.6 \pm 5.9	100.7 \pm 4.9	NA	97.2 \pm 5.5		
	Inferior	90.5 \pm 6.4	97.2 \pm 4.6	96.7 \pm 6.1	96.7 \pm 5.2	97.6 \pm 4.6	97.8 \pm 5.4	94.4 \pm 5.9	100.3 \pm 4.9	NA	96.9 \pm 5.3		
	Average RNFL, μm	NA	107.6 \pm 13.0	108.6 \pm 11.0	106.8 \pm 8.3	107.6 \pm 9.6	107.6 \pm 9.6	109.0 \pm 11.1	112.5 \pm 6.4	110 (N = 1)	108.1 \pm 9.2		
OS	Superior	NA	109.2 \pm 14.0	112.3 \pm 12.0	107.8 \pm 10.0	108.3 \pm 10.4	111.2 \pm 11.0	111.3 \pm 7.5	113 \pm 7.1	111 (N = 1)	109.3 \pm 10.4		
	Inferior	NA	106.8 \pm 13.2	105.1 \pm 10.7	106.0 \pm 8.3	106.9 \pm 9.6	110.5 \pm 10.2	106.7 \pm 16.5	112 \pm 4.2	109 (N = 1)	106.9 \pm 9.5		
	Nasal	NA	84.0 \pm 10.2	88.2 \pm 16.3	85.9 \pm 14.3	86.5 \pm 16.7	91.3 \pm 26.4	86.7 \pm 10.7	93.0 \pm 19.8	86 (N = 1)	87.2 \pm 16.6		
OS	Temporal	NA	73.6 \pm 6.3	78.6 \pm 9.2	79.4 \pm 10.2	78.9 \pm 12.4	85.1 \pm 23.7	85.0 \pm 13.5	75.5 \pm 9.2	84 (N = 1)	79.8 \pm 13.0		
	Average GCC, μm	NA	100.1 \pm 6.4	97.2 \pm 5.9	98.8 \pm 6.5	100.3 \pm 6.4	99.4 \pm 7.1	99.3 \pm 6.4	104 (N = 1)	97 (N = 1)	99.3 \pm 6.2		
	Superior	NA	99.3 \pm 6.6	96.3 \pm 6.9	97.4 \pm 6.3	98.9 \pm 6.3	98.8 \pm 7.6	98.3 \pm 5.0	102 (N = 1)	96 (N = 1)	98.1 \pm 6.4		
OS	Inferior	NA	102.0 \pm 5.8	98.1 \pm 6.1	100.0 \pm 7.5	101.6 \pm 5.7	101.1 \pm 6.6	100.3 \pm 8.3	106 (N = 1)	99 (N = 1)	100.6 \pm 6.5		
	Average RNFL, μm	NA	104.3 \pm 9.3	106.8 \pm 9.7	106.7 \pm 11.0	110.1 \pm 10.9	112.5 \pm 9.1	110.0 \pm 9.8	114 \pm 0	112 (N = 1)	108.5 \pm 10.4		
	Superior	NA	106.5 \pm 9.7	110.6 \pm 11.7	109.4 \pm 11.2	112.3 \pm 11.2	116.5 \pm 8.0	114.0 \pm 15.1	118.5 \pm 0.7	119 (N = 1)	111.4 \pm 11.4		
OS	Inferior	NA	101.8 \pm 9.7	103.1 \pm 11.7	104.1 \pm 11.2	107.7 \pm 11.2	108.5 \pm 8.0	106.0 \pm 15.1	110.5 \pm 0.7	106 (N = 1)	105.6 \pm 10.8		
	Nasal	NA	77.5 \pm 9.8	80.6 \pm 16.6	83.7 \pm 11.3	89.9 \pm 15.3	86.9 \pm 9.0	87.0 \pm 12.3	87.0 \pm 21.2	82 (N = 1)	85.4 \pm 13.2		
	Temporal	NA	74.3 \pm 9.3	76.3 \pm 16.3	78.8 \pm 8.2	12.4 \pm 7.8	77.9 \pm 13.5	76.0 \pm 9.9	79.5 \pm 3.5	84 (N = 1)	77.2 \pm 9.9		
OS	Average GCC, μm	NA	98.5 \pm 6.7	99.4 \pm 6.1	99.6 \pm 6.0	100.3 \pm 6.5	98.6 \pm 7.3	103.7 \pm 9.0	103 (N = 1)	96 (N = 1)	99.7 \pm 6.3		
	Superior	NA	98.0 \pm 7.0	100.1 \pm 6.4	99.9 \pm 6.2	99.8 \pm 5.8	98.8 \pm 7.3	103.0 \pm 9.1	103 (N = 1)	99 (N = 1)	99.7 \pm 6.7		

(continued)

SUPPLEMENTAL TABLE 1
Continued

		Age, years										Total
		3	4	5	6	7	8	9	10	11	Total	
Male	Inferior	NA	98.0 ± 7.0	99.0 ± 6.4	99.3 ± 6.2	100.3 ± 5.8	98.4 ± 7.3	104.3 ± 9.1	103 (N = 1)	93 (N = 1)	99.5 ± 6.3	
	Average RNFL, μm	NA	112.8 ± 10.8	106.1 ± 13.4	107.0 ± 8.2	107.4 ± 12.6	107.6 ± 10.4	102.3 ± 7.6	107.0 ± 8.5	110 (N = 1)	107.2 ± 10.3	
	Superior	NA	115.8 ± 10.7	108.9 ± 18.3	107.5 ± 10.0	108.1 ± 14.3	106.8 ± 11.6	110.0 ± 7.9	113.5 ± 9.2	111 (N = 1)	108.6 ± 12.3	
	Inferior	NA	110.3 ± 12.7	103.7 ± 9.9	106.4 ± 8.9	107.9 ± 12.4	108.1 ± 11.1	94.7 ± 8.1	101.5 ± 7.8	109 (N = 1)	106.2 ± 10.4	
	Nasal	NA	90.5 ± 5.4	88.5 ± 18.2	86.0 ± 11.5	88.4 ± 20.0	86.5 ± 14.3	74.7 ± 7.5	100.5 ± 27.6	86 (N = 1)	87.3 ± 15.3	
	Temporal	NA	70.8 ± 11.3	77.1 ± 6.6	78.2 ± 7.4	75.5 ± 14.6	78.1 ± 15.0	78.5 ± 12.0	71.0 ± 11.3	84 (N = 1)	76.6 ± 11.1	
	Average GCC, μm	99 (N = 1)	99.9 ± 6.4	94.3 ± 9.3	99.7 ± 5.9	97.9 ± 6.0	98.2 ± 6.0	92.3 ± 1.5	97.0 ± 2.8	97 (N = 1)	98.1 ± 6.6	
	Superior	101 (N = 1)	99.0 ± 6.9	93.9 ± 9.3	99.2 ± 6.2	97.1 ± 6.3	97.9 ± 6.0	93.0 ± 1.0	97.0 ± 4.2	96 (N = 1)	97.5 ± 6.8	
	Inferior	96 (N = 1)	101.7 ± 6.5	94.6 ± 9.9	100.3 ± 7.1	98.4 ± 6.0	98.5 ± 6.2	93.0 ± 2.8	96.5 ± 2.1	99 (N = 1)	98.7 ± 7.2	
	Average RNFL, μm	NA	109.0 ± 12.7	107.7 ± 11.1	105.7 ± 13.4	110.3 ± 11.4	107.4 ± 16.7	104.0 ± 7.2	109.5 ± 7.8	112 (N = 1)	107.5 ± 11.5	
	Superior	NA	110.5 ± 12.0	111.4 ± 9.9	108.5 ± 13.2	113.2 ± 12.5	108.3 ± 9.4	111.0 ± 12.4	112.0 ± 8.5	119 (N = 1)	110.4 ± 12.9	
	Inferior	NA	107.5 ± 12.0	104.0 ± 9.9	103.2 ± 13.2	106.9 ± 12.5	106.6 ± 9.4	96.7 ± 12.4	107.0 ± 8.5	106 (N = 1)	104.7 ± 11.6	
	Nasal	NA	83.5 ± 9.2	79.2 ± 18.8	84.1 ± 11.8	87.6 ± 16.7	88.8 ± 18.4	78.3 ± 5.5	86.5 ± 9.2	82 (N = 1)	84.9 ± 14.4	
	Temporal	NA	78.5 ± 4.9	82.5 ± 15.4	79.6 ± 11.7	76.1 ± 10.4	72.2 ± 13.8	79.0 ± 14.0	80.0 ± 4.2	84 (N = 1)	77.8 ± 11.9	
Average GCC, μm	NA	96.5 ± 7.7	96.8 ± 4.8	99.5 ± 6.1	98.0 ± 6.1	97.6 ± 5.6	92.3 ± 2.3	97.5 ± 0.7	96 (N = 1)	98.0 ± 5.8		
Superior	NA	95.5 ± 7.5	97.1 ± 4.8	99.6 ± 6.2	97.4 ± 5.5	97.8 ± 5.6	92.7 ± 4.5	97.5 ± 0.7	99 (N = 1)	98.0 ± 6.4		
Inferior	NA	96.8 ± 7.5	96.7 ± 4.8	99.3 ± 6.2	98.2 ± 5.5	97.4 ± 5.6	91.7 ± 4.5	97.5 ± 0.7	93 (N = 1)	97.9 ± 5.7		
Female	Average RNFL, μm	NA	105.7 ± 14.4	110.6 ± 13.1	107.0 ± 8.8	109.4 ± 8.9	109.8 ± 11.3	110.0 ± 7.1	114.7 ± 5.9	NA	109.0 ± 9.9	
	Superior	NA	110.3 ± 20.8	110.2 ± 13.3	109.1 ± 11.0	112.1 ± 11.3	111.2 ± 13.1	111.8 ± 6.3	115.3 ± 6.4	NA	110.8 ± 11.6	
	Inferior	NA	101.7 ± 8.3	110.8 ± 14.7	105.4 ± 8.0	106.7 ± 8.2	108.3 ± 11.4	108.2 ± 9.5	114.3 ± 5.0	NA	107.3 ± 9.8	
	Nasal	NA	87.7 ± 23.1	85.0 ± 10.8	82.7 ± 15.8	86.1 ± 15.6	84.7 ± 22.7	84.0 ± 9.8	93.7 ± 14.0	NA	84.9 ± 16.8	
	Temporal	NA	72.0 ± 2.6	81.4 ± 10.7	81.7 ± 13.2	79.9 ± 11.2	86.7 ± 19.4	88.5 ± 9.5	76.0 ± 6.6	NA	82.2 ± 13.8	
	Average GCC, μm	88.5 ± 3.5	95.8 ± 6.1	96.8 ± 8.1	97.0 ± 5.5	99.3 ± 5.6	99.1 ± 6.5	99.3 ± 5.6	103.0 ± 1.4	NA	97.9 ± 6.4	
	Superior	90.5 ± 2.1	95.7 ± 6.3	95.9 ± 8.4	95.6 ± 5.5	98.2 ± 5.7	98.9 ± 7.2	98.4 ± 5.8	101.5 ± 0.7	NA	97.1 ± 6.6	
	Inferior	86.0 ± 4.2	95.8 ± 6.2	96.9 ± 7.9	96.9 ± 6.4	100.9 ± 5.7	99.8 ± 6.0	100.6 ± 5.7	105.0 ± 1.4	NA	98.5 ± 6.7	
	Average RNFL, μm	114 (N = 1)	99.5 ± 2.1	110.1 ± 9.1	108.5 ± 7.5	110.1 ± 10.1	109.4 ± 9.3	107.6 ± 9.6	111.7 ± 4.0	NA	109.2 ± 8.7	
	Superior	114 (N = 1)	102.5 ± 2.8	113.6 ± 11.5	111.0 ± 7.3	113.1 ± 10.9	112.7 ± 8.0	107.2 ± 7.6	118.3 ± 7.8	NA	112.1 ± 10.5	
	Inferior	115 (N = 1)	96.0 ± 2.8	107.4 ± 11.5	106.0 ± 7.3	107.0 ± 10.9	106.0 ± 8.0	108.2 ± 7.6	106.0 ± 7.8	NA	106 ± 9.0	
	Nasal	70 (N = 1)	71.5 ± 7.8	90.5 ± 20.1	82.4 ± 11.5	87.2 ± 13.4	81.5 ± 12.6	82.0 ± 11.3	83.0 ± 16.5	NA	84.1 ± 13.8	
	Temporal	79 (N = 1)	70.0 ± 12.7	70.8 ± 14.9	77.2 ± 7.4	74.7 ± 6.5	79.3 ± 8.9	75.8 ± 6.6	79.3 ± 2.5	NA	75.8 ± 9.0	
	Average GCC, μm	90.0 ± 4.2	98.0 ± 3.7	98.4 ± 6.6	97.3 ± 5.8	100.2 ± 5.7	99.0 ± 6.5	99.6 ± 7.9	104.5 ± 2.1	NA	98.7 ± 6.2	
Superior	89.0 ± 6.4	97.8 ± 4.6	98.8 ± 7.1	97.7 ± 5.6	100.3 ± 5.4	99.3 ± 6.6	99.0 ± 8.1	105.0 ± 2.1	NA	98.8 ± 6.3		
Inferior	90.5 ± 6.4	98.0 ± 4.6	98.3 ± 7.1	97.1 ± 5.6	100.0 ± 5.4	98.4 ± 6.6	99.9 ± 8.1	104.5 ± 2.1	NA	98.5 ± 6.2		

GCC = ganglion cell complex; OD = Oculus Dexter (right eye); OS = Oculus Sinister (left eye); NA = not applicable; RNFL = retinal nerve fiber layer.