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**BMI Trajectories in Adulthood: The Intersection of Skin Color, Gender, and Age among African Americans**

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**Appendix A. Alternative Measurements of Skin Color in the CARDIA Study.**

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| **Table 1A.** Growth Curve Models of Skin Color Tertiles, Gender, Sociodemographic Characteristics, Stressors, and Health Behaviors on BMI Trajectories. CARDIA Study, Years 15 to 25. |
|  **Model 1 b Model 2c Model 3d Model 4e Model 5f** |
| **Fixed Effects**  | Women | Men | a m≠w | Women | Men  | m≠w | Women | Men  | m≠w | Women | Men  | m≠w | Women | Men  | m≠w |
|  Intercept | 29.248\*\*\*(.504)\*\*\* | 27.537\*\*\*(.529)\*\*\* | † | 28.985\*\*\*(.742)\*\*\* | 26.700\*\*\*(.684)\*\*\* | † | 29.260\*\*\*(.509)\*\*\* | 27.505\*\*\*(.538)\*\*\* | † | 29.678\*\*\*(.586)\*\*\* | 28.594\*\*\*(.586)\*\*\* |  | 29.649\*\*\*(.809)\*\*\* | 28.138\*\*\*(.754)\*\*\* |  |
|  *Skin color (ref. light; SC ≥ 24.2)* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Medium (SC ≥ 18.4 & ≤ 24.1) | .401\*\*\*(.709)\*\*\* | .886\*\*\*(.669)\*\*\* |  | .408\*\*\*(.708)\*\*\* | .781\*\*\*(.665)\*\*\* |  | .439\*\*\*(.710)\*\*\* | .899\*\*\*(.672)\*\*\* |  | .398\*\*\*(.704)\*\*\* | .888\*\*\*(.661)\*\*\* |  | .419\*\*\*(.703)\*\*\* | .798\*\*\*(.657)\*\*\* |  |
| Dark (SC ≥ 7.1 & ≤ 18.3) | 2.989\*\*\*(.762)\*\*\* | .776\*\*\*(.635)\*\*\* | † | 2.952\*\*\*(.767)\*\*\* | .807\*\*\*(.632)\*\*\* | † | 3.056\*\*\*(.763)\*\*\* | .799\*\*\*(.639)\*\*\* | † | 3.098\*\*\*(.758)\*\*\* | .920\*\*\*(.628)\*\*\* | † | 3.090\*\*\*(.762)\*\*\* | .939\*\*\*(.626)\*\*\* | † |
| Linear slope (age) | .165\*\*\*(.024)\*\*\* | .166\*\*\*(.025)\*\*\* |  | .153\*\*\*(.043)\*\*\* | .157\*\*\*(.039)\*\*\* |  | .164\*\*\*(.025)\*\*\* | .168\*\*\*(.026)\*\*\* |  | .174\*\*\*(.031)\*\*\* | .121\*\*\*(.033)\*\*\* |  | .148\*\*\*(.047)\*\*\* | .098\*\*\*(.045)\*\*\* |  |
| *Skin color (ref. light; SC ≥ 24.2)* |  |  |  |  |  |  |  |  |  |  |  |  | \*\*\* |  |  |
|  Medium (SC ≥ 18.4 & ≤ 24.1) | .014\*\*\*(.035)\*\*\* | –.078\*\*\*(.033)\*\*\* |  | .015\*\*\*(.035)\*\*\* | –.065\*\*\*(.033)\*\*\* |  | .010\*\*\*(.035)\*\*\* | –.079\*\*\*(.033)\*\*\* |  | .009\*\*\*(.034)\*\*\* | –.073\*\*\*(.033)\*\*\* |  | .008\*\*\*(.034)\*\*\* | –.063\*\*\*(.033)\*\*\* |  |
|  Dark (SC ≥ 7.1 & ≤ 18.3) | –.008\*\*\*(.038)\*\*\* | –.020\*\*\*(.031)\*\*\* |  | –.005\*\*\*(.038)\*\*\* | –.013\*\*\*(.032)\*\*\* |  | –.013\*\*\*(.038)\*\*\* | –.021\*\*\*(.032)\*\*\* |  | –.016\*\*\*(.037)\*\*\* | –.023\*\*\*(.031)\*\*\* |  | –.015\*\*\*(.037)\*\*\* | –.018\*\*\*(.031)\*\*\* |  |
| **Random Effects** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Level 1 residual  | 2.007\*\*\*(.066)\*\*\* | 1.369\*\*\*(.052)\*\*\* |  | 2.012\*\*\*(.067)\*\*\*.271\*\*\* | 1.357\*\*\*(.052)\*\*\* |  | 2.005\*\*\*(.066)\*\*\* | 1.368\*\*\*(.052)\*\*\* |  | 1.966\*\*\*(.066)\*\*\* | 1.353\*\*\*(.052)\*\*\* |  | 1.966\*\*\*(.066)\*\*\* | 1.345\*\*\*(.052)\*\*\* |  |
| Level 2 age | .276\*\*\*(.019)\*\*\* | .178\*\*\*(.015)\*\*\* |  | .271\*\*\*(.019)\*\*\* | .177\*\*\*(.015)\*\*\* |  | .275\*\*\*(.019)\*\*\* | .178\*\*\*(.015)\*\*\* |  | .267\*\*\*(.019)\*\*\* | .176\*\*\*(.015)\*\*\* |  | .260\*\*\*(.020)\*\*\* | .172\*\*\*(.015)\*\*\* |  |
| Level 2 intercept | 7.758\*\*\*(.253)\*\*\* | 5.383\*\*\*(.199)\*\*\* |  | 7.705\*\*\*(.255)\*\*\* | 5.320\*\*\*(.198)\*\*\* |  | 7.767\*\*\*(.253)\*\*\* | 5.390\*\*\*(.200)\*\*\* |  | 7.731\*\*\*(.252)\*\*\* | 5.279\*\*\*(.198)\*\*\* |  | 7.687\*\*\*(.255)\*\*\* | 5.212\*\*\*(.197)\*\*\* |  |
| –2 log likelihood | 12514 | 7465 |  | 12502 | 7438 |  | 12509 | 7465 |  | 12425 | 7421 |  | 12404 | 7394 |  |
| *N* | 936 | 657 |  | 936 | 657 |  | 936 | 657 |  | 936 | 657 |  | 936 | 657 |  |
| *Note:* BMI = body mass index, SC = skin color (value from spectrometer). a ‘m≠w’ indicates Chow tests for differences between men and womenb Model 1 estimates effect of skin color on BMI, adjusting for attritionc Model 2 adds sociodemographic characteristics to Model 1d Model 3 adds chronic burdens and racial/color discrimination to Model 1e Model 4 adds health behaviors to Model 1f Model 5 adjusts for all covariates\* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001† indicates a statistically significant (*p* < .05) difference in coefficients for men and women |

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| **Table 2A.** Growth Curve Models of Skin Color Quartiles, Gender, Sociodemographic Characteristics, Stressors, and Health Behaviors on BMI Trajectories. CARDIA Study, Years 15 to 25.  |
|  **Model 1 b Model 2c Model 3d Model 4e Model 5f** |
| **Fixed Effects**  | Women | Men | a m≠w | Women | Men  | m≠w | Women | Men  | m≠w | Women | Men  | m≠w | Women | Men  | m≠w |
|  Intercept | 29.366\*\*\*(.575)\*\*\* | 27.281\*\*\*(.619)\*\*\* | † | 29.147\*\*\*(.788)\*\*\* | 26.495\*\*\*(.761)\*\*\* | † | 29.395\*\*\*(.578)\*\*\* | 27.242\*\*\*(.627)\*\*\* | † | 29.701\*\*\*(.641)\*\*\* | 28.331\*\*\*(.674)\*\*\* |  | 29.726\*\*\*(.845)\*\*\* | 27.977\*\*\*(.823)\*\*\* |  |
|  *Skin color (ref. light; SC ≥ 26.3)* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Light-medium (SC ≥ 21.3 & ≤ 26.2) | –.091\*\*\*(.801)\*\*\* | .843\*\*\*(.798)\*\*\* |  | –.103\*\*\*(.798)\*\*\* | .655\*\*\*(.794)\*\*\* |  | –.082\*\*\*(.802)\*\*\* | .871\*\*\*(.801)\*\*\* |  | .017\*\*\*(.796)\*\*\* | .845\*\*\*(.785)\*\*\* |  | –.004\*\*\*(.793)\*\*\* | .613\*\*\*(.782)\*\*\* |  |
| Dark-medium (SC ≥ 17 & ≤ 21.2) | .472\*\*\*(.831)\*\*\* | 1.264\*\*\*(.771)\*\*\* |  | .401\*\*\*(.833)\*\*\* | 1.137\*\*\*(.766)\*\*\* |  | .510\*\*\*(.833)\*\*\* | 1.284\*\*\*(.774)\*\*\* |  | .662\*\*\*(.826)\*\*\* | 1.370\*\*\*(.760)\*\*\* |  | .597\*\*\*(.828)\*\*\* | 1.239\*\*\*(.756)\*\*\* |  |
| Dark (SC ≤ 16.9) | 3.872\*\*\*(.883)\*\*\* | 1.089\*\*\*(.733)\*\*\* | † | 3.817\*\*\*(.883)\*\*\* | 1.107\*\*\*(.731)\*\*\* | † | 3.914\*\*\*(.884)\*\*\* | 1.120\*\*\*(.736)\*\*\* | † | 4.116\*\*\*(.877)\*\*\* | 1.282\*\*\*(.722)\*\*\* | † | 4.066\*\*\*(.878)\*\*\* | 1.246\*\*\*(.721)\*\*\* | † |
| Linear slope (age) | .169\*\*\*(.028)\*\*\* | .198\*\*\*(.030)\*\*\* |  | .157\*\*\*(.045)\*\*\* | .190\*\*\*(.043)\*\*\* |  | .166\*\*\*(.028)\*\*\* | .201\*\*\*(.030)\*\*\* |  | .185\*\*\*(.034)\*\*\* | .157\*\*\*(.036)\*\*\* |  | .158\*\*\*(.049)\*\*\* | .130\*\*\*(.049)\*\*\* |  |
| *Skin color (ref. light; SC ≥ 26.3)* |  |  |  |  |  |  |  |  |  |  |  |  |  | \*\*\* |  |
|  Light-medium (SC ≥ 21.3 & ≤ 26.2) | .013\*\*\*(.040)\*\*\* | –.069\*\*\*(.039)\*\*\* |  | .013\*\*\*(.040)\*\*\* | –.054\*\*\*(.039)\*\*\* |  | .013\*\*\*(.040)\*\*\* | –.070\*\*\*(.039)\*\*\* |  | .001\*\*\*(.039)\*\*\* | –.071\*\*\*(.038)\*\*\* |  | .002\*\*\*(.039)\*\*\* | –.052\*\*\*(.039)\*\*\* |  |
|  Dark-medium (SC ≥ 17 & ≤ 21.2) | .008\*\*\*(.041)\*\*\* | –.137\*\*\*(.038)\*\*\* | † | .011\*\*\*(.042)\*\*\* | –.123\*\*\*(.039)\*\*\* | † | .003\*\*\*(.041)\*\*\* | –.138\*\*\*(.039)\*\*\* | † | –.011\*\*\*(.041)\*\*\* | –.142\*\*\*(.038)\*\*\* | † | –.010\*\*\*(.041)\*\*\* | –.128\*\*\*(.038)\*\*\* | † |
|  Dark (SC ≤ 16.9) | –.035\*\*\*(.044)\*\*\* | –.052\*\*\*(.036)\*\*\* |  | –.031\*\*\*(.044)\*\*\* | –.044\*\*\*(.036)\*\*\* |  | –.037\*\*\*(.044)\*\*\* | –.053\*\*\*(.036)\*\*\* |  | –.053\*\*\*(.043)\*\*\* | –.062\*\*\*(.036)\*\*\* |  | –.047\*\*\*(.043)\*\*\* | –.052\*\*\*(.036)\*\*\* |  |
| **Random Effects** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Level 1 residual  | 2.009\*\*\*(.066)\*\*\* | 1.370\*\*\*(.052)\*\*\* |  | 2.015\*\*\*(.067)\*\*\* | 1.358\*\*\*(.052)\*\*\* |  | 2.007\*\*\*(.066)\*\*\* | 1.369\*\*\*(.052)\*\*\* |  | 1.968\*\*\*(.066)\*\*\* | 1.355\*\*\*(.052)\*\*\* |  | 1.969\*\*\*(.067)\*\*\* | 1.346\*\*\*(.052)\*\*\* |  |
| Level 2 age | .276\*\*\*(.019)\*\*\* | .174\*\*\*(.016)\*\*\* |  | .270\*\*\*(.020)\*\*\* | .173\*\*\*(.015)\*\*\* |  | .274\*\*\*(.019)\*\*\* | .173\*\*\*(.016)\*\*\* |  | .266\*\*\*(.019)\*\*\* | .171\*\*\*(.015)\*\*\* |  | .259\*\*\*(.020)\*\*\* | .168\*\*\*(.016)\*\*\* |  |
| Level 2 intercept | 7.706\*\*\*(.252)\*\*\* | 5.387\*\*\*(.199)\*\*\* |  | 7.648\*\*\*(.255)\*\*\* | 5.322\*\*\*(.198)\*\*\* |  | 7.716\*\*\*(.253)\*\*\* | 5.394\*\*\*(.200)\*\*\* |  | 7.673\*\*\*(.251)\*\*\* | 5.275\*\*\*(.198)\*\*\* |  | 7.626\*\*\*(.255)\*\*\* | 5.209\*\*\*(.197)\*\*\* |  |
| –2 log likelihood | 12508 | 7458 |  | 12495 | 7431 |  | 12503 | 7457 |  | 12418 | 7412 |  | 12397 | 7386 |  |
| *N* | 935 | 656 |  | 935 | 656 |  | 935 | 656 |  | 935 | 656 |  | 935 | 656 |  |
| *Note:* BMI = body mass index, SC = skin color (value from spectrometer). a ‘m≠w’ indicates Chow tests for differences between men and womenb Model 1 estimates effect of skin color on BMI, adjusting for attritionc Model 2 adds sociodemographic characteristics to Model 1d Model 3 adds chronic burdens and racial/color discrimination to Model 1e Model 4 adds health behaviors to Model 1f Model 5 adjusts for all covariates\* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001† indicates a statistically significant (*p* < .05) difference in coefficients for men and women |

**Appendix B. Alternative Approaches to Imputing Values of Discrimination in Year 20 of the CARDIA Study.**

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| **Table 1B.** Growth Curves Models of Skin Color, Gender, Sociodemographic Characteristics, Stressors, and Health Behaviors on BMI Trajectories—Wave 7 Discrimination Measured as Grand Average of Wave 6 and Wave 8 Values. |
|  **Model 1 Model 2b**  |
| **Fixed Effects**  | Women | Men | a m≠w | Women | Men  | m≠w |
|  Intercept | 29.459\*\*\* | 24.402\*\*\* | † | 29.661\*\*\* | 27.912\*\*\* |  |
|  *Skin color (ref. light)* |  |  |  |  |  |  |
| Medium  | .118\*\*\* | .916\*\*\* |  | .180\*\*\* | .821\*\*\* |  |
| Dark  | 3.877\*\*\* | .966\*\*\* | † | 3.981\*\*\* | 1.118\*\*\* | † |
| *Stressors* |  |  |  |  |  |  |
| Chronic burdens  | –.137\*\*\* | –.059\*\*\* |  | –.138\*\*\* | .024\*\*\* |  |
| Race/color discrimination  | .498\*\*\* | .093\*\*\* |  | .605\*\*\* | .127\*\*\* |  |
| Linear slope (age) | .160\*\*\* | .190\*\*\* |  | .157\*\*\* | .120\*\*\* |  |
| *Skin color (ref. light)* |  |  |  |  |  |  |
|  Medium  | .015\*\*\* | –.096\*\*\* | † | .004\*\*\* | –.084\*\*\* |  |
|  Dark  | –.032\*\*\* | –.042\*\*\* |  | –.040\*\*\* | –.040\*\*\* |  |
| *Stressors* |  |  |  |  |  |  |
|  Chronic burdens  | .006\*\*\* | .009\*\*\* |  | .006\*\*\* | .008\*\*\* |  |
|  Race/color discrimination  | –.055\*\*\* | .004\*\*\* |  | –.062\*\*\* | –.004\*\*\* |  |
| **Random Effects** |  |  |  | \*\*\* |  |  |
| Level 1 residual  | 1.991\*\*\* | 1.350\*\*\* |  | 1.950\*\*\* | 1.331\*\*\* |  |
| Level 2 age | .278\*\*\* | .169\*\*\* |  | .265\*\*\* | .165\*\*\* |  |
| Level 2 intercept | 7.760\*\*\* | 5.354\*\*\* |  | 7.672\*\*\* | 5.187\*\*\* |  |
| –2 log likelihood | 12459 | 7412 |  | 12356 | 7346 |  |
| *N* | 935 | 656 |  | 935 | 656 |  |
| *Note:* BMI = body mass index.a ‘m≠w’ indicates Chow tests for differences between men and womenb Model 2 adjusts for all covariates\* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001† indicates a statistically significant (p< 0.05) difference in coefficients for men and women |

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| **Table 2B.** Growth Curves Models of Skin Color, Gender, Sociodemographic Characteristics, Stressors, and Health Behaviors on BMI Trajectories—Wave 7 Discrimination Measured as Skin Color–Gender Specific Means of Wave 6 Values. **Only**  |
|  **Model 1 Model 2b**  |
| **Fixed Effects**  | Women | Men | a m≠w | Women | Men  | m≠w |
|  Intercept | 29.453\*\*\* | 27.433\*\*\* | † | 29.639\*\*\* | 27.928\*\*\* |  |
|  *Skin color (ref. light)* |  |  |  |  |  |  |
| Medium  | .114\*\*\* | .896\*\*\* |  | .176\*\*\* | .805\*\*\* |  |
| Dark  | 3.871\*\*\* | .944\*\*\* | † | 3.972\*\*\* | 1.100\*\*\* | † |
| *Stressors* |  |  |  |  |  |  |
| Chronic burdens  | –.128\*\*\* | –.050\*\*\* |  | –.126\*\*\* | .034\*\*\* |  |
| Race/color discrimination  | .448\*\*\* | –.002\*\*\* |  | .553\*\*\* | .035\*\*\* |  |
| Linear slope (age) | .160\*\*\* | .188\*\*\* |  | .160\*\*\* | .119\*\*\* |  |
| *Skin color (ref. light)* |  |  |  |  |  |  |
|  Medium  | .016\*\*\* | –.095\*\*\* | † | .004\*\*\* | –.083\*\*\* |  |
|  Dark  | –.031\*\*\* | –.041\*\*\* |  | –.040\*\*\* | –.039\*\*\* |  |
| *Stressors* |  |  |  |  |  |  |
|  Chronic burdens  | .005\*\*\* | .009\*\*\* |  | .004\*\*\* | .007\*\*\* |  |
|  Race/color discrimination  | –.047t\*\*\* | .006\*\*\* |  | –.052\*\*\* | –.001\*\*\* |  |
| **Random Effects** |  |  |  |  |  |  |
| Level 1 residual  | 1.993\*\*\* | 1.350\*\*\* |  | 1.953\*\*\* | 1.331\*\*\* |  |
| Level 2 age | .277\*\*\* | .169\*\*\* |  | .264\*\*\* | .165\*\*\* |  |
| Level 2 intercept | 7.758\*\*\* | 5.350\*\*\* |  | 7.671\*\*\* | 5.182\*\*\* |  |
| –2 log likelihood | 12460 | 7412 |  | 12356 | 7346 |  |
| *N* | 935 | 656 |  | 935 | 656 |  |
| *Note:* BMI = body mass index.a ‘m≠w’ indicates Chow tests for differences between men and womenb Model 2 adjusts for all covariates\* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001† indicates a statistically significant (p< 0.05) difference in coefficients for men and women |

**Appendix C. Calculation of Physical Activity Scores.**

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|  | **Intensity Score****(mets/minute)** | **Cut points for Frequent Participation (hours/week)** |
| **High Intensity Activities**  |  |  |
|  Jogging or running  | 8 | 2 |
|  Vigorous racket sports  | 8 | 3 |
|  Bicycling  | 6 | 2 |
|  Swimming  | 6 | 2 |
|  Vigorous exercise class or vigorous dancing  | 6 | 3 |
|  Vigorous job activities (e.g., lifting, carrying, or digging)  | 6 | 5 |
|  Home or leisure activities (e.g., snow shoveling, moving heavy objects, or weight lifting) | 5 | 3 |
|  Strenuous sports (e.g. basketball, football, skating, or skiing)  | 8 | 3 |
| **Moderate/Low Intensity Activities**  |  |  |
|  Non-strenuous sports (e.g., softball, shooting baskets, volleyball, ping pong, or leisurely jogging, swimming, or biking)  | 4 | 3 |
|  Taking walks or hiking, or walking to work | 4 | 4 |
|  Bowl or golf  | 3 | 3 |
|  Home exercise or calisthenics  | 4 | 3 |
|  Home maintenance or gardening (e.g., carpentry, painting, raking, or mowing) | 4 | 5 |

*Note:* Intensity values based on information from Jacobs et al. (1989).

**Example:**

Respondent X reported jogging or running (a high intensity activity) for 1 hour/week for 5 months and 4 hours/week for 7 months within the past year. The respondent also reported bowling (a moderate/low intensity activity) for 2 hours/week for 9 months and 5 hours/week for 3 months. For running/jogging and bowling, the intensity of the activity (as measured by the number of kilocalories expended in one minute of activity) is given a value of 8 and 3, respectively, and the cut point for frequent participation in these activities is 2 hours/week and 3 hours/week, respectively. Thus, respondent X jogged/ran *infrequently* for 5 months and *frequently* for 7 months, and also bowled *infrequently* for 9 months and *frequently* for 3 months. To calculate the exercise score for respondent X, the following equations are applied:

8\*[5 + (3\*7)] *{score for jogging/running}* + 3\*[9 + (3\*3)] *{score for bowling}* = 208 + 54 = 262.