**Supplemental Table 1.** Summary Statistics for the Target Population by Hispanic/Latino Background

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Mexican  (n=2961) | | Cuban  (n=1135) | | Puerto Rican (n=1196) | | | Dominican  (n=839) | | Central American  (n=956) | | South American  (n=510) | Other  (n=354) | p-value for between group differences |
| Descriptive Characteristics | | | | | | | | | | | | | | |
| Age in years, mean | 54.8  (54.3--55.3) | | | 57.4  (56.6--58.1) | 56.6  (55.8--57.5) | | 54.6  (53.9--55.4) | | 55.4  (54.6--56.3) | | 56.0  (54.9--57.1) | | 54.5  (52.6--56.5) | <0.0001 |
| Female (%) | 56.5  (53.6--59.5) | | | 48.9  (45.4--52.4) | 53.1  (49.3--56.9) | | 58.5  (53.9--63.0) | | 60.2  (55.6--64.8) | | 60.4  (55.3--65.4) | | 53.3  (38.8--67.8) | 0.0002 |
| Education (%) | | | | | | | | | | | | | | |
| < High School | | 47.9  (43.9--51.9) | | 25.8  (22.5--29.1) | 41.1  (36.4--45.8) | | 44.3  (39.2--49.4) | | 41.0  (36.2--45.9) | | 25.5  (20.1--30.8) | | 21.9  (13.0--30.8) | <0.0001 |
| High School graduate | | 18.0  (15.8--20.3) | | 26.3  (22.8--29.8) | 23.3  (19.5--27.1) | | 19.0  (15.1--23.0) | | 21.3  (17.5--25.1) | | 25.2  (20.1--30.4) | | 26.6  (7.1--46.1) | 0.0005 |
| Some college | | 34.1  (30.3--37.8) | | 47.9  (44.8--51.0) | 35.6  (30.9--40.4) | | 36.7  (32.1--41.3) | | 37.6  (32.8--42.4) | | 49.3  (43.5--55.1) | | 51.5  (34.6--68.3) | <0.0001 |
| % Spanish language preference | 88.1  (85.7--90.4) | | | 97.7  (96.7--98.7) | 54.7  (49.3--60.0) | | 95.7  (93.7--97.6) | | 96.4  (94.2--98.6) | | 95.2  (92.8--97.5) | | 79.1  (69.3--88.8) | <0.0001 |
| % No Health Insurance | 50.2  (46.8--53.7) | | | 57.9  (53.4--62.4) | 20.2  (15.7--24.7) | | 27.1  (22.4--31.9) | | 61.4  (55.3--67.6) | | 56.8  (50.6--62.9) | | 44.5  (29.0--59.9) | <0.0001 |
| % Diabetic | 27.5  (24.8--30.3) | | | 23.4  (20.1--26.8) | 29.2  (25.2--33.3) | | 23.8  (19.6--28.1) | | 28.3  (23.9--32.6) | | 18.9  (14.6--23.2) | | 36.6  (20.2--53.1) | 0.0011 |
| % Hypertensive | 36.1  (32.3--39.9) | | | 53.4  (49.9--56.8) | 52.2  (47.2--57.2) | | 50.0  (45.2--54.9) | | 40.3  (36.0--44.7) | | 38.7  (32.8--44.7) | | 47.9  (32.4--63.3) | <0.0001 |
| HbA1c | 6.2  (6.1--6.3) | | | 6.0  (5.9--6.0) | 6.2  (6.1--6.3) | | 6.0  (5.9--6.1) | | 6.2  (6.1--6.4) | | 5.9  (5.8--6.0) | | 6.1  (5.7--6.5) | <0.0001 |
| % on Anti-diabetes medication | 14.9 (12.9--16.9) | | | 11.9  (9.2--14.5) | 19.7  (16.1--23.2) | | 14.0  (10.6--17.5) | | 15.0  (11.7--18.4) | | 8.2  (5.6--10.9) | | 25.8  (7.2--44.3) | <0.0001 |
| Systolic Blood Pressure | 124.6  (123.6--125.6) | | | 131.5  (130.1--132.9) | 129.6 (128.0--131.3) | | 131.2 (129.5--132.8) | | 129.5 (127.9--131.0) | | 127.0 (124.9--129.1) | | 127.5 (122.7--132.2) | <0.0001 |
| Diastolic Blood Pressure | 72.5  (71.8--73.2) | | | 77.0  (76.2--77.8) | | 76.1  (75.3--76.8) | 77.7  (76.7--78.6) | | 75.3  (74.4--76.2) | | 73.9  (72.7--75.1) | | 76.9  (74.4--79.5) | <0.0001 |
| % on Anti-hypertensive medication | 20.9  (18.2--23.5) | | | 28.3  (24.7--32.0) | | 31.2  (26.2--36.1) | 27.7  (23.3--32.1) | | 20.5  (17.2--23.9) | | 18.0  (14.1--21.9) | | 33.7  (15.5--51.8) | <0.0001 |
| Physical Activity Level | | | | | | | | | | | | | | |
| Inactive | 23.1  (20.1--26.1) | | | 35.9  (32.9--38.8) | | 23.4  (19.2--27.7) | 22.3  (17.8--26.8) | | 21.3  (17.5--25.0) | | 22.5  (17.9--27.2) | | 20.8  (10.8--30.8) | <0.0001 |
| Low | 15.0  (12.3--17.8) | | | 12.2  (10.0--14.4) | | 15.1  (12.0--18.1) | 16.6  (13.2--19.9) | | 15.6  (11.0--20.2) | | 15.7  (11.7--19.7) | | 10.7  (5.1--16.3) | 0.3060 |
| Medium | 10.1  (8.5--11.7) | | | 10.2  (8.1--12.3) | | 10.7  (8.3--13.1) | 14.1  (10.4--17.9) | | 12.5  (9.7--15.2) | | 17.7  (13.9--21.5) | | 4.6  (1.7--7.5) | <0.0001 |
| High | 51.7  (48.7--54.8) | | | 41.6  (38.2--44.9) | | 50.5  (45.5--55.4) | 47.0  (41.5--52.5) | | 50.4  (45.9--54.8) | | 43.9  (38.3--49.4) | | 62.6  (51.5--73.7) | <0.0001 |
| Not reported | 0.0  (0.0--0.1) | | | 0.1  (0.0--0.4) | | 0.4  (0.0--0.7) | -- | | 0.3  (0.0--0.7) | | 0.2  (0.0--0.6) | | 1.3  (0.0--3.1) | 0.0636 |
| Diet Quality | 56.3  (55.9--56.7) | | | 45.8  (45.5--46.2) | | 44.8  (44.3--45.2) | 53.1  (52.6--53.7) | | 51.0  (50.5--51.5) | | 49.1  (48.4--49.8) | | 50.7  (47.5--53.8) | <0.0001 |
| Body Mass Index | 29.6  (29.3--29.9) | | | 29.6  (29.2--29.9) | | 31.0  (30.3--31.8) | 29.4  (28.9--29.8) | | 29.8  (29.3--30.3) | | 29.3  (28.7--29.8) | | 30.3  (29.2--31.4) | 0.0011 |
| Annual Family Income | | | | | | | | | | | | | | |
| <$20,000 | 37.9  (33.8--42.1) | | | 47.6  (43.4--51.9) | | 42.3  (37.0--47.6) | 50.1  (45.1--55.1) | | 48.4  (43.6--53.1) | | 44.8  (39.2--50.3) | | 32.8  (20.4--45.1) | 0.0002 |
| $20,000-50,000 | 38.9  (36.0--41.8) | | | 33.0  (29.2--36.8) | | 36.0  (31.3--40.7) | 36.7  (32.1--41.3) | | 35.8  (31.0--40.6) | | 38.4  (33.0--43.7) | | 45.0  (28.7--61.2) | 0.2825 |
| >50,000 | 17.5  (13.9--21.1) | | | 5.9  (3.8--8.0) | | 15.6  (12.1--19.1) | 5.7  (2.9--8.5) | | 5.0  (2.9--7.2) | | 9.6  (6.0--13.2) | | 15.9  (6.8--25.1) | <0.0001 |
| Not reported | 5.7  (4.5--6.9) | | | 13.5  (11.1--15.9) | | 6.1  (4.2--8.0) | 7.5  (5.0--9.9) | | 10.8  (8.1--13.4) | | 7.2  (4.3--10.2) | | 6.3  (1.9--10.7) | <0.0001 |
| % Six Item Screener <4 | 11.8  (10.0--13.7) | | | 10.3  (8.4--12.2) | | 19.5  (16.1--22.9) | 22.2  (18.3--26.2) | | 11.6  (9.1--14.1) | | 12.1  (8.6--15.6) | | 24.2  (4.5--44.0) | <0.0001 |
|  |  | | |  | |  |  | |  | |  | |  |  |
| Lipid Level Predictor (mg/dL) | | | | | | | | | | | | | | |
| Total cholesterol levels (mg/dL) | 209.5 (206.5--212.5) | | | 215.9 (213.1--218.8) | | 200.4 (197.2--203.7) | 206.3 (202.1--210.4) | | 214.6 (210.4--218.9) | | 215.8 (211.3--220.4) | | 202.8 (188.8--216.7) | <0.0001 |
| HDL-C levels (mg/dL) | 49.0  (48.2--49.8) | | | 49.1  (48.2--49.9) | | 49.4  (47.9--50.8) | 50.2  (49.1--51.3) | | 49.4  (48.3--50.6) | | 50.4  (48.6--52.2) | | 48.9  (46.1--51.7) | 0.5908 |
| LDL-C levels (mg/dL) | 129.7 (127.0--132.4) | | | 136.7 (134.3--139.0) | | 123.4 (120.7--126.2) | 130.5 (126.7--134.2) | | 133.4 (129.2--137.6) | | 135.2 (131.5--138.9) | | 127.9 (114.2--141.6) | <0.0001 |
| Triglyceride levels (mg/dL) | 157.3 (150.8--163.8) | | | 154.2 (147.9--160.4) | | 147.1 (128.1--166.2) | 127.3 (119.3--135.3) | | 163.2 (155.5--171.0) | | 153.8 (144.0--163.5) | | 133.4 (120.6--146.2) | <0.0001 |
| % on Lipid-lowering medication | 15.6  (13.3--18.0) | | | 14.4  (11.3--17.5) | | 23.5  (19.9--27.1) | 19.6  (16.2--23.0) | | 13.9  (10.7--17.1) | | 14.8  (11.1--18.5) | | 26.0  (7.7--44.3) | 0.0010 |
| Cognitive Outcomes | | | | | | | | | | | | | | |
| Verbal Fluency | 19.8  (19.2--20.4) | | | 17.9  (17.4--18.3) | | 18.3  (17.5--19.1) | 16.1  (15.5--16.8) | | 18.1  (17.4--18.7) | | 20.6  (19.7--21.4) | | 19.8  (18.6--21.0) | <0.0001 |
| Digit Symbol Substitution Test | 36.7  (35.6--37.8) | | | 33.9  (32.9--34.8) | | 36.3  (35.1--37.4) | 27.5  (26.2--28.8) | | 29.2  (28.1--30.2) | | 35.7  (34.2--37.3) | | 36.4  (31.7--41.0) | <0.0001 |
| B-SEVLT total learning | 23.6  (23.2--24.1) | | | 22.1  (21.7--22.4) | | 21.5  (21.0--21.9) | 23.0  (22.5--23.4) | | 23.1  (22.6--23.6) | | 24.1  (23.4--24.7) | | 24.0  (22.2--25.7) | <0.0001 |
| B-SEVLT recall post-interference | 8.9  (8.7--9.0) | | | 7.9  (7.8--8.1) | | 7.3  (7.0--7.6) | 7.8  (7.5--8.2) | | 8.6  (8.4--8.9) | | 8.9  (8.6--9.2) | | 8.7  (8.0--9.4) | <0.0001 |

Note:All values represent the mean percent and (95% confidence intervals) unless otherwise noted, and account for the HCHS/SOL sample design (including sampling weights, cluster sampling, and stratification) to allow appropriate generalization to the target population, cluster sampling, and stratification (L. M. Lavange et al., 2010); B-SEVLT=Brief Spanish English Verbal Learning test

**Supplemental Table 2.** The association of LDL-C, log2(LDL-C), and HDL-C, log2(HDL-C), with cognitive test performance

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | Cognitive Test Performance | | | |
|  |  | Learning  Beta+SE  (95% CI) | Memory  Beta+SE  (95% CI) | Fluency  Beta+SE  (95% CI) | DSST  Beta+SE  (95% CI) |
|  | | | | | |
| Model 2 | log2(LDL-C) | 0.34+0.19+ (-0.02 -- 0.72) | 0.09+0.09 (-0.09 -- 0.27) | 0.53+0.26\* (0.01 -- 1.05) | 0.56+0.42 (-0.27 -- 1.40) |
|  | log2(HDL-C) | 0.29+0.24 (-0.20 -- 0.78) | 0.05+0.12 (-0.19 -- 0.29) | 0.73+0.39**+** (-0.03 -- 1.50) | 0.48+0.53 (-0.27 -- 1.40) |

Note: log2(lipid level) = either low-density (LDL-C) or high-density (HDL-C) lipoprotein cholesterol levels log 2 transformed to approximate normality and improve model fit; thus, beta weights reflect the effect of doubling each lipid level (separately) on cognition.

Model 2: Adjusted for age, sex, education, Hispanic/Latino background, language of test administration, and health insurance status, physical activity, diet, and BMI, as well as diabetes and hypertension

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05, **+**p<0.10

**Supplemental Table 3.** Effect modification of background on the association between total cholesterol, log2(TC), and Digit Symbol Substitution (DSS)

|  |  |
| --- | --- |
|  | DSS  Beta+SE  (95% CI) |
| Mexican | 1.29+1.15 (-0.96 -- 3.55) |
| Cuban | -0.87+1.29 (-3.41, 1.66) |
| Puerto Rican | 2.95+1.16\*\* (0.66 -- 5.25) |
| Dominican | -0.07+1.31 (-2.66 -- 2.51) |
| Central American | -3.11+1.39 (-5.85 -- 0.37)\* |
| South American | 1.24+1.81 (-2.32 -- 4.81) |

Note: log2(TC) = total cholesterol levels log 2 transformed to approximate normality and improve model fit; thus, beta weights reflect the effect of doubling total cholesterol levels on cognition.

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05, **+**p<0.10