Supplementary Material

Initial Evidence of Variation by Ethnicity in the Relationship Between Vitamin C Status and Mental States in Young Adults

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CONTENTS

Supplementary Table 1. *Number of Participants with Deficient (<11 µmol/L), Marginal (11-23 µmol/L), Inadequate (23-50 µmol/L), Adequate (50-70 µmol/L), or Saturated (70+ µmol/L) Vitamin C Levels for the Total Sample and Each Ethnicity and Gender Subgroup*

	Overall	Vitamin C	Deficient	Marginal	Inadequate	Adequate	Saturated
	n	Mean (SD)	n (%)	n (%)	n (%)	n (%)	n (%)
Total Sample	419	54.90 (20.19)	4 (1.0%)	19 (4.5%)	140 (33.4%)	168 (40.1%)	88 (21.0%)
European	206	59.35 (19.35)	0 (0.0%)	6 (2.9%)	63 (30.6%)	80 (38.8%)	57 (27.7%)
East Asian	68	51.23 (19.16)	1 (1.5%)	3 (4.4%)	26 (38.2%)	29 (42.6%)	9 (13.2%)
Southeast/Other Asian	61	41.83 (18.62)	3 (4.9%)	5 (8.2%)	30 (49.2%)	19 (31.1%)	4 (6.6%)
Maori and Pasifika	38	60.96 (16.80)	0 (0.0%)	1 (2.6%)	7 (18.4%)	20 (52.6%)	10 (26.3%)
Other	46	52.76 (20.77)	0 (0.0%)	4 (8.7%)	14 (30.4%)	20 (43.5%)	8 (17.4%)
Gender							
Male	135	52.55 (18.46)	1 (0.7%)	8 (5.9%)	46 (34.1%)	60 (44.4%)	20 (14.8%)
Female	284	56.02 (20.90)	3 (1.1%)	11 (3.9%)	94 (33.1%)	108 (38.0%)	68 (23.9%)

Note. Percentage of participants displayed is out of the total number of participants per subgroup. SD = Standard Deviation

Supplementary Table 2. *Number of Participants and Mean Vitamin C levels (μmol/L) for the Total Sample and Each Ethnicity by Gender Subgroup.*

		Vitamin C in μmol/L			
	Overall	Male		Female	
	n	*n*	Mean (SD)	*n*	Mean (SD)
Total Sample	419	135	52.55 (18.46)	284	56.02 (20.89)
European	206	80	55.26 (18.57)	126	61.94 (19.72)
East Asian	68	17	46.83 (19.40)	51	52.69 (19.05)
Southeast/Other Asian	61	9	35.85 (12.29)	52	42.86 (19.41)
Maori and Pasifika	38	10	57.35 (8.50)	28	62.25 (18.87)
Other	46	19	51.63 (19.20)	27	53.55 (22.14)

Note. SD = Standard Deviation

Supplementary Table 3. *Regression Models Predicting Total Mood Disturbance, Vitality and Perceived Stress from the Demographic Covariates and Vitamin C Levels, using Europeans as the Reference Group, with Moderators*

	Total Mood Disturbance	**Vitality**	**Perceived stress**
	b (SE)	**b (SE)**	**b (SE)**
Model 1- Unadjusted			
Constant	9.876 (0.705)***	60.935 (0.738)***	5.305 (0.101)***
Vitamin C	0.002 (0.035)	0.013 (0.037)	-0.006 (0.005)
Overall R^2	0.000	0.000	0.004
Model 2 - Adjusted			
Constant	7.742 (1.341)***	62.258 (1.41)***	4.832 (0.185)***
Vitamin C	0.008 (0.036)	0.048 (0.038)	-0.003 (0.005)
SES	-2.585 (0.580)***	1.981 (0.610)**	-0.485 (0.080)***
Gender	-0.705 (1.53)	-1.089 (1.608)	-0.108 (0.211)
Age	-0.210 (0.221)	0.157 (0.232)	-0.026 (0.03)
Ethnicity D1 - East Asian	5.612 (2.052)**	-1.256 (2.157)	1.613 (0.284)***
Ethnicity D2 - Southeast Asian	3.183 (2.267)	2.318 (2.384)	0.857 (0.313)**
Ethnicity D3 - Māori/Pasifika	4.666 (2.487)†	-7.959 (2.615)**	0.720 (0.344)*
Ethnicity D4 - Other	7.420 (2.375)**	0.030 (2.497)	0.861 (0.328)**
R^2 Change	0.071***	0.062***	0.131***
F Change *(df)*	4.491 (7,410)	3.887 (7,410)	8.828 (7,410)
Model 3- Adjusted + Moderators			
Constant	7.756 (1.358)***	62.288 (1.411)***	4.787 (0.186)***
Vitamin C	0.008 (0.073)	0.121 (0.076)	-0.004 (0.010)
SES	-2.597 (0.584)***	1.941 (0.606)**	-0.482 (0.080)***
Gender	-0.742 (1.536)	-1.185 (1.596)	-0.109 (0.211)
Age	-0.225 (0.222)	0.180 (0.231)	-0.030 (0.031)
Ethnicity D1 - East Asian	5.715 (2.074)**	-1.277 (2.155)	1.632 (0.285)***
Ethnicity D2 - Southeast Asian	5.062 (2.538)*	-1.426 (2.637)	1.130 (0.348)**
Ethnicity D3 - Māori/Pasifika	5.497 (2.638)*	-9.511 (2.741)**	0.975 (0.362)**
Ethnicity D4 - Other	7.242 (2.384)**	0.301 (2.477)	0.863 (0.327)**
Vitamin C x Gender	-0.001 (0.079)	-0.067 (0.082)	0.012 (0.011)
Vitamin C x Ethnicity D1	0.022 (0.103)	-0.063 (0.107)	-0.011 (0.014)
Vitamin C x Ethnicity D2	0.141 (0.111)	-0.309 (0.116)**	0.009 (0.015)
Vitamin C x Ethnicity D3	-0.138 (0.148)	0.252 (0.154)	-0.044 (0.020)*
Vitamin C x Ethnicity D4	-0.100 (0.113)	0.080 (0.118)	-0.027 (0.016)†
R^2 Change	0.009	0.032*	0.020†
F Change *(df)*	0.826 (5,405)	2.821 (5,405)	1.879 (5,405)
Overall R^2	0.081	0.094	0.154

Note. b (SE) = unstandardized coefficient (Standard Error), SES = socioeconomic status, D = dummy code, † $p < .10$ * $p < .05$; ** $p < .01$; *** $p < .001$.

Supplementary Table 4. *Regression Models Predicting the Profile of Mood States (POMS) Subscales (tension, depression, anger, fatigue, confusion, and vigor) from the Demographic Covariates and Vitamin C Levels, using Europeans as the Reference Group, with Moderators*

	Tension b (SE)	Depression b (SE)	Anger b (SE)	Fatigue b (SE)	Confusion b (SE)	Vigor b (SE)
Model 1 - Unadjusted						
Constant	4.792 (0.170)***	2.286 (0.128)***	2.644 (0.131)***	6.399 (0.186)***	4.721 (0.156)***	10.967 (0.178)***
Vitamin C	0.004 (0.008)	-0.006 (0.006)	-0.012 (0.007)†	0.013 (0.009)	0.001 (0.008)	-0.001 (0.009)
Overall R2	0.001	0.002	0.008†	0.005	0.000	0.000
Model 2 - Adjusted						
Constant	4.386 (0.327)***	1.829 (0.240)***	2.385 (0.252)***	6.241 (0.360)***	4.539 (0.296)***	11.639 (0.340)***
Vitamin C	0.009 (0.009)	0.000 (0.006)	-0.007 (0.007)	0.009 (0.010)	0.003 (0.008)	0.007 (0.009)
SES	-0.527 (0.141)***	-0.488 (0.104)***	-0.266 (0.109)*	-0.447 (0.156)**	-0.601 (0.128)***	0.255 (0.147)†
Gender	-0.354 (0.372)	-0.247 (0.274)	-0.401 (0.288)	0.032 (0.411)	-0.464 (0.338)	-0.729 (0.388)†
Age	-0.071 (0.054)	-0.001 (0.040)	0.015 (0.042)	-0.032 (0.059)	-0.083 (0.049)†	0.038 (0.056)
Ethnicity D1 - East Asian	1.146 (0.500)*	1.284 (0.368)**	0.961 (0.386)*	-0.137 (0.551)	0.899 (0.453)*	-1.458 (0.520)**
Ethnicity D2 - Southeast Asian	1.459 (0.552)**	1.112 (0.407)**	0.914 (0.427)*	-0.007 (0.609)	0.913 (0.500)†	1.208 (0.574)*
Ethnicity D3 - Māori/Pasifika	0.570 (0.606)	0.389 (0.446)	1.141 (0.468)*	1.248 (0.668)†	0.441 (0.549)	-0.876 (0.630)
Ethnicity D4 - Other	1.786 (0.578)**	1.996 (0.426)***	1.261 (0.447)**	0.420 (0.638)	1.613 (0.524)**	-0.343 (0.602)
R2 Change	0.057**	0.098***	0.048**	0.034*	0.072***	0.062***
F Change (df)	3.554 (7,410)	6.396 (7,410)	2.965 (7,410)	2.097 (7,410)	4.537 (7,410)	3.861 (7,410)
Model 3 - Adjusted + Moderators						
Constant	4.370 (0.331)***	1.782 (0.244)***	2.386 (0.257)***	6.252 (0.365)***	4.573 (0.299)***	11.607 (0.343)***
Vitamin C	0.026 (0.018)	-0.002 (0.013)	-0.012 (0.014)	-0.008 (0.020)	0.011 (0.016)	0.006 (0.018)
SES	-0.535 (0.142)***	-0.483 (0.105)***	-0.263 (0.110)*	-0.438 (0.157)**	-0.612 (0.128)***	0.265 (0.147)†
Gender	-0.372 (0.374)	-0.247 (0.276)	-0.398 (0.290)	0.061 (0.412)	-0.486 (0.338)	-0.699 (0.388)†
Age	-0.068 (0.054)	-0.006 (0.040)	0.012 (0.042)	-0.034 (0.060)	-0.084 (0.049)†	0.046 (0.056)
Ethnicity D1 - East Asian	1.108 (0.505)*	1.294 (0.373)**	0.999 (0.392)*	-0.184 (0.557)	0.914 (0.456)*	-1.583 (0.524)**
Ethnicity D2 - Southeast Asian	1.742 (0.618)**	1.161 (0.456)*	0.917 (0.480)†	0.616 (0.681)	1.474 (0.558)**	0.847 (0.641)
Ethnicity D3 - Māori/Pasifika	0.901 (0.642)	0.472 (0.474)	1.129 (0.499)*	1.376 (0.708)†	0.639 (0.580)	-0.979 (0.666)
Ethnicity D4 - Other	1.808 (0.580)**	2.013 (0.429)***	1.243 (0.451)**	0.378 (0.640)	1.551 (0.524)**	-0.249 (0.602)
Vitamin C x Gender	-0.010 (0.019)	0.013 (0.014)	0.005 (0.015)	0.011 (0.021)	-0.013 (0.017)	0.006 (0.020)
Vitamin C x Ethnicity D1	-0.031 (0.025)	-0.013 (0.019)	0.014 (0.019)	0.009 (0.028)	0.006 (0.023)	-0.036 (0.026)
Vitamin C x Ethnicity D2	0.011 (0.027)	-0.008 (0.020)	0.002 (0.021)	0.059 (0.030)†	0.047 (0.024)†	-0.031 (0.028)
Vitamin C x Ethnicity D3	-0.057 (0.036)	-0.016 (0.027)	0.002 (0.028)	-0.019 (0.040)	-0.032 (0.033)	0.016 (0.037)
Vitamin C x Ethnicity D4	-0.013 (0.028)	-0.020 (0.020)	-0.006 (0.021)	0.006 (0.030)	-0.024 (0.025)	0.044 (0.029)
R2 Change	0.011	0.005	0.002	0.012	0.016	0.016
F Change (df)	0.953 (5,405)	0.412 (5,405)	0.175 (5,405)	1.031 (5,405)	1.461 (5,405)	1.427 (5,405)
Overall R2	0.069	0.105	0.057	0.052	0.088	0.078

Note. b (SE) = unstandardized coefficient (Standard Error), SES = socioeconomic status, D = dummy code, † $p < .10$ * $p < .05$; ** $p < .01$; *** $p < .001$.

Supplementary Table 5. *Regression Models Predicting Total Mood Disturbance, Vitality and Perceived Stress from the Demographic Covariates and Vitamin C Levels, using Māori/Pasifika as the Reference Group, with Moderators*

	Total Mood Disturbance b (SE)	Vitality b (SE)	Perceived stress b (SE)
Model 1 - Adjusted			
Constant	12.408 (2.535)***	54.299 (2.665)***	5.553 (0.350)***
Vitamin C	0.008 (0.036)	0.048 (0.038)	-0.003 (0.005)
SES	-2.585 (0.580)***	1.981 (0.610)**	-0.485 (0.80)***
Gender	-0.705 (1.530)	-1.089 (1.608)	-0.108 (0.211)
Age	-0.210 (0.221)	0.157 (0.232)	-0.026 (0.030)
Ethnicity D1 - European	-4.666 (2.487)†	7.959 (2.615)**	-0.720 (0.344)*
Ethnicity D2 - East Asian	0.946 (2.919)	6.703 (3.069)*	0.893 (0.403)*
Ethnicity D3 - Southeast Asian	-1.483 (3.074)	10.278 (3.232)**	0.137 (0.425)
Ethnicity D4 - Other	2.754 (3.173)	7.990 (3.336)*	0.141 (0.438)
R^2 Change	0.071***	0.063**	0.134***
F Change (*df*)	3.93 (8,410)	3.419 (8,410)	7.938 (8,410)
Model 2 - Adjusted + Moderators			
Constant	13.253 (2.664)***	52.777 (2.767)***	5.762 (0.366)***
Vitamin C	-0.130 (0.157)	0.373 (0.163)*	-0.048 (0.022)*
SES	-2.597 (0.584)***	1.941 (0.606)**	-0.482 (0.080)***
Gender	-0.742 (1.536)	-1.185 (1.596)	-0.109 (0.211)
Age	-0.225 (0.222)	0.180 (0.231)	-0.030 (0.031)
Ethnicity D1 - European	-5.497 (2.638)*	9.511 (2.741)**	-0.975 (0.362)**
Ethnicity D2 - East Asian	0.218 (3.044)	8.233 (3.162)*	0.657 (0.418)
Ethnicity D3 - Southeast Asian	-0.435 (3.374)	8.084 (3.505)*	0.155 (0.463)
Ethnicity D4 - Other	1.744 (3.280)	9.812 (3.408)**	-0.112 (0.450)
Vitamin C x Gender	-0.001 (0.079)	-0.067 (0.082)	0.012 (0.011)
Vitamin C x Ethnicity D1	0.138 (0.148)	-0.252 (0.154)	0.044 (0.020)*
Vitamin C x Ethnicity D2	0.160 (0.165)	-0.315 (0.171)†	0.033 (0.023)
Vitamin C x Ethnicity D3	0.279 (0.169)†	-0.560 (0.175)**	0.053 (0.023)*
Vitamin C x Ethnicity D4	0.038 (0.173)	-0.171 (0.179)	0.017 (0.024)
R^2 Change	0.009	0.032*	0.020†
F Change (*df*)	0.826 (5,405)	2.821 (5,405)	1.879 (5,405)
Overall R^2	0.081	0.094	0.154

Note. b (SE) = unstandardized coefficient (Standard Error), SES = socioeconomic status, D = dummy code, † $p < .10$ * $p < .05$; ** $p < .01$; *** $p < .001$.

Supplementary Table 6. *Regression Models Predicting the Profile of Mood States (POMS) Subscales (tension, depression, anger, fatigue, confusion, and vigor) from the Demographic Covariates and Vitamin C Levels, using Māori/Pasifika as the Reference Group, with Moderators*

	Tension b (SE)	Depression b (SE)	Anger b (SE)	Fatigue b (SE)	Confusion b (SE)	Vigor b (SE)
Model 1 - Adjusted						
Constant	4.956 (0.617)***	2.218 (0.455)***	3.526 (0.477)***	7.489 (0.681)***	4.98 (0.559)***	10.763 (0.642)***
Vitamin C	0.009 (0.009)	0.000 (0.006)	-0.007 (0.007)	0.009 (0.010)	0.003 (0.008)	0.007 (0.009)
SES	-0.527 (0.141)***	-0.488 (0.104)***	-0.266 (0.109)*	-0.447 (0.156)**	-0.601 (0.128)***	0.255 (0.147)†
Gender	-0.354 (0.372)	-0.247 (0.274)	-0.401 (0.288)	0.032 (0.411)	-0.464 (0.338)	-0.729 (0.388)†
Age	-0.071 (0.054)	-0.001 (0.040)	0.015 (0.042)	-0.032 (0.059)	-0.083 (0.049)†	0.038 (0.056)
Ethnicity D1 - European	-0.570 (0.606)	-0.389 (0.446)	-1.141 (0.468)*	-1.248 (0.668)†	-0.441 (0.549)	0.876 (0.630)
Ethnicity D2 - East Asian	0.576 (0.711)	0.895 (0.524)†	-0.180 (0.550)	-1.385 (0.785)†	0.458 (0.644)	-0.582 (0.740)
Ethnicity D3 - Southeast Asian	0.889 (0.749)	0.722 (0.551)	-0.227 (0.579)	-1.255 (0.826)	0.471 (0.678)	2.084 (0.779)**
Ethnicity D4 - Other	1.216 (0.773)	1.607 (0.569)**	0.120 (0.597)	-0.828 (0.853)	1.172 (0.700)†	0.533 (0.804)
R2 Change	0.058**	0.100***	0.055**	0.039*	0.072***	0.062**
F Change (df)	3.138 (8,410)	5.702 (8,410)	3.004 (8,410)	2.105 (8,410)	3.973 (8,410)	3.379 (8,410)
Model 2 – Adjusted + Moderators						
Constant	5.271 (0.648)***	2.254 (0.479)***	3.515 (0.503)***	7.628 (0.715)***	5.212 (0.586)***	10.628 (0.673)***
Vitamin C	-0.031 (0.038)	-0.018 (0.028)	-0.010 (0.030)	-0.027 (0.042)	-0.021 (0.034)	0.022 (0.040)
SES	-0.535 (0.142)***	-0.483 (0.105)***	-0.263 (0.110)*	-0.438 (0.157)**	-0.612 (0.128)***	0.265 (0.147)†
Gender	-0.372 (0.374)	-0.247 (0.276)	-0.398 (0.290)	0.061 (0.412)	-0.486 (0.338)	-0.699 (0.388)†
Age	-0.068 (0.054)	-0.006 (0.040)	0.012 (0.042)	-0.034 (0.060)	-0.084 (0.049)†	0.046 (0.056)
Ethnicity D1 - European	-0.901 (0.642)	-0.472 (0.474)	-1.129 (0.499)*	-1.376 (0.708)†	-0.639 (0.580)	0.979 (0.666)
Ethnicity D2 - East Asian	0.207 (0.741)	0.821 (0.547)	-0.130 (0.575)	-1.560 (0.817)†	0.275 (0.669)	-0.604 (0.768)
Ethnicity D3 - Southeast Asian	0.840 (0.821)	0.688 (0.607)	-0.213 (0.638)	-0.761 (0.906)	0.835 (0.742)	1.826 (0.852)*
Ethnicity D4 - Other	0.906 (0.798)	1.540 (0.590)**	0.114 (0.620)	-0.998 (0.881)	0.912 (0.721)	0.730 (0.828)
Vitamin C x Gender	-0.010 (0.019)	0.013 (0.014)	0.005 (0.015)	0.011 (0.021)	-0.013 (0.017)	0.006 (0.020)
Vitamin C x Ethnicity D1	0.057 (0.036)	0.016 (0.027)	-0.002 (0.028)	0.019 (0.040)	0.032 (0.033)	-0.016 (0.037)
Vitamin C x Ethnicity D2	0.026 (0.040)	0.002 (0.030)	0.012 (0.031)	0.028 (0.044)	0.038 (0.036)	-0.053 (0.042)
Vitamin C x Ethnicity D3	0.068 (0.041)†	0.008 (0.030)	0.000 (0.032)	0.078 (0.045)†	0.079 (0.037)*	-0.047 (0.043)
Vitamin C x Ethnicity D4	0.044 (0.042)	-0.004 (0.031)	-0.008 (0.033)	0.026 (0.046)	0.008 (0.038)	0.028 (0.044)
R2 Change	0.011	0.005	0.002	0.012	0.016	0.016
F Change (df)	0.953 (5,405)	0.412 (5,405)	0.175 (5,405)	1.031 (5,405)	1.461 (5,405)	1.427 (5,405)
Overall R2	0.069	0.105	0.057	0.052	0.088	0.078

Note. b (SE) = unstandardized coefficient (Standard Error), SES = socioeconomic status, D = dummy code, † $p < .10$ * $p < .05$; ** $p < .01$; *** $p < .001$.

Supplementary Table 7. *Regression Models Predicting Total Mood Disturbance, Vitality and Perceived Stress from the Demographic Covariates and Vitamin C Levels, using Southeast/Other Asians as the Reference Group, with Moderators*

	Total Mood Disturbance b (SE)	Vitality b (SE)	Perceived stress b (SE)
Model 1 - Adjusted			
Constant	10.925 (2.363)***	64.576 (2.484)***	5.689 (0.327)***
Vitamin C	0.008 (0.036)	0.048 (0.038)	-0.003 (0.005)
SES	-2.585 (0.580)***	1.981 (0.610)**	-0.485 (0.080)***
Gender	-0.705 (1.530)	-1.089 (1.608)	-0.108 (0.211)
Age	-0.210 (0.221)	0.157 (0.232)	-0.026 (0.030)
Ethnicity D1 – European	-3.183 (2.267)	-2.318 (2.384)	-0.857 (0.313)**
Ethnicity D2 – East Asian	2.429 (2.527)	-3.575 (2.656)	0.756 (0.349)*
Ethnicity D3 – Māori/Pasifika	1.483 (3.074)	-10.278 (3.232)**	-0.137 (0.425)
Ethnicity D4 – Other	4.237 (2.805)	-2.288 (2.950)	0.004 (0.388)
R2 Change	0.071***	0.063**	0.134***
F Change (df)	3.930 (8,410)	3.419 (8,410)	7.938 (8,410)
Model 2 Adjusted + Moderators			
Constant	12.818 (2.648)***	60.862 (2.751)***	5.917 (0.364)***
Vitamin C	0.149 (0.121)	-0.188 (0.125)	0.005 (0.017)
SES	-2.597 (0.584)***	1.941 (0.606)**	-0.482 (0.080)***
Gender	-0.742 (1.536)	-1.185 (1.596)	-0.109 (0.211)
Age	-0.225 (0.222)	0.180 (0.231)	-0.030 (0.031)
Ethnicity D1 – European	-5.062 (2.538)*	1.426 (2.637)	-1.130 (0.348)**
Ethnicity D2 – East Asian	0.653 (2.830)	0.149 (2.940)	0.502 (0.389)
Ethnicity D3 – Māori/Pasifika	0.435 (3.374)	-8.084 (3.505)*	-0.155 (0.463)
Ethnicity D4 – Other	2.180 (3.067)	1.727 (3.186)	-0.267 (0.421)
Vitamin C x Gender	-0.001 (0.079)	-0.067 (0.082)	0.012 (0.011)
Vitamin C x Ethnicity D1	-0.141 (0.111)	0.309 (0.116)**	-0.009 (0.015)
Vitamin C x Ethnicity D2	-0.119 (0.133)	0.246 (0.138)†	-0.020 (0.018)
Vitamin C x Ethnicity D3	-0.279 (0.169)†	0.560 (0.175)**	-0.053 (0.023)*
Vitamin C x Ethnicity D4	-0.241 (0.142)†	0.389 (0.147)**	-0.036 (0.019)†
R2 Change	0.009	0.032*	0.020†
F Change (df)	0.826 (5,405)	2.821 (5,405)	1.879 (5,405)
Overall R2	0.081	0.094	0.154

Note. b (SE) = unstandardized coefficient (Standard Error), SES = socioeconomic status, D = dummy code, † $p < .10$ * $p < .05$; ** $p < .01$; *** $p < .001$.

Supplementary Table 8. *Regression Models Predicting the Profile of Mood States (POMS) Subscales (tension, depression, anger, fatigue, confusion, and vigor) from the Demographic Covariates and Vitamin C Levels, using Southeast/Other Asians as the Reference Group, with Moderators*

	Tension b (SE)	Depression b (SE)	Anger b (SE)	Fatigue b (SE)	Confusion b (SE)	Vigor b (SE)
Model 1 - Adjusted						
Constant	5.845 (0.575)***	2.941 (0.424)***	3.299 (0.445)***	6.234 (0.635)***	5.452 (0.521)***	12.846 (0.599)***
Vitamin C	0.009 (0.009)	0.000 (0.006)	-0.007 (0.007)	0.009 (0.010)	0.003 (0.008)	0.007 (0.009)
SES	-0.527 (0.141)***	-0.488 (0.104)***	-0.266 (0.109)*	-0.447 (0.156)**	-0.601 (0.128)***	0.255 (0.147)†
Gender	-0.354 (0.372)	-0.247 (0.274)	-0.401 (0.288)	0.032 (0.411)	-0.464 (0.338)	-0.729 (0.388)†
Age	-0.071 (0.054)	-0.001 (0.040)	0.015 (0.042)	-0.032 (0.059)	-0.083 (0.049)†	0.038 (0.056)
Ethnicity D1 - European	-1.459 (0.552)**	-1.112 (0.407)**	-0.914 (0.427)*	0.007 (0.609)	-0.913 (0.500)†	-1.208 (0.574)*
Ethnicity D2 - East Asian	-0.313 (0.615)	0.172 (0.453)	0.047 (0.476)	-0.130 (0.679)	-0.013 (0.558)	-2.666 (0.640)***
Ethnicity D3 - Māori/Pasifika	-0.889 (0.749)	-0.722 (0.551)	0.227 (0.579)	1.255 (0.826)	-0.471 (0.678)	-2.084 (0.779)**
Ethnicity D4 - Other	0.327 (0.683)	0.885 (0.503)†	0.347 (0.528)	0.427 (0.754)	0.701 (0.619)	-1.551 (0.711)*
R2 Change	0.058**	0.100***	0.055**	0.039*	0.072***	0.062**
F Change (df)	3.138 (8,410)	5.702 (8,410)	3.004 (8,410)	2.105 (8,410)	3.973 (8,410)	3.379 (8,410)
Model 2 – Adjusted + Moderators						
Constant	6.112 (0.644)***	2.943 (0.476)***	3.302 (0.500)***	6.868 (0.711)***	6.047 (0.582)***	12.454 (0.668)***
Vitamin C	0.037 (0.029)	-0.010 (0.022)	-0.011 (0.023)	0.051 (0.032)	0.057 (0.027)*	-0.025 (0.030)
SES	-0.535 (0.142)***	-0.483 (0.105)***	-0.263 (0.110)*	-0.438 (0.157)**	-0.612 (0.128)***	0.265 (0.147)†
Gender	-0.372 (0.374)	-0.247 (0.276)	-0.398 (0.290)	0.061 (0.412)	-0.486 (0.338)	-0.699 (0.388)†
Age	-0.068 (0.054)	-0.006 (0.040)	0.012 (0.042)	-0.034 (0.060)	-0.084 (0.049)†	0.046 (0.056)
Ethnicity D1 - European	-1.742 (0.618)**	-1.161 (0.456)*	-0.917 (0.480)†	-0.616 (0.681)	-1.474 (0.558)**	-0.847 (0.641)
Ethnicity D2 - East Asian	-0.633 (0.689)	0.133 (0.509)	0.083 (0.535)	-0.799 (0.760)	-0.560 (0.622)	-2.430 (0.714)**
Ethnicity D3 - Māori/Pasifika	-0.840 (0.821)	-0.688 (0.607)	0.213 (0.638)	0.761 (0.906)	-0.835 (0.742)	-1.826 (0.852)*
Ethnicity D4 - Other	0.066 (0.746)	0.852 (0.551)	0.326 (0.580)	-0.238 (0.823)	0.077 (0.674)	-1.096 (0.774)
Vitamin C x Gender	-0.010 (0.019)	0.013 (0.014)	0.005 (0.015)	0.011 (0.021)	-0.013 (0.017)	0.006 (0.020)
Vitamin C x Ethnicity D1	-0.011 (0.027)	0.008 (0.020)	-0.002 (0.021)	-0.059 (0.030)†	-0.047 (0.024)†	0.031 (0.028)
Vitamin C x Ethnicity D2	-0.042 (0.032)	-0.005 (0.024)	0.013 (0.025)	-0.049 (0.036)	-0.041 (0.029)	-0.006 (0.034)
Vitamin C x Ethnicity D3	-0.068 (0.041)†	-0.008 (0.030)	0.000 (0.032)	-0.078 (0.045)†	-0.079 (0.037)*	0.047 (0.043)
Vitamin C x Ethnicity D4	-0.024 (0.035)	-0.012 (0.025)	-0.007 (0.027)	-0.052 (0.038)	-0.071 (0.031)*	0.075 (0.036)*
R2 Change	0.011	0.005	0.002	0.012	0.016	0.016
F Change (df)	0.953 (5,405)	0.412 (5,405)	0.175 (5,405)	1.031 (5,405)	1.461 (5,405)	1.427 (5,405)
Overall R2	0.069	0.105	0.057	0.052	0.088	0.078

Note. b (SE) = unstandardized coefficient (Standard Error), SES = socioeconomic status, D = dummy code, † $p < .10$ * $p < .05$; ** $p < .01$; *** $p < .001$.