On line supplement

Details and Scoring of the A Priori Diet Quality Score

The A Priori Diet Quality Score as applied in CARDIA was previously described in Sijtsma et al (supplemental tables in that publication)[20] by giving the differential ratings of the food groups according to several different investigators. To further illustrate the score details and the scoring method, Supplementary Table 1 below provides category cutpoints and examples of the dietary intakes of one person with a low score (50) and of another with a high score (85). For reference, the mean ± standard deviation of the year 0 score was 63.9 ± 13.2. The selection of the sample individuals was arbitrary among all people in the CARDIA database with year 0 scores 50 (n = 124) and 85 (n = 38). Supplementary Table 2 provides means and standard deviations of all people with scores of 50 and of 85. Means and standard deviations of 11 of the food groups across quintiles of the A Priori Diet Quality Score have also been presented (Meyer et al, Table 1)[21].

Although on average those with a score of 50 eat less beneficially rated and more adversely rated foods than those with a score of 85 (Supplementary Table 2), the examples indicate substantial dietary flexibility in how a score of 50 or 85 is achieved. In general in the two individuals in Supplementary Table 1, there is higher intake of the food groups rated beneficial in the person with score 85 than in the person with score 50, but lower intake of the food groups rated adverse. However, there are exceptions: compared to the person with the lower score, the person with the higher score ate less of the beneficially rated food groups poultry, low fat dairy, coffee, and tea, but ate more of the adversely rated food groups salty snacks, pastries, butter, and sauces. Neutrally rated foods had similar intakes among the people with score 50 compared to those with score 85, although there were lower intakes in the group with score 85 for lean meat, refined grain, eggs, and sugar substitutes, and higher intakes of shellfish and soups.

In Supplementary Table 3, adjusted means of the Year 25 composite cognitive function score (defined below the table) are provided among categories of individual food groups (using cutpoints in Supplementary Table 1) and of the A Priori Diet Quality Score in the last row, N = 2435. Note that there are some substantial correlations among the 46 food groups. This table should not be read as indicating that an individual food group, eaten in isolation from the rest of the diet, has a strong association with cognitive function. It does not attempt to sort out to what extent the consumption of any given food group is independent of the other food groups. The combination of the food groups in the A Priori Diet Quality Score is provided for comparison; it does account for correlations among the individual food groups.

Supplementary Table 1: Calculation of the CARDIA Year 20 A Priori Diet Quality Score, with examples in two arbitrarily selected actual patterns, one with a low score, the other with a high score

	Category Cutpoints				Sample poor diet pattern: A Priori Diet Quality Score = 50			Sample good diet pattern: A Priori Diet Quality Score = 85		
	Cutpoint 1	Cutpoint 2	Cutpoint 3	Cutpoint 4	Servings/ day	Category	Score	Servings/ day	Category	Score
Beneficial Food Groups										
1. Fruit	0.30	0.71	1.23	2.18	0.33	1	1	1.17	2	2
2. Avocado	0	0.06	0.15	0.39	0	0	0	1.76	4	4
3. Beans/Legumes	0	0.06	0.14	0.31	0.72	4	4	1.69	4	4
4. Green vegetables	0.01	0.10	0.23	0.53	0	0	0	4.99	4	4
5. Yellow vegetables	0	0.04	0.13	0.32	0	0	0	0.3	3	3
6. Tomato	0.14	0.26	0.42	0.71	0.33	2	2	2.24	4	4
7. Other vegetables	0.84	1.35	1.96	2.98	1.71	2	2	7.98	4	4
8. Fatty fish	0	0.10	0.15	0.29	0	0	0	0	0	0
9. Lean fish	0.02	0.22	0.49	1.05	0	0	0	0.49	2	2
10. Poultry	0.33	0.61	1.01	1.82	0.78	2	2	0.2	0	0
11. Nuts and seeds	0	0.14	0.46	1.10	0	0	0	2.92	4	4
12. Soya products	0	0.05	0.20	0.76	0	0	0	0	0	0
13. Whole grain	0.27	0.76	1.41	2.43	0.71	1	1	1.7	3	3
14. Low fat milk/Cheese/Yoghurt	0.12	0.32	0.78	1.87	1.85	3	3	1.44	3	3
15. Vegetable oil	0.27	0.65	1.20	2.25	0.17	0	0	6.93	4	4
16. Coffee	0	0.36	1.16	2.59	3.04	4	4	0.17	1	1
17. Tea	0	0.14	0.42	1.09	1.52	4	4	0	0	0
18. Moderate amounts of beer	0	0.15	0.45	1.10	0	0	0	0.16	2	2
19. Moderate amounts of wine	0	0.08	0.16	0.38	0.12	2	2	0.21	3	3
20. Moderate amounts of liquor	0	0.08	0.20	0.45	0.13	2	2	0.21	3	3
Neutral Food Groups										
1. Potato	0.07	0.17	0.32	0.62	0.29	2	0	0.61	3	0
2 Lean meat	0.02	0.29	0.61	1.24	0	0	0	0	0	0
3.Shellfish	0	0.06	0.16	0.38	0	0	0	0.74	4	0
4. Refined grain	1.90	3.03	4.42	6.52	8.05	4	0	2.65	1	0
5. Eggs	0	0.22	0.48	0.93	0.53	3	0	1.31	4	0
6. Margarine	0.02	0.46	1.32	2.90	2.23	3	0	0.02	0	0
7. Chocolate	0	0.07	0.16	0.36	0.03	1	0	0.15	2	0

8. Diet drinks	0	0.28	0.83	1.62	0	0	0	0	0	0
9. Fruit juice	0.36	0.87	1.64	2.91	0.26	0	0	4.15	4	0
10. Soups	0	0.01	0.04	0.09	0	0	0	0	0	0
11. Meal replacements	0	0.10	0.26	0.56	0	0	0	0	0	0
12. Pickled food	0	0.07	0.19	0.42	0.34	3	0	0.07	1	0
13. Sugar substitutes	0	0.10	0.26	0.71	0.38	3	0	0	0	0
Adverse Food Groups										
1. Fried potato	0	0.12	0.25	0.52	0.20	2	2	0	0	4
2. High-fat meat	0.69	1.32	2.12	3.48	2.78	3	1	0.2	0	4
3. Processed meat	0.10	0.33	0.69	1.38	1.87	4	0	0.2	1	3
4. Organ meat	0	0.10	0.18	0.35	0	0	4	0	0	4
5. Fried fish/Poultry	0	0.02	0.08	1.15	0	0	4	0	0	4
6. Grain dessert	0.11	0.29	0.55	1.05	1.99	4	0	0.75	3	1
7. Salty snacks	0	0.03	0.08	0.17	0.13	3	1	0.21	4	0
8. Pastries	0.20	0.46	0.83	1.49	0.44	1	3	0.76	2	2
9. Full fat milk/Cheese/Yoghurt	0.62	1.08	1.71	2.95	2.00	3	1	0.87	1	3
10. Butter	1.47	2.64	4.23	7.03	2.89	2	2	3.95	2	2
11. Soft drink	0.12	0.57	1.30	2.45	1.33	3	1	1.27	2	2
12. Sweets	0.24	0.65	1.38	2.73	3.63	4	0	0.22	0	4
13. Sauces	1.41	2.41	3.81	6.35	1.00	0	4	3.63	2	2
A Priori Diet Quality Score							50			85

Notes:

Categories: Servings/day of each food are categorized into 5 groups (defined by intake quintile where cutpoint 1 is positive; defined by nonconsumers and quartiles among consumers where cutpoint 1 is 0).

Score: The score for each food group is the category ranking if rated beneficial, 0 if rated neutral, and reverse category ranking (4 – category ranking) if rated adverse. The A Priori Diet Quality Score is the sum of food group scores, given in the bottom row of the table. Thus 1 score point is a difference of 1 category in 1 food group.

Supplementary Table 2: Mean ± standard deviation of food group intake in all people with Year 20 A Priori Diet Quality Scores of 50 or of 85

	Sample poor diet pattern: A Priori Diet Quality Score = 50 n = 124	Sample good diet pattern: A Priori Diet Quality Score = 85 n = 38	Mean difference (score 85-score 50)	$P_{difference}$
Beneficial Food Groups	Servings/day Mean ± Standard Deviation	Servings/day Mean ± Standard Deviation		
1. Fruit	1.01±1.14	2.34±1.8	1.33	<0.01
2. Avocado	0±0.01	0.25±0.39	0.25	<0.01
3. Beans/Legumes	0.2±0.37	0.39±0.56	0.19	0.02
4. Green vegetables	0.14±0.18	0.98±1.06	0.84	<0.01
5. Yellow vegetables	0.07±0.1	0.46±0.56	0.39	<0.01
6. Tomato	0.29±0.23	0.88±0.66	0.59	<0.01
7. Other vegetables	1.54±1.17	3.41±2.29	1.87	<0.01
8. Fatty fish	0.01±0.03	0.16±0.5	0.15	<0.01
9. Lean fish	0.51±0.9	0.9±0.99	0.39	0.02
10. Poultry	0.98±0.89	1.64±2.18	0.66	0.01
11. Nuts and seeds	0.39±0.72	0.93±1.03	0.54	<0.01
12. Soya products	0.15±0.48	0.55±1.08	0.40	<0.01
13. Whole grain	1.14±1.4	2.32±1.6	1.18	<0.01
14. Low fat milk/Cheese/Yoghurt	0.73±1.36	1.47±1.38	0.74	<0.01
15. Vegetable oil	1.02±1.43	1.94±1.62	0.92	<0.01
16. Coffee	0.53±1.23	1.64±1.92	1.11	<0.01
17. Tea	0.49±2.44	0.93±1.8	0.44	0.31
18. Moderate amounts of beer	0.36±0.73	0.43±0.49	0.07	0.57
19. Moderate amounts of wine	0.02±0.05	0.31±0.34	0.29	<0.01
20. Moderate amounts of liquor	0.17±1.05	0.11±0.16	-0.06	0.70
Neutral Food Groups				
1. Potato	0.37±0.45	0.38±0.33	0.01	0.90
2 Lean meat	0.74±0.91	0.43±0.62	-0.31	0.05
3.Shellfish	0.12±0.21	0.2±0.23	0.08	0.04
4. Refined grain	5.06±2.89	3.1±2.34	-1.96	<0.01
5. Eggs	0.73±0.71	0.39±0.42	-0.34	<0.01
6. Margarine	1.79±2.23	1.08±1.67	-0.71	0.07
7. Chocolate	0.2±0.33	0.11±0.15	-0.09	0.10
8. Diet drinks	0.24±1	0.37±0.54	0.13	0.46

9. Fruit juice	1.84±2.14	1.95±2.1	0.11	0.77
10. Soups	0.03±0.05	0.05±0.09	0.02	0.04
11. Meal replacements	0.01±0.07	0.01±0.07	0.00	0.92
12. Pickled food	0.42±1.75	0.4±0.36	-0.02	0.94
13. Sugar substitutes	0.03±0.13	0.2±0.62	0.17	<0.01
Adverse Food Groups				
1. Fried potato	0.46±0.49	0.11±0.14	-0.35	<0.01
2. High-fat meat	2.42±1.77	1.41±1.81	-1.01	<0.01
3. Processed meat	1.08±1.13	0.28±0.32	-0.80	<0.01
4. Organ meat	0.05±0.15	0.02±0.09	-0.03	0.30
5. Fried fish/Poultry	0.06±0.25	0.03±0.19	-0.03	0.52
6. Grain dessert	0.83±0.99	0.52±0.4	-0.31	0.06
7. Salty snacks	0.07±0.2	0.03±0.11	-0.04	0.28
8. Pastries	1.04±1.09	0.84±1.18	-0.20	0.35
9. Full fat milk/Cheese/Yoghurt	2.11±1.73	1.47±1.04	-0.64	0.03
10. Butter	5.49±4.22	3.16±2.72	-2.33	<0.01
11. Soft drink	2.45±2.4	0.33±0.47	-2.12	<0.01
12. Sweets	1.83±2.3	0.79±0.94	-1.04	0.01
13. Sauces	4.24±4.03	4.47±7.52	0.23	0.81

Supplementary Table 3. Adjusted means of the Year 25 composite cognitive function score* among categories of individual food groups (using cutpoints in Supplementary Table 1) and of the A Priori Diet Quality Score in the last row, N = 2435. Note that there are some substantial correlations among the 46 food groups.

Year 20 Food Groups and A Priori Diet Quality Score	Lowest	Inter-mediate 1	Inter-mediate 2	Inter-mediate 3	Highest	Absolute difference, highest vs lowest	P for trend over category ranks
Beneficial Food Groups							
1. Fruit	-0.01	0.03	0.06	0.08	0.08	**0.09**	**0.02**
2. Avocado	0.02	0.12	0.11	0.07	0.11	**0.09**	**0.03**
3. Beans/Legumes	-0.01	0.03	0.03	0.07	0.11	**0.12**	**0.003**
4. Green vegetables	-0.08	-0.06	0.02	0.08	0.09	**0.17**	**<0.0001**
5. Yellow vegetables	-0.04	0.01	0.06	0.09	0.09	**0.13**	**0.001**
6. Tomato	-0.06	0.02	0.05	0.1	0.1	**0.16**	**<0.0001**
7. Other vegetables	-0.02	0.04	0.05	0.09	0.1	**0.12**	**0.003**
8. Fatty fish	0.05	0.27	-0.16	0.25	0	**-0.05**	**0.67**
9. Lean fish	0.02	0.09	0.05	0.07	0.04	**0.02**	**0.88**
10. Poultry	0	0.04	0.05	0.07	0.06	**0.06**	**0.12**
11. Nuts and seeds	-0.04	0.06	0.03	0.07	0.11	**0.15**	**0.0001**
12. Soya products	0.02	0.06	0.13	0.04	0.06	**0.04**	**0.27**
13. Whole grain	-0.01	0.04	0.08	0.09	0.03	**0.04**	**0.28**
14. Low fat milk/Cheese/ Yogurt	-0.06	0.06	0.09	0.04	0.07	**0.13**	**0.09**
15. Vegetable oil	-0.06	0.08	0.1	0.08	0.04	**0.10**	**0.12**
16. Coffee	0.04	0.08	0.1	0.02	0.06	**0.02**	**0.84**
17. Tea	0.03	0.05	0.08	0.1	0.03	**0.00**	**0.44**
18. Moderate amounts of beer	0.02	0.09	0.11	0.06	0.11	**0.09**	**0.04**
19. Moderate amounts of wine	0	0.06	0.04	0.11	0.16	**0.16**	**<0.0001**
20. Moderate amounts of liquor	0.01	0.07	0.18	0.12	0.13	**0.12**	**<0.0001**
Neutral Food Groups							
1. Potato	0.03	0.02	0.08	0.09	0.06	**0.03**	**0.07**

2 Lean meat	-0.01	0.09	0.05	0.13	0.01	**0.02**	**0.09**
3.Shellfish	0.01	0.06	0.06	0.05	0.1	**0.09**	**0.02**
4. Refined grain	0.02	0.04	0.08	0.11	0.01	**-0.01**	**0.15**
5. Eggs	-0.12	0.07	0.08	0.02	0.06	**0.18**	**0.72**
6. Margarine	0.03	0.05	0.09	0.04	0.03	**0**	**0.76**
7. Chocolate	-0.01	0.06	0.1	0.13	0.07	**0.08**	**0.001**
8. Diet drinks	0.03	0.08	0.08	0.1	0.11	**0.08**	**0.02**
9. Fruit juice	0.03	0.07	0.09	0.08	0	**-0.03**	**0.73**
10. Soups	0	0.1	0.06	0.1	0.04	**0.04**	**0.14**
11. Meal replacements	0.05	0.07	0.05	0.08	0.01	**-0.04**	**0.61**
12. Pickled food	0.01	0.03	0.06	0.05	0.07	**0.06**	**0.14**
13. Sugar substitutes	0.05	0.12	0.15	0.05	0.04	**-0.01**	**0.84**
Adverse Food Groups							
1. Fried potato	-0.01	0.06	0.12	0.05	0.05	**0.06**	**0.08**
2. High-fat meat	0.04	0.07	0.1	0.01	-0.04	**-0.08**	**0.58**
3. Processed meat	-0.05	0.04	0.1	0.07	0.05	**0.1**	**0.06**
4. Organ meat	0.05	0.07	0	-0.01	0.02	**-0.03**	**0.39**
5. Fried fish/Poultry	0.05	0.01	0.07	0.04	0.06	**0.01**	**0.83**
6. Grain dessert	-0.02	0.05	0.08	0.06	0.09	**0.11**	**0.02**
7. Salty snacks	-0.02	0.02	0.01	0.09	0.11	**0.13**	**<0.0001**
8. Pastries	0.02	0.07	0.07	0.05	0.04	**0.02**	**0.6**
9. Full fat milk/Cheese/Yogurt	0.05	0.09	0.01	0.03	0.02	**-0.03**	**0.37**
10. Butter	0.04	0.1	0.04	0.01	0.11	**0.07**	**0.68**
11. Soft drink	0.07	0.05	0.08	0.07	-0.08	**-0.15**	**0.07**
12. Sweets	0.04	0.01	0.11	0.06	0.06	**0.02**	**0.29**
13. Sauces	0.01	0.04	0.11	0.14	0	**-0.01**	**0.01**
A Priori Diet Quality Score	-0.07	0.04	0.06	0.11	0.11	**0.18**	**0.0001**

* The tabulated means are for the composite cognitive function score, namely the average of the three year 25 standardized cognitive test scores, thus (DSST $_{Z\ score}$ - Stroop test 3 $_{Z\ score}$ + RAVLT long delay recall $_{Z\ score}$)/3, where
DSST $_{Z\ score}$ = (DSST - 70.0665870) /16.0826174,
Stroop test 3 $_{Z\ score}$ = -(Stroop test 3 - 45.1493429) /13.3733514, and
RAVLT long delay $_{Z\ score}$ = (RAVLT long delay - 8.3488163) /3.2495147.
The means are adjusted as in model 3 in the text, namely for age, race, sex, center of clinic visit, energy intake, physical activity, smoking, maximum education attained through Y25, body mass index, blood pressure, total cholesterol, and diabetes.