Author’s response to reviews

Title: Optimism is associated with diet quality, food group consumption and snacking behavior in a general population

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Version: 1 Date: 21 Oct 2019

Author’s response to reviews:

Dear Editor,

Please find enclosed the second revision of our manuscript titled, “Optimism is associated with diet quality, food group consumption and snacking behavior in a general population” (Manuscript Number: NUTJ-D-19-00172), originally submitted on May 30th 2019.

We thank the reviewers for their comments. We have taken them into account and include point-by-point responses. However, we would like to share with you our impression that reviewer 1 likely has expertise in a different domain. In fact, given the feedback we received, we are unsure whether he/she was able to correctly grasp the essence of our work.

In any case, changes in the final manuscript have been highlighted in yellow.
We thank you for your continued consideration of this manuscript and will be happy to provide any additional information that might be needed.

Sincerely yours,

Wassila AIT-HADAD

Reviewer 1

We thank the reviewer for the critical report on our manuscript.

1. What is the public health importance of studying optimism?

The introduction, discussion and conclusion state the public health importance of studying optimism. In brief, modifying optimism level in individuals can impact dietary behavior which can in turn impact health.

In the text:

Introduction: The impact of nutrition on chronic diseases, including obesity, cardiovascular diseases and cancer is utterly recognized (1). Determinants of nutrition and eating behavior are numerous, among which psychological factors (2). So far, the literature has largely focused on negative psychological characteristics associated with eating behavior such as emotional eating (3,4), cognitive restraint (5,6) or impulsivity (7,8). However, more recently, research has started to focus on positive psychological traits that could have a beneficial impact on dietary behavior and nutritional status. Positive characteristics generally allow the individual to easily overcome usual life stresses, perform successful work, and contribute to the social life of their community (9). Therefore they may have positive consequences on physical health (9). A perspective focused on building competency rather than on correcting weakness could present a major stride in health prevention (10).

Discussion: Our results showing an association between optimism and dietary intake are important since it has been demonstrated in randomized trials that optimism can be learned (12), leading to potential novel interventions to improve public health.
Conclusion: Since optimism can be enhanced, programs targeting optimism may provide effective strategies for helping influencing dietary behaviors toward better food choices.

2. How diet quality is measured? How it could be? What is your outcome variable?

We measured overall diet quality with the mPNNS-GS score. This score is an a priori nutritional diet quality score reflecting adherence to the French nutritional recommendations. We modified the sentence to clarify.

In the text:

Line 180: “Overall diet quality was assessed using the modified French National Nutrition and Health Program Guideline Score (mPNNS-GS). This score is an a priori nutritional diet quality score reflecting adherence to the French nutritional recommendations”.

The objective of this study was to explore how optimism could affect eating behavior (although we are aware that our data are cross-sectional). Optimism was therefore the independent variable. There are several outcome variables: the mPNNS-GS, energy, macronutrient intake and food group consumption. We now specify the type of each variable (dependent or independent variables) in the method section:

In the text:

Line 236: “To estimate the association between optimism (independent variable), diet quality (dependent variable), energy and macronutrient intake (dependent variables), and food group consumption (dependent variable), we used multivariable regression analyses”.

3. In line 60 the authors explained that optimism is positively associated with diet quality. So to which type of diet quality optimism make an association?

We showed that optimism is positively associated with overall diet quality assessed by the mPNNS-GS. We have now added “overall” line 54 in order to clarify the fact that we refer to this score and throughout the manuscript (text and tables).

4. How it could two models (linear and logistic) could be applied with single study?
We chose the tests based on the nature of the outcome variables (continuous, binary or multinomial). When the variables were continuous with a normal distribution, we used linear regression (e.g. most food groups, energy, mPNNS-GS). However, since some variables did not have a normal distribution they were binarized (e.g. processed meat, eggs). In this case, we used binary logistic regressions. In addition, 4 categories were available for “snacking” and we therefore applied multinomial regression analyses.

In the text:

Line 238: “To estimate the association between optimism, diet quality, energy and macronutrient intake, and food group consumption, we used multivariable regression analyses. Multivariable linear regressions analyses were used for dependent variables with a normal distribution. In the case of variables without a normal distribution (i.e. processed meat, eggs, dairy products and meat substitutes, milk-based desserts, legumes, fast food, appetizers, non salted oleaginous fruits), two levels were defined: no intake vs intake and binary logistic regressions were used. Finally, to measure the association between optimism and snacking, we used binary (no vs yes) and multinomial logistic regressions (4 frequency categories: never, < once a week, ≥ once a week (and < once a day) and ≥ once a day).

5. "Meat substitutes and non-salted oleaginous fruits" it is better to mention in detail and to describe clearly?

We have added examples for meat substitutes and non-salted oleaginous fruits.

In the text:

Line 172: “vegetarian steaks”

Line 177: “e.g. non-salted nuts, non-salted almonds”.

6. In line 66 & 67 "In contrast, optimism was positively associated with alcoholic beverage and appetizer consumption. Finally, no association was observed between energy and optimism." Is optimism associated with taking snack or not taking snack, similarly is optimism have an association with taking or not taking an alcoholic beverage? Describe briefly?

We now use active rather than passive voice to describe the results in the hope that it will be clearer for the reader.
In the text:

Line 60: Optimism was associated with greater overall diet quality (β (95% CI) = 0.07 (0.004-0.11), P < 0.0001) and higher consumption of fruit and vegetables, seafood, whole grains, fats, dairy and meat substitutes, legumes, non-salted oleaginous fruits, and negatively associated with consumption of meat and poultry, dairy products, milk-based desserts, sugar and confectionery. In addition, optimism was associated with less snacking (OR (95% CI) = 0.89 (0.84, 0.95)). In contrast, optimism was associated with higher consumption of alcoholic beverage and appetizers. Finally, no association was observed between optimism and energy intake.

7. Your conclusion does not reflect your findings for example "It was also associated with consumption of healthy food groups as well as unhealthy food groups typically consumed in social eating occasions" consuming in social setting is not presented in the result, so why mention here?

We have modified the conclusion according to the reviewers’ advice. Results and interpretation are now separated.

In the text:

Line 376: Our findings showed that dispositional optimism was associated with a higher overall diet quality, and less snacking practices. Optimism was also associated with consumption of specific unhealthy foods and alcohol beverages. Our results therefore suggest that optimists tend to have a healthier diet overall but with larger intakes of food and beverages typically consumed at social eating occasions.

8. Key word should be written alphabetically? So rewrite again? And some terminology are not your key words like "Epidemiology; Cross-sectional"

Key words now appear in alphabetically order and have been selected among MesH:

- Eating behavior instead of food intake
- Snacks instead of Snacking
- Cross-sectional study instead of cross-sectional

In addition, even if “diet quality” is not a MesH, we believe that it is an important key word that should be kept.
In the text:

Line 73: “Cross-sectional study, Diet quality, Eating behavior, Optimism, Psychology, Snacks”

9. In line 102 "How high optimism have an association with greater intake of alcoholic beverages"

We have now added that the study on optimism and alcohol beverage was cross-sectional in order to inform the reader about the level of evidence of the design (lowest level of the aetiology hierarchy).

In the text:

Line 101: Consistently, it has been observed in a cross-sectional study that dispositional optimism was associated with higher intake of alcoholic beverages (27).

10. In line 145 the author write as "After reversing the scoring for the negatively worded items, item scores were summed up and divided by the number of item leading to an overall optimism score ranging from 0 to 4 with higher scores representing greater optimism", so what is the importance of doing reversing and what does it mean?

The LOT-R includes 6 questions. Three questions deal with people's general expectations of positive consequences and three questions deal with negative consequences. It is therefore necessary to reverse the 3 items that are negatively worded to obtain an overall optimism score.

11. How it could be high basal metabolic scale considered as an indication for better nutritional quality?

High basal metabolic rate is used to estimate whether individuals exceed their individual energy requirement. Points are deducted in individuals who exceed their requirements in terms of energy. Indeed it is easier to gain point when the overall level of energy is higher.

In the text:

Points are deducted for overconsumption of salt, of added sugars from sweetened foods and when energy intake exceeds the energy requirement (as assessed by physical activity level and basal metabolic rate calculated using Schofield equations [40]) by more than 5%.
12. How could you calculate sample size and what was your sampling procedure?


The sample size was calculated to obtain strong power for examining the various chronic disease risk factors of interest. For instance, taking into consideration the selection bias (volunteers) and on the basis of half of the participants being over 45 years of age, 18,000 to 20,000 new cases of cancers, 25,000 to 30,000 new cases of cardiovascular diseases and around 20,000 deaths during the 10 years of follow-up was expected. The sample size and recruitment of participants of all age groups, at a national level allows us to examine the role of various determinants of dietary patterns and nutritional status.

Our study is ancillary to this cohort. Therefore, we did not calculate a sample size. We used the totality of the sample size available (19,335 participants) which provided a high statistical power.

13. Your data collection period is inconsistence for example snacking was assessed between April and October 2014 and depressive symptomatology gathered between November 2017 and May 2018, so is that possible ,do you believe that snacking behavior at 2014 would be similar to 2017.How can you correlate each other.in case of cross-sectional study design is that possible to collect data in different time period? When was your data collection period for other variables, describe briefly?

These different collection periods are indeed a limit of the study that we now mention in the limits. Unfortunately, we do not have more recent data on snacking. Given the stability of dietary behavior over time, it is unlikely that snacking behavior has changed in an important way between 2014 and 2018. Data collections for each questionnaire are detailed..

In the text:

Line 362: « In our analysis, optimism was collected in 2016, while snacking behavior was collected in 2014 leading to potential temporality issues.

Line 153: “In the present study, we selected participants who completed at least three dietary records between the 2 years preceding and the 18 months following the completion of the LOT-R questionnaire, therefore between 2014 and 2018”.”
Line 201: “At baseline and once per year, self-administered questionnaires are used to collect data on socio-demographic, economic characteristics and anthropometric characteristics”.

14. What was your data entry software?

NutriNet-Santé is a very large population-based cohort based on the internet. Participants complete the questionnaires online: www.etude-nutrinet-sante.fr. Therefore there is no use of data entry software. The address of the website has been added line 119.

15. Line 243 you described that "the strength of the association was estimated by calculating odds ratios (ORs) and 95% confidence intervals (95% CI), so what type of odd ratio you use?

We used adjusted odds ratio. We added “adjusted” in line 246.

16. "Optimism was positively associated with consumption of fruits and vegetables, seafood, whole grains, fats, dairy and meat substitutes, legumes, and non-salted oleaginous fruits, and negatively associated with consumption of meat and poultry, dairy products, milk-based desserts and sugar and confectionery", would describe the pathophysiology optimism with the food mentioned (show clearly the biological plausibility)

In the present study we investigated whether optimism (independent variable) is associated with eating behavior (dependent variable). Hypotheses behind these associations are behavioral and are detailed in the discussion:

Healthier choices in optimistic individuals may be due to a more proactive approach to health promotion (17). Optimistic individuals have been shown more likely to adopt healthier behaviors including less smoking and more exercise (18). Optimists also show a better profile of emotional responses to adversity (less distress, more positive emotions) due to more effective coping reactions, which can lead to healthier choices (17). Our results showing an association between optimism and dietary intake are important since it has been demonstrated in randomized trials that optimism can be learned (12), leading to potential novel interventions to improve public health. However, the reverse has also been suggested; that is, individuals who engage in healthier dietary behaviors may also as a consequence be more optimistic (54,55).

(…)Studies have shown that optimists have greater social connections than pessimists (10) suggesting that they are more likely to share their meals with other people and therefore to include an apéritif in their meal.
Snacking has been associated with depressive symptomatology (61), perceived stress (62) and coping strategies (63). We can hypothesize that the better coping strategies observed in more optimistic individuals (25) lead to lower psychological distress (64,65), which can in turn decrease snacking through lower emotional eating. Indeed, emotional eating has been associated with both stress (66,67) and snacking (4).

17. Your regression analysis is not correct please rewrite again specifically table 3, 4,5 are completely wrong? You did not show the cross tab frequencies, you did not show crude odds ratio, you did not mention the outcome variable in the column?

Following the reviewer’s advice we have added an additional model. We believed that it is of great importance to take into account age and gender and therefore presented a model with minimal adjustment instead of a crude model.

We do not understand however why table 3,4 and 5 appear to be wrong from to the reviewer point of view. We hope that the changes that we have done in the method sections improve clarity, in particular the precision about which variable is dependent vs independent.

In the text:

Line 246: “adjusted odds ratio”

Line 247: “Two models were tested. A first model was adjusted for age and gender. A second model was additionally adjusted for education level, occupational status, and monthly income per household unit, energy intake (except when energy was the outcome), smoking status, physical activity, BMI and depressive symptomatology.

Table 3, 4, 5: added “outcome”

Table 3, 4, 5: added odds ratio adjusted for age and gender

18. Generally what is the public health importance of the study, explain clearly?

The introduction, discussion and conclusion state the public health importance of studying optimism. In brief modifying optimism level in individuals can impact dietary behavior which can in turn impact health.
Introduction: The impact of nutrition on chronic diseases, including obesity, cardiovascular diseases and cancer is utterly recognized (1). Determinants of nutrition and eating behavior are numerous, among which psychological factors (2). So far, the literature has largely focused on negative psychological characteristics associated with eating behavior such as emotional eating (3,4), cognitive restraint (5,6) or impulsivity (7,8). However, more recently, research has started to focus on positive psychological traits that could have a beneficial impact on dietary behavior and nutritional status. Positive characteristics generally allow the individual to easily overcome usual life stresses, perform successful work, and contribute to the social life of their community (9). Therefore they may have positive consequences on physical health (9). A perspective focused on building competency rather than on correcting weakness could present a major stride in health prevention (10).

Discussion: Our results showing an association between optimism and dietary intake are important since it has been demonstrated in randomized trials that optimism can be learned (12), leading to potential novel interventions to improve public health.

Conclusion: Since optimism can be enhanced, programs targeting optimism may provide effective strategies for helping influencing dietary behaviors toward better food choices.

Reviewer 2

We thank the reviewer for the critical report on our manuscript.

1. Put data collection date on results rather than methodology pages 139-140: "The LOT-R was administered between September and December 2016 to the NutriNet-Santé cohort."

Data collection date for 24h records was indeed presented in the results while dates for other variables were presented in the method sections. Given the large number of variables (and therefore the large number of dates), we feel that it is more appropriate to mention them in the method sections. We have therefore moved this date to the methods.

In the text:

Line 262: “between 2014 and 2018” was deleted
In the present study, we selected participants who completed at least three dietary records between the 2 years preceding and the 18 months following the completion of the LOT-R questionnaire, therefore between 2014 and 2018.

2. Include in the study limitation the large interval between recalls, and self-reported anthropometric data whereas men and women often overestimate their height and underestimate their weight.

Anthropometric data are collected once per year in the cohort and 24-h dietary records every 6 months. There are therefore no large intervals between the two data collections. We have now added a limit concerning self-reported data for BMI. Manuscript has been modified to improve clarity.

In the text:

Line 201: “At baseline and once per year, self-administered questionnaires are used to collect data on socio-demographic, economic characteristics and anthropometric characteristics”.

Line 376: “Another limit is the self-anthropometric measures, which could have led to misclassification. Yet, standardized clinical measurements on a subsample (N = 2513) of the NutriNet-Santé cohort showed a good convergence with self-reported data.”