Author’s response to reviews

Title: Development and Relative Validation of a Food Frequency Questionnaire for French-Canadian Adolescent and Young Adult Survivors of Acute Lymphoblastic Leukemia

Authors:

Sophia Morel (sophiamorel@videotron.ca)
Olivia Portolese (olivia.portolese@hotmail.com)
Yasmine Chertouk (yasmine.chertouk@gmail.com)
Jade Leahy (jade.leahy@umontreal.ca)
Laurence Bertout (laurence.bertout@recherche-ste-justine.qc.ca)
Caroline Laverdière (caroline.laverdiere@umontreal.ca)
Maja Krajinovic (maja.krajinovic@umontreal.ca)
Daniel Sinnett (daniel.sinnett@umontreal.ca)
Emile Levy (emile.levy@recherche-ste-justine.qc.ca)
Valerie Marcil (valerie.marcil@umontreal.ca)

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Author’s response to reviews:

Reviewer reports:

Reviewer #1: This manuscript provides the results of validation and reproducibility of a FFQ developed for survivors of Acute Lymphoblastic Leukemia. While it could make a contribution to the work of researchers in the field, the manuscript, in my opinion, deserves further work to become suitable for publication.

We would like to thank the reviewer for his/her encouraging comments regarding our manuscript. He/she will find below the point-by-point answers to his/her comments.
Comment: The most appropriate term to be used for referring to this type of validation is "Relative validity", as it compares two methods of dietary recall that have similar and distinct type of bias.

Response: The term was modified accordingly throughout the text when clarification was needed (lines 2, 177, 220 & 318).

Comment: Introduction, Line 59, vitamins and minerals could be specified or infer they were some, as previously mentioned calcium and Vit D are also part of these nutritional components.

Response: To specify the nature of vitamins, minerals and polyphenols, examples were added to the sentence.

«In addition to their anti-inflammatory actions, antioxidants (polyphenols, vitamins and minerals: e.g. vitamins A, C, E and selenium) mainly found in plant foods and whole grains can improve blood pressure and lipid profile [14-16].» (lines 57-60)

Comment: Introduction, Line 73, Compared to FFQs, food records can provide more precision in quantities and types of food. In that sense, it is not so clear to make this statement for the rationale of the study in the introduction.

Response: We agree with the reviewer that food records can capture more precisely the quantities and types of food consumed during the covered period. However, we wanted to emphasize the possibility that the food records provided by the participants might be incomplete in regards to the quantities and types of food consumed. For clarification, the sentence has been rewritten.

«On the other hand, self-reported food records might be incomplete or lack details regarding quantities or types of foods consumed.» (lines 71 & 72)

Comment: Methods, Line 125, it seems strange to affirm that the FFQ is a 60 minute FFQ, as we could expect variation in time between subjects. Do you have this information to provide?

Response: We agree with the reviewer that this statement does not add any meaningful information. We estimate that, in average, the nutritionists used the full hour to administer the questionnaire. However, because this information was not recorded or quantified, «60 minute» was removed from the sentence. (line 130)
Comment: Methods, Line 143-157, a major aspect to be revised refers the way of calculation of nutrient values. It becomes doubtful if identical foods captured in the food recall and FFQ could have different sources of information on nutrient amounts. Food composition data may also introduce systematic and random errors (depending in which level of analysis). Therefore, it is suggested that only form of quantification could be adopted for the comparison in the validation and reproducibility study. Why not to use the Nutrific application for both (or the adhoc calculation in excell)? An eleven % in overestimated protein intake observed in the FFQ could be influenced by this difference in analysis, for instance.

Response: To evaluate nutrient intakes derived from the FFQ, we opted for a nutrient calculation tool built in-house. This tool has the advantage to be specifically adapted to our questionnaire, which facilitates the analyze of multiple FFQs. On the other hand, Nutrific is a web application that was developed specifically to analyze food journals (https://nutrific.fsaa.ulaval.ca). Importantly, both analysis tools were developed for a French-Canadian population using nutrient values derived from the 2010 Canadian Nutrient File. For these reasons, we considered more adequate and simple the use of different nutrient calculation tools adapted for the specific tool.


Unfortunately, there is no gold standard method for FFQ validation. Hence, to eliminate any improper usage of the validated FFQ and to avoid misleading conclusions; limits were clarified pertaining to the reviewer’s major concern (Discussion section).

«One of the constraints of our study was that, to facilitate the analyses, we used two different calculation tools to evaluate nutrient intakes derived from the questionnaire and the food records. However, both tools were developed for a French-Canadian population using nutrient values derived from the 2010 Canadian Nutrient File.» (lines 404-408)

Comment: Methods, if data were not normally distributed, the mean and the standard deviation is not a good way of presenting the data. Medians and other form of variability should be chosen.

Response: We agree with the reviewer that, because distributions were not normal, the median and inter-quartile range should have been presented instead of mean and standard deviation (SD). However, the vast majority of studies presenting validation of FFQs showed their results as mean ± SD (Perreault et al., Canadian Journal of Dietetic Practice and Research 2016 – Vol 77; Goulet et al., Nutrition Journal 2004, 3:13; Moghames et al., Nutrition Journal 2016 15:4; Männistö et al., L Clin Epidemiol 1996, Vol. 49, No.4: 401-409; Pritchard et al., Nutrients 2010, 2: 805-819;
Zhang et al. JPN 2015, 61: 499-502. To better compare between studies, we have also presented our results under the same format. Nevertheless, we added 2 tables in the Supplementary data (Supplementary Tables 9 and 10) presenting our results as median and inter-quartile range. We have also added a statement in the legends of Tables 3 and 5: «Data presented as medians and inter-quartile ranges are available in Supplementary Tables 9 and 10.»

Comment: Energy adjustment and forms of correlation classification interpretation are not necessary proposed by Goulet and colleagues. They only followed this proposal that was done by others.

Response: The classification used by Goulet and al. to interpret correlation coefficients (well correlated and moderately well correlated) was inspired by the qualification proposed by Rimm et al. (Rimm et al., American Journal of Epidemiology 1992, Vol.135, No.10). The sentence was modified to reflect this key point and the appropriate reference was added.

«The classification used by Goulet et al. (inspired by Rimm et al.) was utilized to interpret correlation coefficients: very well correlated (coefficient 0.7 to 0.9), well correlated (coefficient 0.5 to 0.7) and moderately well correlated (coefficient 0.3 to 0.5) [21, 29].» (lines 183-185)

Comment: Results: There is no need to have the information on caucasian and french speaking information both in the text and in the table. Only one mention is sufficient.

Response: Accordingly, the line on ethnicity was removed from Table 1.

Comment: Results: For the observed differences in % in the validation and reproducibility, a measure of variability should be shown. How much, for instance, the 11,3% in energy intake varies?

Response: The method used to calculate the mean differences in % (Mean daily intake as per FFQ – Mean daily intake as per 3-DFR)/(Mean daily intake as per 3-DFR) x 100) is regularly used in literature (Watson et al., International Journal of Food Sciences and Nutrition 2017, Vol.68, No.5: 617-628; Henn et al. Cad. Saude Publica 2010, 26 (11): 2068-2079; Papazian et al. Clinical Nutrition 2016, 35:1550-1556; Zhao et al. Biomedical and environmental Sciences 2010, 23 (suppl.): 1-38), but does not allow to represent variability.

To represent the dispersal of the differences between the 3-DFR and FFQ, we used the Bland Altman plots as shown in Figure 2. This was performed for the intakes in energy, macronutrients and selected micronutrients (calcium, vitamins D, C, A and E). We do agree with the reviewer that the variability of the differences between FFQ visit 1 and 2 in the reproducibility evaluation
should be illustrated. Thereby, Bland Altman plots were added as supplementary data (Supplementary Figure 1). These sentences were also added in the Results section:

«The variability of differences between the FFQ and the 3-DFR are illustrated in the Bland Altman plots (Figure 2) for the intakes in energy, CHO, proteins, lipids, calcium and vitamins D, C, A and E.» (lines 234-236)

«The variability between FFQs visit 1 and 2 of the differences for energy, CHO, proteins and lipids are shown in Bland Altman plots (Supplementary Figure 1).» (lines 298-301)

Comment: Discussion, Line 309-310, what can you say about the use of this FFQ in other seasons then? Can you warranty the results will be the same. Something should be elaborated about this. You will mention later again saying this could explain differences (Line 333)

Response: The developed FFQ includes fruits and vegetables that are available equally during all 4 seasons and can be used at any month of the year. To address the reviewer’s comment, we have performed further analyses to investigate if seasons could explain some differences observed between the FFQ and the 3-DFR. We found that 82.5% of the 3-DFRs were filled out and returned within a month following the administration of the FFQ. We concluded that differences in micronutrients were probably not influenced by the seasonal effect. This information was added in the Results section:

«We evaluated the time difference between the administration of the FFQ and the completion of the 3-DFR. We found that 66 of 80 participants (82.5%) filled out the 3-DFR within a month following the administration of the FFQ. 4 of 80 participants (5%) completed the food record after 1.5 months to 3.5 months and 10 of 80 (12.5%) did not inscribe the date.» (lines 224-227)

We have also clarified the above-mentioned statement in the Discussion section:

«However, in our study, most of the 3-DFR were filled out and returned within a month following the completion of the FFQ. Consequently, seasons probably did not impact the observed differences in micronutrients.» (lines 356-358)

Comment: Discussion, Line 324-327, there could be many reasons why this study had a different result than the other in cancer child survivor. In fact, we should not expect how the results should be. This is a different FFQ, different foods, different population, different reference method.

Response: The purpose of the sentence at line 349-353 was to discuss the possible factors that could explain the differences between our study and another performed in a population of childhood cancer survivors. According to the reviewer’s comment, we understand that this statement could mislead the reader. To avoid any ambiguity we have modified our explanations:
«However, this comparison is flawed by the study smaller sample size (only 16 participants aged between 5 and 22 years), the different populations (Americans versus French Canadians) and inclusion criteria as well as the use of 24-hour diet recalls as a reference tool [49].» (lines 344-347)

Comment: The manuscript seems too optimistic for the results of lipids.

Response: To address this comment, we clarified our statements and modified the explanations in the Discussion section:

«Consequently, it is difficult to determine whether our FFQ over- or underestimated lipid intakes and/or to what level they were underestimated by the participants in the 3-DFR, a limit that has been met in another FFQ validation study [21].» (lines 373-375)

«As stated previously, frequency and quantity of lipid intakes were difficult to capture using the FFQ, which could potentially under- or overestimates them.» (lines 413 & 415)

Comment: Discussion, Line 388-389, did you assess the results separate for sex? Based on the limitation presented, one could expect the FFQ would have a better application in boys?

Response: We thank the reviewer for this constructive comment. We have performed the analyses separately for males vs. females (for the entire group and separately in adults and children). Results are presented in Supplementary data: Supplementary Tables 3, 4, 5, 6, 7 and 8. These results were commented in the Results section (Validation subsection) and in the Discussion.

Results section: «However, when the analyses were performed separately for males and females, the correlation coefficients followed the same trend with the exception of the female children group (girls) in which coefficient correlations were lower. The nutrients for which we found lower coefficients were energy, proteins, CHO, cholesterol, vitamin C and iron, coefficients ranging between 0.07 (cholesterol) and 0.48 (energy intake) (Supplementary Tables 3, 4, 5, 6, 7 and 8).» (lines 246-251)

Discussion section: «In addition, we observed that girls had a tendency to underestimate their intakes in the 3-DFR or/and to overestimate them in the FFQ. It has been previously shown in the literature that girls and women have a tendency to restrict their diet when using food records [54]. This limit has to be considered when analyzing data obtained in female participants.» (lines 415-418)
Reviewer #2: Development and Validation of a Food Frequency Questionnaire for French-Canadian Adolescent and Young Adult Survivors of Acute Lymphoblastic Leukemia.

The aim of this study was to develop and validate an interview-administered FFQ with the purpose of estimating the impact of nutrition in the development of long-term sequalea of French-Canadian adolescent and young adult survivors of Acute Lymphoblastic Leukemia (cALL). The authors conclude that their FFQ is suitable for classifying individuals according to their dietary intake and will be useful for future studies analysing the impact of nutrition on cardiometabolic and bone complications in French-speaking populations.

In general, I find the paper concise and well written although clarity is required in a few areas.

Major comments

Comment: 3 validated & published FFQs were used in the creation of this FFQ - comment on age and type of participants they were used on.

Response: The first FFQ was developed by Goulet et al. and was structured to reflect French-Canadians’ dietary habits. It was validated in women aged between 30 and 65 years from the Quebec City metropolitan area. Participants had to be free from metabolic disorders requiring treatment and a stable body weight for at least 3 months prior to the start of the study. For the reproducibility study, 50% of the participants were men aged between 25 and 70 years (Goulet et al., Nutrition Journal 2004, 3:13).

The second FFQ was developed by Pritchard et al. and targeted nutrients affecting bone health. It was validated in postmenopausal women aged 70.3 ± 4.7 years (mainly Caucasian). Participants had to be postmenopausal for more than 5 years and greater than or equal to 65 years of age (Pritchard et al., Nutrients 2010, 2: 805-819).

Finally, the third FFQ was an antioxidant nutrient questionnaire published by Satia et al. in which food items were selected based on the most commonly consumed antioxidant-rich foods. The mean age of participants was 31.9 years, 51% were African American, and 52% were female. Eligible participants were generally healthy, free of chronic diseases (i.e., cancer, diabetes, heart disease) and fluent in English (Satia et al., J Am Diet Assoc. 2009, 109(3): 502-508).

In the manuscript, the following paragraph was adjusted in the Method section (Development of the Food Frequency Questionnaire subsection) to describe the information regarding age and type of participants.

«The FFQ was derived from 3 validated and published questionnaires. The first one was developed by Goulet et al., was structured to reflect French-Canadians’ dietary habits and was
validated among healthy women aged between 30 and 65 years [21]. The second FFQ was developed by Pritchard et al. and targeted nutrients affecting bone health. It was validated in postmenopausal women aged 70.3 ± 4.7 years and mainly Caucasian [23]. The third FFQ was an antioxidant nutrient questionnaire published by Satia et al. in which food items were selected based on the most commonly consumed antioxidant-rich foods. The mean age of participants was 31.9 years, 51% were African American, 52% were female and all were free of chronic disease [24].» (lines 117-124)

Comment: Could the authors please clarify the order of administration of the FFQs and the 3-DFR. Also the timeframe between these measures. Possible to include the FFQ or at least a section of it?

Response: To clarify the order of administration of the FFQ and the 3-DFR, the following sentences were modified in the Method Section (Study Population and 3-Day Food Record subsections).

«Visits of Phases 1 and 2 were, on average, one year (± 21 weeks) apart. In both phases, the FFQ was administrated to participants on the visit day by registered nutritionists (2 interviewers), and a 3-day food record (3-DFR) was handed out to complete at home» (lines 104-107)

«At each visit (Phases 1 and 2), instructions were given to participants to complete a 3-DFR at home in the following weeks.» (lines 141 & 142)

Also, the FFQ was included as a supplementary file.

Comment: Were 2 3-DFR completed by each participant? This seems to be implied in lines 103 - 105.

Response: A portion of the participants completed two 3-DFR according to study design. A total of 247 eligible participants were met in Phase 1 (first visit) and a 3-DFR was handed to each of them. Subsequently, 100 of theses participants were invited for Phase 2 (second visit) and a second 3-DFR was given. We obtained 75% and 45% recall rates for the 3-DFR in Phases 1 and 2, respectively. Therefore, on a total of 100 participants who were invited to both phases, 39 completed and handed two 3-DFR. For clarification, the following sentence was added in the text:

«The recall rate obtained was 75% and 45% for the 3-DFR in Phases 1 and 2, respectively. Therefore, on a total of 100 participants who were invited to both phases, 39 completed and handed two 3-DFRs.» (lines 221-223)
Comment: A portion was specified for each food item. Did this vary for adolescents and adults for any of the foods? If not, was it possible to adjust portions where necessary?

Response: In the FFQ, a standard portion was indicated for each food item, which was identical for adolescents and adults. However, the portion size was adjustable by using fractions in the frequency column. An extra column was also available to indicate any other unit of measurement. The following sentence was added for clarification in the text.

«The standard portion size was adjustable by using fractions in the frequency column. An extra column was also available to indicate any other unit of measurement. Quantities were converted when the FFQ was analyzed.» (lines 132-134)

Minor comments

We thank the reviewer for his vigilance. All the corrections are described point by point below:

Comment: developed not developped

Response: This was corrected in line 41.

«Overall, our results support the reproducibility and accuracy of the developed FFQ to appropriately classify individuals according to their dietary intake.»

Comment: Check IU not UI for vitamin D

Response: UI was changed for IU in Tables 3 and 5 and in Supplementary Tables 1 and 2.

Comment: Alcohol not alcohol (alchool)

Response: The word alcohol was corrected in Tables 4 and 5 and in Supplementary Table 2.

Comment: Mediterranean diet score

Response: The word diet was added in the following sentences:
The FFQ was developed to assess habitual diet, Mediterranean diet score, nutrients promoting bone health and antioxidants, and was validated in 80 cALL survivors using a 3-day food record (3-DFR) as the reference method. Therefore, the aim of this work is to develop and validate an interview-administrated FFQ in a population of French-Canadian cALL survivors from the Province of Quebec that assesses habitual diet, Mediterranean diet score, bone health-promoting nutrients, and antioxidants.

Comment: Consistency of FFQ1 FFQ2, FFQ V1/I FFQ V2/II - text & Table 5.
Response: Tables 5 was harmonized using the abbreviations FFQ V1 and FFQ V2. In the text, the word visit was not abbreviated for better clarity.

Classification into quartiles showed that more than 75% of macro- and micronutrients derived from FFQs visit 1 and visit 2 were classified into the same or adjacent quartile (Table 6) with the exception of vitamin A (72%).

Legend Table 5: «Values are means ± SD, N = 29. 1(Mean daily intake as per FFQ V1 – Mean daily intake as per FFQ V2)/(Mean daily intake as per FFQ V1) x 100. 2Wilcoxon signed-rank tests were used to compare values obtained from both FFQ V1 and FFQ V2. No statistical differences were found. 3Intraclass correlations between FFQ V1 and FFQ V2 based on log transformed values. *P ≤ 0.05; **P ≤ 0.01; ***P ≤ 0.0001. V1, visit 1; V2, visit 2. FFQ: food frequency questionnaire, CHO: carbohydrates, SFA: saturated fatty acids; MUFA: monounsaturated fatty acids, PUFA: polyunsaturated fatty acids.»

Comment: Don't think you need a decimal place for large numbers in tables. 2 rather than 3 decimal places for correlations?
Response: In Tables, decimals were eliminated for numbers higher than 100 and correlations were reduced to 2 decimals. Numbers stated in the text were harmonized with the numbers shown in Tables.

Comment: Include age range & sex percentages in methods of abstract.
Response: In the abstract, the following sentences were modified to include the information relative to age and sex.
«The FFQ was developed to assess habitual diet, Mediterranean diet score, nutrients promoting bone health and antioxidants. It was validated using a 3-day food record (3-DFR) in 80 cALL survivors (50% male) aged between 11.4 and 40.1 years (median of 18.0 years).» (lines 29-31)

Comment: Line 48 - include reference.
Response: The reference was added to the following sentence:

«Acute lymphoblastic leukemia (ALL) accounts for approximately one fourth of all childhood malignancies [1].» (line 48)

Comment: Line 73 - 74: Change 'Participants' to 'A participant'
Response: The modification was made as suggested:

«A participant may modify his diet to simplify the task or may report what is, in his perspective, an ideal diet.» (line 72)

Comment: Line 75 - 76: time-consuming
Response: The correction was made as suggested. (line 75)

Comment: Lines 104 - 105: '… was handed out to complete at home.'
Response: The correction was made as suggested. (line 106)

Comment: Line 109 - '.took part in the two…'
Response: The correction was made as suggested:

«For assessing FFQ reproducibility, 29 participants who took part in the two phases of the study (visits 1 and 2) and who were interviewed by both nutritionists were selected.» (lines 110-112)

Comment: Line 118 - replace 'last' with 'third'
Response: The correction was made as suggested:
«The third FFQ was an antioxidant nutrient questionnaire published by Satia et al. in...» (line 121)

Comment: Line 120 - 'consisted of'
Response: The correction was made as suggested:
«The final result consisted of an interviewer-administered FFQ, which comprised 190...» (line 125)

Comment: Line 121 - '…to more accurately describe the nature…'
Response: The correction was made as suggested:
«…106 having sub-questions to more accurately describe the nature of the food consumed.» (line 126)

Comment: Lines 121 - 123: rephrase: The developed FFQ was pre-tested in 35 participants and the tool was then modified accordingly, after addressing issues relating to content and comprehension.
Response: The sentence was rephrased as suggested:
 «The developed FFQ was pre-tested in 35 participants and the tool was then modified accordingly, after addressing issues relating to content and comprehension.» (lines 127 & 128)

Comment: Line 130 – foods
Response: The correction was done as suggested. (line 137)

Comment: Line 134 - 'At each visit..' -?
Response: The correction was made as suggested:
 «At each visit (Phases 1 and 2), instructions were given to participants to complete a 3-DFR at home in the following weeks.» (lines 141 & 142)
While food did not have to be weighed, participants were encouraged to use measuring cups and spoons to estimate portions." (line 145)

When necessary, we contacted companies to obtain nutrient values of their product." (line 155)

We used Spearman correlations to assess the relationships for energy, nutrient intakes and energy-adjusted nutrient intakes." (line 181)

Bland Altman Plots were used to assess agreement between the two tools for intakes of energy, macronutrients and micronutrients (vitamins A, C, E and D, and calcium)." (line 187)
Comment: Lines 187 & 193 – intakes
Response: The correction was made as suggested in lines 193 & 200.

Comment: Line 203 - rephrase: 'Intakes of energy, protein, CHO, …'
Response: The sentence was rephrased as suggested:
«Intakes of energy, proteins, CHO, lipids, calcium, vitamins A, C, D, E and Mediterranean diet score derived from the FFQs at visits 1 and 2 were also classified into quartiles and cross-classification analyses were completed to validate agreement between the two FFQs.» (lines 208-210)

Comment: Table 2 - don't think line on ethnicity is needed as stated clearly in line 209
Response: The line on ethnicity was deleted from Table 2.

Comment: Line 217 - replace 'superior' with 'higher'
Response: The correction was made as suggested:
«Reported intakes of dietary fiber and micronutrients (vitamins A, C, E and D, calcium, iron and folate) were also higher with the FFQ, differences ranging between…» (line 232)

Comment: Lines 218 & 219 - did you look at males/females separately?
Response: We have performed the analyses separately for males vs. females (for the entire group and separately in adults and children). Results are presented in Supplementary data: Supplementary Tables 3, 4, 5, 6, 7 and 8. These results were commented in the Results section (Validation subsection) and in the Discussion.

Results section: «However, when the analyses were performed separately for males and females, the correlation coefficients followed the same trend with the exception of the female children group (girls) in which coefficient correlations were lower. The nutrients for which we found lower coefficients were energy, proteins, CHO, cholesterol, vitamin C and iron, coefficients ranging between 0.07 (cholesterol) and 0.48 (energy intake) (Supplementary Tables 3, 4, 5, 6, 7 and 8).» (lines 246-251)
Discussion section: «In addition, we observed that girls had a tendency to underestimate their intakes in the 3-DFR or/and to overestimate them in the FFQ. It has been previously shown in the literature that girls and women have a tendency to restrict their diet when using food records [54]. This limit has to be considered when analyzing data obtained in female participants.» (lines 418-421)

Comment: Line 229 - rephrase:'.. when children and adults were analysed separately.'
Response: The sentence was rephrased as suggested:

«No major differences in correlation coefficients were noticeable when children and adults were analysed separately (Supplementary Tables 1 and 2).» (lines 245 & 246)

Comment: Line 233 - remove 'Besides,' 
Response: The word besides was removed as suggested:

«More than 93% of the points fell within the limits of agreement for energy intake, CHO, proteins, lipids, vitamins A, C, E and D, and calcium.» (lines 255-256)

Comment: Table 3: in difference column, replace comma with a decimal point where necessary. 1 also to correct in FFQ column. Big difference between 3-DFR and FFQ SD - correct? Reverse superscripts 1 & 2 so they read 1-4 across the table, rather than 2, 1, 3 & 4?
Response: We thank the reviewer for his/her vigilance. All commas were replaced by a decimal point in Table 3. As a matter of fact, the standard deviation for the same nutrient derived from the 2 measurement tools should be within similar range. Following, revision, we noted entry errors in Table 3 and corrected them accordingly.

Adjustments were made to superscripts so they read 1 to 4 across the Table 3.

Comment: Line 250 - '. energy and nutrient intakes'
Response: Correction was made as suggested in the title of Table 4:

«Table 4: Food frequency questionnaires and 3-day food records: cross-classification analysis of energy and nutrient intakes»
Comment: Table 4 - don't need units. Should third column not be the sum of the current 2 & 3, e.g. 87.5% of energy is classified into same +/- 1 column? Table 6 - see Table 4 comments

Response: We agree with the reviewer and have removed the units in Tables 4 and 6. The sum of the 3 columns in Tables 4 and 6 should be 100%, each participants are classified into one of the 3 categories: same or contiguous quartiles (same ± 1 quartile) or in opposite quartile (misclassified). The following sentence in Method section (Statistical analysis – Validation subsection) was modified for clarification:

«Cross-classification analyses were completed to validate agreement between the two tools in terms of proportions of participants’ energy and nutrient intake, classified into the same or contiguous quartiles (same ± 1 quartile) or in opposite quartile (misclassified).» (lines 192-194)

Comment: Line 304 – defence

Response: We agree with the reviewer that justifications are needed to explain the significant decrease of lipid-related nutrient correlation coefficients following adjustment for energy intake. We have initially calculated energy adjusted nutrient intakes in order to reduce the confounding impact of the total energy intake.

The mean daily energy intake derived from the FFQ was higher than the one from the 3-DFR (difference of 11.3%, shown in Table 3). Whereas, the mean daily intake for lipids derived from both tools was similar (difference of 0.5%). This implies that the contribution of lipids to total energy intake is lower in the FFQ compared to the 3-DFR. The reduced correlation coefficient of the energy intake adjusted lipid intakes reflects the variation in lipid intake independently of total energy intake between the 3-DFR and the FFQ.

The following sentences were adjusted and added in the Discussion section (lines 328-337):

«Energy adjusted nutrient intakes were calculated for both tools to reduce the confounding impact of the total energy intake on specific nutrients.» (line 327-328)

«We found that, for CHO, proteins and micronutrients, correlations were slightly impacted by total energy intake, while lipids and lipid-related nutrient correlation coefficients were significantly decreased. The reduction of the correlation coefficient of the energy intake adjusted lipids reflects the variation in lipid consumption independently of total energy intake between the 3-DFR and the FFQ. Thereby, the contribution of lipids to total energy intake was lower in the FFQ compared to the 3-DFR.» (line 328-333)

Comment: Line 318 & 321 – intakes
Response: The correction was made as suggested (lines 337 & 340):

Comment: Line 327 - under-going
Response: The portion of the sentence that included undergoing was removed from the manuscript (line 346):

Comment: Line 329 - '.. the latter being found in a wider range of foods.'
Response: The correction was made as suggested:

«We found larger differences between the FFQs and the 3-DFRs in micronutrients than in macronutrients, the latter being found in a wider range of foods.» (line 349)

Comment: Line 330 - '.3-DFR, this will likely result in a poor correlation with the FFQ.'
Response: The sentence was rephrased as suggested (line 356):

«Hence, if foods containing specific micronutrients were not consumed during the days covered by the 3-DFR, this will likely result in a poor correlation with the FFQ.» (lines 349-351)

Comment: Line 337 – correlations
Response: The correction was made as suggested (line 359).

Comment: Lines 243 - 245 - sentence seems incomplete
Response: The sentence was removed (line 365): the average overestimation of energy intake and macronutrients by the FFQ is already explained in line 337-341.

Comment: Line 351 - fat not fats
Response: The correction was made as suggested (line 371).
Comment: Line 369 - include time frame between FFQ in the methods
Response: The time frame between FFQs was added in the Method section (Study Population sub-section).

«Visits of Phases 1 and 2 were, on average, one year (± 21 weeks) apart.» (line 104)

Comment: Line 370 - replace exposed with shown
Response: The correction was made as suggested.

«It has been shown that repeating FFQ administration within 1 month leads to higher correlation coefficients than repeated administrations further apart.» (line 391)

Comment: Line 381 - replace classify with rank?
Response: The correction was made as suggested.

«Accordingly, our FFQ should be utilized to rank individuals as per nutrient intakes rather than to assess their absolute values.» (line 402)

Comment: Line 384 – administered
Response: The correction was made as suggested.

«In general, the FFQ was administered to the adolescent with the help of the accompanying parent.» (line 409)

Comment: Lines 388 - 389 - how could you tell that they tended to restrict their diet during the 3-DFR? Evidence?
Response: We have performed the analyses separately for males vs. females (for the entire group and separately in adults and children). Results are presented in Supplementary data: Supplementary Tables 3, 4, 5, 6, 7 and 8. These results were commented in the Results section (Validation subsection) and in the Discussion.

Results section: «However, when the analyses were performed separately for males and females, the correlation coefficients followed the same trend with the exception of the female children group (girls) in which coefficient correlations were lower. The nutrients for which we found
lower coefficients were energy, proteins, CHO, cholesterol, vitamin C and iron, coefficients ranging between 0.07 (cholesterol) and 0.48 (energy intake) (Supplementary Tables 3, 4, 5, 6, 7 and 8).» (lines 246-251)

Discussion section: «In addition, we observed that girls had a tendency to underestimate their intakes in the 3-DFR or/and to overestimate them in the FFQ. It has been previously shown in the literature that girls and women have a tendency to restrict their diet when using food records [54]. This limit has to be considered when analyzing data obtained in female participants.» (lines 418-421)