**RESPONSES TO REVIEWERS' COMMENTS**

***Thank you very much for all your comments and for the opportunity to correct the article. All suggestions have been included in the new version of the article. Moreover, there are additional issues that were missed in the previous version of the text. The reviewers' comments were very valuable and allowed us to revise the conclusions from the previous version of the article.***

***As a result of the comments (comments of the Reviewer A and B were similar) the following changes were introduced:***

1. ***In the new version of the article was supplemented theoretical and methodological shortcomings.***
2. ***The new version of the article has been changed in linguistic terms.***
3. ***The text has been prepared in accordance with the requirements of Psychological Topics and APA 6 ed. Citations in the text, tables, numbers, and symbols in the tables have been corrected.***
4. ***Unnecessary characters are excluded.***
5. ***The parts of the study were distinguished in accordance with the requirements of Psychological Topics (e.g. Research aim, Procedure and other sections suggested by the Reviewers). In the Discussion, reference is made to the issues that were previously analyzed. In the Conclusions section the results are summarized and limitations of own research are indicated.***

**REVIEWER A**

The manuscript Does a lower cognitive reserve increase the risk of lower cognitive performance in adults? deals with an interesting and ever more investigated topic of cognitive reserve and its relation to cognitive status in adulthood. Although interesting in its idea, the article has considerable shortcomings in its execution, i.e. writing and reporting of results. Overall, the manuscript needs a great deal of English language editing. The misuse of language renders quality to the overall text (unjustly) sloppy and sometimes even incomprehensible. Aside from the need of language refinement, the manuscript needs a more systematic approach – in writing of the introduction and discussion, as well as in reviewing the materials used. On the part of the results and its analysis, the paper would benefit from the power analysis (conducted beforehand). The discrepancy between the number of variables used and the sample employed stings deeply into the validity and generalizability of the obtained findings. Should this manuscript be thoroughly rewritten, and supplied with power analyses, I would recommend its publication in Psychological Topic.

***Detailed responses***

**Reviewer A**

 ABSTRACT – **we have entered corrections**

1. For the sake of brevity state the number (%) of either female, or male participants
2. “On the basis of the results of these tests were calculated cluster analysis (k-means method)” – revise the sentence
3. LCL and HCL are levels of cognitive abilities, not just abilities
4. “higher CR level of about 14% reduces the probability of obtaining” – needs rewriting

 INTRODUCTION – **we have entered corrections**

Examples of parts of the manuscript, which need rewriting, are numerous throughout the text and their listing is beyond the scope of the revision of the manuscript in terms of its scientific validity. However, I must warn about this issue.

For example, “higher level of resources may delay / relive age-related cognitive decline” – reliving age-related decline with higher resources is in total contradiction of what this and other studies find in the domain of cognitive reserve and cognitive aging.

Also, abbreviations, “e.g.”, “i.e.” should be corrected, and the use of “/” should kept to minimum.

Paragraphs 4 and 6 in the introduction could be combined since they inform of CR, with the difference in levels of definition (behavioral/cognitive and neural reserve).

The aim is missing from the introduction. **– we have entered section The aim of research**

METHOD **the text contains a table with the data of the whole group (N = 120)**

Sample characteristics are advised to be placed in a Table, which would make the grasping of the sample much clearer.

Material **- Information on the methods and calculation of CR are structured. Indeed, the age of the participants was varied. In the discussion on the results, we comment on this problem. In our opinion, some CR items are susceptible to subjectivism and, in relation to age, are probably also correlated with difficulties in recalling or assessing certain facts that make up CR. Grotz et al., 2017 draws attention to this problem. The reviewer's comment was very valuable because only this article mentioned this problem.**

The listing of materials needs a more systematic, old-school approach. Just list the instrument and described, do not use the purpose of its inclusion in the battery as a criteria of classification.

In the “self” part of the CR questionnaire, whatever that is, it is unclear how the authors deal with the issue of duration and intensity of various types of activities. The age range of the sample is very wide, covering over 40 years and it is important to discuss (keep in mind) how did these factors (the age of the beginning of a certain activity, its lifelong or interval duration, and its frequency and intensity) interact or contributed to CR.

DISCUSSION **The discussion has been supplemented. The discussion was divided into parts referring to subsequent results. Because additional calculations were performed (e.g. correlations CR - depression, CR - age, CR - gender), it was possible to signal interesting issues. One of them is the (negative) correlation CR - age. This result indicates that with age, respondents report (remind) fewer facts about their activity and / or give them less importance. This means that the assessment of the CR level is to a certain extent biased by respondents' subjectivism or their memory deficits. It has also been shown that men report a higher CR level than women. These very interesting issues were discussed in the discussion.**

**The limitations of the study were also highlighted. These are: a small number of subjects, unequal gender proportions and no longitudinal measurements. The most interesting, however, is the conclusion, which was now more strongly accentuated - a lower level of CR is associated with a lower, but current level of cognitive ability of the subjects, but due to the lack of longitudinal studies this is not a basis for forecasting the direction of cognitive aging.**

The discussion is brief, much shorter than the introductory part and this should be the main contribution of your findings to the field.

- elaborate more on your findings (1st paragraph)

- elaborate on the wide age range? How were the questions formed – did the participants report on recent or remote activities? How could this have affected the results? (2nd paragraph)

- Limitations should include the comments on statistical power and further research suggested

REFERENCES

The list of references is very extensive. Especially, given the relative brevity of the manuscript. Although the number of references per article is higher for social sciences compared to let’s say math or life-science, still 64 references presented hear seems to be a bit over the edge. Some basic rules for referencing are: i) not to cite several references in one place **without** discussing the relevance of each work to your research (a couple of such cases in the manuscript), ii) not to cite old references; roughly 85% percent of references should be less than five years old (a bit less than 50% of references older than 5 years are cited in this manuscript); exceptions should be reserved for seminal works.

**The reference list has been modified, but unfortunately it is not shortened. The most important reports from recent years were selected, as well as classical works describing CR (e.g. Stern) and those that were the basis for undertaking research on CR, i.e. Blessed, G., Tomlinson, B., & Roth, M. (1968). and Katzman, R., Terry, R., DeTeresa, R., Brown, T., Davies, P., Fuld, P., Renbing, X., & Peck, A. (1988). Due to the broadening of analyses, references were made to article e.g. CR and gender relationship, CR x cognitive aging or x depression relationship. Each of these publications analyses important issues and it seems necessary to show us what has been achieved so far and what has been discussed about CR.**

**TABLES Tables have been improved**.

No need to state p(0.001) in the Table, with three asterisks and once again in Legend. Use “\*” in Table, and explain in Legend. Write Ms with one decimal. Title of the Table should explain what’s in the Table (state the Ns by the LCL and HCL, which need to be explained in the title). Use English (Table 2, wiek=age). Follow APA recommendation for Table formatting and reporting of results (Table 2).

**REVIEWER B**

*Elaboration of review*

This article covers important concept of cognitive reserve and its role in cognitive functioning in elderly. Therefore, I recommend this article to be published in the journal „Psychological Topics” but **after several modifications.**

**Thank you very much for your suggestions - all of them have been taken into account. The new text has also been improved in terms of language.**

General suggestion: **language editing is necessary**! The article must be well-written, clear and easy to follow.

Specific suggestions:

*Title*: The title implies causal relationship but this is correlational research and therefore I suggest to change the title of the article, e.g. “Is lower cognitive reserve related to lower cognitive performance in adults?” or “The association between cognitive reserve and cognitive performance in adults” or “Is there a link between cognitive reserve and cognitive functioning…” or something similar. **The title of the paper has been changed. Current: Is lower cognitive reserve related to lower cognitive performance in adults?**

*Abstract*: **Abstract has been corrected.**

- the aim of this study must be more specific; **we have included the aim of study**

- the age range of the participants is different in Abstract compared to Methods – in Abstract is written from 40 to 60, in Method from 40 to 84**! Corrected**

- Sense of social support or *perceived* social support? **term in the meaning of "perceived" social support**

- the level of depression instead of the intensity of depression **modified**

- list the WAIS subtests in parenthesis **modified**

- when you wrote “on the basis of the results of these tests…” which tests do you mean? cognitive abilities tests? **Yes, on the basis of the results of cognitive tests – the sentence has been modified**

- “distinguished” is not the wright word – please use more specific concept to explain the result of cluster analysis - **was converted into "grouped” (participants into two groups)**

- is better to write “the obtained result**s** are consistent with the results from previous researches” instead of the original sentence “the result is consistent with other data…” **modified**

Key words: dismiss “odds ratio” Termin **OR excluded**

*Introduction*:

* some suggested changes are included in the manuscript as well as some comments - Track Changes option **These suggestions have been taken into account. The Introduction section completes the data on the CR association with the APOEε4 genotype and the CR association with the APOEε2 genotype for Alzheimer's disease. A supplement on familial FTD and CR was also introduced. Links between genotype, CR and dementia development are the subject of interesting analyses and probably they explain cognitive functioning of adults. Due to the topic of the paper, we could only mention this.**
* too many double expressions (e.g. defers/masks; delay/relieve; adults/seniors; delaying/preventing; volumetric/structural, etc…) - please, use single expression where it is possible, or provide more precise explanation instead of “double” expressions
* some sentences are unclear, or incorrect…so, carefully go through the text and check for possible inconsistencies and illogicality (I wrote some comments in the text) – SEE GENERAL COMMENT**! corrected**
* The aim of this paper and its rationale should be clearly defined at the end of this section not as a part of Methods **corrected**

*Methods:* **All section has been corrected and completed**

* Usually consists of 3 parts: participants, measures used and procedure…procedure is missing!
* Some subtitles are missing - please, look at the comment included in the text
* The part related to questionnaires and cognitive abilities tests should be re-arrange – this part has to be clear with all needed details but not too many irrelevant (redundant) information…go through text and my comments alongside
* BDI must be a little bit more explained – to keep a balance with other two parts of this paragraph

*Results:* **The whole section has been improved. The results are discussed according to the sequence of stages of statistical analysis. Additionally, the results of comparisons (CR and sex differences; CR and the condition of the cardiovascular system) and correlation analyses (CR and depression and age) are described.**

* provide clarification of k-means cluster analysis (why did you choose this analysis – the rationale); there is no need to use two ways of expression of significant results – it is enough to use \* with explanation below the table
* You did not provide the information about existence of sex differences?
* Polish word for age in Table 2 **Modified**

*Discussion:* try to relate more your results with results of other researches in this study area;

**The discussion is extensive. The current version contains parts: CR and cognitive competence, depression and age; Cognitive functioning predictors; CR and gender and cognitive functions; CR - methodological notes.**

*Conclusions* (missing in the article): bring discussion on the higher conceptual level in this paragraph – short and compelling. **The current version commented briefly on the results obtained and identified weaknesses in research and the possibilities of supporting CR levels in adults.**

*References*: please check once again citation (within the text as well as in this section) – there are some inconsistency but generally is done correct (according to the APA principles). In a document “Instructions to authors” you can find detail description in Section 4. References. **Corrected in accordance with the requirements of APA 6ed.**