

Response to the reviewers

We thank again the recommender and reviewers for their time and useful comments. Please find below our responses to the last reviewer comments.

Response to Géraldine Escriva-Boulley

The authors did a really great job of responding to my comments and adding relevant information and analyses. I have only minor comments regarding the self determination theory.

In the second paragraph of the introduction, when presenting this theory, the main authors of this theory (Deci & Ryan) may be cited.

In the sentence "In particular, analysing motivation for physical activity could be here an appropriate approach supported by the well-established self-determination theory framework stating that the adoption and maintenance of physical activity behaviour is dependent on the form of motivation (autonomous vs. controlled) and regulation (integrated, identified, introjected, external) related to physical activity, with a particular positive influence of autonomous (identified and intrinsic) regulations (Teixeira et al., 2012) ".

➤ Thank you for this suggestion. We have added a reference to Deci & Ryan (through a paper specifically related to physical activity) in the sentence as follows:

“In particular, analysing motivation for physical activity could be here an appropriate approach supported by the well-established self-determination theory framework **(Ryan et al., 2009)** stating that (...)”

The full reference is the following:

- Ryan R, Williams G, Patrick H, Deci E (2009) Self-determination theory and physical activity: the dynamics of motivation in development and wellness. Hellenic Journal of Psychology, 6, 107–124.

The part "physical activity behaviour is dependent on the form of motivation (autonomous vs. controlled) and regulation" is not entirely correct. It is better to distinguish form of motivation and regulation in this sentence. For instance : "physical activity behaviour is dependent on the form of motivation (autonomous vs. controlled) and/or on regulations"

➤ Thank you for having pointed this out. We have modified the manuscript based on your wording suggestion.

In the sentence "Moreover, to our knowledge, very few studies [...] (Kim, Crane, et al., 2021)." as the authors only cited one study, it may be more precise to write "Moreover, to our knowledge, only one study [...] (Kim, Crane, et al., 2021)." if relevant.

➤ Thanks. We have again modified the manuscript based on your wording suggestion.

The motivational profiles cannot be named as "controlled motivation" if only the introjected regulation is high or moderate, but it is possible to name the profile after the regulation (high autonomous and high or moderate introjected regulation).

Thank you for your remark. We have made the modifications in the manuscript (text and figures) as well as in the R code and supplemental materials. More precisely, we have replaced "controlled motivation" by **"introjected regulation"**, "Very high AU-High C" by "Very high AU-High **IR**", and "High AU-Mod C" by "High AU-Mod **IR**".