We thank the reviewer for the helpful comments. We have responded to each comment and revised our manuscript. The revised sentences were highlighted in yellow in the manuscript.

Reviewer: Malavika Subramanyam

Reviewer's report:

I applaud the authors for making substantial revisions to the manuscript. A major compulsory revision which is still required is to add supporting citations to the following sentences:

"However, this would not be the case for South Korean boys. Rather, adolescent urban environments which allowed better access to high caloric western food might have contributed to an increase in adolescent obesity prevalence among South Korean boys aged 10-19 residing in urban areas. Weight misperception might have been less important in reducing obesity in South Korean boys as in South Korean girls."

The citations should support the claims and also provide a clearer conceptual description explaining these results. For instance, why do the authors think that weight misperception might have been less important in reducing obesity in South Korean boys?

OUR RESPONSE: We rewrote the sentence and added supporting references regarding this point (see line 336-345 in the revised version).

“However, this would not be the case for South Korean boys. For example, gradual secular increases in the energy intake from fat and associated westernized dietary patterns were observed from 1998 to 2005 among Korean adolescents aged 10–19 years [34]. Meanwhile, the westernized dietary pattern and the percentage of energy from fat were positively associated with abdominal obesity and overweight only in Korean boys [34]. In addition, rural boys were more likely to prefer thin body shapes than urban boys, whereas urban girls reported a stronger preference to a skinny body than rural girls [35]. In this regard, the overall increases in obesity and overweight in Korean adolescents might be partly attributable to high calories intake, but the gender differences in
socioeconomic obesity inequalities might be explained by different effects of body image preferences and early childhood factors among boys and girls."

In general, the discussion section needs to situate in the Koran context conceptual statements such as "Another possible explanation is that these gender differences might have originated from earlier childhood." The authors go on to describe what other studies have found. It would help to first describe how the early socioeconomic conditions might differ among groups in the current study.

OUR RESPONSE: We added the following sentences to describe differential impacts by gender of early socioeconomic conditions on socioeconomic differences in obesity.

"In Korea, huge urban-rural inequalities have existed. The relative disadvantage in economic development, health behaviors, health outcomes, and health care resources have been observed in rural area [27]. Adolescents with low household income or rural residency might have been exposed to disadvantaged socioeconomic environments from their early childhood." (see line 305-309 in the revised version) "Residual associations between early childhood SEP and obesity measures were evident in women not in men [31].” (see line 315-316 in the revised version)

Another claim that needs to situate din the context of Korea is: "Meanwhile, girls are more vulnerable to the stigma of obesity than boys." The reference cited does not seem to refer to the Korean context. Do we know how stigma related to obesity works in Korea? Is it different in rural versus urban areas of Korea? I performed a quick web search and found newspaper stories that discussed how prevalent fat-shaming is in Korea. The authors may be able to locate scholarly work that can be cited.

OUR RESPONSE: weight misperception might have been less influential in explaining weight control behaviors in Korean boys unlike in Korean girls. For example, Korean girls were more likely to engage in weight control behaviors for weight loss than Korean boys (Ha et al., 2013). Korean girls were also more likely to try various dieting practices, even including unhealthy methods, than Korean boys (Lim et al., 2014). In addition, an international paper showed that, among Korean university students, the prevalences of perceived overweight and trying to lose weight were three times greater in women than in men (Wardle et al., 2005). Of total 22 countries, the prevalence of ‘trying to lose weight’ was highest in Korean female university students (Wardle et al., 2005). Based on this, we can assume that South Korean girls might be more vulnerable to the stigma of obesity than boys. However, we cannot find any specific scholarly work from South Korea provide more direct information on the magnitude of stigmatization regarding obesity and its gender and urban-rural differences. Accordingly, we deleted the prior sentence on the gender differences in the stigma and added the following sentences with associated references. (see line 295-303 in the revised version)

“Meanwhile, weight misperception might have been less influential in weight control behaviors in South Korean boys unlike in South Korean girls. For
example, girls were more likely to engage in weight control behaviors for weight loss than boys among South Korean adolescents [23]. Korean girls were also more likely to try various dieting practices, even including unhealthy methods, than boys among adolescents who overestimate their weight [24]. In addition, an international paper showed that, among South Korean university students, the prevalences of perceived overweight and trying to lose weight were three times greater in women than in men [25]. Of total 22 countries, the prevalence of ‘trying to lose weight’ was highest in South Korean female university students [25].

Minor essential revisions

"Weight misperception might have been less important in reducing obesity in South Korean boys as in South Korean girls." Recommend changing this to "Weight misperception might have been less important in reducing obesity in South Korean boys unlike in South Korean girls."

OUR RESPONSE: We changed the related paragraph and the sentence "Weight misperception might have been less important in reducing obesity in South Korean boys as in South Korean girls" was removed.