Dear Editor and Reviewers,

We are grateful for the constructive and considered comments from the reviewer. We have made every attempt to fully address these comments in the revised manuscript. Below, we outline how we have handled the comments from the reviewer.

We hope these changes are satisfactory.

Best wishes,
Dan Cui

For the reviewer:	
1. This manuscript argues that the effect of leisure time on productivity has not been widely considered by previous economists. While, studies in either fields of economics or psychology have discussed related issue. More discussion can be added on why and how leisure time is significant in the parts of literature review and discussion.	Thank you for your suggestions. This has been changed. In fact, the effect of leisure on productivity mainly through three pathways or mechanisms including (1) leisure can bring about happiness and positive emotions (Iwasaki, 2007), which can improve the personal competency and work performance, and then enhance their labor productivity. (2) individual personality differences may affect leisure choices (Li and Tsai, 2013), and individuals' labor productivity tends to increase along with their self-esteem, self-awareness (Gould et al., 2008; Nimrod, 2007; Xie et al., 2018). (3) the role of leisure as compensation for and recuperation from work. The positive outcomes of leisure may enhance a person's ability to satisfy the work requirements and his or her importance to the organization (Blekesaune, 2005). This has been discussed in the literature review.
2. Opinions that leisure time is not productive are based on references most published during years ago. Therefore, latest economic studies on this topic should be considered. For example, papers of experimental economics and behavioral economics.	This has been changed. We added some latest economic studies on this topic. For instance, some economists also argued that although leisure time as a pure substitute for working time, reading professional literature in leisure time or surfing the Internet (selecting useful information) can also lead to a greater or lesser increase in work efficiency(Ioan and Ioan, 2016).Even though, the literature in the traditional economics reflects the viewpoint that leisure time has no or little positive effects on labor productivity.
3. Only one optimal level for all the	Thank you for your suggestions. Wei (2006) found that the threshold of leisure time

sample countries was offered. One further question is that, will the optimal point different in different countries? How and why will it happen? The answer can make the paper more interesting and reasonable.	in China is 6136 hours. When leisure time is higher than 6136 hours, the output efficiency of Chinese will gradually increase. Thus, we suggest may be the optimal point is different in different countries. This may be due to the different social and economic development backgrounds. In the future studies, it is necessary to explore the optimal point of leisure time in more developing countries.
4. Equation (2) was put forward directly without any references. However, the equation is the very basis of the potential relationship between leisure time and productivity. Please give more explanation based on references.	Equation (2) shows that technical accumulation combines two processes: the process of "learning by doing" (K^{α}) and the process of "learning through leisure" ($l^{1-\alpha}$)[1], as we call it. The former process has been clearly elaborated by Romer (1986). The latter implies that "creative" leisure produces technological externalities for society. In other words, if activities performed during leisure time are enjoyable and constructive, they benefit individuals' and their counterparts' physical strength, willpower, and creativity. Although the effect of an individual's participation in such leisure on the whole economy may be too weak to notice, the accumulated aggregate effect can be a huge and "unexpected" knowledge accumulation that generates further positive externalities and increases the overall level of technology in the economy(Romer, 1990).
5. "α", which firstly used in Equation (2), was not explained	α indicates the elasticity of K to A, and $1-\alpha$ indicates the elasticity of *l* to A (see page 5).
6. Re-check the grammar.	This has been changed.
7. Acronym and proper noun in the tables and figures should be explained by note.	Abbreviations and acronyms are often defined the first time they are used within the main text and then used throughout the remainder of the manuscript. In the main document, all the acronym and proper noun have been defined the first time they are used.
8. In regards to the model and results, the authors certainly do a	Leisure time, according to Robinson and Godbey (1997), include every moment that one is not at work.

[1] 1-α is the technological elasticity of leisure time. Leisure time has a decreasing marginal return to the technological level, i.e., $0<1-\alpha<1$. However, there are two situations in which $1-\alpha<0$. First, if leisure time has not been constructively used (i.e., there are sharp increases in such leisure activities as crime, drug use, and illegal sex activities), the formation of new knowledge and creativity will be inhibited (Fogel, 2000). Second, when the income of laborers in low-income countries increases, the substitute effects of leisure time may offset the positive effect of "learning by leisure." In these two cases, $1-\alpha< 0$.

good job describing the econometrics and modeling. The calculation of leisure time is taking the total number of hours in a year, and then subtracting working hours and educational hours. Based on this, they estimate that the optimal number of leisure hours would be 5813 hours, or about 15.93 hours per day of leisure. Essentially, their results are basically telling us that the best thing for workers is to have more than 15 hours leisure time a day. In this there is problem. the model essentially describes anything outside of work time as leisure time. Thus sleeping, driving to work, taking care of kids, going to the DMV, etc, are all leisure time activities. In this sense, the authors should give a detailed definition of leisure.	Most economists thought that leisure time is a pure substitute for working time(Farahani *et al.*, 2016; Keane, 2011). Gronau (1977)argued that leisure time should be calculated by deducting work time and home production time from the total available time, while home production time is relatively constant. While Ramsay and Francis (2009)suggested that leisure time should be calculated by subtracting work time, school time and home production from the total available time. Due to these variations and considering the focus of 21 OECD countries, to keep consistency, we calculated leisure time by subtracting average worked hours and schooling hours from total hours in a year (see formula 7). (see page 8)