Author's response to reviews

Title: Personal characteristics related to the risk of adolescent internet addiction: a survey in Shanghai, China

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Author's response to reviews: see over
Dear editors,

Ms. No.: 1202730682715095. Title: Personal characteristics related to the risk of adolescent Internet addiction: A survey in Shanghai, China.

Thank you very much for your letter of the 24th August 2012 and the attached referees’ comments on our paper. Please find enclosed a copy of our revised manuscript with the following changes, according to referees’ comments and suggestions.

Thank you very much for giving us the opportunity to resubmit our work.

Yours sincerely,


In response to Referee 1
1. I appreciate the opportunity to review the article, “Personal characteristics related to the risk of adolescent Internet addiction: A survey in Shanghai, China.” Please find a summary of my comments and concerns below.

Overall, this is an important topic. It is clear from the literature that excessive Internet use is a problem, particularly in parts of the Eastern world and increasingly so in the United States. Understanding personal characteristics related to the risk of adolescent Internet addiction could potentially help public health implication on prevention.

Introduction

Internet addiction is a potentially problematic behavioral problem. Adolescent Internet addiction (AIA) specifically has been under-researched, and the purpose of this paper is to provide prevalence data from 16 high schools in Shanghai, China. Demographic and individual predictive factors are also identified.

Although this appears to be an important potential public health problem worth of study, the introduction could be improved by providing a compelling conceptual foundation for demonstrating the need for this research. Specifically, more details are needed on the extent to which Internet addiction is a problem, and the identified consequences of Internet addiction, especially among youth. Why is there a need to focus specifically on adolescents (rather than college-age populations or adults)? What data are available that describe the impact of Internet addiction in youth in terms of psychological, emotional, economic, and/or educational outcomes (short-term and long-term)? Is Internet addiction among teen-agers longitudinally associated with important outcomes?
This paper would be significantly strengthened if the authors could provide a more thorough description of Internet addiction as a problematic behavior and why, specifically, its identification in adolescents is needed.

We agree with the reviewer that the introduction could be improved if we provide a more thorough description of the possible consequences of adolescent Internet addiction to demonstrate the need for this research, and we have added the related materials into the introduction part of our paper.

Internet addiction may interfere with people’s daily lives, and had short and long-term effects on their social, psychological and physical well-being. According to previous studies, internet addiction was associated with obsessive-compulsive and depressive disorders, attention-deficit hyperactivity disorder, hostility/aggressive behaviors, impaired executive control ability, and multiple structural changes in the brain.

However, very few papers discussed the economic and educational correlates of adolescent internet addiction as our study did. According to our study, adolescents with internet addiction tended to have poorer academic achievement and have higher monthly spending than non-addicts.

In addition, most of internet addiction studies were cross-sectional. However, one paper published in “Pediatrics” in 2011 (Pediatrics 2011, 127: e319-329) and one paper published in “Arch Pediatr Adolesc Med” in 2009 (Arch Pediatr Adolesc Med 2009, 163: 937-943) both revealed that Internet addiction among teen-agers longitudinally associated with their poorer relationships with their parents, poorer grades, increased
levels of depression, anxiety, and social phobia, and have short-term and long-term
effects on the development of adolescent aggression & hostile behaviors.

Until now, whether Internet addiction is classified as impulse-control disorder or a
behavior addiction has not been confirmed. Furthermore, the operational definition of
Internet addiction has not been conclusively developed and internet addiction is not
included in the DSM-IV-TR (fourth edition, text revision) yet. However, the
prevalence of Internet addiction has gained the attention of researchers and it has been
suggested that Internet addiction should be included in DSM-V.

On the other hand, the reasons why we specifically focused on adolescents (rather
than college-age populations or adults) were as follows: (1) Psychological and
developmental dynamics. Adolescents (also called teen-ages, usually less than 18–19
years old) are used to describe young people who are no longer children but who have
not yet become adults. Each adolescent undergoes the period of teenage rebellion.
Teenages usually have poorer self-control ability, worse self-regulative abilities, and
poorer cognition than college-age populations or adults, but they have the same desire
for independence as well as college-age populations or adults do. Therefore, they may
be more vulnerable to the temptations of the internet than adults. (2) Expectation of
computer/Internet use. Nowadays, computer use by adolescents is encouraged, and in
some courses is required. In Shanghai, middle school students often need to go online
to complete their homework. In our study, 14.1% of adolescents used the internet
mainly for academic learning. Therefore, the use of the Internet (E-mail, listserv, and/or
the Web) is logical and common outside the classroom. (3) Access to the Internet. In
In our study, 93.8% of adolescents ever used the internet. In Shanghai, most of middle or high school libraries, most of the families (in our study, 85.1% of families had computers, and 73.1% of families had access to internet), and internet café had internet access. Therefore, adolescents are easy to have access to the internet, and may be more susceptible for internet addiction than adults. Thus, We think it necessary to specially examine adolescent internet addiction (rather than college-age populations or adults) just as other internet addiction studies had done.

2. Methodology

Data were collected from 5,122 adolescents through self-report questionnaire on Internet use, psychological characteristics, and demographic variables. Multiple regression and logistic regression were use to develop predictor models. A few questions:

The age range was 11.3-20.4. 20 years old seems to be quite rare for a high school student. Wonder how many of them or percentage are at this age? Is “20 years old” related to their academic failure (for example, they stayed another year for the same grade) because of AIA? Further analysis or explanation is needed.

In our study, two students (0.04%) were 20 years old, and both of them were third-year students from a same vocational senior high school. One student reported her academic learning as “general level”, and the other reported his academic learning as “relatively bad”. In Shanghai, the fresh student recruitment of vocational senior high schools is
different from ordinary or key senior high schools. In ordinary and key senior high schools, only new junior-high-school graduates were recruited. However, in vocational senior high schools, fresh students were recruited in three ways: (1) Shanghai new junior-high-school graduates; (2) the children of migrant workers; (3) other technical high school graduates. Therefore, it is possible that vocational high school students were 1 or 2 years older than ordinary or key senior high school students even within the same grade. In Shanghai high schools, repeaters are very rare, and almost all the students normally receive their diploma in time even when their academic learning levels were very poor. Therefore, in our paper, the age of “20 years old” were not necessarily associated with students’ academic failure.

In our study, the details of distribution of age groups were as follows:

11 ~12 years: n=7 (0.1%)

12~13 years: n=631 (12.3%)

13~14 years: n=571 (11.1%)

14~15 years: n=690 (13.5%)

15~16 years: n=900 (17.6%)

16~17 years: n=1381 (27.0%)

17~18 years: n=811 (15.8%)

18~19 years: n=120 (2.3%)
19~20 years: n=9 (0.2%)

20 years: n=2 (0.04%)

3. The authors need to justify the reliability of self-reported academic achievement which is an important variable. The authors also need to indicate in the manuscript that data on academic achievement was self-reported (although it can be seen in in the appendix).

In this study, we used anonymous self-reported questionnaires in order that respondents could report their internet use and their symptoms of internet addiction as honestly as possible, However, on the other hand, it became difficult to confirm the reliability of adolescents’ self-reports.

We were also concerned about this issue. Before we started this survey, we actually performed a pilot study to evaluate the reliability of self-reported academic achievement. In the pilot study, we investigated two classes (one class included 45 2nd grade junior high school students and the other included 45 2nd grade senior high school students). At that time, we used same anonymous self-reported questionnaires, and asked their teachers to collect their questionnaires one by one after they finished. Their teachers reviewed the students’ answers, and we found a high coincidence between adolescents’ self-reports and their teachers’ reports on adolescents’ academic learning levels (almost 100%).
4. The questionnaires cover many social demographic variables, please justify why only those indicated in the tables were selected.

A total of 30 variables were included in our questionnaire. We listed 12 variables in the tables because this paper focused on the effects of adolescent personal factors on the development of adolescent internet addiction. Further analyses to detail risk factors in the adolescent's family environment will be done later.

Results and Discussion

Overall, the authors’ reported findings are very interesting need to indicate in the manuscript that data on academic achievement was self-reported (although it can be seen in in the appendix). Findings related to demographics aren’t particularly surprising, but the findings related to academic achievement may be a potentially useful place to focus, especially in terms of risk prevention strategies and in terms of understanding implications.

5. The authors state that the prevalence from the current study (8.8%) is “relatively high”, but this does not seem to be the case in comparison to the data they provide. Other studies in China report prevalence rates of 8.1%, 12.2%, and 2.4%. Hong Kong rates are reported at 6.7%, while in Italy and Greece, the authors report rates of 1.5-10%; 5.4%; and 1.5%. Based on this, it seems more accurate to describe the current findings of 8.8% as expected, given the ranges from other studies in China. It may be that Internet addiction is more prevalent in China than in other countries, but the results
from this study do not seem inconsistent with other Chinese studies of AIA. Please explain.

Maybe it is more appropriate to state that the prevalence level of adolescent Internet addiction in Shanghai is 8.8%, that makes us aware that adolescent internet addiction in Shanghai cannot be ignored, and specific attention needs to be paid to prevention and treatment of adolescent internet addiction in Shanghai.

6. The authors’ suggestion that the link between AIA and greater economic spending may be due to peer influence also seems weak. Furthermore, while factors such as time spent online, academic achievement, and self-esteem have obvious value and importance, it is unclear why the amount of monthly spending was studied as a risk factor. In fact, the authors note that few studies of AIA have studied this as a risk factor, and it may be because its value and importance in understanding outcomes is overall weak. This paper would be strengthened by a heavier focus on factors related to risk identification and the development of prevention strategies (e.g., academic achievement; personality characteristics; family/home life characteristics; number of hours spent online and types of activities conducted online [chatting vs. gaming vs. education]). This discussion could then dovetail into further discussion of prevention strategies and how schools and families can work together to reduce risk and decrease excessive Internet use.

Although the amount of adolescent monthly spending was not studied as a risk factor in previous studies, we found adolescent high monthly spending was closely associated
with adolescent internet addiction after controlling adolescent grade, gender, school
types, district, family social economic status, other personal online behaviors and
academic achievement levels. Therefore, we suggest that adolescent monthly spending
levels might be a clue to adolescent internet addiction when screening adolescent
internet addiction. Prospective studies on the relationship between adolescent monthly
spending and internet addiction needs to be performed later to confirm our results.

7. It seems important that the authors better acknowledge the fact that Internet
addiction is a somewhat controversial condition, given that it is not considered a
diagnosable psychiatric disorder as per the current edition of the Diagnostic and
Statistical Manual of Mental Disorders (DSM-IV). The limitation of self–reported
academic achievement on reliability should be acknowledged.

Until now, there is currently no standardized definition or diagnosis criteria for internet
addiction. Internet addiction is a proposed but unproven disorder, and the upcoming
inclusion of Internet addiction in the DSM-V as a disorder in need of further study
compels further investigation.

In our study, self-reported and anonymous questionnaires were completed by
5122 students. We used anonymous questionnaires in order that respondents could
report their internet use and their symptoms of internet addiction as honestly as possible
(we even asked teachers to leave the classrooms where internet use information was
being collected). However, the anonymous questionnaires made it impossible for
teachers to confirm the reliability of students’ self-reported academic achievement.
Before we started the survey, we did a pilot study to evaluate the reliability of self-reported academic achievements (Question 3 has the detailed information). We also weighed the advantages and disadvantages of using anonymous questionnaires before this study. The advantages of anonymous questionnaires were more honest answers, and disadvantages were that teachers cannot confirm students’ answers because of anonymity, however, we finally thought anonymous questionnaires were necessary because honest answers were the most important thing when we collected internet use data.

We’d like to acknowledge the limitation of self-reported academic achievement on reliability because there were no teachers’ or parents’ reports to confirm it.

8. Finally, it is suggested that the manuscript undergo thorough editing for grammatical and typographical errors, as they are present throughout the paper and are somewhat distracting.

Thank you for your suggestion. I have done as you suggested

In response to Referee 2

Summary:

This is an interesting and important study, concerning adolescents and internet usage. In our society, the increased use of the internet, especially teenagers, can be extremely concerning to parents. Adolescent internet addiction imposes significant adverse
effects on either their physical or mental development. This study is timely and can prove to be extremely beneficial to society.

On the other hand, there are several major issues in this manuscript:

1. This manuscript is poorly organized. The phrasing of this work is ambiguous and it is difficult for the reader to fully comprehend the hypotheses that is posed in the study. The author introduced many conceptions or special technical terms in this manuscript, but most of them were not properly defined. They should have been defined the first time they are introduced. Looking at reference 17, the work immediately introduces the definition of PIU (problematic internet use), its proposed criteria, the scientific results of PIU, and the objective question posed in the study in a clear and coherent order; reference 13 follows a similar coherent structure.

   I have revised my paper as you suggested.

2. This study seems to only describe the relationship between events, but the author fails to provide the underlying biological relevance between events. For instance, the physical and mental harms that AIA causes are not clearly defined. The biological relevance between the risk factors and AIA are difficult to follow and lacks of details of potential biological plausibility and literature support to the proposed relationships.

   According to literature review, the studies on underlying biological relevance between risk factors and internet addiction are very limited because of lack of specific biological
biomarker. In this study, we summarized the possible psychiatric symptoms of internet addiction that AIA may cause (see table 3).

Internet addiction may interfere with people’s daily lives, and had short and long-term effects on their social, psychological and physical well-being. According to previous studies, internet addiction was associated with obsessive-compulsive and depressive disorders, attention-deficit hyperactivity disorder, hostility/aggressive behaviors, impaired executive control ability, and multiple structural changes in the brain.

3. In the methods section, the author introduced several new tools, such as questionnaires and the DRM52 Scale, but didn’t discuss whether these tools were properly validated in the study population.

The questionnaire and DRM 52 Scale had already been validated and used in Shanghai in 2005 (Adolescent internet addiction: Recognition and Intervention. Shanghai: East China University of Science and Technology Press, 2006). An internal comparison of the psychometric scores on the DRM 52 Scale demonstrated good internal consistency of the overall questionnaire and seven subscales (Cronbach alpha was around 0.7), and excellent test-retest reliability (intraclass correlation coefficient was 0.75) (Adolescent internet addiction: Recognition and Intervention. Shanghai: East China University of Science and Technology Press, 2006).

4. In the statistics section: the author should clearly define the potential confounding variables for each regression model and justify why these covariates were chosen. Were
covariates such as age, gender, social economic status of the family, and parents’ education level in the models? There is another important question regarding the contents of their internet activities that was not discussed in the manuscript. Obviously, there would be different impacts on academic preference for spending 3 hours on games versus 3 hours on internet reading.

(1) A total of 30 variables were included in our questionnaire (see additional file 1). Covariates such as age, gender, social economic status of the family, and parents’ education levels were included in the models. We selected these variables according to the available literature and case reports. (2) We consider that it is very necessary to collect the information about the contents of adolescent internet activities, and we had the variable “main purposes of going online” (details please see additional file 1) for this question.

5. In table 2, it is quite confusing to use ANOVA or Chi square analysis for variables that have multiple strata such as School type and Academic achievement. The significant p value only represents one of the comparisons is significant, but we have no way to know which one it is. It would be better to set one of strata as a reference group to compare with rest groups.

We have done as you suggested.

6. The conclusion of the work suggests that “excessive online time alone is not a defining symptom of AIA,” which contradicts the earlier work that states internet
addiction is categorized by how many hours one spends online. It is difficult to ascertain what the actual conclusions of this work are.

In this study, we conclude that “excessive online time alone is not a defining symptom of AIA”. According to Young’s questionnaire or other frequently used questionnaires (such as Chen’s scale or Ran Tao’s scale), the online time was also an important but not necessary symptom of AIA.

Revision Comments

7. The term “risk” in the title is not aptly defined. (pg 1)

The term “risk” in the title means that some adolescent personal characteristics increased exposure to the chance of developing adolescent internet addiction, or means that those adolescent personal characteristics brought a hazard or dangerous chance of developing adolescent internet addiction.

8. AIA should be defined. What is it and what is its difference with PIU (Problematic Internet Usage) which is widely used in other studies? What are the advantages and disadvantages of using AIA in this particular population? [Reference 5, 13, 17] (pg 3, line 4)

(1) About the definition of internet addiction-- At its core, Internet addiction is characterized by frequent, uncontrolled and harmful use of the Internet. Symptoms of
the disorder most frequently observed in clinical settings include preoccupation, withdrawal, loss of control and functional impairment. However, until now, there are still no standardized definitions or diagnosis criteria for internet addiction. Internet addiction is a proposed but unproven disorder, and the upcoming inclusion of Internet addiction in the DSM-V as a disorder in need of further study compels further investigation.

(2) Difference with PIU (Problematic Internet Usage)? Which is widely used in other studies?

Since internet addiction is not a diagnosis in DSM-IV, and there are no related standardized definition or diagnosis criteria, different terms, such as Internet addiction, or, excessive internet use, Internet overuse, problematic internet use or pathological internet use were used in different papers. It’s hard to tell which one is most widely used. However, more people used PIU recently.

The origins of the terms of internet addiction or problematic Internet use: In 1996, the psychologist K. Young became the first one to propose her definition for internet addiction, adapting the DSM-IV criteria for pathological gambling into her Diagnostic Questionnaire. However, in 2001, Shapira et al eschewed the “Internet addiction” label for lack of scientific proof for true addiction and they proposed a more inclusive diagnostic schema in the general style of the impulse control disorders, and they favored the term “problematic Internet use” rather than “internet addiction”. Chen’s Internet Addiction Scale was produced based on their cohort study of 216 Taiwanese college students.
The advantages and disadvantages of using AIA in this particular population?

In 2005, DRM 52 Scale of Internet-use in Adolescents (DRM 52 Scale) was developed from the Young’s Internet Addiction Scale and adapted for use in Shanghai.

The main reason of using the term “internet addiction” in this study is that we utilized the DRM 52 scale, therefore, we continued to use the term “internet addiction” as Young named it.

The main disadvantages of using “internet addiction”: if possible, we’d like to explain to others that even the adolescents’ total score of DRM-52 scale ≥163, they are only “potential internet addicts”. The final diagnosis (whether the adolescent is addicted or not) needs to be provided by the clinical psychiatrists. Therefore, the main disadvantages of using the term of “internet addiction” may be the potential misunderstanding regarding potential addicts (based on the total score of DRM-52 scale) as true addicts.

9. The phrase “an increasingly serious problem” is ambiguous; list the major harms that AIA will bring to adolescents. (pg 3, line 4)

See Answer 1 for the major harms that AIA will bring to adolescents.

10. The definition for “personal characteristics” is not explained. (pg 3, line 7)
“Personal characteristics” means a person's distinguishing feature, including his/her behavioral traits, abilities, and other demographic characteristics (gender, age, location of residence, et al.). In this study, we used “personal characteristics” to describe the adolescents’ behavioral traits of using the internet, spending money, learning abilities (academic achievement levels) and other demographic characteristics (gender, age, district, school types, grade).

11. List the specific psychological symptoms that define AIA. (pg 3, line 14/ pg 4, line 7)

The specific psychological symptoms that defined AIA included “tolerance” (whether the same amount of internet usage elicited a response of less satisfaction for the user), “withdrawal reaction” (whether the user felt unwell when offline), “poor planning abilities” (whether the user cannot use the internet as he/she has planed), “lack-of-control” (whether the user was unable to control his/her on-line use), “excessive time-consuming” (whether the user spent too much time online), “impaired socialization” (level of interference in interpersonal relationships) and “negative-life-consequences” (negative consequences on the user’s life including their health status). Each symptom was important but not necessary in defining AIA. However, according to previous related questionnaires or scales, among all these symptoms, the withdrawal symptom was very important in defining internet addiction.
12. Define the terms “internet addicts” and “academic achievement.” On what standard are these terms based on? (pg 3, line 17-18)

Internet addicts mean the ones who become physiologically or psychologically dependent on the internet or occupy themselves with the internet habitually or compulsively. This term in our paper was defined by using DRM 52 Scale of Internet Use in Adolescents. All answers of 52 items were coded on a 5-point scale from 1 (completely disagree) to 5 (fully agree). The total score on the DRM 52 scale ranged from 0 to 260. A score of 0 meant that a student never used the internet. Internet addiction was defined if the total score was over 163 [16], and scores still higher indicated increasing severity of internet addiction.

Academic achievement was defined by self-rated academic performance by students based on their average test scores in school).

13. The term “adolescent personal factors” is not clearly explained. (pg 4, line 5)

In this paper, “adolescent personal factors” means the factors most closely associated with adolescents themselves, but not with their environment (such as their family environment).

14. The phrase “clinically significant impairment or distress” needs to be specified. What kind of distress and impairment will internet addiction bring? (pg 4, line 16)
Detailed explanations see Answer 1 for Reviewer 1, and Answer 2 and 11 for Reviewer 2.

15. How is current US data relevant to this study? (pg 5, line 3-4) What is the SS-5HTTLPR gene and how is genetics relevant to this study? (pg 5, line 8)

According to the literature, overall, the range of the prevalence of adolescent PIU (or adolescent internet addiction) in US studies was between 0%~26.3% (Arch Pediatr Adolesc Med. 2011, 165(9): 797-805). There are several reasons that this range of reported prevalence rates is so wide. The lack of consensus in conceptual approach to PIU (or internet addiction) may be a key reason for the variability amongst these studies approach and findings. One US study used the Young’s questionnaire and found the prevalence of adolescent internet addiction was 25%. Another US study also used the Young’s questionnaire and reported the prevalence of adolescent internet addiction was 12%.

Previous gene-by-environment (G × E) studies of the interaction of measured genes by measured environments had reported the cumulative negative effects of specific ‘risk’ genes and adverse environments. Serotonin transporter genotype 5HTTLPR has been considered as a genetic marker of differential susceptibility to the environment, and carriers of the short allele were found at risk for developing poorly in an adverse environment. In this study, we didn’t do genetics testing, but we planed to do it in another related study later.
15. The phrase “personal characteristics and potential impact on symptoms of AIA” is never clearly explained and makes the entire study look ambiguous. (pg 6, line 2)

We have explained “personal characteristics and potential impact on symptoms of AIA” in Answer 1 for Reviewer 1, and Answer 2 and 11 for Reviewer 2.

16. How prevalent is the usage of Young’s Internet Addiction Scale? Specify “direct and indirect questions” and “as accurate information as possible.” The phrasing is unclear. What is its relation to AIA or PIU? In addition, define the DRM 52 Scale. (pg 7, line 15-16)

Young’s Internet Addiction Questionnaire was the first questionnaire to assess internet addiction, and has been most frequently used in previous internet addiction studies.

In DRM 52 Scale, we used both direct and indirect questions to get as accurate information as possible on adolescent internet use. Fifty-two items were grouped into seven subscales and were also grouped into two categories including direct questions (or called positive items) and indirect questions (or called negative or reverse items). Positive items were scored as 1-5, and the scores would increase when the answers to these items meant excessive internet use. However, negative items were reversed, the scores would also increase when the answers to negative items meant excessive
internet use. For example, item 1 was direct (positive) item: “Compared with the previous time, I spend more and more time on the internet.” Item 6 was indirect (negative) item: “My academic learning is not affected despite that I use the internet frequently.” The positive items included the item 1, 2, 3, 4, 5, 7, 9, 10, 11, 13, 14, 16, 18, 19, 21, 23, 24, 26, 28, 31, 32, 33, 34, 35, 37, 40, 42, 44, 45, 46, 47, 50, 51. The negative items included the item 6, 8, 12, 15, 17, 20, 22, 25, 27, 29, 30, 36, 38, 39, 41, 43, 48, 49, 52. (see additional file 1)

In this study, we utilized the DRM 52 Scale of Internet-use in Adolescents (DRM 52 Scale), developed from the Young’s Internet Addiction Scale and adapted for use in Shanghai to assess potential internet addicts. DRM 52 Scale had already been validated and used in Shanghai in 2005. An internal comparison of the psychometric scores on the DRM 52 Scale demonstrated good internal consistency of the overall questionnaire and seven subscales (Adolescent internet addiction: Recognition and Intervention. Shanghai: East China University of Science and Technology Press, 2006)

17. Specify “negative-life-consequences” and “health status.” (pg 8, line 5-6)

Negative-life-consequences mean the negative life consequences that internet addiction may cause, such as poor physical fitness (such as bodily pain) or academic failure.

Health status means the conditions of adolescents’ physical fitness.
18. (pg 9, line 13-18) should be included in a table for demographics and not in the literature. The phrase “criteria for AIA” is ambiguous because the standards for AIA were never clearly defined in the study. (pg 12, line 18)

(pg 9, line 13-18) has been included in Table 1 for demographics. In line 18 of page 12, we cited the results of a Guangdong study, which used Young’s Scale to assess whether or not the surveyed adolescents met the criteria for AIA.

19. Specify “special attention as a mental public health problem.” What kind of attention should internet addicts receive? What mental health problems do they suffer from? (pg 13, line 8-9)

According to the literature, adolescent internet addiction was closely associated with obsessive-compulsive and depressive disorder, attention-deficit hyperactivity disorder, hostility/ aggressive behaviors, impaired executive control ability and multiple structural changes in the brain (See answer 1 for reviewer 1 for detailed information). Therefore we should pay special attention to adolescent internet addicts.

20. (pg 13, line 15-17) suggests that AIA is defined by “using the internet mainly for playing games or of real-time chatting.” Is that the proper definition for AIA? Reference/citation for the “weekend effect” needed. (pg 14, line 2)
The purpose of using the internet mainly for playing games or real-time chatting was considered as one of the internet-use characteristics of adolescent Internet addicts. However, the definition for AIA usually included the main symptoms of AIA and the main outcome of AIA. No other studies had focused on the “weekend effect” of AIA, and it’s really a new finding.

21. It can be assumed from the literature that online real-time chatting, poor academic achievement, high monthly spending, and smoking and alcohol consumption are risk factors to AIA. Are these the “risks” that are defined in the title?

We think that these are part of the “risks” that are defined in the title. Other risks those are defined in the title included boys (vs. girls), senior high school students (vs. junior), going online mainly for games, and more hours spent online (especially weekend hours).

22. The psychological symptoms should be detailed earlier in the work and its significance to AIA earlier stated. (pg 16)

I have revised this paper as you suggested.

23. Change the term “monthly consumption” to “monthly allowance.” (pg 24)

In this paper, “monthly consumption” should be changed as “monthly money spending”, however, it’s different from “monthly allowance”, and we have another
variable “monthly allowance” in our questionnaire (see our questionnaire---additional file 1).

24. The term “NS” should not be non-significant. Even if it is non-significant, still present the data. Readers will want to know the beta.

I have revised the paper as you suggested.