Author's response to reviews

Title: Workplace gender composition and psychological distress: The importance of the psychosocial work environment

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Manuscript Title: Workplace gender composition and psychological distress: The importance of the psychosocial work environment
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Dear Editor

We would like to thank you for considering our manuscript for publication in BMC Public Health. We have attended to the comments and suggestions of the reviewers. We have numbered and responded to each comment below. The manuscript has also been proof-read and edited by a language editor.

Sincerely

Sofia Elwér

**Bold font**=comments by the reviewers
Plain font= authors’ response
**Indented, italicized font**= sections from the revised manuscript

**Comments and responses to reviewer 1**

Comment 1.1:
Nothing is said about the type of activity or the size of the company. This is not the same if there are 5 or 500 workers. The authors can they describe a little more work environments?

Response:
The size of the workplaces has now been included in the method section. Concerning the work environment of the included workplaces table 1 displays the type of work, socioeconomic position well as the psychosocial work environment factors included in the study. The following section has been added to the method section.

(page 6, paragraph 1)
The number of employees at the workplaces ranged from 2 to 9130 with a median of 38 employees.

Comment 1.2:
References
- Please check the reference 8. I am not sure it is the right journal. This paper has been published by “Work, 2012 doi: 103233/WOR-121529.”
- Reference 25: Explanatory models …
- Reference 33: Inaugural Lecture …
- Reference 35: volume 26, and not 28.

Response:
We have corrected the mistakes in the reference list accordingly.
Comments and responses to reviewer 2

Comment 2.1:  
General comments  
The article addresses the question of whether and how the degree and type of gender segregation at work affects health. This is a separate question from the more commonly-studied health effects of work on women and men in similar. The emphasis here is on psychosocial components and effects of the segregation-health interaction. Segregation can be defined in terms of occupations, workplaces or immediate workplace environment. The authors have not made these distinctions very clear at the outset. On page 1, I read the following sentence several times without understanding it: “How gender segregation of work is related to ill-health has mainly been studied in relation to gender composition of occupations [2-4] often used as proxies for the workplaces which is the actual site where the psychosocial work environment is shaped. “Surely the “actual site” is at least as much the occupation as the workplace? Do the authors really mean to say that a secretary is in the same “actual site” as a construction worker in the same company? In fact, she may see him rarely or never. When they say “workplace”, do they mean “work site”? Workplaces differ in the degree of contact among workers of different occupational categories. Maintenance employees and upper-level management, primarily male, have been close to invisible at practically all the service-sector workplaces I have studied. Office workers in particular may have little contact with other types of workers. In supermarkets, cashiers, mostly women, have contact primarily with packers who are very young men, whereas butchers have contact with other butchers. Etc. The literature cited with respect to workplaces [5-8] does not make this distinction any clearer. Reference 5 refers to employer reports of gender composition for an entire workplace while reference 7 refers to workers’ self-reported impressions of gender composition at their work site and reference 8 to workers’ self-reported impressions of gender composition at their workplace.

Response 2.1:  
We agree that we were a bit careless in how we expressed the differences between different levels of analysis. We have rewritten the introduction and more carefully explained the different levels of segregation and unit of analysis.

(Page 3, paragraph 1)  
Gender segregation can be identified and studied at the macro level of society in the gender segregated labour market, and all the way down to the micro division of labour in work tasks [3]. How gender segregation of work is related to ill-health has mainly been studied in relation to gender composition of occupations [4-6]. However, the gender composition of the occupation does not always reflect the gender composition of the actual work site as several occupations often form a work group. The degree of contact among workers within the same occupation at a workplace can vary, making both occupations and workplace gender composition valid units of analysis. The few studies that have focused on workplaces have analysed gender composition in relation to sickness absence and self-rated health [7-10], whereas mental health remains unexplored.
Comment 2.2:
The authors themselves have chosen to use data, probably from employers (although this is not stated) on the gender composition of the entire workplace, although they mention (p. 11) that the gender-mixed workplace may not provide a gender-mixed environment for all workers. I am particularly concerned about this issue because, in my experience, women in predominantly male workplaces are very often in highly-segregated professions such as office workers in factories or kitchen workers in forestry. This idea is borne out by the data supplied in Table 1 – as mentioned by the authors, 55% of women (32% of men) in male-dominated workplaces work with data, whereas 50% of men (20% of women) in these workplaces work with things. The women’s actual experience may be closest to that of women in traditionally female professions. On the other hand, 35% of men (20% of women) in female-dominated workplaces work with data, whereas 73% of women (56% of women) in these workplaces work with people. [Note that I do not necessarily prefer measures of occupational segregation. Recent changes in classifications of occupations have occurred in some jurisdictions and may have confused, amplified or diminished gender segregation. To some extent, the degree of segregation of an occupation is an artifact depending on the breadth of definition of the occupational title. Thus for example, when “suppliers of cleaning services” in North America are separated into “janitors” and “cleaners”, gender segregation becomes more visible. Idem “cooks and chefs.”]

Therefore, if one wants to know about a worker’s psychosocial environment, some effort should probably be made to find out what the gender segregation is in that environment. But the salient independent variable can only be identified if the mechanisms being examined have been defined. This is not the case in this paper.

Response:
The reviewer finds it unclear how the gender composition is measured. The gender compositions of the workplaces are calculated from register data from the Statistics Sweden database. We have clarified this in the following section. We have also specified that the workplace level in our case means that the employees are at the same location. The examined mechanisms have been defined both by the clarification of the concepts in the introduction (comment 2.1) and this clarification of the measures used, as requested by the reviewer.

(Page 5, paragraph 5)
Data on the gender of all employees at the participant’s workplaces in 2007 were retrieved from Statistics Sweden’s Longitudinal Integration Database for Health Insurance and Labor Market Studies (LISA). From these data the gender composition of the workplace, in which all employees work at the same site (street address), was calculated. The number of employees at the workplaces ranged from 2 to 9130 with a median of 38 employees.

Comment 2.3:
It appears that the authors want to know if gender segregation of the psychosocial environment of a worker is associated with health symptoms. But it might be that the authors hypothesize that workplaces with more women or workplaces with more men are unhealthier, even if the workers themselves are in an environment that is more balanced or different from that of the workplace as a whole. Or that women or men are better of in one than the other. All this needs to be clarified at the outset.
Response: The interest of the paper is to explore what we call the “work environment hypothesis”. We have tried to be clearer in explaining what this hypothesis means and that this is our purpose.

(Page 3, paragraph 2)
In addition to the token hypothesis, a work environment hypothesis has been suggested that states that the health consequences of the psychosocial work environment are dependent on the gender composition of the workplace [10]. Previous research has shown, for example, that workplaces with more men have a higher risk of sickness absence caused by high job strain compared to workplaces with other gender compositions [10].

(Page 5, paragraph 2)
Our aim was to explore the work environment hypothesis through analysing the importance of the psychosocial work environment for psychological distress at workplaces with different gender compositions.

Comment 2.4:
Methods
Little information is given on the outcome measure (psychological distress). The reader needs to know how this measure was chosen, why more commonly-used measures were not chosen, how the measure was validated, especially whether it has been validated for both genders.

Response:
The question on psychological distress in the questionnaire has remained the same since the cohort was started in 1981 to enable comparisons between waves. Of course there has been a development in the scientific field of how to measure psychological distress and if the cohort was initiated today a different measure would have been selected. Having said that, the symptoms that are included in the measure have a strong face validity and the measure has been shown to be related to later mortality and morbidity for both women and men. We have added the following sentences to the method section:

(Page 6, paragraph 3)
Psychological distress has been shown to be a predictor of later ill-health and mortality for both women and men [33], and the symptoms have high face validity, i.e. it seems possible that such symptoms could be related to psychosocial work environment as well as the gender composition of the workplace.

Comment 2.5:
The authors say, “Gender of the cohort participants was entered as a background variable in the logistic regression to ensure that the results were not caused by compositional effects.” Does this mean that the authors presume that segregation is segregation and that men and women would be equally affected by a predominantly male (or female) workplace? If not, what does that sentence mean? Surely the analysis should have been further stratified by the gender of the worker, even though there appears to be little difference between models 0 and 1. A number of papers such as those
in vol. 35 no. 2 of Scand J. Work Environment and Health (cited by the authors) point out that the fact that there is no apparent effect of adjusting for gender does not mean that stratification for gender is unnecessary. See particularly Messing et al. in that issue.

Response:
We agree with the reviewer that it would have been preferable to perform separate analyses of men and women. However, due to the lack of power can only make analyses of the whole cohort and list this as a limitation of the study in the discussion. We are aware that this problem is not solved by adjusting for gender. However, as a larger proportion of the women in general report psychological distress, we want to ensure that the results are not confounded by the proportion of women in the group (compositional effect). The limitation of not being able to perform separate analyses are mentioned and discussed in the following sections:

(Page 8, paragraph 1)
Due to limitation in sample size, with few women and men at workplaces where they were in minority, there was not enough power to make separate analyses of women and men in the logistic regression.

(Page 13, paragraph 1)
A limitation of the study is that the limited sample size makes separate analyses for women and men impossible in the logistic regression. In future research, gender stratified analyses should be used to further explore if men and women at workplaces with various gender compositions are similarly affected [44].

Comment 2.6: I am curious about the fact that model 2 was adjusted for model 1. Unless this is a mis-statement and what they mean is the model 2 was adjusted for the variables in model 1. I also don’t understand what they mean when they say that model 2 was adjusted for the other psychosocial variables in the table. Which table? Are they talking about table 1? What is the rationale for doing this?

Response: We have clarified the models to table 2 below. The rationale for controlling each of the psychosocial work environment factors for each other is to determine if the association is independent of the other work environment factors or not. This is especially important because we use two less established factors (not important work & being looked down upon).

(Page 18, table 2)
Model 0: Bivariate for each exposure
Model 1: Adjusted for gender, socioeconomic position and psychological distress age 21
Model 2: Adjusted for gender, socioeconomic position, psychological distress age 21 and the whole set of psychosocial work environment exposures.

Comment 2.7:
I don’t understand why they adjusted for psychological distress at age 21. Is this considered to be an age before the workers entered the workplace where they are at age 42 and therefore to represent a control for an ontogenous level of distress? If so, why is there such a big difference between strata? If not, do we know whether those in a specific stratum at age 42 were in the same stratum at age 21? Am I missing something in the methods and could it be pointed out more clearly?
Response: Age 21 is considered to be an age before the workers are established in the labour market. We do not know anything about the gender composition of the participants workplaces at any other age than 42. However, the differences in psychological distress at age 21 tells us that part of the differences that we find at age 42 were present before the participants were established in the labour market. The differences at age 21 can be explained by a variety of factors that are not further explored in this manuscript. Adjusting for psychological distress at age 21 is therefore a way to ensure that the differences at age 21 do not confound the results at age 42. If psychological distress at age 21 confounds the results this is an indication of health selection i.e. that the higher levels of psychological distress where present before the exposure of the workplace and therefore could be part of the reason to why the participants ended up at a certain workplace. This has been clarified in the following section:

(Page 7, paragraph 3)
Psychological distress at age 21 was used as an indicator of health related selection. Health related selection implies that earlier psychological distress could affect which workplace a person chooses, i.e. that unhealthy people are selected into workplaces with a specific gender composition. Adjusting for earlier health status is therefore a way to reduce the health-related selection [35]. The questions and dichotomization of the index were exactly the same as at age 42. Age 21 is considered to be appropriate as it is an age before being established in working life.

Comment 2.8:
Results and discussion
Authors find that gender segregation is associated with psychological distress for women (Table 1) and that the JCQ variables are associated with psychological distress in all workplaces except possible for low control in mixed workplaces (Table 2). A major conclusion of the authors is that “These results gives (should be “give”) some support for the assumption that the gendered organizations have a greater impact on mental ill-health than gender roles attached to the individual, which was suggested previously [19, 20].” I am not sure where this statement comes from, but if it comes from the relatively slight effect of adjusting for gender in Model 1, I think it needs to be borne out by gender-stratified analyses or else stated less baldly.

Response:
The reviewer finds it unclear which results we refer to in the quoted sentence. We have specified that we refer to “the similar development of psychological distress over time for women and men”. We are also more cautious in how we compare it to previous research with gender role explanations. Why we have not performed gender stratified analyses is discussed in comment 2.5. The sentence quoted by the reviewer has been replaces with the following:

(Page 9, paragraph 3)
The similar development of psychological distress over time for women and men in the same strata gives some support for the assumption that the gendered organizations are of importance for mental ill-health, and perhaps more so than gender roles attached to the individual, which was suggested previously [22,
Comment 2.9:
The repeated statement that individual gender roles are less important than organizational environments is an important one. In their discussion of social support (at work) in female dominated workplaces, the authors reject stereotyped social roles as an explanation for their results. I wonder whether it is worth considering the nature of work in female-dominated workplaces and, more particularly, the importance of teamwork. I think the point made about sickness absence vs. distress as dependent variables in the discussion is excellent – probably even more so in North America than in Sweden. Real access to sickness absence is quite variable. The discussion of using demand and control scales separately is excellent also. The point made about job strain and gender composition of samples is a good one and valid in my experience.

Response: We agree with the reviewer that the nature of work in female-dominated workplaces can be of importance and have added the following sentence to the discussion:

(Page 12, paragraph 1)
That the nature of the work mainly concerns work with people can be one possible explanation to the added importance of teamwork and social support.

Comment 2.10:
Major Compulsory Revisions
I think they need to consider more carefully the difference between work environment and workplace gender composition.

Response: We have made major changes to the introduction to be more clear about the distinctions between workplaces and occupations and that gender composition can be applied on several levels. We have also (as presented in detail under comment 2.2) made additions to make our own measure of workplace gender composition clear.

(Page 3, paragraph 1)
Gender segregation can be identified and studied at the macro level of society in the gender segregated labour market, and all the way down to the micro division of labour in work tasks [3]. How gender segregation of work is related to ill-health has mainly been studied in relation to gender composition of occupations [4-6]. However, the gender composition of the occupation does not always reflect the gender composition of the actual work site as several occupations often form a work group. The degree of contact among workers within the same occupation at a workplace can vary, making both occupations and workplace gender composition valid units of analysis. The few studies that have focused on workplaces have analysed gender composition in relation to sickness absence and self-rated health [7-10], whereas mental health remains unexplored.

Comment 2.11:
I think they need to be a bit more reserved about their ability to distinguish between individual gender and workplace gender composition although they are probably right. Adjusting for gender doesn’t entirely solve the problem, especially since they haven’t tested interactive effects.

Response: We agree with the reviewer about that our ability to distinguish between individual gender roles and workplace gender composition are limited and have therefore formulated these conclusions less boldly as shown in the sections below. As debated in response 2.5 we are not able to make gender stratified analyses and unfortunately the small sample size also hinders us from making analyses of interaction.

(Page 9, paragraph 3)
The similar development over time of psychological distress for women and men in the same strata gives some support for the assumption that the gendered organizations are of importance for mental ill-health, and perhaps more so than gender roles attached to the individual, which was suggested previously [22, 23]. However, more research on larger samples is needed to clarify the importance of gender at different levels.

(Page 12, paragraph 1)
However, our results indicate that low social support is associated with psychological distress for both women and men at these workplaces, which challenges previous explanatory models of gender roles attached to the individual as sole explanation to ill-health [22, 23].

Comment 2.12:
My own opinion
Workplaces with different gender compositions may share stressors. In particular, even in Sweden, predominantly male workplaces may share some conditions that make work-family articulation problematic. Predominantly male workplaces may also require forced overtime, at least in my jurisdiction. The authors do not have or do not include information on family responsibilities.

Response: We agree with the reviewer that family responsibility is an interesting aspect that can be related to this subject. We have added the following section to the discussion:

(page 13, paragraph 1)
Future research is also needed to analyses the importance of factors in unpaid work, such as family responsibility, in relation to gender composition of workplaces and psychological distress.

Comment 2.13, 2.14, 2.15:
Specific questions
p. 1 places which are the actual sites where the psychosocial work environment is shaped have analysed relations to sickness absence and self-rated health
p.4 Work demands, control and support are three major aspects of the psychosocial work environment that have been connected to a variety of negative health outcomes both separately and in combination [16-18].
p. 4 Examinations of gender roles have been criticized for not considering…
Etc. there are many plural subjects used with verbs in the singular and vice versa – authors should reread for this – I have not identified each one.

Response:
The manuscript has been proofread and edited by a professional language editor to improve the quality of the English.

Comment 2.16:
p. 6. Psychological distress at age 21 was used as an indicator of health related selection. Do the authors mean, health-related selection into an occupation? Do we know that the participants were in the same occupation at age 21?

Response: This response is also part of the response to comment 7. We do not know anything about the gender composition strata that the participants where in at any other age than 42. At age 21 many of the participants are studying at the university, and it is also common to change job frequently at this age. At age 42 more than 90% of the participants have a permanent employment (Waenerlund 2011). However, the differences in psychological distress at age 21 tells us that part of the differences that we find at age 42 were present before the participants were established in the labour market. Adjusting for psychological distress at age 21 is therefore a way to ensure that the differences at age 21 do not confound the results at age 42. If psychological distress at age 21 confounds the results this is an indication of health selection i.e. that the higher levels of psychological distress where present before the exposure of the workplace and therefore could be part of the reason to why the participants ended up at a certain workplace. This has been clarified in the following section:

(Page 7, paragraph 3)
Psychological distress at age 21 was used as an indicator of health related selection. Health related selection implies that earlier psychological distress could affect which workplace a person chooses, i.e. that unhealthy people are selected into workplaces with a specific gender composition. Adjusting for earlier health status is therefore a way to reduce the health-related selection [35]. The questions and dichotomization of the index were exactly the same as at age 42. Age 21 is considered to be appropriate as it is an age before being established in working life.

Comment 2.17:
p. 11 line 2 should be strata

Response: We have changed to strata.
Comments and responses reviewer 3

Comment 3.1:
It is not made explicit by the authors why the categories: majority of males and majority of females are more prevalent than the mixed group. Does that reflect the real complete picture of the workplace distribution in Sweden? Is it linked to the type of sector or to the type of job? Could be made more explicit

Response: Yes, mixed workplaces are rare in Sweden which is stated in this sentence in the introduction: “Few employees, in Sweden only 13 per cent, work in occupations where women and men are equally represented (with between 40-60 percent women and men)[2].”

Comment 3.2:
Although one could wonder why multiple logistic regression of the total sample as a whole is not applied including interaction terms between the group and each of the 5 independent variables allowing for a better interpretation (statistical significance of the interactions) of the separate analyses presented in table 2

Response:
We have elaborated with different approaches to analyse this data. A multiple logistic regression of the total sample is possible but the categorical exposure (gender composition) makes it difficult to select which reference category to use. Therefore we found the stratified analyses to be the most straightforward approach.

Comment 3.3:
It is not argued why the authors have chosen this particular sample, nor why they did chose a particular age group focused on one age, namely 42 leading to a relative sample size. Usually the population is taken as a whole and age sub-groups are defined. This would have been possible as if I understood well as this sample is extracted from a larger Cohort from the Statistics Sweden longitudinal Integration Database for Health insurance and Labor Market Studies. Anyway this needs more clarification

Response:
The study uses survey data from the whole of The Northern Swedish Cohort, in which all participants where 42 years at the latest follow up. There are no other age groups in the cohort. The whole cohort is included in the study (the only exclusion being respondents who do not have workplaces). The cohort is then complemented with register data from the Statistics Sweden database with data on the gender composition of the workplaces. This study could not have been performed with register data as we need questionnaire data on psychological distress and psychosocial work environment factors. The longitudinal design of the cohort also enables us to adjust for previous psychological distress which is a major strength of this study. We have clarified the study design in the following sections.
The study was based on the Northern Swedish Cohort that consists of all pupils who did (or should have done) their last year of compulsory school in the town of Luleå in 1981 when most of the participants were 16 years old (506 girls, 577 boys) [30].

Data on the gender of all employees at the participant’s workplaces in 2007 were retrieved from Statistics Sweden’s Longitudinal Integration Database for Health Insurance and Labor Market Studies (LISA). From these data the gender composition of the workplace, in which all employees work at the same site (street address), was calculated. The number of employees at the workplaces ranged from 2 to 9130 with a median of 38 employees.

Comment 3.4:
Concerning the exposure variables it is not mentioned if the standard JDCS variables of the KARASEK questionnaire are used or proxies.

Response:
We used the standard JDCS questions from the Swedish version. This has been stated in the following section:

Psychosocial work environment at age 42 was measured with the Swedish version of the Demand – Control – Support Questionnaire [34].

Comment 3.5:
I miss the analyses with ‘Strain’ and ‘Iso-Strain’ as independent variables. It is not mentioned why the authors did not perform these analyses

Response:
Strain and Iso-strain are both combinations of the variables job demand, control and support that are used in the article. It has been debated whether the combination of these factors are extra harmful for health. Also it has been suggested that the combinations are more adequate on populations of men. Therefore we have chosen to use the job demand, control and support variables as separate dimensions instead of combining them into strain and iso-strain variables. This approach also enables us to compare these variables with two less used work environment measures (important work and being looked down on) which we had reason to believe to be of importance. This is all discussed in the “on the method” section of the paper.

In our study we have chosen to include demand, control and support as separate dimensions of the psychosocial work environment rather than combining them into job strain and iso-strain. It has been debated whether to use the variables in combination or as separate dimensions and especially in longitudinal studies the support for the combinations in relation to psychological wellbeing has been scarce[19, 20]. In empirical testing of the demand-control-support model, many studies have also found differences between women and men with more support for using the high strain combination on populations of men [20]. It has also
been suggested that men, to a higher degree, work in organisations and occupations where they have more possibilities to influence their work situation, although this is not always caught by the control measure. This suggestion was supported by an externally assessed validation of the demand-control model in which women who described their work as active did not have more creative tasks than women in high–strain or passive jobs [43].

Comment 3.6:
“Working with people was the most common type of work at workplaces with more women” (like nurses?). I would like to advise the authors to give concrete examples of the sectors concerned in this sample. This could already be done in the description of the sample

Response:
In the description of the variable “type of work” we already give concrete examples:

(Page 7, paragraph 5)
Work was divided into three categories: working with people (e.g. health care, education), working with data (e.g. administration, information technology), and working with things (e.g. manufacturing, construction, cleaning).

We have now also added concrete examples when this variable is first mentioned in the result section:

(Page 8, paragraph 3)
Working with people (for example health care and education) was the most common type of work at workplaces with more women, and working with data (for example different types of office work) was most common at mixed workplaces. At workplaces with a majority of men, women typically worked with data, whereas men typically worked with things (for example manufacturing and construction).

Comment 3.7:
Concerning the mixed group (also the smallest) High Demands in the full model (model 2) was not statistically significant although nearly (0.99- 5.60) and the OR fairly high 2.36 close to the one obtained by the workplace with more men. This deserves some comments maybe.

Response:
We agree and have commented this nearly significant association in the following sections in the results as well as in the discussion:

(Page 9, paragraph 2)
At workplaces with a mixed gender composition, high demands and being looked down upon were significantly associated with psychological distress in the crude analysis and in model 1. In the final model being looked down upon remained significant and high demands was close to significant with a relatively high odds ratio.
High demands was the only psychosocial work environment factor that was associated with high odds ratio of psychological distress in all gender compositions.

However, it should be noted that high demands was close to significant with a high odds ratio and probably would have turned out significant in a larger sample.

Comment 3.8:
I wonder if workers did move to another type of workplace or if they remained in the same in this 21 year period, could maybe be added in the discussion

Response:
The gender composition of the workplaces was measured at one time point (at age 42). At age 42 most of the participants (92%) have a permanent employment (Waenerlund 2011). At age 21 most of the participants are not established in the labour market and most of them are studying or change workplaces frequently. We have specified that gender composition was measured at age 42:

The study population was stratified into three groups based on the gender composition of their workplace at age 42 from register data: more men (>60 percent men at the workplace), mixed (40-60 percent women at the workplace), and more women (>60 percent women at the workplace).

Comment 3.9:
The last paragraph (before on the method in the discussion section) is unclear to me.

Response:
This section has been rewritten as follows to make it clearer (the section has also been moved, see comment 3.14):

Men at the mixed workplaces had the lowest prevalence of psychological distress at age 21, whereas no significant differences between the strata are found at age 42. These results suggest a positive health selection of men into the mixed workplaces, i.e. that the group of men on mixed workplaces at age 42 had lower levels of psychological distress at the beginning of their working life compared to men in the other strata. The lack of significant differences in psychological distress between gender compositions for men at age 42 is consistent with several previous studies on the occupational [12] and workplace level [7, 14]. However, the suggestion of a positive health selection of men into
the mixed workplaces is a new finding that requires more attention in future studies.

Comment 3.10:
To my opinion Table 1 is very busy one and somehow difficult to read, but I have no practical suggestions to enhance that table.

Response: We have clarified the heading and made some adjustments to the font of the headings and hope that the reviewer find it easier to read.

Comment 3.11:
The small sample size, mentioned by the authors themselves, but which might have been resolved by taking more age groups from the full cohort

Response:
The full cohort is used in the study. The cohort does not include any other age groups. We have made this clearer through changing the first sentence describing the cohort to the following:

(Page 5, paragraph 4)
The study was based on the Northern Swedish Cohort that consists of all pupils who did (or should have done) their last year of compulsory school in the town of Luleå in 1981, when most of the participants were 16 years old (506 girls, 577 boys) [30].

Comment 3.12:
Quoting the authors: “There is not a uniform support for the combination of high demands and low control…” I would like to refer the authors to the recently published articles by the IPD-Consortium as an example. See 2 references
Response:
The two articles suggested by the reviewer concern the association between job strain and coronary heart disease whereas our work concerns psychosocial work environment factors and psychological distress. As discussed in response 3.5 above we have chosen to use the separate dimensions of demand, control, and support. We are sure that the job strain measure can be appropriate for many purposes as the suggested articles confirms, however in our case we wanted to test the separate dimensions and also be able to test two new dimensions that we in previous studies have identified as important. The following section has been edited for clarity:

(Page 13, paragraph 2)
In our study we have chosen to include demand, control and support as separate dimensions of the psychosocial work environment rather than combining them into job strain and iso-strain. It has been debated whether to use the variables in combination or as separate dimensions and especially in longitudinal studies the support for the combinations in relation to psychological wellbeing has been scarce[19, 20]. In empirical testing of the demand-control-support model, many studies have also found differences between women and men with more support for using the high strain combination on populations of men [20]. It has also been suggested that men, to a higher degree, work in organisations and occupations where they have more possibilities to influence their work situation, although this is not always caught by the control measure. This suggestion was supported by an externally assessed validation of the demand-control model in which women who described their work as active did not have more creative tasks than women in high–strain or passive jobs [43].

We have also added one of the suggested references to the introduction:

(Page 4, paragraph 2)
Work demands, control and support are three major aspects of the psychosocial work environment that has been connected to a variety of negative health outcomes both separately and in combination [18-21].

Comment 3.13:
“The few studies that have focused on workplaces {5-8} has…” I would write have

Response:
This has been corrected and the manuscript has also been proofread and edited by a professional language editor to improve the overall quality of the English.

Comment 3.14:
Why did the authors change the order of the 3 strata exposed in table 2 with the one in the Discussion part

Response: We have changed the order in which we discuss the three strata in the discussion section so that we consistently in tables, result and discussion use the same order (workplaces with more men, workplaces with more women, mixed workplaces).
References: