Responses to Reviewer 1
We thank you for your comments on how to improve our paper. The comments and our responses are listed below.

Comment 1 (Minor Essential Revisions):
The writing and English is fine with only a few exceptions (e.g. ‘researches’ in the background section of the abstract.

Response 1:
We have revised language used in the paper carefully by having a native speaker to advise us on revising and improving the clarity of the paper.

Comment 2 (Discretionary Revisions):
The paper might be able to be reduced by 20%.

Response 2:
We omitted redundant expressions with the advice of a native English speaker. Although we were not able to reduce the paper by the full 20%, we feel it has been greatly improved.
Responses to Reviewer 2

We thank reviewer 2 for the positive comments and several helpful suggestions for the improvement of our paper. The comments and suggestions made are listed below, followed by our responses to each.

Comment 1:
Can the authors clarify assessment of chronic pain? The manuscript states that participants were first asked if they were currently experiencing any pain before being asked about pain duration – does this mean that people who may have experienced pain during the past 24 hours but not at the moment of assessment were excluded? This seems potentially troublesome as chronic pain might vary significantly over the course of the day.

Response 1:
Thank you for pointing out the possible confusion on our definition of chronic pain. In this study, we defined chronic pain as pain that persisted continuously or intermittently for six months or longer. Therefore, people who had experienced intermittent pain for six months or longer but who were not experiencing pain at the moment of assessment were classified as having chronic pain. To clarify our assessment of chronic pain, we have revised the sentences describing definition of chronic pain as follow: “Participants were first asked if they were experiencing any pain and then asked about the duration of the pain. Chronic pain was defined as pain that had been present continuously or intermittently for \( \geq 6 \) months.”(Line 184-186)

Comment 2:
The authors made a point of only including participants who could complete the PBI for both parents. However, it seems that no analyses take into account scores for both parents. What was the correlation between paternal and maternal bonding for individuals in this study? What percentage of parents was classified as falling into the same quadrant? Also, what happens when both maternal and paternal bonding are considered as predictors simultaneously? And can ‘desirable’ bonding to one parent make up for less ‘desirable’ bonding to the other parent etc.? I think analyses including both maternal and paternal bonding would be of interest to readers and enhance this manuscript.
Response 2:
These are very interesting points. In this study, the correlation coefficient between the paternal and maternal care score was 0.69 \((p < 0.001)\) and that between paternal and maternal overprotection was 0.83 \((p < 0.001)\). The percentage of parents who were classified into the same PBI quadrant was 75.3%. Both parents’ bonding styles had a strong tendency to be similar. We have added these results to the results, as follow: ‘The correlation coefficient between the paternal and maternal care score was 0.69 \((P < 0.001)\) and that between paternal and maternal overprotection was 0.83 \((P < 0.001)\).’ (Line 220-222)
We have did an additional multivariable logistic regression analysis to evaluate the interaction effect between paternal and maternal bonding styles and added text to describe this in result part as follows: ‘Additionally, the bonding styles were divided as optimal and non-optimal to determine the prevalence of chronic pain according to the combination of paternal (optimal or non-optimal) and maternal (optimal or non-optimal) bonding. In comparison with the combination paternal optimal /maternal optimal, significant differences were found for the paternal non-optimal/maternal optimal (OR: 2.66, 95% CI: 1.28-5.54, \(P = 0.009\)) and paternal non-optimal/maternal non-optimal bonding combinations (OR: 1.72, 95% CI: 1.10-2.68, \(P = 0.038\)) after adjustment for demographic variables and depression.’ (Line267-274)

Comment 3:
How come so many people were classified into the ‘affectionless control’ category?
How does this compare to other samples?

Response 3:
Most of the previous studies using PBI quadrants targeted relatively small clinical samples with mental problems, the available data on the distribution ratio of PBI quadrants in general population is limited. Because our sample is of general community dwelling people, we used a different cut-off point.
In several non-clinical samples of case-control studies, the rate of “affectionless control” is approximately 30% (“optimal parenting” is around 35%) for both parents. In most of these studies, assignment to high or low categories was conventionally based on the following cut-off points: low care ≤24 for fathers and 27.0 for mothers and high overprotection ≥12.5 for fathers and 13.5 for mothers. These cut-off points were
determined on the basis of the mean scores of non-clinical Australian samples matched with depressive patients (reference 36). However, given the differences in culture and study population, it is not necessarily appropriate to apply the above-mentioned mean scores of Australians as cut-points for the Japanese population. Therefore, in this study, we dichotomized the care and overprotection scores using tercile cut-points in consideration of the prevalence of chronic pain. Consequently, the cut-points were higher than other studies for care scores and lower for overprotection scores (care 31 and overprotection 5 for father, care 33 and overprotection 4 for mother). This would be responsible for the higher proportion of the “affectionless control” (low care and high overprotection) group in this study (51.2% for father, 52.9% for mother) compared to other studies.

Comment 4:
*Important information is missing from the manuscript. What was the age range of individuals in the study? Table 1 should include percentages for all categories of the categorical variables, i.e. education and marital status. In addition, the second column in table 2 refers to different statistics and is not labeled.*

Response 4:
In accordance with the suggestion, in Table 1 we have provided the age range of the participants (39-92 years) and the percentages for all categories of marital status and education level. In the Table 2 legend, we added explanations of what multivariable-adjustments were made.

Comment 5:
*Did results vary by respondent sex? Were chronic pain rates similar among men and women in this study?*

Response 5:
We thank the reviewer for the suggestions about these very important points. We also conducted all analyses for the men and women separately. Accordingly, the prevalence of chronic pain was 43.4% for men and 48.3% for women. The associations between parental bonding and the prevalence of chronic pain were the same tendency for men and women. When testing for a statistical interaction between parental bonding styles...
and the sex of the participants, there was not significant interaction. Therefore, in this study we decided to describe the results of the analyses only for all subjects. However, the information regarding differences between the sexes is important, as the reviewer suggested. Therefore, we have included additional analyses. We added text to the methods section, as follow: ‘These analyses were done for men and women separately. Tests for a statistical interaction between the parental bonding style and sex of the participants were conducted by entering interaction terms for the quadrants of parental bonding and the sex of the participants in multivariate model.’ (Line 208-212). We also added text to provide the results and added to the discussion, as follows: ‘(43.4% in men, 48.3% in women, P = 0.20)’ (Line 217), ‘The interaction effects between the parental bonding styles and the sex of the participants on the presence of chronic pain were not significant between paternal (P = 0.60) and maternal bonding (P = 0.68).’ (Line 274-276), ‘These associations were not significantly different between men and women.’ (Line 291-292).

Comment 6:
The authors did not perform formal mediation tests and should refrain from discussing depression as a possible mediator in the parental bonding – chronic pain association in the Discussion section.

Response 6:
We agree with the suggestion. Also, the data in the study were cross-sectional. Because it is not possible to draw conclusion about causal associations among the study variables, we have changed the words from “may mediate” to “influences” (Line 303).

Comment 7:
The manuscript, especially the second half of the introduction, should be closely edited for language.

Response 7:
According to the suggestion, we have asked for assistance in rewriting this final manuscript for clarity of expression.

Minor comments:
Comment 8:
Line 73: could the authors provide some examples of such psychosocial factors?

Response 8:
According to the suggestion, we have provided examples of the psychosocial factors (Line 73-75) that influence chronic pain.

Comment 9:
Line 97: should be ‘variables’

Response 9:
As suggested, we have changed “variable” to “variables”. (Line 99)

Comment 10:
Line 113: should be ‘effects’

Response 10:
We agree with the need for the change. However, we have considered some possible options and would like to use the phrase “is related to the prevalence” (Line 114). This helps our paper conform as in our response to comment 6.

Comment 11:
Lines 112-115: last sentence of introduction not clear

Response 11:
As mentioned, last paragraph of introduction (background) might be confusing. Therefore, we have removed the first sentence: 'Identifying association between parental behaviors and attitudes and chronic pain prevalence could help detect factors for future prevention of chronic pain in adulthood’, and have changed the second sentence from ‘the perceived parental bonding style consisting of care and overprotection’ to “parental care and overprotection during childhood”. (Line 114)
Comment 12:
Could the authors provide one or two sample items for the PBI and PHQ?

Response 12:
According to the suggestion, we have provided two example items for the PBI subscales; ‘Care’ and ‘overprotection’. (Line 146-147 and line 149-151)
We added an explanation about the contents of the PHQ-9 items. (Line 174-177)