

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Problem and non-problem gamblers: A cross-sectional clustering study by gambling characteristics
AUTHORS	guillou landreat, morgane; chereau Boudet, isabelle; perrot, bastien; Romo, Lucia; codina, irene; magalon, david; fatseas, melina; Luquiens, Amandine; Brousse, Georges; group, jeu; Challet-Bouju, Gaëlle; Grall-Bronnec, Marie

VERSION 1 - REVIEW

REVIEWER	Anja Kräplin Technische Universität Dresden Germany
REVIEW RETURNED	18-Apr-2019

GENERAL COMMENTS	<p>For preventive strategies on gambling disorder (GD), research is needed to early detect vulnerable individuals with easy to handle indicators. This manuscript addresses this research need and aims to identify profiles of vulnerable individuals for GD based on their socio-demographic, gambling, and psychopathological characteristics. The authors found 3 clusters with significant differences in several of these characteristics, which they labeled “early onset and short course”, “early onset and long course”, and “late onset and short course”. The authors discussed that these 3 clusters may correspond to the 3 pathways into GD proposed by Blaszczynsky and Nower.</p> <p>The presented study is important for the research field and for improved gambling regulation strategies. Please find my recommendations in the following:</p> <ol style="list-style-type: none">1. Terminology<ol style="list-style-type: none">1.1 The authors switch between the terms gambling disorder, pathological gambling and problem gambling. I would recommend, using the DSM-5 term gambling disorder and defining problem gambling as this is a very heterogeneously defined term in the literature and I am not sure what the authors mean by it.1.2 The term vulnerability is used to describe risky gambling behavior, i.e. gambling behavior with an increased risk for later GD. From my point of view, the concept vulnerability refers to more distal risk factors that heighten the susceptibility of a person to develop GD in interaction with external factors (e.g. stressors). These factors include different intra-individual characteristics like heightened impulsivity. I would recommend framing risky gambling behavior as early indicators of GD but not as vulnerability.
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Furthermore, vulnerability or risk research would require the analyses of baseline behavior and follow-up GD. Did the described study assess such data? If so, I would strongly recommend using the profiles to predict GD.

2. Confirmatory versus exploratory approach

I would strongly recommend to better distinguish between confirmatory parts of the manuscript (where the authors have clear theories/ assumptions and hypotheses they tested) and exploratory parts (where the authors had no pre-defined hypotheses and tested associations to derive new hypotheses). Currently, it remains unclear for me whether the authors had hypotheses concerning the profiles of gamblers and concerning the characteristics which are assumed to differ between the profiles/ clusters.

3. Abstract:

Design and Setting: Please clarify, that despite a longitudinal design of the underlying study, the data analyses were cross-sectional.

Participants: Please give the number of participants in each group.

Results: Please give the direction of effects and confidence intervals for the key results.

Conclusions: Please write the conclusions more as a stand-alone (“take-home”) summary mentioning the topic and the main findings as reflecting the findings, without adding conjecture as to the consequences or worth of the findings.

4. Methods

Please add information on the informed consent and the ethical approval.

5. Interpretation of results

5.1 The presented study is cross-sectional. Therefore, it is important to be more cautious concerning a causal interpretation of results. With a cross-sectional design, no clear conclusions concerning pathways, risk factors, or vulnerability factors are adequate. Please adjust your interpretation of results accordingly.

5.2 Furthermore, the clusters show no meaningful differences in many variables and the mere reliance of conclusions on p-values in such a large sample seems to reduce the practical relevance of the results. Please provide the estimations of group differences and evaluate the practical relevance of these differences.

5.3 The number of DSM-5 criteria did not differ in Table 4.

Therefore, I am not sure whether the 3 clusters are really useful to identify less or more serious profiles of GD. Please elaborate on this fact in more detail in the discussion part. BTW: Why did the authors state that they “did not use DSM-5 criteria” in the limitation part while the term “DSM-5” can be found in Table 4.

5.4 The implications for clinicians and policymakers are somewhat unsatisfactorily. For clinicians, it will always be the gold standard to use clinical diagnoses. Behavioral indicators are important for early detection of gambling problems in the field (online or offline). Moreover, the authors focused on individual factors of vulnerability to GD but have many conclusion to change external factors (advertisement, availability, type of game), which can not be concluded from the results. Please adjust your discussion accordingly.

	Minor: Please check the manuscript for typos.
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REVIEWER	Dr Stephanie Merkouris Deakin University, Australia
REVIEW RETURNED	30-May-2019

GENERAL COMMENTS	<p>The current paper uses JEU baseline data to identify clusters of gamblers based on their gambling characteristics. While this manuscript has the potential to add to the gambling literature, the current version of the manuscript needs to be edited for English language and a more clear and detailed rationale is required. Detailed comments on how the manuscript can be improved are provided below. Importantly, the current study only uses baseline data. Given the limited number of longitudinal datasets in the gambling field, this manuscript could be substantially improved by creating these typologies and exploring their predictive ability across various future gambling-related outcomes and other health outcomes. The longitudinal predictive ability of gambling clusters would add a lot the field.</p> <p>Moreover, the accuracy of the references needs to be confirmed as some errors were identified. For example, reference #9 the author is incorrect. It should read the American Psychological Association.</p> <p>Abstract</p> <ul style="list-style-type: none"> - Overall, the abstract was lacking specificity. Please clarify: <ul style="list-style-type: none"> o What is meant by 'gambling characteristics are factors that could influence the course of the gamblers.' o The difference between type of gambling and gambling medium o Which country/countries the JEU was conducted in o The inclusion criteria relating to gamblers. For example, did they need to be past month gamblers? o What gambling characteristics were explored. Only those outlined in the results? - The recruitment strategy is only reflective of the PGST group. Need to specify this and include details on recruitment for the NPG and PGWT group. <p>Introduction</p> <ul style="list-style-type: none"> - It is unclear why the introductory paragraph includes gambling prevalence rates for the UK given the use of data from the French population. Recommend limiting that paragraph to French statistics only. - Need to be cautious with wording. E.g., 'gambling games' is not a common term used in the gambling field. Perhaps 'types of gambling' might be more appropriate. - Given this is not a gambling journal their needs to be a clear definition and distinction between the terms gambling disorder, problem gambling and pathological gambling. Also need to specify which term will be used throughout this manuscript and in what context. E.g., the term problem gambler can be used to refer to a subclinical level of the disorder or can be used to describe gambling at the extreme end of the gambling continuum. Be sure to be consistent in the use of whichever term you decide to use.
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- There are several sentences that are lacking clarity based on English language and the gambling terms used. An example of this include:
 - o “The status of the problem gambler is unstable over time [10], and gamblers can have very different courses of gambling development.” – Do you mean gambling or problem gambling development here?
- There are also several sections in the introduction, which were lacking detail and depth to provide a sufficient rationale. These needed to be expanded on with greater methodological detail and more description of the findings provided. Examples include:
 - o ‘Many studies have focused on individual or environmental factors’.
 - o ‘Hing et al. identified profile differences between online EGM gamblers and those who bet online on sport or horses [8].’
- Need to include citations at the end of this sentence beginning “To the very best of our knowledge...”
- Need to provide definitions or illustrations of what is meant by ‘gambling medium or type of gambling’ and ‘gambling status’. For example, it is unclear throughout the manuscript whether gambling status is referring to gamblers vs non-gamblers or problem gamblers vs non-problem gamblers?
- Note that the latter aim is not reflected in the abstract – Suggest it should be.
- There is confusion and lack of logical flow in the introduction in relation to describing studies that explore clusters of problem gamblers based on various individual/environmental factors and studies that explore the relationship between gambling-related characteristics and gambling status or gambling trajectories. I think these sections need to be clearly differentiated to help the reader understand where the gap in the literature is. I.e., is it that not many studies have explored gambling-related variables, such as, age of gambling onset etc. in relation to gambling status or in relation to gambling course? Or in relation to problem gambling status and the development of problem gambling? Or is it in relation to creating and exploring these clusters?
- Overall, the introduction does not provide a sufficient or clear enough rationale for the present study. In particular, the section on previous studies exploring gambling characteristics does not provide sufficient detail to indicate what has been done in this area and therefore how this study would really build on that. Moreover, the introduction is lacking a clear implications section.

Material and method

Participants

- Need to clearly indicate in the participants section that the JEU was conducted in France.
- Need to first describe how each participant group was recruited and then clearly indicate that clinicians and researchers were involved in the recruitment of the PGSTs only. Otherwise it currently reads as though they assisted with the recruitment of all participants.
- The eligibility criteria would be better expressed in text.
- There seems to be a contradiction between the participants and assessment sections, whereby one section states that participants in the PG groups needed to meet DSM-IV criteria to be included and the latter states that the criteria was 3+ (i.e., at-risk gambling). Please clarify which is correct.

Assessment

	<ul style="list-style-type: none"> - Clarify how the baseline assessment was conducted. - "It explores the lifetime and actual main axis 1 disorders" – Recommend the term current instead of actual. - There are inconsistencies in the type of information included for each measure in this section. Be consistent in indicating the number of items, response options, scoring and psychometric properties for all measures <p>Statistical analysis</p> <ul style="list-style-type: none"> - This comment refers to the rationale for the manuscript overall and not necessarily this section, however, as a reader I would like to know more about the reason why the specific variables were selected and why the decision to focus only on gambling characteristics. I don't think the rationale is strong enough in the introduction, especially given we know that there are many factors (not just gambling-related) that can interact to lead to the development of gambling problems. <p>Results</p> <ul style="list-style-type: none"> - There are inconsistencies in how the descriptive statistics have been reported (i.e., total sample vs group). All descriptive statistics should be presented by group. - In Table 4 there is no need to include the p-values and asterisks indicating the level of significance. Recommend reporting the p-values only. - The results need to be described a bit more in-text to help guide the reader and highlight key findings, especially in relation to table 4 and figure 1. For example, the clusters themselves need to be described in text and not just referred to. <p>Discussion</p> <ul style="list-style-type: none"> - It is unclear why the results of this study have been primarily compared to the Pathways model of problem gambling, given this sample includes non-problem gamblers and did not include psychosocial variables to create the clusters. The reason for the comparison needs to be made clearer or emphasis taken off the Pathways model.
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REVIEWER	Nick Garrett PhD Auckland University of Technology, New Zealand
REVIEW RETURNED	05-Aug-2019

GENERAL COMMENTS	<p>The article is well written, the appropriate statistical analysis is carried out, and the research is well described.</p> <p>There are few minor points:</p> <ul style="list-style-type: none"> - I assume ethics approval was approved as part of the original clinical trial but did not see any reference to ethics approval directly referenced. - there is a reference to Vermunt 2010 on line 46 page 13 that does not appear to have been included in the reference list - not sure why variables that do not influence the estimation of the model are included as in theory they should not differ much across the clusters. The missing reference may inform me better as to their usefulness. The extra variables potentially add some unnecessary noise to the model.
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VERSION 1 – AUTHOR RESPONSE

Reviewer1 Reviewer Name: Anja Kräplin

Institution and Country: Technische Universität Dresden, Germany

Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below

For preventive strategies on gambling disorder (GD), research is needed to early detect vulnerable individuals with easy to handle indicators. This manuscript addresses this research need and aims to identify profiles of vulnerable individuals for GD based on their socio-demographic, gambling, and psychopathological characteristics. The authors found 3 clusters with significant differences in several of these characteristics, which they labeled “early onset and short course”, “early onset and long course”, and “late onset and short course”. The authors discussed that these 3 clusters may correspond to the 3 pathways into GD proposed by Blaszczynsky and Nower.

The presented study is important for the research field and for improved gambling regulation strategies. Please find my recommendations in the following:

1. Terminology

1.1 The authors switch between the terms gambling disorder, pathological gambling and problem gambling. I would recommend, using the DSM-5 term gambling disorder and defining problem gambling as this is a very heterogeneously defined term in the literature and I am not sure what the authors mean by it.

Answer: We defined problem gambling, gambling disorder and we harmonized problem gambling terms in the manuscript.

1.2 The term vulnerability is used to describe risky gambling behavior, i.e. gambling behavior with an increased risk for later GD. From my point of view, the concept vulnerability refers to more distal risk factors that heighten the susceptibility of a person to develop GD in interaction with external factors (e.g. stressors). These factors include different intra-individual characteristics like heightened impulsivity. I would recommend framing risky gambling behavior as early indicators of GD but not as vulnerability. Furthermore, vulnerability or risk research would require the analyses of baseline behavior and follow-up GD. Did the described study assess such data? If so, I would strongly recommend using the profiles to predict GD.

Answer : the reviewer is right. We can separate vulnerability and framing concept. We named it framing risky gambling behavior. Another article is under submission and analyze 5 year follow up data regarding baseline behaviors and vulnerability.

2. Confirmatory versus exploratory approach

I would strongly recommend to better distinguish between confirmatory parts of the manuscript (where the authors have clear theories/ assumptions and hypotheses they tested) and exploratory parts (where the authors had no pre-defined hypotheses and tested associations to derive new

hypotheses). Currently, it remains unclear for me whether the authors had hypotheses concerning the profiles of gamblers and concerning the characteristics which are assumed to differ between the profiles/ clusters.

Answer : Our hypothesis was that clinical profiles would significantly differ according to the main type of gambling. We led an exploratory analysis and tested several gambling characteristics variables.

3. Abstract:

Design and Setting: Please clarify, that despite a longitudinal design of the underlying study, the data analyses were cross-sectional.

Participants: Please give the number of participants in each group.

Answer : we added the number of participants per group and we added cross sectional method.

Results: Please give the direction of effects and confidence intervals for the key results.

Answer : we added the significant variables , and the key results .

Conclusions: Please write the conclusions more as a stand-alone ("take-home") summary mentioning the topic and the main findings as reflecting the findings, without adding conjecture as to the consequences or worth of the findings.

we changed the conclusion.

4. Methods

Please add information on the informed consent and the ethical approval.

Answer : we added information.

5. Interpretation of results

5.1 The presented study is cross-sectional. Therefore, it is important to be more cautious concerning a causal interpretation of results. With a cross-sectional design, no clear conclusions concerning pathways, risk factors, or vulnerability factors are adequate. Please adjust your interpretation of results accordingly.

Answer : We tried to adjust interpretations.

5.2 Furthermore, the clusters show no meaningful differences in many variables and the mere reliance of conclusions on p-values in such a large sample seems to reduce the practical relevance of the results. Please provide the estimations of group differences and evaluate the practical relevance of these differences.

Answer : We are not sure to understand what the reviewer means by " estimations of group differences ".We supposed that the reviewer wants that we provide pairwise differences between the

3 clusters, and the associated CI? comparison would only be possible for active variables and as it was an exploratory analysis, it did not appear statistically pertinent.

5.3 The number of DSM-5 criteria did not differ in Table 4. Therefore, I am not sure whether the 3 clusters are really useful to identify less or more serious profiles of GD. Please elaborate on this fact in more detail in the discussion part. BTW: Why did the authors state that they “did not use DSM-5 criteria” in the limitation part while the term “DSM-5” can be found in Table 4.

Answer : The interpretation of DSM results do not allow to compare levels of PG severity between the 3 groups. But the proportion of NPG differs significantly between the group, we could conclude that in the first cluster EOSC, proportion of NPG is less important than in the 2 others clusters. We made a mistake, it is DSM IV , we changed it.

5.4 The implications for clinicians and policymakers are somewhat unsatisfactorily. For clinicians, it will always be the gold standard to use clinical diagnoses. Behavioral indicators are important for early detection of gambling problems in the field (online or offline). Moreover, the authors focused on individual factors of vulnerability to GD but have many conclusion to change external factors (advertisement, availability, type of game), which can not be concluded from the results. Please adjust your discussion accordingly.

Answer : we understand this comment , concerning clinical evaluation. But our subject in this article really focused on gambling characteristics : age of initiation, age of PG, amount wagered , type of gambling, media of gambling . We also included age of first psychiatric disorders, to compare with age of gambling initiation. All these variables are linked to structural characteristics of gambling, and are easy to identify and easy to change. Clinicians need to be aware to these characteristics , combined to clinical and psychopathological variables. Our findings can help clinicians to be aware to these behavioral and structural characteristics, combined with their clinical evaluations, but also can be used to inform gamblers and to adapt tailored prevention to these gambling characteristics. We decided to discuss more particularly the point of age of gambling initiation and the type and media of gambling , because, according to our results (and literature) these variables are at risk , and a specific intervention to limit young exposition to gambling and to limit PG in online gamblers could be interesting.

Minor: Please check the manuscript for typos.

Answer : the manuscript was reedited by a native english (elsevier editing services)

Reviewer: 2

Reviewer Name: Dr Stephanie Merkouris

Institution and Country: Deakin University, Australia

Please state any competing interests or state ‘None declared’: None declared

Please leave your comments for the authors below

The current paper uses JEU baseline data to identify clusters of gamblers based on their gambling characteristics. While this manuscript has the potential to add to the gambling literature, the current version of the manuscript needs to be edited for English language and a more clear and detailed rationale is required. Detailed comments on how the manuscript can be improved are provided below. Importantly, the current study only uses baseline data. Given the limited number of longitudinal

datasets in the gambling field, this manuscript could be substantially improved by creating these typologies and exploring their predictive ability across various future gambling-related outcomes and other health outcomes. The longitudinal predictive ability of gambling clusters would add a lot to the field.

Moreover, the accuracy of the references needs to be confirmed as some errors were identified. For example, reference #9 the author is incorrect. It should read the American Psychological Association.

Answer : we changed the reference of DSM, for "American psychiatric association" .

Abstract

- Overall, the abstract was lacking specificity. Please clarify:

o What is meant by 'gambling characteristics are factors that could influence the course of the gamblers.'

Answer : we tried to precise in abstract

o The difference between type of gambling and gambling medium

Answer : we tried to precise in abstract

o Which country/countries the JEU was conducted in

Answer : we tried to precise in abstract

o The inclusion criteria relating to gamblers. For example, did they need to be past month gamblers?

Answer : we tried to precise in abstract

o What gambling characteristics were explored. Only those outlined in the results?

Answer : We explored gambling characteristics presented in the article .

- The recruitment strategy is only reflective of the PGST group. Need to specify this and include details on recruitment for the NPG and PGWT group.

Answer : we tried to precise in abstract and in text

Introduction

- It is unclear why the introductory paragraph includes gambling prevalence rates for the UK given the use of data from the French population. Recommend limiting that paragraph to French statistics only.

Answer : we changed it in text

- Need to be cautious with wording. E.g., 'gambling games' is not a common term used in the gambling field. Perhaps 'types of gambling' might be more appropriate.

Answer : we changed it in text

- Given this is not a gambling journal their needs to be a clear definition and distinction between the terms gambling disorder, problem gambling and pathological gambling. Also need to specify which term will be used throughout this manuscript and in what context. E.g., the term problem gambler can be used to refer to a subclinical level of the disorder or can be used to describe gambling at the extreme end of the gambling continuum. Be sure to be consistent in the use of whichever term you decide to use.

Answer : we defined gambling disorder, PG in the manuscript .

- There are several sentences that are lacking clarity based on English language and the gambling terms used. An example of this include:

o “The status of the problem gambler is unstable over time [10], and gamblers can have very different courses of gambling development.” – Do you mean gambling or problem gambling development here?

Answer : we defined gambling disorder, PG in the manuscript .

- There are also several sections in the introduction, which were lacking detail and depth to provide a sufficient rationale. These needed to be expanded on with greater methodological detail and more description of the findings provided.

Answer we tried to develop the introduction , especially sentences reviewers reported.

Examples include:

o ‘Many studies have focused on individual or environmental factors’.

o ‘Hing et al. identified profile differences between online EGM gamblers and those who bet online on sport or horses [8].’

- Need to include citations at the end of this sentence beginning “To the very best of our knowledge...”

- Need to provide definitions or illustrations of what is meant by ‘gambling medium or type of gambling’ and ‘gambling status’. For example, it is unclear throughout the manuscript whether gambling status is referring to gamblers vs non-gamblers or problem gamblers vs non-problem gamblers?

Answer : we added a table precising type and support/media of gambling . We tried to precise in text gambling status and added it in the table.

- Note that the latter aim is not reflected in the abstract – Suggest it should be.

Answer : we added in the abstract.

- There is confusion and lack of logical flow in the introduction in relation to describing studies that explore clusters of problem gamblers based on various individual/environmental factors and studies that explore the relationship between gambling-related characteristics and gambling status or gambling trajectories. I think these sections need to be clearly differentiated to help the reader understand where the gap in the literature is. I.e., is it that not many studies have explored gambling-related variables, such as, age of gambling onset etc. in relation to gambling status or in relation to gambling course? Or in relation to problem gambling status and the development of problem gambling? Or is it in relation to creating and exploring these clusters?

We changed the introduction as recommended .

- Overall, the introduction does not provide a sufficient or clear enough rationale for the present study. In particular, the section on previous studies exploring gambling characteristics does not provide sufficient detail to indicate what has been done in this area and therefore how this study would really build on that. Moreover, the introduction is lacking a clear implications section.

We changed the introduction as recommended .

Material and method

Participants

- Need to clearly indicate in the participants section that the JEU was conducted in France.
 - We changed as recommended .
- Need to first describe how each participant group was recruited and then clearly indicate that clinicians and researchers were involved in the recruitment of the PGSTs only. Otherwise it currently reads as though they assisted with the recruitment of all participants.
 - We changed the introduction as recommended .
- The eligibility criteria would be better expressed in text.
 - We changed the introduction as recommended .
- There seems to be a contradiction between the participants and assessment sections, whereby one section states that participants in the PG groups needed to meet DSM-IV criteria to be included and the latter states that the criteria was 3+ (i.e., at-risk gambling). Please clarify which is correct.

Answer : we did not identify of point reviewer talks about , In text is written "We used a clinical interview based on the 10 diagnostic criteria for pathological gambling according to the DSM-IV TR (APA, 2000). The gambling disorder section of the DSM-5 could not have been used because the recruitment was conducted in 2009-2011. Gamblers who met at least three DSM-IV criteria were classified as problem gamblers, including both gamblers "at risk" of pathological gambling and gamblers with a diagnosis of pathological gambling."

Assessment

- Clarify how the baseline assessment was conducted.
 - Answer : we precised in text.
- "It explores the lifetime and actual main axis 1 disorders" – Recommend the term current instead of actual.
 - Answer : we precised in text.
- There are inconsistencies in the type of information included for each measure in this section. Be consistent in indicating the number of items, response options, scoring and psychometric properties for all measures

Answer : we tried to precise better in text. But for psychopathological measures, we used standardized tools and their cotations.

Statistical analysis

- This comment refers to the rationale for the manuscript overall and not necessarily this section, however, as a reader I would like to know more about the reason why the specific variables were selected and why the decision to focus only on gambling characteristics. I don't think the rationale is strong enough in the introduction, especially given we know that there are many factors (not just gambling-related) that can interact to lead to the development of gambling problems.

Answer : we changed the introduction to try to better introduce the article.

Results

- There are inconsistencies in how the descriptive statistics have been reported (i.e., total sample vs group). All descriptive statistics should be presented by group.

We retired the description of the different subgroups NPG, PGWT, PGST , because clustering was made on the whole sample and it was not made according to the type of gamblers (NPG, PGST , PGWT).

- In Table 4 there is no need to include the p-values and asterisks indicating the level of significance. Recommend reporting the p-values only.

Answer : we changed as recommended.

- The results need to be described a bit more in-text to help guide the reader and highlight key findings, especially in relation to table 4 and figure 1. For example, the clusters themselves need to be described in text and not just referred to.

Answer : we developed results in text.

Discussion

- It is unclear why the results of this study have been primarily compared to the Pathways model of problem gambling, given this sample includes non-problem gamblers and did not include psychosocial variables to create the clusters. The reason for the comparison needs to be made clearer or emphasis taken off the Pathways model.

Answer : the pathway model is one of the best described model of pathological gamblers, and is a reference in literature. We compared to this model because our results , even if we included non problem gamblers, could be compared to this model in some points. We changed discussion to help readers.

Reviewer: 3

Reviewer Name: Nick Garrett PhD

Institution and Country: Auckland University of Technology, New Zealand

Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below

The article is well written, the appropriate statistical analysis is carried out, and the research is well described.

There are few minor points:

- I assume ethics approval was approved as part of the original clinical trial but did not see any reference to ethics approval directly referenced.

We added in text

- there is a reference to Vermunt 2010 on line 46 page 13 that does not appear to have been included in the reference list

We added in text

- not sure why variables that do not influence the estimation of the model are included as in theory they should not differ much across the clusters. The missing reference may inform me better as to their usefulness. The extra variables potentially add some unnecessary noise to the model.

Variables that do not influence the estimation of the model were then used as covariates to describe and compare the clusters. For these inactive covariates, a 3-step approach [46] was used to test differences between clusters.

VERSION 2 – REVIEW

REVIEWER	Anja Kräplin Technische Universität Dresden, Germany
REVIEW RETURNED	29-Oct-2019

GENERAL COMMENTS	<p>The authors have responded very well to the points I made in my last review and the paper has been significantly improved. I have a few minor concerns, based on the numbering of my previous review:</p> <p>1. Terminology 1.1 The authors have harmonized the terminology relating to gambling disorders and problem gambling. At some points in the manuscript, however, the term "pathological gambling / PG" can still be found. Please revise the terminology completely.</p> <p>3 Abstract: Design and setting: I understand from the authors' explanation that they carried out a cross-sectional analysis of the baseline data of the French JEU cohort study. Since there is no longitudinal aspect in this paper, authors should remove the word "prospective" from the title, otherwise it will be misleading.</p> <p>Results: The direction of effects and confidence intervals for the key results are still missing.</p> <p>Conclusion: The authors have carefully revised the conclusion. What is meant by "pointer"? With regard to mental disorders, I would recommend the word "screening".</p>
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REVIEWER	Dr Stephanie Merkouris Deakin University, Australia
REVIEW RETURNED	04-Nov-2019

GENERAL COMMENTS	<p>The authors have done a good job in revising the manuscript based on the comments previously raised. A few minor things that still need to be addressed:</p> <ol style="list-style-type: none"> 1. There is still some inconsistency in terminology used (e.g., in the introduction 'at-risk problem gamblers' and 'at-risk gamblers' are referred to) 2. Note that there is repeated information in the ethical approval section that needs to be removed. 3. Please explain in more detail the 3 step approach that was used to test the differences between the clusters 4. The p-value provided in Table 4 provides an indication if there were overall differences between the 3 clusters, but does not indicate where these differences lie. While there is some attempt to do this within the text that follows, would it be possible for Table 4 to be expanded to clearly indicate where the differences between the 3 clusters lie? 5. Please check the manuscript for typos and grammatical errors. I think it needs a final English proof revision prior to submission.
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REVIEWER	Nick Garrett PhD Auckland University of Technology New Zealand
REVIEW RETURNED	01-Nov-2019

GENERAL COMMENTS	This is a well written article.
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VERSION 2 – AUTHOR RESPONSE

Reviewer: 1

Reviewer Name: Anja Kräplin

Institution and Country: Technische Universität Dresden, Germany

Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below

The authors have responded very well to the points I made in my last review and the paper has been significantly improved. I have a few minor concerns, based on the numbering of my previous review:

1. Terminology

1.1 The authors have harmonized the terminology relating to gambling disorders and problem gambling. At some points in the manuscript, however, the term "pathological gambling / PG" can still be found. Please revise the terminology completely.

R: We changed the last "pathological gambling" in text

3 Abstract:

Design and setting: I understand from the authors' explanation that they carried out a cross-sectional analysis of the baseline data of the French JEU cohort study. Since there is no longitudinal aspect in this paper, authors should remove the word "prospective" from the title, otherwise it will be misleading.

R : we retired prospective

Results: The direction of effects and confidence intervals for the key results are still missing.

R: We added in the table paired significant variables between the 3 clusters to help readers to understand which cluster differ according the variables. we also added some statistical results in the results section of the abstract.

Conclusion: The authors have carefully revised the conclusion. What is meant by "pointer"? With regard to mental disorders, I would recommend the word "screening".

R: We changed in text as recommended

Reviewer: 3

Reviewer Name: Nick Garrett PhD

Institution and Country:

Auckland Univerity of Technology

New Zealand

Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below

This is a well written article.

R : many thanks

Reviewer: 2

Reviewer Name: Dr Stephanie Merkouris

Institution and Country: Deakin University, Australia

Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below

The authors have done a good job in revising the manuscript based on the comments previously raised. A few minor things that still need to be addressed:

1. There is still some inconsistency in terminology used (e.g., in the introduction 'at-risk problem gamblers' and 'at-risk gamblers' are referred to)

R: We retired at risk gamblers

2. Note that there is repeated information in the ethical approval section that needs to be removed.

R: repeated sentence was removed

3. Please explain in more detail the 3 step approach that was used to test the differences between the clusters ? p11

R: We added a sentence with an explanation of the 3 step approach .

4. The p-value provided in Table 4 provides an indication if there were overall differences between the 3 clusters, but does not indicate where these differences lie. While there is some attempt to do this within the text that follows, would it be possible for Table 4 to be expanded to clearly indicate where the differences between the 3 clusters lie?

R: We added in the table paired significant variables between the 3 clusters to help readers to understand which cluster differ according the variables.

5. Please check the manuscript for typos and grammatical errors. I think it needs a final English proof revision prior to submission.

R : We don't understand this comment as this manuscript was twice edited by english natives ; for the first version by Alex Gilman (native english) and for the revision by elsevier translation services . Confirmation of translation were joined to the submission.