PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Cohort Profile: A 30-Year Follow-up of the NICHD Study of Early Child Care and Youth Development (SECCYD), the Challenges and Triumphs of Conducting In-Person Research at a Distance
AUTHORS	Bleil, Maria E; Roisman, Glenn; Gregorich, Steven; Appelhans, Bradley; Hiatt, Robert; Pianta, Robert; Marsland, Anna; Slavich, George; Thomas, Alexis; Yeung, Winnie; Booth-LaForce, Cathryn

VERSION 1 – REVIEW

REVIEWER	Abajobir, Amanuel African Population and Health Research Center
REVIEW RETURNED	08-Sep-2022

GENERAL COMMENTS	It is a pleasure to read such a paper that files a 30-yo cohort study. However, the strength and/or limitation of the cohort needs to discussed and corroborated in the context of other major cohort studies. For instance, I was of the anticipation that the authors corroborate this cohort in the context of an Australian-based major multigenerational cohort study called MUSP (https://social-science.uq.edu.au/mater-university-queensland-study-pregnancy?p=4#4).

REVIEWER	Lubrano, Riccardo Sapienza University of Rome, Pediatrics
REVIEW RETURNED	24-Oct-2022

GENERAL COMMENTS	The work is very interesting and highlights a considerable organizational effort made by the authors, I think, however, that the work needs to be revised extensively. In fact, the methods do not highlight all the references from the literature that were used for the assessment of individual parameters (i.e. blood pressure cholesterol levels etc...). Also was the numerical consistency of the sample studied considered? with what tests? Also in the methods I have not seen the use of statistical tests to evaluate what was detected, and we rely on simple descriptive comparison. I don't know what the statistical evaluations will be able to highlight but they could also change the reading of the results.

REVIEWER	Mariani, Ilaria Institute for Maternal and Child Health - IRCCS Burlo Garofolo, WHO Collaborating Center
REVIEW RETURNED	07-Nov-2022

GENERAL COMMENTS	Thank you for giving me the possibility to review your manuscript. The study is valuable and extremely interesting. I'd like to congratulate with all authors. The manuscript is clear and very well written. However, it would benefit from some additional details as described below. Looking forward to reading further SHINE publications! ABSTRACT May authors clarify what kind of early life exposures were studied in the NICHD SECCYD and when these exposures were assessed? You may consider adding some examples. INTRODUCTION Authors should clarify acronyms (i.e., NIH, NICHD and US later in the text) the first time they appear in the text. "over one thousand scientific research articles": please add reference to some key articles as example COHORT DESCRIPTION - Sample overview In the introduction authors states that the SECCYD was "between 1991 and 2009". However, in the cohort description authors declare that data collection was completed "at age 15 years". Thus, the year of study completion should be 2006 (1991+15 years). Please, clarify this point. May authors add additional information regarding the cause of dead of the 5 participants who died? "Additional research contacts occurred at participant ages 17-18 years, age 22 years, and ages 26-27 years…". Authors may consider adding references to publications related to these follow-up analyses. Please specify if any financial incentive was given in the SECCYD or any follow-up assessment. Please clarify if SHINE corresponds to the last planned follow-up evaluation ("Additional research contacts occurred at participant ages 17-18 years, age 22 years, and ages 26-27 years") or is an additional one. "engage the participants as adults", please add the reference to the definition of adulthood you used. Please, move the strengths of the study in the discussion section. "All methods were carried out in accordance with relevant guidelines and regulations." I suggest the authors adding a reference for guidelines and regulations. Authors should consider adding the years of data collection of the SHINE study (2016-22?). It may be interesting for the reader understand if data collection ended before or during COVID-19 pandemic. COHORT DESCRIPTION - Participation rates: "using free (with pay option) open services" Please clarify if you had to pay or you used the free of charge option. "increasing the study payment" please specify the amount of the financial incentive. "(1, N=927) = 11.5, p<.001)."please confirm that the test used here is a chi-square test (the name of the test is missing in the pdf version). COHORT DESCRIPTION - Data collection overview: "At the study visit, collected data were entered into the online data capture tool, REDCap". Did data collectors use a predefined paper form to collect data? Or did they directly enter data in the REDCap forms? Please add this information in the manuscript. Authors may specify if data collectors and phlebotomists were nurses, students or had any other type of professional

	qualification. Authors may also add how many data collectors/ phlebotomist were trained. COHORT DESCRIPTION - Data collection protocols: Self-administered study protocol: authors may add how many participants used this option during pandemic among participants who chose this option. COHORT DESCRIPTION - Available data: Authors say that hair samples were collected but no other information is given. Authors may add some details on the analyses conducted on the hair samples. Authors may clarify what kind of analysis researchers conducted or are planned for blood and hair sample. Authors may add additional information regarding the questionnaires used (if they were validated, already existing - please specify the name adding the reference-, developed by authors, paper-based or online questionnaire…). Activity monitor wear: may authors clarify if the monitor was given/sent/shipped/rent by the participants and how data collected were sent back to authors (eg, real time data collection? Or the monitor was then sent back to authors?) Figure 1: the bracket related to the intervening assessments should last until 27 years as described in the figure title. As the figure is very informative, authors may consider adding the reference to figure 1 when they describe the SECCYD too. FINDINGS TO DATE Authors may avoid the use of the term “race”. Table 2: authors may consider adding the references to guidelines used in a note below the table. Table 3 (and relative text): authors may quantify the past and current daily tobacco assumption -if the information is available-, and provide more details for past smokers, e.g., when a smoker can be considered “past smoker” and when (on average) past smokers stopped smoking Authors may specify the HEI version used (HEI-2015?) and add a reference. Authors may add a reference also for the Pittsburgh Sleep Quality Index. STRENGHTS AND LIMITATIONS “Analyses showed retention was predicted by higher maternal education at birth (b=.152, p<.001), but not income-to-needs ratio at birth (b=-.007, p=.779), with a 16% increase in the odds of retention among participants with more highly educated mothers.” Please specify if this analysis was conducted for SHINE or for the previous follow-up intervening assessments. Adaptations of data collection tool may have impacted data quality level? Authors may consider adding a point of discussion in their manuscript.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Dr. Amanuel Abajobir, African Population and Health Research Center

Comments to the Author:

It is a pleasure to read such a paper that files a 30-yo cohort study. However, the strength and/or limitation of the cohort needs to discussed and corroborated in the context of other major cohort

studies. For instance, I was of the anticipation that the authors corroborate this cohort in the context of an Australian-based major multigenerational cohort study called MUSP (https://social-science.uq.edu.au/mater-university-queensland-study-pregnancy?p=4#4).

Dr. Abajobir, Thank you for raising this concern. We have taken care to address this gap by writing a new section in the paper (pages 23-24). We attempt to summarize (in a somewhat historical context) notable birth cohort studies and briefly describe the position of the NICHD SECCYD/SHINE in relation to these studies. The text is pasted in here for convenience:

LARGER CONTEXT

The original NICHD SECCYD and recent SHINE data collection may be placed in the larger landscape of cohort studies around the globe. Great Britain initiated the first National Birth Cohort studies (1946, 1958, and 1970) followed more recently by the Avon Longitudinal Study of Parents and Children (ALSPAC, 1991) and the United Kingdom Millennium Cohort Study (MCS, 2000).[32] In the US, the National Longitudinal Surveys (NLSY, 1979, 1986, 1997) and the Early Childhood Longitudinal Study (ECLS, 1998) were launched later as were efforts such as the Minnesota Twin Family Study (MTFS, 1989) and the Adolescent Brain and Cognitive Development study (ABCD, 2015). Other notable cohort studies include the Dunedin Multidisciplinary Health and Development Study (Dunedin Study, 1979) in New Zealand and the Mater-University of Queensland Study of Pregnancy in Australia (MUSP, 1981).

Each of these studies, unique in time, place, and scope, reflects the value of the longitudinal cohort design in which causal inferences may be drawn between exposures and their impacts in areas of child health and development. On the other hand, common challenges emerge, including problems with selective attrition and sample representativeness, the maintenance of long-term funding, and the accommodation of new lines of research into the existing study.[32] In context, the NICHD SECCYD/SHINE follow-up is generally smaller in size compared to other cohorts and even at its inception was not population-based. Rather, recruitment parameters ensured participants represented the geographies of their respective locations including across urban and rural settings. Additionally, similar problems with attrition have been experienced. In contrast, relative strengths of the NICHD SECCYD/SHINE follow-up include its depth of measurement, which is unique compared to other cohorts, including, for example, multi-method assessments of attachment, Tanner staging of pubertal development, and the current gold standard measures of health status and health behaviors.

Reviewer: 2
Dr. Riccardo Lubrano, Sapienza University of Rome
Comments to the Author:
The work is very interesting and highlights a considerable organizational effort made by the authors, I think, however, that the work needs to be revised extensively.
In fact, the methods do not highlight all the references from the literature that were used for the assessment of individual parameters (i.e. blood pressure cholesterol levels etc...).
Also was the numerical consistency of the sample studied considered? with what tests?
Also in the methods I have not seen the use of statistical tests to evaluate what was detected, and we rely on simple descriptive comparison.
I don't know what the statistical evaluations will be able to highlight but they could also change the reading of the results.

Dr. Lubrano, Thank you for your review and comments. Please see our responses to Reviewer 3 below regarding the many additional references we have added to support the methods described in

the manuscript. Note that a reference is provided for the specific blood pressure cut-points that were used (e.g., ACC and AHA guideline). Also, with respect to your concern about the unusual nature of the paper (as it is primarily descriptive and lacks association-level analyses), we do understand that our descriptive summaries provide only a high-level overview of the available data and that the comparisons drawn in relation to other national studies do not include statistical tests. However, we would like to clarify that the paper was written under the 'Cohort Profile' mechanism. Per BMJ Open, cohort profiles 'should describe the rationale for a cohort's creation, its methods, baseline data and its future plans. Cohorts described should be long-term, prospective projects and not time-limited cohorts established to answer a small number of specific research questions. Papers addressing a specific research question using cohort data should be submitted as a Research paper.' In this context, we describe the baseline data of the NICHD SECCYD/SHINE only and compare it to other national sources of data for context. Then, in the 'future plans' section, we discuss the association-level analyses that we will be doing next to test the main hypotheses of the study. Results from the association-level analyses will be submitted for publication as traditional research papers.

Reviewer: 3

Dr. Ilaria Mariani, Institute for Maternal and Child Health - IRCCS Burlo Garofolo

Comments to the Author:

Thank you for giving me the possibility to review your manuscript. The study is valuable and extremely interesting. I'd like to congratulate with all authors. The manuscript is clear and very well written. However, it would benefit from some additional details as described below. Looking forward to reading further SHINE publications!

Dr. Mariani, Thank you for your thoughtful and detailed review. Below (in blue highlights) we have taken care to respond to each comment.

ABSTRACT

May authors clarify what kind of early life exposures were studied in the NICHD SECCYD and when these exposures were assessed? You may consider adding some examples.

In the abstract, we re-worded the purpose to describe early life risk and resilience factors, but we do not have the space to provide examples, unfortunately.

INTRODUCTION

Authors should clarify acronyms (i.e., NIH, NICHD and US later in the text) the first time they appear in the text.

We carefully reviewed the manuscript to ensure that the first use of the indicated word is spelled out and the abbreviation is used subsequently. We did this separately for the abstract and the body of the manuscript.

"over one thousand scientific research articles": please add reference to some key articles as example

In the first paragraph of the introduction (page 5), we now include selected key references from the SECCYD.

COHORT DESCRIPTION - Sample overview

In the introduction authors states that the SECCYD was “between 1991 and 2009”. However, in the cohort description authors declare that data collection was completed “at age 15 years”. Thus, the year of study completion should be 2006 (1991+15 years). Please, clarify this point.

The period of the study (and the grant funding) was between 1991 and 2009. However, the final data collection time point was when the participants were ~15.5 (year 2007). This small discrepancy is due to the time needed to perform the final data cleaning, analyses, and write-up tasks. This is clarified by re-writing the first sentence of the second paragraph of the ‘sample overview’ section (page 7) to reference completion of the final data collection time point at age 15 (vs. completion of the study itself).

May authors add additional information regarding the cause of dead of the 5 participants who died?

We were able to confirm that the participants had died but not the cause of death so this information cannot be reported.

“Additional research contacts occurred at participant ages 17-18 years, age 22 years, and ages 26-27 years…”. Authors may consider adding references to publications related to these follow-up analyses.

As described above, in the first paragraph of the introduction (page 5), we now include selected key references from the SECCYD. In addition, in the second paragraph of the ‘sample overview’ section (pages 6-7), we now also include references associated with each of the follow-up time points.

Please specify if any financial incentive was given in the SECCYD or any follow-up assessment.

Yes, appropriate financial compensation was provided for study participation in the original study and each of the follow-up studies. In the 5th paragraph of the ‘sample overview’ section (page 7) this is now mentioned.

Please clarify if SHINE corresponds to the last planned follow-up evaluation (“Additional research contacts occurred at participant ages 17-18 years, age 22 years, and ages 26-27 years”) or is an additional one.

The SHINE cohort may be followed for additional assessment in the future. However, this depends on securing additional grant funding which has not yet occurred. It is our intention to continue to maintain the cohort and to pursue additional research in this cohort in similar areas of health and biological aging, per such funding.

“engage the participants as adults”, please add the reference to the definition of adulthood you used.

In the 3rd paragraph of the ‘sample overview’ section (page 7), we now describe adulthood as age 18 years or older.

Please, move the strengths of the study in the discussion section.

We have followed the guidance of the journal regarding the section headings and the indicated order of these sections.

“All methods were carried out in accordance with relevant guidelines and regulations.” I suggest the authors adding a reference for guidelines and regulations.

In the 5th paragraph of the ‘sample overview’ section (page 7), we added a reference representing the University of Washington guidance on human subjects regulations.

Authors should consider adding the years of data collection of the SHINE study (2016-22?). It may be interesting for the reader understand if data collection ended before or during COVID-19 pandemic.

In the 3rd paragraph of the ‘sample overview’ section (page 7), we clarify that the SHINE data collection occurred between 2018 and 2022.

COHORT DESCRIPTION - Participation rates:

“using free (with pay option) open services” Please clarify if you had to pay or you used the free of charge option.

In the 1st paragraph of the ‘participation rates’ section (page 8), we re-wrote the text to clarify that we used paid services offered through White Pages, LexisNexis, and TransUnion.

“increasing the study payment” please specify the amount of the financial incentive.

In the 1st paragraph of the ‘participation rates’ section (page 8), we added detail to the text noting that we incentivized participation by increasing the study payment. It is described, as an example, that payment for completion of the full study protocol increased from $250 to $400 over time. (Note that this increase was incremental: $250 in 2018, $300 in 2019, and $400 in 2021. The increase was not planned but arose in reaction to lagging participation rates.)

“(1, N=927) = 11.5, p<.001).”please confirm that the test used here is a chi-square test (the name of the test is missing in the pdf version).

Apologies. Yes, this is a chi-square test. The symbol is visible in the source document.

COHORT DESCRIPTION - Data collection overview:
“At the study visit, collected data were entered into the online data capture tool, REDCap”. Did data collectors use a predefined paper form to collect data? Or did they directly enter data in the REDCap forms? Please add this information in the manuscript.

In the 2nd paragraph of the ‘data collection overview’ section (page 9), we added detail explaining that a paper form was used to record the collected data as the data collector worked with the participant. This information was then (while the visit was still on-going) entered into REDCap, making it available to the UW research team online where it could be reviewed, and intervention performed (if needed) before the visit was over. The paper form was also mailed back to the UW research team for formal review for completeness and accuracy.

Authors may specify if data collectors and phlebotomists were nurses, students or had any other type of professional qualification. Authors may also add how many data collectors/ phlebotomist were trained.

In the 3rd paragraph of the ‘data collection overview’ section (page 10), we added detail regarding the educational and employment backgrounds of the data collectors and mobile phlebotomists. Note that the data collectors generally had college degrees, 3+ years of research experience, and worked concurrently in jobs related to social or health sciences (e.g., nursing, social work). Note that the mobile phlebotomists generally had 2+ years of phlebotomy experience, including blood processing, worked concurrently in relevant medical settings, and were required to maintain their

professional credentials in their respective states. It is also noted that a data collector and mobile phlebotomist were hired in each of the 10 main data collection sites and 4 of these individuals needed to be replaced during the study.

COHORT DESCRIPTION - Data collection protocols:
Self-administered study protocol: authors may add how many participants used this option during pandemic among participants who chose this option.

The self-administered protocol was developed later in the study in response to the pandemic, but also to provide participants more flexibility in general. In this way, all participants in the self-administered protocol participated during the pandemic (*n*=99, 14%). Text is added in the 'self-administered study protocol' section to clarify this (page 11). Our data show participants chose this protocol primarily due to long distance or convenience (not due to the pandemic necessarily). However, we did not systematically ask whether participants chose one of the three 'remote' protocol options due to the pandemic.

COHORT DESCRIPTION - Available data:
Authors say that hair samples were collected but no other information is given. Authors may add some details on the analyses conducted on the hair samples.

In the 'hair sample collection' section (page 13), we now describe that the hair samples were assayed for the assessment of hair cortisol, indexing the activity of the hypothalamic-pituitary-adrenal (HPA) axis as a marker of psychological stress experienced over the preceding months. The assays for the hair samples, however, are still in progress. Therefore, results are not able to be described in this manuscript.

Authors may clarify what kind of analysis researchers conducted or are planned for blood and hair sample.

See above. In the 'blood sample collection' section (page 13), we also now describe that the blood samples were used for assays in areas of cardiometabolic health (e.g., total cholesterol, high-density lipoprotein [HDL], low-density lipoprotein [LDL], triglycerides, glucose, insulin, hemoglobin A1c) and inflammation (e.g., c-reactive protein [CRP]).

Authors may add additional information regarding the questionnaires used (if they were validated, already existing -please specify the name adding the reference-, developed by authors, paper-based or online questionnaire…).

In the 'self-report questionnaires' section (page 14), we describe that the questionnaires were completed using REDCap, an online data capture tool. Support during the questionnaires was provided to participants either in-person or remotely depending on the study protocol. We now provide details describing examples of the questionnaires that were administered in particular content areas. Note that all questionnaires were selected because of their psychometric properties showing high reliability and validity. Also, a subset were ones that were used in the original NICHD SECCYD.

Activity monitor wear: may authors clarify if the monitor was given/sent/shipped/rent by the participants and how data collected were sent back to authors (eg, real time data collection? Or the monitor was then sent back to authors?)

In the 'activity monitor wear' section (pages 13-14), we added a sentence describing that the activity monitor was sent to the participant by mail and that a postage-paid box was included for the

participant to use to return the activity monitor once wear was completed. We also clarified that it was upon the return of the activity monitor that the data could be exported from the device. (The data were not accessible in real time.)

Figure 1: the bracket related to the intervening assessments should last until 27 years as described in the figure title. As the figure is very informative, authors may consider adding the reference to figure 1 when they describe the SECCYD too.

Thank you for noticing this. We corrected Figure 1 so the bracket extends to age 27 years. We also moved reference to Figure 1 up in the main document to the 'sample overview' section (page 6) so it helps the reader understand the timeline of the SECCYD and SHINE earlier.

FINDINGS TO DATE
Authors may avoid the use of the term "race".

We have retained use of the term race/ethnicity to be consistent with prior SECCYD reports and to follow the labelling and categories advised by the study sponsor, the (United States) National Institutes of Health (NIH).

Table 2: authors may consider adding the references to guidelines used in a note below the table.

As appropriate, references were added to the table notes.

Table 3 (and relative text): authors may quantify the past and current daily tobacco assumption -if the information is available-, and provide more details for past smokers, e.g., when a smoker can be considered "past smoker" and when (on average) past smokers stopped smoking

In Table 3, we added detail regarding the quantity of smoking and age quit smoking for past smokers. Please note that current smokers smoked an average of 7.5 cigarettes per day (range, <1-20) and past smokers reported that they used to smoke an average of 7.9 cigarettes per day (range, <1-45). Past smokers last quit smoking at age 24.6 years on average (range, 12-29).

Authors may specify the HEI version used (HEI-2015?) and add a reference.

We now consistently write HEI-2015 throughout and repeat the reference throughout.

Authors may add a reference also for the Pittsburgh Sleep Quality Index.

This reference is now consistently provided throughout.

STRENGHTS AND LIMITATIONS
"Analyses showed retention was predicted by higher maternal education at birth (b=.152, p<.001), but not income-to-needs ratio at birth (b=-.007, p=.779), with a 16% increase in the odds of retention among participants with more highly educated mothers." Please specify if this analysis was conducted for SHINE or for the previous follow-up intervening assessments.

In the 2nd paragraph of the 'strengths and limitations' section (page 22), we clarify that this retention analysis applies to the 705 subjects who participated in the current SHINE study.

Adaptations of data collection tool may have impacted data quality level? Authors may consider adding a point of discussion in their manuscript.

In the 2nd paragraph of the ‘strengths and limitations’ section (page 22), we added text noting that the data collections associated with the remote protocols may have been less rigorous due to less oversight by the UW research team.

Reviewer: 1
Competing interests of Reviewer: NA.

Reviewer: 2
Competing interests of Reviewer: I confirm that I understand the above, and consent to the named publication of my review.

Reviewer: 3
Competing interests of Reviewer: No competing interests

VERSION 2 – REVIEW

REVIEWER	Mariani, Ilaria Institute for Maternal and Child Health - IRCCS Burlo Garofolo, WHO Collaborating Center
REVIEW RETURNED	10-Jan-2023

GENERAL COMMENTS	Dear authors, congratulation for your work. I have found the manuscript improved and I have really appreciated the new “context” section. Looking forward to reed other paper with the results of your analysis. I just give you some minor suggestions to further improve your paper in the attached document.

VERSION 2 – AUTHOR RESPONSE

Reviewer 3

Dear authors, congratulation for your work. I have found the manuscript improved and I have really appreciated the new “context” section. Looking forward to reed other paper with the results of your analysis.

I just give you some minor suggestions to further improve your paper.

Dr. Mariani, Thank you again for your thoughtful comments. Below (in yellow highlights) we have carefully responded to each.

ABSTRACT

You may specify if you reported the mean or the median when you wrote“M=28.6 years”.

We now clarify that the value is the sample mean for age. (See abstract.)

You may also rephase the “college+”. I assume that it stands for people that finished at least the

college but it may be better described.

We now write ’55.6% college educated or greater’. (See abstract.)

FINDINGS TO DATE

I’d suggest using the term “ethnicity” instead of “race”.

We understand the limitations of the use of the word ‘race’. We are reluctant, however, to use a different word because the sample was coded according to the National Institutes of Health (NIH) categories for ethnicity and race. According to this scheme, ethnicity categories are Hispanic/non-Hispanic and race categories are White, Black or African American, American Indian or Alaska Native, Asian, and Native Hawaiian or Other Pacific Islander. Additional categories are ‘other race’ and ‘more than one race’. Again, we acknowledge the limitations of this scheme but would like to remain consistent with NIH and the way the cohort has been described in the past.

I do not find any added reference in table 2 notes. Maybe something got wrong in the manuscript upload.

We apologize. Please see additional text at the bottom of Table 2 that describes the clinical guidelines that were used to code the health status indicators. (See Table 2, page 18.)

Table 3: I’d suggest specifying “years” in the 7th row, i.e., “Age last quit (years)” OR “Age last quit (in years)”

We made this change: ‘in years’ (See Table 3.)