Chapter 3

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Dr, Joshua Reichard

This section contains the research study methodology. It describes the research questions and hypothesis being explored to determine the association between using Generative AI vs. traditional pre-employment document creation or enhancement methods as it relates to the rate of selection for interviews for job seekers in STEM fields. The research design is a quantitative, quasi-experimental design. The information describes how the research methodology and the statistical analysis methods will address the research questions and test the hypotheses. Further information is provided to explain details about the survey population, the sampling method, and instrumentation. Additionally, it describes the data collection, processing, and analysis methodologies. Finally, it includes information regarding the protection of research survey respondents through a social science research questionnaire, IRB review process, and data protection provisions.

# Research Questions

There are seven research questions being explored which are described to support the research study. There is one research qualifying question, and six inquiry questions.

RQ1: What associations exist in interview selection rates between those who use Generative AI for resume creation or enhancement and those who do not among candidates in STEM fields?

RQ2: What association exists in interview selection rates between racial groups among candidates in STEM fields who use Generative AI for resume creation or enhancement?

RQ3: What association exists in interview selection rates between racial groups among candidates in STEM fields who do not use Generative AI for resume creation or enhancement?

RQ4: What association exists in interview selection rates between genders among candidates in STEM fields who do not use Generative AI for resume creation or enhancement?

RQ5: What association exists in interview selection rates between genders among candidates in STEM fields who use Generative AI for resume creation or enhancement?

RQ6: What differences exist in the perceived accuracy of AI-generated resume content between racial groups among candidates in STEM fields?

RQ7: What differences exist in the perceived accuracy of AI-generated resume content between genders among candidates in STEM fields?

# Hypotheses

Seven hypotheses are being tested in suppoet of the research study.

Quasi-Experimental:

H01: No statistically significant association exists between interview selection rates of those who use Generative AI for resume creation or enhancement and those who do not among job seekers in STEM fields (RQ1).

Ha1: A statistically significant association exists between interview selection rates of those who use Generative AI for resume creation or enhancement and those who do not among job seekers in STEM fields (RQ1).

H02: No statistically significant association exists between interview selection rates and racial groups among candidates in STEM fields who use Generative AI for resume creation or enhancement. (RQ2).

Ha2: A statistically significant association exists between interview selection rates and racial groups among candidates in STEM fields who use Generative AI for resume creation or enhancement (RQ2).

Ha3: A statistically significant association exists between interview selection rates and racial groups among candidates in STEM fields who do not use Generative AI for resume creation or enhancement (RQ3).

Ha3: A statistically significant association exists between interview selection rates and racial groups among candidates in STEM fields who do not use Generative AI for resume creation or enhancement (RQ3).

H04: No statistically significant association exists between interview selection rates and genders among candidates in STEM fields who do not use Generative AI for resume creation or enhancement (RQ4).

Ha4: A statistically significant association exists between interview selection rates and genders among candidates in STEM fields who do not use Generative AI for resume creation or enhancement (RQ4).

H05: No statistically significant association exists between interview selection rates and genders among candidates in STEM fields who use Generative AI for resume creation or enhancement (RQ5).

Ha5: A statistically significant difference association exists between interview selection rates and genders among candidates in STEM fields who use Generative AI for resume creation or enhancement (RQ5).

H06: No statistically significant difference exists in the perceived accuracy of AI-generated resume content and racial groups among candidates in STEM fields? (RQ6).

Ha6: A statistically significant difference exists in the perceived accuracy of AI-generated resume content between racial groups among candidates in STEM fields? (RQ6).

H07: No statistically significant difference exists in the perceived accuracy of AI-generated resume content between genders among candidates in STEM fields (RQ7).

Ha7: A statistically significant difference exists in the perceived accuracy of AI-generated resume content between genders among candidates in STEM fields (RQ7).

Testing the hypotheses will require a rigorous research methodology and design.

# Research Methodology and Design

This quantitative study will utilize a quasi-experimental design because it will examine interview selection rates for statistically significant associations among job seekers in STEM fields who utilize Generative AI for resume creation or enhancement and those who do not. This study will utilize chi-squared analysis and ANOVA to test hypotheses for statistically significant association between groups.

Quasi-Experimental design is often used in social science research. It is advantageous because it allows for real-world settings where random assignment of group membership is impractical. Quasi-Experimental research designs compare differences in a continuous dependent variable between groups split on one or more independent variables from a validated instrument (quantitative, deductive).Quasi-Experimental is used in the experimental design due to the groups not being randomly assigned instead, groups are connected in social relationships. The group membership has pre-existing connections through professional relationships on LinkedIn. The LinkedIn member is sharing the survey with those with whom they have a professional relationship. The limitation is that it increases the risk of confounding variables, making it more difficult to assert causal relationships with the same confidence as randomized controlled trials (Terrell, 2023, p.119).

Chi-squared analysis is a statistical method used to determine if there is a significant association between two categorical variables. It compares the observed frequency in each category to the frequencies one would expect to find if there were no causal associations between the variables. (Mac Farland et al., 2016, p.77-78). Since the dependent variable is the interview selection rate, Chi-square is appropriate for examining how the interview selection rates differ across expected rates in each category (Mac Farland et al., 2016, p.77-78). The categorical independent variables are race, gender, and the use of Generative AI for resume creation or enhancement. The data is organized in a matrix, referred to as a matrix representation. The interview selection rate is organized alongside the race, gender and use of Generative AI. The Chi-square test will analyze the data organized in the matrix. The Chi-square analysis assumes that the expected frequencies are sufficiently large for the Chi-square approximation to be statistically valid. Usually, this means each cell count will have a value of 5 or more. When the Chi-square is less than 0.05, it indicates there is a statistically significant difference between the observed and expected frequencies, indicating an association between the independent and dependent variables (MacFarland et al., 2016; p.80, Creswell et al., 2023, p. 268).

The Analysis of Variance (ANOVA) test compares the means of two or more independent variables to determine if at least one dependent variable mean is significantly different from the others. In this analysis, the ANOVA test is used to determine if there is a significant difference between the dependent variable, rate of interview selection, and each independent variable, race, gender or the use of Generative AI for resume creation or enhancement. This is especially helpful when analyzing multiple independent variables, which may each have different levels or categories.(Creswell etal., 2023, p.268). Factorial ANOVA, which can analyze the effects of each independent variable and their interactions on a dependent variable. (Mac Farland et al., 2016, p.177). The t-test was not used for this analysis because there are multiple independent variables, race, gender and the varied use of Generative AI. T-tests are designed to compare the means of only two groups. Since there are more than two groups to compare, multiple t-tests would increase the likelihood of rejecting a true null hypothesis, a Type 1 error. ANOVA is the better choice because the analyzed data contains multiple independent variables. The population and sampling are important to the research design and methodology.

# Population and Sampling

The target population for this study will be diverse STEM college or university-educated job seekers from socially connected networks. The size of the target population is unknown because snowball sampling via social media will be utilized. However, based on Indeed.com, in April 2024, approximately 944,000 open positions were active in the job market for STEM-related fields. There are approximately 500,000 diverse and female graduates seeking employment. Approximately 39% of these job seekers are diverse, and approximately 40% are female candidates (NCES, 2024, p.322.20, 322.30). The distribution is not mutually exclusive.

Snowball sampling will be utilized to encourage broader participation on social media for a period of four weeks. A recruitment request, informed consent, and instrument will be posted to the researcher’s social media platforms (LinkedIn) and relevant social media groups (with permission from the group administrators), with a request for others to share the post. The sample size will be a convenience sample based on the responses received during the recruitment period. Snowball sampling is a process by which participants are recruited for a study by sharing recruitment information with other potentially eligible participants until a specific target sample size is reached (Goodman, 1961, p.148-150). In a study by Kozowski (2021), a similar method was used. One of the possible solutions to this problem is the selection of respondents via LinkedIn, which is the world’s largest platform for employees from various industries. LinkedIn, like other large Internet platforms, has a network structure, i.e., each user is “connected’’ to a certain group of people, each with their own group of connections, and so on, very quickly creating a vast network of potential respondents. The sampling procedure consists of four steps:

1. Building a list of potential respondents belonging to the study population
2. Acquiring respondents from the created list as direct contacts of the researcher

3. Distributing invitations to participate in the study ” (p.2)

4. Allowing those invited to share the invitation with others in their professional network.

The desired sample size is a minimum of 30. If a minimum sample size of 30 is not reached within the recruitment period, the recruitment period will be extended. If more than 30 eligible participants are recruited during the study, all participants will be utilized. A sample size calculator will not be utilized for this study because normality of the sample is not anticipated. The chi-square and ANOVA analyses will be treated as nonparametric procedures with no expectation of generalizability to the entire sample. Inclusion and exclusion criteria will be used to determine eligibility.

The inclusion criteria for research participants are their perceived qualification based on applying for a job in a STEM field. Secondarily, the survey participant must have been looking for a job in the past 12 months. The exclusion criteria are not having applied for work in a STEM field in the past 12 months.

## Instrumentation

This study will utilize a researcher-developed survey instrument comprised of eight questions: two demographic screening questions, five binary (Yes/No) questions, and a single Likert-style question. The instrument will be validated through field testing by a panel of 3 subject matter experts (SMEs).

## Variables

Table 1 demonstrates the alignment of research questions and the variables measured by the instruments to establish clear organization and structure.

**Table 1***Alignment of Variables to Research Questions*

|  |  |  |
| --- | --- | --- |
| Quantitative Variable(s)  | Research Question | Theory or Literature Support |
| Interview Selection Rates (dependent)Ratio Scale as Percentage | RQ1, RQ2,RQ3,RQ4, RQ5 | MacFarland et al., 2016, p.178 |
| Racial Groups (Independent)Categorical/Nominal | RQ2,RQ3 | MacFarland et al., 2016, p.178 |
| Gender (independent)Categorical/Nominal | RQ4,RQ5 | MacFarland et al., 2016, p.178 |
| Accuracy of resume content (independent)Categorical/Nominal | RQ6, RQ7 | MacFarland et al., 2016, p.178 |
| Traditional versus AI-assisted (independent)Categorical/Nominal | RQ1,RQ2,RQ3, RQ4, RQ5, RQ6, RQ7 | MacFarland et al., 2016, p.177-178 |
| Traditional versus Professional Resume Service (independent)Categorical/Nominal | RQ1,RQ2,RQ3, RQ4, RQ5, RQ6, RQ7 | MacFarland et al., 2016, p.177-178 |
| Improvement in resume content (dependent)Ordinal/Likert Scale |  | Sideridis et al., 2023, p.886 |

The interview selection rate as the dependent variable is analyzed relative to the independent variables of race, gender, use of Generative AI, as well as the accuracy of the results from the use of Generative AI. Additionally, the degree of improvement from using Generative AI for pre-employment document preparation is measured on a Likert scale. The Likert scale has five measurement options, where the distance between options is equidistant, as Sideridis (2023) recommended. The Likert question is analyzed only if the survey respondent used Generative AI to create or enhance their pre-employment documents.

## Validity and Reliability

## Because the instrument is primarily binary, interrater reliability or construct validity is unnecessary. Subject matter experts will review the single Likert-style question on an ordinal scale for alignment and appropriateness to the intended research questions.

## Instrument Validation

Two subject matter experts in the fields of artificial intelligence and STEM professions were solicited to review the instrument and provide feedback. Feedback is included in Appendix 2. The following revisions were made based on expert feedback on the subject matter. An additional question was added to determine whether a professional resume writing service was sought to create or enhance the pre-employment document creation. The relative improvement of AI-assisted vs. professional services will also be compared from the analysis of survey results.

All experts were PhD mathematicians working in AI applied research. They reviewed the alignment of the research questions and the variables and agreed that the instrument was sufficient for the research study.

# Data Collection and Analysis

## The social science research data collection and analysis will consist of an on-line survey through Survey Monkey, LLC. A detailed description of the data preparation, storage, protection and analysis method is provided.

## Data Collection

The AI Ethics Foundation, LLC will be the conduit for a research participant to access both the research consent form and the survey. The survey can be found on [AIEthicsFoundation.org](http://aiethicsfoundation.org/). The principal investigator, owns the AI Ethics Foundation, LLC. A URL to the AI Ethics Foundation, LLC will direct the potential research participant to a description of the purpose for the survey. If the potential participant consents to the research agreement, they digitally sign the document and are then advanced to the advanced to the survey. The survey questions are on the Survey Monkey platform. All the data will be collected on this platform for consistency. After sufficient samples of the population are collected for the nonparametric study, the data will be downloaded in aggregate from Survey Monkey to a CSV file and sent to an encrypted computer. The data will be kept in a password protected file for no more than eighteen months.

**Data Preparation**

The data preparation contains three stages. First, the data will be exported in a CSV file with delimited data by question. Next, the data will be put into an Excel file, cleaned, and curated for analysis. Extraneous data or incomplete survey data will be eliminated through the cleaning process. There will be an inspection to ensure alignment of answers to every relevant question. A theoretical sample of the cleaned and curated data can be found in Appendix 1. Finally, the curated data will be imported into PSPP for analysis.

## Data Analysis

This study will test data for normality and relevant assumptions of appropriate statistical procedures. If data do not meet assumptions for parametric procedures (results apply to the population), nonparametric procedures (results apply only to the sample) will be utilized. The types of test to be used to test normality of the data are visual inspection using a histograms, Q-Q plots, or box plots to assess the shape and symmetry of the distribution. An alternative to just visual inspection for normality is the Anderson-Darling Test. The Anderson-Darling test calculates a test statistic based on the differences between the observed and expected cumulative distribution function. If the calculated statistic exceeds the critical value for a chosen significance level, the null hypothesis will be rejected, indicating a departure from normality. The final alternative for normal distribution testing is the Lilliefors Test. The Lilliefors test is specifically designed for small sample sizes. It assesses the difference between the empirical cumulative distribution function of the data and the theoretical normal distribution. The null hypothesis is that the sample is drawn from a normal distribution and rejecting this hypothesis suggests non-normality (Ewens et al., 2023, p.205).

This study will utilize a Chi-Squared analysis and an ANOVA to test the hypotheses for statistically significant associations. The details of these two approaches are described in the research design and methodology section.

This study will include post-hoc statistical procedures such as power and effect size to aid the interpretation of the results. The power analysis will examine the effect size or the magnitude of the difference or relationship between variables in the population. Larger effect sizes will make it easier to detect with higher power. The sample size will also be examined to determine effect on power. The significance level ($α$) will be set at 0.05. the probability of correctly rejecting the null hypothesis when it is false or ($1-β)$ will be analyzed additionally. A Type I Error (or false positive rate) is the probability of rejecting the null hypothesis when it is true and the Type II Error (false negative rate) is the probability of failing to reject the null hypothesis when it is actually false. In addition to aiding in the data analysis, the power analysis will guide the direction for planning future studies (Trenkler, 1994, p.396).

# Ethical Considerations

The nature of the study requires human subject data collection. The participants will be given a Social Research consent form before participation. Participation in the survey is completely voluntary. Should they choose to participate, they will also be given contact information to withdraw from participation before the publication of the results. Their data will be anonymized when stored on in an encrypted file and kept no longer than eighteen months. The consent form outlines this information and can be found in Appendix B.

## Participant Consent

## The human participants in the study will be presented with a Consent form for social science research that explains the protection of their information and their rights as a participants. Specifically, the consent for describes the purposes of the study. It also describes the method of recruitment of participants, procedures which generally describes the seven questions which will be asked during the survey. Additionally, it describes the risks and benefits of the study. The methods used to protect the participants data are described, including it never being sold, shared or disclosed to anyone without their consent. The information will be kept confidential and encoded with a unique identifier for storage and analysis. It also describes that the research is voluntary and provides contact information should the participant want to withdraw from the study later. No compensation will be provided for any of the participants. The procedure is described for reporting any adverse effects experienced by participants taking the study. Digitally signed consent forms are emailed to the AI Ethics Foundation, LLC. A copy of the Social Science Research Consent Form can be found in Appendix C.Bias Acknowledgment and Mitigation

Research biases may come from population selection bias using snowball sampling. It depends on the researcher’s social networks and those known by professional networks associated with the researcher. To mitigate this bias, an initial list for distribution of the survey on linked in will come from at least 5 associates. Additionally, snowball sampling to the second and third degree of distance from the researcher will reduce the likelihood of bias in the population.

# Summary and Conclusion

The quasi-experimental research design and methodology was described in detail. It contained the research questions and hypothesis being explored to determine the association between using Generative AI vs traditional pre-employment document creation or enhancement method relationships to the selection rate for interviews for job seekers in STEM fields. The information described how the research methodology and a description of the statistical analysis methods will address the research questions and test the hypotheses. Further information was provided to describe details about the survey population, the method of Snowball sampling, and distribution of the survey questions through LinkedIn professional associations. Additionally, it described the data collection, processing and analysis methodologies. Finally, it included information regarding the protection of research survey respondents through a social science research questionnaire, IRB review process and data protection provisions. This quantitative, quasi-experimental research design will inform employment seekers on the association between using Generative AI and being pre-selected for an interview.

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**Appendix A – Data Collection**

**Social Science Research Consent Form**

Consent Form for Social Science Research Study

Differences in Interview Selection Rates Between Traditional and Generative AI Enhanced Resumes Among Diverse STEM Employment Candidates: A Quantitative

Quasi-Experimental Study

Dear Volunteer,

Thank you for your interest in participating in our social science research in the title above. This study is being conducted on behalf of the AI Ethics Foundation, LLC. The purpose of this consent form is to give you the information you will need to help you decide whether to be in the study or not. Please read the form carefully. You may direct questions about this research to ???@OGS.edu. This process is called “informed consent.” You may download a copy of this form for your records.

Principal Investigator: Gina Marshall-Johnson.

Purpose of the Study

The purpose of this study is to examine associations between interview selection rates among underserved groups in Science Technology Engineering and Math (STEM) fields according to the use of Generative AI for resume creation or enhancement. Many companies use AI to pre-screen resumes prior to interview selection. Participation in this study will help quantify the impact of Generative AI in interview selection rates.

Participant Recruitment

The target population for this study will be diverse STEM college or university-educated job seekers from socially connected networks. Participants must be 18 years or older to participate in this study. Snowball sampling will be utilized to encourage broader participation on social media for a period of four weeks until the end of the recruitment period.

Study Procedures

The study consists of a researcher-developed and validated, survey instrument comprised of seven questions: two demographic screening questions, four binary (Yes/No) questions, and a single Likert-style question. The commitment of time is minimal. The entire survey will take three to five minutes to complete.

Risks and Benefits of the Study

There are no foreseeable risks with this study. The findings from the study may help private and public businesses meet their technology sector hiring needs, and adhere to AI ethics principles established to ensure equity across all populations regardless of race, ethnicity or gender.

Confidentiality and Privacy of Research Information

The Research Committee understands and respects the privacy of each participant. The researcher guarantees that the information gathered through this research will never be sold, shared, or disclosed to anyone without their consent. All the information you provide will be confidential. All data is coded by a unique identifier associated with your answer. The researcher has no access to identifiable data. The researcher may share the overall findings based on the participant’s information. The researcher respects the rights and privacy of the participant.

Procedures for Withdraw

Given this research is voluntary in nature, the participant may withdraw from the research at any time. If you have filled out the survey and wish to withdraw your submission please email survey@aiethicsfoundation.org along with a PDF of your responses.

Compensation

There will be no compensation provided for participants in this study.

Data Monitoring and Safety

If you experience any adverse events or unanticipated problems by participating in this survey, please email survey@aiethicsfoundation.org. All participants that experience such events will be reported to the Oversight Institutional Review Board at Omega Graduate School.

Questions

You may direct questions about this research to ???@OGS.edu

**Appendix B: Instrument**



**Appendix C: Sample Data Collection Excel File**



**Appendix E: Social Science Research Consent Form**

**Consent Form for Social Science Research Study**

 **Interview Selection Rate Association Between Traditional and Generative AI Enhanced Resumes Among Diverse STEM Employment Candidates: A Quantitative Quasi-Experimental Study**

Dear Volunteer:

Thank you for your interest in participating in our social science research in the title above. This study is being conducted on behalf of Omega Graduate School and AI Ethics Foundation, LLC. The purpose of this consent form is to give you the information you will need to help you decide whether to be in the study or not. Please read the form carefully. You may direct questions about this research to ????@OGS.edu. This process is called “informed consent.” You may download a copy of this form for your records.

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**Questions**

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**Appendix F: SME Instrument Validation Inquiry and Responses**

SME #1 – Shelby Wilson, PhD Mathematics, University of Maryland College Park

Shelby,

As part of my tribe, I am sharing my research questions and asking if you can take a look and let me know if you think the variables for data collection are sufficiently aligned with the search questions.  I also have one survey question that is not covered with a research question.  Should I add one?

Thanks for sharing your PhD brilliance.

Gina

**Research questions**

RQ1: What associations exist in interview selection rates between those who use Generative AI for resume creation or enhancement and those who do not among candidates in STEM fields?

RQ2: What association exists in interview selection rates between racial groups among candidates in STEM fields who use Generative AI for resume creation or enhancement?

RQ3: What association exists in interview selection rates between racial groups among candidates in STEM fields who do not use Generative AI for resume creation or enhancement?

RQ4: What association exists in interview selection rates between genders among candidates in STEM fields who do not use Generative AI for resume creation or enhancement?

RQ5: What association exists in interview selection rates between genders among candidates in STEM fields who use Generative AI for resume creation or enhancement?

RQ6: What association exists in accuracy of resume content between traditionally generated resumes or those who use Generative AI for creation or enhancement?

Table 1 demonstrates alignment of research questions and the variables measured by the instruments to establish clear organization and structure.

**Table 1***Alignment of Variables to Research Questions*

|  |  |  |
| --- | --- | --- |
| Quantitative Variable(s)  | Research Question | Theory or Literature Support |
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| Racial Groups (independent)Categorical/Nominal  | RQ2,RQ3 | MacFarland et al., 2016, p.178 |
| Gender (independent)Categorical/Nominal  | RQ4,RQ5 | MacFarland et al., 2016, p.178 |
| Accuracy of resume content (independent)Categorical/Nominal  | RQ6    | MacFarland et al., 2016, p.178    |
| Traditional versus AI-generated (independent)Categorical/Nominal | RQ1,RQ2,RQ3, RQ4, RQ5, RQ6 | MacFarland et al., 2016, p.177-178 |

|  |  |  |
| --- | --- | --- |
|  Improvement in resume content (independent)Ordinal/Likert Scale  |      |  Sideridis [etal](http://et.al" \t "_blank)., 2023, p.886 |
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Because hallucinations are such a prevalent attribute of Generative AI inquiries, I am wondering if I should explicitly report on this part of the analysis as part of my findings.

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| Gina Johnson <gina@werthejohnsons.net> |

 | Mon, Apr 8, 7:54 AM (9 days ago) |  |  |
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| to Shelby.wilson |

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There is a figure missing below.  Please use this version.

Thanks for being part of my tribe.  I am wondering if you can review my research questions to be sure they are aligned with the variables for data collection.  Also, I realized there is one survey question that is not covered by a research question. Do you think I should add an additional question to cover it?

Thanks for sharing your PhD brilliance!  I am open to any and all suggestions.

Thanks,

Gina

Because hallucinations are such a prevalent attribute of Generative AI inquiries, I am wondering if I should explicitly report on this part of the analysis as part of my findings.



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| Wilson, Shelby N. |

 | Wed, Apr 10, 11:48 AM (7 days ago) |  |  |
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| to me |

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Hi Gina,

Thanks for sharing.  I was out on Monday to go see the eclipse.  It was amazing!

The “*Variable relationships to research questions*”image didn’t render in the email.  It seems like this image likely shows similar information to what’s in the table?  So I think I get the idea.  But let me know if I’m wrong.

Otherwise, I like the research questions and look forward to hearing what you find during your research.

I have a couple of suggestions/comments:

* Consider Swapping RQ4 and RQ5.  This is so that the “does use GAI” falls on evens RQ2, RQ4… and “does not use GAI” falls on the odds RQ3 and RQ5.  (It took me a few minutes to realize this was “off” during reading.  It doesn’t change the science at all, but it’s the type of silly thing that reviewers of manuscripts don’t take the time to disambiguate).
* To your question about adding a RQ leading towards improvement, I think it’d be an interesting question to see whether the use of GAI actually improves the resumes. I would imagine that GAI might make women’s resume’s look a lot better because we tend to undersell ourselves.  But this is just a hypotheses   I don’t think you actually need to necessarily need to break out by race/gender.  But if you add this analysis, then you have both RQ1 “who selects to use GAI” and RQ7 “Does the use of GAI improve resume content”
* I like the idea of reporting on hallucinations.  Any findings you have here don’t necessarily have to be a part of your “research” but I could definitely see this being a part of your literature review and how hallucinations (and trust of AI) might impact people’s willingness to use GAI for their resumes as well as their ability to catch errors/hallucinations generated in their resumes (You could nod to RQ6 here!)
* The thing that is not mentioned here, and might impact your results is whether or not an individual used a non-AI resource to generate/improve their resume (I’m thinking a resume writing service or a recruiting service).  I think whether or not this is a factor might originate from who you’re surveying.  I could imagine more senior/corporate people being more apt to use a human to help with their resume generation.  Again, I wouldn’t modify your survey/research questions, but something to consider whether it will impact your findings and should be included in the background/discussion.

This is exciting work and I hope this feedback helps.  Happy to have more in depth discussion!

Cheers,

Shelby

SME #2 Tamara Goyea, PhD Mathematics, University of Maryland College Park

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| Gina Johnson <gina@werthejohnsons.net> |

 | Mon, Apr 8, 7:48 AM (9 days ago) |  |  |
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| to Tamara.goyea |

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Tamara,

Thanks for being part of my tribe.  I am wondering if you can review my research questions to be sure they are aligned with the variables for data collection.  Also, I realized there is one survey question that is not covered by a research question. Do you think I should add an additional question to cover it?

Thanks for sharing your PhD brilliance!  I am open to any and all suggestions.

Thanks,

Gina

**Research questions**

RQ1: What associations exist in interview selection rates between those who use Generative AI for resume creation or enhancement and those who do not among candidates in STEM fields?

RQ2: What association exists in interview selection rates between racial groups among candidates in STEM fields who use Generative AI for resume creation or enhancement?

RQ3: What association exists in interview selection rates between racial groups among candidates in STEM fields who do not use Generative AI for resume creation or enhancement?

RQ4: What association exists in interview selection rates between genders among candidates in STEM fields who do not use Generative AI for resume creation or enhancement?

RQ5: What association exists in interview selection rates between genders among candidates in STEM fields who use Generative AI for resume creation or enhancement?

RQ6: What association exists in accuracy of resume content between traditionally generated resumes or those who use Generative AI for creation or enhancement?

Table 1 demonstrates alignment of research questions and the variables measured by the instruments to establish clear organization and structure.

**Table 1***Alignment of Variables to Research Questions*

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| Quantitative Variable(s)  | Research Question | Theory or Literature Support |
| Interview Selection Rates (dependent)Ratio Scale as Percentage | RQ1, RQ2,RQ3,RQ4, RQ5 | MacFarland et al., 2016, p.178 |
| Racial Groups (independent)Categorical/Nominal  | RQ2,RQ3 | MacFarland et al., 2016, p.178 |
| Gender (independent)Categorical/Nominal  | RQ4,RQ5 | MacFarland et al., 2016, p.178 |
| Accuracy of resume content (independent)Categorical/Nominal  | RQ6    | MacFarland et al., 2016, p.178    |
| Traditional versus AI-generated (independent)Categorical/Nominal | RQ1,RQ2,RQ3, RQ4, RQ5, RQ6 | MacFarland et al., 2016, p.177-178 |

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| Goyea, Tamara D. |

 | Wed, Apr 10, 5:07 PM (7 days ago) |  |  |
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| to me |

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Hi Gina,

I took a look at the research questions and believe that they are aligned with the variables for data collection.

I do think it may be good to add a research question to cover the survey question to ensure completeness and consistency.

Hope this helps and very excited about the work!!!! Please let me know if you need help with anything.

All the best,

Tamara

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Tamara Goyea, Ph.D.