

Optimizing the Format of a Resume Based on Recruiters' Gaze

Kyra Whiteman
Clemson University
Clemson, SC, USA
kwhitem@clemson.edu

Oliver Pasquesi
Clemson University
Clemson, SC, USA
opasque@clemson.edu

Chase Dunlap
Clemson University
Clemson, SC, USA
dunlap7@clemson.edu

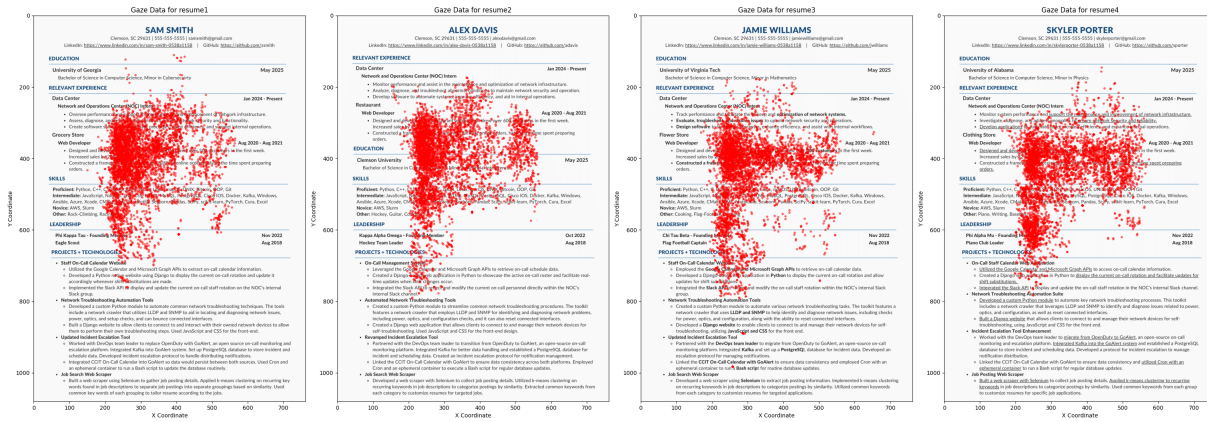


Figure 1: Example of Gaze Patterns in Differing Resume Information Layout and Presentation

ABSTRACT

Unlocking the secret to resume creation and resume review is something that all job applicants wish they could achieve. This paper analyzes how resume information order and information presentation affects the resume review process. Using a 2x2 within-subjects study, participants were asked to analyze each resume for a limited period of time (8 seconds) and then assess the candidate's "fit"-ness and their own comprehension of that candidate. Eye tracking technology was used to evaluate how the different stimuli affected where each participant was looking impacting their "fit/no-fit" decisions.

KEYWORDS

eye tracking, visual attention, resume format

ACM Reference Format:

Kyra Whiteman, Oliver Pasquesi, and Chase Dunlap. 2024. Optimizing the Format of a Resume Based on Recruiters' Gaze. In *ACM, New York, NY, USA*, 6 pages. <https://doi.org/10.1145/nnnnnn.nnnnnn>

1 INTRODUCTION

Research has shown that job recruiters spend an average of 7.4 seconds reviewing a resume before deciding whether or not that

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than the author(s) must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from [permissions@acm.org](https://www.acm.org).
Conference'17, July 2017, Washington, DC, USA

© 2024 Copyright held by the owner/author(s). Publication rights licensed to ACM.
ACM ISBN 978-x-xxxx-xxxx-x/YY/MM
<https://doi.org/10.1145/nnnnnn.nnnnnn>

candidate will continue to the next stage of the hiring process [3]. This short decision can make or break a job seeker's application. Many studies have been conducted to understand how job seekers can maximize their resumes for this crucial moment. One study revealed that job recruiters spend 80% of their time looking for a select few key pieces of information, with education and job experience being some of the most important [2]. Based on this and other research, a set of criteria for resume evaluation was created, concerning itself with specific elements that recruiters actively seek out [7].

Research shows that a simple resume layout with defined sections, headings, and clear fonts significantly improves readability. This is important because job recruiters tend to spend the most time looking at job titles when considering a resume [3]. Additionally, resumes that took advantage of F-pattern or E-pattern reading tendencies were proven to be very effective in facilitating the job recruiter [3]. This is due to those particular patterns being linked to speed reading techniques, which will be discussed further in the next section.

Even though the skills and experience of the job candidate are the main factors in the hiring process, in this experiment the location and presentation of key information is being hypothesized to also play a critical role, especially given the limited time recruiters spend reviewing each resume. General guidelines for resume formatting are well established, but exploring and understanding the nuances of information layout can further enhance a candidate's chance of making a positive impression. Therefore, it is important to recognize how resume organization influences a job recruiter's scanning patterns, which in turn influences their decision making process.

2 BACKGROUND

The way people process and retain information is very important to the discussion of resumes. Working memory plays a crucial role in this process. When reviewing a resume, a job recruiter's working memory is actively engaged in obtaining information, comparing information with previous candidates, and making decisions based on overall fit with predetermined requirements [1]. Reviewing resumes requires quick decision making and efficient manipulation of information gathered from the resumes. The act of taking and processing this information in a very short amount of time correlates directly with speed reading techniques. The two speed reading techniques particularly concerned with resume reviews are skimming and scanning. Skimming is when readers visually search for indicators of the main idea of the text, or particular information wanting to be known. Scanning is the extraction of this information, facilitating the reader in a general understanding of the text [4]. These two techniques are designed to enhance speed by focusing on key information, which in the case of resumes is the resume review criteria mentioned before.

Speed reading, especially scanning, encourages readers to create a visual hierarchy of information. This visual hierarchy helps people retain crucial details from what they have skimmed past [4]. A well structured resume enables recruiters to extract important details and match candidates' experience and skills to job requirements more efficiently. While the relationship between speed reading and comprehension is complex it does not seem to affect the analysis of this study. Studies suggest that speed reading techniques improve reading speed without compromising comprehension when moderate levels of understanding are sufficient, such as in resume reviews. Yet, if higher comprehension is necessary, speed reading may not offer an advantage [6].

A resume's visual hierarchy plays a crucial role in how they are evaluated. Analyzing scan patterns and eye movements such as fixations, saccades, and scanpaths can provide valuable insights into how recruiters process resumes with different orders and presentations of information. Eye tracking metrics like saccade rate (the number of eye movements between fixations) offer valuable information about how much effort is required to search for and comprehend information. For example, research has shown that poorly designed interfaces can lead to more saccades, causing an increase in cognitive effort [5]. The elongated skimming process to try and identify the prominent indicators causes this increased cognitive effort. In resume reviews, a poorly structured layout may cause job recruiters to increase the amount of searching and scanning they do, in turn reducing efficiency. If particular orders of resume information were to decrease scanning, it could help increase the amount of time recruiters spend actively retaining the information. Metrics like scanpath length (the total sequence of eye movements over a period of time) and fixation rate can also measure search efficiency. More fixations and shorter scanpaths indicate better organization and a faster ability to retrieve information due to the organization.

Given the influence of visual hierarchy on resumes and the information able to be studied using various eye tracking methods, examining the order of resume sections and presentation of information in resumes could lead to improved recruiter efficiency.

Therefore, studying how recruiters scan different resume layouts using techniques such as saccade rate and most importantly fixation rate can possibly identify the most effective resume structures, improving the overall hiring process.

2.1 Hypothesis

This study explores how order of resume information and the presentation of the information affect how job recruiter's evaluate the "fit"-ness of a candidate. Specifically, we propose the following hypotheses:

- (1) If the layout of the resume sections differ, then the section at the beginning of the resume will be read the most.
 - (a) Changing the order of the sections will impact what information the participant will be able to read in the limited time, impacting their comprehension of how "fit" the candidate is.
- (2) If the information is bolded or underlined, then those particular sections will be read the most.
 - (a) Changing the presentation of information will draw the participant to read similar information, causing the participant's comprehension of how "fit" the candidate is to be relatively the same between the two.

3 EMPIRICAL VALIDATION

3.1 Experimental Design

The study was a 2x2 within-subject experimental design, where one factor was the order of the resume (experience before education or education before experience) and the other was the presentation of certain important information in the resume (by bolding or underlining). The order of presentation of resumes was randomized during each resume reviewing task. After each resume, the participants were asked questions per resume to gauge how "fit" the candidate was for the job and how much they comprehended about the individual candidate. The dependent measures were applicant "fit"-ness, applicant comprehension, and eye-tracking metrics (fixation, number of fixations on the AOIs, and duration).

ID	Age	Gender	Corrective Lenses	Eye Conditions	Resume Experience
S01	21	M	Glasses	---	A bit
S02	22	M	Glasses	---	A lot
S03	21	M	---	---	A bit
S04	22	F	Glasses	---	A bit
S05	21	M	Contacts	Astigmatism	A lot
S06	21	M	---	---	Almost a bit
S07	22	F	Contacts	---	A bit
S08	21	F	---	---	A bit
S09	23	M	---	---	A lot
S10	21	F	Glasses	Astigmatism	A lot
S11	21	M	---	---	A lot

Figure 2: Participant Data

3.2 Participants

11 Clemson University Students participated in this study (7 male and 4 female; age range = 21-23; mean age = 21.45 years; SD = 0.656).

The participants were recruited through a convenience sampling method, of colleagues both related and unrelated to computer science and eye tracking. All participants had normal or corrected vision and the only eye conditions reported were astigmatism, which had been corrected for in each case. Each of the 11 participants had at least a minimal amount of experience creating their own resume and with the overall interview process, while none of them had any experience job recruiting. All of this information can be seen in Figure 2.

3.3 Procedure

- Before the experiment, each participant took a pre-assessment questionnaire that collected demographic information like gender, age, job experience, recruiting experience, resume creation experience, and any visual impairments that may influence the output of the experiment. The participants were then informed about the experiment and were allowed to ask any questions regarding the process. The participants were then required to provide verbal consent to participate in the study.
- The eye tracker was calibrated to each participant, and the calibration was validated for accuracy before every resume reviewing task. After calibration, participants were reminded to keep their head position as still as possible without causing discomfort.
- Next the participants read the job flier, as shown in Figure 3, indicating the qualities to look for in each resume. Each participant was given 8 seconds to review each resume. There were two separate resumes for each resume reviewing task. Before each individual resume the job flier was shown to them again if they needed to refresh themselves on what to look for.
- In the first resume reviewing task (order of information), one of the two resumes was presented to the participants, and then the participants were asked questions related to the applicant to assess the applicant's "fit"-ness for the job and the participant's comprehension of the applicant. The next type of resume was presented and after the same questions

IT Consultant

Clemson University • Clemson, SC
Full-time

Qualifications:

- Education:** College Degree in the Field of Computer Science
- Work Experience:** Experience working on computer systems, data communications system design, installation, operation, repair, sales or marketing, or processing of information in a data processing environment or related systems

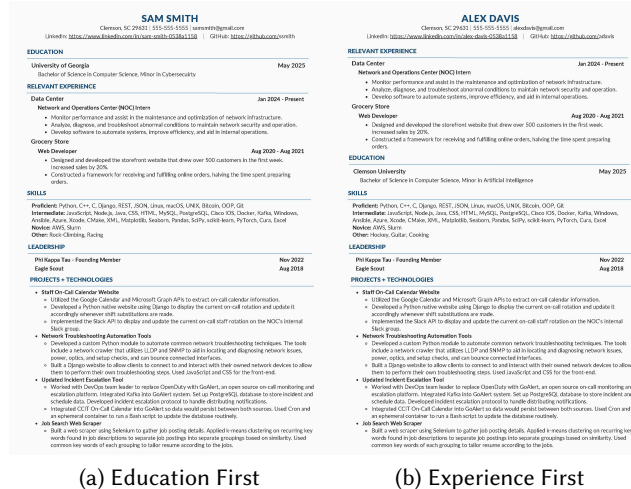
Responsibilities:

- Provides technical support to customers
- Troubleshooting software and hardware issues
- Implementing solutions promptly
- Assists with software installations
- Serves as the initial on-site contact for classroom technology and video conferencing systems

Figure 3: Job Flier

were asked. The second resume reviewing task (presentation of information) was conducted the same.

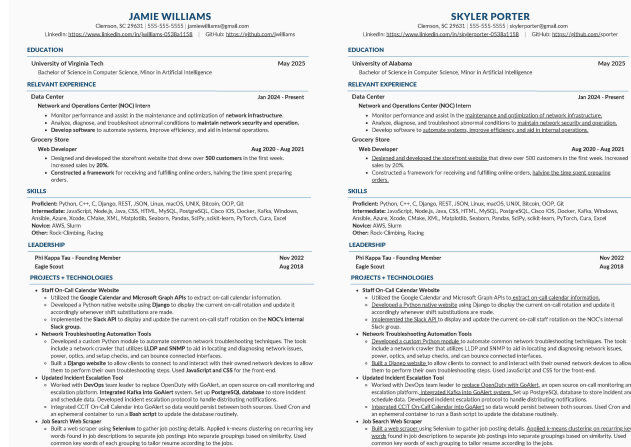
- After completing all the tasks, the participants were thanked, and the researcher's contact information was provided to them in case they had any questions related to the experiment.



(a) Education First

(b) Experience First

Figure 4: Resumes Testing Order



(a) Bolding

(b) Underlining

Figure 5: Resumes Testing Information Presentation

3.4 Stimulus

Participants were presented with four resumes created by the researchers. All resumes had experience and skills that met all requirements. The information in each resume is worded differently and the names of the candidates were changed between each resume to create some level of differentiation. All the same bolding

techniques for subsection titles, candidate names, etc. and font sizes were used throughout each resume. Different bolding and underlining techniques were added to critical information in order to be tested during the second resume reviewing task. Each section had similar lengths of information. The resumes were scaled to fit the screen while conducting the experiment. An example of the differences between order of information can be seen in Figure 4. While Figure 5 shows the differences between the resumes testing presentation of information.

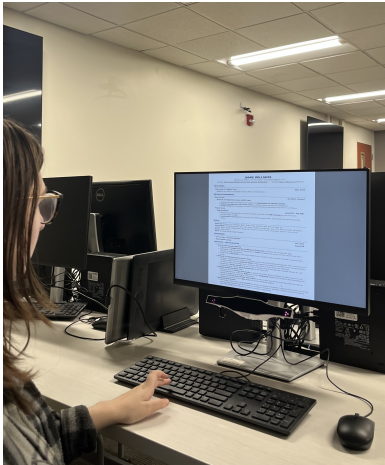


Figure 6: Example of Apparatus (not actual participant)

3.5 Apparatus

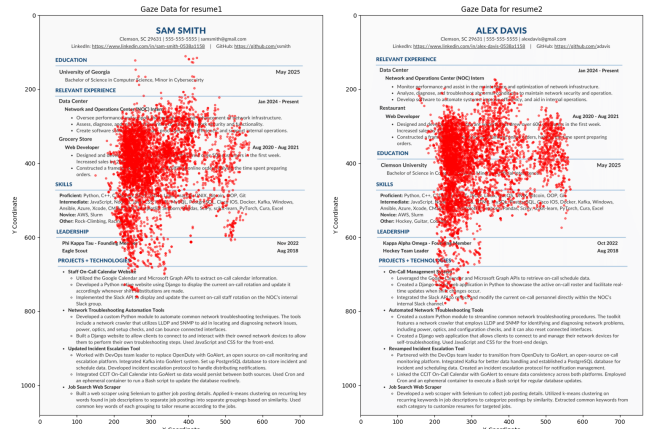
A 23.8" Dell desktop monitor with a resolution of 1920 x 1080 was used for this experiment. The participants used a wired mouse and a keyboard to input responses whenever prompted. To collect eye tracking metrics a Gazepoint GP3 eye tracker was used, sampling at 60 Hz with an accuracy of 1° as given by the manufacturer. The participants were seated on a chair in front of the monitor at an approximate distance of 60 cm in order to collect eye tracking metrics. An example image of the apparatus is shown in Figure 6.

4 RESULTS

4.1 Eye Tracking Metrics

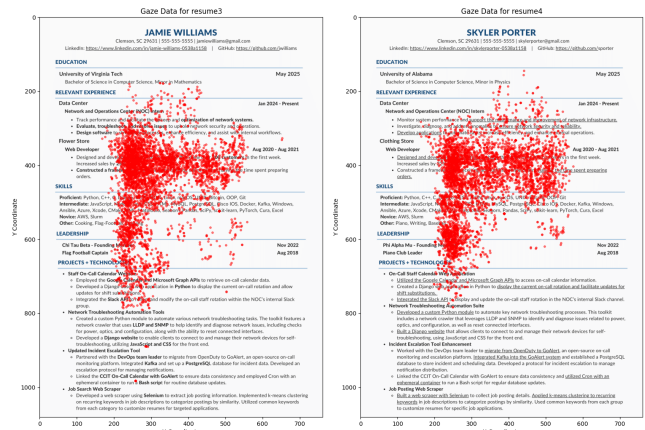
4.1.1 Fixation Duration. Fixation duration was mainly analyzed regarding certain areas of interest (AOIs). Percentages of fixation duration on these particular AOIs were averaged and plotted in order to compare and contrast each resume. The results for this analysis will be discussed in the following section.

4.1.2 Amount of Fixations. Gaze plots were created in order to show the difference in the amount of fixations and where those fixations occurred on each resume. As shown in Figures 7 and 8, Each resume regardless of study (Order or Presentation) were viewed in an F-pattern corroborating the tendency for people to speed read using that technique of skimming and scanning [3].



(a) Education First (b) Experience First

Figure 7: Gaze Plots: Resumes Testing Order



(a) Bolding (b) Underlining

Figure 8: Gaze Plots: Resumes Testing Information Presentation

4.2 Areas of Interest (AOIs)

4.2.1 Order of Information. For the first study, varying the order of information, the AOIs created for these two resumes consisted of each major section of the resume. This resulted in 6 AOIs consisting of Header, Experience, Education, Skills, Leadership, and Projects with the order of the second and third sections/AOIs flipped in each case. Subjects spent the most amount of time fixating on the Experience section of the resume no matter if it came before the Education section or not. The Experience section, in each case, also received a very similar amount of fixation time, 71.638% for Resume 1 and 64.612% for Resume 2. It also seems like the section that came after the Experience section, whether that be Education or Skills, received the second most amount of fixation time in both cases,

again receiving very similar fixation percentages. The bottom sections of the resumes both received very little viewing time. Figures 9 and 10 show the time spent fixating on the AOIs in both resumes, throughout the total allotted time of each resume cycle (8 seconds).

4.2.2 Presentation of Information. As for the second study, AOIs were created at each instance of bolding or underlining in the various sections. There was very little difference in the time spent fixated on bolded vs underlined information. In each instance, the average percent of time spent fixating on these items was around 3% throughout the entire 8 second period as seen in Figure 11.

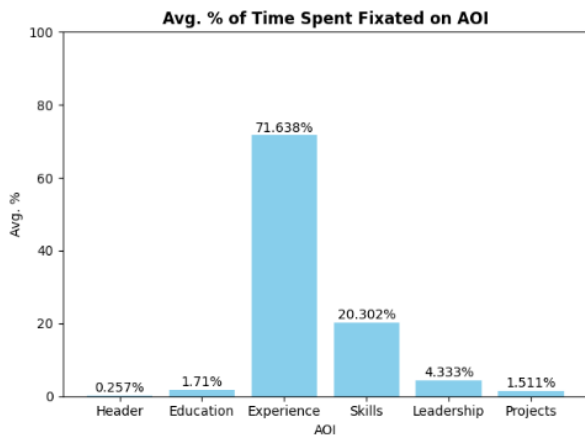


Figure 9: Fixation on AOIs: (Order of Information Education First)

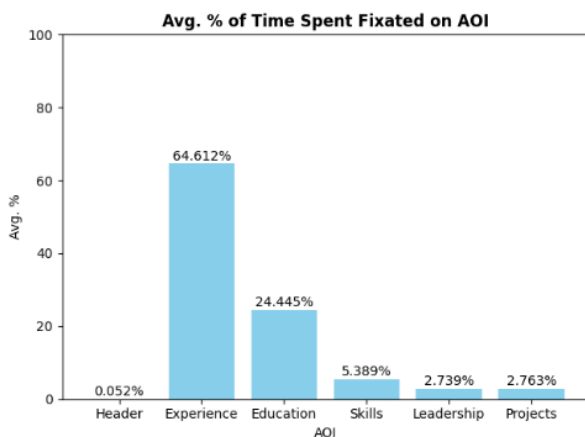


Figure 10: Fixation on AOIs: (Order of Information Experience First)

4.3 Participant Resume Evaluations

4.3.1 Candidate Rating. There was no significant difference in the perceived "fit-ness" of a candidate for the job role, even though

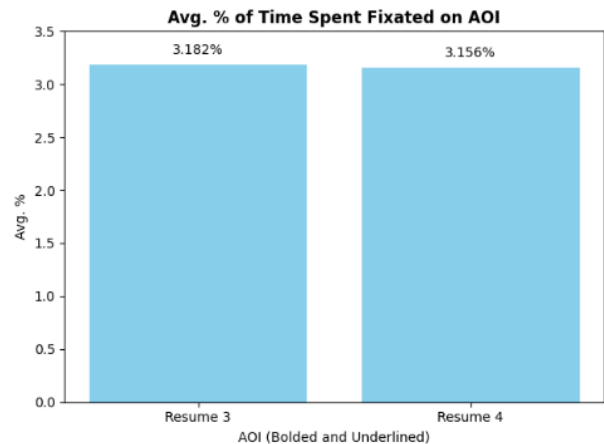


Figure 11: Fixation on AOIs: Presentation of Information)

minor changes were made to each resume. The results indicated that neither type of change within the two studies produced significant differences in how participants rated the candidates for the job role. There were also no notable differences between the two studies themselves (changing the order of information and the presentation of information), suggesting that the variations introduced both within and between studies did not substantially affect perceptions of the candidates' "fit"-ness. Each candidates' "fit"-ness rating stayed in the range of 3.567 to 4.044 out of 5, with Resume 2 (Experience First) producing the least "fit" candidate and Resume 4 (Underlining) producing the most "fit" candidate.

4.3.2 Comprehension. As for comprehension of the resume information, there was quite a significant difference between each study. The resumes included in the first study (Order) averaged around 1 whole point less in comprehension than the resumes included in the second study (Presentation). All resumes resulted in a below average comprehension score. Resume 1 (Education First) had the

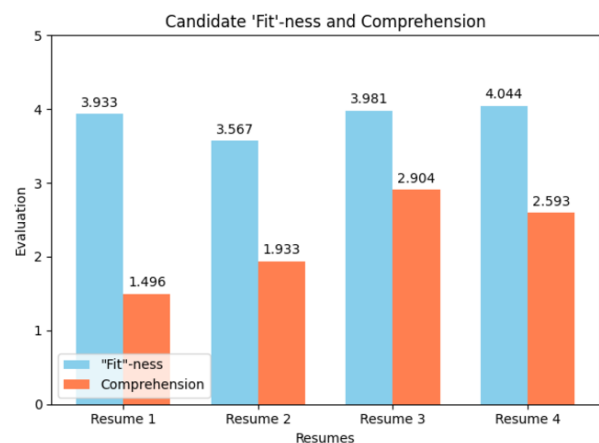


Figure 12: Candidate and Comprehension Evaluations

lowest score of 1.496 out of 5 and Resume 3 (Bolding) had the highest score of 2.904 out of 5. Figure 12 compares candidate "fit"-ness to candidate comprehension for each resume.

5 DISCUSSION

The results of the study supported some initial hypotheses while disproving others. As for the first study (Order), the Experience section itself is what participants focused on the most not just the section closest to the beginning of the resume as proposed. The Education section, even though it was also featured at the beginning of one of the resumes was actually viewed longer when it was placed after the Experience section. This suggests that relevant experience might play a larger role than education when it comes to choosing a candidate for a specific job role. Since the change in order did not impact what the participant was able to read in the short allotted time, there was no significant difference in the participants' "fit"-ness rating for each candidate. However, these similar ratings could also be due to both resume's information being too similar to one another. The slightly lower score in the "fit"-ness between Resume 1 and Resume 2 could suggest that the Skills section might have more relevancy to "fit"-ness than believed. Since in Resume 1 the Skills section received a similar amount of fixation time as the Education section in Resume 2, it could be suggested that education is not as valuable in determining fitness than relevant skills. We can also see from the gaze plots that Resume 3 and 4 also viewed the Skills section more than the Education section (due to having the same section layout as Resume 1) and both received higher "fit"-ness. This also might help suggest the hidden importance of relevant skills. As for the second study (Presentation), the bolded and underlined sections were only read around 3% of the allotted time. This is vastly shorter than the majority of time proposed in our hypothesis. However, this could be due to the small size of the AOIs, and/or small imperfections in the calibration resulting in significant impact to the data. Another reason for the short amount of time spent on those particular AOIs could be that the participants were able to locate and comprehend those bits of information quickly and then had more time to move on to the other information presented in the resumes. Furthermore, like the first set of resumes, the perceived "fit"-ness of the candidates were similar across both resumes, only deviating 0.63 of a point. The comprehension scores of these resumes are quite higher than the other two, suggesting that the bolding and underlining helps facilitate finding key information. This likely allows recruiters to spend more time reviewing other information in the resume, helping them to make more informed decisions about a candidate's "fit"-ness and overall feel like they have a higher understanding of what that candidate has done.

6 LIMITATIONS & FUTURE WORK

While this study aims to provide much needed insight into job recruiter behavior through eye-tracking, certain limitations must be acknowledged to provide a comprehensive and nuanced understanding of our findings. First, the number of participants was quite small, which limits our ability to generalize the results of this experiment. Additionally, all of our participants lacked prior experience in job recruiting, which presents a significant limitation. The lack of experience may mean that the eye-tracking patterns observed

in this study do not accurately reflect that of a professional job recruiter, making our findings less applicable to real-world scenarios. However, this limitation highlights an opportunity for future research more focused on professional job recruiters performing this task. Related to this participant limitation, the time allotted for viewing each resume was restricted to 8 seconds in order to mimic the actual recruiting process. However, since these participants were not very familiar with this process the time could have been extended in order to allow the suitable amount of time needed to comprehend the information presented in each resume. Lastly, the design of the study limited our ability to ask more in-depth comprehensive questions about the resume, in order to gauge if the participants objectively comprehended the material or not. By recognizing these limitations, we aim to provide a groundwork for refining this experiment and encourage further research in this untapped area of eye-tracking studies.

7 CONCLUSION

Overall, our results supported one of the fundamental principles of speed reading, the use of the F-pattern, used by job recruiters to quickly and accurately comprehend relevant information about a job candidate. Though our results predominantly did not align with our initial hypotheses, they did suggest some interesting qualities of a resume that could play bigger roles in getting a recruiter's attention and helping him or her comprehend a resume faster. Relevant experience seemed to be looked at the most between resumes, while bolding and underlining both helped increase comprehension. Optimizing the Experience section of a resume by bolding and underlining the key information is suggested, through our findings, to be beneficial to creating a strong and efficient resume. And possibly the Skills section should be taken into a greater consideration when crafting a resume. However, a lot more research, particularly tracking the gaze of real job recruiters, must be done in order to truly know how beneficial this information could be in navigating the harsh reality of job recruiting.

REFERENCES

- [1] Baddeley, A. D. and Hitch, G. J. (1974). Working memory (vol. 8). *New York: GA Bower (ed), Recent advances in learning and motivation.*
- [2] Evans, W. (2018). New study clarifies recruiter decision-making. *Boston University Libraries.*
- [3] Ladders (2018). Eye tracking study. *Boston University Libraries.*
- [4] Masson, M. E. (1983). Conceptual processing of text during skimming and rapid sequential reading. *Memory & cognition*, 11(3):262-274.
- [5] Pan, B., Hembrooke, H. A., Gay, G. K., Granka, L. A., Feusner, M. K., and Newman, J. K. (2004). The determinants of web page viewing behavior: an eye-tracking study. In *Proceedings of the 2004 symposium on Eye tracking research & applications*, pages 147-154.
- [6] Rayner, K., Schotter, E. R., Masson, M. E., Potter, M. C., and Treiman, R. (2016). So much to read, so little time: How do we read, and can speed reading help? *Psychological Science in the Public Interest*, 17(1):4-34.
- [7] Ross, C. M. and Young, S. J. (2005). Resume preferences: Is it really "business as usual"? *Journal of Career Development*, 32(2):153-164.