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Preferences and Perceptions of Resumes Among Chinese People: A Visualization Study Based on Gaze Plot

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Abstract

This study uses the visualisation method of the gaze plot in eye-tracking technology to analyse how the physical characteristics of a CV, such as its layout, content ratio, and blankness rate, affect the attention of different Chinese people during the CV screening process. The study aims to summarise the focus, characteristics, and patterns of different people's attention when browsing CVs to provide some references for CV creation for job seekers with different needs. The study found that: 1. Regardless of the type of CV, the subjects would first pay attention to the image information in the CV; 2. The CV with a relatively open and organised text layout and a moderate/low amount of text would be more preferred by the subjects; 3. Appropriate blank space would attract the attention of the viewers more and faster, and a reasonable amount of blank space would also have a buffering effect on the reception of new information; 4. Different types of CV layout can have different psychological implications for specific groups of people.

Keywords

Job Application CV; Human Resource Management; Eye Movement; Attention Guidance; Gaze plot

1. Introduction

The combined effects of the epidemic and industrial restructuring in recent years have led to a reduction in the industrial lines of Chinese companies of all types and a significant reduction in the budget for new talent. As a result, the number of new jobs created by Chinese companies in recent years and the number of existing jobs added has decreased significantly compared to the pre-epidemic period. However, Chinese university graduates will reach 28.59 million in the three years from 2020 to 2022. Suppose we add the number of unemployed and new job seekers to this base. In that case, the phenomenon of many people competing for the same position and the increasing competition for popular positions will only intensify in a sluggish talent market environment. How to make their resume can maximize the degree of matching their own and the position, to gain the most significant competitive advantage so that they can stand out among thousands of job seekers, has become the primary concern of all job seekers. No matter what type of enterprise or business company, the first opportunity to meet with job seekers is through the resume bridge to achieve. Recruiters often have to select many CVs in a limited amount of time. Often, recruiters cannot read each CV in detail and often choose to reduce the time spent on each CV during the initial screening stage to improve the selection process's efficiency. Therefore, it is essential to understand the visual patterns of recruiters when screening CVs, the key points they focus on, and the CV vulnerabilities of the candidates themselves when creating CVs. This study will introduce the gaze plot research tool from eye-movement research into CV research, aiming to analyse the impact of physical characteristics such as the layout, content share, and blankness rate of CVs on the attention of different Chinese populations during their CV screening process. This

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research aims to summarise the focus, characteristics, and patterns of different people's attention when browsing CVs and to provide a reference for job creation for job seekers with different needs.

With the continuous development of technology, eye tracking technology has been widely used in education, mainly for online learning, consumer-oriented advertising design, and engineering, mainly for road safety applications (Zheng, Wang & Yan, 2021). The gaze plot is a visualisation of the individual's gaze position, gaze duration, and gaze sequence on the stimulus material. The obtained gaze content is formed into a gaze sequence, visualised as a visualisation of the individual's gaze while observing the stimulus—the trajectory map. Currently, in the job market, where CV screening is the main focus of research, the gaze plot in eye-tracking technology is mainly applied to colour matching in CV production (Chen et al., 2009; Mason et al., 2016) and textual content research. The area of interest with the highest number of first gaze points was the photo area, followed by text area 2 (personal competence and access to rewards) and text area 1 (basic personal information).

It can be seen from the above studies that many researchers have focused on a single factor of the CV and less on the overall layout of the CV. In this study, the 664 CVs collected were divided into three types (Type A/V/E) by classifying them into different types of CVs. These were used to investigate the different attentional effects of different image and text layouts/quantities in CVs. Whether the difference in blankness in CVs affects the information processing of different groups of people. The type of preference of different people for different CVs. Whether different CV layouts have a psychological implication on the memory effect of specific groups of people. Whether different CV layouts psychologically affect the memory of specific groups of people. The findings of this study are intended to provide a basis for creating CVs for people with different job search needs to make them more relevant and effective.

2. Research Methodology

In the reality of manually screening CVs, there is a '15-second effect', i.e., the average time taken by a recruiter to quickly review a CV is 15 seconds (Chen et al., 2009). In response to this factual basis, this study used 15 seconds as a criterion for time pressure and as one of the experimental conditions. In this experiment, the original CVs were the actual CVs submitted by the job applicants for the different positions. The original structure and text volume of the CVs were kept in their original state, except for the privacy of the information, to ensure that the researcher did not subjectively influence the original CVs. Each participant will be assigned a fixed number of three different types of CVs, and each CV was presented for 15 seconds under time pressure, after which the subjects were asked to view the CV as fully as possible.

2.1. Classification of CV Types

In this study, 664 original CVs were used as the classification sample. The status of workers covered by the CVs included interns and regular employees, and the types of CVs included human resource management, operation, sales, planning, and design positions. In classifying the resumes, the study used the seven criteria of photo position, content order, work time order, space division, text volume, blankness rate, and layout rate to classify the 664 original resumes into three types abstracted them into three sample resumes, namely A/V/E. Table 1 presents the characteristics and corresponding diagrams of the seven classification criteria of photo location, content order, work time sequence, spatial division, text volume, blank rate, and typography rate for the A/V/E type of CVs.

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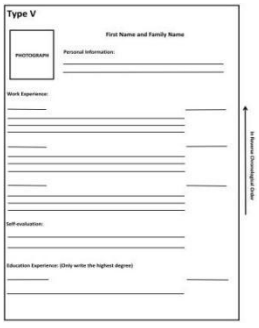
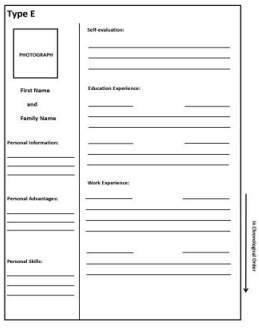
Table 1 A/V/E Type CV Characteristics

Type	Photo Location	Order of Content	Working Time Sequence	Spatial Division	Text Volume	Blank Rate	Typographical Rate
Type A	Top Right	Personal Information - Personal Evaluation - Education - Work Experience	Reverse Order	None	More	Low	High
Type V	Top Left	Personal Information - Work Experience - Personal Evaluation - Education Experience	Reverse Order	None	Moderate	Relatively Low	Moderate
Type E	Top Left	(Left) Personal Information - Personal Strengths - Personal Skills (Right) Personal Evaluation - Education Experience - Work Experience	Order	Left and Right Split	Less	Moderate	Relatively Low
Schematic							
Type A			Type V			Type E	
							

2.2. Experiments

This experiment aims to reveal the browsing patterns and preferences of different groups of people in the process of browsing CVs by means of a gaze plot under time pressure (15 seconds), to discover the optimal layout and amount of content for the CV.

2.2.1. Subjects

Ten people were selected from three categories: university students, employees with 1-3

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years of experience in general business positions, and employees in administrative positions working in HR recruitment (Table 2). All subjects had normal visual acuity (0.8 or above) in their bare eyes or corrected visual acuity, no colour blindness, colour weakness, or other colour differentiation problems, and all had good colour differentiation ability.

Table 2 Subjects' Information

Subjects Type	Working Years	Total Number of Subjects
University Students	None	4
Staff in Business Positions	1-3 years	3
HR Position Recruiters	1-3 years	3

2.2.2. Experimental Materials

The experimental materials for this experiment were selected from 664 original CVs that matched the three types of CVs, A/V/E, shown in the schematic diagram of Table 1, and one original representative CV of each of the three types was selected as the experimental CV. All three experimental CVs were written in Simplified Chinese, with the text content of Type A CV consisting of 1473 Chinese characters and 78 numbers, totaling 1747 characters (including spaces) and two pages; the text content of Type V CV consisting of 998 Chinese characters and 97 numbers, totaling 1703 characters (including spaces), and two pages; the text content of Type E CV consisting of 694 Chinese characters and 54 numbers, a total of 1065 characters (including spaces), one page.

2.2.3. Experimental Procedures

Initially, all subjects were presented with the instructions, and the experiment was started after confirming that they had understood all the instructions correctly. During the experiment, the subjects were presented with three types of CVs in sequence, each of which disappeared after 15 seconds and automatically jumped to the subsequent CV. When all three CVs had been viewed, a small image of the three CVs appeared on the screen, and the subjects were asked to choose the one with the most competitive advantage in terms of the layout by using their memory of 15 seconds. At the end of the experiment, the subjects will be interviewed, and the whole experiment + interview will be strictly limited to 15-20 minutes. The main questions will be the following 5 points, with additional questions depending on the subject's answers: 1. Why did you choose this CV? What are the strengths of this CV? 2. What are the weaknesses/dislikes of the CVs you did not choose? 3. How well do you think these 3 CVs match the position you are interested in? 4. What is your favourite order of CV content? Why? 5. What is your preference for the chronological order of work? Why?

2.2.4. Collection and Analysis of Experimental Data

After collecting the subjects' visual trajectories while browsing their CVs, ErgoLAB software was used to analyse and manage the subjects' complete gaze plot data. During the interview sessions, audio recordings are made to ensure that the actual semantics of the subjects are recorded. During the data analysis phase of the interviews, the audio files will be converted into text files. The text data and sentiment will be analysed using SPSS for Windows 10.

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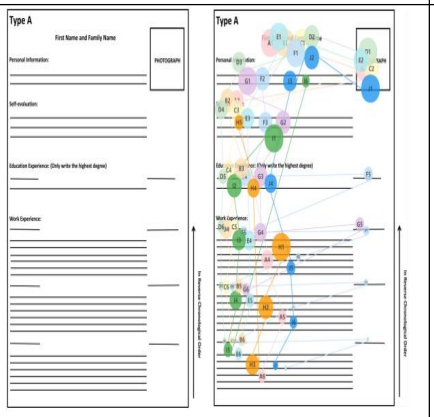
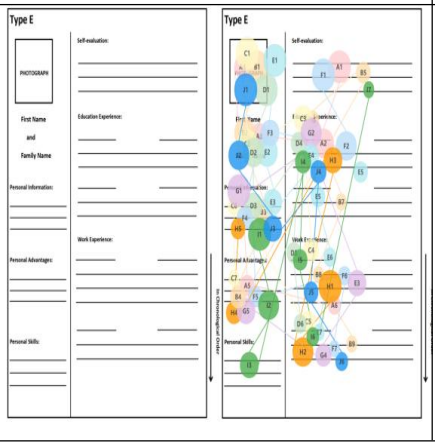
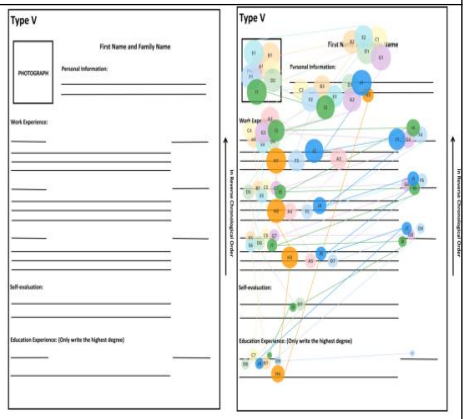
2.3. Results

2.3.1. Gaze Plot

Table 3 A/V/E Type CV Gaze Plot

No.	Type	No.	Type
A	University Students	F	HR Position Recruiters
B	University Students	G	Staff in Business Positions
C	University Students	H	HR Position Recruiters
D	University Students	I	Staff in Business Positions
E	Staff in Business Positions	J	HR Position Recruiters
Gaze Plot			
Type A		Type E	
			
Type V			
			

Type A CV Gaze Plot Analysis

With 15 seconds of time pressure, as shown in the gaze plot of Type A in Table 3, most of the subjects focused first on the candidate's name and photo in the CV; secondly on the self-evaluation section; and then on the name of the school in the education experience; finally on the company name, duration of employment and job title in the work experience section, and the specific content of the work experience. Most of the subjects indicated that they did not have time to skim through it under a 15-second time pressure situation.

Type E CV Gaze Plot Analysis

With 15 seconds of time pressure, as shown in the gaze plot for type E in Table 3, most subjects focused first on the photo and name in the left-hand section of the CV; secondly, the name of the school and the name of the profession in the personal information in the left-hand section and the highest educational experience in the right-hand section; thirdly, the name of the company and the brief job description in the work experience; and lastly, the attention was given to personal strengths. The personal skills and evaluation sections received the least attention in this type of CV, receiving one attention and four attention, respectively.

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Type V CV Gaze Plot Analysis

With 15 seconds of time pressure, as shown in the gaze plot for Type V in Table 3, most subjects focused first on the photograph and personal information in the CV; secondly, the name of the candidate; thirdly, the name of the company and the number of hours worked in the work experience section, as well as a brief description of the job; and finally, generally, the last part of the educational experience section in Type V, the name of the school and the name of the profession. The self-evaluation section received the least attention in this type of CV, with a total of 2 attention.

2.3.2. Subjects' Screening of CVs

Table 4 Preference of Different Types of Subjects For A/V/E Type of CV

Crowd Type	Total Number of Subjects	Type A	Type E	Type V
University Students	4	0	4	0
Staff in Business Positions	3	0	1	2
HR Position Recruiters	3	0	0	3

The results of the post-experimental interviews (Table 4) show that out of all ten subjects, 0 chose type A; a total of five chose type E, including four university students and one employee in a business position; and a total of five chose type V, including two employees in a business position and three recruiters in an HR position.

3. Discussion and Conclusion

The gaze plot shows the position of the subject's eyes on the stimulus material (web page, print advertisement, or video), the sequence, and the duration of observation of an area. The main feature of the gaze plot is, therefore, to reveal the temporal order of observation or the location of observation and the time spent observing a location. The observation time is usually expressed as the duration of the observation point and is represented by dots of different diameters on the trajectory diagram. The longer the observation, the larger the dot.

3.1. Effects of Image and Text Layout/Quantity on Attention

This study found that (Table 3), regardless of the type of CV, the subjects focused first on the photo information in the CV, e.g., the photo of the candidate's CV. For each of the three samples, CVs with different background colours were selected, with type A having a white background, type E having a blue background, and type V having a red background. Although the experiment results showed that all three CVs received the majority of attention at first sight, the photo with the red background was the most likely to receive the most attention at first sight (5/10). In contrast, the photo with the white background received slightly less attention at first sight (2/10). In terms of layout and amount of text, the study found that resumes with a relatively loose, organised layout and a moderate/low amount of text were preferred by the subjects. With its tight layout and a large amount of text, Type A was not preferred by any of the ten subjects, whom all had two reasons for not liking it: 1. Too many words will cause impatience when reading. It is challenging to have the patience and time to browse all the places with too many words in the resume. 2. The typesetting of the text is very compact, and it is easy to see the content in series and miss the line when browsing, and it is often easy to miss key content when browsing. The layout and amount of text in the E and V

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types of CVs were relatively good, so more subjects chose these two types of CVs. Most respondents felt that the text layout of these two types of CVs was well coordinated, allowing them to read the CVs with a better sense of rhythm and to remember some essential information about the candidate's application. In terms of the amount of text, the majority of respondents were able to skim through both types of CVs with a moderate/low amount of text in a short period, giving them a quick and efficient overview of the candidate's past work experience.

3.2. Impact of CV Gap Rate on Information Processing

Blankness refers to the relationship between the ratio of text and images to the blank area on the page. In terms of application, blank space refers to an idea of simplicity and peace of mind. It also plays a vital role in CV design, and with good use of blank space, the readability and accessibility of any CV will be improved. This study found that a concise, marked-up text narrative with appropriate blank space attracted viewers' attention more and faster. The study also found from interviews with participants that appropriate blank space acts as a buffer for information, allowing the viewer to process the previous text before the blank space to easily remember the critical information and form a logical chain of memory.

3.3. Psychological Cues Generated by the Type of CV Layout for Specific Groups of People

The statistics in Table 4 show that the university students preferred the E type of CV because they generally felt that this type of left-right layout had the following advantages: 1. It separated basic personal information from job-related information; 2. There were more ways of partitioning the CV so that a single CV was compatible with many different aspects of the candidate; 3. Each section was very concise. However, after thorough communication with the subjects who preferred the E type of CV, this study discovered the underlying reasons. The page limits the left-right layout of the CV, so the whole CV cannot have a large amount of text in one section and needs to be divided into sections. However, the fundamental reason the university community prefers the E type of CV is that, as university students with little work experience, they can relate to a CV with less work experience and recognise that it can disguise the lack of work experience. Different from the resumes preferred by university students, employees in business positions with specific social experience and HR prefer V-type resumes because the work experience content of this type of CV takes up most of the space of the whole CV, and the layout and quantity of text are appropriate. This type of CV allows the person screening the CV to focus on the critical elements of the CV and obtain a sufficient basis for screening. At the same time, it can save much time and improve the efficiency of the office for those who are also employees of the company. In addition, the V type of CV has a self-evaluation section at the end, which summarizes work experience and enhances the integrity of the CV. In contrast, Type A and Type E CVs, which place the self-evaluation at the top of the CV, are easily overlooked and forgotten by CV screeners and do not play their role of "Self-promotion" well.

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