

A Review of The Research on Chinese typeface Design and its User Groups

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Abstract

With the development of science and Technology, culture, technology and society need typeface design to reflect the cultural heritage and adapt to the development of technology in the digital age. Research on font design and user groups can better meet the needs of users, but also promote the development and innovation of Chinese typeface design. The problem is how to balance the traditional culture and modern technology in Chinese typeface design, and the needs of the user groups is not very detailed survey. Through the questionnaire to collect a large number of user needs and feedback and the use of data analysis to study the development of font design and user needs. It is found that the rapid development of digital media and technology brings new challenges and opportunities to typeface design. Typography on digital platforms is moving in a more diverse direction, with users paying more attention to the appearance and adaptability of typography on different screens. The research direction in the future can further explore the relationship between font design and culture, traditional art. Research should focus on a more comprehensive understanding of user needs, the integration of technology and design, and adapt to the trend of social diversity.

Keywords: Cultural Heritage, User Groups, Modern Technology, Typeface Design

Introduction

Typography is often regarded as the visual expression of language, and plays an important role in different industries. In brand design, the strategic use of fonts is a powerful visual clue, helping to establish a unique brand image. As Adrian Frutiger observes, "Typography is to the text what clothes are to the human body," underscoring the crucial role that typography plays in shaping a brand's appearance. The field of advertising and marketing relies on typography not only to attract attention but also to elicit specific emotions that affect consumer perception and promote brand recall (Spiekermann, 2015). In the publishing industry, the careful choice of fonts enhances readability and contributes to the overall aesthetic appeal of printed materials, in line with "Font design is the process that gives human language a permanent visual form" (Bringhurst, 2004). In addition, in the digital age, responsive font

design is critical to ensuring optimal readability across devices, laying the foundation for a positive user experience. In professions such as health care, technology and finance, typography has become a tool for conveying professionalism and creating a visual language that meets industry standards. In essence, typography is a dynamic and influential element in visual communication, leaving an indelible mark on the visual landscape of every industry.

Typography plays a key role in many aspects of the user experience. First, it directly affects the user's reading experience and understanding of the information. Typography is designed to improve the comfort of reading and to provide a pleasant reading experience for the eyes, rather than to burden the eyes (Bringhurst, 2004). Second, font standardization and consistency are critical to the usability of the user interface. In the digital realm, responsive typeface design ensures consistent layout and readability across devices. Good typography is functional and versatile, but avoids tedium (Spiekermann, 2015). In this regard, the choice and design of fonts must strike a balance between aesthetics and function. In addition, font personalization and brand relevance are crucial. Designers can convey brand values and personality through the style, shape and emotional expression of typefaces. In fact, the choice of font to a certain extent will affect the emotional experience of users. According to research, different typefaces can convey different emotions and tones, which are critical to the emotional connection between the brand and the user experience. For example, typography is designed not only to make reading easier, but also to convey certain emotions (Spiekermann, 2015). In general, Typography's role in the user experience goes beyond mere readability, including brand expression, emotional communication, and overall design coherence, making it an indispensable element of the digital design era.

In the current Chinese typeface design field, technology and cultural factors together to promote its continuous development and wide application. With the advent of the digital age, Chinese font design has undergone significant technological progress. The popularity of digital media has forced typography to focus more on readability and compatibility, as designers need to better adapt to different resolutions and Chinese presentations on devices (Chen, 2022). This is critical to maintaining the clarity and beauty of the Chinese language in a digital environment. The rapid development of mobile applications has further shaped the trend of Chinese typeface design. On small-screen devices such as mobile phones and tablets, designers are working to make Chinese typefaces more legible by optimizing details such as font structure and line thickness, ensure that users have a good reading experience within the limited screen space (Huang, & Zhang, 2018). This reflects the focus on the user experience, but also reflects the ability of designers to adapt to new technologies and devices change. In addition to technological advances, the use of Chinese typeface design in the field of cultural creativity has become increasingly important. Chinese typefaces, as a tool of cultural expression, are increasingly integrated into brand identity, advertising, and the arts and culture (Huang & Zhang, 2018). By using the traditional cultural elements, the designers have created Chinese typeface design with unique cultural characteristics, which not only improves the cultural content of the brand, but also injects new creative power into the cultural creative industry. In addition, Chinese font design has also played a huge role in the cross-border field. Chinese fonts have shown unique creativity in the fields of digital art and virtual reality (Tan, 2015). By combining traditional calligraphy art with modern design concept, the designers break the traditional boundary and create Chinese typeface design with modern feeling and traditional culture. This innovation not only meets the needs of

contemporary aesthetics, but also expands the application of Chinese typefaces in the emerging fields. To sum up, the current Chinese typeface design in the technical and cultural aspects have made significant achievements. The development of technology provides more possibilities for Chinese typeface to be presented in the digital environment, and the integration of culture makes Chinese typeface design a part of cultural creativity, which further expands its application fields. This reflects the Chinese font design is not only a skill, but also a fusion of technology, aesthetics and culture of integrated art.

Related Research Fields of Chinese Typeface Design

The research of typeface design has attracted wide attention in many fields. In the field of art and design, typography as a form of visual art has attracted in-depth research by artists and designers (Leavy, 2020). The study of typeface shape, typeface structure, lines and space use aims to create unique and beautiful typeface works of art. This shows that typography is not only a craft, but also a part of creative expression and aesthetic thinking. In the field of culture and communication, typography plays a key role in the transmission of culture and information. Writing styles and typography reflect the unique characteristics of different cultures, and researchers are working to understand how typography conveys cultural information and how it affects people's perceptions of a particular culture. In addition, the use of typefaces in media and advertising has received much attention, as well-chosen typography can enhance the effectiveness of the message and create a deeper resonance. In the field of technology, especially in computer science and digital design, typeface design has become the focus of the digital age. With the advent of the digital age, the role of fonts in screen, mobile applications and web design has become critical. The researchers focused on the performance of typefaces at different resolutions, compatibility across devices, and how technology can be used to create more innovative and practical typography. The evolution of typography in technology reflects the flexibility of designers to adapt to new technologies and changes in equipment. From the perspective of psychology and human-computer interaction, typeface design affects reading experience and cognitive process. In-depth study of the role of font on reader emotion and attention guidance, help to improve user experience, for designers to provide a deeper level of cognitive science support. Finally, in the field of business and brand, font design has become one of the research focuses. The success of branding and corporate identity often depends on unique and recognizable typography (Nguyen, 2020). Researchers focus on how fonts shape brand personality, convey values, and create differentiated competitive advantage in the market.

The research of Chinese typeface design involves a wide range of fields, which has aroused great concern in academic and practical fields. In the field of art and design, researchers are committed to a deep understanding of font shape, structure and style, trying to create both beautiful and unique style of Chinese typeface. However, research has also revealed the direct impact of different font choices and typography on the reading experience, so further research is needed to identify the most effective typeface design strategies in different scenarios. In mobile applications and small-screen devices, the research of Chinese font design is still an emerging field. Although some progress has been made, researchers recognize that more work is needed to understand how best to achieve readability in these particular contexts. In addition, the use of typography in commercial branding has received a lot of attention, but current research may not fully explore the exact relationship between typography and brand awareness, emotional connection and consumer behavior, more empirical studies are needed. Technology research shows that with the development of the

digital age, Chinese font design needs to adapt to new technology trends and user behavior. The application of Chinese font design on virtual reality, augmented reality and other emerging technology platforms has not been fully studied, which provides a new direction for future research (Wang & Li, 2022) . In the continuous innovation in this field, designers try to combine traditional calligraphy art and modern design ideas, breaking the traditional boundaries, to create a modern and traditional culture of Chinese font design. In a word, the research direction of Chinese typeface design covers many fields such as art, mobile application, commercial brand and technology. While significant progress has been made, more in-depth research is needed to address existing problems and drive innovation in the field.

The research on user groups of typeface design covers many subjects, among which human-computer interaction, user experience design and psychology play a key role. In the field of human-computer interaction, researchers are committed to a deep understanding of the impact of font design on the interactive experience of digital interface users. Through experimental design and user survey, the researchers explored the effects of different fonts on users' reading speed, comprehension and comfort in order to optimize the usability of digital products. User experience design is not only about product function, but also about users' emotional experience and perception when using the product (Wang & Yuan, 2019) . Research in this area seeks to answer questions about how typography can improve user-interface interaction with technology, making it more natural and fluid. User experience design is another important aspect of typography research, which focuses on users' understanding of the overall feeling of typography. Through extensive user research and focus group discussions, researchers delved into user preferences for different typeface styles and typography layouts and their impact on the overall user experience. The emotional expression of typefaces is a key element in design, which directly shapes the emotional connection between users and information (Guo, 2023) . This helps designers to better meet the aesthetic needs of users and enhance the user experience of digital products. Psychology also plays a key role in user research for typography. Researchers are concerned about the impact of fonts on individual cognition and emotion. Different typeface styles, shapes, and sizes can lead to different emotional experiences for users, so psychological research has revealed how typeface design can affect users' emotions and attitudes at a subconscious level. This provides designers with insight into the more targeted choice and use of fonts to evoke specific emotional resonance.

The user group research of Chinese typeface design has made some discoveries in the aspects of aesthetic preference, readability requirement, cultural factor, multi-platform usage and professional domain requirement. Through user research, designers can understand different users on the typeface style, stroke shape, typeface structure and other preferences to better meet the visual needs. At the same time, the focus of the research is on the readability of typeface. Different groups of users may have different reading habits and needs, which has guiding significance for typeface designers. Cultural factors are also considered, and user research may involve users' preferences for traditional or modern cultural elements, as well as their perception of the role of typefaces in cultural expression (Guo, 2021). In addition, the need for users to use typefaces on different platforms, such as mobile devices, computers, tablets, and so on, requires designers to consider how fonts will behave on different screens. In terms of professional domain needs, the research may reveal the use and needs of different professional users for fonts in professional domain, such as designers, artists, publishers, etc. .

However, there are some deficiencies, including the limitations of the sample, the lack of long-term follow-up, inadequate consideration of cultural differences, insufficient technological development and insufficient participation. Therefore, the Chinese typeface design user research needs to consider more comprehensive factors to overcome the limitations of the study, in order to better meet the diverse needs of users.

A Review of User Groups in Art and Design

The research on user groups of art design originates from the continuous attention to user experience and creative industry. With the development of digital technology, designers gradually realized that the work is no longer a one-way transmission, but with the interaction between users. At first, the research of art and design user community focused on traditional media, such as painting, sculpture, photography and other fields. Designers try to understand the audience's reaction to different art forms in order to optimize the expression of the work (Reas & Fry, 2007). This stage of research focuses on aesthetics and emotional experience, to explore how works of art trigger the emotional resonance of the audience. With the rise of the Internet and social media, the research of art and design user groups is gradually expanding into the digital field. Designers began to pay attention to user interaction and feedback on online platforms, using data analysis and social media trends to understand how works work in a digital environment. Research at this stage emphasizes the impact of digitization on the way art is created and disseminated, as well as the degree of user participation in digital media. In recent years, the research on user groups of art design has further integrated the concepts of human-computer interaction and user experience design (Rapp, 2021). Designers tend to place the user at the heart of the creative process to ensure that the work better meets the needs and expectations of the audience. This approach emphasizes the importance of user engagement and promotes closer interaction between the work of art and the audience. The research of Art Design User Group has formed a multi-level, multi-angle system. In addition to aesthetic experience and digital interaction, researchers are increasingly concerned about the social, cultural and psychological impact of art.

Art and design user groups play an important role in the fields of art and design. First, in the field of art, researchers focus on how works of art are understood and interpreted by different user groups. This includes the in-depth study of the audience's emotional response, cultural cognition and subjective feelings in the aesthetic experience. By looking at user groups in different cultural and social contexts, researchers can better understand the multiple meanings of works of art and their impact on a global scale. Secondly, in the field of design, the focus gradually extends to the level of user experience and user participation. Designers are increasingly concerned about the role of users in art design, emphasizing the engagement, interaction, and feedback of the user community in the design process (Wright & McCarthy, 2022). This research direction has promoted the innovation of design methods, making the art work closer to the needs and expectations of users. In the intersection of Art and design, researchers have begun to explore the impact of digital technology on art and design user groups. New media technologies such as virtual reality and augmented reality have provided users with brand-new artistic experience, leading to a study on the mechanism of the dissemination and acceptance of artworks in the digital era (Kljun & Coulton, 2018). This includes an in-depth study of how digital works of art capture the attention of viewers, how they spread on social media, and how users interact in virtual environments. From aesthetic

experience to user participation to innovation in the digital age, researchers are committed to revealing the complex and multi-level relationship between users and works of art, providing rich research topics for future art design.

As a comprehensive creative activity, art and design permeates into many industries and groups, and has an impact on visual communication, Brand Building and user experience. First, art design plays a vital role in advertising and brand marketing. Through the unique graphic elements, color scheme and creative layout, designers can create eye-catching advertising and brand image, so as to attract consumers' attention and establish the brand's unique position in the market. Art and design in advertising directly affects the consumer's cognitive and emotional experience of a product or service (Cuny & Demarles, 2020) . Secondly, art design plays a key role in web and mobile application design. Through creative user interface design and user experience layout, designers can enhance the usability and attractiveness of digital products. Good art design not only makes users feel comfortable, but also conveys the values of the brand and makes users enjoy the experience of using the product. Through ingenious design techniques, artistic design enriched the reading experience, attracting readers' attention and conveying information beyond the text. This way of visual communication makes publications more competitive in the market. Social media and digital marketing are also supported by art and design. In the digital age, graphic content has a huge impact on social media platforms. Designers create compelling content for brands and products through creative visual elements that facilitate user interaction and sharing (Landa, 2021). Finally, art design plays an important role in creative industry and art market. From graphic design to sculpture art, art design promotes the creation of creators in various media, provides abundant creative resources for independent artists, galleries and cultural institutions, and promotes the prosperity of cultural and creative industries.

The research of art design user group in the digital age has made some relevant research and findings. First of all, the study found that the digital age art design user groups pay more attention to personalized and customized experience. With the development of digital technology, users in the Internet platform access to more art and design works, thus forming a more unique aesthetic interest and needs. Designers need to better understand and satisfy users' desire for personalized artwork, which is critical to the development of the digital art market (Hu, 2023). Secondly, user groups in the digital age pay more attention to interaction and participation in art design. Social media and online platforms enable users to interact directly with designers and express their views and opinions on their work. This kind of interaction has promoted the art design from the traditional one-way communication mode to the more open and shared creative process. However, the study also found that increased interactivity may lead to subjective interpretation of works by users, and further research is needed to understand the actual impact of such interaction on art design. In the digital era, there are some deficiencies in the research of art design user groups, mainly in the lack of in-depth understanding of the psychology and behavior of art design user groups in the digital era. Although the research on personalization and interactivity is increasing, the research on users' perception, emotion and experience in the digital age is still insufficient. In addition, the rapid development of digital technology has brought new problems and challenges, such as privacy protection, digital copyright, and so on, these issues need more scholars' attention and research.

The Research Status Quo of the Field of Design and Art in the User Group of Typeface Design

In the current digital era, the research on user groups of typography design from the perspective of Art combines many theories and methods to fully understand users' perception, experience and interaction in art design. The aesthetic theory of perception is an important part of it. Through the in-depth analysis of the role of typeface design in users' visual perception and aesthetic experience, the effects of font shape, line thickness and spacing on user perception are emphasized. This provides a powerful guide for designers to make font design more in line with user's perceived needs. Semiotics and semantics also play an important role in art. Through these theories, researchers can interpret the meaning of typeface as a symbol, reveals how typography conveys a particular emotion, cultural element, or brand value (Skaggs, 2017) . This makes the typeface is not only a tool to display the text, but also a carrier to express and convey information, which has a far-reaching impact on cultural creativity and brand building. Drawing on user experience design methods, research from an artistic perspective emphasizes field observation, user interviews, and user testing to gain insight into how users feel and respond to their interaction with typography. This kind of humanistic research method not only helps to optimize the typeface design and make it more in line with user expectations, but also promotes the innovation of design practice. In the research of history and culture, researchers reveal how typeface design reflects social and cultural changes and artistic movements by exploring the styles of typeface design in different historical and cultural environments. This provides designers with rich cultural elements and historical heritage, making font design more depth and uniqueness. Finally, experimental design research is an important part of the art perspective, through the design of new typefaces or modification of existing fonts, and through the experimental evaluation of user reaction to these designs. This experimental research method not only tests the innovation and practicability of design, but also provides valuable experience for future design practice.

From the perspective of design, the research on typeface user group involves many theories and methods to understand the user's interactive experience and needs in the design process. First, design linguistics is a key theory that focuses on the language attributes of design elements such as fonts (Martinec & Van, 2020). This theory discusses how fonts convey information, elicit emotional responses and play a role in the overall design context. Through the application of design linguistics, researchers can dig deeply into the context and meaning of fonts in design, so as to better serve the design objectives. Second, design thinking plays an important role in the study of user groups in font design, which emphasizes understanding user needs and solving problems through an iterative design process. Through design thinking, designers can better understand the needs of users and meet these needs by experimenting and adjusting the typography to create designs that are closer to the expectations of users (Johnson, 2020). Visual communication theory focuses on how design elements, including fonts, communicate visually. In font design, this includes factors such as typography, color, shape, and how they affect the user's understanding and perception. By applying Visual communication theory, researchers can better understand the impact of typography on users' perceptions. Finally, the theory of brand design emphasizes the importance of conveying brand values and personality through design. In typeface design, the choice of a specific typeface for the brand image has a profound impact. Therefore, the theory of brand design is very important to understand the role of fonts in brand building. These theories and methods interweave with each other and provide a comprehensive analytical framework for the research of typeface user groups from the perspective of design. By applying these theories

and methods, researchers can better understand the role of typography in user experience and how to optimize typography to meet design goals and user needs.

In the field of linguistics, the research on user groups of typeface design involves many branches of linguistics to better understand the role of typeface in language expression. Linguists pay attention to the effect of font in conveying language information, including the expressive ability of font, phonetic features and the transfer of grammatical information. Researchers have found that the impact of different typefaces on language expression and the perception and understanding of typefaces may vary among users in different contexts (Rello & Marcos, 2016). In the field of psychology, research on user groups of font design focuses on the effects of typefaces on users' mental states and behaviors. Through experiments and research, psychologists have revealed the effects of fonts on users' emotions, attention and memory. Researchers have found that different typefaces can elicit different emotional responses that affect users' memory and perception of information. However, there is still a lack of in-depth research on the relationship between typefaces and psychology, and more empirical research is needed. In the field of culturology, the research on user groups of typeface design focuses on the application and interpretation of typefaces in different cultural environments. Researchers focus on the aesthetic standards of typefaces and the understanding of cultural symbols in different cultural contexts. In the field of sociology, the study of user groups in typeface design deals with the role of typefaces in social and cultural communication. Sociologists focus on how fonts shape social cognition and cultural identity in social media, advertising, and brand communication. In the area of computer science, research on user groups for typography has focused on typography and computer graphics. The researchers used computer simulations and algorithms to improve the operability and performance of typefaces on digital platforms. However, in-depth research on user experience and aesthetics of font design from the perspective of computer science needs further development.

In the digital era, the rapid development of digital media and technology has brought new challenges and opportunities to the typography, which has made a series of new discoveries and advances in the research of user groups. First, users in the digital age are more concerned about the readability and adaptability of typefaces on different screens. The study found significant differences in the need for font representation on mobile devices, tablets and computer screens of different resolutions, therefore, designers need more flexibility to adjust the details of the font to adapt to the diversity of display conditions. Secondly, multimedia content and user interaction on digital platform require that typeface design pay more attention to visual impact and information transmission. Some users prefer to use typefaces with unique visual effects and styles to enhance the attractiveness and recognition of digital media content. This means that designers need to think more creatively about typography so that it meets both the need for readability and the need to stand out in a digital media environment. With the rise of social media, typefaces have become increasingly important in expressing personality and emotions (Choi & Aizawa, 2019). User Group research has found that social media users pay more attention to the emotional expression and personalization of typefaces, choosing typefaces to better display their identity on the web. This discovery has pushed typography to become more personalized and diverse to meet the unique needs of users in the digital social space. However, there are some new challenges in the research of user groups of typeface design in the digital age. For example, the new media forms and

platforms emerging in the digital environment require higher technology and innovation for font design. At the same time, the rapid spread of digital media has made users' expectations of typography more diverse and rapidly changing. Therefore, typographers need to constantly pay attention to the user trends of the Digital Age, timely adjustment of design strategy.

Research on Chinese Typeface Design and its User Groups

Research on Chinese typeface design and its user groups Chinese typeface design and its user groups have experienced rich historical changes, this historical journey spanning thousands of years, witnessed the inheritance and evolution of culture. Chinese traditional typeface design is deeply rooted in the evolution of Chinese characters, which can be traced back to ancient typeface forms such as oracle bone inscriptions and bronze inscriptions. In the long river of history, the emergence and evolution of various styles of calligraphy, such as official script, regular script and running script, mark the historical process of typeface design. With the development of history, the cultural, political and social changes in different dynasties had a profound impact on typeface design. During the Tang and Song dynasties, regular script gradually became the dominant style of printed literature and calligraphy. Its modesty and standardization laid the foundation for the later typeface design. During the Ming and Qing Dynasties, the revival of official script and the unique development of regular script injected more artistic and personalized elements into the typeface design. In modern times, the introduction of Chinese characters printing and typesetting technology has provided new opportunities for typeface design (Huang, 2019). During the period of the Republic of China, the rise of regular script typography was widely used in newspapers and books, which marked the gradual trend of font design to the public. After 1949, China's socialist construction has affected the direction of typeface design, advocate standardization and standardization of the printing font to serve the people. In the 21st century, the rise of digital technology makes typeface design more diverse and flexible. The popularity of the Internet has made the use of fonts on digital platforms more important, and the needs of user groups have gradually diversified. At the same time, the influence of globalization has brought the cross-cultural communication of Chinese typeface design, the integration and innovation of Chinese and Western typeface design has become a new trend.

The industry distribution of Chinese typeface design users shows a trend of diversification. The demand and application of different industries promote the development of typeface design in various fields. First of all, the field of advertising and brand design is an important application of typography scene. In advertising and brand building, the choice of font directly affects the expression of brand image and the perception of the audience, so advertising companies and brand design agencies are important users of font design, on the unique font and the value of the brand has a higher degree of fit. Secondly, the printing and publishing industry has a long-term need for typeface design. Books, magazines, newspapers and other printed matter typography needs to consider the beauty and readability of the font, which makes publishing houses and printing enterprises become an important user group of font design. With the rise of digital media, electronic publishing also presents new challenges and opportunities for typeface design. In the Internet industry, typography also plays an important role. The choice of fonts on digital platforms such as websites, applications and social media is directly related to the user experience and aesthetics of interface design. As a result, there is a growing demand for typography from Internet companies, design studios and self-media creators, and the pursuit of innovative and personalized typography has

become an important factor in attracting users. Educational and cultural institutions are also important users of typography. Schools, museums and cultural institutions need to use a specific style of typeface in their exhibitions, publicity and educational activities to convey specific cultural and educational ideas.

In order to better meet the needs of users, designers have carried out in-depth investigation and analysis. First, the research on aesthetic preference reveals the individual preferences of different users for typeface style, stroke shape and font structure, this helps designers to choose or create fonts more accurately that match the aesthetic preferences of users. Secondly, readability requirement is an important research direction. Different user groups have different concerns about the readability of fonts, especially for applications on different media and platforms. This pushes designers to focus on font details to ensure that clear, readable text is available in different environments. The cultural factor is also one of the key contents in the research. User Research reveals users' preferences for traditional or modern cultural elements and their perceptions of the role of fonts in cultural expression. This makes the designer in the typeface design can better integrate cultural elements, make it more in line with the cultural identity of users. With the advent of the digital age, the use of typefaces on social media and other platforms has attracted researchers' attention. Users' greater emphasis on emotional expression and personalization of typefaces on social media poses a higher challenge to typography and provides designers with more room for innovation (Lee & Lee 2021). Recent research has also looked at user acceptance and usage of variable font technology. Variable font technology allows users to adjust font size, height and other parameters as needed, so as to better adapt to different design scenarios and media. The study found that users responded positively to the technology, injecting greater flexibility into typography.

In the digital era, the research on Chinese typeface design and its user groups has gradually focused on the impact of digital media and technology, and made some new discoveries, but also revealed some shortcomings. First, the study found that the typeface needs of digital platforms are more diverse, and users are more concerned about the typeface on different screen performance and adaptability. This has pushed typography to become more flexible and responsive to meet the demands of different digital media. Second, users in the digital age have higher expectations for personalized and innovative typography. The use of typefaces on digital platforms such as social media and apps requires more creative and personalized designs to capture users' attention. Research shows that designers need to pay more attention to the visual impact and cultural fit of fonts in the Digital Age (Gilbert, 2019). However, research in the Digital Age has also revealed some shortcomings. First of all, the rapid development of technology to the designer put forward higher technical requirements. With the introduction of new technologies such as variable font technology, designers need to constantly learn and adapt to new tools and platforms, which can be a challenge for traditional font designers. Another drawback is the rapid change in user requirements. User preferences and trends on digital platforms change rapidly, and research has found that typographers may struggle to keep up with these changes quickly, leading to a disconnect between design and user expectations. This requires more real-time user research and sharp market insights. In addition, the research of font design in the digital age still faces some privacy and security problems. On some digital platforms, the use of fonts may involve user privacy and security issues that need to be weighed more carefully in the design process.

Conclusion

Based on the main research perspectives and findings of Chinese typeface design and its user groups, we can draw some conclusions. First of all, the study found that typeface design plays an important role in Chinese society, its application in advertising, brand, print, the internet and other areas of increasing demand. User's aesthetic preference for fonts, readability needs, cultural identity and other aspects of the higher requirements to promote the typeface design field in the digital age innovation and development. However, the research also reveals some shortcomings. The rapid development of technology for traditional font designers put forward higher learning and adaptation requirements. The rapid changes in user demand and innovation trends on digital platforms also make it difficult for designers to keep up. In addition, the research of font design in the digital age needs to pay more attention to the privacy and security of users to ensure the proper application of font design in the digital environment. The future research direction can include digging the relationship between font design and culture, traditional art, in order to better integrate the elements of Chinese traditional culture. In addition, with the aging of society, especially needs to pay attention to China's elderly groups for the font design needs. The visual characteristics and aesthetic preferences of older people may be different from those of younger people, so designers need to be more attuned to the needs of older people and provide more legible and clear typography. To sum up, the research on typeface design and its user groups in China has made remarkable progress, but still faces some challenges. Future research should focus on a more comprehensive understanding of user needs, on the integration of technology and design, and on adapting to the trend of social diversity, with particular emphasis on older age groups, in order to promote the typeface design field in the digital age of sustainable development.

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