



# How homepage aesthetic design influences users' satisfaction: Evidence from China <sup>☆</sup>



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## ABSTRACT

In the product emotional design era, the website homepage design, especially the aesthetic design, has become a key factor that influences users' first impressions, attitudes and behaviors. Based on the Stimulus-Organism-Response (S-O-R) theory, the current study examines the mechanism through which the aesthetic design of a comprehensive job-hunting website homepage affects users' satisfaction. Emotion and perceived ease of use were used to describe users' internal evaluation to the homepage (i.e. organism). The Structural Equation Modeling method was used to test the proposed hypotheses. The empirical evidence shows that aesthetic formality does not have a significant impact on positive arousal, but it has positively influences on energetic arousal through its impact on aesthetic appeal. The other hypotheses proposed in this study are all been supported. The additional results, i.e. the effects of three key design elements on homepage aesthetics, are found. The aim of this study was to provide practical recommendation in the establishment of a pattern of webpage aesthetics that influences users' satisfaction.

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## 1. Introduction

The Internet, as one of the greatest human inventions in twentieth century, has been applied widely in people's lives since its invention, and has influenced people's life styles deeply. And many websites with different types appeared, such as news websites, social networking websites, shopping websites and government websites. Since the functions of websites in the same category are highly homogenous. In the context of Emotional Design and User-Centered Design about product development, users' non-functional requirements (e.g. technical, content-related and form-related) of a website have received considerable attention from scholars and designers. As the form-related the visual appearance of the webpage interface is taken as one of the most important non-functional requirements, and it can affect users' overall impression, emotions and behavior intention [1–3]. If the visual appearance design of the webpage is good, users' overall impression will be good, positive emotion will be aroused and subsequent approach behavior towards a website may come into being.

At present, job-hunting websites have become an important approach for job seekers to search recruitment information. As of

March 9, 2015, according to a comprehensive ranking of job-hunting websites conducted by a Chinese website ([top.chinaz.com](http://top.chinaz.com)), [www.yjbys.com](http://www.yjbys.com), [www.51job.com](http://www.51job.com), and [www.zhaopin.com](http://www.zhaopin.com), are the top three, respectively. Compared to local or industrial job-hunting websites, comprehensive websites have attracted a larger amount of job seekers due to their massive advertising campaigns and their rich content in terms of positions, industries, and locations. As user experience has received more attention, in addition to the content richness of a comprehensive job-hunting website, the aesthetics of the webpages used to reflect the quality of webpages' visual appearance [2,3] may be another key influential factor of users' experience and satisfaction to a website, which in turn may improve the websites' market competitiveness. However, less research has ever investigated the issue in-depth. For many users who surf around the Internet without any particular aim for their search, they may easily move to another website if the website does not prove to be satisfactory [3]. Therefore, this study was conducted to examine how the visual appearance of a comprehensive job-hunting website can influence users' satisfaction from the perspective of webpage aesthetics. Because the content/information design of a webpages is also important [4,5], to eliminate the influence of content/information design to this study, we will design webpage prototypes used to collect data for analysis.

Usually, a website may have lots of webpages. It's important to note that the homepage is the first webpage users see when they

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**Table 1**  
Several related studies based on S-O-R theory.

Authors	Stimulus	Organism	Response
Deng and Poole [1]	Order and complexity	Arousal and pleasure	Approach-avoidance behavior toward website
Koo and Ju [17]	Graphics, colors, links and menus	Arousal and pleasure	Approach-avoidance behavior toward website
Wang et al. [18]	Aesthetic formality and aesthetic appeal	Arousal, satisfaction and cognitive	Purchase, consultation, search on other websites and re-visit
Ding and Lin [19]	Background music tempo	Arousal, pleasure and trust	Purchase intention
Liu et al. [20]	Product availability, visual appeal and website ease of use	Impulsiveness, normative evaluation and instant gratification	Urge to buy impulsively
Floh and Madlberger [4]	E-store content, design and navigation	Shopping enjoyment and impulsiveness	Impulse buying behavior
Loureiro and Roschk [5]	Graphic design and information design	Positive emotions	Intentions to re-visit the store or re-use the website
Chang et al. [2]	Aesthetic formality and aesthetic appeal	Control, energetic arousal, tense arousal and pleasure	Search on other websites and purchase behavior
Gao and Bai [21]	Informativeness, effectiveness and entertainment	Flow	Purchase intention and satisfaction

open the website. Singh and Dalal [6] have provided empirical evidence in support of the argument that a homepage is like an advertisement. And a websites' first impression produced by the homepage can affect users' first visceral 'gut feeling' that helps to decide users' attitudes toward the entire website, which in turn may affect whether the users are going to stay at this place or continue surfing to other sites [3]. Given that the aesthetic design of a homepage plays a vital role in influencing users' perceptions about the quality of its visual appearance, this study explores how the homepage with different levels of aesthetics affects users' internal evaluation, and how their internal evaluation affects their satisfaction subsequently. The Stimuli-Organism-Response (S-O-R) theory, based on the assumption that environmental cues influence people's cognitive or emotion, which subsequently influence their behaviors [7], has been widely applied to examine how environmental factors influence users' responses [1,2,4,5]. Thus, the S-O-R theory is adopted in this study. Emotion and perceived ease of use are used to describe users' internal evaluation (organism). An organic mode, regarding the influence of homepage aesthetics on users' emotion and perceived ease of use, was constructed to obtain a deeper understanding of users' satisfaction.

The rest of this article is structured as follows: First, a review of the relevant theoretical background and literatures, i.e. S-O-R theory, webpage aesthetics and PAD theory, is presented. Second, the research model and hypotheses are introduced, followed by the methodology, analysis and results. Finally, the empirical results are discussed and the conclusions and limitations are presented.

## 2. Theoretical background and literature review

### 2.1. S-O-R theory

The classical S-R theory in behaviorism refers to human behaviors as a learned response to stimuli, which treats human mind as a black box. Mehrabian and Russell [7] proposed the S-O-R environmental psychology model, which extended the S-R theory by integrating organism to account for internal cognitive and affective processes of people in response to external stimulus. They maintained that stimulating cues perceived from the environment triggers one's internal evaluation, which subsequently result in positive or negative behaviors or intentions toward the stimuli.

Since Donovan and Rossiter [8] introduced the S-O-R theory to the retail context, it has become one of the most important theories in this field. Since then, this theory has been widely used in the marketing research, especially to explain how features of the retail environment influence consumer behaviors through the mediating effects of induced emotional responses in the traditional offline retailing context [9–12]. Under the context of e-commerce, consumers prefer online shopping. Thus, many researchers have

extended the S-O-R theory to the online shopping content, and examined the effects of webpage/website design features on consumers' organism and their subsequent behaviors [13–16]. Table 1 shows several important studies in the past five years [1,2,4,5,17–21]. The stimulus is the set of characteristics of the environment that affect the internal states of the individuals, such as graphics, colors, links, menus, background music tempo, entertainment and webpage visual complexity. Organism refers to the intervening internal process, such as users' arousal, pleasure, trust and impulsiveness. The response includes users' satisfaction or dissatisfaction with the experience and the approach-avoidance behavior toward the website, such as store search, purchase intention and re-visit.

### 2.2. Webpage aesthetics

The visual appearance of a webpage is very important, because it is one of the key factors that influence users' first impressions and subjective experience [22,23]. Dickie [24] defined the notion of aesthetics as a "philosophy of beauty". In terms of webpage, the aesthetics represents a beautiful impression created by the combination of various elements and attributes [2].

In the related researches of webpage aesthetics, several scholars have studied the stability of user' perceived webpage aesthetics. Lindgaard et al. [22] found that the exposure time and the perceived visual appeals (denoting what many would call webpage "aesthetics") are highly correlated. They concluded that users' first impression toward a website can be formed quickly and will remain consistent regardless of the exposure time (500 ms vs. 50 ms). In line with Lindgaard et al., Tractinsky et al. [25] also provided direct evidence on the premise that aesthetic impressions of a webpages are formed quickly. In a study on the critical factors that influence the perceived aesthetic fidelity of a webpage, Park et al. [26] found that the aesthetic fidelity increases when webpage designers use more appropriate visual design elements that are more relevant to the target impression in their webpage development, and decreases when the users perceive the same webpage more diversely. Some other researchers applied the S-O-R theory to study the effect of webpage aesthetics on users' emotion, cognitive and behaviors [2,18].

For the webpage aesthetics' construct, Schenkman and Jonsson [3] noted that visual aesthetics of webpages comprise of two dimensions, i.e. aesthetic formality and aesthetic appeal. Later, Lavie and Tractinsky [27] conducted four studies to develop a measurement instrument of perceived website aesthetics, and two main dimensions i.e. classical aesthetics and expressive aesthetics were founded. The classical aesthetics dimension in Lavie and Tractinsky's study [27] was considered to be aligned closely with the notions of aesthetics that presided from antiquity until the 18th century. These notions emphasize orderly, clean, clear and

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