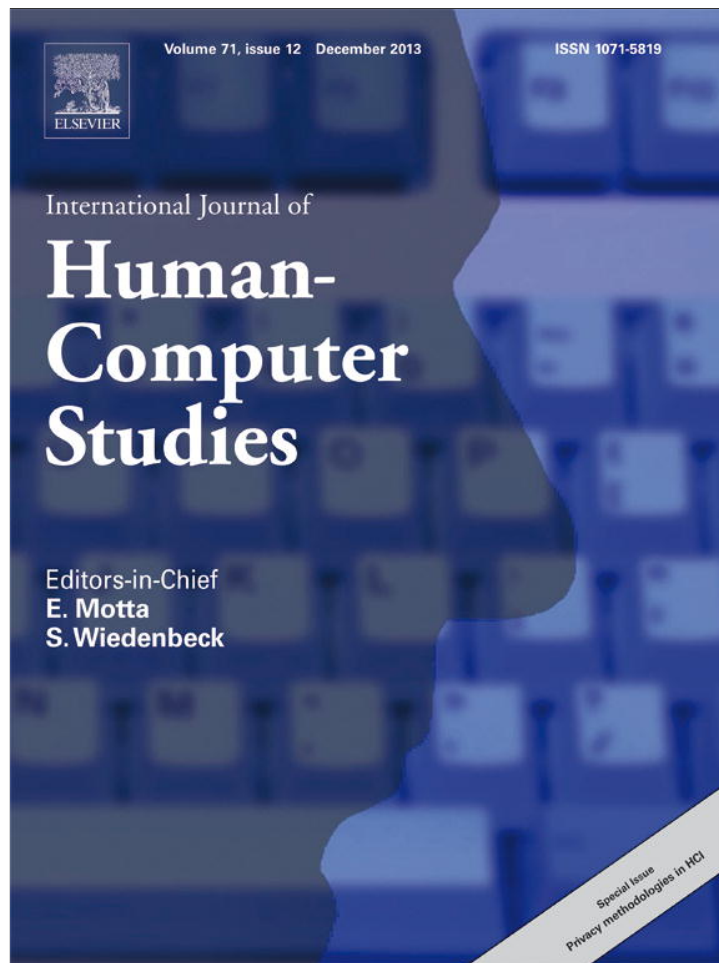


Provided for non-commercial research and education use.  
Not for reproduction, distribution or commercial use.



This article appeared in a journal published by Elsevier. The attached copy is furnished to the author for internal non-commercial research and education use, including for instruction at the authors institution and sharing with colleagues.

Other uses, including reproduction and distribution, or selling or licensing copies, or posting to personal, institutional or third party websites are prohibited.

In most cases authors are permitted to post their version of the article (e.g. in Word or Tex form) to their personal website or institutional repository. Authors requiring further information regarding Elsevier's archiving and manuscript policies are encouraged to visit:

<http://www.elsevier.com/authorsrights>



Contents lists available at ScienceDirect

## Int. J. Human-Computer Studies

journal homepage: [www.elsevier.com/locate/ijhcs](http://www.elsevier.com/locate/ijhcs)

# The impact of task framing and viewing timing on user website perceptions and viewing behavior<sup>☆</sup>

Dianne Cyr<sup>a,\*</sup>, Milena Head<sup>b,1</sup><sup>a</sup> Beedie School of Business, Simon Fraser University, Central City Tower, 250 - 13450 102nd Avenue, Surrey, BC, Canada V3T 0A3<sup>b</sup> DeGroote School of Business, McMaster University, 1280 Main Street West, Hamilton, Ontario, Canada L8S 4M4

## ARTICLE INFO

## Article history:

Received 30 August 2012

Received in revised form

20 August 2013

Accepted 28 August 2013

Communicated by E. Motta

Available online 13 September 2013

## Keywords:

Hedonic

Utilitarian

Task framing

Website viewing time

Eye-tracking

## ABSTRACT

It is generally recognized that online shopping has both utilitarian as well as hedonic components. The primary focus of this investigation is to examine task framing (either utilitarian or hedonic) and length of viewing time (unlimited or 5 s) as conditions that influence user website perceptions and viewing behavior. Whether a task is framed as either hedonic or utilitarian received limited support. However, viewing time does make a difference and unconstrained viewing versus 5 s of viewing time results in higher levels of perceived involvement, enjoyment, trust, and effectiveness. In addition, eye-tracking results indicate that users tend to focus more on hedonic zones versus utilitarian zones (i.e. exhibit higher number of fixations and longer viewing times). Interview data provide additional support and insights. In sum, these findings contribute to understanding the complex and dynamic perceptions of online shoppers.

© 2013 Elsevier Ltd. All rights reserved.

## 1. Introduction

Online retail shopping is recognized to encompass both utilitarian and hedonic components (Babin et al., 1994; Childers et al., 2001; Kim et al., 2007; Sun and Zhang, 2006; Tractinsky, 2004; Voss et al., 2003; Zhang and Li, 2004). Utilitarian consumption is focused on achievement of predetermined outcomes typical of cognitive consumer behavior. Such utilitarian consumption activities that appeal to rationality of consumers have been well investigated using the technology acceptance model (Davis, 1989) among others, and typically result in outcomes such as perceived usefulness, effectiveness, or trust (Gefen and Straub, 2003; Wang and Benbasat, 2005). Alternately, hedonic elements of the online shopping experience are focused on affective or emotive user perceptions and outcomes that result in pleasure, enjoyment, or involvement (Bruner and Kumar, 2003; Childers et al., 2001; Chung and Tan, 2004; Eroglu et al., 2003; Kumar and Benbasat, 2002).

Previous research has examined the relative impact of hedonic versus utilitarian website design elements on the user (Cyr et al., 2007; Hassanein and Head, 2007). Although to date, we know of no investigation that delves deeper into the implications of how users perceive websites based on whether the task they are to

undertake is framed as either hedonic or utilitarian. Thus, if a task is for fun (e.g. hedonic-focused) will this induce perceptions in the user that are more hedonic in nature such as enjoyment or involvement? Alternately, if a task is a “must do” and more utilitarian in nature, then will the user simply seek that a website fulfill requirements to get the job done. This may result in common website perceptions such as trust or effectiveness, but not involvement or enjoyment.

To test these assumptions about task framing, in this study we use elements of the Environmental Psychology Model (Mehrabian and Russell, 1974) in which an individual's emotions mediate the effects of environmental stimuli on behavior. Based on a Stimulus-Organism-Response (S-O-R) paradigm, the theory suggests that environmental stimuli can influence an individual's internal states (i.e. cognitive and affective reactions), which in turn produce either approach or avoidance behaviors. Relevant to the current investigation, using the S-O-R framework, we argue that task framing is one environmental condition which is likely to affect user behavior.

To provide an illustration of how task framing may occur, assume a user is told to browse a website for fun to buy a dress for a party. In this scenario, the user is likely to be involved in the task and to enjoy the experience. Further, the user may focus more attention on hedonic zones such as pictures of happy women modeling clothing items, or perhaps emotive text that suggests how exciting it would be to appear in a given clothing item. Hence task framing is an environmental condition that may temper the user's website experience. Alternatively, if the task is to select

<sup>☆</sup> This paper has been recommended for acceptance by E. Motta.

\* Corresponding author. Tel.: +1 604 552 9504; fax: +1 778 782 3621.

E-mail addresses: [cyr@sfu.ca](mailto:cyr@sfu.ca) (D. Cyr), [headm@mcmaster.ca](mailto:headm@mcmaster.ca) (M. Head).

<sup>1</sup> Tel.: +1 905 525 9140x24435; fax: +1 905 528 0556.

a dress for work, the shopper may pay more attention to more utilitarian areas of the website zones that itemize cost and product details. In either case, the user is interacting with the website, but this experience is likely to vary depending on how a task is framed and hence the user's meta-motivational state. Specifically, in the current research we are interested to determine

- (1) when an online shopping task is framed to be more hedonic and fun will this result in hedonic perceptions of involvement and enjoyment, while a task that is framed to be required and utilitarian will elicit utilitarian perceptions of trust and effectiveness;
- (2) whether how a task is framed (either hedonic or utilitarian) affects whether a user focuses on either hedonic or utilitarian content of the website.

As a second environmental contingency, we are interested to examine the length of time a user is able to view a website. Visual characteristics of web pages have been shown to be correlated with immediate impressions formed of the web pages (Zhang, 2013). However, only a few studies have previously investigated online viewing time (Hotchkiss, 2006; Kaiser, 2001; Lindgaard et al., 2006; Perfetti, 2005; Ramsey, 2004). In the current investigation, user's initial impressions of a website are contrasted with unlimited viewing times to determine user perceptions of each condition. Tied to the Environmental Psychology Model, the amount of time a user is able to view a website may be considered a condition that ultimately influences user emotions – with an expectation that longer viewing times result in more positive impressions for the user. In line with this assumption we will explore

- (3) whether or not unrestricted viewing times (compared to very limited viewing times) contribute to a more positive experience for the user.

The preceding questions serve to better inform how users approach shopping tasks on websites. To probe these research questions, we employ a multi-method approach that includes an experimental questionnaire, eye-tracking, and interviews. In subsequent sections we outline previous research that supports our proposed hypotheses. The remainder of this paper unfolds with a description of the research methodology and results, and concludes with the contributions and limitations of the investigation.

## 2. Theoretical background and hypotheses

### 2.1. Hedonic implications of website design

Less studied that utilitarian components of websites, affective or hedonic components of websites are gaining prominence in the recent literature (Zhang, 2013). In an information and communication technology context, Zhang (2013) outlined that “affective cues have been studied as environmental cues or signals containing affective information that can influence emotions...and cognitive processing strategies” (p. 250). Understanding events that result in user appraisals is a process signaled by this researcher as important. Zhang further differentiates between affective responses to general stimuli such as those found on websites, and particular stimuli that in our case are represented in either hedonic or utilitarian content. Finally, Zhang initiates a call to investigate how process-based affective evaluations toward an information and communication technology are able to influence user affective perceptions and behaviors. Translated to the current context, framing a task as hedonic (or utilitarian) sets in motion a

set of process-based affective evaluations by the user which then are expected to result in related affective perceptions.

This phenomenon is consistent with the Environmental Psychology Model, as originally outlined by Mehrabian and Russell (1974) and mentioned earlier, in which environmental stimuli have the potential to influence user cognitive and affective reactions. To test their theory, Mehrabian and Russell examined ambient characteristics such as lighting and music, and social cues such as number and friendliness of employees related to respondent's arousal, pleasure, and subsequently willingness to purchase. In a related study, shoppers were exposed to environmental stimuli such as music or other marketing techniques that evoked an emotional response – which in turn result in the consumer either leaving the store, or staying (Dube et al., 1995). Other retail characteristics that have the potential to mediate emotional responses of consumers are sale/promotion signage, product view presentation methods, color presentation, and the product display method (Ha et al., 2007).

The M-R model has also been applied to a Web design context to examine user affect in response to web page visual complexity and order (Deng and Poole, 2010), or web atmospherics (Sheng and Joganapelly, 2012). Further, the M-R model was used to examine women users who viewed a clothing website to determine the effects of “color swapping” (or changing the perceptions of colors); or picture enlargements on emotions (Kim and Lennon, 2010). Related to the current investigation, Eroglu et al. (2003) found that online atmospheric cues such as colors, graphics, layout and design can produce various affective reactions in site visitors including attitudes toward the online store. These researchers also found user involvement impacted approach-avoidance behaviors resulting from emotions experienced during the shopping session. Finally, Deng and Poole (2010) suggested user responses to a website are determined by an interaction of physical Web design characteristics and the user's meta-motivational states. In our case, such meta-motivational states are expected to be induced by task framing or viewing time.

Hedonic elements on websites such as socially rich text or pictures showing clothing worn by models are known to result in positive hedonic perceptions such as enjoyment (Hassanein and Head, 2004, 2007; Cyr et al., 2007; van der Heijden, 2004). In fact, perhaps more than any other construct, enjoyment has been used to measure user hedonic perceptions and expectations on websites (e.g. Dellaert and Dabholkar, 2009; Füller et al., 2009; Gretzel and Fesenmaier, 2006; Hassanein and Head, 2006; Koufaris et al., 2001; Koufaris, 2002; Sun, 2010; Sun and Zhang, 2006; Qiu and Benbasat, 2009; Venkatesh, 2000).

Further, involvement was chosen as another hedonic construct tested in the current research. Involvement implies absorption and excitement for the user associated with website characteristics which is an emotional response (e.g. Kumar and Benbasat, 2002; Santosa et al., 2005; Singh et al., 2005). Jiang et al. (2010) refer to “affective involvement” as a heightened emotional feeling associated with a website and is made up of how users feel toward the website. Koufaris et al. (2001) refer to product involvement which refers to one's motivational state toward the object that is activated by the relevance or importance of the object. In the current investigation, involvement along with enjoyment, are hedonic constructs evaluated as outcomes of hedonic framing.

### 2.2. Utilitarian implications of website design

Related to utilitarian elements of the experimental task, in the current research users are engaged in a decision-making process as they consider various products for potential purchase. As one example, destination marketers increasingly aim to design websites as an information tool for influencing traveler's decision-making processes

(Werther and Klein, 1999; Zach et al., 2007). In the literature on decision making, effectiveness rather than usefulness is used as the dependent variable (i.e. Dean and Sharfman, 1996; Schmidt et al., 2001). In line with previous research on decision-making we also focus on effectiveness, in this instance related to utilitarian elements of the website.

Further, numerous researchers pointed out that online trust is fundamental to online decision-making and purchase intentions (Bhattacharjee, 2002; Chen and Dhillon, 2003; Cheung and Lee, 2006; Everard and Galleta, 2006; Flavián et al., 2005; Gefen, 2000; Jarvenpaa et al., 2000; Koufaris and Hampton-Sosa, 2004; McKnight et al., 2004; Yoon, 2002). Similar to traditional shopping, trust is focused on consumer confidence in the website as part of a buyer–seller transactional exchange, and the consumer's willingness to rely on the seller and take actions in circumstances where such action makes the consumer vulnerable to the seller (Jarvenpaa et al., 1999). Corritore et al. (2003, p. 740) provide a definition of online trust for users interacting with transactional or informational websites that encompasses “an attitude of confident expectation in an online situation or risk that one's vulnerabilities will not be exploited”.<sup>2</sup> Within an e-Services application, Gefen and Straub (2003) conducted a study which confirmed that social content on websites is important and results in trust, and trust resulted in purchase intentions related to the viability of the website. In the current research, effectiveness and trust are utilitarian constructs evaluated as outcomes of utilitarian framing.

### 2.3. The impact of task framing

Task framing has potential to influence user attention. MacInnis and Jaworski (1989) found that as consumer attention increases, more information processing capacity is allocated to the task of interpreting an advertisement visual or message. In their research, it was posited that consumers with utilitarian needs tend to evaluate discrete product attributes and hence are less receptive to highly visual, open advertisements. Alternately, consumers with “expressive” or hedonic motivations would be more receptive to visual imagery in advertising since it is associated with being entertained. It would therefore be expected that in an online environment, framing a task as either hedonic or utilitarian may have implications for how a website is viewed. In the current experiment, tasks are framed for the user as being either utilitarian (a required task), or hedonic (a fun task) in order to examine this phenomenon further. The preceding suggests that the context in which a user considers a task will have an impact on perceptions of that task. This is in alignment with the M-R model in which environmental contingencies (i.e. type of framing) result in various emotional responses for the user that ultimately effect consumer behaviors.

According to van der Heijden (2004, p. 695), “[H]edonic information systems aim to provide self-fulfilling rather than instrumental value to the user, are strongly connected to home and leisure activities, focus on the fun-aspect of using information systems, and encourage prolonged rather than productive use.” Users also demonstrate psycho-social needs as part of the online shopping process (Tractinsky and Rao, 2001).

Alternately, a utilitarian view of Web-store design focuses on the completion of tasks and transactions effectively and efficiently,

and “fails to take into account that an activity like shopping is not merely an exercise but a pleasurable avocation” (Tractinsky and Rao, 2001, p.105). It is well known that trust is an important ingredient of effective website transactions, and lack of trust results in consumers exiting a website (Cyr et al., 2007; Flavián et al., 2005; Gefen and Straub, 2003; Hassanein and Head, 2007; Jarvenpaa et al., 1999). As Simon (2001, p. 26) notes: “information rich, consumer oriented web sites should help reduce ambiguity, increase trust/reduce risk, and encourage users to purchase with lower levels of consumer dissonance.” In the instance when consumers are tasked to search for a clothing item for a utilitarian (work) purpose, then we might suppose that they will focus more on elements of trust and effectiveness than when the requirement for shopping is more fun in nature. Although not previously investigated, we explore the effect of how a task is framed on user perceptions of a website:

**H1.** Task framing will impact website perceptions.

**H1a.** Hedonic framing leads to higher perceptions of hedonic constructs (involvement and enjoyment) than utilitarian framing.

**H1b.** Utilitarian framing leads to higher perceptions of utilitarian constructs (trust and effectiveness) than hedonic framing.

In addition to emotional reactions to hedonic framing, we might expect that hedonic framing of a task as fun (i.e. searching for a dress for a party), will result in greater user attention to hedonic zones. As already outlined, this may include focusing attention on pictures of happy models wearing clothing, or emotive text that serves to excite the user about the product. This is in contrast to utilitarian framing (i.e. purchasing an outfit for work) when users may be more interested to find out information about costs, fabric attributes, dry cleaning issues, etc. If users demonstrate interest for a particular zone, then based on previous research in which eye-tracking is used, they will exhibit more eye fixations and longer viewing times on those zones (Cyr et al., 2009). Hence, we believe that hedonic framing will encourage users to focus more interest on hedonic zones. Further, we expect if users are asked to complete a task related to work then they will more likely focus on utilitarian zones where practical information is provided. This results in the next set of hypotheses:

**H2.** Task framing will impact web page viewing behavior.

**H2a.** Hedonic framing results in more attention to hedonic zones (based on eye fixations and gaze durations) compared to utilitarian framing.

**H2b.** Utilitarian framing results in more attention to utilitarian zones (based on eye fixations and gaze duration) compared to hedonic framing.

### 2.4. The impact of viewing time

Lindgaard et al. (2006) examined the impact of website viewing time on users, with emphasis on “first impression” of the site. First impressions have been considered in various contexts related to user perceptions of website appeal and usability (Tractinsky et al., 2000), trust (Karvonen, 2000), reliability (Basso et al., 2001), and hedonic factors such as beauty (Hassenzahl, 2004). In a series of experiments, Lindgaard and her colleagues determine whether or not users like a Web page in as few as 50 ms. However in a longer 500 ms condition, users are able to evaluate more information related to content and the purpose of the web page. Other research also considers the influence of website first impressions on the user, as measured in very short periods of 3–7 s (Kaiser, 2001; Perfetti, 2005; Ramsey, 2004). Affective or cognitive impressions can be almost immediately

<sup>2</sup> In research in which online trust is the primary focus, a multi-dimensional construct of trust is most appropriate. For example, trust may be viewed as resulting from a consumer's belief that an online vendor demonstrates ability, benevolence or integrity (McKnight et al., 2002). Alternately, in studies such as this one when trust is one element included to better understand a more comprehensive user reaction to a website, trust as a single construct has been used (Gefen and Straub, 2003; Koufaris and Hampton-Sosa, 2002).

formed, and in the case of affective responses can result in perceived enjoyment (Zhang, 2013).

Kim and Fesenmaier (2008) examined the persuasiveness of travel websites, and propose a sequential model of information search that is time dependent. In stage 1 of the model, the user initiates searching using various input terms. In stage 2 (which they term primacy) users view a Web page, build expectancies, and form a “first impression”, to use Kim and Fesenmaier's term. In stage 3 (which these researchers term elaboration), the user searches within the website to learn more about the website and travel destinations offered. If the website “fails to appeal and to evoke good impressions for website visitors, they are more likely to stop browsing the site, go back to the search results and repeat the same procedure until they find a satisfactory information source” (Kim and Fesenmaier, 2008, p. 2).

Scott (1994) describes evocative communication as involving attentive consumers who are able to cognitively process visuals or information on a website. Longer time exposure is expected for cognitive processing to be more complete, and to lend greater meaning to website content. Further, considering timing in website viewing, van der Heijden (2004) outlines that for hedonic information systems prolonged viewing and use is desirable. In the current research we wish to build on this work by van der Heijden by examining both hedonic as well as utilitarian information systems. Therefore, based on these previous assessments, it seems that in order for users to absorb hedonic or utilitarian elements of the website that result in higher hedonic and utilitarian perceptions, longer viewing times will be superior to shorter viewing times. This results in our final hypothesis:

**H3.** Viewing time will impact website perceptions.

**H3a.** Unconstrained viewing time results in higher perceptions of hedonic constructs (involvement and enjoyment) than more constrained (5 s) viewing time.

**H3b.** Unconstrained viewing time results in higher perceptions of utilitarian constructs (trust and effectiveness) than more constrained (5 s) viewing time.

### 3. Methodology

#### 3.1. Participants

Sixty female participants took part in this laboratory experiment. There is precedent for using a female only sample when investigating clothing perceptions on websites (for instance, Kim and Lennon, 2010). Women are an appropriate sample to use in this context as they represent a rapidly growing segment of online shoppers (Burkolter and Kluge, 2011). More specifically, concerning apparel and fashion, women are more likely to search for information via the internet (Burkolter and Kluge, 2011) and purchase online (Norum, 2008; Seock and Bailey, 2008) than men. As such, the use of females in our investigation is appropriate and can provide meaningful insights to online apparel practitioners. The experimental website is specific to a female audience, showing women's clothing and sharing women's experiences.

Participants were recruited through a major Canadian university and were largely senior year business major undergraduate students, recent graduates, or staff members. Average participant age is 22.2 years, and all are currently in or seeking professional jobs in the private or public sector. Participants are Internet experienced, and spent on average 30.8 h online per week. They have been shopping online for an average of 2.6 years, and have purchased approximately 3 items online during the last year. Only two of the 60 participants had visited Ann Taylor.com (the base website for this experiment) prior to this study. Four participants

have purchased clothing from Ann Taylor in the past, but none has purchased from the online store. ANOVA tests found no significant differences for subjects in the various treatment groups in terms of participant characteristics (i.e. age, internet experience, education). Therefore, randomization of assignment across groups is successful in terms of the control variables.

#### 3.2. Experimental task and design

The laboratory experiment was conducted in a controlled setting where participants browsed a Web page or website in a usability laboratory. The study was designed as a partially-repeated measures two-factorial experiment with two levels for each factor. The first factor is framing, where two scenarios are created to frame the shopping experience as either hedonic or utilitarian in nature. The second factor is time, where subjects are given 5 s to view a single apparel webpage, or unlimited time to browse an apparel website comprised of 14 pages. Five seconds was chosen for the limited time framing based on previous studies on initial impressions, when 5 s is a mean amount of time used [i.e. 3 s exposure (Lindgaard et al., 2006); 4 s (Kaiser, 2001); 5 s (Perfetti, 2005); and 7 s (Ramsey, 2004) in human-to-human interaction]. Of note, first impressions can actually be formed in as little as 50 ms (Lindgaard et al., 2006) at the subliminal level of awareness; while as little as 1 s is sufficient for conscious assessment of visual content (Branthwaite, 2002). Further, in pre-trials 5 s is sufficient time for each participant to consciously view the Web page, but is insufficient time to browse more than briefly.

Participants experienced two treatment groups, where they were exposed to both hedonic and utilitarian framing, as well as limited and unlimited time constraints. Thus the overall sample size for the study is 120 (60 participants by 2 treatments each). Table 1 provides the experimental design, showing the two groups of participants labeled “A” and “B”. For example, if a participant was randomly assigned to group A, she would have limited time (5 s) for the hedonic framing treatment and unlimited time for the utilitarian framing treatment. Within each group, there is randomization of the order of viewing the limited or unlimited time treatments. Thus, in group A, 15 participants experienced the limited time constraint first and the other 15 participants experienced the unlimited time constraint first. This design helps to eliminate learning effects for familiarity of the experimental website, or bias towards the survey instrument administered after each task as any learning effects or bias were equally distributed across the treatments. ANOVA tests confirm that the sequence of treatments experienced by participant groups did not impact the means of any of our constructs (involvement, enjoyment, trust or effectiveness). Thus, treatment sequencing does not bias or influence our results.

It is important to note that while a partially-repeated measures design is employed, we do not seek to match participants as per some important characteristic. The partially-repeated design is used for logistical and resource utilization reasons. Asking a participant to come to the eye-tracking laboratory to conduct an experimental task for 5 s would be frustrating for the participants, and excessively expensive in terms of laboratory use and

**Table 1**  
Experimental design.

Factor 2: time	Factor 1: framing	
	Hedonic	Utilitarian
Limited time (5 s; single webpage)	A (n=30)	B (n=30)
Unlimited time (Website of 15 pages)	B (n=30)	A (n=30)

personnel. Allowing participants to experience two of the four conditions (as per Table 1), is more efficient and allows for a larger sample size in each condition. Even though this is a partially-repeated design (where participants experienced 2 of the 4 conditions), randomization of task order and the distinct nature of the tasks suggest that the samples can be treated independently. Further, correlation analysis of various pairings of the research constructs across the four conditions confirms this independence. As such, data is analyzed using a between-subject approach.

The Ann Taylor website (<http://www.annataylor.com>) was the basis for the experimentally manipulated websites. It was chosen after an extensive search by usability experts for an e-Commerce site that would appeal to female professionals, and could seamlessly incorporate both hedonic and utilitarian manipulations. Within the large Ann Taylor website, the sweaters section is chosen as the basis for this experiment as it was determined to be the least preference dependent (i.e. while some females may prefer slacks over skirts, sweaters are more uniformly preferred). The sweater section of the Ann Taylor website is also more versatile for this experiment as it offered heavier items for cooler temperatures and light-weight items for spring and summer wearing. Fifteen Web pages from the sweater section of the Ann Taylor website were downloaded to a local PC for experimental manipulation. While the sweaters and corresponding text differ across each of the 15 pages, the amount of screen space, style and details of Web page elements is consistent across all pages. The sweater products chosen for the 15 pages were different however they were similar in style and purpose. For the 5-second treatment, participants were shown only one page of the website for one apparel item. This page was randomly selected from the available 15 apparel pages created for this experiment. While first impressions can be made during a few seconds or even as little as a fraction of a second (Lindgaard et al., 2006), an extensive study by Liu et al. (2010) examined viewing times on over 200,000 web pages and found that most users dwell on pages between 10–20 s. As such, users would not typically be examining more than one web page during a 5-s viewing time. Limiting our participants to one page during the 5-s treatment does not impose an additional constraint on their viewing behavior. For the unlimited time treatment, participants had access to the remaining 14 web pages, each showing one apparel item. For analysis and comparison to the 5-s treatment, only the first apparel item Web page examined by the participant (of the 14 page website) was considered. While the apparel items and their corresponding details are not identical in the 5-s and unlimited time treatments, the style and presentation on the Web pages is consistent. Having exactly the same product and text across the two treatments would create unnecessary bias in the comparison analysis.

For this experiment, each website was divided into areas of hedonic or utilitarian interest. A pilot study involving 5 e-commerce and usability experts unanimously confirmed the below classification of hedonic and utilitarian website elements. The amount of screen space occupied by hedonic and utilitarian elements is approximately equal. As shown in Appendix A, three hedonic zones are defined as

- (1) Emotive text that describes a pleasant scene involving the garment (Zone E): this text is carefully designed to evoke emotion without providing any further details on the product attributes. As an illustrative example, one of the emotive text descriptions used in this study is: *"In London, on Sloane Street, I observed a woman wearing this clingy sleeveless tunic. Her hair peeked out of the hoodie to hint at the glorious auburn mane that hid beneath. She was standing with a chatter of models by the door of a gourmet chocolate shop. Most striking one of the lot, but she wasn't a model...she was the photographer, wrapping up a*

*shoot. It reminded me that life's most exquisite and precious moments are rarely planned or presented... they sneak up on you when you least expect it and, perhaps, when you most need it."*

- (2) User comments of customers that had purchased the garment (Zone F): customer comments are framed in a hedonic way to evoke feelings rather than details on product attributes. Illustrative examples include: *"The hoodie I ordered arrived today and it is absolutely gorgeous – Annie from Edmonton"* and *"This is a great date sweater! – Sue from Toronto"*.
- (3) A picture of the garment being worn on a human model expressing pleasure (Zone D): pictures have the ability to convey both hedonic emotions and utilitarian information. For the purposes of this study, we classified the picture as a hedonic design element in alignment with Hassanein and Head (2007), who find that the addition of socially rich pictures (depicting products with people in emotional settings) has a strong impact on emotive user perceptions. Adding socially rich pictures have a more significant effect on user enjoyment than other hedonic design elements, such as emotive text (Hassanein and Head, 2007). This hedonic classification is confirmed in our pilot study of e-commerce and usability experts. However, given the potential dual benefits of pictures evoking emotion and providing attribute information, subsequent analysis will also consider removing Zone D as a hedonic design element.

Five utilitarian zones are defined as

- (1) the name of the website (Zone A);
- (2) a text navigation bar at the top of the page focused on site functional elements (Zone B): examples include checkout, shopping bag, customer service, order status, my account and sign in;
- (3) a text navigation bar at the left of the page focused on the garment content of the website (Zone C): examples include outfits, apparel (sweaters, blouses & shirts, tees & knits, etc.), petites, celebrations, accessories, shoes, etc;
- (4) bullet points outlining the garment functional attributes (Zone G): examples include *"51% Rayon & 49% Nylon"*, *"Imported"* and *"Dry Clean Only"*;
- (5) an order specification area for the garment (Zone H): size, color and quantity could be entered in this area.

Participants individually arrived at the usability lab and were given a brief introduction to the research and provided with a consent form to sign. Upon signing the consent form, participants were fitted with the eye-tracking equipment and appropriately calibrated. As noted above, each subject participated in two experimental conditions, grouped as "A" or "B" in Table 1. For the hedonic framing condition, the following scenario script is read to the participants:

*You have made your favorite cup of tea and have a couple of worry-free hours to enjoy. Summer is in the air and you decide to hop on the Internet to find a smashing new summer item.*

For the utilitarian framing condition, the following script is read to the participants:

*You started a new job two weeks ago and you need to find something new to wear to an upcoming corporate retreat. You decide to search the Internet for an appropriate item. You realize how important it is to make a good first impression at the retreat, but you would rather be spending this time doing your favorite hobby.*

After each experimental task was completed, participants filled out an online questionnaire, and answered interview questions geared towards the experimental condition (determined by the time factor). Thus, the survey and interview questions were completed twice by each participant. Following the experimental tasks, participants completed a demographics survey, are debriefed, and the researcher answered any remaining questions. An average experimental session lasted 1 h, and participants received a \$20 honorarium as compensation for their time.

### 3.3. Manipulation checks

In an experiment where manipulations are involved, checks are expected to confirm whether the experimental manipulations work or not. Effective manipulations are required to draw valid conclusions about an experiment. In this experiment, two manipulations were used: (1) time (unlimited viewing time versus 5-s limited viewing time); and (2) framing (hedonic versus utilitarian framing via a scenario script). For the time manipulation, no check is necessary as this is a straightforward manipulation that required no subjectivity. All participants are clearly informed of the time condition before viewing the experimental website. The website shown for the limited time condition has a built-in timer that activates a blank screen after 5 s of viewing. Participants are not allowed to go back to the website after this time. There is no chance for error with the time manipulations.

For the framing manipulation, the scenario script is designed to place study participants into either hedonic or utilitarian frames of mind for the experimental task. Two pilot studies are conducted prior to the main study. The first pilot study involves 5 e-commerce and usability experts and the second pilot study involves 10 participants who are representative of the main study participant demographic. The goals of the first pilot study of experts are to classify the hedonic and utilitarian website elements, as well as to indicate feelings evoked through the scenario scripts. The goals of the second pilot study of representative participants are to finalize the questionnaire (identify and modify any confusing wording), as well as to indicate feelings evoked through the scenario scripts. These participants did not experience the eye-tracking aspect of this research, as it is resource intensive and the eye-tracking equipment and procedures are well validated through several previous studies. Across the total of 15 pilot study participants, all shared consistent feelings following exposure to the two scenario scripts. When asked how each felt about the task after reading the utilitarian script, descriptors such as “serious”, “necessary” and “not much fun” are provided. When asked about how they felt about the task after reading the hedonic script, comments such as “fun”, “cool” and “I love shopping” are provided.

The pilot studies helped to verify that the experimental manipulations (i.e. wording of the task framing scenarios) were properly realized by the participants. At the end of main study, each participant is asked: “Did it make any difference to you that it was a task to be completed for fun or related to your work?” Many of the participants commented on the influence that the scenarios had on their feelings and approach to the online shopping task. Representative examples of such comments include: “Yes. The first time I was looking for something just to wear for myself in my leisure time, there is no pressure there whereas if I were selecting something for work, you will want to choose something more conservative like more professional looking and that make a difference.”; “It kind of changed how I browse the website because I was more enthusiastic about looking for clothes for myself.”; and “It did make me approach both tasks differently. For the second one, for example, more ideas came to mind and for work, it was more thinking the classic blouses and shirts. For summer it was

more personal and you could put your style into it.” The researchers are confident the scenario scripts are successful to instill appropriate utilitarian or hedonic feelings resulting from framing of the experimental tasks. This is reinforced by results of the pilot studies, and comments made by participant in the interview portion of the main study.

## 4. A multiple-method approach

### 4.1. Eye-tracking

Eyes naturally fixate on objects or areas that are surprising, salient, or important (Loftus and Mackworth, 1978). As previously noted, three hedonic zones and five utilitarian zones are created for each Web page utilized in this experiment. Capturing data on the zones that attract eye fixations help to enrich analysis by providing additional insights to self-reported perception-based measures.

The eye-tracker system used in this experiment was Applied Science Laboratories Model 504 with head tracking integration. Eye movements are processed using a small camera mounted on a pan/tilt optics mechanism positioned under the stimulus monitor. Participants wear a headband with a small mounted sensor, allowing the pan/tilt mechanism to track head movements without loss of eye image. This permits participants to move their heads in a relatively natural manner. Following equipment calibration, which took between 5 and 10 min, participants are presented with the experimental websites with instructions to examine each site as they would normally. In this study, minimum duration time for an eye fixation is 0.5 s (following Lankford, 2000), and is expected to represent interest in the viewed portion of the website. Gazetracker software is used to process ocular data.

Eye tracking analysis can proceed in either a top-down or bottom-up fashion. Top-down analysis is based on theoretical hypotheses, whereas a bottom-up approach is based entirely on observation of the data without predefined theories (Goldberg et al., 2002). Our hypotheses are derived from extant literature. As such, the eye-tracking analysis of this research follows a top-down approach.

### 4.2. Experimental questionnaire and instrument validation

A questionnaire was administered after each participant completes each experimental task. All items in the questionnaire were constructed as agree–disagree statements on a seven-point Likert scale. The questionnaire appears in Appendix B. Analysis of questionnaire data is conducted using SPSS 20.0 and SmartPLS 2.0 software.

Content validity considers how representative and comprehensive the items are in creating the experimental constructs. In this research, questionnaire items are adapted from previously validated work on involvement (Kumar and Benbasat, 2002), enjoyment (Cyr et al., 2007; Hassanein and Head, 2007), trust (Cyr et al., 2004, 2005, 2007; Gefen and Straub, 2003) and effectiveness (Teo et al., 2003). Therefore, content validity for these five constructs is established through a literature review (Straub, 1989).

A PLS approach to confirmatory factor analysis (CFA) was used to assess the psychometric properties of the multi-item scales as outlined by Gefen and Straub (2005). When using the PLS CFA method to examine convergent and discriminant validity, Gefen and Straub (2005) recommend the measurement items on their assigned latent variables should be an order of magnitude larger than their loadings on other variables. Running the initial CFA analysis on all construct items reveals that Involve6 did not satisfy this criterion (loading of 0.710 on Involvement and 0.619 on

Enjoyment). Items that did not load properly may be dropped from the instrument (Churchill, 1979). Removing Involve6, the CFA was run again where Involve7 is found to not satisfy this criterion (loading of 0.668 on Involvement and 0.593 on Enjoyment). Removing both Involve6 and Involve7 from the Involvement construct results in the loadings matrix shown in Table 2. This final CFA matrix meets the convergent and discriminant guidelines specified by Gefen and Straub (2005).

Construct reliability is assessed using Cronbach's  $\alpha$ -values. As shown in Table 2,  $\alpha$ -values range from 0.849 (for effectiveness) to 0.934 (for enjoyment), which exceed the recommended threshold of 0.7 (Nunnally, 1978). Similarly, the Guttman Split-Half Coefficient range from 0.741 (for trust) to 0.911 (for enjoyment), which is also well within acceptable ranges (Straub et al., 2004). Therefore, all the constructs in this study demonstrate construct reliability. Fornell and Larcker (1981) suggest the average variance extracted (AVE) from a construct should exceed 0.5. As shown in Table 2, all constructs exceed this criterion, which means more than one-half of the variances observed in the items are accounted for by their

hypothesized factors. Thus, the proposed constructs demonstrate convergent validity on all three metrics proposed by Fornell and Larcker (1981).

Discriminant validity examines if constructs differ from each other. The correlations between items in any two constructs should be lower than the square root of the average variance shared by items within a construct (Fornell and Larcker, 1981). As shown in Table 3, the square root of the variance shared between a construct and its items is greater than the correlations between the construct and any other construct in the model, satisfying Fornell and Larcker (1981) criteria for discriminant validity.

Therefore, the survey utilized in this study exhibits satisfactory content validity (established through literature reviews); satisfactory convergent validity (demonstrated by the principle component factor analysis,  $\alpha$ -values, split-half values and AVE values); and satisfactory discriminant validity (shown from inter-construct correlation analysis).

**Table 2**  
Confirmatory factor analysis of the final 15-item questionnaire.

	Component			
	1	2	3	5
Effect1	<b>0.819</b>	0.411	0.406	0.460
Effect2	<b>0.923</b>	0.437	0.463	0.566
Effect3	<b>0.886</b>	0.478	0.445	0.455
Enjoy1	0.405	<b>0.921</b>	0.733	0.338
Enjoy2	0.406	<b>0.917</b>	0.679	0.359
Enjoy3	0.465	<b>0.959</b>	0.721	0.420
Enjoy4	0.565	<b>0.856</b>	0.660	0.544
Involve1	0.540	0.730	<b>0.877</b>	0.521
Involve2	0.413	0.570	<b>0.830</b>	0.356
Involve3	0.344	0.662	<b>0.806</b>	0.321
Involve4	0.329	0.559	<b>0.831</b>	0.290
Involve5	0.386	0.566	<b>0.725</b>	0.419
Trust1	0.519	0.401	0.395	<b>0.937</b>
Trust2	0.504	0.397	0.453	<b>0.936</b>
Trust3	0.547	0.463	0.469	<b>0.912</b>
$\alpha$ -value	0.849	0.934	0.873	0.920
Split-half	0.763	0.911	0.803	0.741
AVE	0.769	0.835	0.665	0.861

**Table 3**  
Discriminant validity.

	Effect	Enjoy	Involve	Trust
Effect	<b>0.877</b>			
Enjoy	0.503	<b>0.914</b>		
Involve	0.500	0.765	<b>0.815</b>	
Trust	0.565	0.454	0.474	<b>0.928</b>

The diagonal elements in bold (the square root of the average variance extracted) should exceed inter-construct correlations below and across them for adequate discriminant validity.

**Table 4**  
Construct descriptive statistics.

Treatment	N	Involvement Mean (Std Dev.)	Enjoyment Mean (Std Dev.)	Trust Mean (Std Dev.)	Effectiveness Mean (Std Dev.)
Limited time/hedonic framing	30	3.98 (1.08)	3.69 (1.36)	4.52 (0.96)	4.06 (1.18)
Limited time/utilitarian framing	30	3.91 (1.17)	3.70 (1.26)	4.83 (1.16)	4.53 (1.05)
Unlimited time/hedonic framing	30	4.91 (1.26)	4.23 (1.54)	5.26 (1.27)	5.49 (0.86)
Unlimited time/utilitarian framing	30	4.97 (1.15)	4.66 (1.37)	5.11 (0.95)	4.97 (1.17)

### 4.3. Interviews

After each treatment, participants were asked the following question: "When you viewed the webpage, where did you mostly look and why?" Following the unlimited time treatment, participants were asked further questions about their perceptions of the website's utilitarian and hedonic outcomes. All interview questions were recorded using a digital recorder, and subsequently analyzed using Atlas.ti software for content analysis and coding. The analysis process consisted of the following steps: (1) data preparation (i.e. interview transcription and formatting); (2) in vivo coding (use of participants' words as code labels) and open coding (use of arbitrary labels for code labels); (3) category and concept building in which semantic relationships between codes are identified to build higher conceptual abstractions; and finally (4) theory building based on interpretation of the results. While it is customary to have multiple raters code the same data when only one (qualitative) methodology is used, in an instance where multiple data sources are used to confirm the same phenomenon inter-rater reliability is not critical. When triangulation of data is used (as in the current research), then use of these multiple methodologies lends weight to the findings (Armstrong et al., 1997), and is consistent with the methodology used by Cyr et al. (2009).

### 4.4. Results

Table 4 provides descriptive statistics for the involvement, enjoyment, trust and effectiveness constructs across the four treatments (defined by framing and time factors). A MANOVA analysis is conducted to examine mean differences for the two treatments (task framing and time condition) and the dependent variables of involvement, enjoyment, trust and effectiveness. There is no statistically significant difference between the task framing treatment and the dependent variables ( $F(4,112)=0.466$ ;  $p > 0.05$ ; Wilks' Lambda=0.980; Partial Eta Squared=0.020). However, there is a statistically significant difference between the time condition treatment and the dependent variables ( $F(4,112)=6.455$ ;  $p < 0.001$ ; Wilks' Lambda=0.776; Partial Eta Squared=0.224). Further, the results of the ANOVAs



of our dependent variables are presented in Table 5. While the MANOVA only necessitates further ANOVA analysis of the time condition treatment (as task framing was not significant), all main and interactions effects are shown in Table 5 for completeness. Implications of this analysis are further elaborated in the following sections.

4.4.1. The impact of task framing on website perceptions (H1)

Examining differences between hedonic and utilitarian framing for all time conditions grouped together, ANOVA results of questionnaire data reveal no significant differences for involvement, enjoyment, trust or effectiveness (Table 5;  $p > 0.05$  in all cases). Therefore, hedonic framing does not lead to involvement and enjoyment more than utilitarian framing, as hypothesized in H1a. Similarly, utilitarian framing does not lead to trust and effectiveness more than hedonic framing, as hypothesized in H1b.

While H1a and H1b are not supported, we further explored task framing impacts when the two time conditions are separated. Comparing limited to unlimited time conditions, task framing reveals some interesting results, as shown in Table 6. Framing effects are evident for perceptions of effectiveness and enjoyment across initial impressions (5 s viewing) and established impressions (unlimited viewing). When tasks are framed hedonically, initial impressions are not focused on assessing utilitarian effectiveness. The assessment of effectiveness is significantly different ( $p < 0.001$ ) between initial and established impressions for hedonically framed tasks. However, perception of hedonic enjoyment is not significantly ( $p = 0.428$ ) different between initial and established impressions for hedonically framed tasks. Similarly, when tasks are framed in a utilitarian way, there is a significant difference between initial and established impressions of enjoyment ( $p = 0.042$ ), but no significant difference between initial and established impressions of effectiveness ( $p = 0.402$ ). Involvement increases significantly between first and established impressions, regardless of task framing. For trust, while there is no significant difference with respect to time in the utilitarian framed condition, in the hedonic framed condition trust perceptions are almost significant between initial and established perceptions ( $p = 0.051$ ), with more trust established with longer viewing times.

4.4.2. The impact of task framing on web page viewing behavior (H2)

Turning to eye tracking analysis, it is hypothesized in H2a that hedonic framing leads viewers to pay more attention to hedonic zones compared to utilitarian framing. Similarly, in H2b it is

hypothesized that utilitarian framing leads viewers to pay more attention to utilitarian zones compared to hedonic framing. Fig. 1 shows the viewing times for both time treatments combined, by utilitarian/hedonic framing scenarios and utilitarian/hedonic webpage zones. While the average viewing time for hedonic zones is higher under hedonic framing versus utilitarian framing (16.44 s versus 14.36 s), and the average viewing time for utilitarian zones is higher under utilitarian framing versus hedonic framing

Table 6 Differences in limited and unlimited time conditions.

	Utilitarian frame (p-value of time condition differences)	Hedonic frame (p-value of time condition differences)
Involvement	0.004**	0.013*
Enjoyment	0.042*	0.428 (ns)
Trust	0.758 (ns)	0.051 (ns)
Effectiveness	0.402 (ns)	0.000***

ns = not significant.

\* = significant at the .05 level.

\*\* = significant at the .01 level.

\*\*\* = significant at the .001 level.

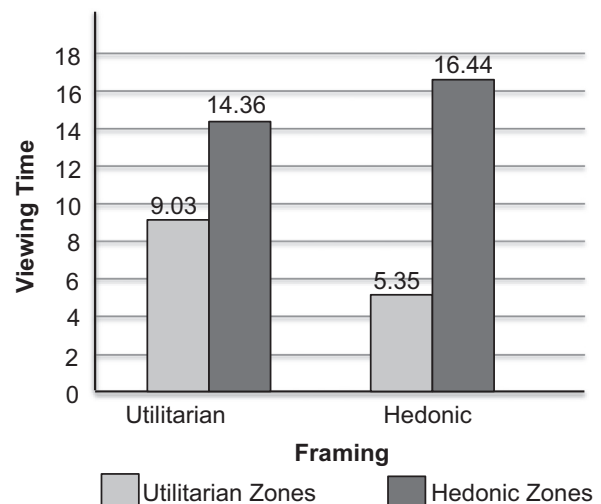


Fig. 1. Zone viewing times under different task framing conditions (H3b and H4b).

Table 5 ANOVA results.

Dependent variable	Sum of squares	df	Mean square	F	Sig.	Partial eta squared
<b>Task framing</b>						
Involvement	0.001	1	0.001	0.001	0.979	0.000
Enjoyment	1.408	1	1.408	0.734	0.393	0.006
Trust	0.208	1	0.208	0.175	0.677	0.002
Effectiveness	0.015	1	0.015	0.013	0.910	0.000
<b>Time condition</b>						
Involvement	29.668	1	29.668	21.900	<b>0.000</b>	0.159
Enjoyment	16.875	1	16.875	8.792	<b>0.004</b>	0.070
Trust	7.668	1	7.668	6.430	<b>0.013</b>	0.053
Effectiveness	26.133	1	26.133	22.745	<b>0.000</b>	0.164
<b>Task framing × time condition</b>						
Involvement	0.112	1	0.112	0.083	0.774	0.001
Enjoyment	1.268	1	1.268	0.660	0.418	0.006
Trust	1.556	1	1.556	1.305	0.256	0.011
Effectiveness	7.500	1	7.500	6.528	<b>0.012</b>	0.053

(9.03 s versus 5.35 s), neither of these differences are significant ( $p > 0.05$ ). Examining fixation counts rather than viewing times reveals similar results ( $p > 0.05$ ). Thus, it appears that H2a and H2b are not supported. However, further analysis is performed to investigate if task framing impacts may be present under different time conditions. For the unlimited time group, time spent viewing hedonic design elements under hedonic task framing is longer than for utilitarian framing (30.3 s versus 26.3 s), but this difference is not statistically significant. However, for the unlimited time group, time spent viewing utilitarian design elements under utilitarian task framing compared to hedonic task framing is significant (17.32 s versus 9.78 s;  $p = 0.031^*$ ). This difference is not statistically significant for the limited time group ( $p > 0.05$ ). Therefore, for the 5-s treatment, task framing does not impact viewing behavior, but for the unlimited time treatment there is evidence to suggest that task framing impacts viewing behavior (especially for utilitarian framing). Thus, H2a is not supported, but H2b is partially supported for the unlimited time treatment. This is graphically represented in Fig. 2, where 2a shows the viewing times for the unlimited time treatment, and 2b shows the viewing times for the 5-s time treatment by utilitarian/hedonic framing scenarios and utilitarian/hedonic webpage zones.

The above general behavior is also evident in the detailed interview transcripts. Very few differentiating comments are made between hedonic and utilitarian framing treatments for the limited viewing time group. However, for the unlimited viewing time group, distinct differences are noted when subjects describe their experiences with utilitarian and hedonic framing. For example, in the utilitarian-framed scenario, subjects commented that the descriptive text components are not important or not relevant. One utilitarian-framed subject comments, “I was skimming through them” with reference to the descriptive text. However, hedonically-framed unlimited-time subjects provide rich comments on the emotions and moods generated by the descriptive text components of the website. For instance, one such subject describes the descriptive text as being “fun and creative and it was like trying to sell a feeling and not just the clothing”. Overall, when comparing the utilitarian and hedonically-framed scenarios, representative comments from subjects during the interview include: “I look at the words more when it is for work and when it is for fun, I look at the pictures”; “If I was looking for something for work, I don’t want to click around that much and I just key in what I want ... if it were for fun, I want to see what’s out there”; and “If it were for fun, I would be looking more at the pictures whereas if it were for work I would be looking like at the cleaning informa-

tion and price which would be more of concern”. Therefore, while the quantitative, eye-tracking and interview data do not provide conclusive evidence; they do suggest that task framing can influence experience and behavior on online apparel websites.

#### 4.4.3. The impact of viewing time on website perceptions (H3)

Comparing means between the two time groups, there are significant differences in involvement, enjoyment, trust and effectiveness where the unlimited time group demonstrates significantly higher levels than the 5-s time group. As shown in Table 5, for the unlimited time group, participants experience higher levels of perceived involvement ( $p < 0.001$ ), enjoyment ( $p < 0.01$ ), trust ( $p < 0.05$ ) and effectiveness ( $p < 0.001$ ). During the interview portion of the experiment, one subject comments, “I felt connected to it and I feel that I was interacting with the website [in the unlimited time treatment] compared to the first task [5-s treatment]”. For the unlimited time treatment, representative interview comments include: “I really liked the descriptions. They are creative and they are eye catching and you start to think of the possibilities you can do in this sweater”; “the text added a different dimension to the website ... the text chosen tried to make it more personable and more appealing”; and “I feel I could trust the website because they have used comments so it means that other people trusted the website as well and they are satisfied with their decisions”.

While the quantitative analysis supports our hypothesis for time constraints (H3), it is interesting to delve deeper with the eye-tracking and interview data to provide further insights into this observed behavior. As noted above, there are differences in the unlimited time treatment, with utilitarian framing resulting in significantly more attention paid to utilitarian zones (17.32 s on average) when compared to hedonic framing (9.78 s on average). However, there are no differences in the amount of time spent viewing utilitarian or hedonic zones in the 5-s time treatment across framing scenarios. This result can be explained by interview data analysis. At the end of each experimental treatment, subjects were asked where they looked most on the Web page and why. Of 60 participants, 51 in the 5-s treatment group state they looked at the hedonic picture because of its prominence and visual attraction. The picture stands out on the page due to the choice of color, size, and contrast with the background, thus attracting immediate visual attention. Sample interview comments for the 5-treatment group include: “I looked at the picture of the woman because it was very large and the color was mostly red and so it attracted

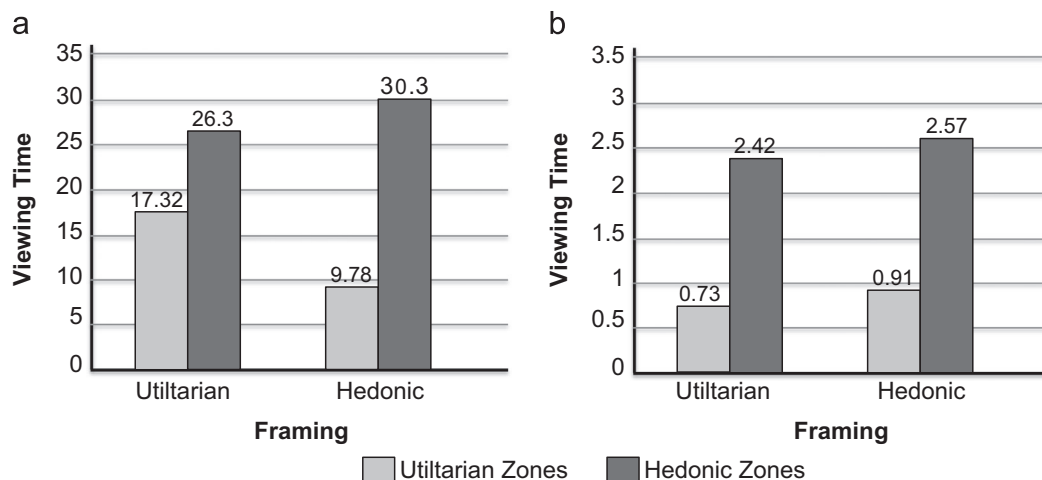


Fig. 2. (a) Zone viewing times for the unlimited time treatment (H3b and H4b), (b). Zone viewing times for the 5-s time treatment (H3b and H4b).

**Table 7**  
Hypotheses results.

Hypothesis	Results
H1a: hedonic framing leads to higher perceptions of involvement and enjoyment than utilitarian framing.	Not supported through quantitative analysis. However, hedonic task framing does result in a significant difference in utilitarian effectiveness between constrained and unconstrained time conditions.
H1b: utilitarian framing leads to higher perceptions of trust and effectiveness than hedonic framing.	Not supported through quantitative analysis. However, utilitarian task framing does result in a significant difference in hedonic enjoyment between constrained and unconstrained time conditions.
H2a: hedonic framing results in more attention to hedonic zones (based on eye fixations and gaze durations) compared to utilitarian framing.	Not supported through eye-tracking analysis. Some support through interview analysis.
H2b: utilitarian framing results in more attention to utilitarian zones (based on eye fixations and gaze duration) compared to hedonic framing.	Partially supported through eye-tracking analysis. Combining the two time treatments, task framing does not impact viewing behavior (utilitarian framing does not result in more attention to utilitarian zones). However, when unconstrained with time, the time spent viewing utilitarian design elements under utilitarian task framing compared to hedonic task framing is significant, as hypothesized.
H3: unconstrained viewing time results in higher perceptions of involvement, enjoyment, trust and effectiveness than more constrained (5 s) viewing time.	Supported through quantitative analysis. Further insights provided through eye-tracking and interview analyses.

me”; “the only thing that caught my eye is the picture, photo, because it stood out more than the text”; and “the woman drew me to her because there was color and a certain amount of vibrancy to it and it was very visual”.

In contrast, only 18 of the 60 participants in the unlimited time group comment on the picture's prominence. From this group, 30 out of the 60 unlimited time participants comment that they look at web page elements that best fit their assigned tasks. Only 9 of the 60 participants in the 5-s time treatment made any reference to task-fit criteria. As an illustrative example, one subject comments she looked at the picture because “it just stands out and captures my attention” after the 5-s treatment, but indicated she looked at the pictures in the unlimited time treatment “for the style and fit of the clothes”. Table 7 provides a summary of the hypotheses and the results.

## 5. Theoretical contributions

This study was aimed to explore two specific conditions – task framing and time constraints – to determine if environmental contingencies influence user hedonic and utilitarian perceptions related to website design. To our knowledge, this is the first study to examine how process-based affective evaluations toward an information and communication technology are able to influence user affective perceptions and behaviors as called for by Zhang (2013). In addition to examining only hedonic evaluations we also examined process-based utilitarian evaluations in the same study. As expected, user reactions to websites are dynamic, emotionally laden, and more complicated than extensively investigated by models that focus solely on utilitarian value of the website through variations of the original TAM (Technology Acceptance Model). Hence, the current work offers theoretical insights into how users react to websites within a given context, building on the Environmental Psychology Model as proposed by Mehrabian and Russell (1974). Through the use of multiple methodologies, we gain further insights into exactly where users look and why on websites featuring both hedonic and utilitarian content.

### 5.1. Task framing

New to this investigation is an examination of hedonic or utilitarian task framing, and the subsequent impact on outcomes of involvement, enjoyment, trust or effectiveness. Overall, task

framing is not a strong predictor of user online reactions. It may be that the type of task is therefore not important as a determinant of the shopping experience – although this finding bears additional testing in future research. Regardless, users did spend more time viewing hedonic zones in a condition of hedonic framing (16.44 s), and this viewing time is considerably higher than when users viewed utilitarian zones in a condition of utilitarian framing (9.03 s). These findings are somewhat aligned to earlier research in which hedonic information systems have hedonic value for the user, as opposed to instrumental value (van der Heijden, 2004). When time is entered into the equation, it is noteworthy that only in the unlimited viewing condition does task framing seem to matter, and this is most apparent for the utilitarian task framing. Speculating on this result, it may be that sufficient consumer attention (as in the unlimited condition), is required for both framing conditions if users are able to critically evaluate and use hedonic versus utilitarian content.

Although it is already known that hedonic website design elements contribute to user enjoyment and involvement, until now it was unexplored regarding how long users focus on hedonic zones versus utilitarian zones, and on which portions of a web page users direct their focus. One outcome from this study is that users tend to direct their gaze to hedonic zones ( $p < 0.001$ ). More specifically, the most viewed hedonic zone received 24.23 average seconds of eye-fixations, while the most viewed utilitarian zone received 7.89 average seconds of eye-fixations. Since eye fixations are an indicator of user arousal, one possible interpretation of this result suggests that users find hedonic portions of the website to be more arousing than utilitarian portions. Hence, the current research lends some support to earlier work by Riegelsberger and Sasse (2002) in which photographs of faces on websites have a positive effect on viewers. Ultimately, future research is suggested to more fully test arousal for hedonic versus utilitarian web contents by controlling and varying hedonic and utilitarian zone sized and placements on a web page.

Further, interview comments from participants suggest that evocative comments on the website stimulated emotion and “mood”. This finding supports other researchers (Hassenzahl, 2001; van der Heijden, 2004) who suggested that website viewing can be a managed perceptual and cognitive process. Results from the current research bolster the importance of photographs of humans and emotive text as carriers of representational or symbolic meaning capable of eliciting user emotional responses. While previous research suggests this to be the case, in this study

we have physiological data (through eye-tracking) to verify this premise.

### 5.2. Time constraints

The time allowed for website viewing is another novel contribution as it relates to hedonic and utilitarian perceptions on websites. Expanding the work by Lindgaard et al. (2006) and others, we find that unlimited time viewing is more satisfactory for users and results in higher perceived involvement, enjoyment, trust, and effectiveness. With reference to previous research, Kim and Fesenmaier (2008) suggest a three-stage model of website persuasiveness which is time dependent. In stage 2 of the model users have a “first impression” of the site which might be possible in 5 s, and it is not until stage 3 when users search the website further. An interesting result from the current research is a determination of exactly where users focus based on differing amounts of available time. For instance, in the 5-s treatment, 51 of 60 participants focus on pictures due to their prominence and visual attraction, and note it was the “only thing that caught my eye...”; “it was very visual”. While pictures are a known element of website design, they are of particular importance when time is short. Alternately, in the unlimited viewing treatment, only 18 of 60 participants mention the website pictures. In this group, comments about the pictures are focused on style and emotion (hedonic feelings) rather than visual salience. While utilitarian focus is significantly enhanced with utilitarian framing, hedonic focus seems to be of interest regardless of framing and takes some time to be generated.

### 6. Practical implications

This research offers insights to website marketers or website designers who aim to develop websites that fully engage consumers. Since hedonic components of websites resulted in user enjoyment and involvement, the inclusion of website elements such as pictures and emotive text that induce these reactions is important. In previous research on an entertainment website, users found that website design features such as pictures, text, or personal reviews added to the overall experience (Cyr et al., 2007). In the current study this is confirmed by a participant who comments: “I think it [the website] was effective because it showed the pictures and the descriptions and also reviews. So there was somebody else who has already bought the products and was happy with them so it was trustworthy. I think it was enjoyable and satisfying because there were mainly positive comments.” The inclusion of elements that elicit a sense of “warmth and sociability” may be especially important to women users. Cyr et al. (2007) found that perceived social presence leading to enjoyment, and ultimately to online loyalty, is more critical for women than for men.

As already outlined, one outcome of this investigation is the impact of pictures on the website – especially when viewing time is brief. This is a signal to website designers to selectively employ pictures to engage and inform users. While the importance of pictures for website perceptions such as perceived social presence is acknowledged (Hassanein and Head, 2004, 2006), relatively little research has investigated this phenomenon. Exceptions are Cyr et al. (2009) who find that images with facial features are superior to a no human image condition, and Riegelsberger and Sasse (2002) who found that facial images attract viewer attention.

Nusair et al. (2008) found that “visual emotional appeal” and accurate and updated information are essential to website success. Others, such as Lin and Lu (2000) established the importance of website information quality. It appears that utilitarian content

such as adequate information is a basic requirement leading to website effectiveness, but that hedonic elements are important when tasks are framed to be fun. For example, if a user is viewing a website oriented toward an activity such as travel, then the use of rich text or pictures would be engaging for the viewer. In a work context such as acquiring a new computer, then comprehensive and reliable information may take precedence over hedonically focused elements.

With reference to time, according to Kaiser (2001) only 4 s are required to capture viewer interest. For website designers, and based on the findings in this study, it is very important to include pictures on websites. This is especially so when the user is likely to visit the site only briefly.

### 7. Limitations and future directions

Limitations to this research are a mostly student population and a female only sample. While the sample was chosen based on the aims of the study, there is uncertainty as to whether the results would generalize to a male population. A single website was investigated. Although the Ann Taylor website was carefully chosen and experimentally controlled, some of the participants in the study commented that the clothing is not aligned to their personal style. Use of other websites for other types of products or services would increase the generalizability of the findings. While it is expected there is information equivalence of the websites as viewed for the two time exposures, it is possible that there are some perceived variations by users. This possibility could be explored in future research, along with a broader sample of websites.

Another potential limitation in the current study is the strength of the experimental framing. As with any controlled experiment, manipulations may not accurately reflect reality outside the laboratory setting. Participants are presented with utilitarian and hedonic online shopping scenarios. It is possible that the framing scenarios do not have the same impact to generate behaviors and attitudes of online shoppers as experienced in the real world – where there are more salient risks (financial, social, or work related, etc.). Manipulation checks were conducted using pilot studies and by asking the main study participants if they perceive differences when the task is framed for fun or for work. We are confident that the scenario scripts instilled appropriate utilitarian or hedonic feelings to frame the experimental tasks, and that the subjects remained in these orientations throughout the shopping task. However, to provide further evidence of the effects of our scenario manipulations, statistical verification through quantitative data gathering could have been conducted. Further, participants could have been asked how well the experimental framing generated behavior and attitudes which are consistent with real online shopping under similar circumstances. Finally, although great care was taken to create a highly-controlled experiment, as with any behavioral experiments other unseen factors may influence results. For example, the mood of the participant, how seriously they take the experimental tasks and differing levels of responsibility that may be felt from the task framings could potentially impact our results. While these considerations are outside the scope of our study, they could be considered in future research.

In addition, we chose 5 s for the limited time viewing condition. While 5 s appeared to work well in the current study, other researchers might experiment with different viewing times to determine the optimal time required for users to absorb website elements. To our knowledge, this is the first study to examine hedonic versus utilitarian task framing as well as time constraints in this dual context, and it is hoped this initial study interests other researchers to build on this work using different types of tasks or viewing restrictions. In addition, a similar investigation could be conducted with both men and women to examine

comparisons between these groups. Finally, since so little research has previously investigated the impact of human images in website design, additional research in this area will ideally be undertaken. Online shopping is already a global phenomenon, and variations of this research can be used to test users with different cultural values and in diverse geographic locations. As pointed out by Cyr et al. (2009), cross-cultural differences are found for how human images are perceived.

This research demonstrated that hedonic elements such as pictures and emotive text are important and lead to user enjoyment and involvement. Other website elements that infuse a website with hedonic elements are human audio, human video, or the use of recommendation agents to impart a more personal touch. For certain types of websites aimed at selling an “experience” such as for travel, then increasing the number of hedonic components on the site may be of particular importance. In alignment with earlier work by Mehrabian and Russell (1974), the utilization of music or appealing product views and presentations that instill human warmth (i.e. presentation of clothing on

models rather than without models) will be advantageous to compel online visitors to remain at a website or to visit it again in the future. In this vein, opportunities exist to further examine which hedonic elements are most important for the type of website experienced, and whether or not the use of multiple hedonic elements has a multiplicative effect on the user.

**Acknowledgment**

Funding for this project was generously provided by the Social Sciences and Humanities Research Council of Canada. Research assistance was provided by Eric Lim, Zorana Svedic, and Hector Larios.

**Appendix A**

See Fig. A1 here.

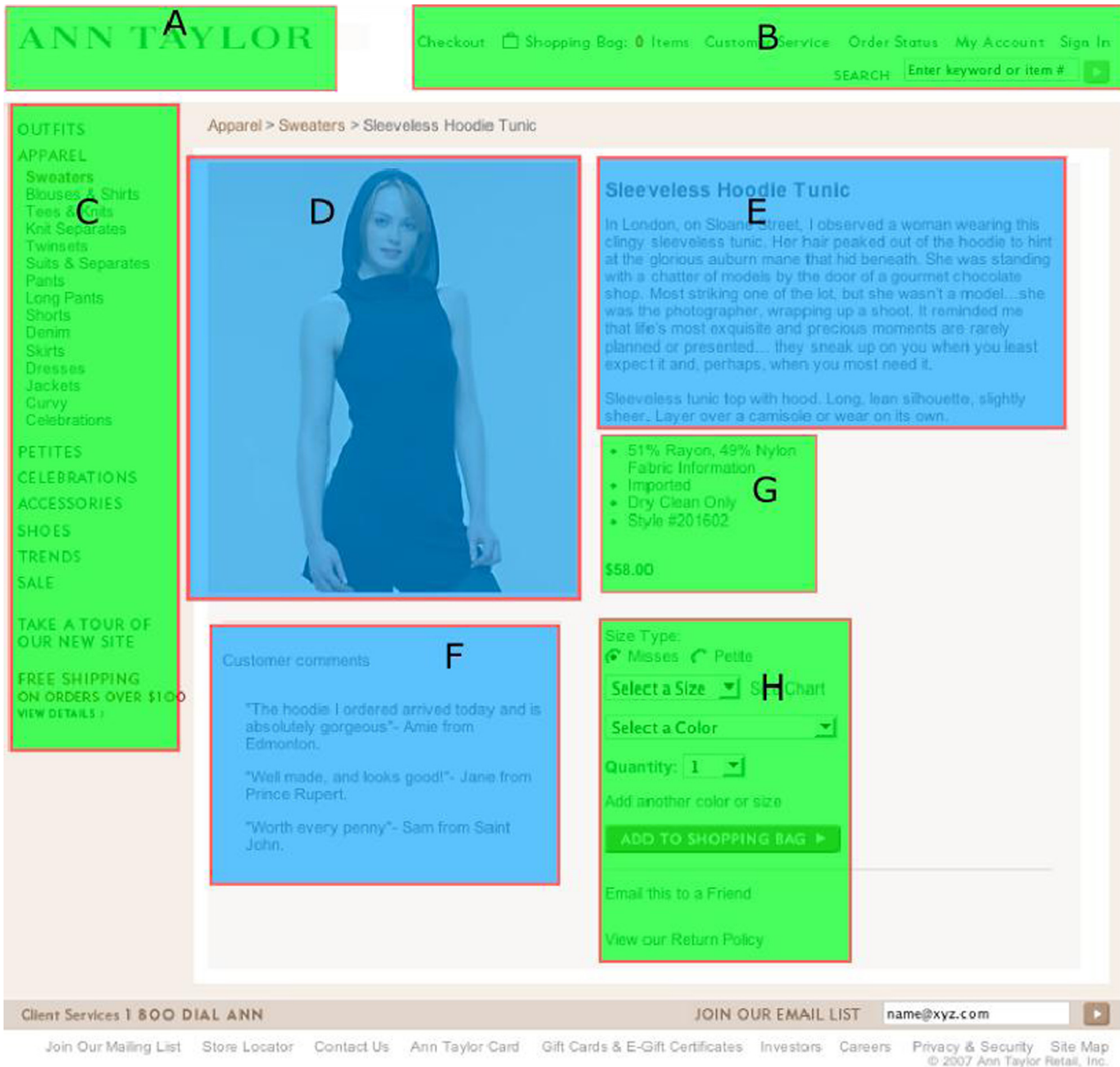


Fig. A1. Sample experimental website with hedonic zones (blue) and utilitarian zones (green) outlined. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

## Appendix B. Participant questionnaire

### Involvement (Source: Kumar and Benbasat, 2002)

- IN1 – The website keeps me totally absorbed in my interactions with it.  
 IN2 – I was deeply involved in my interactions while browsing the website.  
 IN3 – The website holds my attention.  
 IN4 – I was completely interested in what I was doing while browsing the website.  
 IN5 – The website failed to keep me involved while I was browsing. (reverse coded)  
 IN6 – The website excites my curiosity.  
 IN7 – The website aroused my imagination.

### Trust (Cyr et al., 2004, 2005, 2007; Gefen and Straub, 2003)

- T1 – I can trust this website.  
 T2 – I trust the information presented on this website.  
 T3 – I feel this online vendor would provide me with good service.

### Effectiveness (Teo et al., 2003)

- EF1 – The website increased my awareness of the merits and demerits of the products.  
 EF2 – The website provided me with relevant information to facilitate my decision.  
 EF3 – The website helped me to meet my decision-making need.

### Enjoyment (Cyr et al., 2007; Hassanein and Head, 2006, 2007)

- EN1 – I found my visit to this website interesting.  
 EN2 – I found my visit to this website entertaining.  
 EN3 – I found my visit to this website enjoyable.  
 EN4 – I found my visit to this website pleasant.

Notes: Items answered on a 7-point Likert scale from strongly agree to strongly disagree. Denotes items dropped from the original scale.

## References

- Armstrong, D., Gosling, A., Weinman, J., Marteau, T., 1997. The place of inter-rater reliability in qualitative research: an empirical study. *Sociology* 31 (3), 597–606.
- Babin, B., Darden, W.R., Griffin, M., 1994. Work and/or fun: measuring hedonic and utilitarian shopping value. *Journal of Consumer Research* 20, 644–656.
- Basso, A., Goldberg, D., Greenspan, S., Weimer, D., 2001. First impressions: emotional and cognitive factors underlying judgments of trust in e-commerce. In: *Proceedings of the 3rd ACM conference in Electronic Commerce*. ACM Press, New York, pp. 143–147.
- Branthwaite, A., 2002. Investigating the power of imagery in marketing communication: evidence-based techniques. *Qualitative Market Research* 5 (3), 164–171.
- Bhattacharjee, A., 2002. Individual trust in online firms: scale development and initial test. *Journal of Management Information Systems* 19 (1), 211–241.
- Bruner, G., Kumar, A., 2003. Explaining consumer acceptance of handheld internet devices. *Journal of Business Research* 58, 115–120.
- Burkolter, D., Kluge, A., 2011. Online consumer behavior and its relationship with socio-demographics, shopping orientations, need for emotion, and fashion leadership. *Journal of Business and Media Psychology* 2, 20–28.
- Chen, S., Dhillon, G., 2003. Interpreting dimensions of consumer trust in e-commerce. *Information Technology and Management* 4 (2–3), 303–318.
- Cheung, C., Lee, M., 2006. Understanding consumer trust in internet shopping: a multidisciplinary approach. *Journal of the American Society for Information Science and Technology* 57 (4), 479–492.
- Childers, T., Carr, C., Peck, J., Carson, S., 2001. Hedonic and utilitarian motivations for online retail shopping. *Journal of Retailing* 77 (4), 511–535.
- Chung, J., Tan, F.B., 2004. Antecedents of perceived playfulness: an exploratory study on user acceptance of general information-searching websites. *Journal of Information and Management* 41, 869–881.
- Churchill, G.A., 1979. A paradigm for developing better measures of marketing constructs. *Journal of Marketing Research* 16 (1), 64–73.
- Corritore, C.L., Kracher, B., Wiedenbeck, S., 2003. Online trust: concepts, evolving themes: a model. *International Journal of Human-Computer Studies* 58 (6), 737–758.
- Cyr, D., Head, M., Larios, H., Pan, B., 2009. Exploring human images in website design: a multi-method approach. *MIS Quarterly* 33 (3), 539–566.
- Cyr, D., Hassanein, K., Head, M., Ivanov, A., 2007. The role of social presence in establishing loyalty in e-service environments. *Interacting with Computers. Special Issue on Moving Face-to-Face Communication to Web-based Communication* 19 (1), 43–56.
- Cyr, D., Bonanni, C., Bowes, J., Ilsever, J., 2005. Beyond trust: website design preferences across cultures. *Journal of Global Information Management* 13 (4), 24–52.
- Cyr, D., Trevor-Smith, H., 2004. Localization of web design: an empirical comparison of German, Japanese, and U.S. website characteristics. *Journal of the American Society for Information Science and Technology* 55, 1–10.
- Davis, F.D., 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly* 13 (3), 319–333.
- Dean, J.W., Sharfman, M.P., 1996. Does decision process matter? *Academy of Management Journal* 39 (2), 368–396.
- Dellaert, B.G., Dabholkar, P.A., 2009. Increasing the attractiveness of mass customization: the role of complementary on-line services and range of options. *International Journal of Electronic Commerce* 13 (3), 43–70.
- Deng, L., Poole, M.S., 2010. Affect in Web interfaces: a study of the impacts of Web page visual complexity and order. *MIS Quarterly* 34 (4), 711–730.
- Dube, L., Chebat, J.C., Morin, S., 1995. The effects of background music on consumers' desire to affiliate in buyer–seller interaction. *Psychology and Marketing* 12 (4), 305–319.
- Eroglu, S.A., Machleit, K.A., Davis, L.M., 2003. Empirical testing of a model of online store atmospherics and shopper responses. *Psychology & Marketing* 20 (2), 139–150.
- Everard, A., Galleta, D., 2006. How presentation flaws affect perceived site quality, trust, and intention to purchase from an online store. *Journal of Management Information Systems* 22 (3), 56–95.
- Flavián, C., Guinalíu, M., Gurrea, R., 2005. The role played by perceived usability, satisfaction and consumer trust on website loyalty. *Information & Management* 43 (1), 1–14.
- Fornell, C., Larcker, D.F., 1981. Evaluating structural equation models with unobserved variables and measurement error. *Journal of Marketing Research* 18, 39–50.
- Füller, J., Mühlbacher, H., Matzler, K., Jawecki, G., 2009. Consumer empowerment through internet-based co-creation. *Journal of Management Information Systems* 26 (3), 71–102.
- Gefen, D., Straub, D., 2005. A practical guide to factorial validity using PLS-graph: tutorial and annotated example. *Communications of the AIS* 16, 91–109.
- Gefen, D., Straub, D., 2003. Managing user trust in B2C e-services. *E-Service Journal* 2 (2), 7–24.
- Gefen, D., 2000. E-commerce: the role of familiarity and trust. *Omega* 28 (6), 725–737.
- Goldberg, J.H., Stimson, M.J., Lewenstein, M., Scott, N., Wichansky, A. M., 2002. Eye tracking in Web search tasks: design implications. In: *Proceedings of the Eye Tracking Research & Applications Symposium*. ACM, New York, pp. 51–58.
- Gretzel, U., Fesenmaier, D.R., 2006. Persuasion in recommender systems. *International Journal of Electronic Commerce* 11 (2), 81–100.
- Ha, Y., Kwon, W.S., Lennon, S.J., 2007. Online visual merchandising (VMD) of apparel web sites. *Journal of Fashion Marketing and Management* 11 (4), 477–493.
- Hassanein, K., Head, M., 2007. Manipulating social presence through the Web interface and its impact on attitude towards online shopping. *International Journal of Human-Computer Studies* 65 (8), 689–708.
- Hassanein, K., Head, M., 2006. The impact of infusing social presence in the Web interface: an investigation across different products. *International Journal of Electronic Commerce* 10 (2), 31–55.
- Hassanein, K., Head, M., 2004. Building online trust through socially rich Web interfaces. In: *Proceedings of the 2nd Annual Conference on Privacy, Security and Trust*. Fredericton, New Brunswick, Canada, pp. 15–22.
- Hassenzahl, M., 2004. The interplay of beauty, goodness, and usability in interactive products. *Human-Computer Interaction* 19, 319–349.
- Hassenzahl, M., 2001. The effect of perceived hedonic quality on product appeal-iness. *International Journal of Human-Computer Interaction* 13 (4), 481–499.
- Hotchkiss, G., 2006. The 50 millisecond judgment. ([http://www.searchengineguide.com/hotchkiss/2006/0206\\_gh1.html](http://www.searchengineguide.com/hotchkiss/2006/0206_gh1.html)) (accessed 22.06.06.).
- Jarvenpaa, S., Tractinsky, N., Vitale, M., 2000. Consumer trust in an Internet store. *Information Technology and Management* 1 (2), 45–71.
- Jarvenpaa, S.L., Tractinsky, N., Saarinen, L., 1999. Consumer trust in an Internet store: a cross-cultural validation. *Journal of Computer Mediated Communication* 5 (2) (<http://www.ascusc.org/jcmc/vol5/issue2/jarvenpaa.html>).
- Jiang, Z., Chan, J., Tan, B.C.Y., Chua, W.S., 2010. Effects of interactivity on website involvement and purchase intention. *Journal of the Association for Information Systems* 11 (1), 34–59.
- Kaiser, S., 2001. Your Web site's first impression happens only once. (<http://skde.signs.com/newsletter/v2n2.shtml>) (accessed 24.10.10.).
- Karvonen, K., 2000. The beauty of simplicity. In: *Proceedings of the Conference on Universal Usability*. ACM Press, New York, pp. 85–90.
- Kim, H., Lennon, S.J., 2010. E-atmosphere, emotional, cognitive, and behavioral responses. *Journal of Fashion Marketing and Management* 14 (3), 412–428.
- Kim, H., Chan, H.C., Chan, Y.P., 2007. A balanced thinking-feelings model of information systems continuance. *International Journal of Human-Computer Studies* 65, 511–525.

- Kim, H., Fesenmaier, D., 2008. Persuasive design of destination Web sites: an analysis of first impression. *Journal of Travel Research* (accessed 24.10.10.) (<http://jtr.sagepub.com/content/47/1/3.abstract>).
- Koufaris, M., Hampton-Sosa, W., 2004. The development of initial trust in an online company by new customers. *Information & Management* 41 (3), 377–397.
- Koufaris, M., Hampton-Sosa, W., 2002. Customer Trust Online: Examining the Role of the Experience with the Website. CIS Working Paper Series (#CIS-2002-05). Zicklin School of Business, Baruch College, New York.
- Koufaris, M., 2002. Applying the technology acceptance model and flow theory to online consumer behavior. *Information Systems Research* 13 (2), 205–223.
- Koufaris, M., Kambil, A., LaBarbera, P.A., 2001. Consumer behavior in web-based commerce: an empirical study. *International Journal of Electronic Commerce* 6, 115–138.
- Kumar, N., Benbasat, I., 2002. Para-social presence and communication capabilities of a website. *E-Service Journal* 1 (3), 5–24.
- Lankford, C., 2000. Gazetracker: Software Designed to Facilitate Eye Movement Analysis. Eye Tracking Research & Applications Symposium. Palm Beach Gardens, FL.
- Lin, C., Lu, H., 2000. Towards an understanding of the behavioral intention to use a website. *International Journal of Information Management* 20 (3), 197–208.
- Lindgaard, G., Fernandes, G., Dudek, C., Brown, J., 2006. Attention Web designers: you have 50 milliseconds to make a good impression!. *Behavior & Information Technology* 25 (2), 115–126.
- Liu, C., White, R.W., Dumais, S., 2010. Understanding web browsing behaviors through weibull analysis of dwell time. In: *Proceedings of SIGIR'10*, July, Geneva, Switzerland.
- Loftus, G.R., Mackworth, N.H., 1978. Cognitive determinants of fixation location during picture viewing. *Journal of Experimental Psychology: Human Perception and Performance* 4 (4), 565–572.
- MacInnis, D., Jaworski, B., 1989. Information processing advertisements: toward an integrative framework. *Journal of Marketing*, 53, 1–23.
- McKnight, H., Kacmar, C.J., Coudhury, V., 2004. Shifting factors and the ineffectiveness of third party assurance seals: a two-stage model of initial trust in a web business. *Electronic Markets* 14 (3), 252–266.
- McKnight, D.H., Choudhury, V., Kacmar, C., 2002. Developing and validating trust measures for e-commerce: an integrative typology. *Information Systems Research* 13 (3), 334–359.
- Mehrabian, A., Russell, J.A., 1974. *An Approach to Environmental Psychology*. MIT Press, Cambridge, MA.
- Norum, P.S., 2008. Student internet purchases. *Family and Consumer Sciences Research Journal* 4, 373–388.
- Nunnally, J.C., 1978. *Psychometric Theory*, second ed. McGraw Hill, New York.
- Nusair, K., Yoon, H.J., Parsoa, H.G., 2008. Effect of utilitarian and hedonic motivations on consumer satisfaction with travel websites. *Information Technology and Tourism* 10, 75–89.
- Perfetti, C., 2005. Five-seconds Tests: Measuring your Site's Content Pages. ([http://www.uie.com/articles/five\\_second\\_test](http://www.uie.com/articles/five_second_test)) (accessed 24.10.10.).
- Qiu, L., Benbasat, I., 2009. Evaluating anthropomorphic product recommendation agents: a social relationship perspective to designing information systems. *Journal of Management Information Systems* 25 (4), 145–182.
- Ramsey, L., 2004. How to seal the deal in seven seconds. ([http://www.jobbankusa.com/CareerArticles/Personal\\_Aspects/ca80304b.html](http://www.jobbankusa.com/CareerArticles/Personal_Aspects/ca80304b.html)) (accessed 02.03.07.).
- Riegelsberger, J., Sasse, M.A., 2002. Eye-catcher or blind spot? The effect of photographs of faces on e-commerce sites. In: *Proceedings of the 2nd IFIP Conference on E-Commerce, E-Business, E-government*. Monteiro, J.L., Swatman, P.M.C., Tavares, L.V. (Eds.). Kluwer Academic Publishers, Boston, pp. 383–398.
- Santosa, P.I., Wei, K.K., Chan, H.C., 2005. User involvement and user satisfaction with information-seeking activity. *European Journal of Information Systems* 14 (4), 361–370.
- Schmidt, J.B., Montoya, W., Massey, A.P., 2001. New product development decision-making effectiveness: comparing individuals, face to face teams, and virtual teams. *Decision Sciences* 32 (4), 575–600.
- Scott, L.M., 1994. Images in advertising: the need for a theory of visual rhetoric. *Journal of Consumer Research* 21, 252–273.
- Sheng, H., Joginapelly, T., 2012. Effects of Web atmospheric cues on users' emotional responses in e-commerce. *Transactions on Human-Computer Interaction* 4 (1), 1–24.
- Simon, S.J., 2001. The impact of culture and gender on web sites: an empirical study. *The Data Base for Advances in Information Systems* 32 (1), 18–37.
- Singh, S.N., Dalal, N., Spears, N., 2005. Understanding web home page perception. *European Journal of Information Systems* 14 (3), 288–302.
- Seock, Y.K., Bailey, L.R., 2008. The influence of college students' shopping orientation and gender differences on online information searches and purchase behaviors. *International Journal of Consumer Studies* 32, 113–121.
- Straub, D., Boudreau, M.C., Gefen, D., 2004. Validation guidelines for IS positivist research. *Communications of AIS* 13 (24), 380–427.
- Straub, D., 1989. Validating instruments in MIS research. *MIS Quarterly* 12 (2), 147–170.
- Sun, H., 2010. Sellers' trust and continued use of online marketplaces. *Journal of the Association for Information Systems* 11 (4), 182–211.
- Sun, H., Zhang, P., 2006. The role of affect in IS research: a critical survey and a research model. In: Zhang, P., Galletta, D., Sharpe, M.E. (Eds.), *Human-Computer Interaction and Management Information Systems – Foundations*. Armonk, New York.
- Teo, H., Oh, L., Liu, C., Wei, K., 2003. An empirical study of the effects of interactivity on web user attitude. *International Journal of Human-Computer Studies* 58, 281–305.
- Tractinsky, N., 2004. Toward the study of aesthetics in information technology. In: *Proceedings of the Twenty-Fifth International Conference on Information Systems*, pp. 771–780.
- Tractinsky, N., Rao, V.S., 2001. Incorporating social dimensions in Web-store design. *Human Systems Management* 20, 105–121.
- Tractinsky, N., Katz, A.S., Ikar, D., 2000. What is beautiful is usable. *Interacting with Computers* 13, 127–145.
- van der Heijden, H., 2004. User acceptance of hedonic information systems. *MIS Quarterly* 28 (4), 695–704.
- Venkatesh, V., 2000. Determinants of perceived ease of use: integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information Systems Research* 11 (4), 342–365.
- Voss, K.E., Spangenberg, E.R., Grohmann, B., 2003. Measuring the hedonic and utilitarian dimensions of consumer attitude. *Journal of Marketing Research*, 40, 310–320.
- Wang, W., Benbasat, I., 2005. Trust in and adoption of online recommendation agents. *Journal of the Association for Information Systems* 6 (3), 72–101.
- Werther, H., Klein, S., 1999. *Information Technology and Tourism – A Challenging Relationship*. Springer-Verlag, New York/Berlin.
- Yoon, S.J., 2002. The antecedents and consequences of trust in online-purchase decisions. *Journal of Interactive Marketing* 16 (2), 47–63.
- Zach, R., Xiang, Z., Fesenmaier, D.R., 2007. An assessment of innovation in Web marketing: Investigating American convention and visitors bureaus. In: *Proceedings of the ENTER Conference*, Ljubljana, Slovenia, December.
- Zhang, P., 2013. The affective response model: a theoretical framework of affective concepts and their relationships in the ICT context. *MIS Quarterly* 37 (1), 247–274.
- Zhang, P., Li, N., 2004. Love at first sight or sustained effect? The role of perceived affective quality on users' cognitive reactions to IT. In: *Proceedings of the Twenty Fifth International Conference on Information Systems*.