IMPACT OF ANIMATION AND LANGUAGE ON
BANNER CLICK-THROUGH RATES

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ABSTRACT

This field experiment tested the impact of animation and language on the click-through rate (CTR) of banner advertisements across two website types. Animation results of over one million banner impressions were inconsistent for social networking and information websites. As expected, two languages, English and Norwegian, showed insignificant CTR differences. The CTR was under one tenth of one percent (0.1%), consistent with low reported CTRs for traditional advertising banners. The study contributes to research in testing different website design elements, an under researched area.

Keywords: banner advertisement, click-through rates, Elaboration Likelihood Model

1. Introduction
Online advertising revenue increased significantly in the past decade, for example in the US from 7.2 billion dollars in 2001 to 23.4 billion in 2008. Despite a decline to 22.6 billion in 2009, online advertising was the least affected advertising sector in the economic downturn and grew to its highest peak in history in 2010's third quarter [Interactive Advertising Bureau, 2009, 2010]. It is estimated that online advertising revenue will reach $40 billion in 2014 [eMarketer, 2010b]. Banner advertising accounts for approximately 20 percent of the annual US online advertising revenue, ranking second behind search advertising [Mediaweek, 2010]. Banner advertising is popular due to low costs and the ability to measure advertising effectiveness almost immediately [Hollis, 2005].
1.1 Evolving Banner Advertising
Since the 1994 launch of banners ads, graphic images and other media objects used as advertisements on websites [Hai et al., 2010; Interactive Advertising Bureau, n. D.], spectacular growth in web use has driven major

changes in online campaigns and consumer responses. Hollis [2005] observed a boom-bust-revival pattern in online advertising, with a 1996 boom preceding a 2001-2002 decline and a revival in 2003. Driving the revival was an increased adoption of broadband access -- over 90% of Australian households and two-thirds of US adults had broadband at home in 2010 [Australian Bureau of Statistics, 2011; Smith, 2010] -- and sophisticated segmenting strategies. For example, advertising companies can match individual banner advertisements to user characteristics such as a user's domain, web browser, operating platform, search topic and profiles in online communities such as Facebook and MySpace [Hanson and Kalyanam, 2007; Hollis, 2005; Stone, 2007]. Online advertising companies such as Double-Click and AdLINK Media Norway serve as a broker between advertisers and website publishers, providing a platform for online advertising and profiling user activities on websites. Employing gathered user data, companies can increase advertising effectiveness by targeting different banner ads to the appropriate user profiles [Charters, 2002]. Depending on banner ads' purpose, advertising effectiveness can be measured in different ways.

1.2 Banner Advertising and Advertising Effectiveness

Banner ads serve different purposes – as a direct marketing instrument, encouraging customers to click on the ad to be referred to the advertising company's website, or as marketing communication similar to ads in print media or on TV [Robinson et al., 2007]. Thus, apart from clicking on banners, mere exposure to ad banners has value. Although viewers process banners on a pre-attentive level, this processing has a positive impact on brand awareness and advertising recall [Briggs and Hollis, 1997; Drèze and Hussherr, 2003; Fang et al., 2007].

Depending on advertising's objective, marketing communication or direct marketing, banners might attract impressions or clicks. Impressions indicate exposure – how many times an ad was shown on the web. Clicks show how often an ad was clicked on and redirected users to a targeted webpage [Lohtia et al., 2003]. The ratio of clicks and impressions, the click-through-rate (CTR), serves as a measure of advertising effectiveness.

Digital media offer efficiency and measurability, but the development of applicable theories and studying how design elements influence banner ads is a new research area [Diao and Sundar, 2004]. A 2003 study of design elements in business-to-business and business-to-consumer banner advertisements closed with a call for experimental research to test design elements across different website types [Lohtia et al., 2003]. Although researchers have started to investigate how advertisement design elements relate to click-through rates and other consumer behaviours, there is still a lack of understanding on how user reactions relate to different advertisement types [McCoy et al., 2007; Rosenkrans, 2009].

Furthermore most studies in this area focused on specific website types such as gambling websites [Robinson et al., 2007] and a simulated website [McCoy et al., 2007], or used self-reported online behaviour which might be biased and might inflate or underrate real behaviour [Burns and Lutz, 2006; Cho et al., 2001]. However website users might react differently on different website types, for example sites that offer utilitarian versus hedonic value. Utilitarian websites such as banking or news websites focus on economic values, rationality and goal-orientation [Batra and Ahtola, 1991; Childers et al., 2001; Hirschman and Holbrook, 1982]. Visitors of hedonic websites such as entertainment websites seek happiness, fantasy, sensuality, enjoyment, playfulness, positive affect and emotional arousal [Batra and Ahtola, 1991; Bridges and Florsheim, 2008; Hirschman and Holbrook, 1982].

The current study investigates how animated and static banner ads, in English and Norwegian, across different website examples relate to click-through rates to answer the call for experimental research. It contributes to literature in helping understand how different advertisement design elements and website types relate to consumer behaviour. For advertisers, this study helps choose the appropriate advertisement type and language for two website types.

2. Literature Review

2. 1 Click-through Rates to Measure Banner Effectiveness

Click-through rates are declining, although there has been a halt to this trend recently. For example the annual average CTR for banners worldwide dropped to 0.09 percent [eMarketer, 2010a; Green, 2006; Pagendarm, 2001]. One cause for this decline, banner blindness − just one in two users sees a banner − has psychological and technological reasons [Drèze and Hussherr, 2003; Hanson and Kalyanam, 2007]. Familiarity with banner locations or animation leads the website visitor to focus elsewhere, and software can block advertising banners. Another cause for declining CTRs might be the growing importance of the web as a sales channel and the resulting need to advertise online. The number of available online advertisements has grown enormously over the years, making it difficult for users to keep up and click at the same pace [eMarketer, 2010a]. Advertisers try to counter declining CTRs with sophisticated advertisement types such as using evolving banner formats [Edwards et al., 2002].

2.2 Banner Formats and Elements

Changes in banner formats continue more than a decade after the first banner advertisement. In addition to a trend towards larger banners, a high adoption rate of broadband enables rich-media advertising such as video to move advertising dollars away from TV and to the WWW [Hanson and Kalyanam, 2007; Morrissey, 2005].

Beyond static banner ads, dynamic banner types include pop-up, pop-under, inter- and superstitial, and floating banners. Pop-up and pop-under banners appear over or under the main browser window. Pop-ups jump into sight while pop-unders appear after closing the browser window. Inter- and superstitials ads fill the entire browser window. In contrast to interstitials, superstitials appear when the user moves to another website. Floating ads consist of transparent layers over a website and execute an animated ad within this layer [Burns and Lutz, 2006; Rosenkrans, 2009].

In showing an ad, advertisers interrupt website visitors' tasks such as seeking information on a news site which can result in possible negative outcomes for the advertiser [Edwards et al., 2002]. For example pop-ups, interstitials and floating ads are more effective in attracting attention than static ads but more intrusive and annoying, leading to a negative impact on attitude towards the ad and often a negative attitude towards the brand [Burns and Lutz, 2006; Cho et al., 2001; Diao and Sundar, 2004; McCoy et al., 2007]. In a study comparing different ad types, floating ads and interstitials had the highest annoyance factor and lowest click-through rate. Banner ads displayed on the periphery of the website interrupted few website visitor activities [Edwards et al., 2002]. Visitors perceive ads outside the website's main content area least annoying and click on these ads most often [Burns and Lutz, 2006]. In addition to an appropriate positioning, advertisers can reduce negative perceptions of ads and thus ad avoidance in limiting the necessary cognitive effort to process ads or providing rewards for viewers such as relevant information or entertainment [Edwards et al., 2002].

Distinctive advertising elements such as interactivity and animation can act as a reward for viewers, draw attention and impact click-through rates [Hai et al., 2010; Rosenkrans, 2009]. Interactivity, a major advantage of the Internet as an advertising medium [Cho et al., 2001], gives website users control, and helps users reduce search costs in selectively focusing on important information [Liu and Shrum, 2009; Roehm and Haugtvedt, 1999]. Research on the effects of interactivity, however, has produced inconsistent results. One study found users favoured interactive ad elements [Ramsey, 2011], while interactive elements lowered click-through rates in another study [Lohtia et al., 2003].

2.3 Animation

Similar to interactivity, researchers argue that animated ads can yield higher click-through rates than static ads [Cho et al., 2001; Hong et al., 2004; Li and Bukovac, 1999; Rosenkrans, 2009]. For example, one study argued that rich media ads, including animated ads, increase click-through-rates because of their distinctiveness [Rosenkrans, 2009]. Another study showed that the main characteristic of animation – motion – has an influence on consumers in creating arousal. Comparing different animation speeds showed a positive relationship among animation speed, arousal and recall. However a very high animation speed had a negative impact on consumer behaviour such as the willingness to try a product [Sundar and Kalyanaraman, 2004]. Some users might see animation as an irritation while carrying out a specific task [Rodgers and Thorson, 2000].

Yet in a study investigating the impact of banner elements on click-through rates, animation showed no effect [Hai et al., 2010]. However for these studies the research environment was a single website. Given users differ in their motivation to access the web such as information seekers and entertainment seekers [Jose-Cabezudo et al., 2008], website users might react differently to advertisements on news and entertainment sites.

2.4 The Role of Involvement

Another reason for these conflicting results could be involvement. Unlike mass media that broadcast, the web's interactivity limits the applicability of some traditional advertising theories [Cho, 1999] and increases the emphasis on the role of user involvement as the web requires at least a minimum amount of effort from a user [Hoffman and Novak, 1996; Rafaeli and Sudweeks, 1997].

Involvement, the degree of relevance or interest of an object to an individual [Krugman, 1966; Zaichkowsky, 1985], seems to moderate the effect of interactivity on attitude. When involvement is low, consumers have low interest in engaging with a website's interactive features and consequently spend little effort on the website. Yet in one study, interactive elements attracted attention and had a positive impact on low involvement consumers' attitudes towards the ad [Liu and Shrum, 2009]. In high involvement conditions, interactivity enhanced information processing for experienced users but inhibited processing for inexperienced users who are cognitively strained to process interactive elements. This strain resulted in inexperienced users having less positive attitudes than their experienced counterparts [Liu and Shrum, 2009]. Consequently, under low involvement conditions, interactivity had a positive influence on brand attitude. Under high involvement conditions, experienced users showed a positive relationship between interactivity and brand attitudes, inexperienced users showed negative attitudes towards the brand on a website with interactive elements [Liu and Shrum, 2009].

One theory of attitude change that includes involvement, the Elaboration Likelihood Model (ELM), is useful to predict how certain design elements of a website or an ad might support or inhibit information processing [Liu and Shrum, 2009]. Elaboration, the process of attitude formation towards an object, depends on an individual's

involvement [Martin et al., 2011; Petty et al., 1983]. According to ELM, high motivation and ability lead consumers to choose the "central route" of high involvement with information gathering goals, and deep and long-lasting attitude change [Petty et al., 1983]. A highly involved person has an intrinsic motivation to spend considerable effort on the message because the message seems highly relevant, and carefully and thoughtfully considers the true merits of information. Brand information is linked to the ad [Cho, 1999; MacInnis et al., 1991]. However, some ads such as large banners and pop-ups are too intrusive and distract highly involved website users in their information gathering. Consequently, the associated negative affect of these ads and the resulting lower brand attitude lead to ad avoidance over time [Chatterjee, 2008].

In contrast to high involvement, low involvement heightens awareness of affective cues such as advertisement attractiveness [Morris et al., 2005]. A low involved person has a low motivation to elaborate on a message. The persuasion of a low involved person happens through the "peripheral route" of attitude change without message scrutiny and can occur through a simple cue such as an attractive source [Petty et al., 1983]. For example, a study showed that under low-involvement conditions, ads that sparked customer attention obtrusively, such as large banner sizes or pop-ups, generated ad recall and click-throughs [Chatterjee, 2008]. However some authors argue that the peripheral route has a lower impact on attitudes than the central route [Petty et al., 1983]. Others see both routes as equivalent as emotional and cognitive aspects are equally important [Morris et al., 2005].

2.5 Website Type

Similar to banner elements, the website type relates to user involvement. Based on motives to use the web, web users *search* a website, scrutinizing core information to achieve search satisfaction or *surf* a website in an experiential mode, skimming core and peripheral information [Muylle et al., 2001].

In high involvement, central route searches such as on news or weather sites, the utilitarian and task-focused user spends minimal time on a site [Hanson and Kalyanam, 2007; Murphy, 1999]. Searchers often ignore colours, graphics and sounds, which are secondary to content [Briggs and Hollis, 1997; Lohtia et al., 2003]. In contrast, the low involvement surf mode is a hedonic activity for fun and killing time such as on entertainment sites [Hanson and Kalyanam, 2007; Murphy, 1999], social network sites [Sledgianowski and Kulviwat, 2009] and chat websites [Lin and Bhattacherjee, 2010]. Information processing for surfers tends to be subconscious using the peripheral route of the ELM with ad banner colour, animation and music impacting behaviour [Lohtia et al., 2003]. However motives might change while accessing the web, a searcher might become a surfer after having fulfilled the search task, a surfer might become a searcher because of an attention grabbing feature such as an interesting ad [Rodgers and Thorson, 2000].

A banner study used animation to operationalize peripheral processing [Lohtia et al., 2003]. The authors argued that the visitor's web browsing mode, searching or surfing, related to peripheral versus central processing. The study, a content analysis of 10,000 banner advertisements, found animation lowered CTRs for business-to-business (B2B) banners but increased CTRs for business-to-consumer (B2C) banners. The authors concluded that animation impacted searchers (B2B) negatively and impacted surfers (B2C) positively. Their study closed with two calls for future research, using an experiment and investigating the type of website hosting the ad banners.

2.6 Language

Language, another banner and website design element, has a significant impact on online consumer behaviour [Chau et al., 2002; Luna and Peracchio, 2001]. English is the most common language on the web with 536 million users [Internet World Stats, 2011] and seems the main language for cross-cultural communication in the near future [Anderson and Rainie, 2006; Flammia and Saunders, 2007]. However English only ranks third overall, after Chinese and Spanish, with 328 million English speakers [Ethnologue - Languages of the World, 2011]. Thus for many web users English is the second language.

Visiting a website in a second language might result in a different meaning of a message for the web user from what the website publisher intended. Users process information based on cultural concepts linked to their first language [Luna et al., 2002]. Processing a website in a second language might challenge a web user cognitively, and yield a negative or confusing attitude towards the website. Website elements such as graphics can diminish negative effects of presenting the website in a second language [Luna et al., 2002]. Summarizing, the preferred language and graphics seem to enhance ad processing.

Traditional media showed similar results. For example only one in three Dutch consumers knew an English television commercial's meaning [Gerritsen et al., 2000]. However in some countries, the dominant language of the country, not the first language of the viewer, might be the preferred choice. In a study Hispanics in the U.S. preferred ads in English, not Spanish [Hernandez, 1992].

3. Conceptual Development, Hypotheses and Research Question

Three studies now lead to two hypotheses related to animation effects across two website types: surf and search. The first study investigated banner ad CTRs on a surf site, which used an online gaming context [Robinson et al., 2007]. The result was a negative but insignificant (p=.09) relationship between animation and CTRs. However the research context was a single website. A second study compared banner ad texts length on a dating website, where consumers search for information, and suggested that compared to high-involvement banners, low-involvement banners led to higher CTRs [Hofacker and Murphy, 2005]. The third study argued that banner effects depend on the type of website; animation was a positive peripheral cue on low-involvement surf sites but had a negative effect on high-involvement search sites [Lohtia et al., 2003].

The current study follows-up on animation and compares animation effects on two different website types – a low-involvement (surf) social networking and a chat website, and two high-involvement news (search) websites. As animation showed an insignificant effect on an entertainment website, a positive effect on a low-involvement surf website and a negative effect on a high-involvement search website, the following hypotheses drive this study.

> *H1: On social networking websites, which tend to support a low-involvement surf mode, the CTR of animated ad banners will be higher than the CTR of static ad banners.*
>
> *H2: On websites providing information, which tend to support a high-involvement search mode, the CTR of animated ad banners will be lower than the CTR of static ad banners*

As mentioned language is another important design element on the web as for example a message in a foreign language requires more cognitive effort to process than a message in a first language and might result in a different message understanding. However users might prefer a second language when this language is dominant in a country, especially when graphics help understand a message. A country where English is approaching second rather than foreign language status is Norway [Fenner, 2003]. Today Norwegian newspapers contain many English words and many English expressions are in Norwegian [Sirnes, 2001]. Popular Norwegian television programs and films run in English with Norwegian subtitles [Fenner, 2003]. Children learn English from the age of six; it is a compulsory subject until upper secondary school and students following a pre-academic course undertake intensive English training [Fenner, 2003].

> *H3: There will be no difference in English and Norwegian language advertisement CTRs*

4. Methodology

Discussions with current and graduated Norwegian students helped determine ad banner content for Norwegian students considering Australian universities. Several rounds of feedback from Norwegians in Australia and the Norwegian branch of AdLink Media (www.adlinkmedia.no) led to the creation of English and Norwegian versions of a static and animated ad banner. Both banners had the same key phrases, but the animated version had extra copy for each phrase such as *beaches*, *surfing* and *wine* floating in after the phrase "Experience an amazing natural environment". As a validity check, the Norwegian banner versions were translated from English and then back-translated into English. Figures 1 and 2 show the static English and Norwegian banners.
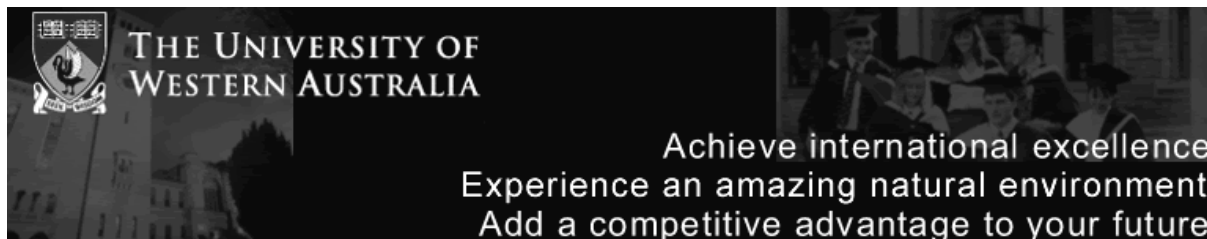

Figure 1: English Banner

Figure 2: Norwegian Banner

Based on the availability of advertisement space on their content network, AdLink Media Norway randomly allocated the four ad banner types across two surf sites, myspace.no and ebuddy.no, and two search sites, stocklink.no and p4.no. Consequently, website visitors of each of the four sites could have seen any of the banner types – animated English, animated Norwegian, static English or static Norwegian.

5. Results

Table 1 shows the four researched websites' characteristics, the website name and content. Alexa.com, a website collecting data on websites and publishing website ranking, and AdLink Media Norway [AdLink Media Norway, 2011] provided additional characteristics such as ranking and user demographics – the website's audience dominant age group, gender and education relative to the general Internet audience. Myspace a social networking site is popular among people between 18 and 34 with a low to medium education level and ranks among the top 100 websites, most ebuddy users are under 18 – generally younger than myspace users – with no formal education, possibly still attending school. The radio website p4.no and the finance website stocklink.no attract mainly senior website visitors with a medium to high level of education. Whereas the two surf websites ebuddy and myspace have a balanced gender ratio, p4 is popular among women and stocklink among men.

Table 1: Website characteristics

	myspace.no	ebuddy.no	stocklink.no	p4.no
Website Type	Surf	Surf	Search	Search
Content	Social networking site	Online messenger	Norwegian stock market news and information	Radio station website
Alexa ranking	91	1,207	427,886	142,019
Age group(s)	18-34	Under 18	35-49	35-49
Gender (female / male)	52% / 48%	52% / 48%	6% / 94%	60% / 40%
Education	Low / Medium	No	Medium / High	Medium / High
Number of Impressions				
English Static	193,425	6,980	18,058	18,259
English Animated	190,797	9,535	18,649	18,087
Norwegian Static	193,679	6,727	17,583	18,815
Norwegian Animated	193,511	6,880	17,934	18,847
CTR in % (highest CTR for each site in **bold**)				
English Static	.016	**.072**	.033	**.093**
English Animated	.023	.031	.021	.066
Norwegian Static	.015	.030	.028	.064
Norwegian Animated	**.028**	.044	**.045**	.048

The CTR ranged from a low of 0.015% for m*yspace.no* to 0.093% for *p4.no*. These rates are below the CTR numbers noted earlier in this paper. Similarly, the CTR ranged widely for banner types, Norwegian static banners on *myspace.no* generating the lowest and English static banners on *p4.no* the highest CTR.

As for banner type and each site, visitors to *myspace.no* preferred Norwegian animated ads, English animated ads ranked second and both static ads last. *ebuddy.no* users had a preference for English static ads, both animated ads showed moderate CTR results and Norwegian static ads ranked last. Norwegian animated ads on *stocklink.no* showed the highest CTR, both static ads had a moderate CTR and animated ads in English ranked last. In contrast to the previous sites, for the radio website *p4.no* English static ads attracted most clicks, English animated and Norwegian static followed and Norwegian animated ads were least liked.

5.1 Hypotheses Testing

Given website impressions ranged from 6,727 on ebuddy.no to 193,679 on myspace.no this study used the Marascuillo procedure to investigate CTR differences across the four ad types [NIST/SEMATECH, 2011]. This statistical procedure stems from testing for defects, rare occurrences, in manufacturing industries or comparing

individuals to normative groups in psychology. Compared to standard statistical tests such as x^2 tests, the Marascuilo procedure has the advantage of offering stable results for small samples and low frequencies. Furthermore researchers can investigate interaction effects [Michael, 2007].

Table 2 below shows the overall CTR for both websites in each category and the results of the Marascuilo procedure comparing different design elements across sites. A Q' value bigger than a corresponding x^2 value indicates a significant difference. For surf sites animated ads worked significantly better than static ads. Yet, myspace.no accounted for 96% of all impressions on surf sites. Given Table 1 shows that English static ads worked best for the second surf site, ebuddy.no, results seem to be inconclusive and thus H1is rejected - *On social networking websites, which tend to support a low-involvement surf mode, the CTR of animated ad banners will be higher than the CTR of static ad banners*. CTRs for static ads and animated ads had an insignificant difference on search sites, rejecting H2- *On websites providing information, which tend to support a high-involvement search mode, the CTR of animated ad banners will be lower than the CTR of static ad banners*. Between both languages, differences were insignificant, confirming H3 - *There will be no difference in English and Norwegian language advertisement CTRs*.

Table 2: Design Elements Differences across Website Categories, x^2=3.84

	CTR in %		Q'	p<.05
	Animated Banners	**Static Banners**		
Surf Sites (H1)	**.026**	.016	**5.36**	**YES**
Search Sites (H2)	.045	.055	.49	NO
	English Banners	**Norwegian Banners**	**Q'**	**p<.05**
All Sites (H3)	.025	.026	.01	NO

Highest CTR for significant differences in **bold** (p<.05)

Testing for language and animation/static interaction effects, both website categories, surf (Q'=1.3) and search (Q'=.65) showed insignificant interaction effects.

6. Conclusions, Limitations and Future Research

The animation findings lacked support for ELM. Users on one social networking site, myspace.no, preferred animated ads but users of the other social networking site, ebuddy, preferred static ads. The expected low involvement surf mode where users' persuasion follows the described ELM peripheral path and a heuristic cue such as animation helps an ad attract awareness and encourage website visitors to click on it, might only explain results for *myspace.no* not for the second website, *ebuddy.no.*

Similarly, search sites showed insignificant differences between animated and static ads. On the financial website *stocklink* users liked English static ads the most, on the radio information website *p4,* animated Norwegian ads worked best. Possibly, the amount of cognitive effort users allocate to a media task such as comprehending an ad could explain these results [Lang et al., 2002]. To raise users' awareness for a banner, a banner needs a certain minimal level of stimulation such as the described heuristic cue or a language different to the webpage's primary language. Otherwise users focus elsewhere and shield out such ads, resulting in low CTRs. Given all websites in this study are in Norwegian, an English banner might raise a website visitor's awareness for this banner. A static banner ad in the first language, Norwegian, might go unnoticed. However animated ads in a second language might exceed the upper threshold level of a website visitor's assigned processing resources. Future research should investigate this phenomenon further - how website types and characteristics relate to cognitive effort and ad comprehension.

As expected, language had no impact on both website categories. The described high familiarity of English in Norway might explain this result. Similarly, the dominance of English on the web might cause website visitors to be indifferent towards language and perceive English only as an additional cognitive stimulation.

Furthermore, the study based its website classification on general hedonic and utilitarian descriptors. The study assumed visitors of news websites (utilitarian) are searchers, visitors of websites with primarily an entertainment character (hedonic) are surfers. However, as discussed, web users' motives might change and websites with hedonic and utilitarian elements might attract both surfers and searchers. For example, ebuddy, an online messenger for under 18's, could be a search site. Instead of a hedonic focus, users could have a strong utilitarian, task-oriented focus to discuss topics such as homework. Future research could develop a surf/search scale to classify different websites on a search/surf continuum.

This online experiment complements and extends Lohtia et al. [2003] in two ways. This study was a field experiment rather than a content analysis of ad banner categories. Secondly, this study operationalised surfing versus

searching via website category rather than ad banner category.

This paper also highlights the importance of operationalizing central versus peripheral processing of advertising banners. Short copy [Hofacker and Murphy, 2005] and animation [Lohtia et al., 2003] may reflect peripheral cues, but their effects may differ regardless of the website type. Animation may help attract user attention but could annoy website visitors [Hong et al., 2007]; simple and short copy may have a positive effect. Future research could go beyond measuring CTRs and investigate consumer opinions of short versus long copy, and animated versus static banners.

Literature suggests language affects consumer attitudes and behaviours [Gerritsen et al., 2000; Hernandez, 1992; Luna and Peracchio, 2001], but in this study there were no significant CTR differences between English and Norwegian ad banners. Given the growing importance of keyword advertising [Jansen et al., 2009], future studies could replicate this study using Google AdWords.

Future research should also go beyond measuring CTRs and measure activity on the advertiser's website. For example, would an English ad banner, which should require more elaboration, yield more web page visits than a Norwegian banner? Furthermore, studies should investigate how different online advertising methods relate to long-term consumer attitudes and behaviours. Using measures of long-term customer profitability, such as customer lifetime value, studies could investigate which advertising banners acquire valuable customers.

As the experiment ran in Norway, generalising the language results to other countries requires caution. Future research could replicate this study in other countries with high English comprehension, such as Sweden or Denmark, as well as low English comprehension countries such as France or Italy.

Two final future research ideas explore the advertised product type and user type. Advertising strategies for goods are often inappropriate for services and vice versa [Stafford, 2005]. Future studies could investigate consumer behaviour related to the advertising for goods versus services. The level of interactivity in a banner and the user type seem interesting for future research. For example verbal oriented consumers seem to prefer interactive media and visual oriented consumers seem to prefer non-interactive media [Bezjian-Avery et al., 1998].

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REFERENCES

AdLink Media Norway, "Adlink Media Norway - Media Planning Tool," 2011, Retrieved 13 Sept 2011, from www.adlinkmedia.no/mediatool.html

Anderson, J.Q., and L. Rainie, "The Future of the Internet Ii," 2006, Retrieved September 28 2007, from www.pewinternet.org

Australian Bureau of Statistics, "Internet Activity, Australia, Dec 2010," 2011, from http://www.abs.gov.au/ausstats/abs@.nsf/mf/8153.0/

Batra, R., and O.T. Ahtola, "Measuring the Hedonic and Utilitarian Sources of Consumer Attitudes," *Marketing Letters,* Vol. 2, No. 2: 159-170, 1991.

Bezjian-Avery, A., B. Calder, and D. Iacobucci, "New Media Interactive Advertising Vs. Traditional Advertising," *Journal of Advertising Research,* Vol. 38, No. 4: 23-32, 1998.

Bridges, E., and R. Florsheim, "Hedonic and Utilitarian Shopping Goals: The Online Experience," *Journal of Business Research,* Vol. 61, No. 2008: 309-314, 2008.

Briggs, R., and N. Hollis, "Advertising on the Web: Is There Response before Click-Through? ," *Journal of Advertising Research,* Vol. 37, No. 2: 33-45, 1997.

Burns, K.S., and R.J. Lutz, "The Function of Format: Consumer Responses to Six on-Line Advertising Formats," *Journal of Advertising,* Vol. 35, No. 1: 53-63, 2006.

Charters, D., "Electronic Monitoring and Privacy Issues in Business-Marketing: The Ethics of the Doubleclick Experience," *Journal of Business Ethics,* Vol. 35, No. 4: 243-254, 2002.

Chatterjee, P., "Are Unclicked Ads Wasted? Enduring Effects of Banner and Pop-up Ad Exposures on Brand Memory and Attitudes," *Journal of Electronic Commerce Research,* Vol. 9, No. 1: 51-61, 2008.

Chau, P.Y.K., M. Cole, A.P. Massey, M. Montoya-Weiss, and R.M. O'Keefe, "Cultural Differences in the Online Behavior of Consumers," *Communications of the ACM,* Vol. 45, No. 10: 138-143, 2002.

Childers, T.L., C.L. Carr, J. Peck, and S. Carson, "Hedonic and Utilitarian Motivations for Online Retail Shopping Behavior," *Journal of Retailing,* Vol. 77, No. 4: 511-535, 2001.

Cho, C.-H., "How Advertising Works on the Www: Modified Elaboration Likelihood Model," *Journal of Current*

Issues and Research in Advertising, Vol. 1, No. http://www.ciadvertising.org/studies/reports/info_process/jcira.html, 1999.

Cho, C.-H., J.-G. Lee, and M. Tharp, "Different Forced-Exposure Levels to Banner Advertisements," *Journal of Advertising Research,* Vol. July/August, No. 2001: 45-55, 2001.

Diao, F., and S.S. Sundar, "Orienting Response and Memory for Web Advertisements," *Communication Research,* Vol. 31, No. 5: 537-567, 2004.

Drèze, X., and F.-X.Hussherr, "Internet Advertising: Is Anybody Watching? ," *Journal of Interactive Marketing,* Vol. 17, No. 4: 8-23, 2003.

Edwards, S.M., H. Li, H., and J.-H. Lee, "Forced Exposure and Psychological Reactance: Antecedents and Consequences of the Perceived Intrusiveness of Pop-up Ads," *Journal of Advertising,* Vol. XXXI, No. 3: 83-95, 2002.

eMarketer, "Have Click Rates Finally Stopped Declining?," 2010a, from http://www.emarketer.com/Article.aspx?R=1008045

eMarketer. Online Ad Spend Continues Double-Digit Growth. 2010b, http://www.emarketer.com/Article.aspx?R=1008087

Ethnologue - Languages of the World, "Summary by Language Size," 2011, Retrieved 27. April 2011, from http://www.ethnologue.com/ethno_docs/distribution.asp?by=size

Fang, X., S. Singh, and R. Ahluwahlia, "An Examination of Different Explanations for the Mere Exposure Effect," *Journal of Consumer Research,* Vol. 34, No. 1: 97-103, 2007.

Fenner, A.-B., "The Situation of Modern Language Learning and Teaching in Europe: Norway," 2003, Retrieved 28 June 2007, from http://www.ecml.at/documents/members/norwaynr.pdf

Flammia, M., and C. Saunders, "Language as Power on the Internet," *Journal of the American Society for Information Science and Technology,* Vol. 58, No. 12: 1899-1903, 2007.

Gerritsen, M., H. Korzilius, F.v. Meurs, and I. Gijsbers, "English in Dutch Commercials: Not Understood and Not Appreciated," *Journal of Advertising Research,* Vol. 40, No. 4: 17-31, 2000.

Green, H., "The Future of Advertising," *Business Week Online,* 2006, Retrieved 26 June 2007, from http://blogs.businessweek.com/mt/mt/tb.cgi/3421.1259413365

Hai, L., L. Zhao, and A. Nagurney, "An Integrated Framework for the Design of Optimal Web Bannera," *Netnomics,* Vol. 11, No.: 69-83, 2010.

Hanson, W., and K. Kalyanam, Internet Marketing and E-Commerce (1st eds.). Mason City, OH: Thomson South-Western, 2007.

Hernandez, S.A., "Choice of English Vs. Spanish Language in Advertising to Hispanics," *Journal of Current Issues and Research in Advertising,* Vol. 14, No. 2: 35, 1992.

Hirschman, E.C., and M.B. Holbrook, "Hedonic Consumption: Emerging Concepts, Methods and Propositions," *Journal of Marketing,* Vol. 46, No. 3: 92-101, 1982.

Hofacker, C.F., and J. Murphy, Using Server Log Files and Online Experiments to Enhance Internet Marketing. In S. Krishnamurthy (eds.), *Contemporary Research in E-Marketing* (Vol. 1, pp. 226-249). Hershey, Pennsylvania: Idea Group, 2005.

Hoffman, D.L., and T.P.. Novak, "Marketing in Hypermedia Computer-Mediated Environments: Conceptual Foundations," *Journal of Marketing,* Vol. 60, No. 3: 50-68, 1996.

Hollis, N., "Ten Years of Learning on How Online Advertising Builds Brands," *Journal of Advertising Research,* Vol. 45, No. 2: 255-268, 2005.

Hong, W., J.Y.L. Thong, and K.Y. Tam, "Does Animation Attract Online Users' Attention? The Effects of Flash on Information Search Performance and Perceptions," *Information Systems Research,* Vol. 15, No. 1: 60-87, 2004.

Hong, W., J.Y.L. Thong, and K.Y. Tam, "How Do Web Users Respond to Non-Banner-Ads Animation? The Effects of Task Type and User Experience," *Journal of the American Society for Information Science and Technology,* Vol. 58, No. 10: 1467-1482, 2007.

Interactive Advertising Bureau. Iab Internet Advertising Revenue Report. 2009, http://www.iab.net/media/file/IAB-Ad-Revenue-Six-month-2009.pdf

Interactive Advertising Bureau, "$6.4 Billion in Q3 2010 Sets New Record for Internet Advertising Revenues," 2010, from

http://www.iab.net/about_the_iab/recent_press_releases/press_release_archive/press_release/pr-111710

Interactive Advertising Bureau, "Glossary of Interactive Advertising Terms V. 2.0," n. D., Retrieved 31 Jan 2011, from

http://www.iab.net/media/file/GlossaryofInteractivAdvertisingTerms.pdf

Internet World Stats, "Internet World Users by Language," 2011, Retrieved 27. April 2011, from

http://www.internetworldstats.com/stats7.htm

Jansen, B.J., T.B. Flaherty, R. Baeza-Yates, L. Hunter, B. Kitts, and J. Murphy, "The Components and Impact of Sponsored Search," *Computer,* Vol. 42, No. 5: 90-93, 2009.

Jose-Cabezudo, R.S., J. Gutierrez-Cillan, and A.M. Gutierrez-Arranz, "The Moderating Role of User Motivation in Internet Access and Individuals' Responses to a Website," *Internet Research,* Vol. 18, No. 4: 393-404, 2008.

Krugman, H.E., "The Measurement of Advertising Involvement," *Public Opinion Quarterly,* Vol. 30, No. 4: 583, 1966.

Lang, A., J. Borse, K. Wise, and P. David, "Captured by the World Wide Web," *Communication Research,* Vol. 29, No. 3: 215-245, 2002.

Li, H., and J.L. Bukovac, "Cognitive Impact of Banner Ad Characteristics: An Experimental Study," *JandMC Quarterly,* Vol. 76, No. 2: 341-353, 1999.

Lin, C.-P., and A. Bhattacherjee, "Extending Technology Usage Models to Interactive Hedonic Technologies: A Theoretical Model and Empirical Test," *Information Systems Journal,* Vol. 20, No.: 163-181, 2010.

Liu, Y., and L.J. Shrum, "A Dual-Process Model of Interactivity Effects," *Journal of Advertising,* Vol. 38, No. 2: 53-68, 2009.

Lohtia, R., N. Donthu, and E.K. Hersberger, "The Impact of Content and Design Elements on Banner Advertising Click-through Rates," *Journal of Advertising Research,* Vol. 43, No. 4: 410-418, 2003.

Luna, D., and L. Peracchio, "Moderators of Language Effects in Advertising to Bilinguals: A Psycholinguistic Approach," *Journal of Consumer Research,* Vol. 28, No. 2: 284, 2001.

Luna, D., L.A. Peracchio, and M.D. Juan, "Cross-Cultural and Cognitive Aspects of Web Site Navigation," *Journal of the Academy of Marketing Sciences,* Vol. 30, No. 4: 397-410, 2002.

MacInnis, D.J., C. Moormann, and B.J. Jakowski, "Enhancing and Measuring Consumers´Motivation, Opportunity, and Ability to Process Brand Information from Ads," *Journal of Marketing,* Vol. 55, No. October: 32-53, 1991.

Martin, S.S., C. Camero, and R.S. Jose, "Does Involvement Matter in Online Shopping Satisfaction and Trust? ," *Psychology and Marketing,* Vol. 28, No. 2: 145-167, 2011.

McCoy, S., A. Everard, P. Polak, and D.F. Galletta, "The Effects of Online Advertising," *Communications of the ACM,* Vol. 50, No. 3: 84-88, 2007.

Mediaweek, "By the Numbers - 2009 U.S. Online Advertising Spending by Format," *Mediaweek,* Vol. 20, No. 8: 27, 2010.

Michael, G.A., "A Significance Test of Interaction in 2 X K Designs with Proportions," *Tutorials in Quantitative Methods for Psychology,* Vol. 3, No. 1: 1-7, 2007.

Morris, J.D., W. ChongMoo, and A.J. Singh, "Elaboration Likelihood Model: A Missing Intrinsic Emotional Implication," *Journal of Targeting, Measurement and Analysis for Marketing,* Vol. 14, No. 1: 79-98, 2005.

Morrissey, B., "Banner Ads: From Bargain Basement to Rich Media," *Adweek,* Vol. 46, No. 34: 12, 2005.

Murphy, J., "Surfers and Searchers: An Examination of Web-Site Visitor's Clicking Behavior," *Cornell Hotel and Restaurant Administration Quarterly,* Vol. 40, No. 2: 84-95, 1999.

Muylle, S., R. Moenaert, and M. Despontin, "A Grounded Theory of World Wide Web Search Behaviour," *Journal of Marketing Communications,* Vol. 5, No. 3: 143-155, 2001.

NIST/SEMATECH, "Comparing Multiple Proportions: The Marascuillo Procedure," *e-Handbook of Statistical Methods,* 2011, Retrieved 1 Sept 2011, from http://www.itl.nist.gov/div898/handbook/prc/section4/prc474.htm

Pagendarm, M., "Why Are Users Banner-Blind? The Impact of Navigation Style on the Perception of Web Banners," *Journal of Digital Information,* Vol. 2, No. 1: 14, 2001.

Petty, R.E., J.T. Cacioppo, and D. Schumann, "Central and Peripheral Routes to Advertising Effectiveness: The Moderating Role of Involvement," *The Journal of Consumer Research,* Vol. 10, No. 2: 135-146, 1983.

Rafaeli, S., and F. Sudweeks, "Networked Interactivity," 1997, Retrieved 15 September 2007, from http://jcmc.indiana.edu/vol2/issue4/rafaeli.sudweeks.html

Ramsey, G., "7 Key Digital Trends for 2011," 2011, Retrieved 16 March 2011, from http://www.emarketer.com/blog/index.php/emarketer-webinar-key-digital-trends-2011/

Robinson, H., A. Wysocka, and C. Hand, "Internet Advertising Effectiveness - the Effect of Design on Click-through Rates for Banner Ads," *International Journal of Advertising,* Vol. 26, No. 4: 527-541, 2007.

Rodgers, S., and E. Thorson, "The Interactive Advertising Model: How Users Perceive and Process Online Ads," *Journal of Interactive Advertising,* Vol. 1, No. 1: 42-61, 2000.

Roehm, H.A., and C.P. Haugtvedt, Understanding Interactivity of Cyberspace Advertising. In D. W. Schumann and E. Thorson (eds.), *Advertising and the World Wide Web*. Mahwah, NJ: Lawrence Erlbaum, 1999.

Rosenkrans, G., "The Creativeness and Effectiveness of Online Interactive Rich Media Advertising," *Journal of Interactive Advertising,* Vol. 9, No. 2: 18-31, 2009.

Sirnes, S.M., "On the Norwegian Language. Norway Official Site in the United States," 2001, Retrieved 26 June 2007, from
 http://www.norway.org/news/2001/200105language.html

Sledgianowski, D., and S. Kulviwat, "Using Social Network Sites: The Effect S of Playfulness, Critical Mass and Trust in a Hedonic Context," *Journal of Computer Information Systems,* Vol. 49, No. 4: 74-83, 2009.

Smith, A., "Home Broadband 2010," 2010, from http://pewinternet.org/Reports/2010/Home-Broadband-2010.aspx

Stafford, M.R., "International Services Advertising (Isa)," *Journal of Advertising,* Vol. 34, No. 1: 65-86, 2005.

Stone, B., *International Herald Tribune*. 2007, September 18. Myspace Mines Data to Tailor Advertising

Sundar, S.S., and S. Kalyanaraman, "Arousal, Memory, and Impression-Formation Effects of Animation Speed in Web Advertising," *Journal of Advertising,* Vol. 33, No. 1: 7-17, 2004.

Zaichkowsky, J.L., "Measuring the Involvement Construct," *The Journal of Consumer Research,* Vol. 12, No. 3: 341-352, 1985.