Unblinding Internet Users to Online Ad Banners: The Effects of Task Orientation and Context Congruence on Memory and Attitude

Master Thesis

Carina Nugaeva, B.Sc.
Institute of Psychology
Department for Cognitive Psychology and Methodology
University of Basel

November 2012

Thesis Supervisors:

Markus Hug, M.Sc.
Center for Cognitive Psychology and Methodology, University of Basel

Prof. Dr. Klaus Opwis
Center for Cognitive Psychology and Methodology, University of Basel

Abstract

In recent years, Internet users have become increasingly blind to website banner advertisements as measured by decreasing click-through rates. However, the click-through rate gives a limited picture of the effectiveness of banner advertisements. This paper adopts a fuller examination of factors associated with 'banner blindness' by investigating users' memory of banners and their attitudes towards the advertisement. This paper tests the hypothesis that users' memory of banners and their attitude toward banner advertisements correlate with context congruence as well as with the users' task orientation as investigated by Zanjani, Diamond, and Chan (2011). The interaction effects between congruence and user task orientation on banner recall, recognition and attitude are examined, distinguishing between 'surf', 'goal' and 'action' orientation. In the present study, conducted online, 329 participants took part: 189 female, 136 male and 4 unspecified. The mean age was 30.84 years (SD = 12.20, range = 16-69). The participants in the three task orientations differed in regard to their recognition of ad banners, while in regard to recall only differences between surf mode and the two information-oriented modes were found. Analysis of interaction between the task orientations and banner-website congruence reveals that it is only in action mode that a congruent banner increases banner recognition, albeit with weak significance. In no other setting did the influence of banner-context congruence bear significantly on the attitudes or memory of the user. The implications of these results are discussed and recommendations are made regarding future research into banner blindness.

Keywords: Internet advertisement, banner blindness, task orientation, congruence

Unblinding the Internet Users to Online Ad Banners

The Internet has been open to commercial traffic since the early nineties. Today, Internet Display Advertising (IDA) – featuring visual advertisements as banner ads or Flash-based rich media – is one of the most common types of Internet advertisement (Aksakalli, 2012). In 2010, 4.9 trillion advertisement displays appeared on US Internet users' screens (Radwanick, 2011). To measure the effectiveness of IDA, practitioners and researchers have commonly focused on what is known as the click-through rate (CTR) of these advertisements, which is the ratio of the display times of an advertisement to the number of times its audience 'clicks' on. Since the appearance of the first banner advertisements, Yaveroglu and Donthu (2008) noted that, on average, CTRs have dropped from 7% in 1996 to approximately 0.5% in 2003.

Does the reduction in CTRs mean that banner advertisements are losing their effectiveness over the course of time? If we assumed that CTRs are an accurate measure of the effectiveness of advertisements, then the statistics above seem to indict banner advertisements as highly ineffective. However, the effectiveness of IDA is not solely described by CTRs, however. Besides the CTR, 'branding' is the second important objective (Aksakalli, 2012). 'Branding' means building brand-awareness and positive attitudes towards the brand or product (Hollis, 2005). Briggs and Hollis (1997) demonstrated that there is a response to advertisements on a preattentive level which may result in a positive attitude towards the product; however, this response was not reflected in the CTR. As well, Drèze and Hussherr (2003) provided a valuable insight into banner effectiveness using traditional memory measurements as recall and recognition. Consequently, some measurements independent of the CTR should be included in order to determine the effectiveness of IDA. The measurement given by CTR is an indirect indicator of the success of advertisements, as it does not reflect the underlying processes as attitude change or a better memory of the brand.

Consequently, taking the importance of branding into account, the decreasing CTR does not necessarily mean that banner advertisements are less effective. To complete the picture, diverse outcomes of exposure to ads should be accessed. The present study focuses on viewers' attitudes, their recall and recognition of advertisement banners to assess their effectiveness.

Banner Blindness

The tendency among Internet users to ignore or avoid banner advertisements poses a challenge for the online advertisement industry (Pagendarm & Schaumburg, 2001). This tendency is known as 'banner blindness' (Benway, 1999). Banner blindness occurs when the user, whether consciously or unconsciously, ignores IDAs while navigating a website. A common indicator of banner blindness is that the banner advertisement leaves an insufficient memory trace in the user, such that the user does not have an improved memory of the brand nor does he have a more positive attitude towards the brand. There is a recognized need to identify the factors relevant to banner blindness to reassure the effectiveness of IDAs (Shamdasani, Stanaland, & Tan, 2001).

The term 'banner blindness' was coined by Benway (1998) to refer to users' failure to detect relevant information appearing in the form of a graphical banner. In a series of usability experiments in which the users were asked to complete certain tasks such as registering for an Internet course on the intranet, Benway observed that users had difficulties recognizing relevant information if it were presented in banner-like form. Big red-rimmed banners calling out: 'New! Internet courses!' were ignored in favor of less conspicuous, small menu-links, entitled: 'Courses'. From this and subsequent studies, Benway and Lane (1998) concluded that graphical banners are not useful to provide users with information, as they tend to be overlooked and not recognized in subsequent memory tests. Another conclusion is

that banner ads are viewed but not judged as being a source of credible information necessary to fulfill the users' tasks.

In the current research, the meaning of 'banner blindness' has been generally extended to the user's failure to attend to and remember advertisement banners on websites. Numerous studies examining the effectiveness of advertisement in the Internet have measured the extent of banner blindness using either eye-tracking technology (e.g., Drèze & Hussherr, 2003; Hervet, Guérard, Tremblay, & Chtourou, 2011; Nielsen, 2007; Owens, Chaparro, & Palmer, 2001) or solely traditional memory measures, such as recall and/or recognition (e.g., Bayles, 2000; M. Burke, Hornof, Nilsen, & Gorman, 2005; Pagendarm & Schaumburg, 2001). The results have been twofold: An eye-tracking study by Nielsen (2007) supports the claim that users tend to ignore all website elements resembling ad-banners, even when they do not actually serve any advertising purpose. No matter whether the users are looking for a quick fact or are absorbed by the website content, they tend to try to avoid the distraction by using certain navigation strategies. An earlier eye-tracking study by Drèze and Hussherr (2003) found that there is an approximately 50% probability that users will fixate on a banner. Similarly to Nielsen (2007), they assumed that Internet users have developed some strategies for consciously avoiding ad banners. M. Burke et al. (2005) have also suggested that users are consciously trying to avoid looking at banners, as the majority of the users' (probably involuntary) ocular fixations on the banners happened in the first eye-movement, and over half of them even before the banner appeared in the upper area of the screen. Specifically for news websites, Stenfors and Holmqvist (1999) investigated users' reading behavior and concluded that though users notice the advertisement while reading, they are able to deploy strategies to avoid remembering them, which explains the low recall and recognition scores in memory test after the trials.

Nevertheless, not all studies led to effects consistent with the claim of a consciously banner blind user. Recognition rate in the study by Bayles (2000) was exceptionally high: All participants could recognize at least one of two banners used in the study, and 74% recognized both. A recent eye-tracking study by Hervet, Guérard, Tremblay, and Chtourou (2011) found that more than 80% of users fixated on banners at least once during the trial. Also, a significant number of ads and brand names was recalled in comparison to no-banner condition. However, around 65% of all banners were not fixated on at all.

As for banner blindness in general, it is widely believed that Internet-experienced users manage to ignore banner-like web elements due to their expectations about ad banner location and its appearance. The literature supports the following explanation of user behavior. Users learn very quickly the structure of a webpage in order to locate useful information (Lapa, 2007; Nielsen, 2007). Having learnt that advertisement banners are not particularly helpful but rather distracting, the users learn to avoid them. This result is confirmed in multiple studies (e.g., M. Burke et al., 2005; Cho & Cheon, 2004; Drèze & Hussherr, 2003; Pagendarm & Schaumburg, 2001). The foregoing account of the processes leading to the development of banner blindness is more accurately explained using what is known as 'dual-processing' theory (Schneider & Shiffrin, 1977; Shiffrin & Schneider, 1977).

Dual-processing theory. The adaptation of Schneider and Shiffrin's (1977) and Shiffrin and Schneider's (1977) dual-processing theory and its extension to website context gives a promising explanation for the acquisition and development of banner blindness. Dual-processing theory distinguishes between controlled and automatic processing (Schneider & Shiffrin, 1977; Shiffrin & Schneider, 1977), whereby the attentional control of the subject is of importance. Controlled processing is directed by momentary intentions and goals. Automatic processing, on the other hand, is moderated by enduring dispositions, be they biological (as instincts) or learned (habits) (Hong, Thong, & Tam, 2007; Louis & Sutton,

1991). Our biological predisposition facilitates the automatic capture of moving or salient objects. Hence, by the first encounter of the website, a salient advertisement banner will attract attention through the automatic processing route. Later though, after getting experienced with ad-banners and learning that many are erroneous to the user's intended purpose, users engage in controlled suppressing of attention on banners. After several exposures to a website or repeated interactions, users learn the automatic suppression of salient elements, which mainly results in banner blindness (Sun, Lim, Peng, Jiang, & Chen, 2008). According to dual-processing theory, several factors influence banner blindness: When banner suppression is an automatic process, users' personal factors determine the extent of banner blindness, while at the controlled processing stage, momentary (e.g., task-orientated) intentions influence users' perception of the website as a whole and banners in particular. Especially for the novel users, examining the role of users' task orientation is useful for understanding of the banner blindness.

Effects of Task Orientation

The dissimilarities in the findings of Benway (1998, 1999) and Bachofer (1998) motivated Pagendarm and Schaumburg (2001) to explore the importance of users' task orientation. The divergent results of these studies, one finding a high degree of banner blindness and another very little banner blindness respectively, might have been originated in different task orientations of the participants. In contrast to Benway (1998) and Benway and Lane's (1999) goal-oriented usability studies, the participants in the eye-tracking study by Bachofer (1998) were browsing through an online magazine aimlessly, with the instruction to investigate the website in the way they preferred. The resulting recognition rate was comparable with that of print magazines (Perfect & Askew, 1994). Though the results of the two studies cannot be compared directly due to their differing methodologies, they point to the general idea that the task orientation affects user's memory of banners. Also, Hassenzahl

(2003) states that in terms of website perception, a user with a goal to accomplish should be differentiated from a user without a goal.

Mainly, in the research investigating the effects of different task orientation focuses on distinction between goal-oriented and not-goal-oriented behavior. Several studies point out that users without any informational goal ('surfers' or 'aimless browsers') perform better in terms of memory of advertisement material than users with a goal-directed navigation style (e.g., Danaher & Mullarkey, 2003; Pagendarm & Schaumburg, 2001; Yesilada, Jay, Stevens, & Harper, 2008; Zanjani et al., 2011). Aimless browsers also have longer fixations on the banner ads (G. Kim & Lee, 2011). The foregoing findings strongly indicate that research into banner blindness should take into account users' 'task orientations'.

The literature on task orientation and banner blindness has been based on a dichotomous conception of goal-driven information acquisition and free surfing, while over 100 user types have been identified and described in The Web Motivation Inventory (WMI) (Rogers, Wang, Rettie, & Alpert, 2007). The core distinction between the two predominantly examined task orientations is that the goal-oriented information 'seekers' navigate through the Internet with the intention of finding out specific information about a topic, whereas the behavior of 'surfers' is curious, exploratory and playful, and they navigate without a specific purpose (Rogers et al., 2007). However, this twofold division of users' behavior is not sufficient for a profound examination of banner blindness on the Internet. For a better insight, a more precise distinction of users' task orientation should be implemented.

The present paper examines banner blindness according to three types of task orientations, adding 'action mode', proposed by Hassenzahl (2003), to the abovementioned pair of user task orientations. Action mode describes the behavior of a user who browses through a website without a specific informational goal, but who nevertheless seeks to expand his knowledge. In this mode, the user follows navigation paths in the website which

the user finds interesting or entertaining. Dörk, Carpendale, and Williamson (2011) proposed a similar concept for this user type, coined 'information flaneur', referring to the French term of a flaneur, a city dweller, whose primary aim is to experience the space and the crowds around him, without having a concrete aim in mind. The information flaneur stands analogously for this curiosity-driven behavior on the Internet. In empirical terms, the study by van Schaik and Ling (2009) has implemented the concept of action mode along with goal mode on the basis of Hassenzahl's (2003) work. However, they acknowledged an insufficient differentiation of the participants' task instructions, which might account for the lack of an influence on their dependent variables, namely evaluation of website attractiveness. This paper aims to adopt a clearer distinction between the two modes.

By incorporating a threefold approach to navigation modes – based on goal, action and surf modes - this thesis aims to provide a more nuanced analysis of banner blindness. For an ecologically valid approach, online news pages were chosen as an adequate environment for a natural implementation of the three task orientations.

The predictions of the extent of banner blindness in different task orientations can be given taking in account the incidental exposure paradigm, described by Shapiro, MacInnis, and Heckler (1997).

Incidental exposure paradigm. The incidental exposure paradigm gives an account of the impact of task orientation, on memory and attention to banner ads: Given an informational task, the primary information (e.g. the main content of the website) is mainly at the direct focus of attention, whereas the secondary information (e.g. banners ads) is not, making the memory traces weaker, less specific and less recallable (Shapiro et al., 1997). The more directed the information task, the more narrow the user's focus. Therefore, a goal-oriented user looking for specific information focuses on the primary page content, which based on prior experiences had lead to the fulfillment of his goal. Consequently, he does not

attend the peripheral information. On the other hand, a user in an action mode and especially in the surf mode with a wider focus has more resources available. In such a manner, the peripheral material on the website can compete for his attention and leave stronger traces in his memory. Hence, it is expected that

H1: The more directed the task orientation, the worse the memory (recall and recognition) of advertisement banners.

Congruence

Another factor which is believed to affect both the cognitive and affective states of users is the banner's perceived congruence with the host website content. This hypothesis is supported by diverse publications (e.g., Davidaviciene, 2012, May; Y. Kim, Zhang, & Lankes, 2009; Zhang & Kim, 2008). Congruence is found to influence both the attitudes towards advertisement banner and the host website (e.g., Moore, Stammerjohan, & Coulter, 2005; Newman, Stern, & Sprott, 2004) and the memory of the banner (e.g., Danaher & Mullarkey, 2003; McCoy, Everard, Polak, & Galletta, 2007; Zanjani et al., 2011).

In this paper, 'congruence' means the degree of relatedness between the content of the host page and the content of the ad banner. As defined by Newman et al. (2004), congruence is a matter of 'consistency between product-class associated with the advertisement and the web site'. Congruence is thus about whether two objects are perceived by the user as 'belonging together'.

Effects of congruence on recall and recognition. There is an inconsistency in the various findings on the effect of congruence on the effectiveness of banner advertisements. In terms of memory of congruent and incongruent banner ads, incongruence with website content had a more favorable effect on recall and recognition of ads (Moore et al., 2005), as well as on retention of website information (McCoy, Everard, Galletta, & Polak, 2004; McCoy et al., 2007).

Conversely, despite finding no effect of congruence on the duration of ocular fixation on the banner ad, Hervet et al. (2011) found better memory of congruent textual ads than incongruent ones. Also, Yaveroglu and Donthu (2008) found that brand name is better recalled after being displayed on a content-relevant website. Finally, Zanjani et al. (2011) observed increased memory of congruent ads for goal-oriented users, but not for surfers.

Two theories provide explanations for the divergent findings. The first theory is the cognitive priming approach (Yi, 1990) describes the context of the host website as a cognitive prime, activating the semantically or conceptually related memory contents. This activation process facilitates the memorizing of banners as related concepts, resulting in better memory of congruent information, or in our case, congruent banner advertisements.

The second theory includes the input interference (Tulving & Arbuckle, 1966) and competitive interference (R. Burke & Srull, 1988), shedding light on why two closely related stimuli (e.g. two banners for the same product category or banners closely related to the content of the host page) shown simultaneously or shortly after each other result in bad recall. In terms of the user's cognitive processes when navigating the website, the dissimilarity of the stimuli should therefore provide an easier encoding of unrelated banner and host page and therefore should lead to better recall for incongruent banners.

Goal impediment. When the task orientation of the user is taken into account, following the research by Zanjani et al. (2011), the goal orientation is expected to moderate the relationship between congruence and memory. According to the goal impediment proposition put forward by Ha and McCann (2008), goal-oriented users screen out irrelevant information obstructing their aims. Congruent ads, however, might be perceived as beneficial for fulfilling their goal and therefore may catch the users' attention more easily. Additionally, in action mode, where users follow their curiosity and spending time on the website of their

interest, congruent banners may be perceived as being more relevant to their interest and, hence, they may pay more attention to the ads. Thus,

H2: Goal-directed information seekers and action-mode users have better memory of congruent than incongruent ads.

Effects of congruence on attitude. Besides affecting memory, the degree of congruence of the ad banner and the host website has been shown to affect users' attitudes. By and large, it was found that high congruence resulted in a better overall attitude toward ads and the website itself than low congruence (e.g. Moore et al., 2005; Newman et al., 2004; Shen & Chen, 2007). So, as Broder, Fontoura, Josifovski, and Riedel (2007) point out, the relevance between Web ads and their surrounding content is one of the main success factors for contextual ads. This raises the question of whether this relationship also holds true for the Internet advertisement banners, and if so, why.

Processing fluency offers an explanation for a better evaluation of congruent material. Since congruent material is easier to deal with than incongruent material, the perceived ease of processing induces a positive affect (Reber, Schwarz, & Winkielman, 2004; Reber, Winkielman, & Schwarz, 1998), which is carried over the perceived stimulus, as for instance a website. Thus, users have better attitudes towards stimuli which are easy to process (Reber et al., 2004), for instance, congruent banner ads.

Adapting the processing fluency approach to the current study, we expect the congruence between banner advertisement and the host website content to enhance the ease of processing, which in turn will enhance positive evaluations by users.

H3: The attitude ratings for an ad banner displayed on a news page with a congruent topic will be higher than those for the same banner in an incongruent context.

Further Factors Affecting the Extent of Banner Blindness

It has been widely investigated how the extent of the banner blindness can be mitigated. A multitude of boundary conditions have been identified and they can be categorized as follows: Those relating to the web advertisement itself (as animation, location and content) and the advertised product, those relating to the medium displaying the advertisement and its content, various factors related to the user, and the interaction between these groups (Zhang & Kim, 2008). A brief overview of the most prominent and relevant factors shall be provided.

In investigating the role of the ad banner's location, the banners located at the top of the website were found to be the most successful (Davidaviciene, 2012). Banner advertisements at the top of the webpage were more often viewed (M. Burke et al., 2005; Josephson & Holmes, 2002; Sundar & Kalyanaraman, 2004), and attracted more attention than those on the right side (Owens, Chaparro, & Palmer, 2011). To achieve higher effectiveness and maintain the natural appearance of the website, the ad banners will be consequently placed on the top of the page above the logo, which is also a usual location for banner ads on a news website.

The design elements of ad banners such as color scheme or banner size showed some influence on the users' response to banner ads: Larger banners triggered a higher CTR than small banner ads (Li & Bukovac, 1999). Given this finding, in this experiment, the banner size was kept standardized, as used on the actual website. It has also been found that medium level of color is associated with a better CTR than low or high levels of color (Lohtia, Donthu, & Hershberger, 2003); as such, in this experiment, the color scheme of the banners used in the prestudy and the main study were controlled.

Another identified boundary condition is viewer's expertise in Internet usage (Dahlen, 2001). However, it has been found that the probability of actually seeing a banner is not

affected by the level of expertise (Drèze & Hussherr, 2003). By contrast, the content of the banner, the advertised product, has been found to be important: For functional products ('think' products, purchased guided by rational motives), banner ads produce a higher CTR. However, for expressive products ('feel' products, associated with affective purchase motives), ad banners are more useful for branding and need more time to 'wear in' to achieve high CTR (Dahlen, 2002; Dahlen & Bergendahl, 2001). Banner ads for high involvement products (for which the user is willing to invest time and effort into research about it) perform better in terms of CTR than those for low involvement products (Dahlen, Ekborn, & Morner, 2002). Also, the level of personal involvement with a product plays a crucial role for the CTR: Users with a low product involvement are less likely to click on a banner (Cho, 2003). Given the above findings, the banner ads were controlled in terms of their content with an emphasis on functional, rather than expressive products.

Aims and Expectations of the Study

Based on the theoretical findings, this study aims to find the effects of the different task orientations on memory of banner advertisements. The recall and recognition of users in the information-oriented conditions (as goal and action modes) is expected to be worse than that of users in surfing mode. Another factor, congruence between banner ad and host page content, is anticipated to influence users' memory of the banners in the information-oriented conditions. Also, congruence is expected to have a beneficial effect on users' attitudes toward the ad banners.

Methods

Participants

The majority of participants were recruited from the faculty-internal participants database (Department of Psychology, University of Basel), consisting of volunteers who

signed up to receive invitations to ongoing studies. In total, 2000 e-mails were distributed. Additionally, the invitation to participate in the study was cross-posted and shared multiple times on Facebook and on the online-marketplace from the University of Zurich. From initially 606 persons who followed the link to the survey, 329 completed it. The mean age of the sample is 30.84 years (SD = 12.20, range = 16-69). Women are overrepresented with a 57% share in the data (189 female, 136 male, 4 unspecified).

Out of the participants who are familiar with the news website nzz.ch (51%), 7.9 % use the website daily, 14.5% use it several times pro week, 15.8% weekly, 52.1% rarely use it and 9.7% never use this website.

Procedure and Materials

Design and independent variables. The experiment had a 3x2 independent measures design. The first between-subject factor was the task orientation with three levels (goal-oriented mode, action mode, and the surfing mode), accompanied by modified instructions from van Schaik and Ling (2009) for the goal and action mode. The surfing mode was adapted from Zanjani et al. (2011).

The second between-subjects factor was the level of congruence between the content of the news page and the ad banner, with two levels (high vs. low congruence). A prestudy was conducted to determine the most congruent and incongruent banner ad /news page combinations.

To reassure that the effects on the dependent variables would be due to congruence and not to specificity of material, two versions of congruent/incongruent banner-page combinations with different topics were combined crosswise. The two topics (energy and public transportation) served the purpose of controlling the interaction between the incongruent contents of banner and page and were not used as primary independent variables.

In each condition, two experimentally modified news pages (overview and article) were

presented. Figure 1 gives an overview of the experimental conditions.

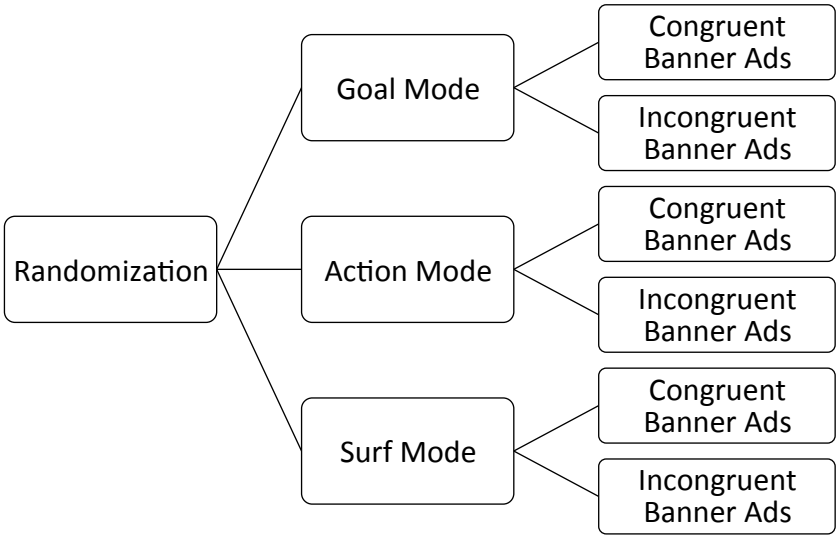


Figure 1. Study design with six experimental conditions. Every participant was assigned to one condition, either for topic 'energy' or 'public transportation' (not displayed in the figure) and saw two news pages (overview and article), each containing an ad banner.

Measurement of dependent variables. The first group of between-subject dependent variables was the users' *memory* of the two presented banner ads, reflected in separate evaluations of the users' free recall and recognition. For free recall, the participants wrote down everything they remembered about the advertisement banners on the shown pages including brand names, product types or descriptions of banner elements. An independent condition-blind judge coded the recall scores. The coding scheme was similar to those of Newman et al. (2004) and Norris and Colman (1992):

- For a correct or virtually correct (e.g. 'Swisssolar' instead of 'Swissolar') recall of the brand name, the maximal score of 2 points per recalled banner was granted.
- For a brand name recalled incorrectly but containing recognizable parts of it (e.g. 'Post' instead of 'Postauto'), a product type (e.g. 'Solarstrom') or description of one or multiple banner elements (e.g. a yellow bus), one point was scored per banner.
- Finally, zero points were given for recalling nothing related to the ad banners.

Therefore, for the two presented banners, the recall scale ranged from zero (nothing

recalled/incorrect recall) to four (both brand names recalled correctly).

To see whether the participants could recognize the banners, the two target banners alongside with ten distractor banners were presented and the participants clicked on all the banners they thought they had seen on the preceding pages. Each correctly recognized banner received one point, resulting in the maximal score of two points. To account for false positives, an adjusted recognition score was computed, incorporating the ratio of correctly recognized banners and totally indicated number of banners. Finally, the three scales were transformed to range from zero to one.

The second group of between-subject dependent variables reflected the *attitudes of the users*. The attitude toward the advertisement banner was measured by a four-items questionnaire by Martìn-Santana and Beerli-Palacio (2012), extended with three items for ad-credibility from Beltramini (1988) and one 'general' item used by MacKenzie and Lutz (1989). The attitude towards the brand being a possible co-variable was accessed through three items from Martìn-Santana and Beerli-Palacio (2012).

The evaluation of the users' attitude toward the host website, nzz.ch was based on three items from Grazioli and Jarvenpaa (2000). Finally, general attitude towards advertisements was accessed with four items, following Mehta and Purvis (1995).

Also, the prior knowledge and frequency of use of online news sites and specifically of the nzz.ch were measured on a five-point Likert scale from 1 (*never*) to 5 (*daily*). Finally, a manipulation check of congruence was conducted using three items from the prestudy, reflecting how well the content of the page and the ad banner were perceived to fit together.

All the responses (unless specified) were recorded on a seven-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

Materials. The survey was conducted with an on-line survey platform, Unipark (ww2.unipark.de). Four pages from a local online news website 'Neue Zürcher Zeitung'

(nzz.ch) were used as host pages. On the one side, two slightly different types of pages, both very common for a news website, were employed – dossiers overviewing briefly four articles, and full-length articles. Hereby, the three task orientations can be naturally used – looking for an answer in goal mode, for interesting contents in action mode and viewing the pages in surfing mode. On the other side, with regards to content, two different topics ('energy' and 'public transportation') were selected to control the influence of the topical specificity. Therefore, the experimental pages contained a dossier and article for each of the two topics. Combined with either a congruent or an incongruent ad banner, the eight experimental stimuli are presented in Appendix A.

The width of the pages in pdf format was 1000 pixel. The webpages were modified with GIMP-freeware in order to neutralize the influence of further graphical material on the right hand-side of the page. The colorful photo-teasers were replaced with the news site common textual teasers (as 'Börseninformation' and 'Jobs of the week'). All other advertisement banners were erased. The standard banner size 994x118 pixels and its location above the NZZ logo were maintained as they usually appear on the nzz.ch news page. The Prestudy section describes stimuli selection procedure and the combination scheme of banners and pages.

Prestudy. A prestudy with 72 subjects in total was conducted in order to determine the most congruent banner ad-web page combination. The mean age of the sample was 35.25 years (*SD* = 16.16, range 17-71 years), 56.6% female and 31.3% male, 12% unspecified.

Initially, 12 banners related to different topics were designed, as presented in Appendix B. Each banner consisted of a background, company name/logo and an original slogan. Each banner was combined with each of the six initially chosen news pages concerning three different topics: Energy, public health and public transportation. Based on descriptive results of the prestudy, four stimuli (banner-page combinations) were chosen for the congruent and

four for the incongruent condition. In the congruent condition, banners and pages dealt with the same topic. In the incongruent condition, the pages containing information about energy were matched with banners advertising for public transportation and vice versa. 'Public health' topic, which received less pronounced congruence ratings, was excluded from the main study. The stimuli were chosen in such a way as to have: a) high ratings for congruence in a congruent condition and low ratings in an incongruent condition and; b) similar congruence ratings for both topics, so that energy banners were perceived as congruent to energy pages as the public transportation banners to the public transportation. Table 1 depicts the scheme, which provided the basis for the stimuli used in the main study. The congruent stimuli were perceived to be significantly more congruent than the incongruent ones, compared with a series of two-tailed *t*-tests for independent samples. The means and statistics for congruence and incongruence scores can be seen in Table C10 in Appendix C.

Table 1

Overview of the Composition Scheme of the eight Experimental Stimuli

		Banners			
		Congruent		Incongruent	
Pages		Energy	PT	Energy	PT
Energy	Dossier	IWB			RhB
	Article	Swissolar			Postauto
PT	Dossier		RhB	IWB	
	Article		Postauto	Swissolar	

Note. 'PT' stands for 'public transportation', 'RhB' for 'Rhätische Bahn'.

Additionally, further banner factors believed to influence memory were measured in order to keep them constant across all of the experimental banners. Those factors were familiarity for the brand, color level, banner's salience and intrusiveness and its 'state of art' (i.e., the perceived professionalism of the banner's visual composition). The banners' scores on those dimensions can be found in Table D11 in Appendix D and the full questionnaire for the prestudy can be found in Appendix E.

Procedure. The first page of the online survey containing a brief description of the study without revealing its factual goal could be accessed through a link. The subsequent Unipark-randomization filter referred each participant to the instructions of one of the six experimental conditions, for either one of the two topics.

After reading the instructions for the first news page (overview), the participants saw its screenshot. The task specified in the instructions could be resolved on the same page. The next page displayed the instructions for interacting the article. Subsequently, a screenshot of the article was presented with a text field for the answer on the bottom of the page. The instructions differed according to the task orientation condition.

- In the goal mode, participants had to imagine they were interested in a certain topic and would like to find an answer about a specific question. On the overview page displaying four brief articles, they were asked to select an article, which would be the most useful for their aim. For the second page, the article, they were asked to answer a question in note form in the box below the article.
- In the action mode, participants first were asked to pick an article from the overview they considered most interesting for themselves and for the article to write down what from this article what they would tell a colleague during a coffee break.
- The surfing mode did not contain specific instructions – participants were asked to take a look at the page and, if desired, they could leave comments in the box below the page, same instructions for both pages.

The detailed instructions (in German) can be found in Appendix G.

After being exposed to the experimental material, the participants specified their demographical data and the attitude towards the news page nzz.ch, partially in order to induce a delay between the exposure and memory measures. On the next pages, participants indicated their recall and recognition of the banners. Thereafter, the attitudes towards the

target banners, corresponding brands and the general attitude toward online advertisement were collected. Finally, a manipulation check for perceived congruence followed. The complete questionnaire of the main study with all items can be found in Appendix F. On the last page, the participants were invited to write down their e-mail address in order to participate in the raffle of five gift certificates à 50 Swiss Franks from Digitec.ch, which was the incentive of the study.

Results

The analysis was conducted with the SPSS 20-statistical package. An alpha level of .05 was used for all statistical tests, unless specified.

Manipulation check

To determine whether the manipulation of congruence as measured in the prestudy was also successful in the main study as well, two independent *t*-tests based on the congruence condition were run for the banners with homogenous variances. For the IWB, $t(150) = 6.22$, $p < .001$, and Postauto, $t(167) = 2.59$, $p = .01$ banners, there were significant differences in perceived congruence. For the other two banners, a Mann-Whitney *U* Test showed significant differences in congruence ratings for Swissolar, $U(79, 76) = 1380$, $p < .001$, and Rhätische Bahn, $U(81, 89) = 1356$, $p < .001$ banners in the two experimental conditions, indicating a successful manipulation of congruence.

Descriptive Statistics

Firstly, descriptive measures of recall and recognition of the two banners were assessed. To improve interpretation and comparison, the original scores were transformed from the 0-2 scale for recognition and 0-4 scale for recall to a 0-1 scale, with 1 meaning a perfect recall and recognition for both banners. Table 2 shows the mean scores for the two

memory indicators, recall and recognition of ad banners in different task orientations (goal, action and surf), subdivided into congruent and incongruent banner-page conditions.

Table 2

Descriptive Statistics: Means and Distribution of Transformed Scores for Recall and Recognition, by Task Orientation and Congruence

		Goal			Action			Surf		
		Congr.	Incongr.	Total	Congr.	Incongr.	Total	Congr.	Incongr.	Total
Recall	*M*	.11	.11	.11	.10	.13	.12	.27	.28	.28
	SD	.21	.23	.22	.23	.23	.23	.34	.33	.33
Recognition	*M*	.21	.21	.21	.40	.31	.35	.51	.51	.51
	SD	.29	.31	.30	.32	.38	.36	.36	.39	.37

Note. *M*=mean and *SD*=standard deviation are indicated. "Congr." and "Incongr." indicate the corresponding congruence condition.

The Influence of the Task Orientation on Recall and Recognition

For a closer investigation of Hypothesis 1, the memory scores were plotted to visualize expected differences in memory scores according to the task orientation. Figure 2 shows the transformed mean scores for recall (green solid line) and recognition (blue dashed line) for the three task orientations: Goal, action and surf.

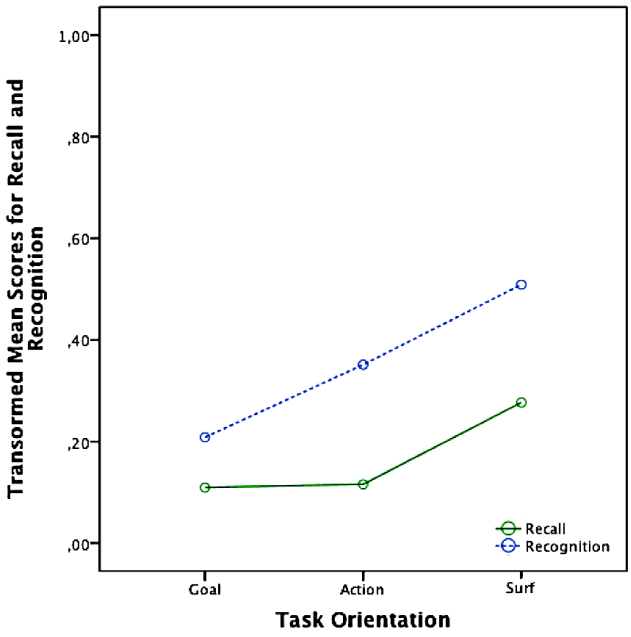


Figure 2. Transformed mean scores for recall and recognition. The categories are separated by task orientation.

Additionally, two crosstabs (Tables 3 and 4) indicate the row percentages of participants who achieved different scores in recall and recognition in each task orientation. The original scales range from 0-4 for recall and 0-2 for recognition. The differences in expected and observed percentages are documented with the Pearson's χ^2.

Table 3

Crosstab: Row Percentages of Banner Recall by Task Orientations

	0	1	2	3	4	Total
Goal	33.2%	19.2%	26.8%	8.3%	8.3%	29.2%
Action	41.7%	26.9%	26.8%	41.7%	8.3%	36.8%
Surf	25.1%	53.8%	46.4%	50.0%	83.3%	34.0%

Note. Pearson's χ^2 : 32.40, *df* = 8, *n* = 329. The values 0-4 are explained in Methods, section Design.

Table 4

Crosstab: Row Percentages of Banner Recognition by Task Orientations

	0	1	2	Total
Goal	42.1%	23.3%	9.1%	29.2%
Action	37.2%	38.0%	32.7%	36.8%
Surf	20.7%	38.8%	58.2%	34.0%

Note. Pearson's χ^2 : 35.57, *df* = 4, *n* = 329. 0 = no banners were recognized, 1 = one banner was recognized, 2 = two banners were recognized.

Furthermore, for each banner, the numbers of participants who recognized a particular banner (coded with a numerical score of 1) and those who failed to recognize a one (coded with a score of 0) in each task orientation can be found in Table 5. The Pearson's χ^2 with *df* = 2 showing significant differences in expected and observes frequencies in recognition between the three task orientations. Except for the IWB banner showing marginal significance of $p = .072$, all other banners were recognized differently depending on the task orientation.

Table 5

Crosstab: Number of Participants who Recognized the Banner Correctly (1) and of those who did not (1), Tested for Significance with Pearson's χ^2 (df)

	Goal		Action		Surf		Total		$\chi^2(2)$
	0	1	0	1	0	1	0	1	
IWB	30	10	39	23	28	26	97	59	5.26
Swissolar	36	4	44	18	33	21	113	43	9.72**
RhB	41	15	33	26	23	35	97	76	13.03**
Postauto	45	11	41	18	26	32	112	61	16.64***

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

To determine whether there was a main effect of task orientation on differences in memory of the advertisements, a nonparametric Kruskal–Wallis analysis of variance was chosen for the heteroscedastic nonnormal distributed recall scores as well as for nonnormal distributed recognition scores. There was a significant difference in recall, $H(2) = 25.66, p < .001$, and recognition, $H(2) = 34.87, p < .001$ of advertisement depending on the task orientation.

Furthermore, six independent two-tailed Mann-Whitney *U* tests were run to compare the memory scores between all task orientations for both memory indicators. The difference between goal and action mode when comparing recall scores was the only insignificant finding, $U(96, 121) = 5774, p = .92$, with all other pairwise comparisons showing significant differences after the Bonferroni correction setting the alpha level to α/n comparisons, .017, as indicated in Table 6.

Table 6

Mann-Whitney U Test Scores, Comparing the Task Orientations Pairwise for Recall and Recognition

	Goal - Action	Goal - Surf	Action - Surf
	U (n_1, n_2)	*U* (n_1, n_2)	*U* (n_1, n_2)
Recall	5774 (96, 121)	3838 (96, 112) ***	4892 (121, 112) ***
Recognition	4562 (96, 121) **	3045 (96, 112) ***	5233 (121, 112) **

Note. n_1 indicates sample size for congruent condition, n_2 for incongruent. ** $p < .01$, *** $p < .001$.

False positive rate in recognition. The false positive rate of recognition of 1.5% was fairly low for the banners, which were unrelated to the topics of the page or banner (banners for 'health care', which were screened out in the prestudy). A slightly higher percentage of 5.5% emerged for the 'energy provider' banners, which were not target banners. The 'public transportation' banners achieved the highest false positive rate: 14% for the BVB banner and 25% for the SBB banner, being especially high in the condition where the topic of news pages was public transportation (44% vs. 4.4% for the pages concerning energy), meaning that almost every second person who read the article about public transportation falsely indicated having seen the SBB banner. Generally, 91% of the participants indicated to have recognized maximal of two banners, and 1% have indicated five banners.

To deal with the false positives, an adjusted recognition score was computed. The number of correctly recognized banners was divided by the number of all indicated banners for every participant. The achieved quotient was subsequently transformed to a 0-1 range, as previously recall and recognition scores. To test whether false positives have significantly influenced the recognition score, the original recognition scores were compared with the adjusted recognition scores. A Wilcoxon's matched-pairs test was run, revealing significant decrease of recognition performance if the total indicated number of banners is taken in account, $T(94) = -8.55$, $p < .001$. Hence the adjusted score differed from the original one, the same series of test as for recognition and recall were run to test whether the results hold for the adjusted score. First, significant differences in recognition scores between the three task orientations were assessed with a Kruskal-Wallis H test, $H(2) = 17.07$, $p < .001$. Subsequently, the task orientations were compared pairwise with three two-tailed Mann-Whitney U tests. The only significant difference was found between goal and surf modes, $U(54,89) = 1519$, $p < .001$. The differences between goal-action, $U(54,87) = 1890$, $p = .036$, and action-surf, $U(87,89) = 3195$, $p = .022$, were not significant on Bonferroni-corrected

significance level ($\alpha = .017$).

Differences in recognition depending on serial position of the banner. To determine whether the recognition rate of participants differed between the first and the second presented banner, series of Wilcoxon's matched-pairs tests were conducted depending on the banner serial position (IWB and RhB banners were always on the first page and Swissolar and Postauto were always on the second one) and separately for each task orientation. No significant differences were found between recognition scores for first or second banner in any task orientation. Table H12 in Appendix H shows the *T* scores for the Wilcoxon's test.

Differences in memory of banners with different content. Overall, there was a significant difference in recall scores depending on banner content; the two banners for public transportation (Rhätische Bahn and Postauto) were recalled significantly better than the banners for energy providers (IWB and Swissolar), $U(156,173) = 11{,}508$, $p = .005$. This tendency was not significant for recognition, $U(156,173) = 12{,}171$, $p = .096$. However, split into the three task orientations, the differences between the banners with different content disappear on the Bonfreroni-correctred significance level.

Differences in memory depending on familiarity with the website. Approximately half of the participants indicated that they were familiar with the online news website nzz.ch. The effects of familiarity with the site were investigated for recall and recognition, in relation to each task orientation. Three independent two-tailed Mann-Whitney *U* test were conducted to compare the knowledgeable nzz.ch readers with those who did not know nzz.ch. In no task orientations were significant differences between the two groups found. Moreover, evaluating the memory performance of the two groups independently with two Kruskal-Wallis *H* tests, resulted in the same pattern as already observed for the entire sample. The recall and recognition scores differed between the task orientations: For the participants who knew nzz.ch, recall, $H(2) = 11.96$, $p = .003$, and recognition, $H(2) = 24.18$, $p < .001$ differed

depending on the task orientation. Similarly for the participants not familiar with the nzz.ch, for recall, $H(2) = 11.53$, $p = .003$, and recognition, $H(2) = 9.92$, $p = .007$, significant differences between the modes were found.

Exposure duration. Regarding the time spent on the news pages shown, a separate analysis was conducted. The extreme outliers (over three times the length of the box) were identified with the boxplots and were excluded from the analysis. Figure 3 shows the mean time in seconds the participants spend on each of the two pages, split by the task orientation condition. Despite the fact that the articles to different topic did not have exactly the same length, the amount of time spent on the pages dedicated to energy topic and public transportation topic did not differ significantly across the participants. Comparing the congruent and incongruent conditions, the time spent on each page did not differ for any task orientation, meaning that congruent and incongruent banners were seen for a comparable amount of time.

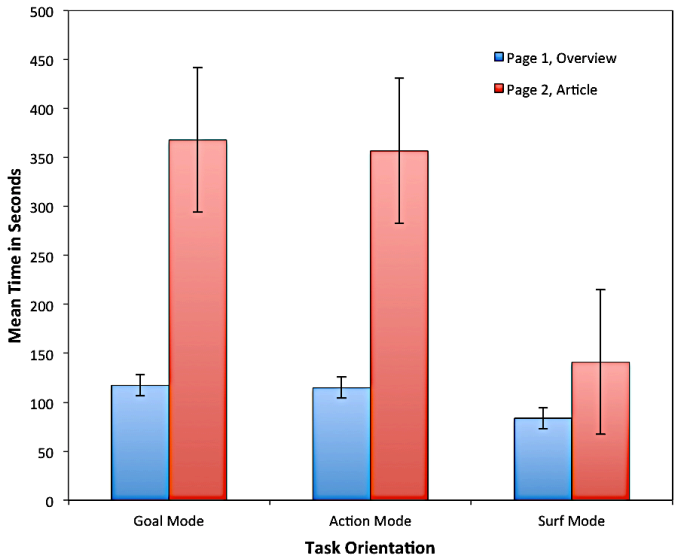


Figure 3. Average time the participants spent on the news pages, separated by the three task orientations. The error bars represent standard errors.

The users' task orientation had a significant influence on how long the users spent on the news page. Two-tailed Mann-Whitney *U* tests were used due to heterogeneity of variance. The surfers spent significantly less time on the news pages than the users in other two task

orientations, $U(89,106) = 1414, p < .001$ for goal mode and $U(107,106) = 1945.4, p < .001$ for the action mode, respectively. In the goal and action modes, the duration of stay was approximately the same, tested with a two-tailed *t*-test for independent samples, $t(194) = .03$, $p = .98$. The users contemplated the first (dossier) page significantly more briefly than the second one (article) in all conditions. Two-tailed *t*-test for related samples showed significant differences for goal mode $t(88) = -13.54, p < .001$, for action mode $t(106) = -10.73, p < .001$ and surf mode, $t(105) = -9.93, p < .001$.

Effect of Congruence on Recall and Recognition

As investigated in Hypothesis 1, the surf mode is associated with higher levels of recall and recognition of banner ads and the differences between the goal and action modes are only to be seen for the recognition scores. For Hypothesis 2, the effects of ad-content congruence on memory of the ad were investigated. The descriptive statistics in Table 2 showed transformed recall and recognition scores for the two congruence conditions in different task orientations. As an amplification of exploratory analysis, Figure 4 visualizes the influence of banner-content congruence on the recall and recognition scores, respectively.

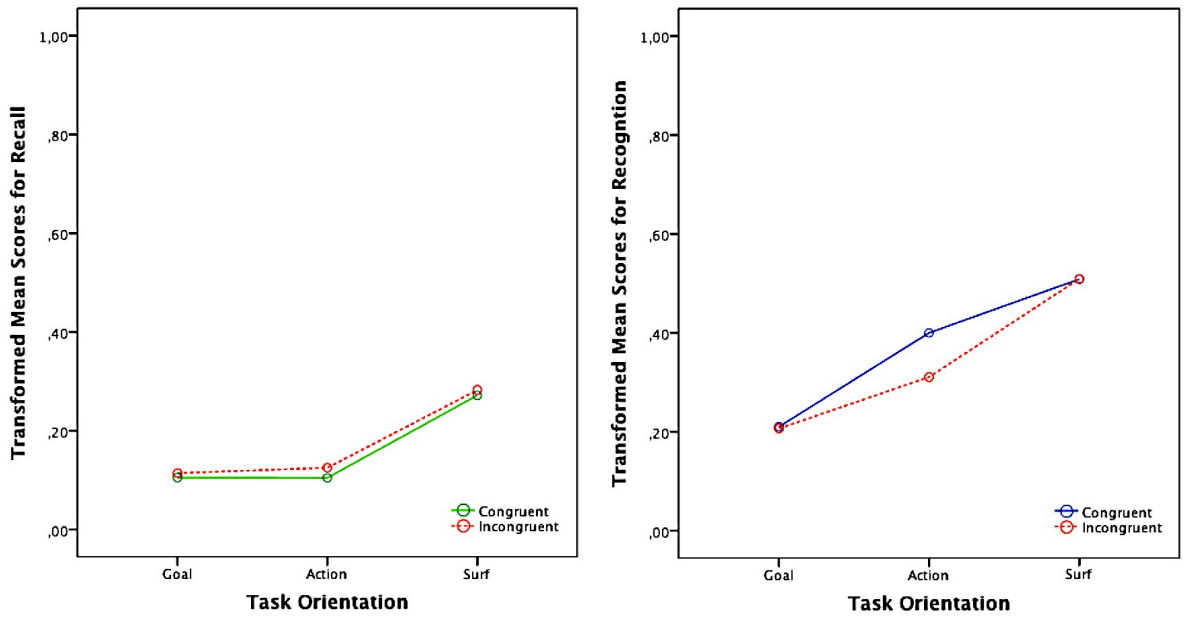


Figure 4. Transformed mean scores for recall (left) and recognition (right). The categories are separated by task orientation.

Regarding the influence of congruence on recognition scores, as can be seen from Figure 4 (right side), the scores for congruent and incongruent conditions in goal and surf modes coincide, contradicting Hypothesis 2. Nor is the difference in the action mode significant, $U(55, 66) = 1517.5$, $p = .091$, tested with Mann-Whitney U test. For the adjusted recognition scores, the difference between congruent and incongruent conditions however reaches significance level of $p = .034$, $U(55,66) = 1439.5$. For recall scores, the differences between the congruent and incongruent conditions were not significant in any of the task orientations. The details for the Mann-Whitney U tests can be seen in Table 7.

Table 7

Mann-Whitney U Test Scores Comparing Congruent and Incongruent Conditions per Task Orientation for Recall and Recognition

	Goal	Action	Surf
	U (n_1, n_2)	*U* (n_1, n_2)	*U* (n_1, n_2)
Recall	1132.5 (50, 46)	1717 (55, 66)	1518 (58, 54)
Recognition	1125.5 (50, 46)	1517.5 (55, 66)^t	1563 (58, 54)
Adjusted Recognition	1045 (50,46)	1439.5 (55,66)*	1480 (58,54)

Note. n_1 indicates sample size for congruent condition, n_2 for incongruent. $^t p < .10$, * $p < .05$.

To determine the congruence effects per banner, multiple Mann-Whitney U tests were conducted, comparing recognition score for a banner in congruent and incongruent contexts separately for every task orientation. No significant differences in recognition between the two congruence conditions were detected for any banner. Table I13 in Appendix I shows the results of the tests.

Effect of Congruence on Attitude to Banner Ad

The descriptive statistics presented in Table 8 show the means scores for the users' attitude to each ad banner, computed from the four items construct and attitude to the advertised brand, computed from the three items construct by Martìn-Santana and Beerli-Palacio (2012). For the two constructs, a confirmatory factor analysis was run to access the

factor loadings of the items every banner and brand. All the items exhibited reasonably high factor loadings, above .6. The reliability analysis indicated Cronbach's α for the banners between .83-.95 and for brands between .86-.94, indicating good internal consistency. The corresponding questions to banner and brand attitude can be found in Appendix F. The scores in Table 8 reflect the opinions on banner and brand of the participants who correctly recognized the banner.

Table 8

Descriptive Statistics: Means and Distribution of Attitude Scores toward Banners and Brands, by Congruence

		Congruent		Incongruent	
		M (SD)	*n*	*M (SD)*	*n*
IWB	Banner	4.59 (1.42)	37	4.30 (1.71)	22
	Brand	5.29 (1.27)	27	5.00 (1.44)	16
Swissolar	Banner	4.82 (1.38)	18	4.96 (1.36)	25
	Brand	5.20 (1.52)	12	4.82 (1.52)	16
Postauto	Banner	5.25 (1.10)	30	4.89 (1.31)	31
	Brand	6.01 (.96)	30	5.93 (1.02)	30
Rhätische Bahn	Banner	4.68 (1.05)	38	4.79 (1.44)	37
	Brand	5.32 (1.28)	38	5.56 (1.28)	35

Note. M=means, *(SD)*=standard deviations and *n*=number of participants are indicated. The answer scale ranged from 1-7, 'definitely disagree' to 'definitely agree'.

In the first step, four one-tailed *t*-test for independent samples were run to test the assumption that the congruence of ad banner to page content positively influences the attitude to the banner. However, no significant differences were found regarding attitudes towards the ads between the congruent and incongruent condition, contradicting Hypothesis 3. The *t*-test scores for the four-item construct can be found in Table J14 in Appendix J.

To expand the analysis, all of the attitude scores for each item of the eight initially gathered were compared in relation to the congruence condition. With one exception, the attitudes towards the ad in congruent and incongruent settings did not differ for any of the items of each banner. The descriptive measures for each item and the corresponding *t*-test

scores for all eight items can be found in Appendix K, Table K15.

Furthermore, the influence of preexisting attitudes towards the brand on attitudes towards the banner ad was controlled for, based on Item 2 from the 'brand attitude' scale ('X is a brand I like'). To determine whether congruence influences the attitudes for the ad, a one-way ANCOVA was implemented incorporating two levels of congruence as the independent variable, the users' attitude to the brand under investigation as covariable, and the users' attitude to the ad banner as dependent variable. The variance explained by congruence is neither substantial nor significant for any one of the four banners and therefore lets us refute Hypothesis 3. Brand attitude as a covariate, on the other hand, correlates with the measured banner attitudes. The results of ANCOVA are presented in Table 9.

Table 9

Results of ANCOVA comparing attitudes to congruent and incongruent banners, with attitude to corresponding brand as a covariate

	F(df1, df2) Congruence	*F (df1, df2)* Brand Attitude	*n*	
			Congruent	Incongruent
IWB	.07 (1, 38)	29.00 (1, 38)***	24	14
Swissolar	.54 (1, 17)	13.89 (1, 17)**	8	9
Postauto	.61 (1, 60)	8.52 (1, 60) **	30	30
Rhätische Bahn	.27 (1, 64)	6.64 (1, 64)*	32	32

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. The scores are indicated for the participants who recognized the banner correctly.

After splitting the participants in two groups with 'high' (5-7) and 'low' (1-3) attitudes towards brand, a separate one-way ANOVA was conducted to ascertain whether congruence led to better banner attitudes. In no group, the difference between congruent and incongruent banners was significant.

Furthermore, no differences were found between the attitudes of participants who remembered being exposed to the banner and those who did not. Nor were differences found regarding attitudes to banners with different content (energy or public transportation).

Discussion

The study has investigated the banner blindness phenomenon for established Swiss brands in the context of a well-known Swiss online news pages, which is the 4th most popular online news pages in Switzerland (http://hitparade.ch/website_charts.asp).

The most prominent finding from the data provides support for Hypothesis 1, highlighting the differences in memory of banner ads depending on the way users interacted with the news pages. The surf group without specific instructions inducing an informational need recalled and recognized the advertisements significantly better than the two information-oriented groups. This finding is consistent with the findings of Danaher and Mullarkey (2003), Zanjani et al. (2011), and G. Kim and Lee (2011). A need for information drew the focus of participants to the primary information, here the main textual content of the news page. Particularly, the differences in recognition between goal and action mode support that hypothesis that the more goal-directed the task orientation, the worse the memory of secondary information (Owens et al., 2011). The addition of an action mode proved to be warranted. It was found to be different from the goal-oriented mode, for instance in regard to recognition of peripheral information. However, more differentiated research on this particular mode – for example, incorporating materials of genuine interest to the viewers – is necessary.

The observed recall/recognition patterns, similar to those offered by Zanjani et al. (2011) raise the question about the differences between the implicit and explicit memory measurements. Being distinct memory processes (Tulving & Arbuckle, 1966), recognition is often considered a more robust measure than recall for advertisement (Ewing, Napoli, & du Plessis, 1999). This is reflected in the results of the present experiment, as the participants had considerably better implicit memory of advertisements. Therefore, a more differentiated analysis of recognition scores was conducted.

False positives for recognition. The extremely high false positive rate for the SBB, a branch leader in public transportation in Switzerland, might be due to the association with the presented article concerning trains run by SBB, and its value as a typical category representative. Generally, if a product is associated with a high brand awareness (Nedungadi & Hutchinson, 1985), it can possibly cause the impressions of falsely having been seen. In contrast, the banners advertising for the products unrelated neither to banner nor to website content ('public health care') caused the lowest false recognition rate, as would be predicted by cohort activation model. The semantically related distractors were found to generate a higher false positive rate than unrelated ones (Wallace, Stewart, Sherman, & Mellor, 1995), which also was as well seen in the data.

The high 'false-alarms' rate can confound and lower the recognition rates due to competitive interference (R. Burke & Srull, 1988). and should be handled with care. This suggests the following methodological point: In studies presenting familiar brands and testing memory, the brand leader should not be included in the test set given its tendency to act as a highly confounding distractor.

Role of exposure time and frequency. Regarding the length of stay on the presented news pages, the participants with a more directed task orientation (i.e. requiring reading the article as in goal and action modes) spent more time on the news pages than the surf group. This finding goes against the proposition asserted by Riegelsberger, Sasse, and McCarthy (2002), who expected a longer task duration in an undirected task as free browsing than in a directed (search) task and therefore better opportunities to attend the ad. In the present study, the free-browsing surf group spent significantly less time on the pages and remembered the banners better. This finding supports the importance of the informational orientation of the user, indicating that although less time was dedicated to the news page, more resources were available to process peripheral material, resulting in better memory of the ads. In addition to

this, though significantly more time was spent on the second than on the first overview page, the second banner was not recognized any better than the first one. As Danaher and Mullarkey (2003) suggested, a minimal level of exposure (around 40 seconds) is needed for user to be able to recall and remember the banners ad. However, the recognition did not augment substantially if exposure time exceeded the minimal threshold (Danaher & Mullarkey, 2003), as seen in the results by the comparison between the first and second pages. There were no substantial differences in memory of the first or second banner in both goal and action mode, where the times on the first and second pages differed significantly. Nor were there differences in memory between the first and second banner in the surf mode, where the users spent comparable amounts of time on both pages.

In terms of exposure, a minimal threshold of exposures should be reached for advertisements for them to have an effect on the consumer. Previous experimental findings point out that banner exposure increases product awareness and loyalty (Briggs & Hollis, 1997). However, the two-factor theory (Berlyne, 1970) suggests a U-shaped wear-out effect: after a too frequent exposure, the positive effects decrease. Familiar brands tended to wear out quickly, whereas banner ads for unfamiliar brands needed multiple exposures to wear in (Dahlen, 2001). Being exposed to the banners just once might have been insufficient to generate a difference in banner perception, despite operating with familiar stimuli (Drèze & Hussherr, 2003).

The Effects of Congruence on Memory

Despite the assumption that ad banner-page congruence benefits to the processing of banners for action- and goal-oriented readers, the data showed no significant differences in memory of congruent and incongruent banners, independent from the mode of use. The marginally significant difference in recognition scores for action mode with congruent banners being recalled better points towards the priming hypothesis (Yi, 1990). However, this

conclusion should be handled with care, as no information is available about the actual personal interest of readers in action mode, and the extent to which they were interested in the article and the related topic, in general.

Especially in the goal mode, where the focus lay on the search of a particular piece of information, congruent banners were expected to be processed more fluently by being less of a task impediment. However, in contrast to the experiments by Zanjani et al. (2011), familiar banners and pages were used in the present study. The fact that the advertised brands are considerably well-known might give an explanation for users' memory achievements. The banners in peripheral field of a user who is engaged in an informational task, e.g. reading an article, are processed and analyzed on a preattentive level (Ryu, Lim, Tan, & Han, 2007). In such a manner, the decision is made regarding whether the peripheral information (as banners) is useful for the task or for personal field of interest, and whether a shift of attention is required. Familiar brands are quickly identified as advertisements; consequently, the banners are screened out as irrelevant to the task at hand, without reflecting on their usefulness. So, congruence plays a minor role in engaging users' attention to well-known banners while searching for information.

Intrusiveness of the banners. In contrast to the experiment by Zanjani et al. (2011) where the advertisements were cluttered in an e-magazine, the experimental stimuli were regular banners located on the top of the page above the news page logo. In the study by Zanjani et al. (2011), the perceived intrusiveness of the clutter mediated the relationship between ad-context congruence and memory recall of the ad. However, the stimuli were not perceived to be particularly intrusive, as evidenced in the results of the prestudy, and did not take much space in relation to other page elements. The stimuli were placed on the usual location for the particular newspaper and had a regular banner size, aiming to investigate the phenomenon of banner blindness occurring in a 'natural looking', uncluttered environment.

Presumably, a certain threshold level of intrusiveness should be surpassed in order to get enough attention to the advertisements, which the banners in our study failed to reach. A high level of perceived intrusiveness however decreases memory of advertisements – a possible inverse U-shaped relationship between memory and intrusiveness is conceivable, especially in the goal mode. In future research, including a variable assessing the perceived intrusiveness of advertisement and negative feelings towards the ad may help to explore the boundary conditions for intrusiveness leading to improved memory.

Congruence and Attitude

Against expectations, no positive effects of ad-context congruence on attitudes toward the ad banner were found, contradicting the ease-of-processing assumption, which was based on the findings of previous experiments (Moore et al., 2005). An explanation for the absence of the beneficial effect of congruence may originate in the familiarity of the presented stimuli. Previous research on ad-context congruence and attitudes employed unfamiliar banners, to which the viewers had no opinion prior to seeing them. The already existing opinion about brands, banners or the host website, whether high or low, might have overweighed the attempt to induce attitude formation or change through the congruence manipulation. As Dröge (1989) suggests, ad likeability is correlated with brand attitude (for instance in a low involvement situation), which is strongly confirmed by the high correlation of brand and banner attitudes in the present study.

Conclusion

It was found that Hypothesis 1 was confirmed, underlining the importance of the way the readers interact with the news pages, their aims and interests for the memory of the advertisements. The results indicate that readers deeply involved with the article or looking up a particular piece of information will pay less attention to the advertisements than a freely browsing user. Based on this finding, we can speculate that banner advertisements placed on

pages serving mostly an informative purpose with a narrow focus on a certain topic (visited by the goal-oriented user during search for information) are more prone to banner blindness than if they are placed on pages serving not informational but entertainment purposes, assuming that mostly free-browsing users will visit such pages.

The effects of congruence on memory of the advertisement banners were less pronounced. Solely the action mode, the congruence between ad and page content seemed to improve recognition for the ads. More profound investigation of the action mode, under consideration of actual users' interest is required.

The Hypothesis 3 concerning effects of ad-context congruence on attitude towards the ad did not find any support in the data. The consequent implication would be that – at least for familiar brands with a preexisting users' attitude – the subtle manipulation of congruence will not work as well as for unfamiliar banners and brands as shown in previous research (Moore et al., 2005; Yoo, 2009; Zanjani et al., 2011). Therefore, there is no urgent need to customize the displaying environment for already well-known brands and banners ads in order to increase their effectiveness. For practitioners, this means that placing an ad banner for a well-known brand on a congruent website will not promote a better attitude towards the ad banner.

Limitations and Further Research

Several limitations were present in our study. First of all, the realism of the surfing situation, displaying news pages screenshots, was considerably low. To reach a higher external validity, a more realistic environment, for instance an entire news-website allowing a more natural browsing experience, should be used instead.

Furthermore, we can highly advise a careful choice of stimuli, especially of banners being highly popular or branch leader ads, as they can confound the results by being falsely recognized as the most typical category representative.

Also, repeated exposures to the banner ads might be interesting to consider as a factor causing better memory of ads (Moore et al., 2005). Exposure durations might be controlled to have a better insight into minimal and optimal banner ad exposure times for the best memory.

In accordance with the dual-processing theory, users experiencing novel environment initially engage in controlled processing to consciously avoid advertisements and after several exposures switch to automatic processing (Louis & Sutton, 1991). Interestingly, in our study, the participants familiar with the website and presumably processing the information through the automatic route, did not differ in terms of memory of the ads from the users who were new to the particular news page. However, it was not otherwise determined to which extent the automatic processing or controlled processing were executed. Accessing or even manipulating user's personal factors such as motivation or mood might be interesting to determine how ad suppression as an automatic process can be influenced (Danaher & Mullarkey, 2003).

For a better understanding of ad-context congruence, personal relevance of the product and preferences of the viewers should be taken in account. The action mode was especially defined by following personal interests. These factors may be important both for the attitude judgments and better recognition. An increased interest for the ads which are task and/or interest-relevant might show a stronger effect of congruence if manipulated more thoroughly (Wells, 2000). For future research concerning attitude formation, taking a variable measuring involvement with the product and the product type into the analysis, as in Dahlen et al. (2002), can be highly recommended. Additionally, investigating users' attitudes towards familiar brands and emotions during the ad exposure (Machleit & Wilson, 1988) can be investigated to gain a deeper insight into attitude changes.

Banner blindness is a complex phenomenon, influenced by multitude of factors, both user- and advertisement-specific. Further investigation of these factors would be worthwhile

to assure the effectiveness of Internet advertisements, whereby the attitude and memory for the ad can be used as important success indicators.

References

Aksakalli, V. (2012). Optimizing direct response in Internet display advertising. *Electronic Commerce Research and Applications, 11*(3), 229-240.

Bachofer, M. (1998). *Die Stern Bibliothek: Wie wirkt Werbung im Web?* Hamburg: Gruner + Jahr.

Bayles, M. (2000). Just how 'blind' are we to advertising banners on the web? *Usability News, 2*(2), 520-541. Retrieved from http://www.surl.org/usabilitynews/22/banners.asp

Beltramini, R. F. (1988). Perceived believability of warning label information presented in cigarette advertising. *Journal of Advertising, 17*(2), 26-32.

Benway, J. (1998). Banner blindness: The irony of attention grabbing on the World Wide Web. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 42*(5), 463-467.

Benway, J. (1999). *Banner blindness: What searching users notice and do not notice on the World Wide Web.* (Ph.D. thesis), Rice University, Houston, TX. Retrieved from http://hdl.handle.net/1911/19353

Benway, J., & Lane, D. M. (1998). Banner blindness: Web searchers often miss 'obvious' links. *Internetworking*, from http://www.internettg.org/newsletter/dec98/banner_blindness.html

Berlyne, D. (1970). Novelty, complexity, and hedonic value. *Attention, Perception, & Psychophysics, 8*(5), 279-286.

Briggs, R., & Hollis, N. (1997). Advertising on the Web: Is there response before click-through? *Journal of Advertising Research, 37*(2), 33-45.

Broder, A., Fontoura, M., Josifovski, V., & Riedel, L. (2007). *A semantic approach to contextual advertising.* Paper presented at the SIGIR Conference, ACM, Amsterdam.

Burke, M., Hornof, A., Nilsen, E., & Gorman, N. (2005). High-cost banner blindness: Ads increase perceived workload, hinder visual search, and are forgotten. *ACM Transactions on Computer-Human Interaction, 12*(4), 423-445.

Burke, R., & Srull, T. (1988). Competitive interference and consumer memory of advertising. *Journal of Consumer Research, 15*(1), 55-68.

Cho, C.-H. (2003). The effectiveness of banner advertisements: Involvement and click-through. *CyberPsychology & Behavior, 6*(2), 201-215.

Cho, C.-H., & Cheon, H. J. (2004). Why do people avoid advertising on the Internet? *Journal of Advertising, 33*(4), 89-97.

Dahlen, M. (2001). Banner advertisements through a new lens. *Journal of Advertising Research, 41*(4), 23-30.

Dahlen, M. (2002). Thinking and feeling on the World Wide Web: The impact of product type and time on Web advertising effectiveness. *Journal of Marketing Communications, 8*(2), 115-125.

Dahlen, M., & Bergendahl, J. (2001). Informing and transforming on the Web: An empirical study of response to banner ads for functional and expressive products. *International Journal of Advertising, 20*(2), 189-205.

Dahlen, M., Ekborn, Y., & Morner, N. (2002). To click or not to click: An empirical study of response to banner ads for high and low involvement products. *Consumption, Markets and Culture, 4*(1), 57-76.

Danaher, P. J., & Mullarkey, G. W. (2003). Factors affecting online advertising recall: A study of students. *Journal of Advertising Research, 43*(3), 252-267.

Davidaviciene, V. (2012, May). *Effectiveness factors of online advertising*. Paper presented at the Business and Management 2012 International Scientific Conference, Vilnius, Lithuania.

Dörk, M., Carpendale, S., & Williamson, C. (2011). The information flaneur: A fresh look at information seeking. In *Proceedings of the 2011 annual conference on human factors in computing systems* (pp. 1215-1224): ACM.

Drèze, X., & Hussherr, F.-X. (2003). Internet advertising: Is anybody watching? *Journal of Interactive Marketing, 17*(4), 8-23.

Dröge, C. (1989). Shaping the route to attitude change: Central versus peripheral processing through comparative versus noncomparative advertising. *Journal of Marketing Research, 26*(2), 193-204.

Ewing, M., Napoli, J., & du Plessis, E. (1999). Factors affecting in-market recall of food product advertising. *Journal of Advertising Research, 39*(4), 29-38.

Grazioli, S., & Jarvenpaa, S. (2000). Perils of Internet fraud: An empirical investigation of deception and trust with experienced Internet consumers. *IEEE Transactions on Systems, Man, and Cybernetics - Part A: Systems and Humans, 30*(4), 395-410.

Ha, L., & McCann, K. (2008). An integrated model of advertising clutter in offline and online media. *International Journal of Advertising, 27*(4), 569-592.

Hassenzahl, M. (2003). The thing and I: understanding the relationship between user and product. In M. Blythe, C. Overbeeke, F. Monk & P. C. Wright (Eds.), *Funology: From usability to enjoyment* (pp. 31-42). Dordrecht: Kluwer Accademic Publishers.

Hervet, G., Guérard, K., Tremblay, S., & Chtourou, M. S. (2011). Is banner blindness genuine? Eye tracking Internet text advertising. *Applied Cognitive Psychology, 25*(5), 708-716.

Hollis, N. (2005). Ten years of learning on how online advertising builds brands. *Journal of Advertising Research, 45*(2), 255-268.

Hong, W., Thong, J. Y. L., & Tam, K. Y. (2007). 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, 58*(10), 1467-1482.

Josephson, S., & Holmes, M. E. (2002). Visual attention to repeated Internet images: Testing the scanpath theory on the World Wide Web. In *Proceedings of the 2002 symposium on eye tracking research & applications* (pp. 43-49). New York, NY: ACM.

Kim, G., & Lee, J.-H. (2011). The effect of search condition and advertising type on visual attention to Internet advertising. *CyberPsychology, Behavior, and Social Networking, 14*(5), 323-325.

Kim, Y., Zhang, P., & Lankes, R. D. (2009). *Future of information seeking on the Internet and web advertising: How can we guide web advertising for users' information seeking on a website?* Paper presented at the iConference 2009, Chapel Hill, NC.

Lapa, C. (2007). *Using eye tracking to understand banner blindness and improve website design.* (ICT-Thesis), Rochester Institute of Technology, Rochester, NY. Retrieved from http://hdl.handle.net/123456789/399

Li, H., & Bukovac, J. L. (1999). Cognitive impact of banner ad characteristics: An experimental study. *Journalism & Mass Communication Quarterly, 76*(2), 342-353.

Lohtia, R., Donthu, N., & Hershberger, E. (2003). The impact of content and design elements on banner advertising click-through rates. *Journal of Advertising Research, 43*(4), 410-418.

Louis, M. R., & Sutton, R. I. (1991). Switching cognitive gears: From habits of mind to active thinking. *Human Relations, 44*(1), 55-76.

Machleit, K. A., & Wilson, R. D. (1988). Emotional feelings and attitude toward the advertisement: The roles of brand familarity and repetition. *Journal of Advertising, 17*(3), 27-35.

MacKenzie, S. B., & Lutz, R. J. (1989). An empirical examination of the structural antecedents of attitude toward the ad in an advertising pretesting context. *Journal of Marketing, 53*(2), 48-65.

Martìn-Santana, J. D., & Beerli-Palacio, A. (2012). The effectiveness of Web ads: Rectangle vs contextual banners. *Online Information Review, 36*(3), 420-441.

McCoy, S., Everard, A., Galletta, D., & Polak, P. (2004, January). A study of the effects of online advertising: A focus on pop-up and in-line ads. In *Proceedings of 3rd Annual Workshop on HCI Research in MIS*. Washington, DC.

McCoy, S., Everard, A., Polak, P., & Galletta, D. F. (2007). The effects of online advertising. *Communications of the ACM, 50*(3), 84-88.

Mehta, A., & Purvis, S. C. (1995). *When attitudes towards advertising in general influence advertiding success*. Paper presented at the Conference of the American Academy of Advertising, Norfolk, VA.

Moore, R. S., Stammerjohan, C. A., & Coulter, R. A. (2005). Banner advertiser - web site context congruity and color effects on attention and attitudes. *Journal of Advertising, 34*(2), 71-84.

Nedungadi, P., & Hutchinson, J. W. (1985). The prototypicality of brands: Relationships with brand awareness, preference and usage. In E. Hirschman & M. Holbrook (Eds.), *Advances in Consumer Research* (Vol. 12, pp. 498-503). Provo, UT: Association for Consumer Research.

Newman, E. J., Stern, D. E. J., & Sprott, D. E. (2004). Banner advertisement and Web site congruity effects on consumer Web site perceptions. *Industrial Management & Data Systems, 104*(3), 273-281.

Nielsen, J. (2007, August). Banner blindness: Old and new findings. *Jakob Nielsen's Alertbox*. Retrieved from http://www.useit.com/alertbox/banner-blindness.html

Norris, C. E., & Colman, A. M. (1992). Context effects on recall and recognition of magazine advertisements. *Journal of Advertising, 21*(3), 37-46.

Owens, J. W., Chaparro, B. S., & Palmer, E. M. (2011). Text advertising blindness: The new banner blindness? *Journal of Usability Studies, 6*(3), 172-197.

Pagendarm, M., & Schaumburg, H. (2001). Why are users banner-blind? The impact of navigation style on the perception of Web banners. *Journal of Digital Information, 2*(1).

Perfect, T. J., & Askew, C. (1994). Print adverts: Not remembered but memorable. *Applied Cognitive Psychology, 8*(7), 693-703.

Radwanick, S. (2011). *U.S. digital year in review 2010: A recap of the year in digital media*. White Paper. comScore, Inc. Retrieved from http://www.comscore.com/Press_Events/Presentations_Whitepapers/2011/2010_US_Digital_Year_in_Review

Reber, R., Schwarz, N., & Winkielman, P. (2004). Processing fluency and aesthetic pleasure: Is beauty in the perceiver's processing experience? *Personality and Social Psychology Review, 8*(4), 364-382.

Reber, R., Winkielman, P., & Schwarz, N. (1998). Effects of perceptual fluency on affective judgments. *Psychological Science, 9*(1), 45-48.

Riegelsberger, J., Sasse, M. A., & McCarthy, J. D. (2002). Eye-catcher or blind spot? The effect of photographs of faces on e-commerce sites. In J. L. Monteiro, P. M. C. Swatman & L. V. Tavares (Eds.), *Proceedings of the 2nd IFIP Conference on e-commerce, e-business, e-government (i3e)* (pp. 383-398). Lisbon, Portugal: Kluwer.

Rogers, S., Wang, Y., Rettie, R., & Alpert, F. (2007). The Web Motivation Inventory: Replication, extension and application to Internet advertising. *International Journal of Advertising, 26*(4), 447-476.

Ryu, G., Lim, E. A. C., Tan, L. T. L., & Han, Y. J. (2007). Preattentive processing of banner advertisements: The role of modality, location, and interference. *Electronic Commerce Research and Applications, 6*(1), 6-18.

Schneider, W., & Shiffrin, R. M. (1977). Controlled and automatic human information processing. Detection, search, and attention. *Psychological Review, 84*(1), 1-66.

Shamdasani, P. N., Stanaland, A. J., & Tan, J. (2001). Location, location, location: Insights for advertising placement on the web. *Journal of Advertising Research, 41*(4), 7-21.

Shapiro, S., MacInnis, D. J., & Heckler, S. E. (1997). The effects of incidental ad exposure on the formation of consideration sets. *Journal of Consumer Research, 24*(1), 94-104.

Shen, F., & Chen, Q. (2007). Contextual priming and applicability. *Journal of Advertising, 36*(1), 69-80.

Shiffrin, R. M., & Schneider, W. (1977). Controlled and automatic human information and a general theory. *Psychological Review, 84*(2), 127-190.

Stenfors, I., & Holmqvist, K. (1999, September). *The strategic control of gaze direction when avoiding Internet ads*. Paper presented at the European Conference on Eye Movements 10, Utrecht, the Netherlands.

Sun, Y., Lim, K. H., Peng, J. Z., Jiang, C., & Chen, X. (2008). *Why and when will banner blindness occur? An analysis based on the dual processing theory.* Paper presented at the Proceedings of the Fourteenth Americas Conference on Information Systems, Toronto, Canada.

Sundar, S., & Kalyanaraman, S. (2004). Arousal, memory, and impression-formation effects of animation speed in Web advertising. *Journal of Advertising, 33*(1), 7-17.

Swiss Website Charts based on Alexa Ranking. Retrieved November 13, 2012, from: http://hitparade.ch/website_charts.asp

Tulving, E., & Arbuckle, T. Y. (1966). Input and output interference in short-term associative memory. *Journal of Experimental Psychology, 72*(1), 145-150.

van Schaik, P., & Ling, J. (2009). The role of context in perceptions of the aesthetics of Web pages over time. *International Journal of Human-Computer Studies, 67*(1), 79-89.

Wallace, W. P., Stewart, M. T., Sherman, H. L., & Mellor, M. D. (1995). False positives in recognition memory produced by cohort activation. *Cognition, 55*(1), 85-113.

Wells, W. D. (2000). Recognition, recall, and rating scales. *Journal of Advertising Research, 40*(6), 14-20.

Yaveroglu, I., & Donthu, N. (2008). Advertising repetition and placement issues in on-line environments. *Journal of Advertising, 37*(2), 31-43.

Yesilada, Y., Jay, C., Stevens, R., & Harper, S. (2008). *Validating the use and role of visual elements of web pages in navigation with an eye-tracking study*. Paper presented at the Proceedings of the 17th international conference on World Wide Web, Beijing, China.

Yi, Y. (1990). Cognitive and affective priming effects of the context for print advertisements. *Journal of Advertising, 19*(2), 40-48.

Yoo, C. Y. (2009). Effects beyond click-through: Incidental exposure to web advertising. *Journal of Marketing Communications, 15*(4), 227-246.

Zanjani, S. H. A., Diamond, W. D., & Chan, K. (2011). Does ad–context congruity help surfers and information seekers remember ads in cluttered e-magazines? *Journal of Advertising, 40*(4), 67-83.

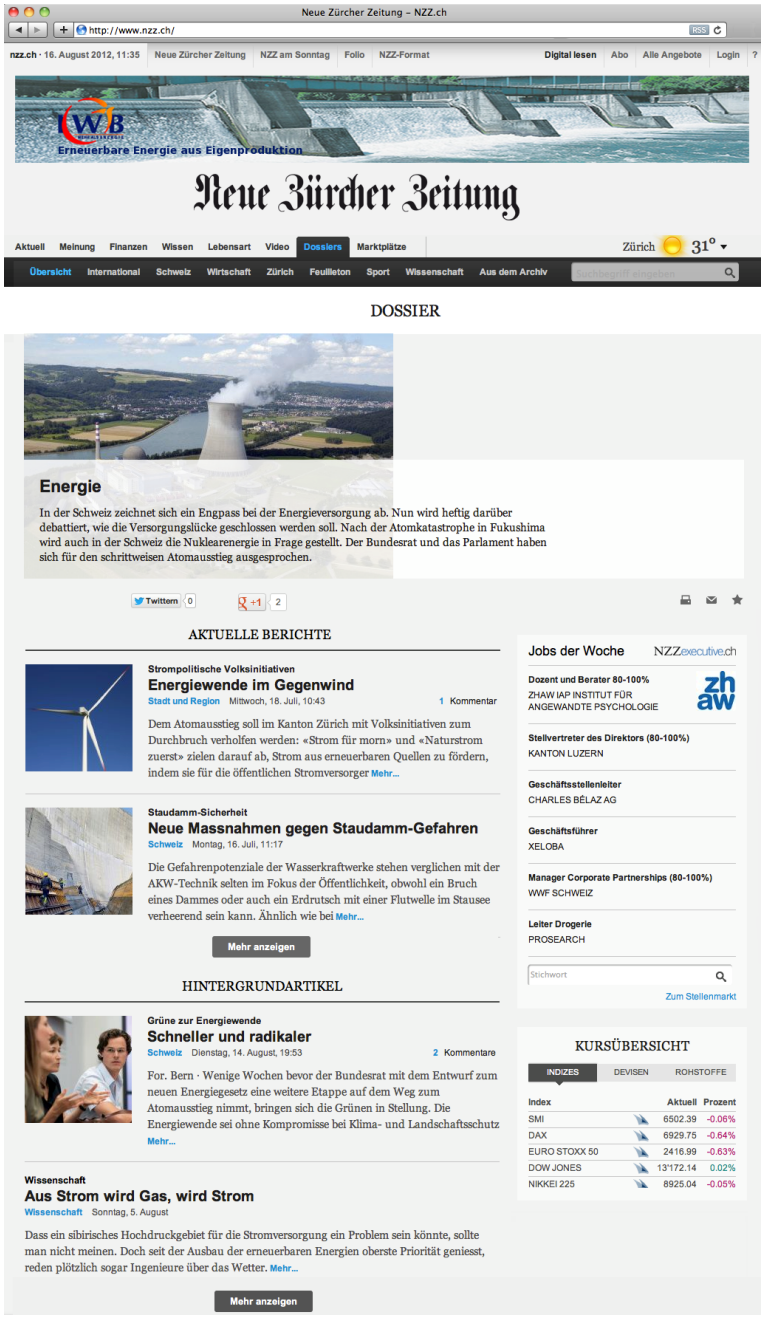
Zhang, P., & Kim, Y. (2008). Web advertising: What do we know about its acceptance and impacts? - A meta-analysis of the literature. *Pacific Asia Conference on Information Systems Proceedings*, paper 246.

Appendix A

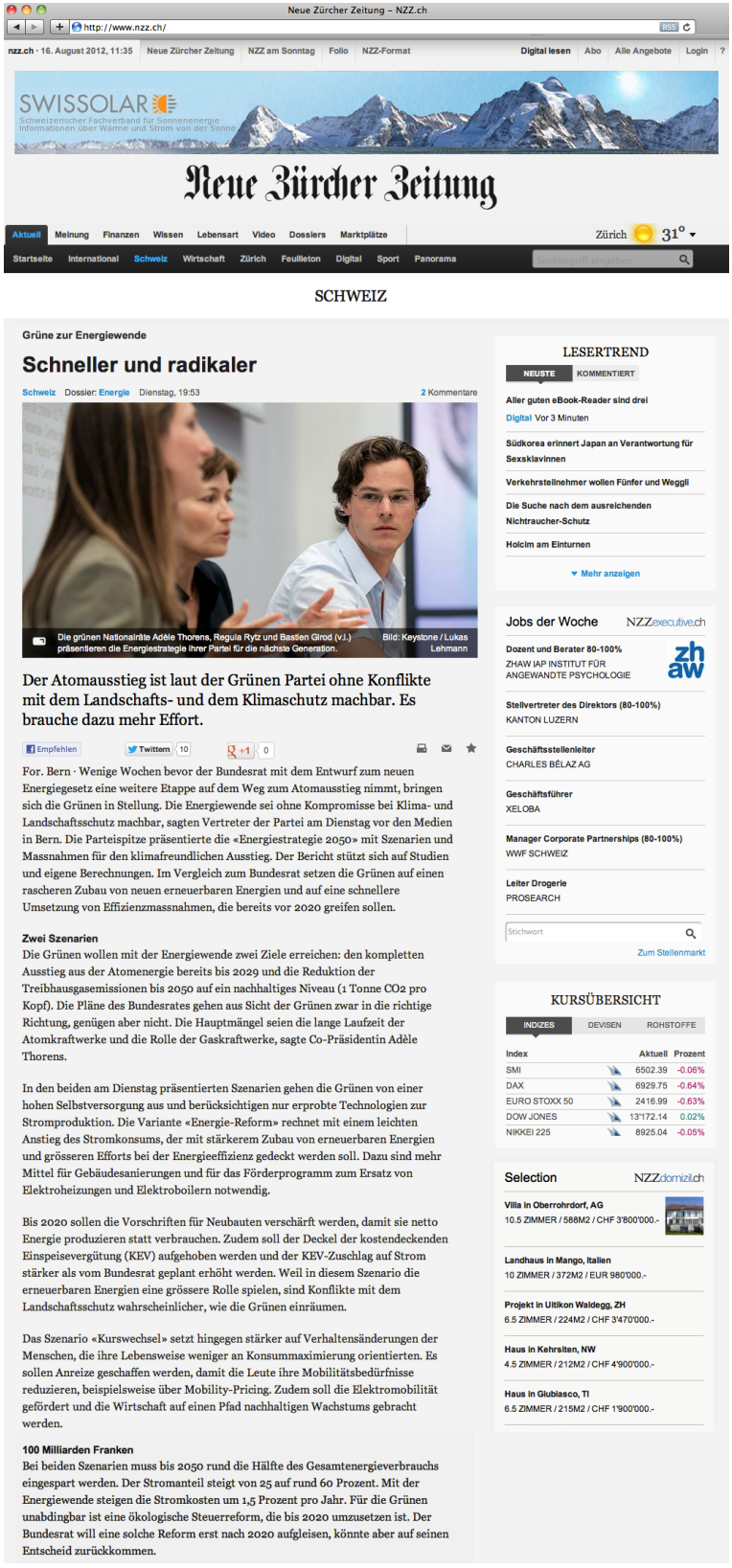
Stimuli Used in the Main Study

Four online news pages with two different topics were selected as experimental material. Each page was combined with a congruent and an incongruent ad banner, resulting in total of eight stimuli. Per participant, a set of overview and article was shown, both with either congruent or incongruent banners.

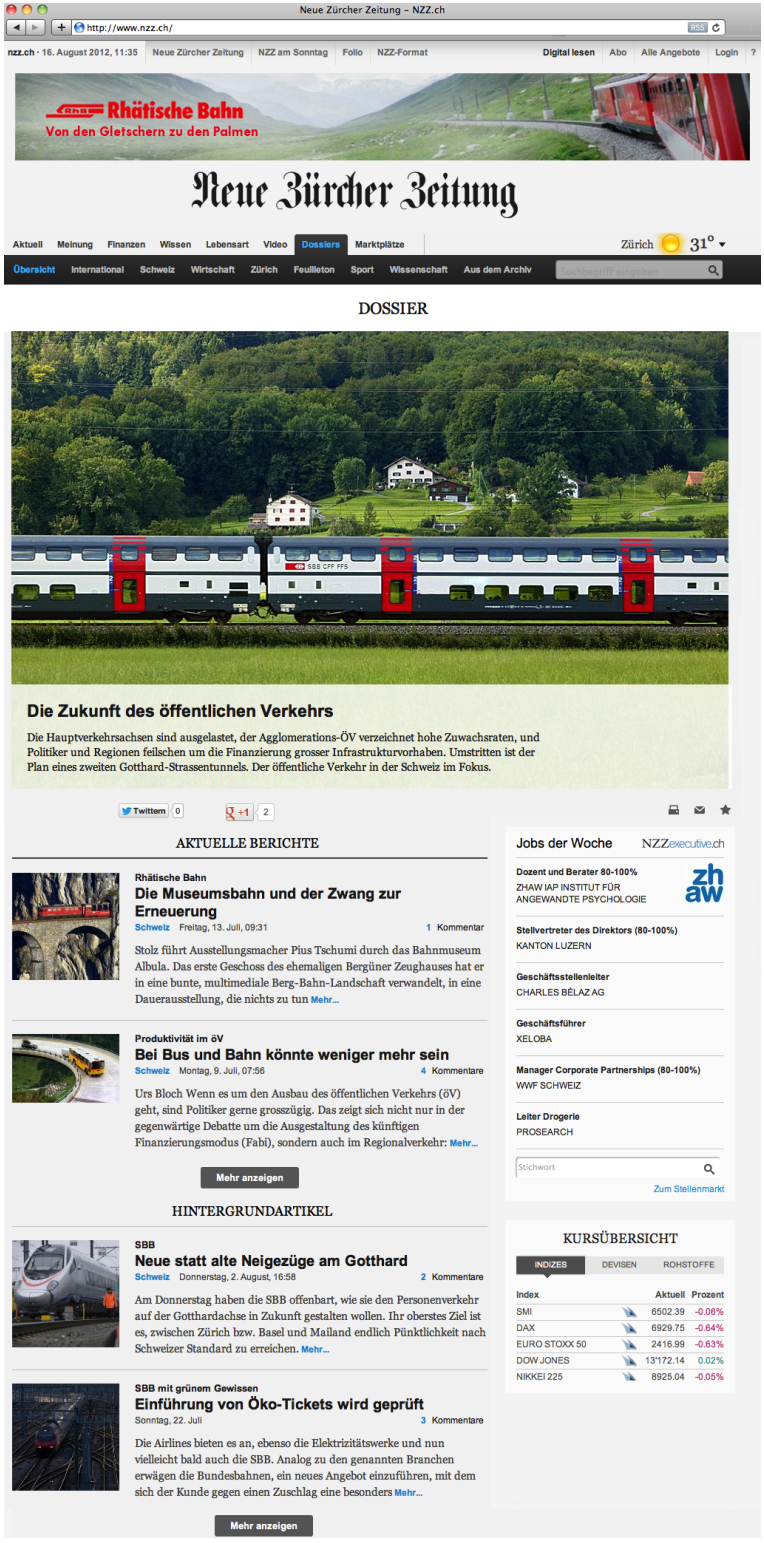
Congruent Condition, Overview Energy



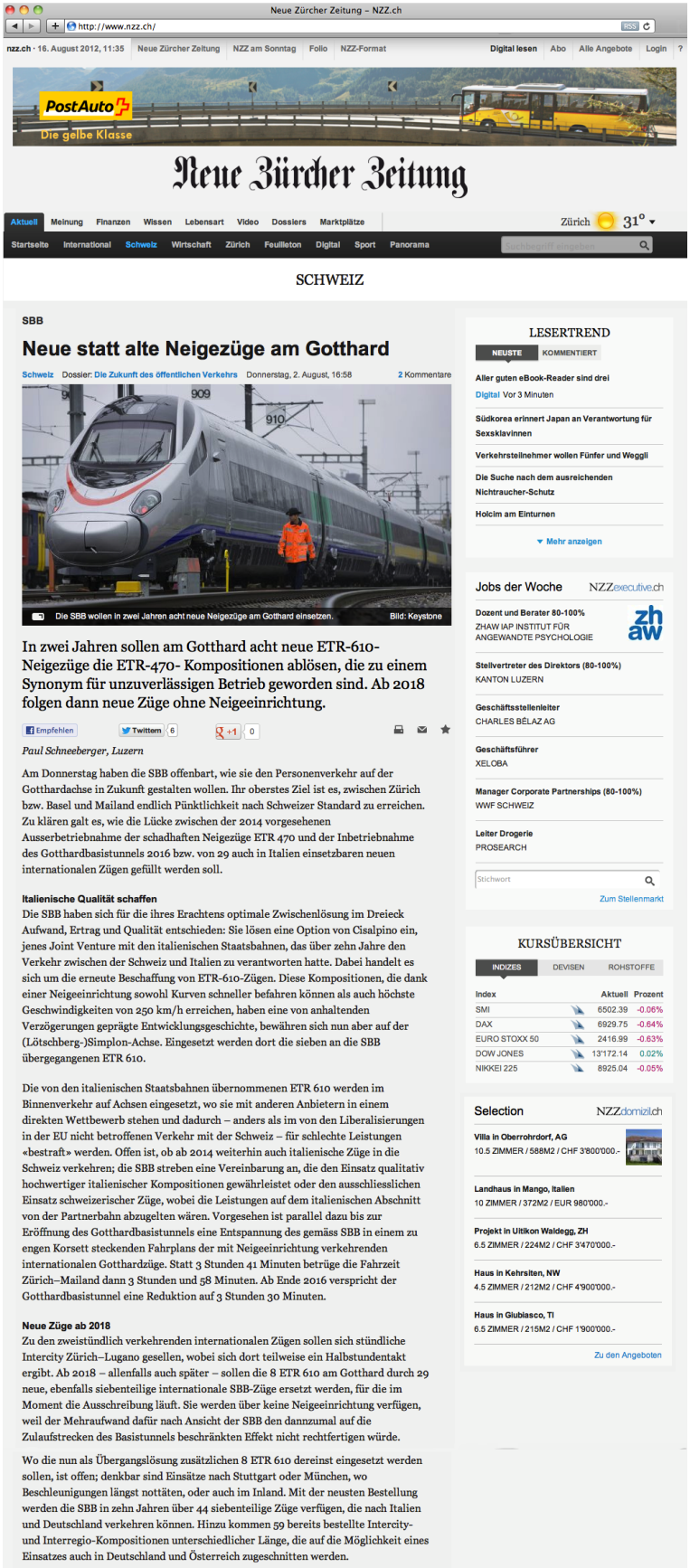
Congruent Condition, Article for Energy



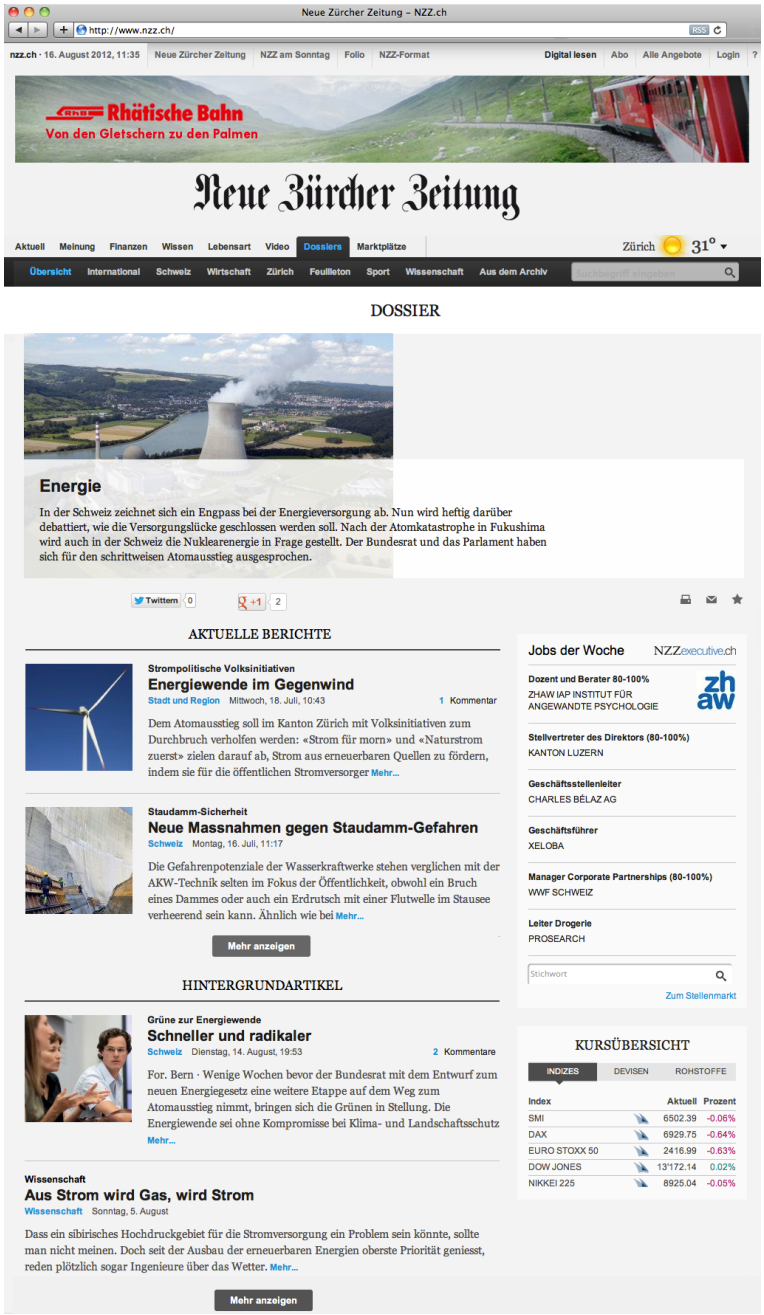
Congruent Condition, Overview for Public Transportation



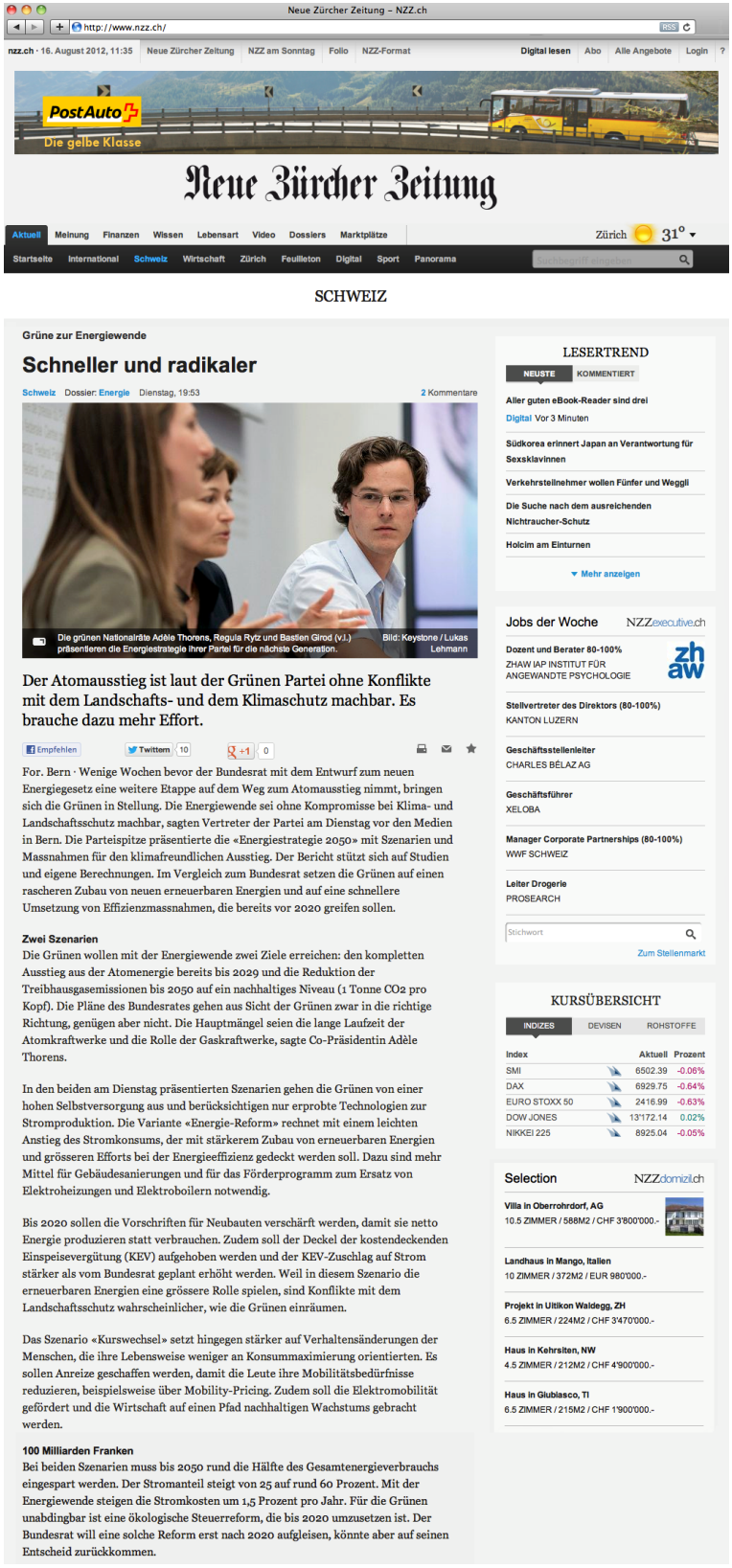
Congruent Condition, Article for Public Transportation



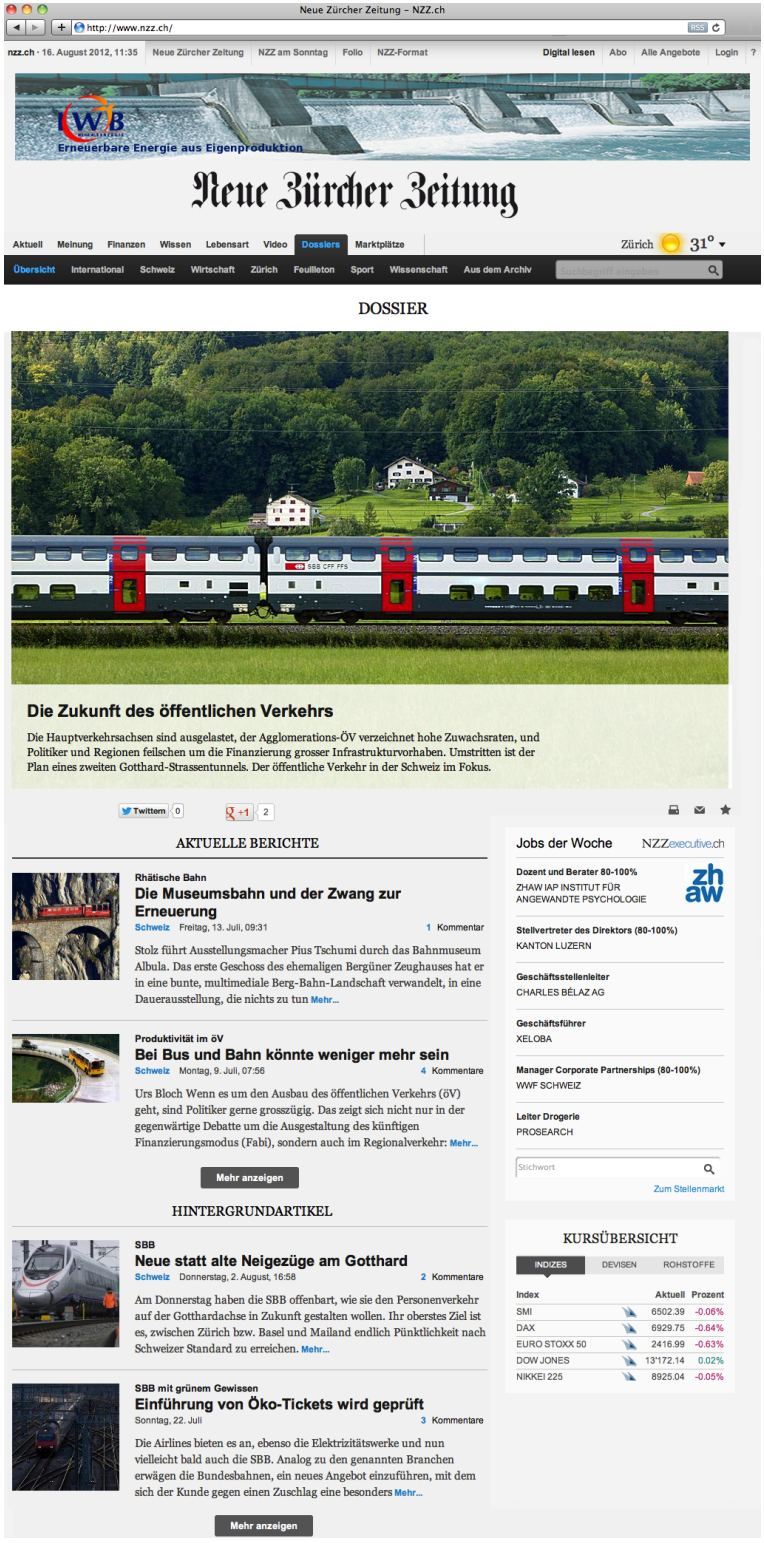
Incongruent Condition, Overview for Energy



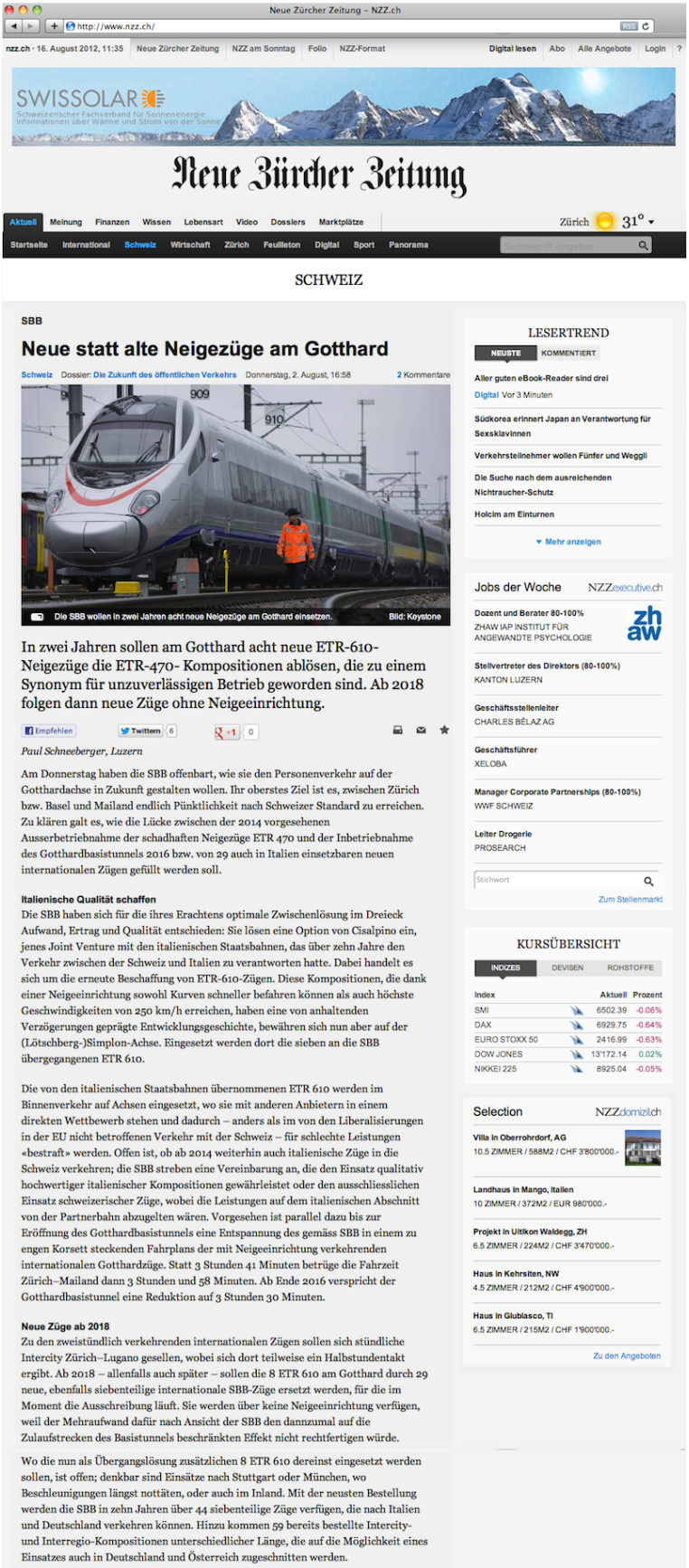
Incongruent Condition, Article for Energy



Incongruent Condition, Overview for Public Transportation



Incongruent Condition, Article for Public Transportation



Appendix B

Banners Designed for the Study

Twelve banners were initially designed for the study. The content of the banners was aiming to be related to one of the three topics, which were panned to be used in the study: Energy, public transportation and health care system. As the 'health care' category dropped out in the prestudy, two banners from the two remaining categories were chosen as target congruent and incongruent banners (IWB, Swissolar, Rhätische Bahn and Postauto).

Energy

Health care

Public Transportation

Appendix C

Statistics for the Prestudy

The mean scores for congruence per banner are indicated. Two-tailed *t*-test compared the congruence scores for incongruent and congruent conditions. For all brands, the banners displayed on congruent pages were perceived to be significantly more congruent than displayed on incongruent pages.

Table C10

Descriptive statistics and comparison of congruence scores per banner

	Congruent *M (SD)*	Incongruent *M (SD)*	*T*	*df*
IWB	6.20 (1.04)	3.22 (2.55)	3.14**	11
Swissolar	6.43 (.88)	2.58 (1.71)	5.70***	12
Postauto	5.20 (1.65)	2.30 (1.17)	4.54***	18
Rhätische Bahn	5.94 (1.06)	1.89 (1.54)	4.71**	7

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. Two-tailed *t*-test for independent samples was used. The corresponding questions accessing congruence can be found in Appendix E. The answer scale ranged from 1-7, “definitely disagree” to “definitely agree”.

Appendix D

Statistics for Further Dimensions of Banners Measured in the Prestudy

Mean scores of further banner factors, which might have an influence on participants memories and attitude toward banners are presented in Table D8.

Table D11

Descriptive statistics: Means and distribution for the variables measured in the prestudy, per banner

	Salience *M (SD)*	Intrusiveness *M (SD)*	Colors *M (SD)*	State of Art *M (SD)*	Familiarity 1 *M (SD)*	Familiarity 2 *M (SD)*
IWB	4.02 (1.79)	2.46 (1.52)	4.15 (1.68)	5.72 (1.33)	2.77 (2.19)	4.57 (2.64)
Swissolar	4.50 (1.74)	2.43 (1.43)	4.75 (1.51)	5.96 (1.28)	3.04 (1.40)	2.76 (1.90)
Postauto	5.31 (1.49)	3.00 (1.61)	5.15 (1.55)	5.61 (1.37)	3.92 (2.44)	6.27 (1.40)
Rhätische Bahn	4.53 (1.85)	2.40 (1.65)	4.27 (1.73)	5.43 (1.44)	3.37 (2.06)	5.16 (2.11)

Note. *M* = mean and *(SD)* = standard deviation are indicated. The corresponding questions can be found in Appendix E. The answer scale ranged from 1-7, “definitely disagree” to “definitely agree”.

Appendix E

Questionnaires Used in the Prestudy

Demographic questions

- Alter (in Jahren)
- Geschlecht

männlich – weiblich – keine Angabe

Experience with Internet news pages

- Wie häufig nutzen Sie normalerweise News-Webseiten (z.B. 20min.ch, nzz.ch, etc.)?

nie – seltener – ca. einmal pro Woche – mehrmals pro Woche – täglich

Knowledge of nzz.ch

- Kennen Sie die News-Webseite der Neuen Zürcher Zeitung (nzz.ch)?

ja – nein

Experience with nzz.ch

- Wie häufig nutzen Sie normalerweise die News-Webseite der Neuen Zürcher Zeitung (nzz.ch)?

nie – seltener – ca. einmal pro Woche – mehrmals pro Woche – täglich

Attitude to nzz.ch

- Wie zufrieden sind Sie insgesamt mit der News-Webseite NZZ.ch?

sehr unzufrieden (1) – sehr zufrieden (7), keine Angabe

Congrunence (Newman, Stem Jr, & Sprott, 2004)

1. Das Werbebanner passt gut zum Inhalt der Webseite.
2. Zwischen dem Werbebanner und dem Inhalt der Webseite herrscht hohe Übereinstimmung.
3. Das Werbebanner und der Inhalt der Webseite haben viel gemeinsam.
4. Das Werbebanner lässt die Webseite weniger glaubwürdig erscheinen.
5. Der Inhalt der Webseite lässt das Werbebanner glaubwürdiger erscheinen.
6. Die Webseite und das Werbebanner profitieren voneinander.

trifft nicht zu (1) – trifft zu (7), keine Angabe

Color intensity (Moore, Stammerjohan, & Coulter, 2005)

- Die Farben des Werbebanners wirken intensiv.

trifft nicht zu (1) – trifft zu (7), keine Angabe

Salience

- Das Werbebanner hebt sich klar von der Website ab.

trifft nicht zu (1) – trifft zu (7), keine Angabe

Intrusiveness (Li, Edwards, & Lee, 2002)

- Das Werbebanner ist aufdringlich.

trifft nicht zu (1) – trifft zu (7), keine Angabe

Familiarity (Pieters, 2002)

- Die Werbung für X habe ich schon häufig gesehen.
- X ist mir gut bekannt.

trifft nicht zu (1) – trifft zu (7), keine Angabe

„State of art“

- Das Werbebanner wirkt professionell.

trifft nicht zu (1) – trifft zu (7), keine Angabe

Appendix F

Questionnaires Used in the Main Study

Demographic questions

- Alter (in Jahren)
- Geschlecht

männlich – weiblich – keine Angabe

Experience with Internet news pages

- Wie häufig nutzen Sie normalerweise News-Webseiten (z.B. 20min.ch, nzz.ch, etc.)?

nie – seltener – ca. einmal pro Woche – mehrmals pro Woche – täglich

Knowledge of nzz.ch

- Kennen Sie die News-Webseite der Neuen Zürcher Zeitung (nzz.ch)?

ja – nein

Experience with nzz.ch

- Wie häufig nutzen Sie normalerweise die News-Webseite der Neuen Zürcher Zeitung *(nzz.ch)?*

nie – seltener – ca. einmal pro Woche – mehrmals pro Woche – täglich

Attitude to nzz.ch (Jarvenpaa, Traktinsky, & Vitale, 2000)

1. Die nzz.ch ist dafür bekannt, dass sie zuverlässig ist.
2. Die nzz.ch hat einen schlechten Ruf auf dem Markt.
3. Die nzz.ch ist hoch angesehen.

trifft nicht zu (1) – trifft zu (7), keine Angabe

Attitude to the advertisement (Martín-Santana & Beerli-Palacio, 2012)

Ich finde diesen Werbebanner:

1. *attraktiv*
2. *interessant*
3. *glaubwürdig*
4. *aufmerksamkeitserregend*

(Beltramini, 1988):

5. *überzeugend*
6. *ehrlich*
7. *vertrauenswürdig*

(Mackkenzie & Lutz, 1989):

8. *gut*

trifft nicht zu (1) – trifft zu (7), keine Angabe

Attitude to the brand (Martín-Santana & Beerli-Palacio, 2012)

1. X ist eine gute Marke.
2. X ist eine Marke, die ich mag.
3. X gegenüber bin ich positiv eingestellt.

trifft nicht zu (1) – trifft zu (7), keine Angabe

General attitude towards advertisements: (Mehta & Purvis, 1995)

1. Ich mag es Online-Werbung zu betrachten.
2. Vielfach ist mir die Werbung zu langweilig.
3. Viele Produkte sind nicht so gut wie es die Werbung verspricht.

4. Werbung hilft mir auf dem Laufenden zu bleiben was Produkte und Dienstleistungen betrifft, die ich brauche oder haben möchte

trifft nicht zu (1) – trifft zu (7), keine Angabe

Manipulation check. congruence (Newman, Stem Jr, & Sprott, 2004)

1. Das Werbebanner passt gut zum Inhalt der Webseite.
2. Zwischen dem Werbebanner und dem Inhalt der Webseite herrscht hohe Übereinstimmung.
3. Das Werbebanner und der Inhalt der Webseite haben viel gemeinsam.

trifft nicht zu (1) – trifft zu (7), keine Angabe

Appendix G

Instructions for the Three Task Oriantation Modes

Goal Mode

Energie. Im Folgenden werden Ihnen zwei Seiten der Internet-Newsseite nzz.ch gezeigt (nicht klickbar). Sie müssen jeweils eine kurze Aufgabe dazu lösen und anschliessend einige Fragen beantworten.

Aufgabe 1. Stellen Sie sich vor, Sie interessieren sich für alternative Energien. Sie möchten herausfinden, wie sich das neue Energiegesetz zum Atomausstieg entwickelt und gehen dafür auf die nzz.ch-Webseite.

Auf der nächsten Seite sehen Sie das Dossier “Energie”, wo Sie eine Auswahl der Artikel zu diesem Thema finden.

Welchen Artikel fänden Sie am hilfreichsten/relevantesten?

Aufgabe 2. Auf der nächsten Seite sehen Sie einen der Artikel aus der Übersicht.

Finden Sie heraus, was die Grünen bei der "Energie-Reform" vorschlagen und beschreiben Sie dies stichwortartig im Antwortfeld auf der nächsten Seite.

Öffentlicher Verkehr. Im Folgenden werden Ihnen zwei Seiten der Internet-Newsseite nzz.ch gezeigt (nicht klickbar). Sie müssen jeweils eine kurze Aufgabe dazu lösen und anschliessend einige Fragen beantworten.

Aufgabe 1. Stellen Sie sich vor, Sie interessieren sich für den öffentlichen Verkehr. Sie möchten herausfinden, welche Investitionen die SBB für die Zukunft tätigen wird und gehen dafür auf die NZZ.ch-Webseite.

Auf der nächsten Seite sehen Sie das Dossier "Öffentlicher Verkehr", wo sie eine Auswahl der Artikel zu diesem Thema finden.

Welchen Artikel fänden Sie am hilfreichsten/relevantesten?

Aufgabe 2. Auf der nächsten Seite sehen Sie einen der Artikel aus der Übersicht.
Finden Sie heraus, welche Pläne die SBB für die kürzlich in Betrieb gesetzten ETR 610 Züge für die Zeit nach der Eröffnung des Gotthardbasistunnels haben und beschreiben Sie dies stichwortartig im Antwortfeld auf der nächsten Seite.

Action Mode

Energie. Im Folgenden werden Ihnen zwei Seiten der Internet-Newsseite **nzz.ch** gezeigt (nicht klickbar). Sie müssen jeweils eine kurze Aufgabe dazu lösen und anschliessend einige Fragen beantworten.

Aufgabe 1. Auf der nächsten Seite sehen Sie das Dossier "Energie", wo Sie eine Auswahl der Artikel zu diesem Thema finden.
Welchen Artikel aus diesem Dossier fänden Sie persönlich am interessantesten?

Aufgabe 2. Auf der nächsten Seite sehen Sie einen der Artikel aus der Übersicht.
Was aus diesem Artikel würden Sie einem Kollegen/einer Kollegin während einer Kaffeepause erzählen?
Beschreiben Sie dies stichwortartig im Antwortfeld auf der nächsten Seite.

Öffentlicher Verkehr. Im Folgenden werden Ihnen zwei Seiten der Internet-Newsseite **nzz.ch** gezeigt (nicht klickbar). Sie müssen jeweils eine kurze Aufgabe dazu lösen und anschliessend einige Fragen beantworten.

Aufgabe 1. Auf der nächsten Seite sehen Sie das Dossier "Öffentlicher Verkehr", wo Sie eine Auswahl der Artikel zu diesem Thema finden.
Welchen Artikel aus diesem Dossier fänden Sie persönlich am interessantesten?

Aufgabe 2. Auf der nächsten Seite sehen Sie einen der Artikel aus der Übersicht.

Was aus diesem Artikel würden Sie einem Kollegen/einer Kollegin während einer Kaffeepause erzählen?

Beschreiben Sie dies stichwortartig im Antwortfeld auf der nächsten Seite.

Surf Mode

Energie. Im Folgenden werden Ihnen zwei Seiten der Internet-Newsseite nzz.ch gezeigt nicht klickbar) und anschliessend einige Fragen gestellt.

Seite 1. Auf der nächsten Seite sehen Sie das Dossier "Energie", wo Sie eine Auswahl der Artikel zu diesem Thema finden.

Schauen Sie sich diese Seite an. Sie haben die Möglichkeit, die Seite im Antwortfeld zu kommentieren.

Seite 2. Schauen Sie sich diese Seite an. Sie haben die Möglichkeit, die Seite im Antwortfeld zu kommentieren.

Öffentlicher Verkehr. Im Folgenden werden Ihnen zwei Seiten der Internet-Newsseite nzz.ch gezeigt nicht klickbar) und anschliessend einige Fragen gestellt.

Seite 1. Auf der nächsten Seite sehen Sie das Dossier "Öffentlicher Verkehr", wo Sie eine Auswahl der Artikel zu diesem Thema finden.

Schauen Sie sich diese Seite an. Sie haben die Möglichkeit, die Seite im Antwortfeld zu kommentieren.

Seite 2. Schauen Sie sich diese Seite an. Sie haben die Möglichkeit, die Seite im Antwortfeld zu kommentieren.

Appendix H

Results of a More Detailed Investigation of Hypothesis 1

To determine whether banner's serial position resulted in a better recognition score, series of Wilcoxon's tests were run, separately for every task orientation. Table H12 shows the results of comparison between the first and second banner seen by participants.

Table H12

Wilcoxon's T test Scores Comparing Recognition Scores for the First and Second Banner Shown, by Task Orientation

	Goal	Action	Surf
	T (n)	*T (n)*	*T (n)*
IWB - Swissolar	-1.73 (12)	-1.04 (23)	-1.00 (25)
Rhätische Bahn - Postauto	-.94 (18)	-1.57 (25)	-.60 (25)

Note. n indicates number of participants overall, not counting those with tied ranks.

Appendix I

Results of a More Detailed Investigation of Hypothesis 2

For every banner, the congruent and incongruent conditions were compared in terms of better recognition. No differences were found in any task orientation for any banner.

Table I13

Mann-Whitney U test Scores, Comparing Recognition Scores per Banner and Task Orientation for Congruent and Incongruent Condition

	Goal	Action	Surf
	U (n_1, n_2)	*U* (n_1, n_2)	*U* (n_1, n_2)
IWB	170.5 (23, 17)	380 (27, 35)	280.5 (29, 25)
Swissolar	189.5 (23, 17)	446.5 (27, 35)	301 (29, 25)
Rhätische Bahn	370 (27, 29)	355.5 (28, 31)	377 (29, 29)
Postauto	355 (27, 29)	420 (28, 31)	391.5 (29, 29)

Note. n_1 indicates sample size for congruent condition, n_2 for incongruent.

Appendix J

Results of a More Detailed Investigation of Hypothesis 3

For each banner, the attitudes in congruent and incongruent conditions were compared with one-tailed *t*-tests. Only the judgements of participants who recognized the banner correctly were taken into account. No differences in attitudes toward any banner were found.

Table J14

Results of One-Tailed t-Tests Comparing Attitude Scores for Banner Ads in Congruent and Incongruent conditions

	T	*df*	*p*	*n*	
				Congruent	Incongruent
IWB	.67	37.93	.26	37	22
Swissolar	- .34	36.53	.37	18	25
Rhätische Bahn	- .38	73	.35	38	37
Postauto	1.20	59	.12	30	31

Note. The scores compared were computed from the four first items in banner attitude questionnaire.

Appendix K

Results of a More Detailed Investigation of Hypothesis 3 per Item

For every items from the 'attitude' questionnaire listed below Table K15, a separate analysis was conducted to closer examine the effect of congruence on judgements. Except for one item ('aufmerksamkeitserregend') for Swissolar banner, no differences were found depending on congruence condition.

Table K15

Two-tailed t-tests comparing attitude scores for banner ads in congruent and incongruent conditions, all items

	IWB				Swissolar			
	Conguent	Incongruent			Congruent	Incongruent		
Item	*M(SD)*	*M(SD)*	*T*	*df*	*M(SD)*	*M(SD)*	*T*	*df*
1	4.41 (1.68)	3.91 (1.88)	1.25	78	5.00 (1.51)	4.79 (1.77)	.56	77
2	4.43 (1.78)	3.85 (1.84)	1.42	78	4.05 (1.68)	4.03 (1.71)	.04	75
3	4.72 (1.63)	4.59 (1.70)	.32	76	4.93 (1.48)	4.76 (1.58)	.51	77
4	4.11 (1.77)	3.67 (1.83)	1.10	77	3.48 (1.60)	4.40 (1.87)	-2.39*	79
5	4.53 (1.60)	4.16 (1.67)	1.00	75	4.17 (1.51)	4.11 (1.68)	.17	79
6	4.65 (1.48)	4.61 (1.79)	.54	71	4.86 (1.56)	4.65 (1.56)	.60	73
7	4.65 (1.48)	4.43 (1.72)	.59	74	4.93 (1.56)	4.85 (1.39)	.25	76
8	4.53 (1.79)	4.45 (1.52)	.21	74	4.72 (1.60)	4.35 (1.63)	1.00	78

	Rhätische Bahn				Postauto			
	Conguent	Incongruent			Congruent	Incongruent		
Item	*M(SD)*	*M(SD)*	*T*	*df*	*M(SD)*	*M(SD)*	*T*	*df*
1	4.96 (1.33)	4.73 (1.72)	.75	88	5.10 (1.40)	4.78 (1.60)	1.07	100
2	4.54 (1.51)	4.33 (1.75)	.63	98	4.66 (1.39)	4.41 (1.69)	0.83	100
3	5.29 (1.33)	4.72 (1.51)	1.98	97	5.51 (1.14)	5.35 (1.22)	.69	98
4	4.25 (1.49)	4.35 (1.91)	-.30	89	4.77 (1.59)	4.31 (1.50)	1.52	100
5	4.71 (1.39)	4.33 (1.59)	1.30	97	5.04 (1.37)	4.55 (1.51)	1.69	98
6	5.35 (1.52)	4.96 (1.65)	1.22	97	5.66 (1.19)	5.35 (1.09)	1.37	97
7	5.50 (1.22)	5.02 (1.38)	1.83	96	5.60 (1.18)	5.45 (1.21)	.65	100
8	5.08 (1.34)	4.73 (1.75)	1.11	88	5.21 (1.32)	4.86 (1.58)	1.23	99

Note. M = mean and *(SD)* = standard deviation are indicated. * $p < .05$. Two-tailed *t*-test for independent samples was used. The corresponding items accessing congruence are below the table. The answer scale ranged from 1-7, "definitely disagree" to "definitely agree".

Items

1. attraktiv
2. interessant
3. glaubwürdig
4. aufmerksamkeitserregend
5. überzeugend
6. ehrlich
7. vertrauenswürdig
8. gut