Motivating and achievement-eliciting pop-ups in online environments: A user experience perspective

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ABSTRACT

The aim of the present research was to develop pop-up windows that motivate users and evoke a positive user experience. Several variants of achievement eliciting pop-ups were designed and tested on a real business-website. A pre-test examined the effectiveness of 24 combinations of pictures and words in eliciting achievement motivation. The strongest effects on user experience were found for pop-ups containing a congruent achievement-related picture and word. The three pop-up variants with the most positive ratings were employed in a subsequent experiment.

The main experiment tested the effects of a sequence of three pop-ups that were presented on a website. We had three conditions with different display times of the sequence of pop-ups. They were presented to 78 website-users for either 1, 2 or 3 s, and compared to a control group on subsequent motivation-related ratings. The results demonstrated that the website was stronger associated with achievement motivation if pop-ups were presented for only 1 or 2 s, compared with 3 s or the control group. This indicates that short presentations of pop-ups could activate achievement motivation in users of learning and business websites. It could be an important design guideline to flash shorter pop-ups that make online environments more appealing to users.

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1. Introduction

Over the past decade, a shift has taken place from advertising in traditional media, such as print, television and radio, to online advertising. Websites have the advantage that marketers can monitor online users and learn significantly more about them (Evans, 2009). Although online advertising is a promising tool, advertisements on websites are oftentimes perceived as intrusions that disturb the online-activities of users (Diao & Sundar, 2004). Therefore, marketers aim to develop online advertisements that appeal to users and that evoke a positive user experience. Pop-up windows have the potential to be an effective communication tool in online advertising, if their design avoids reactance in users (Edwards, Li, & Lee, 2002). The present research tested whether pop-ups can have positive effects on user experience by motivating users to reach their goals. Fulfilling the needs of the user should be perceived as pleasurable (Hassenzahl et al., 2013). Therefore, we aimed to provide insights into external stimuli that may influence the motivation of website users. If the content of a pop-up is in line with the users' current goals, it should not be perceived as intrusive and, therefore, should not evoke reactance (Edwards et al., 2002).

2. The perception of pop-ups from a user experience perspective

A few studies showed that pop-up windows can be effective for online activities. For example, Bétrancourt and Bisseret (1998) found that a pop-up is likely to emphasize the presented information by increasing its visual presence. More specifically, the integration of text and pictures in this experiment led to a higher performance and a lower learning time. Another study demonstrated that pop-ups direct the users' attention toward a specific location on the computer screen, and thus increase their attention as a spotlight for information processing (Constantin, 2010). In addition, pop-ups may serve as cues that influence the user (Diao & Sundar, 2004) and, thus, pop-ups may potentially function as external stimuli, such as learning aids in online environments (Ruf & Ploetzner, 2014).

Although this reasoning sounds promising, the personal experience of the user is oftentimes a different one. For example, consumers have labeled online advertisements as senseless, uninformative, unmemorable, and ineffective (McCoy, Everard,

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Polak, & Galletta, 2007). Oftentimes, pop-ups are considered to be the most annoying type of all advertisements among online users (Diao & Sundar, 2004). Because a lot of online behaviour is goal-oriented, pop-ups are perceived as highly intrusive, as they block or frustrate the current goals of the user (Bagozzi & Dholakia, 1999). This may lead to defensive reactions, such that users ignore pop-ups and try to avoid them by installing pop-up blockers. Marketers, by contrast, aim to make pop-ups more difficult to avoid (McCoy et al., 2007). The result can be that pop-ups lead to negative attitudes and brand perceptions (Abernethy, 1991), which may in turn contribute to a low retention of website contents (McCoy et al., 2007).

The present research tested whether pop-ups that appear for a few seconds in the middle of a website and then disappear by themselves could transfer motivating information to the user. If the contents of a pop-up evoke a positive user experience, this type of pop-up should not interrupt the user. It would not block ongoing online-activities by forcing the user to close it (Brajnik & Gabrielli, 2010; Chatterjee, 2008), but would give a motivating message that may increase goal pursuit.

2.1. User experience

Researchers and practitioners are typically looking for methods that evoke pleasurable experiences in users interacting with technology (Hassenzahl, Diefenbach, & Göritz, 2010; Hassenzahl & Tractinsky, 2006). The evaluation of user experience focuses on the positive aspects of interactive technology; starting from products with their associated problems, to humans and their positive or negative feelings (Hassenzahl, 2008). There is, however, a lack of empirical research on user experience with regard to online advertising. Pop-ups on websites may evoke negative experiences in users (Buchanan, 2015; Diao & Sundar, 2004). To avoid TV-commercials, people may simply change the channel, whereas online-advertisements interrupt internet users from their current online-activities (Abernethy, 1991). Considering the perspective of the user when designing website contents could aid in constituting more pleasurable experiences with technology. Moreover, it might even motivate users to achieve their goals (Hassenzahl et al., 2013), for example on learning or business websites. Below, we review design guidelines and make suggestions for the development of motivating pop-up windows.

2.2. Pop-up design guidelines

In the literature, several design elements have been described that make pop-ups more effective and pleasurable from a user experience perspective. First, pop-ups can only activate positive associations with brands if they do not disturb consumers in pursuing their current goals. In this line, Bahr and Ford (2011) found that, on average, users look at a pop-up only for a duration of 1.3–1.5 s. Users may not pay attention to pop-ups if they interrupt them while they are engaged in an ongoing task. More than that, users even learn to dismiss and avoid pop-ups (Bahr & Ford, 2011). Second, pop-ups that visually differ from the content of the website may stimulate more attentional effort, which leads users to remember more contents of the website and the advertisement (McCoy et al., 2007).

In cognitive psychology, furthermore, a combination of pictures and words has been shown to evoke a priming effect, in particular if pictures and words originate from the same semantic category (Dell'Acqua & Grainger, 1999). Another important consideration is the congruence between an advertisement and the website content (Flores, Chen, & Ross, 2013). When advertised products are highly congruent with the surrounding context (e.g., car ads in an automotive magazine), people recall the content of ads more

frequently (Moorman, Neijens, & Smit, 2002), and may also develop a more positive attitude toward a new brand (Dahlén, 2005).

A recent study showed that repeated brief exposures to animated banner ads may induce a more positive attitude toward the brand than a static ad on a website (Lee, Ahn, & Park, 2015). Another study on learning in online environments investigated how the use of cognitive learning aids can be increased (Ruf & Ploetzner, 2014). Learning aids were presented in an obvious, but not too intrusive way, either as a static or dynamic window with learning material. The results of eye movements and learning activities showed that learners benefited more if learning aids were displayed dynamically instead of statically. This leads to the conclusion that the presentation of obvious, but not intrusive windows may attract more attention from the user.

Because studies have often focused on the impact of cognitive factors in online environments, the present research aimed to examine the possibility of providing motivational assistance. A motivating environment may increase users' positive emotions and might even enhance performance.

3. Motivation in online environments

3.1. Motivation and goal pursuit

Motivation is important online and offline, because it explains parts of an individuals' performance and behaviour. It can be defined as the "activating orientation of all current actions toward a positively valued goal state" (Rheinberg, 2004, p. 15). In most definitions, motivation is the energy an individual mobilizes to pursue a goal, such that goals direct subsequent behaviour. According to Locke and Latham (2002), goals that are specific and difficult lead to the best performance outcomes. To reach their desired goals, individuals oftentimes develop action plans that enable them to achieve a specific end state.

Individuals have attitudes toward increasing or proving ability in achievement situations, and researchers differentiate between learning and performance goal orientations (Dweck & Leggett, 1988). Individuals with a performance goal orientation aim to demonstrate their competence and gain favorable judgments from others, whereas individuals with a learning goal orientation focus on developing their skills further. Therefore, someone with a learning goal orientation seeks for stimulating tasks which offer the possibility to improve one's knowledge and skills. On the other hand, people with a performance goal orientation strive to prove their competence and favor tasks that minimize mistakes, at the expense of obtaining new abilities (Yi & Hwang, 2003).

Self-regulation skills are important for learning- and performance-related settings and can be acquired across the lifespan (Stamov-Rossnagel, Bittner, & Staudinger, 2009). Goal-setting techniques can be employed to train self-regulation competencies in learning environments. For instance, an empowerment program was constructed to improve goal-monitoring and self-regulation of students (Cleary & Zimmerman, 2004). That way, students learn how to set motivating goals for themselves and develop their self-regulation competencies further.

Online environments can be challenging for learners, because they require self-regulatory skills. The present research tested the idea that pop-up windows can be employed as a tool that implements motivating goals within online environments. On an achievement-related website, motivational pop-ups were designed to evoke a positive user experience and it was tested whether pop-ups increase the association with achievement motivation.

3.2. Information processing of external stimuli

A growing amount of literature suggests that a wide range of behaviours is influenced by external stimuli. For example, emotion-eliciting pictures may activate an automatic allocation of processing resources and thus may increase the memory for specific types of information (Buchanan, 2015; Diao & Sundar, 2004). Moreover, external stimuli as diverse as objects, music, scent, color or other people, can influence behaviours and attitudes – sometimes even without people noticing that they have been influenced (Baker, 1986). In theories on the perception – behaviour link, information processing of motivational contents is usually divided into two main stages (Bargh & Chartrand, 1999). First, external stimuli may automatically activate motivational processes, and, second, these processes have effects on subsequent behaviours. In addition, the mere perception of external stimuli may trigger motivational reactions and automatic goal pursuit (Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trötschel, 2001). For example, goals can be activated by features of the environment, such that the perception of another person's goals and behaviours may increase the likelihood of engaging in that behaviour oneself (Bittner, 2011).

Most relevant for the present research question is the activation of achievement motivation. Achievement goals are related to the human need for achievement and can be activated by performance-related pictures. In one study, for instance, people were simply shown a picture of a woman winning a race, and this manipulation induced a significant effect on their need for achievement (Shantz & Latham, 2009). In our study, we employed an online pop-up picture together with a congruent word as external stimuli to activate achievement goals in users. This design aimed to establish an effect of pop-ups with motivational contents on a real website.

4. Pre-test

The goal of the pre-test was to evaluate the effectiveness of several pop-up windows that were developed to activate achievement-related associations. We tested 24 pop-up variants of different achievement-related pictures and words to examine which combinations were most effectively associated with achievement. The presented material was intended to be perceived as positive, but not intrusive by the user. We expected that congruent pictures and words would be perceived as motivating, because previous research showed that picture-text congruence may enhance processing fluency in online environments (Van Rompay, De Vries, & Van Venrooij, 2010). A high processing fluency is usually associated with more aesthetic pleasure of the perceiver (Reber, Schwarz, & Winkielman, 2004).

4.1. Method

4.1.1. Participants

The participants for this pre-test were recruited in the Netherlands via email. Fourteen participants (12 male; mean age 26.4 years) were invited to participate online by rating the different pop-up variants. All the participants were Dutch university students.

4.1.2. Materials
4.1.2.1. Pop-up windows.
We tested 24 pop-up variants that consisted of different combinations of pictures and words from the same semantic category of achievement motivation. The images depicted different achievement-related events such as 'a student taking a test', 'a marathon runner', 'a gold medal', or 'a businesswoman giving a presentation'. Thus, every picture portrayed a different type of achievement-related activity. Below each image, an achievement-related word was presented (*fulfillment, completion,*

accomplishment, or *success*; cf. Bargh et al., 2001). When designing the pop-ups, we paid attention that the pictures and words were not too obviously related to the construct of achievement motivation, as this would possibly evoke reactance.

4.1.2.2. Website.
The pop-ups were presented on an existing website that focuses on solving business problems via crowdsourcing (www.statetocreate.nl). People usually visit the website to test solutions for existing business problems and to compete for prize money.

4.1.2.3. Achievement motivation.
Participants evaluated the pop-ups by rating on five achievement-related items to what extent they were characteristic for each displayed pop-up. The items were: *striving, mastery, excellence, ambition, performance* (cf. Bargh et al., 2001). Participants indicated on a 7-point scale ranging from 'least corresponding' to 'most corresponding' whether they considered these items as descriptive of each pop-up variant ($\alpha = .93$).

4.1.2.4. User experience.
To measure the affective responses toward the pop-up windows, three items were used: *positivity, desirability,* and *good feeling*. Participants indicated on a 7-point rating scale ranging from 'least corresponding' to 'most corresponding' to what extent they considered these items descriptive of each pop-up variant ($\alpha = .93$).

4.1.3. Procedure

First, participants were asked to help with developing the website further and received a brief introduction explaining that they would rate a number of pop-up windows for the website. Then, the different variants of the pop-ups were presented and participants were instructed to indicate after each pop-up whether the items from the achievement scale were descriptive of the pop-up. In addition, participants were asked whether they perceived the pop-ups as positive, desirable and eliciting a good feeling. Finally, participants were thanked for their time and effort.

4.2. Results and discussion

Fig. 1 shows the three pop-up windows that resulted in the highest effects when summing up the five items of the achievement scale. Comparisons of means showed that the picture with the gold medal (©Fotosearch.com/csp_snake3d) and the word accomplishment ($M = 25.55$, $SD = 1.68$), the picture with the student taking a test (©iStock.com/Susan Chiang) and the word fulfillment ($M = 26.35$, $SD = 1.03$), and the picture with a business woman (©Shutterstock.com/Pressmaster) and the word success ($M = 25.29$, $SD = 1.19$) received the highest ratings on the achievement-related items.

In addition, we tested whether the pop-ups elicited a pleasurable user experience by inducing positive perceptions of the pop-ups. Comparisons of means showed that the first pop-up ($M = 14.86$, $SD = 1.63$), the second pop-up ($M = 15.36$, $SD = 1.32$), and the third pop-up ($M = 14.57$, $SD = .99$) also yielded high means for the items asking about a positive user experience.

This pre-test assessed whether the developed pop-ups were associated with achievement-related content and whether they activated a positive user experience. The results showed that three different pop-ups, comprising of congruent achievement-related words and pictures, were most effective in activating achievement-related associations in users. Moreover, these pop-ups also evoked a positive user experience.

5. Main experiment

The goal of the main study was to examine whether the developed pop-ups were perceived as related to achievement
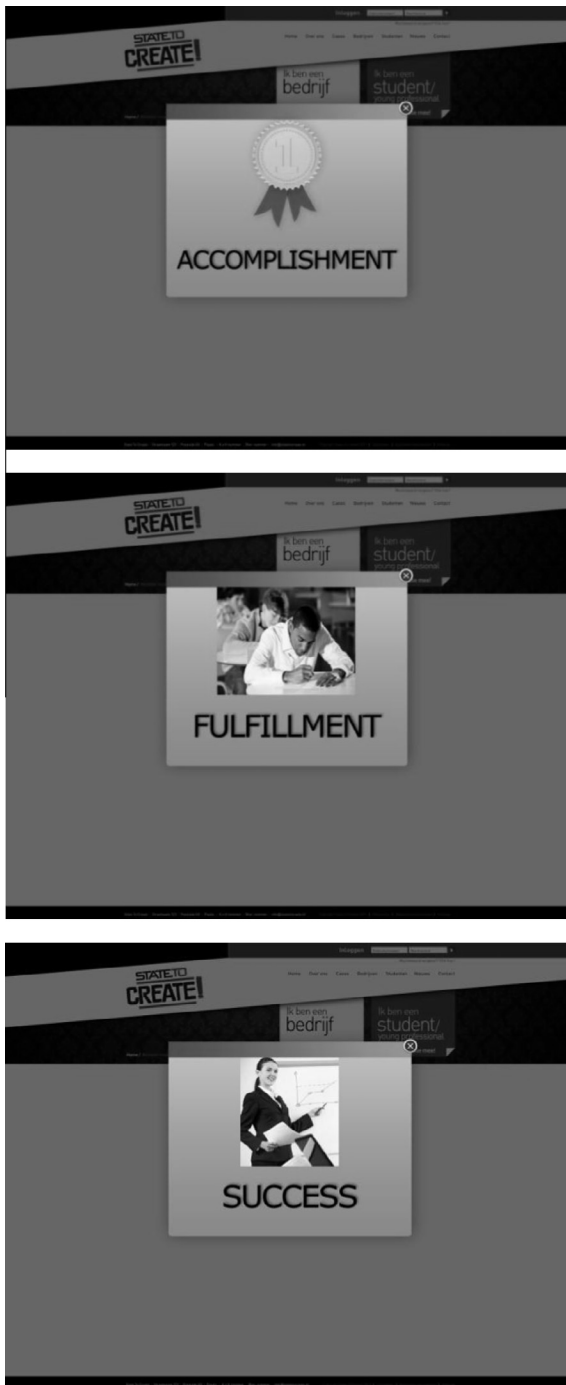
Fig. 1. Pop-up windows that resulted in the highest ratings in the pre-test.

motivation if a sequence of three pop-ups was presented on a website. To test different pop-up-combinations, we compared three groups of pop-up manipulations to a control group. Seventy-eight participants visited the website and were exposed to one of the four conditions. On the website, a sequence of three pop-ups was presented and was expected to lead to higher associations of the website with achievement motivation than a control condition without pop-ups.

Furthermore, we expected differences depending on the duration of the presentation of each pop-up in this sequence. In the three experimental conditions, the display time was varied and we presented each pop-up for either 1, 2, or 3 s. These groups with

different display times were tested because we expected that shorter pop-ups might be more effective. The appearance of a pop-up may lead to an orienting response of the user (Lang, Borse, Wise, & David, 2002). However, if pop-ups are repeatedly presented for a longer amount of time, users may simply start to ignore them. Therefore, a longer display time may lead to diminished processing of the contents of a pop-up.

5.1. Method

5.1.1. Participants and design

The participants were 78 students from different subjects of the University of Twente. A total of 62.8% of the participants were female, and they had a mean age of 24.3 years. They were invited via personal email to participate in an online session. We examined a student sample, because these websites are oftentimes targeted for student users.

The design had 4 groups (presentation time: 1 vs. 2 vs. 3 s vs. no pop-up). While they visited the website, the participants received a sequence of three pop-ups. For each of the experimental groups, the pop-ups were presented for a different amount of time: Presentation time was 1, 2, or 3 s per pop-up. The control group received no pop-ups and these participants were instructed to rate the design of the website. For the dependent variable, the participants were asked to what extent they perceived the items of the achievement scale from the pre-test as descriptive of the website.

5.1.2. Material

Based on the results of the pre-test, we employed the three pop-ups with the highest ratings in eliciting achievement motivation (see Fig. 1). We used the program *Easy GIF Animator* to create a sequence of three pop-ups. The presentation time per pop-ups was varied between conditions, such that each pop-up in the sequence was displayed for either 1, 2, or 3 s. With this design, we aimed to test for differences between the presentation times of the pop-up conditions.

5.1.3. Procedure

The participants were randomly assigned to one of the four conditions, and were informed that they would subsequently visit and evaluate a website (www.statetocreate.nl). While visiting the website, the three experimental groups received a sequence of three pop-ups that were presented for either 1, 2, or 3 s each. The control group did not receive a pop-up, but was instructed to rate the design of the website.

Afterwards, participants received the achievement scale from the pre-test, which examined with five achievement-related items whether they perceived each item as descriptive of the website. In the end, manipulation check questions asked how many pop-ups the participants had seen.

5.2. Results

The aim of this experiment was to provide a deeper insight into the impact of achievement-related pop-ups and to test the effectiveness of different display times for a sequence of three pop-ups. First, a manipulation check tested to what extent the participants remembered the pop-ups they had seen.

5.2.1. Pop-ups seen

Interestingly, the question how many pop-ups they had seen showed that not all participants remembered the correct amount of pop-ups seen. Participants in the conditions with 1 or 2 s display time remembered fewer pop-ups than they had actually seen, as is illustrated in Table 1. An ANOVA indicated a significant main effect of the display time, $F(2, 54) = 3.51$, $p = .037$, $\eta_p^2 = .12$ on the

Table 1
Means (M) and standard deviations (SD) for the remembered pop-ups.

Condition	1 s		2 s		3 s		Control	
	M	SD	M	SD	M	SD	M	SD
Pop-ups seen	2.50	.79	2.68	1.00	3.15	.49	n/a	

amount of pop-ups seen. Planned contrasts revealed that participants in the condition with the 1 s presentation remembered significantly fewer pop-ups than participants with 3 s display time, $p = .014$. Participants in the 2 s condition also remembered fewer pop-ups than the 3 s condition, $p = .069$. It therefore seems that participants did not pay attention to each individual pop-up and that a longer display time led to the perception that more pop-ups were presented.

5.2.2. Achievement ratings

Most importantly, we tested for differences between the three sequences of display times to investigate the intensity of the pop-ups on achievement ratings and compare them to the control group. An ANOVA showed a significant effect of the four experimental conditions on achievement ratings, $F(3, 74) = 4.69$, $p = .005$, $\eta_p^2 = .16$. The variation of the display times of the pop-ups led to significantly different ratings of the website (see Table 2).

Planned contrasts revealed that the display of three pop-ups for 2 s each led to the highest means on achievement-related ratings and were significantly higher than the control group, $p = .008$. In addition, the 1 s condition resulted in a similar effect and was significantly higher than the control group, $p = .016$. The presentation of each pop-up for 3 s, by contrast, elicited the lowest ratings, which were similar to the control condition. These findings point out that the presentation of motivating pop-ups for only one or two seconds may elicit the highest effects.

5.3. Discussion

The results showed that a sequence of three pop-ups comprising of achievement-related words and pictures led to a higher perception of achievement-related contents on the website than the control condition. We found the highest effect on achievement ratings if the pop-ups were presented for 2 s. To motivate users, it does not seem necessary to display pop-ups for a longer amount of time, but it seems advisable to employ pop-ups that disappear after 1 or 2 s. That way, motivating messages could be processed by users, but would not have the negative consequences of evoking reactance and interrupting users' online-activities for a longer period of time.

Furthermore, the results indicate that a longer display time of 3 s led to the perception of more pop-up windows, although all groups were exposed to a sequence of three pop-ups. An explanation could be that a longer display time induced a higher awareness for the presence of pop-ups on the website. This awareness could possibly lead to a lower processing of the achievement-related contents, because users may start to ignore pop-ups after 2 s. If pop-ups are presented for a longer period of time, users

may feel interrupted and may pay less attention to the contents of the pop-ups. In conclusion, a longer presentation time seems to lead to the perception to have seen more pop-ups, but also to less processing of the motivational contents of the pop-ups.

6. General discussion

The present research aimed to investigate pop-up windows that elicit motivating goals in website users. Achievement motivation may support users to perform well on websites with performance-related contents and may furthermore evoke a positive user experience. The present findings indicate that the developed pop-ups enhanced an association of the website with achievement motivation.

In the pre-test, we designed pop-up windows that were associated with achievement motivation and a positive user experience. The results demonstrated that the participants had a positive feeling about the pop-up windows, which could be an important design guideline to induce positive affect toward the contents of a website. In the main experiment, we tested the effects of different display times for a sequence of three pop-ups, and compared them to a control condition. The control group was asked to simply evaluate the design of the website. This design allowed conclusions about the amount of time pop-ups should be displayed to have an intense effect – while not disturbing the user. Our findings show that the presentation of pop-ups containing a word and a congruent picture to stimulate achievement motivation led to the subsequent association of the website with achievement-related contents. When comparing the four conditions, the sequence of pop-ups that were displayed for 2 s yielded the highest effect on users. These findings indicate that the combination of achievement eliciting words and pictures affects subsequent achievement-related ratings of the website. By contrast, if the three pop-ups were presented for 3 s each, they were significantly less effective and led to similar results as the control group.

Based on these results, it can be assumed that users may perceive a repeated presentation of 3 s pop-ups as too intense and disturbing. Instead of activating achievement motivation, longer pop-ups may interrupt users and may lead to reactance. A previous study found that irritation in users reached similar levels for a 10-s and a 20-s pop-up (Edwards et al., 2002). It could be that a display time of only 1 or 2 s leads to diminished perceptions of intrusion, and, thus, could be used to communicate positive messages toward the user. This conclusion is in line with previous research showing that users look at a pop-up for only 1.3–1.5 s (Bahr & Ford, 2011). After this period of time, users may dismiss the presented message, even if it is important for the task at hand.

In learning contexts, these findings could be employed to make the design of websites more motivating, as online-situations sometimes lead users to put less effort into a task. For example, Evans and Mathur (2005) argued that a major potential disadvantage of online self-administered surveys is that people stop working on a task if the instructions are unclear. If problems arise, some individuals may become de-motivated and stop working on an online-task without finishing or reading further instructions on the website (Ray & Tabor, 2003).

6.1. Limitations and suggestions for further research

The present study has a few limitations that could be considered in future research on this topic. First, the participants saw the pop-ups in an experimental situation where the pop-ups might be perceived as less intrusive than in learning situations where interruptions block users' current goals online (e.g., McCoy et al., 2007). This situation may have led to more positive ratings of user

Table 2
Means (M) and standard deviations (SD) for the four conditions.

Condition	1 s		2 s		3 s		Control	
	M	SD	M	SD	M	SD	M	SD
Achievement ratings	26.50	3.38	26.84	4.44	22.70	5.73	22.86	4.39
n	18		19		20		21	

experience than would be expected if people are interrupted during their daily activities on a website. Second, possibly also the position of the pop-ups on our website could have a beneficial effect on user attention (Diao & Sundar, 2004). We did not vary the position of the pop-ups and only analyzed the presentation in the middle of the screen. We expected that this position in the middle is in the focus of the users' attention. It could be that smaller pop-ups in the corner of the website may not be seen, and that, therefore, longer display times and more pop-ups would be necessary to evoke an effect in users. In addition, future studies could investigate the effects of pop-ups on further factors, such as brand awareness, product recall and recognition, or changes in attitudes and behaviour (e.g., Courbet, Fourquet-Courbet, Kazan, & Intartaglia, 2014). We aimed to investigate achievement-related pop-ups on a website, because achievement motivation can be considered a relevant construct for tasks in learning and performance environments.

In general, consumers not only focus on the contents of websites, but also expect positive experiences (Bagozzi & Dholakia, 1999; Hassenzahl et al., 2010). Our findings provide implications that the strategy to gain people's attention should not be to use numerous types of visual and auditory formats of pop-ups to direct the attention to specific advertisements (Diao & Sundar, 2004). Presenting pop-ups for too long may more likely block user's goals and therefore induce negative attitudes toward the website. At this point, a consumer could choose to leave the website and go to another, more user-friendly website (Clayton & Hettche, 2012).

6.2. Practical implications

The current research sheds light on pop-up windows as a communication technology and as tools that may activate achievement motivation in learners. This finding is of interest for research and practice in online advertising, as the competition for attaining the attention of online users has increased (Diao & Sundar, 2004). Because advertisements in pop-ups are likely to be avoided by consumers (Bahr & Ford, 2011), the effectiveness of pop-ups is perceived to be low compared to other forms of advertising. Marketers, however, have dealt with this encounter by flooding online users with numerous types of visual and auditory formats of pop-ups, such as bigger sizes, brighter colors, animations, and music, in an effort to direct a users' attention to their own advertisements (Diao & Sundar, 2004). For users, this resulted in negative perceptions and attitudes toward pop-ups. Our research, however, shows that the activation of positive motivations in online situations can be perceived as positive by the users. Possibly, motivational pop-ups may furthermore contribute to a better retention of the website content, if that content is congruent with the evoked motivation (McCoy et al., 2007).

For achievement-related situations, it could be expected that pop-ups comprising of a congruent word and picture might even have an effect on subsequent task performance, if the tasks on the website are in line with the associated goal content. Thus, not attention-grabbing pop-ups are advisable in online environments, but motivating pop-ups with congruent semantic associations that are shown for a short amount of time.

Our findings provide implications for advertisers that the congruent combination of pictures and words on pop-ups may evoke effects that also transfer to the perception of the website content. Thus, when developing pop-up advertisements, marketers should focus on the congruence of the contents of the pop-up and website. Activating goals and motivations that are congruent with the current task may be most effective in an online environment (Moorman et al., 2002). Paying attention to these design guidelines may help to improve the layout of a website and make it more user-friendly. It would be important for further research to specify

the diverse situational cues that may influence achievement motivation in online environments. Developing pop-ups for specific types of motivations could help to create positive user experiences in an online environment.

6.3. Conclusions

We investigated whether pop-ups that are related to achievement motivation are effective from a user experience perspective. The present findings show that pop-ups could serve as external cues that foster an association of the website content with achievement motivation. This has implications, for example, for learning environments and business websites where users need to be motivated to achieve a good performance.

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