



The effect of violating visual conventions of a website on user performance and disorientation. How bad can it be?

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ABSTRACT

This experiment investigates what happens to user performance and disorientation when visual conventions of a genre are violated. It also looks at what happens to the user performance and disorientation over time. Twenty-eight participants were randomly allocated to two independent groups: one was tested with a conventional website and the other with a convention-violating website. The study comprised of two parts and on each part participants were tested on a different website. Results showed that in the first part participants who used the violating site performed worse and were more disoriented than participants who used the conventional version. But the performance of the participants of the convention-violating group improved over time so that by the end of the first part performance on both groups were equivalent. In the second part performance and disorientation on both groups were equivalent suggesting that users might rapidly adapt to visual convention violations.

Categories and Subject Descriptors

H.5.2 [Information Interfaces and Presentation]: User Interfaces – *graphical user interfaces (GUI), screen design, interaction styles, evaluation.*

General Terms

Design, Performance, Human Factors.

Keywords

Interface, conventions, genres, navigation.

1.INTRODUCTION

Designers are constantly faced with the dilemma of whether to break new grounds and innovate or stick to what is conventional. This dilemma is even stronger when it comes to designing websites because of the number of visual possibilities allowed by the technology. Usability literature usually condemns the violation of conventions but recent studies suggest that the problem might not be as big as initially thought.

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This study focuses on the investigation of the effect of violating visual-conventions on user performance and disorientation over time.

2.BACKGROUND

2.1.The visual side of genre: visual conventions

Genre theory has its foundations in several areas of knowledge such as literature, linguistics and rhetoric. And in each of these areas, the concept of genre has been adapted to its needs and idiosyncrasies [27]. Despite small variations in concepts, it is generally agreed that genres are a class of communicative events which are recognized by members of a group. These groups are generally known as discourse communities [27] and they have the ability to identify, decode and understand the genre they use.

Although genres have been focus of research in many areas for quite a while, studies on the visual components of a genre are scarce and many authors do not extend deeply into it. Although the concept of genre extends beyond the visual aspect engulfing fields of knowledge such as rhetoric, linguistics and literature, not many authors consider their visual components in their theories. A framework which is generally agreed upon is one which subdivides genres into substance and form components [19, 34]. Substance referring to the social motives and theme aspects of genre, and form to the observable and linguistic features of the genre [19].

One of the first studies to mention the visual characteristics of genre was carried out by Waller [31] who called them *typographic conventions*. Delin, Bateman & Allen [7] have developed the concept further into a schema that illustrates the components of the genre identity of a document. One component of this schema called *layout structure* is particularly relevant to designers as it refers to the 'nature, appearance and position of communicative elements on the page' [7]. One can say that the layout structure of a genre then is basically a set of conventions on how to present visual information for a particular genre which in this study will be called visual conventions.

The visual conventions were proven to be an important aspect of genre recognition [28] allowing users who are familiar to a specific genre to identify it visually through the layout before looking at the content.

With the significant expansion of the World Wide Web, some researchers [9, 12] have been indicating the emergence and evolution of digital genres. But the impact of violating these digital genres has not been thoroughly studied.

2.2. Conventions and usability

For many, following design conventions is an unquestionable matter and just the mention of violating them can send most into an exalted argument. One of the main advocates of unconditional adherence to conventions is Jakob Nielsen who has stated in his law of web user experience that any deviation from a convention will cause major usability problems [21].

However, the fact that something is conventional it does not necessarily mean it is also easy to use. Some believe that it is even necessary to break with standards and conventions in order to improve usability [6].

Interestingly enough, Nielsen [22] is one who exemplifies rather well this point by affirming that placing the navigation menu of a web page on the right side of the screen would improve its usability because:

(a) it would be closer to the scroll bar and that would save users time

(b) because users always look at content first [cf. 8]

Because in cultures that read left-to-right people tend to look at the left-side of the screen first, moving the menu would leave the left side of the window for content to be placed [22]. Despite his own argument, Nielsen continues to reinforce the following of conventions even when a different design would be better [21].

As research shows, users do have expectations on the positioning of web page elements [3, 17] and a web design which agrees with these expectations helps users find interface elements faster [23] and improve task performance [11]. A study to verify this was carried out by Kalbach & Bosenick [16]. According to the study, if these statements were true user performance on websites with the navigation bar on the left-side of the screen (expected position) would be better than menus placed in the right-side of the screen (unexpected position). The study found no differences in overall user performance regarding the positioning of the menu on the screen. But researchers found that participants who used the right-side menu spent more time scanning the homepage on the two first tasks and that this effect diminished on the subsequent tasks.

This lack of a significant difference in Kalbach & Bosenick [16] could be explained by another study by Vaughan and Dillon which compared user performances on genre-conforming and genre-violating online news pages [29]. In this study, the authors tested users with a genre-conforming and a genre violating web news sites. For the genre-violating sites, not only the layout of the page was changed from what was deemed conventional, but also the categorization of the news was reinvented demanding a complete semantic rethink of the information organization within the site by the user. The study found that the participants who used the genre-conforming sites showed a more efficient performance on the information-seeking tasks compared to the ones who used the genre-violating. But by the 5th time they used the website, users of the genre-violating sites learned the new interface increasing their efficiency during the tasks.

So it is possible that the learning effect which took place in the study by Vaughan and Dillon [29] also happened in the study by Kalbach and Bosenick [16]. But unlike Vaughan and Dillon who have violated the visual and structural conventions of the genre, Kalbach and Bosenick only altered the visual conventions of the genre. This could have made learning easier in the latter and consequentially sped-up the process.

People can learn to do a task by one of three ways: (a) by hearing, (b) by seeing or (c) by doing. And of these three ways, the most important and effective is learning by doing [6]. And based on learning by doing, Constantine and Lockwood [6] have developed the *Anticipatory Learning* paradigm which consists of four elements: novelty, anticipation, action and confirmation. According to this model the user finds an unfamiliar element, guesses what the element is or how it works. Then the user tries it out and is rewarded by finding out the guess was correct [6]. Constantine & Lockwood [6] mention that when all the elements necessary for anticipatory learning to take place are present, no prolonged period of trial-and-error is needed. With one use the user learns the interface and uses it correctly thereafter [6]. So in the previous study by Kalbach & Bosenick [16], the fact that the structure of the site was not changed might have given users a better chance at correctly anticipating the function of a particular interface element thus reducing the learning process.

In fact, research has shown that users do learn where elements of the interface are [11, 18, 23]. A study on interface menu positioning carried out by McCarthy, Sasse and Riegelsberger [18] has shown that sites that conformed to user's expectations regarding the menu positioning did lead to faster search times when compared to non-conforming websites. But according to the authors this performance difference was short-lived and when sites were revisited for the second time there was no search time difference.

Although there seems to be indications that violating genre conventions might have a negative impact on user performance some experiments seem to suggest that this negative impact might not last for long. Furthermore, when only visual conventions are violated it seems that this negative impact can be even more ephemeral. But no study so far has looked specifically if users can learn to use a visual convention-violating site and how long this learning process could take.

This study proposes to investigate what happens when participants who are familiar with a certain set of genre conventions are tested against a visual convention violating website. The hypothesis here is that participants will familiarize themselves with the new interface. And as happened with the studies from McCarthy et al. [18] and Vaughan & Dillon [29] the group which uses the convention-violating website will have a performance improvement throughout the test compared to a group which uses a conventional website.

2.3. Disorientation

User disorientation has been considered one of the major problems in navigating through hypertext [5, 20, 33] and violating the expectations users have regarding a particular genre has been reported to make users feel disoriented [10]. Disorientation in hypertext has been defined as the 'tendency to lose one's sense of location and direction in a nonlinear document' [5, p. 40].

Measuring disorientation, however seems to be not an easy task [15] and several methods have been proposed. Basically the methods revolve around two main ideas: one that claims a link between the actions of users when navigating and disorientation [24] and another which claims that user disorientation can only be measured by asking the user about their perceptions [1].

More recently researchers have been questioning the concept of separating these two measurements and have actually found correlations between the user actions and their perceived

disorientation [14, 15]. This correlation could indicate that although backtracking and revisits might not be the ideal way to measure disorientation they could give good indication as to whether a user is lost or not.

If violating conventions do result in disoriented users, then possibly the learning of the violating interface will reduce again user disorientation over time. This study will also look at the effect of violating visual conventions on user disorientation and will observe if after some time using a convention-violating website disorientation will be reduced.

2.4.In summary

This study will investigate what happens with the performance of users who are familiar with a certain set of genre conventions when they are tested against a visual convention violating website. The study will not only look at overall performance but also the performance over time. It will also attempt to verify if violating visual conventions will produce user disorientation and if this disorientation will persist as users spend more time using the violating website.

3.THE EXPERIMENT

3.1.Method

3.1.1Experimental design

The experiment used two independent groups of participants, with one group tested using the conventional forum design and the other using the less conventional forum design. The dependent variables were the task completion times, the number of wrong answers, the number of navigational corrections done by each participant and the number of page revisits done by each participant. The independent variable was the conventionality of the forum (conventional or convention-violating).

The experiment was divided in two parts with a 5 minute interval between them. In the first part, participants were tested on web forum about books (one group with the conventional template and the other with the convention-violating template). In the second part participants were tested with another web forum (about palmtops) also designed in accordance to the templates – one conventional and one convention-violating. The group which used the conventional version of the forum in the first part used a conventional version of the forum in the second part and the group which used the convention-violating version in the first part used a convention-violating version in the second part.

3.1.2.Materials

3.1.2.1.The websites

The website to be used in this experiment has to be a strong candidate for a digital genre. Previous research has shown the personal homepage [9] and web news [12, 29] to be emerging digital genres. But unlike the personal homepage, the web news genre is not a purely digital genre since some of its characteristics have been adapted from the paper genre [26]. Besides the personal homepage, there are other strong candidates for digital genres such as the weblog [26] and the web discussion forum [25]. Due to their nature, web forums seem adequate for the purposes of this experiment because they not only are truly digital genres with no paper counterpart, but also their sole purpose is creating an environment which facilitates the communication between people.

Furthermore, these people are part of a restricted group (forum users) which can be thought of as a discourse community.

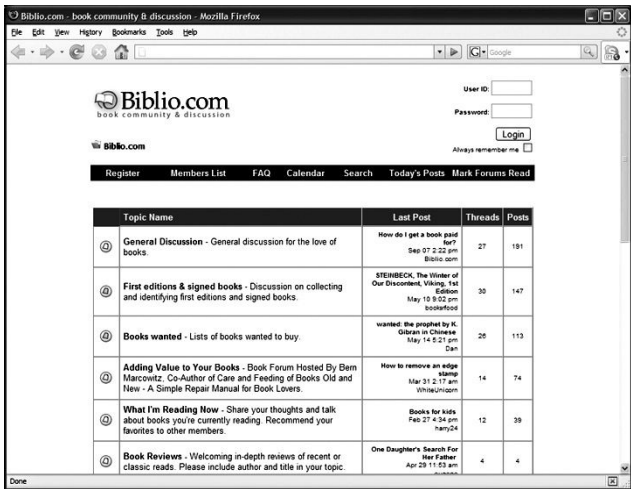
To prepare the conventional and convection-violating web forums it is necessary to define what is and what is not conventional. When investigating the personal homepage Dillon and Gushrowski [9] came up with a method to define conventionality what was common and what was not common in the personal homepage. They looked at 100 personal homepages and noted the elements which appeared on them and the frequency in which they appeared. After that they assembled 8 homepage variations using the 5 most occurring elements and the 5 least occurring elements. The pages were then presented to users who ranked them in order of preference as a homepage design. Dillin and Gushrowski have essentially altered the visual aspect of the personal homepage genre by manipulating most occurring and least occurring elements.

So, to generate the conventional and convention-violating web forums a development of the method devised by Dillon and Gushrowski was used. This development was based essentially on the concept of layout structure proposed by Delin et al. [7].

Due to the technology behind them, web forum page design is much more restrictive than personal webpage design, so thet most of the web forum pages are very similar to one another. Thus, 15 web forum pages were examined. On each of these pages the elements appearing were noted along with their presentation method (graphic, alphanumeric or hybrid), arrangement (horizontal, vertical or both) and their position.

The frequencies of occurrence for each element and for the presentation, arrangement and position of each element were noted. Then 12 conventional page variations and 12 convention-violating page variations were created and presented to 12 web forum users. The users had to compare each of the 12 conventional pages with each of the 12 convention-violating

Figure 1 - Example of the conventional forum page



ages and choose on each pair a page which was more like other web forum pages they had seen before.

The page chosen by the participants as the most similar to other forums was used as a template for the conventional forum (Figure 1) and the page which was chosen the least was used as a convention-violating template (Figure 2).

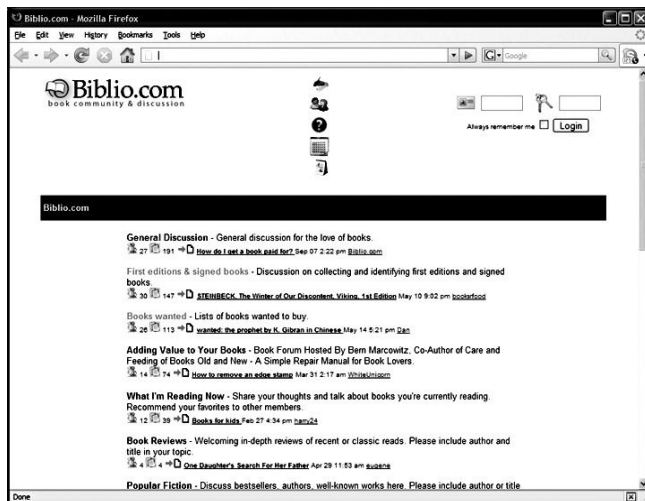


Figure 2- Example of the convention-violating page

3.1.2.2. The tasks

It was decided that in the first part the number of tasks would be 10. And due to the length of the experiment and not to tire participants, the second part of the study was designed to be shorter than the first so only 6 tasks were designed for this part. Task order was randomized for each participant.

3.1.2.3. The questionnaire

Based on the work by Ahuja & Webster [1] a questionnaire to assess the perception of users regarding their disorientation when using the web forums was elaborated. Although the same ideas from the authors were followed, this questionnaire contained fewer questions than the original designed by Ahuja & Webster. This was because the original questionnaire had some of the questions repeated but reverse-coded, so for reasons of simplicity and not to tire the participants excessively, only 5 of the authors' original questions were taken into the questionnaire. The answers to the questionnaire were arranged in a 5 point Likert scale but no numbering was placed on it, only squares with the respective answer below it. Table 1 shows the questions used in the questionnaire.

Table 1 - Questions as they appeared in the questionnaire

Question 1	I felt lost / disoriented
Question 2	I felt like I was going around in circles
Question 3	It was difficult to find a page I had previously viewed
Question 4	Learning to use the site was easy
Question 5	The site was easy to navigate

Questions 1, 2 and 3 asked participants about their perceived sense of disorientation and questions 4 and 5 were concerned with their perceived ease of learning the interface.

3.1.3. Participants

Twenty-eight participants, all graduates or post-graduates from different disciplines volunteered for the experiment. Participants were randomly allocated to one of the experimental groups in a way that 14 participants were tested with the conventional version

and 14 participants were tested with the convention-violating version. All participants were web forums users and were fluent in English (either as first or second language).

3.1.4. Procedure

Participants were tested individually and before each one entered the room, all the material for that participant was prepared.

Then the experiment was explained to the participant and they were told that the test would be divided into two parts with a 5 minute break between them. Each part consisted basically of looking for answers to questions within a web forum and that it would be a different forum for each part. It was then explained that whenever the participant found a satisfactory answer they should select the text (with a click and drag mouse movement) and click on the 'finished' button that was on the pop-up window to the left of the browser.

Participants were told to look for the answers as fast and as accurately as possible, that there were no tricky questions and all answers were in the forum. They were told to behave as they would in a normal web environment and were allowed to give up on the search for an answer at any time they wanted. The researcher reinforced to the participant that the experiment was concerned with testing the design of the site and not the participant so they should not feel pressured.

When the participant was ready the web forum was presented and a paper with a task printed on was given to the participant. The participant would read the paper and as soon as they finished reading and looked at the screen the stopwatch would be started. As the participants clicked the mouse, a copy of the screen would automatically be captured to the hard drive. Whenever a participant found an answer they would select it and click on the 'finished' button indicating they have completed the task. That action would take them back to the first level of the forum and another paper with the next task was given to them and the procedure would be repeated until all tasks for the first part were completed. Then, the participant was requested to answer the questionnaire on their perceptions of disorientation and ease of use of the forum in the first part. After that the participant would take a 5 minute break while the researcher prepared the material for the second part.

The procedures of the second part were the same as the procedures of the first part: the participant would receive a sheet of paper with the task, look for the answer, select it with the mouse and click on the 'finished' button. When the participant completed all the tasks from part two they were requested to fill in the questionnaire on their perceptions of disorientation and ease of use of the forum in the second part. These procedures were repeated to all the participants in both groups.

3.2. Results

3.2.1. First part

3.2.1.1. Time

The group which was tested on the conventional forum took on average 594.1 seconds ($SD=192.1$) to complete the first part of the test while the group which was tested on the convention-violating forum took on average 750.5 seconds ($SD=304.4$) to complete the first part of the test. This result was not significant ($F_{(1,26)}=2.64$, $p=0.116$).

Looking at the time to complete the tasks over the course of the first part, it is quite evident that both the convention-violating (Figure 3) and the conventional (Figure 4) groups seemed to have reduced the time to complete the tasks over time. A Mann-Kendall trend test showed a downward trend on both the convention-violating group ($z=-2.14$, $p=0.015$) and the conventional group ($z=-2.86$, $p=0.002$). But it is also apparent in the graphs that this process was stronger and quicker in the convention-violating group.

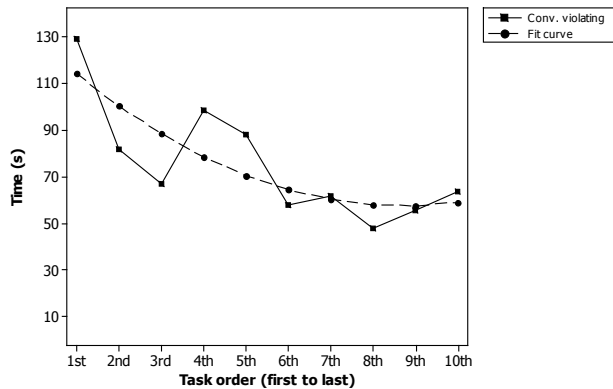


Figure 3 - Mean time to complete tasks of the convention-violating group over time in the first part of the experiment

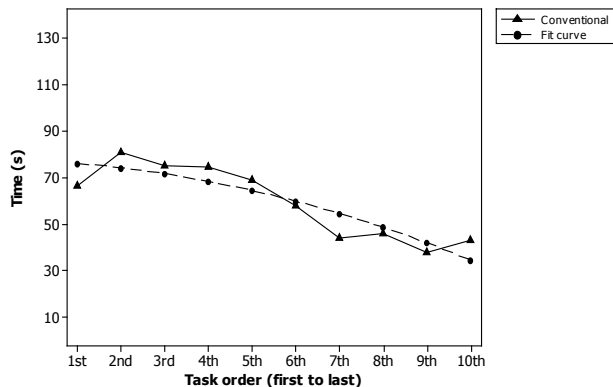


Figure 4 – Mean time to complete tasks of the conventional group over time in the first part of the experiment

3.2.1.2. Right answers

There was no significant difference in the number of right answers in the conventional and less conventional group ($F_{(1,26)}=0.76$, $p=0.390$). However, when looking at the number of right answers as the experiment progressed, a Mann-Kendall trend test detected an upward trend in the convention-violating group ($z=1.720$, $p=0.042$) while no trend was detected in the conventional group ($z=1.106$, $p_{up}=0.134$, $p_{down}=0.865$). The graphs for the convention-violating (Figure 5) and conventional (Figure 6) groups are shown below.

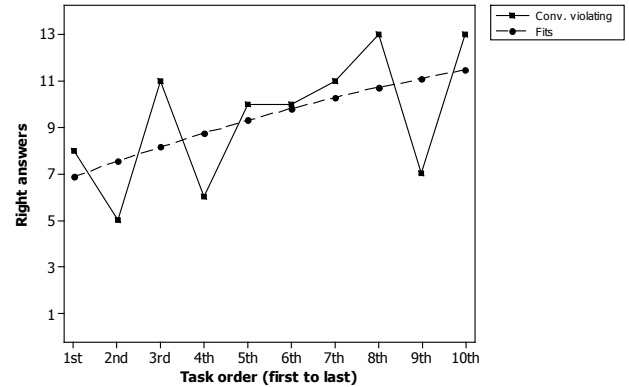


Figure 5 - Number of right answers of the convention-violating group over time in the first part of the experiment

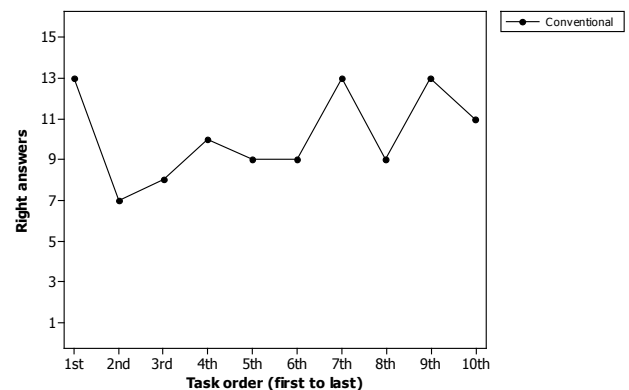


Figure 6 - Number of right answers of the conventional group over time in the first part of the experiment

3.2.1.3. Rate of right answers

As done previously by Whiteside, Jones, Levy and Wixon [32], one way of looking at the results to better assess any improvement or hindrance in performance is to combine time and right answers into one rate. A logical way of combining these two measures is by dividing the number of right answers by time which will give a 'Right answers per second' ratio (RPS). But this operation will result in quite small numbers which could be quite difficult to operate. Multiplying the ratio by a constant will improve number manageability without compromising the analysis. The formula to calculate the RPS is illustrated in Figure 7.

$$RPS = 100 \times \frac{TotalRightAnswers}{TotalTime}$$

Figure 7 - Right answers rate formula

A one-way Analysis of Variance on the RPS ratio for the first part of the test showed a significant difference ($F_{(1,26)}=5.70$, $p=0.025$) between the conventional ($M=1.30$, $SD=0.41$) and convention-violating group ($M=0.98$, $SD=0.30$). The participants in the convention-violating group showed a lower mean RPS than the conventional group which indicates that in this part of the test their performance was not as good as the other group of participants.

Looking at the progression of the RPS rate, the Mann-Kendall trend test showed no trend in the conventional group ($z = -1.25$, $p_{up} = 0.895$, $p_{down} = 0.105$) and an upward trend in the less conventional group ($z = 2.50$, $p = 0.006$).

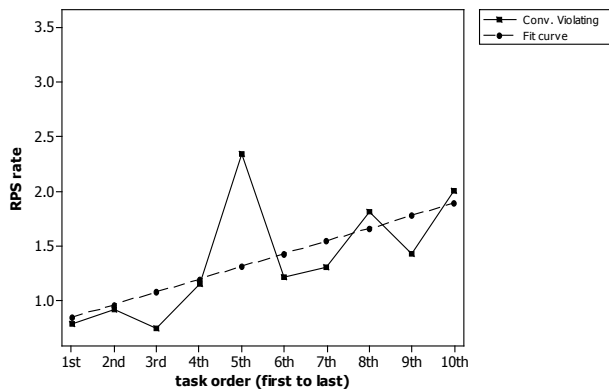


Figure 8 - RPS rate of the convention-violating group over time in the first part of the experiment

Overlapping the RPS progression graphs of the conventional and less conventional groups (figure 9) it is possible to see that by the end of the test, the performance of the less conventional group was apparently leveled with the performance of the conventional group.

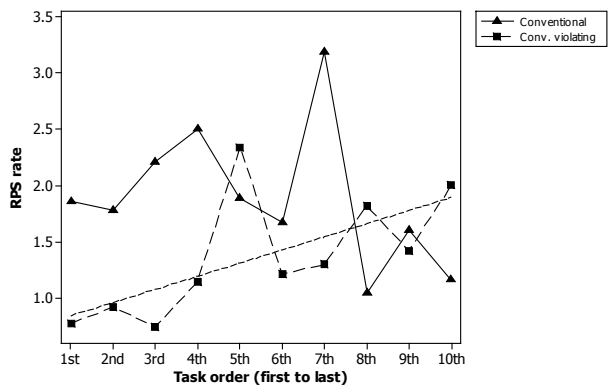


Figure 9 - RPS rate of both the conventional and convention-violating groups over time in the first part of the experiment

After the point in the where the trend line for the convention-violating group crosses the graph of conventional group there are three RPS scores. Although there was a difference in overall performance, a one-way ANOVA showed no statistical significant difference between the last 3 RPS scores of the two groups ($F_{(1,26)} = 1.85$, $p = 0.186$).

3.2.1.4. Navigational corrections

3.2.1.4.1. Revisits

Participants who used the convention-violating forum performed more page revisits (mean=20.36) than the participants who used the conventional forum (mean=7.93). This result was significant ($F_{(1,26)} = 7.48$, $p = 0.011$).

3.2.1.4.2. Backtracking

Again, participants who used the convention-violating forum used the back button more times (mean=17.36) than participants who

used the conventional forum (mean=5.07). This result was significant ($F_{(1,26)} = 9.37$, $p = 0.005$).

3.2.1.5. Questionnaire

In the first part participants in the conventional and convention-violating group only differed in their perceptions of the ease of learning the web site (see Question 4 on Table 1). Participants who used the conventional version thought it was easy to learn to use their site, while the other group neither agreed nor disagreed. A Mann-Whitney test comparing the answers of the conventional (Median=4) and convention-violating (Median=3.5) groups for this question showed that this result was significant ($W = 242.5$, $n = 14$, $p = 0.046$).

3.2.2. Second part

3.2.2.1. Time

A one-way ANOVA showed no difference in total time to complete the tasks for the second part of the test ($F_{(1,26)} = 0.77$, $p = 0.388$). With the conventional group showing an average of 253.8s (SD=123.2) and the convention-violating group an average of 298.4s (SD=144.9). The time to complete the tasks over the course of the second part showed no trend in the conventional group ($z = -0.37$, $p = 0.354$) nor in the less conventional group ($z = 0.37$, $p = 0.646$).

Overlapping the two graphs it is possible to notice how the shapes of the graphs are similar which seems to suggest an equivalent performance on both groups in the second part of the test.

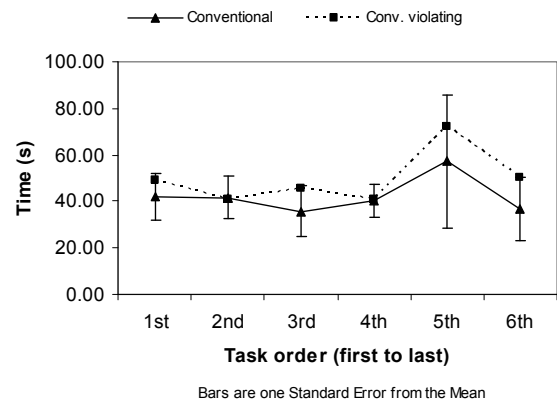


Figure 10 - Mean time to complete tasks of both groups over time in the second part of the experiment

3.2.2.2. Right answers rate

A one-way ANOVA found no significant difference between the RPS ratio ($F_{(1,26)} = 0.02$, $df = 1$, $p = 0.882$) of the conventional ($M = 2.16$, $SD = 1.39$) and less conventional group ($M = 2.23$, $SD = 1.10$).

3.2.2.3. Right answers rate over time

A Mann-Kendall test found no trend in the conventional group ($z = -0.375$, $p_{up} = 0.646$, $p_{down} = 0.354$) and no trend in the less conventional group ($z = 0.00$, $p_{up} = p_{down} = 0.5$).

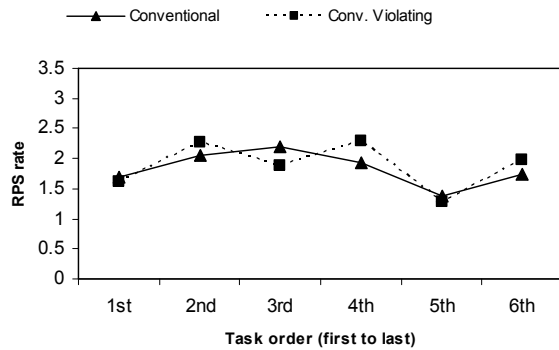


Figure 11 - RPS rate of both groups over time in the second part of the test

3.2.2.4. Navigational corrections

3.2.2.4.1. Revisits

A one-way ANOVA found that the difference in the number of revisits done by the participants in the conventional ($M=3.00$, $SD=3.21$) and convention-violating groups ($M=8.36$, $SD=12.93$) was not significant ($F_{(1,26)}=2.26$, $p=0.144$).

3.2.2.4.2. Backtracking

Also here, the difference in the usage of backtracking by the participants in the conventional group ($M=1.79$, $SD=2.08$) and the participants in the less conventional group ($M=6.14$, $SD=8.94$) was not significant ($F_{(1,26)}=3.15$, $p=0.088$).

3.2.2.5. Questionnaire

There were no differences between groups in the perceived disorientation and ease of learning and navigating the web forums in the second part of the test.

However when comparing the answers given by the convention-violating group in the first part with the answers given by the same group in the second part some interesting results came up. A Wilcoxon signed-rank test showed that the convention-violating group felt more lost in the first part than in the second part ($Z=-2.72$, $n=14$, $p=0.006$) and they felt as they were going round in circles more in the first part than in the second part of the test ($Z=-2.73$, $n=14$, $p=0.006$). Between the two parts of the test there were no differences in the perception of the convention-violating group regarding (a) the difficulty of finding a previously viewed page; (b) the ease of learning the site and (c) the ease of navigating the site.

There were no significant differences between the answers given by the conventional group in the first and second parts of the test.

3.3. Discussion

This study demonstrated that as commented in the literature, violating visual conventions can leave users disoriented and hinder their performance [10, 21]. But it also showed that their disorientation and hindered performance are short-lived. This offers further insights which can help explain some discrepancies found in the literature.

In the first part performance (measured by the RPS rate) for the group using the convention-violating website was not as good as the performance of the group using the conventional website. But, as expected, their performance improved throughout the first part

of the test so that by the end of the first part participants in the convention-violating forum had an equivalent performance to the participants of the conventional group.

In the second part of the test there was no difference in the time to complete the tasks or in the RPS rate of both groups. This indicates that the performance of both groups were equivalent in the second part of the test. This could mean that participants who used the violating website had familiarized themselves with the rules of the site in the first part of the test so that their performance was equivalent to the group which used the conventional version in the second part. An alternative explanation would be that because the site used in the second part had fewer topics and fewer pages than the one in the first part it was easier to find the answers to the tasks.

However, a comparison of the answers given by the convention-violating group to the question regarding the ease of use of the forum showed no differences in perception between the two parts it. This indicates that they did not think the site in the second part was easier to learn than the one in the first part.

Also, participants using the violating site did more page revisits and backtracking movements than the conventional group. This could indicate that they were more disoriented than participants in the conventional group. However, according to the questionnaire they have felt as lost and disoriented as the participants in the conventional group. One explanation for this difference between the measured disorientation and the perceived disorientation could be due to different interpretations of the answers in the scale. The most frequent answer on both groups for the questions of disorientation was 'Sometimes' it could be that for one group sometimes is more often than for the other group. In fact, some authors have reported that the Likert-type scale could lead to ambiguity in the interpretation of the words used [2, 4, 13, 30]. However, when the comparisons are made within the same group these ambiguities in interpretation cease to exist [2].

Looking at the perceived disorientation of the convention-violating group across parts there was an improvement in their condition: they have felt more disoriented in the first part than in the second. These results are in accordance with the measured disorientation of the group, since in the first part they made more page revisits and backtracking movements than in the second part.

3.4. Conclusion

Although initially violating visual conventions might hinder user performance and leave users disoriented this experiment indicates that these problems can be short-lived and users can adapt reasonably fast to a new set of visual conventions. So the decision to whether conform or violate visual conventions when designing a website should ponder that although users might adapt quickly to novelty there is an initial performance hindrance and disorientation.

Further investigation is needed to determine if this improvement in performance and disorientation endures or if users just adapted momentarily to these violations to sort and immediate problem.

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