Graph framing and colour priming: The effect of involvement in a cyber security case

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Abstract

The purpose of the present study was to explore the persuasive potential of graph framing and to investigate how this further depends on involvement in online security. Previous studies had focused almost exclusively on framing and colour manipulations in written texts or on visual framing elements other than colour in data visualizations. Furthermore, none of them had investigated the combined effects of visual framing and involvement on persuasion, which seemed to be an important gap in this field of research. A two (colour: red vs. grey) by two (involvement: low vs. high) between-subjects experimental design was used to explore the effect of colour and involvement on intention to change behaviour in a cyber security case. A factorial analysis of variance (ANOVA) on intention to change behaviour showed no significant effect as well as no significant interaction effect. Despite the nonsignificant result, this study has contributed to the growing body of knowledge in this field by refining research questions and highlighting methodological considerations. Future research should continue to explore this relationship and should employ a sufficient sample size as well as an experimental design that includes a well-defined control group.

Keywords: graph framing, colour priming, cyber security

Introduction

There has never been this much data available to us ever before. In both the personal context and the business context, data visualizations are an increasingly common way in which to show and explain highly complex data to even the greatest laymen. As they can reveal meaningful patterns and insights that might not emerge just by looking at vast amounts of data, they have been found effective in today's political and non-governmental organization campaigns and are ubiquitous in corporate annual reviews, college textbooks, on news websites, social media and in sports (e.g., Otten et al., 2015). Moreover, the health and safety of millions of people depend on data visualizations each day. A pilot cannot do without the data visualizations on his or her dashboard, seismic activity is constantly monitored in order to ensure our safety and various checks and scans that display data from X-ray machines map out a patient's health problem. Furthermore, visual aids in data processing have been found to help people make more informed decisions about their own personal health (Kissane, 2016). In addition to more effectively communicating information, data visualizations are suggested to be easier to memorize as they

break down data into manageable bite-sized chunks which ensures information to remain in the brain for longer (Hegarty & Kozhevnikov, 1999; Pavlik Jr. & Anderson, 2005). To sum up, visualizations can help to reveal patterns, trends, and relationships in data that can be difficult to deduce from tables or written descriptions.

Using the right visualization technique for the right data is crucial for accurately and effectively communicating information, as has been previously emphasized by many scientific articles (Gehlenborg et al., 2010). Choosing the wrong technique may lead to misinterpretation of the data and may hinder the effectiveness of the analysis. Most often, the type of data involved in these kind of large data overviews is quantitative. According to several studies (e.g., Garcia-Retamero & Cokely, 2013; Mayer & Moreno, 2002; Tufte, 1983; Zikmund-Fisher et al., 2007), the most effective way to visualize quantitative data is by using graphs, including line and bar graphs, scatter plots, histograms, and several types of charts. One may think that if the correct graph type is selected for a specific type of data, then there is no possibility of misinforming viewers.

However, whether data visualizations are actually interpreted in the way they are supposed to be, depends on a number of factors. Firstly, viewers are ought to possess a high level of graphical literacy. According to Fry (1981), graphical literacy can quite simply be defined as "the ability to read and write (or draw) graphs" (p. 383). In other words, graphical literacy refers to the ability to understand and interpret graphical representations of data and is suggested to be important in many fields. Consequences of low graphical literacy may include misunderstanding data, limited access to information, lower job performance, and reduced critical thinking skills (Mayer & Moreno, 2002).

Secondly, in order to persuade people, data may be displayed and presented more favourably which in turn, may leave room to intentional *graph framing*. The process of designing a graph inherently involves a concept known as graph framing. Much like storytelling, where narratives or events are presented from a specific point of view, the construction of a graph entails deliberate decisions regarding what information to include, how to arrange it, and what context to provide. This includes choices such as selecting the type of graph, determining the axes and scales, deciding on labels and annotations, and highlighting specific data points or trends. Each of these design choices contributes to the framing of the graph and influences the audience's perception of the information presented. On the other hand, unethical and intentional graph framing involves intentionally distorting or manipulating the data to mislead or deceive the audience. This can be done through selective omission of relevant information, altering scales or axes, using inappropriate visual representations, or presenting

data out of context. Unethical framers may have ulterior motives, especially when in some cases, the importance of showing a favourable graphic is high, such as when promoting a specific agenda, to enhance their own credibility, or to mislead others for personal gain. Such practices undermine the integrity of the data and compromise the audience' ability to make informed judgments. One may also unintentionally create graphs that mislead. Inaccurate visualizations can result in misinformed decisions, incorrect conclusions, and even potential harm in fields such as medicine, where visual data is used to guide diagnoses and treatments (Heer & Bostock, 2010).

A comprehensive study in the field of graph framing is the review by Franconeri et al. (2021) exploring different types of graphs and charts, and their effectiveness in data communication. Another important study that suggested one's preferences being shaped by graphical format, is a study by Sun et al. (2012). These authors found that manipulation of axis scales in graph design influences product preference even when other elements such as the phrasing of the accompanying text and the numbers remained consistent. From this study, the conclusion may be drawn that different graph representations can significantly affect the perception of the data being presented within the graph. Even when technically, this is not an incorrect way of altering data and persuading viewers, it is something to take into account when designing a graph and when presenting others with a graph. In summary, it seems to take two important things to correctly analyse and interpret a graph; high graphical literacy and an appropriate graph-data fit.

One of the aspects that may play a role in graph framing in particular, and visual communication in general, is the use of colour. Previous articles have suggested an effect of design choices on the effectiveness of visualizations. In a literature review by Franconeri et al. (2021), an intriguing example of axis manipulation arises in which climate change data over multiple decades is displayed in two distinct ways: one characterized as 'deceptive' and the other as accurate. The axes in the 'deceptive' visualization were intentionally manipulated through zooming out, resulting in the suppression of the discernible effect within the graphics. More specifically, an observer might erroneously infer the absence of substantial variations in the climate data over time. However, upon closer examination through zooming in on the axes, then an upward trend would indeed be visible, thus aligning the actual data representation.

An additional pivotal aspect for deliberation in the design process pertains to the selection and implementation of appropriate colours. The careful consideration of colour allows for the enhancement of clarity, differentiation, and meaningful categorization within the visual elements. In Gerend and Sias's (2009) work, male participants were asked about their

willingness to take a HPV vaccine after reading either a gain- or loss-framed text-based message accented in either the colour grey or red. Gain- and loss-framed messages refer to different approaches in persuasive communication that emphasize either the benefits (the gains) or the potential negative effects (the losses) that may occur with certain behaviour. The study by Gerend and Sias (2009) found first of all that both the framing of a message and colour priming can significantly affect its persuasive impact, and that second of all, participants who were primed with the colour red were more persuaded by messages framed in terms of losses than by messages framed in terms of gains. Several studies have shown a significant effect of the colour red on perceived threat as it is suggested to denote possible danger through its association with blood, infection, risk and danger signals on warning labels and traffic lights (Wogalter, Conzola & Smith-Jackson, 2002). All in all, colour seems to play a role in the processing and interpretation of textual information and may also play such a role in graph framing.

By contrast, what if someone has zero interest in the information provided in the graph? Simply put, what if someone basically does not care about the message? Would it then make a difference whether or not certain colour cues were to be used? This may raise the question of whether the effectiveness of colour framing further depends on the involvement individuals have in a certain topic. A large number of studies have investigated the role of involvement in communication and persuasion. The highly influential work by Petty and Cacioppo (1986) suggested a model called the *elaboration likelihood model* (ELM), which proposes two main 'routes' to persuasion depending on the amount of cognitive effort and data processing the message viewer is able and willing to invest in a message. On the one hand, the central route, which is characterized by high cognitive effort, is used when the message viewer is motivated and able to process a message in depth. Thus, when people are motivated, they are more likely to be persuaded by strong arguments and form strong, lasting attitudes. The peripheral route, on the other hand, is characterized by low cognitive effort: people are not able or not motivated to process a message and are therefore more likely to be influenced by peripheral cues such as the attractiveness, the number of arguments and other situational factors.

The purpose of the present study is to explore the persuasive potential of graph framing and to investigate how this further depends on involvement. The present study may be considered an extension of the study by Gerend and Sias (2009), in that it replicates elements of the methodology, i.e. the colour aspects, used in the study and applies it to graphs instead of textual elements. Previous studies have focused almost exclusively on framing and colour manipulations in written texts or on visual framing elements other than colour in data

visualizations (e.g., axis manipulation; Sun et al., 2012); furthermore, none of them has investigated the combined effects of visual framing and involvement on persuasion which seems to be an important gap in this field of research. As mentioned earlier, Gerend and Sias (2009) found a main effect of the colour red in message framing, but for loss-framed messages only. The current study therefore focused exclusively on loss-frame messages. Furthermore, consistent with the findings in Gerend and Sias (2009), the present experimental study predicted a main effect of colour on intention to change behaviour, therefore, used a grey- and a red-accented graph to examine differences in persuasive effect. The red-accented graph was expected to have more effect than the grey one, therefore, the following hypothesis has emerged on the basis of previous literature:

> H1: The presence of the colour red in a graph positively influences intention to change behaviour.

Based on the ELM discussed on the previous page as well as a study conducted by De Graaf, van den Putte, & de Bruijn (2015) – who found a loss-frame to be more effective when involvement is high – the present study hypothesized involvement to have an effect on intention to change behaviour due to its loss-frame perspective. The following hypothesis resulted from these predictions:

> H2: Higher levels of involvement lead to an increase in intention to change behaviour.

Finally, the ELM showed that when people are motivated about or invested in a certain topic, they are more likely to take the 'central route' and thoughtfully process the message content whereas people who are not naturally invested in the topic are more likely to take the 'peripheral route' and be more influenced by contextual elements, such as colour. Or to put it in laymen's terms: people who are already motivated already have their full attention on a message whereas people who are not motivated need to somehow be stimulated by other things but the actual content. These predictions lead to the final hypothesis:

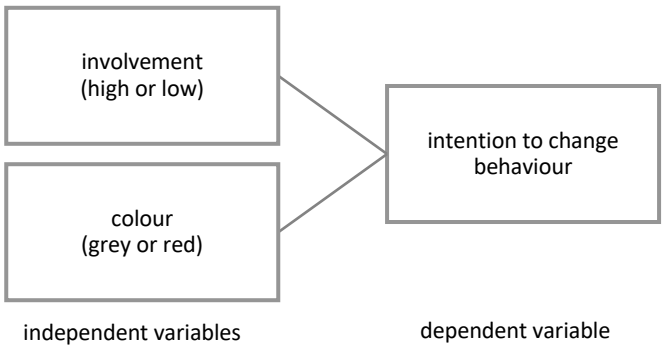
> H3: Colour has a persuading effect on intention to change behaviour when involvement is low.

Method

Materials

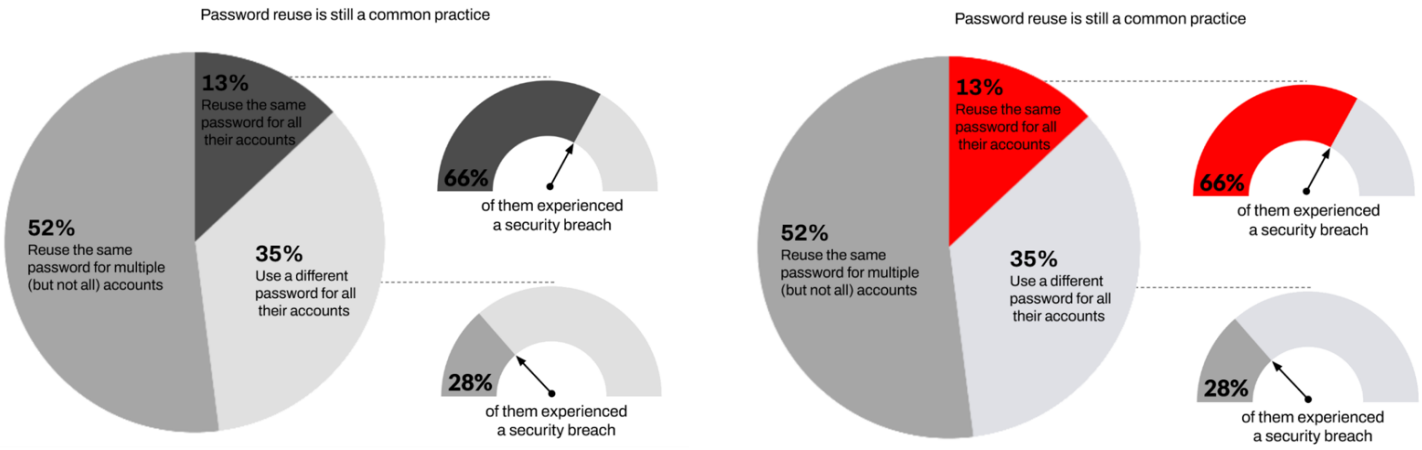
There were two independent variables for this experimental study: Colour (grey-prominent or red-accented) and Involvement (high or low; see below for details). This can be observed in the analytical model in Figure 1. Firstly, the stimulus material consisted of two different versions of an infographic about cyber security – one in grey and one accented with red – in order to measure the effect of colour on the intention to change behaviour. The accompanying numerical and textual information as well as the mentioned loss-frame were the same for both versions. In the textual information, participants were made aware of the dangers of password reuse and how breaking into one account can create a sort of domino effect across all of that person's accounts. The consequences of having accounts hacked were enumerated (for the full introduction text, see Appendix A). The participants were then presented with the data about security breaches as a result of reusing passwords. The two versions of the graphs only differed in the colour accented in the graph. Both versions of the graph are shown in Figure 2 below.

Figure 1. Analytical model



The second independent variable in this study pertained to the level of involvement exhibited by participants. It was determined that the measurement of Involvement should be conducted subsequent to the assessment of the dependent variable Intention to change

Figure 2. Both versions of the graph as presented in the online questionnaire



behaviour. This sequencing was implemented to mitigate potential bias arising from participants becoming cognizant of the study's objectives, which could have influenced their responses toward responding in a 'desired' way rather than providing objective feedback. Involvement was measured using nine different items on a seven-point Likert scale (for a full overview of the exact items, see Table 1 below). These items covered several relevant aspects, namely: general involvement (items 1 to 3; based on Finney & Iannotti, 2001) and attraction (items 4 and 5), outcome-relevant (item 6), and value-relevant involvement (item 7; based on Kyle et al., 2007). The reason why Finney & Iannotti's scale (2001) was selected to serve as base to measure the first three Involvement items in this study, is that they looked at the participants' involvement in a health issue (breast cancer) which may overlap with the cyber security case used in the present study in that they might both be considered potentially harmful and partially uncontrollable events. The reliability of Involvement comprising a total of nine items, was good: $\alpha = .87$.

The means of all nine items in Table 1 served as a base to calculate an overall average score which was then used as the index variable Involvement. In order to create a high and a low involvement group, a median split was performed which involves identifying the median score of a variable, then categorizing participants into 'high' and 'low' groups, depending on whether their scores were above or below the median, respectively. The rationale for employing a median split was to explore potential differences or relationships between individuals with relatively higher versus lower involvement. This approach allowed for examining the potential impact of extreme values and investigating potential nonlinear relationships that might not be captured by treating the variable as continuous. The variable under consideration exhibited a

Table 1. Overview of items measuring the independent variable Involvement

Number of item	Items measuring the independent variable Involvement
1	Online security is of much relevance to me.
2	I read a lot about online security.
3	I pay a lot of attention to the topic of online security in the media.
4	Improving my online security is my top priority.
5	Taking care of my online security is enjoyable/satisfying to me.
6	Increasing my online security has a big impact on my life.
7	The values that are most important to me determine if I will increase my online security.
8	In my daily life, I take great care to ensure my online security.
9	Taking care of my online security helps me to be seen by others as I want them to see me.

median value of 3.44. Based on this median, the sample was divided into two distinct groups: a low involvement group consisting of 42 participants who scored below 3.44 (M = 2.53, SD = .62) and a high involvement group comprising 41 participants who scored above 3.44 (M = 4.17, SD = .54).

Subjects and design

The initial participant pool consisted of 148, which was a targeted sample, consisting of acquaintances within the researchers' social network, including friends and family members. No financial reward or other incentive was used. Participants who did not finish the whole questionnaire were excluded as well as participants who did not give their consent or indicated that they were colour-blind, which brought back the final total participant pool to 123. For the statistical analyses, it was important that the participants did not show the desired behaviour (i.e. using different passwords for different accounts) yet in order to ensure the effect of the experiment. Therefore, participants who indicated they already showed the desired behaviour (n = 40) were excluded from the final analyses. This means for the analysis that the sample size consisted of 83 participants, rather equally distributed over the four conditions (see Table 2). In total, 40 participants responded to the grey-prominent version and 43 to the red-accented version.

Table 2. Number of participants in each of the four conditions

		Colour condition	
		Grey-prominent	Red-accented
Involvement	High	19	23
	Low	21	20
Total		40	43

The mean age of the participants was 29 years (SD = 12.05). The age of participants ranged from a minimum of 18 years to a maximum of 74 years. In total, 24 male and 59 female participants took part in the experiment. A variety of different nationalities were represented in the study (for a full overview, see Table 6 in Appendix B). However, most respondents were of Dutch nationality (n = 50). The other most frequent nationalities were Belgian (n = 5), American (n = 4), Bulgarian (n = 4), and German (n = 4) respectively. Most respondents had a Master's degree or equivalent (n = 30) or a Bachelor's degree or equivalent (n = 29). A quarter of the participants had secondary education as their highest level of education (n = 21) and three participants had completed a PhD. Average internet usage differed substantially among participants. However, more than 90 percent of the participants indicated they used the internet for an average of three hours or more on a daily basis. Participants were randomly assigned to either one of the two colour conditions. The criteria on which the participants were divided into

a high vs. low involvement group are discussed in the next section. A two (colour: red vs. grey) by two (involvement: low vs. high) between-subjects experimental design was therefore used. Demographic data distribution over the four groups can be found in Table 3.

Table 3. Demographic data for the four different groups: total number of participants, mean age with standard deviations (between brackets), number of females and number of males

	Group			
	Grey * high	Grey * low	Red * high	Red * low
N	19	21	23	20
Mean age	31.89 (15.36)	26.43 (8.37)	29.30 (10.69)	29.90 (13.47)
Number of females	15	16	15	13
Number of males	4	5	8	7

Instruments

The dependent variable examined in the present study encompassed participants' intention to modify their behaviour, specifically in relation to adopting alternative passwords for their online accounts. Measuring Intention to change online behaviour involved using a total of nine statements of which participants were instructed to rate on a seven-point Likert scale (see Table 4 below). The reliability of Intention to change behaviour comprising a total of nine items, was good: $\alpha = .81$. Consequently, the mean of all items was used to calculate the index variable Intention to change behaviour, which was used in further analyses as the dependent variable.

Table 4. Overview of items measuring the dependent variable Intention to change behaviour

Number of item	Item
1	In the future, I intend to use different passwords for different accounts more often.
2	I believe that if I use different passwords for each of my accounts, this will result in a lower risk of having security breaches.
3	A lower risk of having security breaches is a good thing.
4	I believe that I will succeed in using different passwords for different accounts more frequently.
5	Those closest to me think that I should use different passwords for each of my accounts.
6	When it comes to matters of online security, I want to do what those closest to me think I should do.
7	The people in my direct environment (family and friends) would encourage me to use different passwords for different accounts more often.
8	I expect that I will have good online security in the future.
9	Using different passwords for different accounts would enable me to stay safer during online activities.

Procedure

The experiment was administered via an online questionnaire deployed in Qualtrics. Starting the online questionnaire, the participants were first kindly thanked for their participation to fill out the questionnaire and they were asked for their informed consent. Subsequently, the participants were asked to fill in some questions regarding their device and internet usage, and some demographics (age, gender, level of education and nationality), after which either the grey-prominent or the red-accented graph was showed. Participants were given some time (no time limit specified) to look closely at the infographic, as there was no option included to return to the graph.

After carefully examining the graph, participants were instructed to provide ratings on a seven-point Likert scale to assess their intention to change their online behaviour. This rating task encompassed nine statements specifically designed to capture their level of agreement or disagreement, as outlined in the Instruments section. Subsequently, participants were presented with an additional set of nine statements relating to the independent variable of interest, namely, Involvement. Similar to the previous assessment, participants were requested to rate their agreement or disagreement using a seven-point Likert scale.

A comprehension check was included after the involvement questions to verify if the participants had understood the data presented in the graph and to see if the participants were able to recall the information provided. The exact question asked was formulated as: 'You are now asked to recall the information provided in the chart you saw earlier in the study. Think about the group of people who reused the same password for all of their accounts. What percentage of the people in this group experienced a security breach? Please indicate below'. The participants could then indicate any number ranging from 0 to 100; the closer to 52 percent, the better they had recalled the information. The average number indicated for the comprehension check was 55.6 (SD = 16.53), which indicated participants looked rather closely at the graph and were able to recall the number presented in the graph.

After the comprehension check, the questionnaire included a check for colour-blindness on the basis of which a participant was excluded from analysis if he or she indicated 'yes', as mentioned in the Subjects section. Following the data collection phase, participants were presented with a comprehensive debriefing. Participants were extended gratitude for their participation in the study, and a thorough explanation regarding the study's objectives was provided. Participants were also given the opportunity to share any comments or pose questions related to the questionnaire. Lastly, an end-of-survey message was displayed to indicate the

completion of the questionnaire. The average time to complete the survey was about five to ten minutes.

Statistical treatment

A two (colour: red vs. grey) by two (involvement: low vs. high) between-subjects experimental design was used with Intention to change behaviour as the dependent factor. A factorial analysis of variance (ANOVA) was conducted to assess effects of colour and involvement on the intention to change behaviour. Levene's test was used to assess the assumption of equal variances across groups.

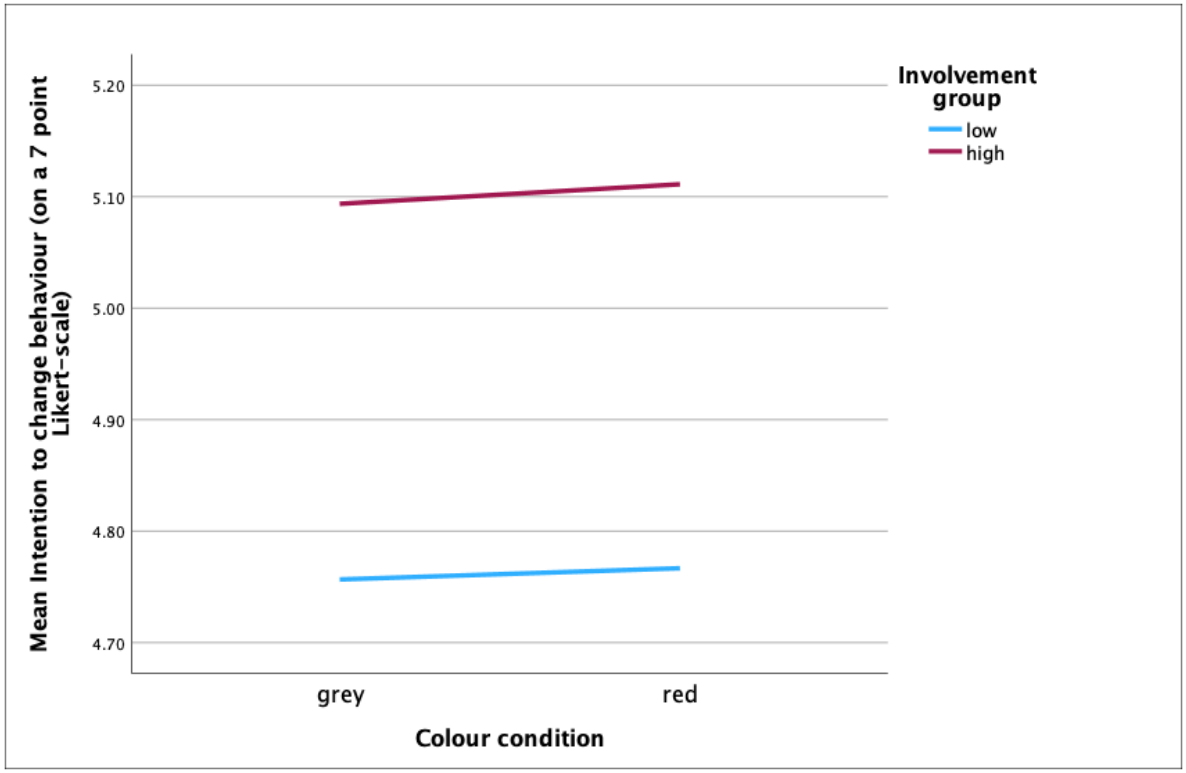
Results

An overview of the means and standard deviations for the dependent variable Intention to change behaviour can be found in Table 5 as well as a visualization of the means for each different group can be found in the interaction plot shown in Figure 3. From these descriptive statistics, it seems that when involvement in online security was high (red line), participants were more likely to change their online behaviour than when involvement in online security was low (blue line). These descriptives indicate there could be an effect of involvement on intention to change behaviour.

Table 5. Means and standard deviations (between brackets) for the dependent variable Intention to change behaviour per group

		Colour condition	
		Grey-prominent	Red-accented
Involvement group	High	5.10 (.86)	5.11 (.80)
	Low	4.76 (.88)	4.77 (.91)

Figure 3. Interaction plot for Involvement and Colour on the dependent variable Intention to change behaviour (on a seven-point Likert scale)



However, a one-way two (colour: red vs. grey) by two (involvement: high vs. low) analysis of variance (ANOVA) on intention to change behaviour was conducted and no main effects of colour ($F(1, 79) < 1$, $p = .942$) and involvement ($F(1, 79) = 2.397$, $p = .077$) on intention to change behaviour were observed. Furthermore, no significant interaction effect of colour and involvement on intention to change behaviour was found ($F(1, 79) < 1$, $p = .984$). Levene's test was conducted to assess the assumption of equal variances across groups. The Levene's test revealed that the assumption of equal variances was not significant based on the mean ($F(1, 79) = .308$, $p = .820$), therefore the assumption of homogeneity of variance has been met.

Discussion

This section delves into the interpretation of the findings, uncovering the complexities and potential explanations behind the observed results in the context of graph framing. This study holds appreciable value as it explored a relatively uncharted area in the field, shedding light on the potential relationship between colour in persuasive communication. By examining this relationship, it was aimed to contribute to the understanding of the persuasive power of graphical design choices regarding colour and how this further depended on involvement in a possible dangerous event of having online security breaches. However, the results of the study did not provide sufficient evidence to support the hypotheses that;

- the presence of the colour red in a graph positively influences intention to change behaviour (H1);
- that higher levels of involvement lead to an increase in intention to change behaviour (H2);
- and that colour has a persuading effect on intention to change behaviour when involvement is low (H3).

The analysis failed to reach statistical significance, indicating that no conclusive support was found for the hypothesized relationship between colour and intention to change behaviour. Therefore, at this point in time, the presence of a significant difference cannot be asserted with a high level of confidence, which should be noted first and foremost. However, based on the observed data, there are indications of a potential difference between the two involvement groups in their intention to change behaviour. These preliminary findings warrant further investigation to fully understand the nature and extent of this difference.

The nonsignificant effects observed in this study may be attributed to several possible factors, although caution is warranted in interpreting these plausible explanations. One potential explanation could be the relatively small sample size, because many participants indicated the target behaviour already, which may have limited the statistical power to detect smaller effects. Future studies with larger sample sizes and refined methodologies could provide further insights into this relationship. Furthermore, the suboptimal screen sizes and the necessity for participants to scroll horizontally may have contributed to practical limitations that could have affected the observed results. However, given the strong performance on the comprehension check, it is improbable that the participants' lack of understanding of the graph significantly influenced the observed results. It is therefore essential to consider alternative explanations for

the lack of significant findings. The influence of the cybersecurity case and participants' possible perception of potential identity theft and financial loss as highly alarming factors may have played a role in shaping the observed results. It could be plausible that the intensity of the chosen case may have overshadowed the nuanced effects that could have been observed with a different scenario in which the sense of danger gradually increases and is not necessarily immediately apparent (such as for the consequences of climate change that do not pose immediate peril or the consequences of being overweight on the risk of cardiovascular disease). The disparities between these findings and those of Gerend and Sias (2009) – who investigated male participants' willingness to take a HPV vaccine – may be attributed to the potential differential impact of gradual danger as described in their study. It is plausible that the progressive escalation of perceived risk over time, as examined in their research, may have produced distinct outcomes compared to the present investigation where the danger was presented as immediate. This discrepancy highlights the importance of considering the role of varying levels of perceived danger in influencing behavioural responses and underscores the need for further exploration in this area.

Another study limitation should be acknowledged when interpreting the results, namely, the use of a specific measurement instrument or methodology could have influenced the outcomes. Considering the limitations and challenges encountered in this study, it is strongly recommended to pursue further investigations employing a rigorous experimental design that includes a well-defined control group. The absence of a control group in the current study limits the ability to draw definitive conclusions and to disentangle the potential effects of confounding variables. Incorporating a control group would provide a comparative baseline against which the impact of the independent variable can be accurately assessed.

Despite the nonsignificant result, the study has helped to refine and shape the discourse surrounding this topic. All in all, future research should continue to explore this relationship, considering alternative conceptualizations and examining potential moderating or mediating factors. This study, despite yielding nonsignificant results, has contributed to the growing body of knowledge in this field. It has helped refine research questions, highlighted methodological considerations, and opened up new avenues for exploration. With a positive and constructive outlook, these findings can serve as stepping stones toward advancing the understanding of colour priming in graph framing, ultimately leading to more comprehensive and meaningful insights.

Appendix A. Accompanying text with the graphs

People often tend to reuse the same password for their online accounts, such as social media (like Facebook, LinkedIn or Twitter), or even for their bank accounts. However, reusing passwords is a poor security practice, because if one of the accounts using this password is compromised, malicious actors are likely to compromise a person's other accounts where this password is also used.

This is usually done by means of automated algorithms attempting to enter this password in all known accounts of a person. Once an account is hacked this way, its owner can not only lose access to their account, but also have their sensitive data exposed, become the victim of identity theft, suffer financial losses, or experience other negative consequences.

The chart below indicates the prevalence of three different password reuse behaviours among users and the percentage of users who experienced a security breach in two of the three groups.

Please have a look at the chart. After this, we will ask you a couple of questions.

Appendix B. Table of all the nationalities represented in the study, their frequencies and their share within total

Table 6. Overview of the frequencies of respondents' nationalities and their percentage share within total (N = 83)

Nationality	Frequency	Percentage within total
Dutch	50	60.2
Belgian	5	6.0
German	4	4.8
Bulgarian	4	4.8
American	4	4.8
Portuguese	3	3.6
Iranian	2	2.4
Armenian	1	1.2
Brazilian	1	1.2
Chinese	1	1.2
Danish	1	1.2
Egyptian	1	1.2
Filipino	1	1.2
Indian	1	1.2
Indonesian	1	1.2
Peruvian	1	1.2
Romanian	1	1.2
Syrian	1	1.2

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