The impact of Internet interactivity and need for closure on consumer preference

Yair Amichai-Hamburger*, Adi Fine, Abraham Goldstein

Department of Psychology, Bar-Ilan University, Ramat-Gan 52900, Israel

Abstract

The Internet is used by an ever-increasing number of people worldwide. However, there is little understanding of the interaction between Internet technology and the behavior of different human personality types. This article focuses on the impact of the need for closure on the desired level of interactivity of a given Website. For this experiment, four commercialized Websites were created: (1) flat—with no hyperlinks and no time pressure; (2) flat with time pressure; (3) interactive with no time pressure; and (4) interactive with time pressure. All of the Websites contained identical information presented in different ways. The interaction between need for closure as a personality variable and as a situational variable and level of interactivity of the Website as a variable on consumer behavior was examined. A 2 (high need for closure vs. low need for closure) × 2 (time pressure vs. no time pressure) × 2 (interactive vs. non-interactive Website) between-subjects design was used. One hundred and eighty-two experienced Web surfers took part in the experiment, and were randomly assigned to one of the Websites. After surfing they completed a questionnaire about their level of satisfaction with the Website, their willingness to purchase the product offered there, and their wish to return to the Website. It was predicted that people with a high need for closure would prefer a Website with fewer hyperlinks, while people with a low need for closure would prefer a Website containing more hyperlinks. Results confirmed our predictions with regard to the conditions without time pressure. In contrast, when participants were under time pressure, the results were completely reversed: People with a low need for closure preferred the flat Website and those with a high need for closure preferred an interactive Website. The implications of the results on Website design are discussed.

© 2003 Elsevier Ltd. All rights reserved.

Keywords: Internet; Personality; Need for closure; Hyperlinks; Consumer behavior

* Corresponding author. Tel.: +971-3-5318539; fax: +972-3-5350267.
E-mail address: hambur@mail.biu.ac.il (Y. Amichai-Hamburger).
1. Introduction

Many people regard the Internet as an essential part of their daily lives and use it in various ways; for example, as an information source, for shopping, and for discussions with other users. Hamburger and Ben-Artzi (2000) pointed out the need to study the interaction between the users’ personality and the different Internet services. Amichai-Hamburger (2002) suggested that the lack of communication between Web designers and psychologists has created a situation in which the Web is not sufficiently user-friendly and does not fulfill its potential as a consumer-sensitive service, especially when a unique ability to interact with individual needs and requests is taken into account. Amichai-Hamburger stresses that a comprehensive study of the impact of personality characteristics and Internet services on well-being is necessary in order to create a knowledge-base which will help shape the Internet into a more user-friendly environment.

Hamburger and Ben-Artzi (2000) were the first to demonstrate the link between personality and the Internet. They analyzed levels of extraversion and neuroticism and found that these showed different patterns for men and women in their interaction with the Internet services scale. For men, extraversion was positively linked to the use of leisure services and neuroticism was negatively related to the use of information services. Whereas for women, extraversion was negatively related and neuroticism was positively related to the use of social sites. These results are particularly interesting because they confirm earlier studies showing that women have a higher self-awareness and are more likely to use the social network for support. Hamburger and Ben-Artzi’s (2000) results are important because they show that personality is a highly relevant factor in determining behavior on the Internet.

Howes, Miles, Payne, Mitchell, and Davies (2001) pointed out that very little empirical work has been carried out on the commercial effectiveness of Website design. The ability of the Internet to adapt itself to the preferences of net-users could contribute significantly to the effectiveness both of Websites and of advertising which would then become much more oriented towards the individual (Rust & Varki, 1996). Building on his previous work, Amichai-Hamburger (2002) suggested that people who differ in their need for closure (Kruglanski & Freund, 1983) might differ in their preference for a Website based on the amount of hyperlinks in the Website.

1.1. Internet and interactivity

The Internet is by definition an interactive medium (Rust & Varki, 1996). An essential part of this interactive ability is the hyperlinks technique (namely, the ability to move from one place to another with a click on the mouse and so reach a new layer of information by a simple movement). There are, generally speaking, two kinds of hyperlinks: external and internal. The external hyperlink sends the surfer outside of the Website to an external source of information, while
the internal hyperlink sends the surfer immediately to the part requested on the same Website. Websites differ as to their level of interactivity. A Website that uses many hyperlinks is called a high interactive Website, while a Website with very few or no hyperlinks is called a flat Website. Hyperlinks allow different surfers to visit the same Website simultaneously, while spending their time in completely different ways and seeing different parts of the site. For example, when visiting a car sale Website with a great amount of information, (e.g. photographs, media reports and service information), a person who needs much information before reaching a decision will move through many hyperlinks whereas, a fast decision maker will not.

By clicking, a surfer is seeking more information. It is important to understand the process by which an Internet user decides he/she has enough information. This point has been considered by lay epistemology theory (Kruglanski, 1980).

1.2. The lay epistemology theory

The lay epistemology theory (Kruglanski, 1980; Kruglanski & Ajzen, 1983) is concerned with the process by which people acquire information. This acquisition takes place in two phases: (1) hypothesis generation: a cognitive generation stage in which the contents of the information form in our mind; (2) evaluation generation: a cognitive validation stage in which the degree of validity attributed to the contents is assessed and the degree of confidence in the knowledge is determined. An individual’s motivation can be located on a continuum, one end of which is a strong desire for closure and the other a desire to avoid closure. Closure is defined as the wish to attain the evaluation quickly. This may lead to a speedy “seizing” upon judgmentally relevant cues (Kruglanski & Webster, 1996). At this stage, people may adopt a “freezing” tendency in order to protect their prior judgment (Kruglanski & Freund, 1983). The dominant epistemic need at a specific time depends on the analysis of cost–benefit of the different results of the epistemic process. This is determined by a consistent personality tendency to see certain informational situations as cost or benefit situations; it may also be influenced by situational characteristics like those that enhance satisfaction on the basis of cost or benefits of freezing or unfreezing of the epistemic process in a given situation. For example, the benefit of cognitive closure can be related to predictive ability or the ability to act immediately. The lack of cognitive closure might be related to the time available and the additional effort required to reach closure. It was found that the need for closure is enhanced by time pressure (Heaton & Kruglanski, 1991; Kruglanski & Freund, 1983), environmental noise (Kruglanski & Webster, 1991; Kruglanski, Webster, & Klem, 1993), a request for global impression (Freund, Kruglanski, & Shpitzajzen, 1985), cognitive load (Ford & Kruglanski, 1995), and the need to reach an unequivocal conclusion (Kruglanski & Mayseless, 1988). Alternatively, the need to avoid closure is influenced by the costs that stem from a judgmental mistake (Freund et al., 1985) or benefits that result in the avoidance of such a mistake. The cost–benefit might be financial (Kruglanski & Mayseless, 1987) or psychological (Kruglanski & Freund, 1983).
People differ as to their epistemic needs (Kruglanski et al., 1993; Webster & Kruglanski, 1994). Some people are characterized as having a high need for closure. Those people are motivated to avoid uncertainties on a judgmental topic and a tendency to “freeze” the epistemic process. Such people will tend to form their conclusions quickly, become locked into conceptions, and ignore contradicting information. People who have a low need for closure are predisposed to unfreeze and generate alternative hypotheses and to test as many implications of their hypotheses as possible, so as to ensure that the information they are holding is valid.

Webster and Kruglanski (1998) suggested that several of the effects of situational factors related to the need for closure were replicated when the need for closure was operationalized in terms of scores on the Need for Closure Scale (Webster & Kruglanski, 1994). This indicated that the closure motivation represents a stable personality dimension in addition to being a product of situational factors.

1.3. Website interactivity and the need for closure

Participants with a high need for closure are interested in reaching the ‘epistemic freezing’ in a relatively short time. It was therefore hypothesized that: (1a) participants with a high need for closure would be more convinced by the messages on the Website, would express more willingness to return to the site, and would feel more satisfaction from a flat site as compared with an interactive site. On the other hand, participants with a low need for closure require more information before they make a decision. Therefore it was hypothesized that: (1b) participants with a low-need-for-closure would be more convinced by the messages on the website, would express more willingness to return to the site, and would feel more satisfaction from an interactive site compared with a flat site. (2) Moreover we hypothesized that participants who surf a Website when the situation is aligned with their personal need (i.e. high-need-for-closure surfing under time pressure or low-need-for-closure surfing without time pressure) will show more extreme patterns of preference than participants who surf when the situation contradicts their personal need (i.e. high-need-for-closure surfing without time pressure or low-need-for-closure surfing under time pressure).

2. Method

2.1. Subjects

One hundred and eighty-two people volunteered to take part in the study (120 women and 62 men). Participants were aged between 21 and 30 years (M = 26.95). Participants had at least 2 years experience surfing the net. They were all students in the Faculty of Social Sciences. They were all familiar with the Internet. They were randomly assigned to one of the four Websites.
2.2. Tools

2.2.1. The Websites

Four Websites were built especially for this experiment. They all included the same information about a new type of software (CallX) priced $10, which enables the user to use the telephone line for both telephone calls and the Internet simultaneously. CallX is a real software produced by the commercial company—MerlyNet. The company gave its permission to use the software for the purposes of this study. The study included two main manipulations:

(1) Interactivity: This was examined by building two interactive Websites and two flat Websites. The interactive sites included four internal links: (a) who are we? (b) tell me more about CallX; (c) demonstration of CallX; and (d) future developments of MerlyNet.

The flat Website did not include any links, but included all the information in the interactive Website.

(2) Time pressure: There were two Websites with time pressure. The time pressure was created by telling participants that their maximum stay on the Website was 4 min. Participants could see a clock on the screen as they entered the Website, giving them the time of entry and a notice on the computer screen telling them that they would receive another warning at the half-way mark and again when they had half a minute left. It was explained to participants that the time limit was included to make the whole scenario more realistic, since most Internet users do not spend much time surfing.

The Websites that did not have any time limit gave subjects a notice on the screen that they could stay there for as long as they liked.

Interactivity and time pressure manipulation were examined on the four Websites, as follows:

1. Interactive Website with time pressure.
2. Interactive Website with no-time pressure (for half of the subjects).
3. Non-interactive Website with time pressure.
4. Non-interactive Website with no time pressure.

The Website included the following components (the order varied):

1. Introduction and instructions for the experiment.
2. The need for closure questionnaire.
3. Preference questionnaire referring to satisfaction from the Website, readiness for a return visit, and level of being convinced by the Website messages.
4. Participants’ personal details included gender, birth year, year of immigration, and years of education.
Need for closure questionnaire: The questionnaire by Kruglanski et al. (1993) comprises 42 statements. Participants were asked to rate each statement on a scale of 1–6 (1 being strongly disagree and 6 agree very much). A high score related to a high need for closure and a low score to a low need for closure. The questionnaire had an internal consistency of $\alpha = 0.84$.

Half of the subjects were required to answer the questionnaire before entering the commercial Website, while the other half answered it after surfing the commercial Website.

Preference questionnaire: Satisfaction with the Website, readiness to return, and the degree to which the surfer was influenced by the Website were measured by a questionnaire developed specifically for this study that included 12 questions. Questions had different rating scales that were transformed to create one scale. The whole questionnaire had a high internal consistency of $\alpha = 0.94$, dealing with satisfaction from the Website (six questions, $\alpha = 0.94$), readiness to return to the Website (two questions, $\alpha = 0.81$), and level of influence by the Website (four questions, $\alpha = 0.84$).

Personal details questionnaire: In this questionnaire, participants gave their personal details including gender, birth year, year of immigration (where relevant), and years of study. Three additional questions dealt with personal Internet habits: (1) How long has he/she been an Internet user? (2) How often does he/she surf? (3) How long on average does he/she surf each time?

2.3. Procedure

Each participant who entered the research Website was randomly assigned by the computer to one of the four Websites. Half of the participants started with the “need for closure” questionnaire and were then moved to the Website, and half of the participants started with the Website and after surfing the Website were introduced to the “need for closure” questionnaire.

Once participants had been assigned to one of the four Websites, they were told that the Website promotes a type of software which may be acquired at the site. Subjects were asked to view the software characteristics and decide whether they wished to acquire it. Participants in the time-pressure conditions were told that they had to make their decision regarding the software within a certain time limit. It was explained to them that this replicates the usual conditions of Internet users who have to make purchase decisions quickly. After completing their surfing all subjects were asked whether they wish to download the software which costs $10. They were then presented with the questionnaires: (1) need for closure (for half of the subjects; the other half completed this questionnaire before entering the commercial Website); (2) the preference questionnaire; and (3) participants’ personal details questionnaire.
3. Results

3.1. Manipulation check

An examination of the time-pressure manipulation revealed that participants who were subject to a time limit spent significantly less time on the Website compared with those who were not under time pressure $t(147)=3.4, \ P=0.001$.

An examination of the manipulation of the order of the need for closure questionnaire (half of the participants completed it before entering the Website and half after) revealed no significant differences between the groups.

3.2. Website preference

To check the hypothesis, a $2 \times 2 \times 2$ multivariate analysis of variance was conducted for the three independent variables: interactivity, personal need for closure, and time pressure. Means and standard deviations of the levels of persuasion, willingness to return and the satisfaction values by the interactivity, personal need for closure, and time pressure variables are presented in Table 1.

MANOVA analysis did not show any significant main effects. No significant differences were found in either the interactivity (interactive vs. non-interactive Website), Wilks’ $\Lambda = 0.997, \ F<1$, need for closure (high vs. low relative to median), Wilks’ $\Lambda = 0.998, \ F<1$, or time pressure (vs. lack of time pressure), Wilks’ $\Lambda = 0.988, \ F<1$. The dual interaction between need for closure and time pressure was found to be significant [Wilks’ $\Lambda = 0.945, \ F(3, 172)=3.37, \ P=0.02, \ \eta^2 = 0.055$]. The dual interaction between interactivity and need for closure was not significant (Wilks’ $\Lambda = 0.999, \ F<1$). The same was true for the dual interaction between interactivity and time pressure (Wilks’ $\Lambda = 0.995, \ F<1$). The triple interaction between interactivity, need for closure, and time pressure was found to be significant [Wilks’ $\Lambda = 0.938, \ F(3, 172)=3.77, \ P=0.01, \ \eta^2 = 0.062$]. In addition, it was found that the interaction is significant for two out of the three dependent variables, for the persuasion variable [$F(1, 174)=9.73, \ P=0.002$], and for the willingness to return variable [$F(1, 174)=4.79, \ P=0.03$].

The general pattern of preference as found by the triple interaction between interactivity, need for closure, and time pressure (an average of all three dependent variables) is presented in Chart 1. When there was no time pressure, the predicted pattern occurred: participants with a high need for closure preferred the flat site as compared with the interactive site, while participants with a low need for closure preferred the interactive site as compared with the flat site. However, when there was time pressure, the pattern of preference was reversed: participants with a high need for closure preferred the interactive site compared with the flat site, while participants with a low need for closure preferred the flat site compared with the interactive site.

To better understand the source of the triple interaction, a simple effects analysis splitting the time pressure variable was performed. It was found that when there was no time pressure, a significant dual interaction between the need for closure and
Table 1
Means (and standard deviations) of persuasion, willingness to return, and satisfaction values by the interactivity, personal need for closure, and time pressure variables

<table>
<thead>
<tr>
<th></th>
<th>Time pressure</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No time pressure</td>
<td>Interactive</td>
<td>Time pressure</td>
<td>Interactive</td>
<td>Time pressure</td>
<td>Interactive</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flat</td>
<td>Interactive</td>
<td>Flat</td>
<td>Interactive</td>
<td>Flat</td>
<td>Interactive</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Need for closure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Persuasion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No time pressure</td>
<td>4.78 (0.84)</td>
<td>4.99 (1.01)</td>
<td>5.24 (0.79)</td>
<td>4.45 (1.05)</td>
<td>4.98 (1.00)</td>
<td>4.64 (1.12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interactive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time pressure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flat</td>
<td>2.77 (1.79)</td>
<td>3.19 (1.93)</td>
<td>3.45 (1.70)</td>
<td>2.77 (1.57)</td>
<td>2.74 (1.56)</td>
<td>2.77 (1.48)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interactive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3.88 (0.71)</td>
<td>3.61 (0.77)</td>
<td>3.81 (1.02)</td>
<td>3.95 (0.95)</td>
<td>3.84 (0.90)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td>3.65 (0.92)</td>
<td>4.06 (0.86)</td>
<td>3.87 (1.08)</td>
<td>3.99 (0.83)</td>
<td>3.88 (0.71)</td>
<td>3.61 (0.77)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preference (total average)</td>
<td>3.74 (0.91)</td>
<td>4.08 (1.03)</td>
<td>4.19 (0.97)</td>
<td>3.74 (0.88)</td>
<td>3.87 (0.91)</td>
<td>3.68 (0.90)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
interactivity $[F(3, 86) = 2.47, P = 0.06]$ was found. It was also found that the interaction was significant for the persuasion dependent variable $[F(1, 88) = 6.58, P = 0.01]$. When there was time pressure, the dual interaction between need for closure and interactivity was not significant, although it was still significant for the persuasion dependent variable $[F(1, 86) = 3.71, P = 0.05]$. To examine further the preferences of participants with different levels of need for closure toward the various Websites, a simple effects test was performed. When the averages for the different time pressure conditions were compared, a similar pattern was revealed. When there was no time pressure, participants with a low need for closure were persuaded more effectively by the messages of the interactive Website compared with the messages of the non-interactive Website ($M = 5.24, M = 4.78$, respectively), $[t(44) = 1.89, P = 0.06]$. High-need-for-closure participants were more convinced by the messages of the non-interactive Website compared with the interactive Website ($M = 4.99, M = 4.45$, respectively), $[t(44) = 1.77, P = 0.08]$. Conversely, when there was time pressure, high-need-for-closure participants were more convinced from the messages of the interactive Website as compared to the non-interactive Website ($M = 5.20, M = 4.64$, respectively), $[t(43) = 1.94, P = 0.05]$. The difference in conviction level for high-need-for-closure participants with regard to the interactive and non-interactive Websites was not significant, although the difference between the averages shows clearly that participants with a high need for closure were more convinced by the messages displayed on the non-interactive Website than those displayed on the interactive Website ($M = 4.98, M = 4.62$, respectively).

An additional proof that a similar pattern of results for all three dependent variables was revealed was provided by an examination of the Pearson correlations between our three dependent variables, as demonstrated in Table 2. Examining the table reveals that all three dependent variables are highly correlated with one another. Moreover, they were not correlated with any of the independent variables.
These results confirm in part our first prediction that (1) high-need-for-closure participants will be more successfully persuaded, be more willing to return to the Website, and report more satisfaction from the interactive Website compared with the non-interactive Website. (2) Low-need-for-closure participants will be more successfully persuaded, more willing to return to the Website, and report more satisfaction from the non-interactive Website compared with the interactive Website. This pattern was confirmed by the results only for those participants who surfed the Website with no time pressure. This pattern was found for the three dependent variables, although it was statistically significant for the persuasion variable and for readiness to return to the Website. The satisfaction variable revealed this to be only a tendency.

The results also constitute a partial confirmation of the second prediction that participants surfing under time pressure in accordance with the needs of their personality will show extreme patterns of preference as compared with those surfing the Website under the time-pressure condition in contradiction to their personality needs. It was found that participants showed different patterns of preference under time pressure compared with their preference when there was no time pressure. However, the preference patterns were not only more extreme, but in total opposition to them. This pattern was found for the three dependent variables, although it was statistically significant only for the persuasion variable and showed a tendency only for readiness to return to the Website and satisfaction from the Website.

3.3. Use of hyperlinks

To examine the impact of the need for closure and time pressure on the use of hyperlinks we performed a 2 (high need for closure vs. low need for closure) × 2 (time pressure vs. no time pressure) univariate analysis of variance. This analysis was performed only on the data accumulated from the interactive Website. The dependent variable was the extent of the use of hyperlinks. Means and standard deviations for the use of hyperlinks in the interactive site as a result of the interaction between need for closure and time-pressure variables are presented in Table 3.

Analysis of variance did not reveal any significant main effect; neither time pressure (vs. no time pressure) nor need for closure (high vs. low) showed significant differences. However, we did find a significant interaction between need for closure and time pressure [F(1, 84) = 7.24, P = 0.009]. To examine the source of the interaction we have performed t-tests to examine the impact of need for closure under the
different conditions of time pressure. When there is no time pressure, participants with a low need for closure used significantly more hyperlinks than high-need-for-closure participants \([t(42)=2.755, P=0.009]\) \((M=1.86, M=0.77, \text{respectively})\). Under time pressure, there were no significant differences between high-need-for-closure participants and low-need-for-closure participants. An additional \(t\)-test was performed to examine the impact of time pressure on the different levels of need for closure. Significant differences were found in the behavior of low-need-for-closure participants between those performing under time pressure and those performing with no time pressure \([t(46)=2.70, P=0.01]\). Low-need-for-closure participants performing under time pressure used fewer hyperlinks compared with those who performed without time pressure \((M=0.85, M=1.86, \text{respectively})\). Among high-need-for-closure participants, no significant differences between time pressure and no time pressure groups were found.

It seems clear that the analysis of the use of hyperlinks in the interactive site provides support for the explanations mentioned earlier.

### 3.4. Length of time spent on the Website

To examine the impact of need for closure, time pressure, and interactivity on the length of time spent on the Website, a univariate analysis of variance for 2 (high need for closure vs. low need for closure) \(\times 2\) (time pressure vs. no time pressure) \(\times 2\) (interactive vs. non-interactive Website) was performed. The dependent variable was time spent on the Website. Means and standard deviations of the lengths of time that participants stayed in each condition as a result of the interaction between interactivity, need for closure, and time-pressure variables are presented in Table 4.

Analysis of variance revealed a significant difference between the time pressure vs. no time pressure conditions in the time spent in the two conditions \([F(1, 173)=11.75, P=0.001]\). Participants who acted under time pressure spent less time on the Website compared with those who acted without time pressure \((M=1.19, M=1.92, \text{respectively})\). Analysis of variance also revealed significant differences between low need for closure and high need for closure with regard to time spent on the Website \([F(1, 173)=3.49, P=0.063]\). Participants with a high need for closure spent less time on the Website as compared to those with a low need for closure \((M=1.37, M=1.76, \text{respectively})\).

In addition, a dual interaction between time pressure and need for closure in time spent on the Website \([F(1, 173)=8.00, P=0.005]\) was found. To examine the source

---

**Table 3**

Means and standard deviations of the usage of hyperlinks in the interactive site by the personal need for closure and time pressure variables

<table>
<thead>
<tr>
<th>Need for closure</th>
<th>Time pressure</th>
<th>No time pressure</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>1.28 (1.44)</td>
<td>0.77(1.23)</td>
<td>1.00(1.34)</td>
</tr>
<tr>
<td>Low</td>
<td>0.85 (1.22)</td>
<td>1.86 (1.39)</td>
<td>1.31 (1.38)</td>
</tr>
<tr>
<td>Total</td>
<td>1.02 (1.32)</td>
<td>1.32 (1.41)</td>
<td>1.17 (1.36)</td>
</tr>
</tbody>
</table>
of this interaction, a $t$-test was performed. This was designed to examine the impact of the different need for closure levels on the different time-pressure conditions. In the lack of time pressure condition, significant differences were found between high-need-for-closure participants and low-need-for-closure participants [$t(86)=2.73, P=0.008$]. High-need-for-closure participants spent less time on the Website as compared with low-need-for-closure participants ($M=1.43$, $M=2.41$, respectively).

In contrast, under time pressure, no significant differences were found between participants with a high need for closure and those with a low need for closure. An examination of the means, however, revealed that participants with a high need for closure spent more time on the Website as compared with those with a low need for closure ($M=1.31$, $M=1.07$, respectively).

To compare more specifically different time spans spent on the Website, $t$-tests were performed. Low-need-for-closure participants, performing without time pressure, stayed at the interactive site for the longest length of time [$t(23)=2.774, P=0.011$] as compared with all other conditions ($M=2.73$, $M=1.40$, respectively). The length of time low-need-for-closure participants stayed at the interactive site when they operated under time pressure was the shortest time [$t(41)=3.009, P=0.004$] compared with all other conditions ($M=0.92$, $M=1.67$, respectively).

An additional $t$-test was performed. This was to examine time pressure at the different levels of need for closure among participants. Participants with a low need for closure performed very differently in the time pressure and no time pressure conditions [$t(46)=2.70, P=0.01$]. Low-need-for-closure participants who acted under time pressure used fewer hyperlinks as compared with performing without time pressure ($M=0.85$, $M=1.86$, respectively).

It would appear that analyzing the length of time that the participants stayed in each condition provides additional support for the earlier mentioned explanations.

### Table 4
Means and standard deviations of the lengths of time that the subjects stayed in each condition by the interactivity, personal need for closure, and time pressure variables

<table>
<thead>
<tr>
<th>Need for closure</th>
<th>Time pressure</th>
<th>No time pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>S.D.</td>
</tr>
<tr>
<td><strong>High</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flat</td>
<td>1.37</td>
<td>0.84</td>
</tr>
<tr>
<td>Interactive</td>
<td>1.22</td>
<td>1.11</td>
</tr>
<tr>
<td>Total</td>
<td>1.31</td>
<td>0.95</td>
</tr>
<tr>
<td><strong>Low</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flat</td>
<td>1.26</td>
<td>1.15</td>
</tr>
<tr>
<td>Interactive</td>
<td>0.92</td>
<td>1.08</td>
</tr>
<tr>
<td>Total</td>
<td>1.07</td>
<td>1.11</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1.19</td>
<td>1.03</td>
</tr>
</tbody>
</table>
4. Discussion

It would appear that when there is no time pressure, subjects choose their preferred alternative; thus, it may be assumed that they express their natural preferences. Subjects with a low need for closure prefer the interactive site. This provides a perceived legitimacy to pressing repeatedly on different hyperlinks. In addition, the interactive site causes those who visit it to feel that they have chosen to receive additional information, by pressing the links, as opposed to information being given to them. Apparently, these characteristics fulfill the need of subjects with a low need for closure to receive further information before they make a decision. The interactive site thus provides the tools necessary to achieve ‘epistemic melting’ and so serves the need to avoid closure. Conversely, subjects with a high need for closure, who have a need to reach ‘epistemic freezing’ in a relatively short span of time, prefer a flat site.

However, when they surf under time pressure, subjects are unable to choose their preferred alternatives with ease. In this condition, participants with a low need for closure prefer the flat site. According to Kruglanski and Webster (1996), people with a high need for closure experience its absence as aversive. The same may be said to be true for people with a low need for closure. They perceive the necessity of deciding quickly, having no opportunity to receive further information and so running the risk of making mistakes, as aversive. Therefore, it would seem that to find themselves at an interactive site, in which each hyperlink provides potentially relevant information, without being able to ‘check them as they would wish’, is frustrating and undesirable. Therefore, subjects with a low need for closure who operate under time pressure prefer a flat site.

Subjects with a high need for closure prefer the ‘interactive’ site under time pressure, but their motivation may be different from that of subjects with a low need for closure who operate with no time pressure. It may be assumed that participants with a high need for closure strive to reach a certain decision as soon as possible; the urgency tendency is more dominant than the permanence tendency. When subjects with a high need for closure are required to make a decision under time pressure, their desire to achieve a final answer, which is mediated by the urgency tendency, is activated more intensively. Therefore, they are willing to ‘filter’ information and make a decision based on relatively few parameters. The hyperlinks on the interactive site enable them to filter information and choose only those hyperlinks that will assist them directly in their decision-making. In this way, the hyperlinks serve the urgency tendency and allow subjects to reach ‘epistemic closure’. Therefore, subjects with a high need for closure who operate under time pressure prefer the interactive site over the flat site.

The results for the use of hyperlinks in the interactive site provide further support for this explanation. When there is no time pressure, subjects with a low need for closure use significantly more hyperlinks than those with a high need for closure. This finding supports the explanation that when there is no time pressure, the interactive site provides tools for achieving ‘epistemic melting’ and so serves the need to avoid closure. In addition, subjects with a low need for closure use significantly fewer hyperlinks when they operate under time pressure compared with
when they operate without time pressure. These findings support the explanation that time pressure serves as a constraint that does not enable subjects with a low need for closure to use what they perceive as the necessary number of hyperlinks in the interactive site, and so does not enable them to ‘enjoy’ the information obtained.

Further support may be found by assessing the length of time that the subjects stayed in each condition. Subjects with a low need for closure stayed at the interactive site when there was no time pressure for the longest period of time compared with all other seven conditions. This finding supports the explanation that the hyperlinks contained in the interactive site provide tools for achieving ‘epistemic melting’ for subjects with a low need for closure. In addition, the length of time subjects with a low need for closure stayed at the interactive site when they operated under time pressure was the shortest compared with all other seven conditions. This finding supports the explanation that subjects with a low need for closure, who operate under time pressure, perceive their stay at the interactive site as frustrating and unwanted.

To extend our understanding of the roles played by personality and interactivity, it is recommended that the interaction between other personality characteristic theories and interactivity be examined. For example, it seems likely that the need for sensation will interact with interactivity. People who are low on sensation seeking may well avoid or feel anxious in Websites with many hyperlinks. This is in contrast to people who are high on sensation seeking who are likely to flourish at highly interactive Websites. Another personality theory that should be studied with regard to its interaction with hyperlinks is the need for cognition. This is defined as the individual tendency to engage in and enjoy effortful cognitive endeavors (Cacioppo & Petty, 1982). A person with a high need for cognition has a strong tendency to engage in and enjoy effortful cognitive endeavors, while a person with a low need for cognition does not enjoy this activity. Since a particularly interactive Website creates a cognitive challenge, it may be assumed that an individual with a high need for cognition will enjoy visiting it, whereas someone with a low need for cognition will prefer a flat Website.

This paper is a pioneering study which is intended to increase our understanding of the interaction between personality and the Internet technology. It focuses on a single personality variable—the need for closure and a single Internet feature, the hyperlink. It demonstrates that the interaction between the two creates significant, although not altogether straightforward, results. However, there is no doubt that when research in this field begins to accumulate information, it will demonstrate how the unique interactive ability of the Internet may be used more effectively in order to create a technology that does not deny the individual his/her own personality.

References


