

Testing Consumers' Motivation and Linguistic Ability as Moderators of Advertising Readability

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ABSTRACT

The present study focuses on testing rival hypotheses regarding the effects of advertising readability: Are the effects of readability on cognitive responses and attitudes moderated by the readers' motivation or by their linguistic ability? A two (low/high involvement) by two (strong/weak arguments) by two (low/high readability) factorial design was used to test the hypotheses. The findings support the hypothesis that readers' linguistic ability is the dominant influence factor, because low readability significantly reduces the effects of argument strength under both low and high involvement. Psycholinguistic theory provides explanation for the findings. The implications for advertising practice relate to consumers' levels of literacy. © 2003 Wiley Periodicals, Inc.

The task of reading print advertisements is too difficult for many North Americans. A substantial proportion of North American's *ability* to read any print message is low, as reported by several studies:

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- More than 73 million adults in North America are functionally illiterate (Harrison-Walker, 1995).
- The average readability level is far below what could be expected from the mean level of education for U.S. adults (12.3 years); more than one-third of U.S. adults read below the eighth-grade level (Burton, 1991).
- A linguistic analysis of 30 consumer-oriented brochures distributed by five major U.S. banks shows that their readability level is beyond the comprehension of 62% of U.S. adults (Burton, 1991).

Ability to read is only a necessary condition for advertisement information to be processed by consumers. As message complexity increases, consumers exposed to print ads often need to be motivated to attend to and process the message; such motivational levels may occur rarely, as reported in several convergent studies. For instance, Toncar and Munch (2001) conclude that explicit advertising claims are likely to be ignored when viewers are not motivated to process advertising information (p. 56).

The present study focuses on the interaction effects of ability and motivation to read advertisements as antecedents of the information and the persuasion processes. The research probes the following issues. Do highly motivated consumers process advertisements that are difficult to read more deeply than less motivated consumers? Or, is processing linguistically difficult messages a cognitive barrier that the even highly motivated cannot overcome?

Even if advertisements prove to be too difficult to understand fully, they may be persuasive, because message clarity and persuasion are unique factors. Can a difficult-to-understand advertisement be persuasive? The following literature review examines the effects of readability on both information processing and persuasion. The studies described include contradictory findings.

EFFECTS OF ADVERTISING READABILITY: CONTRADICTIONARY FINDINGS

Readability relates to the linguistic complexity of the text, in particular to the semantic and syntactic dimensions of the text. Readability centers mostly on words (familiarity, frequency, abstractness, and length), sentences (length, syntactic complexity), and texts (density, number of new concepts). Whereas readability has been studied thoroughly and measured in various domains of communication, such studies are rarely found in advertising.

The effects of readability on advertising effectiveness are unclear. On the one hand, advertising copywriting guidelines include a straightfor-

ward appeal: Simple is best. For some advertising practitioners, “the whole issue is readability (. . .) [for if] I can’t read it, I’m not interested in it” (Braus, 1995, p. 35). Implicitly, according to this view, ability to process and the motivation to process an ad interact to affect its persuasiveness. Some empirical studies on linguistic complexity support arguments favoring high readability. Information may be “more likely to be attended to and processed” when it is easily readable (MacDonald-Ross, 1977, p. 398). Tufte (1983) advocates the same view. Texts that are too long may also hinder readers’ information processing (Root & Stableford, 1999, p. 25).

On the other hand, a number of empirical studies on the advertising language do not confirm these commonsense norms. Chamblee, Gilmore, Thomas, and Soldow (1993) report that copy complexity (e.g., a high ratio of separate to total words) can increase ad readership, which clearly contradicts the “keep it short-and-simple” heuristic. Another study (Motes, Hilton, & Dulek, 1994) provides similar counterintuitive results: Passive syntax may elicit positive responses. The effects of readability on both information processing and persuasion may be understood from the psycholinguistic literature, which shows the moderating roles of motivation and ability to process the linguistic information.

READABILITY, MOTIVATION AND ABILITY TO PROCESS TEXTS: A PSYCHOLINGUISTIC BACKGROUND

Readability research stems mostly from the domain of education, where two concepts are central: Ss’ *ability* to understand what they read and Ss’ *motivation* to read. Balancing students’ linguistic ability and texts’ linguistic complexity is the impetus of these studies. Educational researchers are interested mostly in the effects of the text linguistic characteristics on students’ cognitive responses. Educational researchers view comprehension to be more than a simple rephrasing of the text. “Within the constraints of vocabulary and syntax of the sentences of a passage, a reader can legitimately construct meanings at multiple levels of abstraction or with reference to multiple issues to the reader” (Witrock, 1981, p. 251).

The depth of cognitive responses is of special interest also to researchers in consumer behavior, because the depth of cognitive responses is an antecedent of attitudes and behavior (e.g., MacInnis & Jaworski, 1989). Whereas “surface” responses are “mental associations related to message assertions and logical implications, deeper cognitive levels reflect increased activation of relevant knowledge structures producing elaborated meanings for the stimulus information” (Mick, 1992, p. 412). To reach deeper levels of comprehension, readers should show more than linguistic ability. They should also demonstrate motivation to process the information. A well-accepted definition of readability includes

both ability and motivation: “The success [of the reading process] is the extent to which they [the readers] understand it, read it at optimum speed and find it interesting” (Dale & Chall, 1948, p. 13).

Recent psycholinguistic models show how motivation and ability affect readability. In his construction–integration theory, Kintsch (1998) proposed that text comprehension follows a two-stage process. In the first stage, called the construction stage, a reader constructs meaning progressively in short-term memory. As a word or phrase is visually processed in a text, its associates (i.e., all the evoked mental images) are “activated in a spreading fan” (p. 21). Such spreading activation is limited by the context to the easily retrieved related, “candidate” concepts. In the subsequent integration phase, deeper context checks occur as the reader moves ahead until contextual constraints are satisfied and a stable interpretation emerges.

If the text is hardly readable, individuals with low linguistic ability show poor comprehension of verbal cues and tend to allocate most of their cognitive resources to the comprehension processes and significantly less for storage (Daneman & Carpenter, 1983). Consequently, when exposed to a linguistically complex text, a reader’s cognitive resources are focused on the complex word or sentence. Briefly, the completion of the construction stage is compromised by semantic complexity (mostly complex words); the completion of the integration stage is compromised by a syntactically complex sentence.

Verbal memory relates to processing resources utilized in a complex sentence-processing task (see Montgomery, 2000) and verbal memory correlates with language abilities (see Weismer & Evans, 1999). Psycholinguists conceptualize the role of functional verbal memory in the reading process as follows. Unfamiliar words or complex phrases force readers to “regressive fixations” (i.e., backward glances). Consequently, short-term memory¹ is emptied by the forced attention to unusual words. If the ability to process the text is low, the storage capacity of the working memory provides insufficient cognitive resources. Thus, the comprehension process of complex sentences is compromised. Ability to process print information relates closely to the storage capacity of the functional verbal memory (for empirical evidence, see Daneman & Carpenter, 1983; Just & Carpenter, 1992).

For Daneman, Carpenter, and their colleagues, memory is a resource-limited system that includes both storage and processing functions. If the storage and/or processing demands of a comprehension task exceed the amount of resources available to the memory system, a trade-off between storage and processing occurs; this trade-off may lead to forgetting of some or all of the previously processed information residing

¹About 8–10 items can be stored in short-term memory, which can be increased if the items are organized in subgroups (e.g., 12 digits can be regrouped into three historic dates). Because this cognitive elaboration takes place in short-term memory, the term *short working memory* is more appropriate than *short-term memory* (Wade & Travis, 1996).

in storage. Daneman and Carpenter (1983) argue that individuals demonstrating poor comprehension typically allocate a majority of their resources to comprehension processes, leaving fewer resources for storage. These individuals have a functionally smaller temporary storage capacity. Thus, by the time they reach the end of a sentence, the representation (typically a thematic/semantic one) constructed earlier in a sentence may be forgotten (i.e., the representation no longer receives sufficient activation to remain in an active state).

However, motivation to process the information may counterbalance the process. Motivated individuals may mobilize more cognitive resources at the point where short-term memory is large enough to store the initial meaning constructed as well as the processing of the unfamiliar words. For instance, in a remarkable study on eye fixation, D. M. Krugman and Fox (1994) report subjects looking at Camel ads, featuring the popular comic character Joe Camel, for almost twice as long as the Marlboro ad, even though the Camel ad contained a text section not present in the Marlboro ad. Conversely, consumers with low motivation to process the information may be unable to access their relevant knowledge structures. The less-motivated consumers are unlikely to process the information deeply, because they are less likely to relate the incoming advertising information with personal knowledge and experience.

The effects of legibility are not investigated in this study: Legibility is related to variables such as the size of the font (Braus, 1995; Candace, 1999; Cullingford et al., 1988; Davis & Kendrick, 1989; Kingery & Futura, 1997; Li & Bukovac, 1999), the contrast of colors (Hoy & Stankey, 1993; Moriarty & Duncan, 1989; Nicotera, 1999; Rehe, 1974), and the number of letters (Swasy, Mazis, & Morris, 1992). See McCarthy and Motherbaugh (2002) for application of many of these variables in an advertising context.

In summary, semantic and syntactic levels of complexity impact on two different stages on the reading comprehension process. Reading ability relates mostly to the storage capacity of the functional verbal memory; such ability is a stable characteristic inherent to the reader. Reading motivation helps mobilize cognitive resources to store and process complex linguistic sentences. Although motivation and ability to process print information are both major potential moderators of the effects of readability, very few advertising studies have investigated these moderators. The next section reviews the advertising literature on readability and persuasion.

RECENT ADVERTISING STUDIES ON READABILITY

Bradley and Meeds (2002) assess the effects of syntactic complexity in ads as a combination of two linguistic manipulations: active-versus-passive voice and “particle movement.” Particle movement refers to the

manipulation of the adverb position in a sentence (e.g., “Comtech *accurately* reproduces your thoughts,” versus “Comtech reproduces your thoughts *accurately*”). The Bradley and Meeds (2002) experimental design includes three levels of syntactic complexity: low (active voice and usual positioning of the adverb), high (passive voice and unusual positioning of the adverb), and moderate (the other two combinations of voice and particle movement). Their findings demonstrate a curvilinear effect: “moderate levels of (syntactic) complexity can have a positive effect on A_{ad} but higher effects of complexity can have a negative effect on A_{ad} ” (p. 613). The findings challenge the conventional wisdom that ad copy should be kept as simple as possible. More precisely, the authors conclude, “slightly varying the syntax in an ad is seen as refreshing, while too much syntactic complexity is an overload” (p. 614). Bradley and Meeds (2002) explain their results as follows: “Elaborative processing models suggest that, within limits, complexity could help with encoding because more time is spent during the encoding process” (p. 614).

However justified and thought provoking the explanation by Bradley and Meeds can be, it implies that the receivers have high abilities to process the message, which is likely to be the case for university mass communications students who constitute the participants of their study; otherwise all the cognitive resources would have been mobilized to process the message, leaving no resources to store it (Daneman & Carpenter, 1983; Just & Carpenter, 1992). Another limitation of this study is the absence of measurement or manipulation of the receivers’ motivation, as motivation is shown to influence significantly both the cognitive and persuasive processes (e.g., Chebat, Charlebois, & Gelinias-Chebat, 2001).

Another major study on advertising readability is that by Lowrey (1998). She studied the effects of syntactic complexity, a central aspect of readability, on both attitudes and cognitive responses. She conducted a series of three experiments: first on the effects of syntactic complexity solely, then on the interactive effects of syntactic complexity and argument strength, and finally on the interactive effects of these two variables and involvement.

In her first experiment, contrary to expectations, simple syntax did not enhance attitudes toward the brand but enhanced (marginally) recall and (significantly) recognition. In her second experiment, the possible interactive effects of syntactic complexity and argument strength were assessed in a lab 2×2 factorial experiment, to control measurement and procedure influences. The effects of syntactic complexity on recall were not found to be significant, due to “the moderate levels of syntactic complexity used” (p. 194). As expected, strong arguments were found to generate more support cognitive responses for a syntactically simple ad but not for a complex syntax ad. A similar pattern was found for brand attitudes. At this stage of her research, Lowrey (1998) has proposed two competing explanations. Either complex syntax hindered

the ability to process information or the “*motivation* to process the ad is reduced when extra effort is required” (p. 196).

On the one hand, “if syntactic complexity operates solely as an ability factor, involvement level should not affect attitudes” (Lowrey, 1998, p. 197). In this case, a significant two-way interaction between readability and argument strength is expected to affect information processing and attitudes for both low and high involvement. Strong versus weak arguments should have a greater effect if the text is more readable than if it is less readable, for both high and low involvement.

On the other hand, “if syntactic complexity operates as a motivational factor, the attitudes of participants in the high-involvement condition should differ from those in the low-involvement condition, producing an interaction among syntactic complexity, argument strength, and involvement” (Lowrey, 1998, p. 197).

In order to address this issue, Lowrey (1998) conducted a 2 (simple/complex syntax) by 2 (strong/weak arguments) by 2 (low/high involvement) factorial experiment. The results indicated a pattern of results that tended to favor the “motivational” explanation. First, a three-way interaction was observed: “syntactic complexity appears to impact motivation, influencing one’s willingness to process an ad as opposed to one’s ability to process an ad, at least in a print context” (p. 202). Second, the two patterns of interaction between argument strength and involvement under complex and simple syntax conditions were those expected by the motivational hypothesis.

Lowrey’s study focuses on moderate levels of complexity. What happens if complexity increases significantly? The present study focuses on whether readability operates as an ability factor or as a motivational factor at higher levels of linguistic complexity. The two rival hypotheses, that is, motivation versus ability as moderators of readability, are tested here.

Briefly, for the *ability* hypothesis to be supported, a significant two-way interaction between readability and argument strength is expected to affect information processing and attitudes under both high and low levels of involvement. Conversely, if readability inhibits the motivation to process information, a significant three-way interaction between linguistic complexity, involvement and argument strength is expected to affect both information processing and attitudes.

METHOD

The study is a $2 \times 2 \times 2$ factorial design to test the effects of readability (high vs. low), arguments (strong vs. weak) and involvement (high vs. low). Each participant was presented with a booklet containing one of the eight experimental ads (see the Appendix) and a questionnaire. The ads show either a shower gel (low-involvement condition) or a face cos-

metic (high-involvement condition). The same font, colors, and layout were used throughout all experimental conditions in order to cancel the effects of those variables (Motes et al., 1994).

The experimental ads were presented to the participants as a project for an advertisement designed by a local advertising agency for individuals similar to themselves. The participants were instructed to examine the advertisement carefully with the objective of evaluating the product presented in the ad. The participants were also instructed not to refer back to the ad once they had finished examining it. After processing the ad, the participants answered a questionnaire discussed subsequently. They were then thanked and dismissed.

Participants

The participants ($n = 168$) were recruited among second-year students of a university engineering school; the selected participants were similar in age (between 22 and 28). All participants were of the same gender (males), in order to cancel the effects of gender shown by the following advertising studies. First, gender differences among readers of popular magazines may hide a difference in terms of involvement, because “lexically complex ads would be read more carefully by people who are highly involved with the product being advertised” (Chamblée et al., 1993, p. 27). Second, males and females may consider the same product under different perspectives, which interferes with the information processing (Holbrook, 1986; Painter & Granzin, 1976). Third, as H. E. Krugman (1966) reports, females engage in greater elaboration of ads than males, regardless of whether the ads focused on content considered to be of more interest to men or to women. Fourth, “women’s judgments reflected greater consideration of the message cues than did those of men” (Meyers-Levy & Sternthal, 1991, p. 93). Because all participants were males, these possible effects of gender on advertisements processing should be canceled.

Manipulation Check of Readability

In the present study semantic complexity is manipulated *in addition* to syntactic complexity. Semantic complexity is related to the choice of words. Unfamiliar words make the comprehension all the more complex, because readers are unable to relate their personal knowledge to the incoming message. Recent psycholinguistic studies (e.g., Chall, 1996; Zakaluk & Samuals, 1996) demonstrate that semantic and syntactic components complement each other and affect readability. Word length and sentence length represent the highest loading on the regression equations to estimate text readability (Zakaluk & Samuels, 1996).

Readability was assessed in two different ways: in terms of linguistic scales, and in terms of participants’ perception of readability. First read-

ability was measured against the Flesch index. The second author, a professional linguist, calculated three separate subindexes: sentence readability, readability of the vocabulary, and a combined index of linguistic readability. Sentence readability relates to the mean length of the sentences used. Longer sentences result in lower scores. Readability of the vocabulary relates to the mean length of the words used. Longer words used results in lower scores. The combined linguistic readability index is calculated with the sentence readability and the readability of the vocabulary multiplied with a constant variable. The lower the score, the lower the readability of the text.

The four versions of low readability varied little in terms of sentence readability (18, 18, 17, and 17), readability of the vocabulary (53, 53, 49, and 48) and combined index (51, 53, 53, and 56). Similarly, the four versions of high readability varied little on the same indexes: that is, for the sentence readability (80, 80, 80, and 79), readability of the vocabulary (72, 72, 74, and 76) and combined index (0 in the four cases of low linguistic readability). Thus linguistic readability was homogeneously low throughout the four versions of low linguistic readability and homogeneously high in the four other versions of high linguistic readability.

Highly accessible texts rate around 50 for the global index. This level is the typical score of *Reader's Digest* texts. Hermetic scientific texts, such as doctoral dissertations, rate near zero. Some texts can be rated as even more complex: For instance, the readability score of typical Proust's texts was -10 because of very long sentences (sometimes as long as a full paragraph), and the frequent occurrence of nine-letter words (Zacharia, 1987).

Second, readability of the advertisements' text was also assessed by the participants on two 7-point Likert scales anchored as *clear* (+3) to *confused* (-3) and as *easy to read* (+3) to *not easy to read* (-3). A MANOVA was used to check if the readability assessments of readability on these two variables were significantly related to the manipulated readability (low vs. high). The MANOVA showed a significant effect of the manipulation on the two variables together ($F_{2,163} = 6.42; p = .002$) and for each of them separately ($F_{1,165} > 5.5; p < .02$). The scores were 0.15 and 0.24 for the low-readability treatment and 1.14 and 0.86 for the high-readability treatment, showing that subjects found that the highly readable ads were easier to read and less confusing.

Manipulation Check of Involvement

Two products designed for men were shown in the ads, because the sample is deliberately composed of male participants (for reasons discussed above): either a shower gel (low involvement) or a facial cream for men (high involvement). The participants were administered the Laurent–Kapferer (1985) involvement profile questionnaire. This ques-

tionnaire is composed of 16 scales. A principal-component factor analysis (with oblique rotation) resulted in five factors, as expected from the Laurent–Kapferer (1985) findings (probability of error, importance of the risk, pleasure, symbolic value, and interest). A MANOVA in which the factor scores were the dependent variables and the manipulated involvement was the independent variable was conducted. This analysis showed strong effects of the manipulated involvement on the Laurent–Kapferer scale ($F_{5, 161} = 6.12; p < .001$); however, separate ANOVAs conducted for each of the involvement factors showed that only two of the factors were significantly impacted by the manipulation, that is, probability of error ($F_{1, 161} = 14.29; p < .001$) and importance of the risk ($F_{1, 161} = 11.70; p < .001$), whereas the three others were not ($F_{1, 161} < 1.00; p > .38$). In other words, the manipulation was significant but limited to the two dimensions related to risk inherent to the use of cosmetic products by male consumers. As expected, the shower gel scored lower than the face cream on both involvement factors successfully manipulated.

Manipulation Check of Argument Strength

Argument strength was manipulated in a way that responds to criticisms related to the way argument strength was manipulated in some earlier tests of the elaboration likelihood model (Petty & Cacioppo, 1981a; Petty, Cacioppo, & Schumann, 1983). According to Areni and Lutz (1988); Petty & Cacioppo, (1983); Petty, Cacioppo & Schumann (1983) manipulate the positive versus negative consequences of the advertised product, not argument strength.

In operationalizing argument strength, an effort was made to create claims that might realistically be expected to be found in ads supplied by a manufacturer but that varied in intensity and avoided negative valence. The strong-argument copy was created that featured an ideal claim for the product. A corresponding copy that was considered plausible, but less compelling, was then created for the weak-argument version. For instance, the advertisements were worded as follows in the strong and weak versions (the weak version is in parentheses): “The [advertised product] is made especially (*also*) for men. It perfectly (*no adverb*) balances the skin. It gives it a unique (*some*) tone.” This procedure responds to the criticisms addressed by Areni and Lutz (1988), who suggest manipulating argument strength on the basis of quantified elements (for instance, razor blades should be presented as shaving closer than four versus two of its competitors) or variation of the strength of adjectives or adverbs.

Hennessey and Anderson (1990) show empirically that if argument strength is manipulated as suggested by Areni and Lutz (i.e., a manipulation of quantitative elements or adjectives), strong arguments increase cognitive responses under high involvement only. Strong argu-

ments as defined by Areni and Lutz may still generate more cognitive activity if readers are exposed to them under high involvement. In the present study, arguments were manipulated in the way suggested and used by Areni and Lutz (1988), Boller, Swasy, and Munch (1990), Chebat, Lavallée, and Gélinas-Chebat (1995), and Altsech, Kellaris, and Cline (2000).

A pretest was designed to screen a series of arguments to be potentially included in the message, which allowed us to identify the arguments showing either a high score or a low score to be used in the experiment. Subsequently, in the experiment, two scales were used in the questionnaire to assess the degree to which the manipulation of argument strength was adequately done, “the message arguments are *convincing* (+3)/*not convincing* (-3)” and “the message arguments are *well conceived* (+3)/*not well conceived* (-3).”

A MANOVA showed that the manipulation of arguments was successful, because the strong argument ads were rated significantly higher on these two variables together ($F_{2, 161} = 7.79; p = .001$) and separately ($F_{1, 161} > 4.60; p < .03$).

Dependent Measures

Attitude toward the Ad (A_{ad}). Ten 7-point Likert scales were used to measure attitude toward the ad, with 0 as a median point; for example, *well-executed* (+3)/*badly executed* (-3); *pleasant* (+3)/*unpleasant* (-3), *informative* (+3)/*uninformative* (-3). A principal-components factor analysis was performed on the 10 variables related to the assessment of the advertising message. The findings include two factors. One factor relates to cognition (informative–useful–honest–interesting), and explains 45% of the variance (with an eigenvalue of 4.3). The second factor relates to execution (well done–easy to understand–easy to read), and explains 15% of the variance (with an eigenvalue of 1.5). Cronbach’s alphas were, respectively, 0.83 and 0.75.

Attitude toward the Product. A principal-component factor analysis on the eight 7-point Likert scales—for example, *original* (+3)/*not original* (-3); *well designed* (+3)/*badly designed* (-3); *attractive* (+3)/*unattractive* (-3); *reliable* (+3)/*unreliable* (-3)—showed a single factor explaining 50% of the variance (Cronbach’s alpha was 0.84).

Behavioral Intent. A principal-component factor analysis showed one factor composed of the three 7-point Likert scales used (“I’d be willing to buy this product;” “I want to know more about the product;” “I’ll recommend the product to my friends.”). Cronbach’s alpha was 0.68.

Depth of Information Processing. The section of questionnaire assessing the level of information processing is formulated into a single

Table 1. The Six Levels of Information Processing (MacInnis and Jaworski, 1989).

Level 1:	Cognitive response based upon the recollection of certain contextual elements of the message (presentation, name, and logo).
Level 2:	Opinions that stemmed from certain contextual elements of the message.
Level 3:	Recollection of certain major arguments of the message and paraphrases.
Level 4:	Logical conclusions derived from the arguments in the message.
Level 5:	Cognitive responses reflecting a general impression of the product, illogical conclusions.
Level 6:	The respondent going beyond the arguments in the message to form attributes or to imagine scenarios in which the product is being used.

open-ended question. The respondents were asked to write down everything they had thought and imagined while reading the advertisement. The coding procedure used is similar to the method of Chebat, Charlebois, and Gelinat-Chebat's (1997, 2001) method. The depth of information processing was assessed by two graduate students in linguistics who classified the responses by following the reference points listed below (see Table 1). This method reflects the hierarchy of information processing levels developed by MacInnis and Jaworski (1989). If the cognitive responses show that the subject attained several levels, the judges had to indicate all the levels that were attained. This task was accomplished individually by each of the judges. The codification of the two judges turned out to be identical in 86% of the cases. Two judges resolved the cases not decided unanimously. The percentage of respondents at each level is as follows: level 1: 10, level 2: 21, level 3: 16, level 4: 29, level 5: 15, and level 6: 9.

Prior Knowledge. Availability and accessibility of knowledge of the brand are the antecedents of receivers' capacity to process information (MacInnis, Moorman, & Jaworski, 1991). For Celsi and Olson (1988), this capacity depends upon the quantity and type of knowledge consumers acquire through their own experience. MacInnis and Jaworski (1989) point out that prior knowledge of the product advertised influences the information processing and that this knowledge exerts a major effect on attention to the message and capacity to process the information. In addition, Chebat et al. (2001) demonstrated empirically that prior knowledge affected the depth of information processing. It is then important to distinguish the effects of prior knowledge from the effects of ability and the effects of motivation to process the information. Because this study focuses on the question of whether low readability hinders the ability or the motivation to process the information, the effects of prior knowledge should be canceled.

Prior knowledge was measured with six scales. A factor analysis showed two factors: one related to personal use and knowledge (32% of

total variance), the second related to knowledge obtained from media, friends, and relatives (19% of the variance). The corresponding factor scores were used in all subsequent ANOVAs and MANOVAs as covariates.

RESULTS

An ANOVA was used to test the effects of the three independent variables on the depth of information processing. A MANOVA was used to test the effects of the independent variables on the four attitudinal factors. The prior knowledge factors were used as covariates in both cases; in both cases the effects of prior knowledge were not significant ($F_{1,147} < 1.5$; $p > .2$).

Effects on the Information Processing. The reasoning used here is that the presence of a significant three-way interaction between the independent variables is a necessary condition for the motivation hypothesis to be supported. Conversely, the two-way interaction between readability and argument strength has to prove to be significant in order to support the ability hypothesis. The ANOVA results showed no significant three-way interaction ($F_{1,163} = 0.163$; $p = .68$). However all two-way effects were significant (all F 's_{1,163} > 4.41 ; all p 's $< .04$; $r^2 = .32$). More specifically, the two-way effects of readability and argument strength ($F_{1,163} = 4.41$; $p = .04$), readability and involvement ($F_{1,163} = 5.37$; $p = .02$), and involvement and readability ($F_{1,163} = 5.57$; $p = .02$) are significant. Figures 1–3 show, respectively, the means and interactive patterns. High readability significantly enhanced information processing under strong arguments but not under weak arguments (see Figure 1). Also, high readability significantly enhanced information processing under low involvement, not under high involvement (as shown in Figure 2). Strong arguments significantly enhanced information processing under high involvement, not under low involvement (see Figure 3).

Effects on Attitudes and Behavioral Intent. The same reasoning was used also for attitudes to assess which of the two hypotheses (motivation vs. ability) proved to be supported. Results on the effects of the three independent variables on the four attitudinal factors presented a somewhat similar pattern as the information-processing pattern shown in the previous paragraphs: the three-way interaction was not significant ($F_{4,155} = .718$; $p = .58$) and all two-way interactive effects were significant (all F 's_{4,153} > 2.43 ; all p 's $< .05$; $.99 > \omega^2 > .70$). Figures 4–7 show a stable pattern of the interactive effects of readability and argument strength on the four types of attitudes: High readability enhanced attitudes if the arguments were strong ($F_{1,85} > 5.57$; $p < .02$) not if they were weak ($F_{1,79} < 2.27$; $p > .14$). As Figure 7 illustrates,

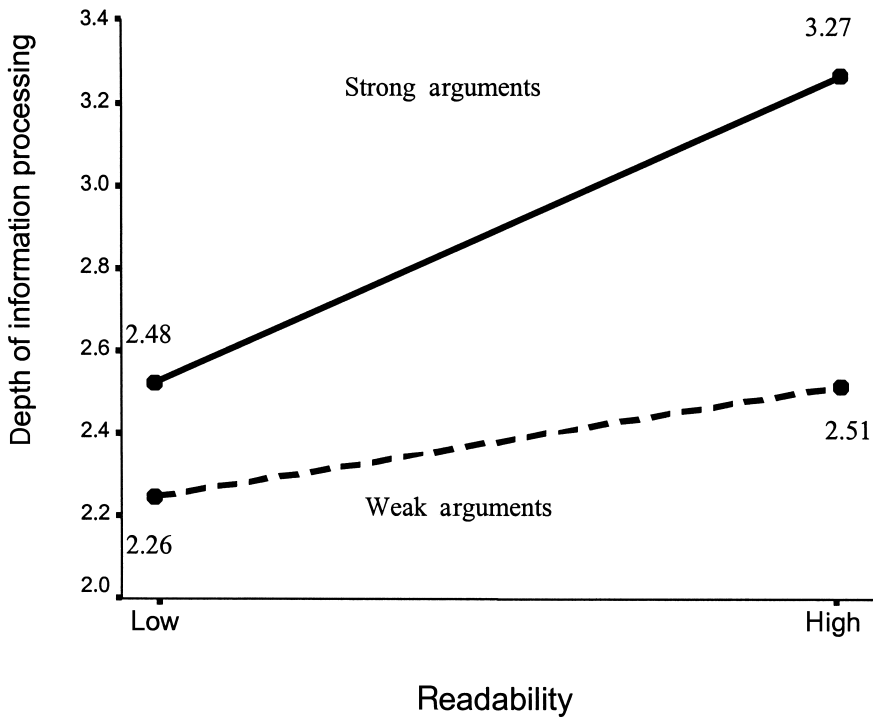


Figure 1. Interactive effects of readability and argument strength on depth of information processing.

whereas the argument strength has no significant effects on the behavioral intent under low readability ($-.07$ vs. $-.05$; $F_{1,79} = 1.85$; $p = .18$), strong arguments (as compared with weak arguments) enhance significantly the behavioral intent (0.44 vs. -0.36 ; $F_{1,84} = 26.74$; $p < .001$).

Second, readability and involvement also interacted significantly on the attitudes: high readability was found to have significant effects on attitudes under low involvement ($F_{1,79} < 4.10$; $p < .04$), but not under high involvement ($F_{1,77} < 0.10$; $p > .70$), but only in the case of the attitudes toward the cognitive cues of the ad and the behavioral intent. In the case of the other two attitudes (attitudes toward the executional cues and the product), although close to significance, the pattern of results remains the same. Third and last, arguments and involvement had significant interactive effects on attitudes: Strong arguments were found to have significantly more positive effects on all four components of the attitudes under high involvement ($F_{1,85} > 7.42$; $p < .008$) than under low involvement ($F_{1,79} < 1.86$; $p > .18$).

DISCUSSION

The results on the depth of information processing partially support the motivational hypothesis, because the information processing is signifi-

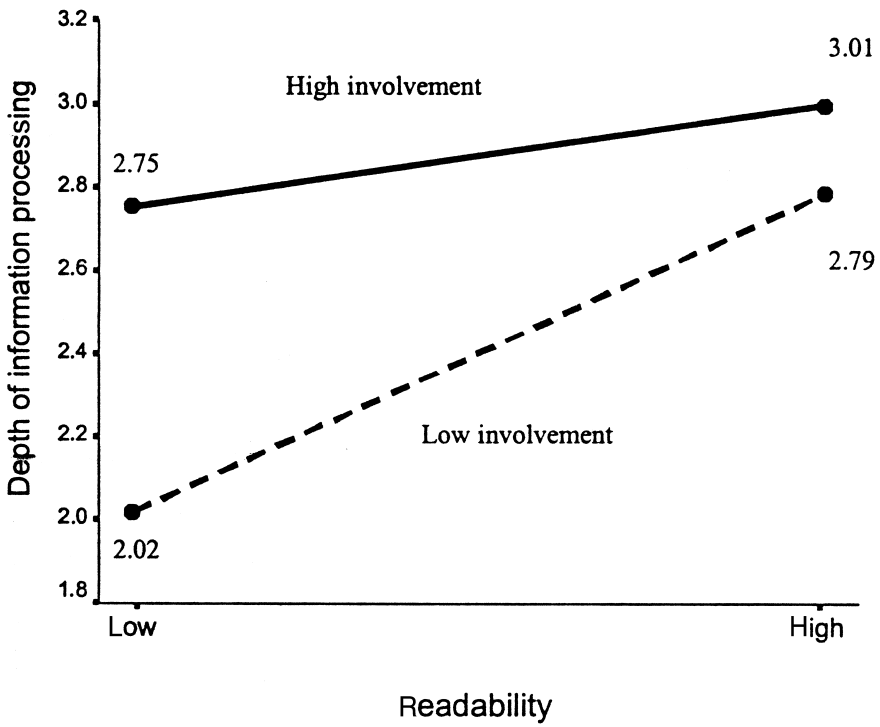


Figure 2. Interactive effects of readability and involvement on depth of information processing.

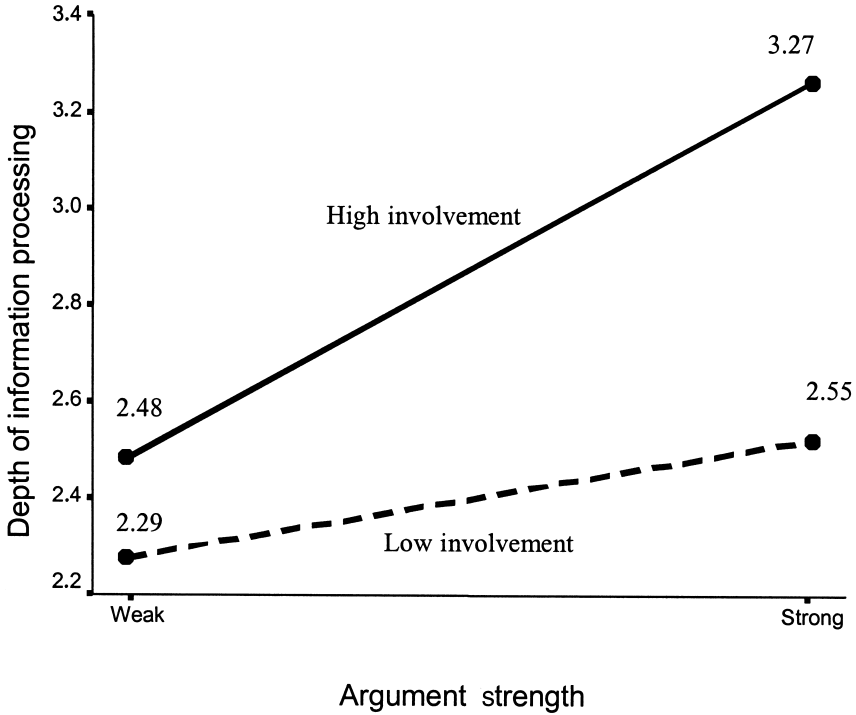


Figure 3. Interactive effects of argument strength and involvement on depth of information processing.

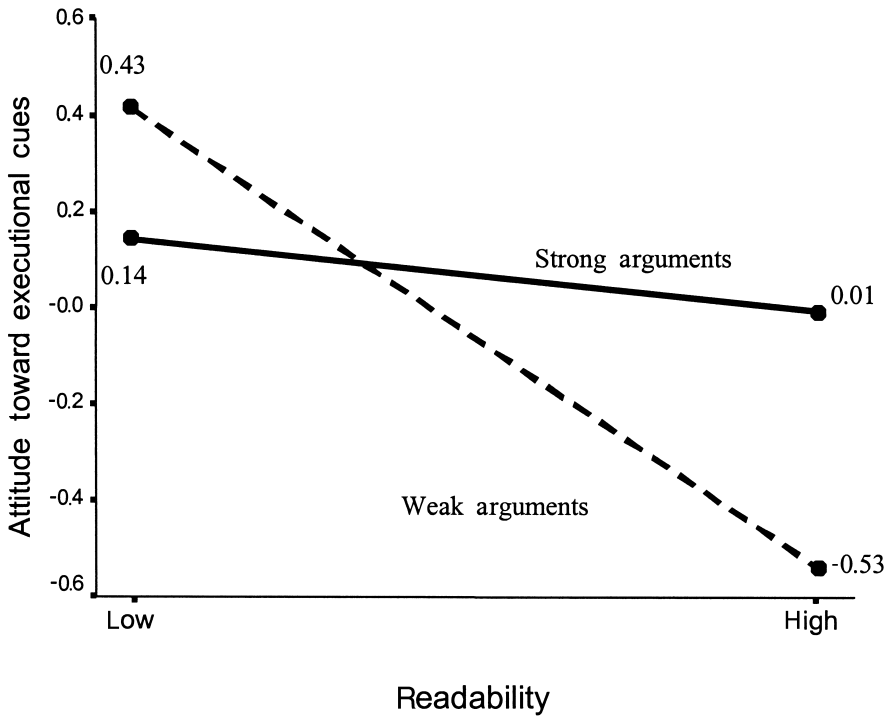


Figure 4. Interactive effects of readability and argument strength on the attitude toward the advertisement's executional cues.

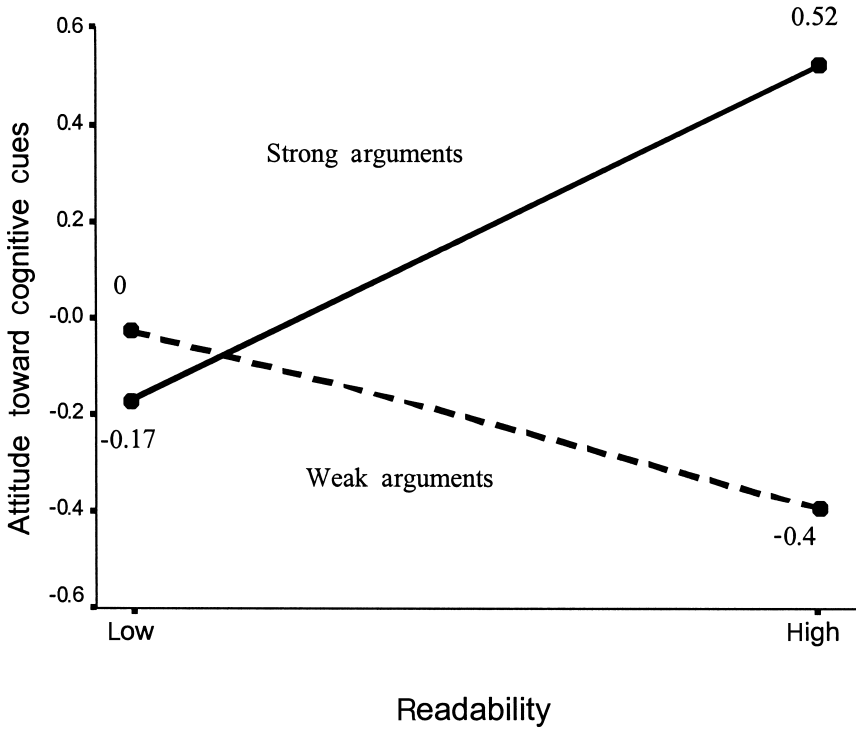


Figure 5. Interactive effects of readability and argument strength on the attitude toward the advertisement's cognitive cues.

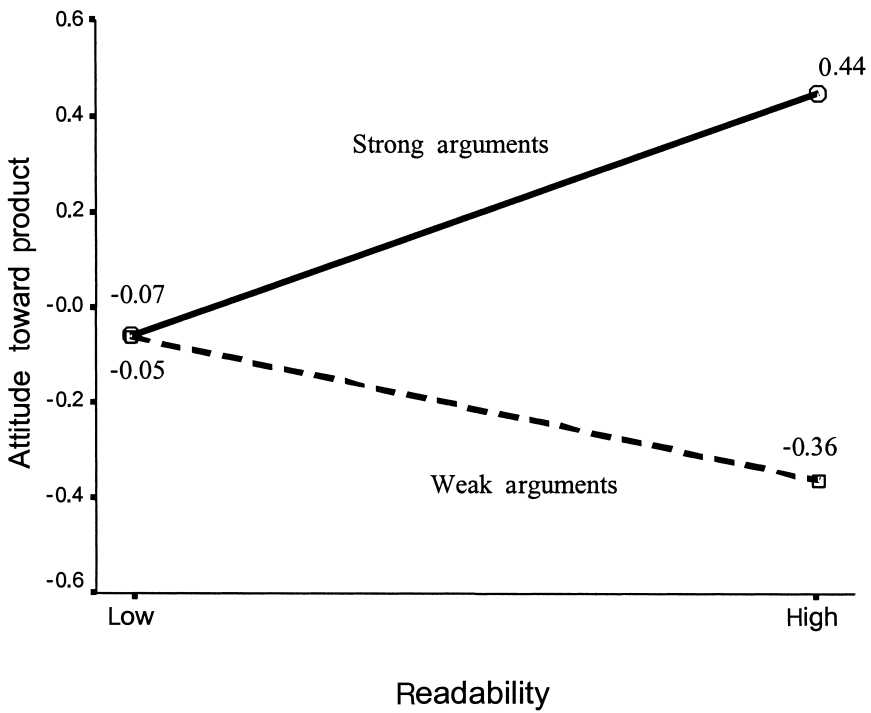


Figure 6. Interactive effects of readability and argument strength on the attitude toward the product.

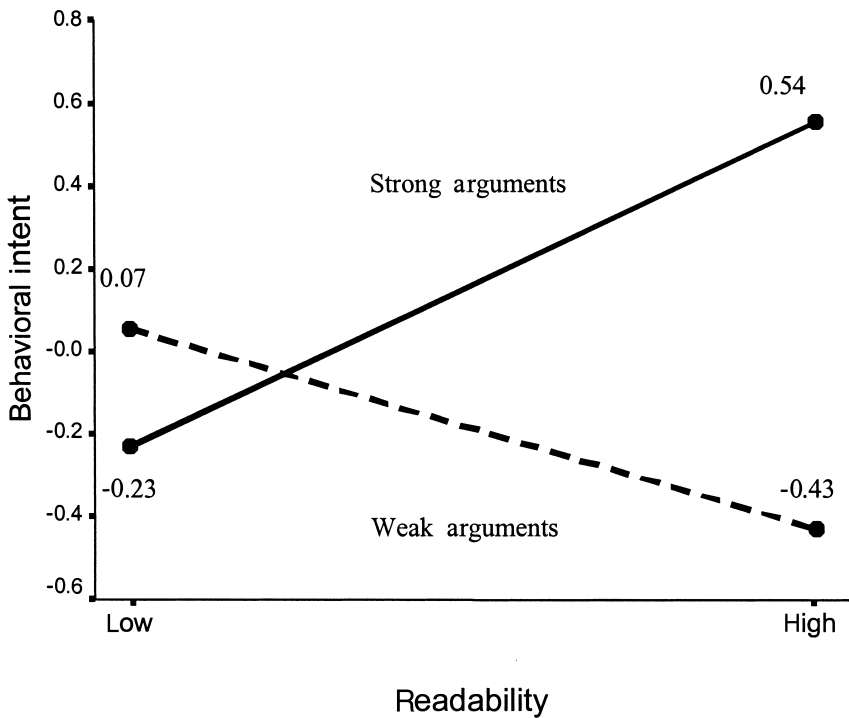


Figure 7. Interactive effects of readability and argument strength on behavioral intent.

cantly reduced by low readability under low involvement, not under high involvement. If the participants are motivated to process the advertisement, they process the information under both low and high readability. If they are not motivated, low readability significantly reduces information processing.

The rest of our findings support the hypothesis that readability operates as an ability factor. First, no three-way interaction was found, as already pointed out.² Second, all the interactive effects of readability and argument strength showed the same pattern under both levels of involvement: low readability cancels the effects of argument strength, whereas strong arguments enhanced attitudes under high readability for all measures except attitude toward execution cues.

Under high readability participants were able to assess the arguments and to transfer their evaluation of the arguments on the attitudes. Low readability canceled this transfer because of the reduced comprehension of the arguments. The findings support the proposition that low readability inhibits the ability to process the information.

That Lowrey's findings (1988) support the motivational hypothesis whereas the present findings support the rival hypothesis, that is, the ability-factor hypothesis, is explained as follows. First, the different levels of readability achieved by Lowrey and in the present experiment are contiguous. This study's advertisements reached higher levels of complexity (respectively 13.1 and 14.1 in Gunning's scale) than the more complex advertisements used in Lowrey's experiment. In Lowrey's sample of advertisements displayed in the Appendix, the more complex ads reached 5.8 (versus 4.6 for the simpler version) in Gunning's scale.³ In the present experiment, the reading capabilities expected to understand the complex advertisements was that of individuals who have attended school up to 13 and 14 years, that is, the first years of postsecondary education. Because participants in both studies were university students, the discrepancy of findings can hardly stem from the educational level of the students. The complexity of the ads used in the present study fits the educational level of the sample, whereas in Lowrey's study, as she reports several times in her article, even her more complex ads are of only moderate complexity, especially in the case of her sample of university students. In the case of Lowrey's study, high motivation may have canceled the effects of moderately low readability. The participants

²Because significant three-way interactive effects were not found in the present study, whereas they are found in Lowrey (1998), a procedure was used to replicate more closely Lowrey's manipulation of involvement. As in Lowrey (1998), only the respondents who scored high and low on involvement were selected. Recall that the Laurent-Kapferer (1985) involvement profile, which includes 16 items, was used. The respondents of the present sample were classified on one scale, that is, the sum of the 16 items, which is justified by the high Cronbach's alpha (0.86). Whether two groups or three groups or five groups were used, no significant three-way interaction was found.

³Lowrey's advertisements' linguistic complexity was measured through a computer program called SATO, available on the website of the second author's university.

in her study may be quite *able* to process even the complex messages; their relative complexity may have reduced their *motivation* to process them. By contrast, in the present study, the complexity was just at the upper limit of the participants' *ability*. For some of the participants it may even have been too complex. The linguistic complexity may explain some contradictory results pointed out above. Although some previous studies (e.g., MacDonald-Ross, 1977) support the "simple-is-best" rule, some other studies (e.g., Motes et al., 1994) advocate the opposite view that linguistic complexity can contribute positively to information processing and persuasion. The latter position makes sense if the complex version of the message is still understandable for motivated readers. Conversely, motivation is of little effect if the linguistic complexity is beyond the readers' linguistic ability.

Second, the difference between the two studies is not only a matter of level of linguistic complexity: It is also a matter of the *nature* of complexity. Lowrey's study manipulates only the syntactic complexity. In this study both semantic and syntactic complexities were manipulated. The psycholinguistic theories discussed earlier may shed some light on the respective findings. In the case of Lowrey's study, the participants' working memory is sufficiently large to allow them to store the meanings of the words and sentences and to complete the construction stage and the integration stage, especially under high motivation. If the ads are substantially more complex, as in this study, the working memory may become insufficient even under high motivation. Short-term memory is emptied regularly by attention to unusual words/syntax. This process hinders the completion of the construction phase and does not allow the readers to even reach the integration phase. Thus, motivation plays the main role in the case of moderately readable ads, whereas ability is the key factor in the case of advertisements that are highly difficult to read.

The results verify the elaboration likelihood model (ELM; Petty & Cacioppo, 1983, 1986). Involvement and argument strength interact as ELM predicts: Argument strength enhanced depth of information processing and attitudes only under high involvement. ELM predicts "the quality of the message arguments should have a greater impact on persuasion when motivation and ability to think are high" (Petty & Cacioppo, 1986, p. 11). The findings confirm that view: Under high involvement, participants exposed to strong arguments processed the information more deeply and attitudes toward the two components of the advertisement and the product were more positive.

CONCLUSION AND FUTURE RESEARCH AVENUES

The present study points out the very existence of a readability threshold. Below this threshold, that is, if the message is linguistically moderately complex, motivated readers may grasp the meaning of the ar-

guments and may change their attitudes as intended by the message. Beyond this threshold, that is, if the message is excessively complex, motivation has neither cognitive nor persuasive effects. Below the threshold, consumers may assess the strength of arguments even if formulated in a complex language. For instance, rhetorical questions may enhance the elaboration of their cognitive responses. Beyond the threshold, linguistically complex messages can hardly convey argumentative persuasion. They may, however, convey another sort of persuasion. Some unknown words, for instance, may exert some aesthetic attraction similar to poetry or religious incantation. The 1999 IBM campaign (Johnson, 1999) directed at the American market used sentences in Japanese, German, or French that were not intended to be understood literally by the average consumers but to convey an image of global company. A substantial proportion (74%) of south Asian advertisements include foreign words (Neelankavil & Mummalaneni, 1995) and one-third of commercials on Dutch television contain English (Gerritsen, 2000). A number of other American companies also advertise in foreign language to the American public (e.g., “mangia Uncle Ben’s risotto;” “Folgers’s dans la tasse.”). Once translated, some slogans in foreign language lose their strange mystery. For instance Volkswagen’s slogan in the United States—*Fahrvergnugen*—simply means “a love of driving.” Interestingly, Gerritsen (2000) shows that the attitude toward English commercials does not depend on how well the Dutch consumers describe the meaning of the commercials in English: Some consumers may develop positive attitudes toward ads they simply do not understand, which paradox may be understood as what Freud called “the Narcissism of marginal distinction” (Dean, 1997). In this study, low readability may have effects similar to that of the use of a foreign language. Weak arguments generate cognitive and attitudinal responses as strong arguments under low-readability conditions, as though complex syntax and semantic could hide the very weakness of the arguments under a shadow of mystery.

McGuire (1968) had explored the interactive effects of motivation and ability. His seminal ideas are still relevant today. McGuire (1968) had reached similar conclusions deductively. He pointed out that individuals comprehend but are not persuaded when comprehension skills are high and message acceptance is low. (Message acceptance and comprehension skills are associated negatively, according to McGuire.) Thus, the opposite occurs when comprehension skills are low, message acceptance is high. Consequently, message impact on intention to comply is highest when both comprehensive skills and message acceptance traits are moderate because individuals must both attend and accept to some extent for an effective message impact.

Message acceptance reflects involvement and manipulating comprehension levels serves to reduce (increase) the share of individuals who can follow the message argument. Increasing involvement serves

to increase message acceptance, while increasing message comprehension serves to reach subjects less likely to counter-argue with the message.

The specific level of this threshold is likely to depend on the readers' linguistic competence. Future studies should explore samples other than university students (whose reading ability is higher than the rest of the population). The troubling statistics on illiterate consumers cited at the beginning of this article should entice a new wave of research on the effects of advertising readability. The low ability to read advertisements may be a major obstacle in public social advertising campaigns, such as the reduction of tobacco consumption. Tobacco consumption is significantly higher in segments of the population where the education level is low (Osberg, 2000), which potentially makes the print advertisements all the more inefficient. Future advertising studies may focus on how antitobacco advertisements may be adapted linguistically to at-risk populations.

Readability remains an underresearched advertising area, which is somewhat paradoxical, because verbal language is the main persuasive tool. Advertising researchers have to go beyond the point where psycholinguists stop: Whereas psycholinguists are interested in message comprehension, advertising researchers focus on persuasion. One key element of advertising persuasion is repetition. The present study does not take into consideration the effects of repetition. One can hypothesize that low readability may paradoxically increase advertising effectiveness for some other segments of the population in certain situations. The reasoning leading to such a hypothesis is based upon the Anand and Sternthal findings (1990). They show that difficulty processing advertisements relates to brand evaluations in a curvilinear way, which resembles the recent findings by Bradley and Meeds (2002). Following Berlyne's two-factor theory (1971), Anand and Sternthal (1990) shows that reducing ease of message processing slows the habituation process so that the onset of tedium occurs at higher levels of message exposure for difficult-to-process stimuli than it does for more easily processed ones. If such a relationship exists, then moderately low readability may generate better attitudes and higher attention to messages repeated adequately. Consequently, the interactive effects of repetition and readability should be explored. Because repetition can eventually become counterpersuasive, low readability can be a way of counterbalancing the effects of tedium. It is then important to understand which viewer characteristics may moderate the interactive effects of repetition and readability. Need for cognition and reading ability may be moderators, because viewers scoring high on these scales may show curvilinear attitudes. At moderate levels of repetition they may be expected to be interested in the complex advertisements that challenge their understanding; however, they may feel bored more rapidly because they would have cognitively explored the subtle linguistic cues.

APPENDIX

The Advertisements Employed in the Experiment

	High Involvement-Strong Arguments (Weak Arguments between Brackets)	Low Involvement-Strong Arguments (Weak Arguments between Brackets)
High Readability	<p>Discover the new care for the face EQUINOXE The new cream for the face EQUINOXE is made especially (<i>also</i>) for men. It perfectly (<i>no adverb</i>) respects the skin. It gives it a unique (<i>some</i>) tonus. EQUINOXE is like no (<i>some</i>) other brands Its oilless revolutionary formula fights vigorously (<i>no adverb</i>) the skin dryness due to shaving. It hydrates the skin and leaves (<i>almost</i>) no oil on it.</p>	<p>Discover the new gel-shower EQUINOXE The gel-shower EQUINOXE is made especially (<i>also</i>) for men. It perfectly (<i>no adverb</i>) respects the skin. It gives it a unique (<i>some</i>) tonus. EQUINOXE is like no (<i>some</i>) other brands Its soapless revolutionary formula fights vigorously (<i>no adverb</i>) the skin dryness due to showering. It hydrates the skin and leaves (<i>almost</i>) no oil on it.</p>
Low Readability	<p>Discover the new care for the face EQUINOXE In order to design a new system of care for the face particularly (<i>also</i>) adapted to dermatological specific characteristics of the masculine gender, scientists working for EQUINOX have elaborated a new oilless revolutionary hydro-biological formula which, in addition to the fact that it offers an incomparable (<i>some</i>) tonus, annihilates (<i>mostly</i>) the dehydrating effects of shaving on the skin, without leaving any (<i>almost no</i>) oily film, contrary to all (<i>some</i>) other brands proposed on the market</p>	<p>Discover the new gel-shower EQUINOXE In order to design a new gel-shower particularly (<i>also</i>) adapted to dermatological specific characteristics of the masculine gender, scientists working for EQUINOX have elaborated a new soapless revolutionary formula which, in addition to the fact that it offers an incomparable (<i>some</i>) tonus, annihilates (<i>mostly</i>) the dehydrating effects of showering, without leaving any (<i>almost no</i>) oily film, contrary to all (<i>some</i>) other brands proposed on the market.</p>
Pictures		

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