

“Where There Is a Will . . .”: Motivation as a Moderator of Language Processing by Bilingual Consumers

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ABSTRACT

This article examines the impact of processing motivation on language processing by bilingual consumers. The article begins by outlining the revised hierarchical model (Dufour & Kroll, 1995), which implies that second-language conceptual processing is more challenging and less likely to be successful than first-language processing. Then two empirical studies are conducted to investigate whether intrinsic and/or extrinsic motivation can be moderators of the impact of first- and second-language processing on cognitive measures of advertising effectiveness. Study 1 finds that need for cognition, an intrinsic measure of motivation, fulfills this moderating role. Consistent with the revised hierarchical model, for low-need-for-cognition individuals, first-language processing is superior to second-language processing. By contrast, high-need-for-cognition individuals remember first- and second-language ads equally well. Study 2 finds a significant interaction between need for cognition and an extrinsic manipulation of processing motivation, indicating that first language leads to greater memory under conditions that include both high motivation and low need for cognition. Our results are interpreted using consumer-behavior models. © 2002 Wiley Periodicals, Inc.

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Advertisers seem to agree that it is more effective to advertise in their consumers' native language than in their second language (Brill, 1994; Goerne, 1990). For example, a key to tapping the buying power of the U.S. Hispanic market, estimated at more than \$200 billion a year, is thought to reside in reaching out to Hispanic consumers in Spanish. Hence, many firms are currently pursuing Hispanic consumers by advertising in Spanish-language print and TV media. However, little theory-based consumer research has been conducted to assess the validity of these claims and practices from an information-processing perspective. The present article attempts to fill the need for such research by investigating the cognitive processes involved in language comprehension by bilingual consumers. Several studies have examined differences in language processing between monolingual speakers of different languages (e.g., Schmitt, Pan, & Tavassoli, 1994; Tavassoli, 1999). However, the unique characteristics of bilingual language processing remain largely unexplored. The purpose of the present study is to apply and extend a psycholinguistics theory to an advertising context. This theory, the Revised Hierarchical Model or RHM (Kroll, 1993), specifies the cognitive structure underlying language processes in the minds of bilingual individuals. The RHM applies to all bilinguals, regardless of the languages they speak, so it can be used as a cognitive framework to study advertising targeting bilingual populations. The present study extends the RHM by identifying a moderator of the relationships predicted by the model: the processing motivation of bilingual individuals.

First the RHM is introduced. Then a measure of motivation, need for cognition of bilingual individuals, is presented as a potential moderator of the language effects on processing predicted by the RHM. Study 1 is a preliminary exploration of need for cognition as a moderator of language effects. Study 2 further tests the role of need for cognition and examines the effect of manipulating processing motivation on language effects.

BILINGUALS' INFORMATION PROCESSING

The topic of conceptual representation in a bilingual individual's memory has been discussed extensively in the psycholinguistics literature. A recent and widely accepted model of bilingual concept representation is the Revised Hierarchical Model, or RHM (Dufour & Kroll, 1995; Kroll & de Groot, 1997). This model builds on previous findings (Durgunoglu & Roediger, 1987; Snodgrass, 1984) suggesting that there exist two levels of representation in the bilingual's mind: the lexical (word) level and the conceptual (meaning) level. At the lexical level, each language is stored separately. However, at the conceptual level, there is a unitary system in which words in each language access a common semantic

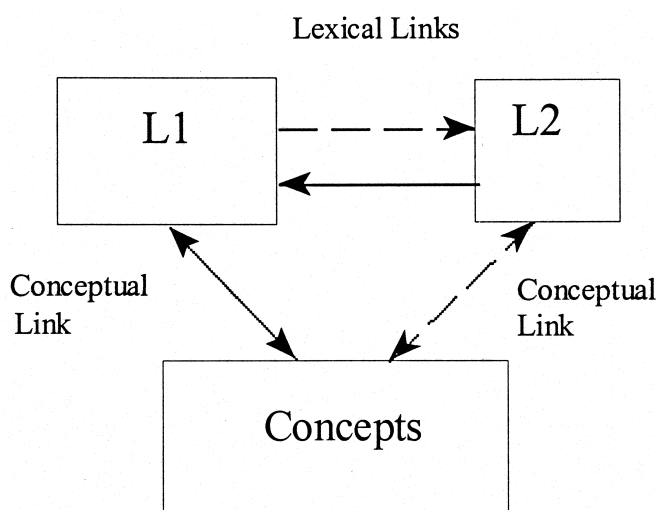


Figure 1. The Revised Hierarchical Model from Dufour and Kroll (1995).

representation or meaning. Thus, according to Dufour and Kroll (1995), bilingual individuals possess a “hierarchical arrangement of words and concepts, with a separation at the lexical level but with connections to a semantic system that is shared across languages.”

The connections between words in different languages made at the lexical level are referred to as word associations or *lexical links*, whereas the connections in memory between lexical representations in either language and the meanings they represent are referred to as *conceptual links*. Figure 1 depicts the RHM in graphical form. The model specifies a stronger lexical link from the individual’s second language (L2) to his or her first language (L1) than from the individual’s L1 to his or her L2. This is a residual effect from the second-language acquisition process in which individuals begin learning words in their L2 by relating them to words in their L1. Hence, words in the bilingual individuals’ L2 are closely associated with words in their L1.

The same residual effect accounts for the stronger conceptual links between the lexical representations in an individual’s L1 and the semantic representations in memory (concepts). Conceptual links to the individual’s L2 are weaker than L1 links because it is only after individuals have achieved a high level of proficiency in their L2 that they rely less on their L1 to gain access to meaning. Thus, the strengths of both lexical and conceptual links are a function of the L2 proficiency of the individual in question. However, even after the individual has become fluent in both languages there is a residual asymmetry in both lexical and conceptual links (Dufour & Kroll, 1995; Kroll & de Groot, 1997). The model also specifies that the second-language lexical store is smaller than the first-language store, which indicates a pervasive vo-

cabulary superiority of first language over second language.¹ Thus, the RHM suggests that processing an L2 message at the conceptual level is less likely than processing an L1 message conceptually.

The RHM seems to imply that the intuitions of marketers may be correct. If one is trying to reach a Hispanic audience that has Spanish as a first language and is relatively fluent in both English and Spanish, it is better to do so in Spanish. The RHM would support this hypothesis because of the residual effect in conceptual-link strength. Messages in the consumer's first language are easier to relate to the information stored in the semantic level than messages in the consumer's second language. Evidence that seems to support this claim has been found in several recent studies (e.g., Keatley, Spinks, & de Gelder, 1994). These studies have found that cross-language semantic priming of words (e.g., the French *jardin* priming the Dutch *bloemen*) is more effective when the prime (*jardin*) is in the subject's first language than when the prime is in the subject's second language. Kroll and Stewart (1994) also found evidence for the conceptual-link asymmetry in a task involving picture naming (a concept-mediated task) and recall. As predicted by the RHM, picture naming took longer in the subjects' second language than in their first language because second-language conceptual links are weaker than first-language conceptual links.

The language asymmetry specified in the RHM can be interpreted as an information-processing issue. When conceptual processing indeed takes place, first-language messages ought to demand less cognitive resources than second-language messages because the first-language conceptual links are stronger. Therefore, processing first-language messages may be less effortful than processing second-language messages. The higher processing capacity required for second language messages may have attentional implications, which would be particularly significant at the critical time of encoding (Favreau & Segalowitz, 1983). Thus, consumers who are presented with second-language messages may divert their attention to non-language peripheral cues such as pictures. However, once the message is encoded and the information stored at the conceptual level, the language of the original stimuli does not seem to have an effect on the memory of the information previously presented (Durgunoglu & Roediger, 1987; Kolers & Gonzalez, 1980).

In summary, the RHM would predict that advertising messages in the consumers' first language will be remembered better than messages in their second language. This is mainly due to demands on processing capacity and attentional biases at time of encoding and will happen even in the case of individuals relatively fluent in two languages. A question

¹Although it may seem intuitive that bilinguals who are proficient in two languages have perfectly balanced lexical representations for first- and second-language words, no empirical support has been found for this proposition. Research indicates that even when bilinguals are proficient in two languages there is an imbalance in their first- and second-language lexical storage (Dufour & Kroll, 1995; Kroll & de Groot, 1997).

arises from this discussion: Will this prediction apply in all cases, or should we expect other variables to moderate the effects of language processing? The next section will introduce need for cognition (NFC) as an individual difference that is hypothesized to interact with language-processing effects on ad claim memory.

NEED FOR COGNITION AND BILINGUALISM

The need for cognition construct (Cacioppo & Petty, 1982) suggests that “some individuals tend to act as cognitive misers in circumstances that call forth effortful problem solving in most individuals, whereas others tend to be concentrated cognizers even in situations that lull most individuals into a cognitive repose” (Cacioppo, Petty, Feinstein, & Jarvis, 1996). Individuals high in need for cognition tend to seek, acquire, and elaborate on information in order to make sense of the world around them. On the other hand, individuals low in need for cognition are more likely to avoid tasks that are cognitively demanding and instead rely on other people (e.g., celebrities and experts), cognitive heuristics, or social-comparison processes to provide this structure.

An extensive body of research can be found relating NFC to other personality traits such as information style orientation (Berzonsky, 1989), intrinsic motivation (e.g., Amabile, Hill, Hennessey, & Tighe, 1994), and need for closure (Petty & Jarvis, 1996). Several other studies have measured some cognitive variables, such as memory, as a function of NFC. A meta-analysis of these studies shows that, in general, individuals high in need for cognition recall more of the information presented to them than individuals low in need for cognition (Cacioppo et al., 1996). Other studies have found that high-NFC subjects perform better at a variety of tasks such as math and other academic tasks (e.g., Dornic, Ekehammar, & Laaksonen, 1991), number of issue-relevant thoughts (e.g., Lassiter, Briggs, & Slaw, 1991), and message evaluations and perceived argument quality (e.g., Baron, Logan, Lilly, Inman, & Brennan, 1994).

In summary, individuals who are characterized by high NFC tend to engage in effortful cognitive activity and enjoy cognitively effortful problems more often than individuals with low NFC. In a practical context this means that, when presented with an advertising message that demands a high level of processing capacity (resources), the high-NFC individual will not avoid the task and instead will process the message. Low-NFC individuals, on the other hand, will shift their attentional focus toward a message or task that will require less of their processing capacity.

How can this hypothesis be integrated into a bilingual context? The RHM states that second-language messages are more cognitively demanding than first-language messages (Favreau & Segalowitz, 1983;

Van Hell & de Groot, 1998). Second-language messages require more processing resources to be fully processed and coded into long-term memory. This is because the conceptual links that join the second-language lexical store with semantic concepts are weaker than the first-language conceptual links. Thus, if bilingual individuals who are low in need for cognition are presented with a message in their second language, they will tend to devote less effort to it. By contrast, individuals high in need for cognition who are presented with an ad in their second language will tend to invest more of their cognitive resources in the task of processing the message. They will do this because it is their natural inclination to seek, acquire, think about, and reflect back on information to make sense of their world (Cacioppo et al., 1996). This is not to say that high-NFC individuals will find the message easier to process, or that the second-language conceptual links of high-NFC individuals are stronger than those of their low-NFC counterparts. Rather, the cognitive drive of individuals high in need for cognition will be such that they will tend to more fully process a message in their second language in spite of the considerable effort required. On the other hand, individuals low in need for cognition will tend to invest less effort in the task due to the high level of processing resources it involves.

STUDY 1

It follows from the two previous sections that the interaction of language and need for cognition may have an effect on ad claim recognition. Recognition is a process that involves not only sensory analysis but also semantic processing (Jacoby & Hoyer, 1989), so a recognition measure is likely to reflect the asymmetries in conceptual links proposed by the RHM. Such a measure would also indicate to what extent need for cognition affects semantic processing. Recognition measures are considered valid indicators of cognitive processing in advertising research (Krishnan & Chakravarti, 1999; Stewart, Pechmann, Ratneshwar, Stroud, & Bryant, 1985).

The hypothesis developed in this section is an expression of the interaction of language and need for cognition with respect to ad claim recognition. The RHM would predict that, in general, a message in the individual's first language will result in greater recognition than a message in the individual's second language. On the other hand, need for cognition leads us to predict that high-NFC subjects will tend to exhibit greater recognition of a complex stimulus than low-NFC subjects. It is proposed that both effects can be integrated into a single model characterized by a significant interaction.

H1: Low-NFC individuals will remember ads in their first language better than ads in their second language. High-NFC individuals

will remember ads in their first language and ads in their second language equally well.

Method

Subjects. Forty-six Spanish–English fluent bilinguals were included in the study. The subjects were undergraduate students at a large Midwestern university. Subjects were entered in a raffle to win a \$35 certificate to a restaurant in the area. Subjects rated their own reading and speaking fluency in both Spanish and English on a 7-point scale, with higher numbers representing greater proficiency. Because the reading and speaking scales were highly correlated in both Spanish ($r = 0.81$) and English ($r = 0.79$), a proficiency score was computed by averaging reading and speaking scores. According to their scores, subjects were assigned to the L1 = English or to the L1 = Spanish conditions.² All subjects were proficient in both languages: Mean L1 proficiency was 6.51 and mean L2 proficiency was 5.56. First-language proficiency scores were significantly higher than second-language proficiency scores [$t(45) = 3.74, p < .001$].

Stimuli. The stimuli presented to the subjects consisted of a booklet including two target ads, one featuring shoes and the other a camera, and three filler ads. All ads consisted of a photo and advertising copy. The shoes ad featured a pair of hiking boots that could be worn in very wet conditions. The photo in this ad depicted one of the shoes being soaked in a pool of water. The camera ad featured a 35-mm point-and-shoot camera and told a brief story about how a man was mistaken for a professional photographer because he was carrying one of the featured cameras. The photo in this ad showed the man at a fashion show.

The five ads were included in each booklet. Two versions of each ad were created: one in English and another one in Spanish. The latter was obtained through a professional translation of the original English version following Hui and Triandis (1983). Both versions of the ads were identical except for the language in which they were presented to the subjects. The two target ads included in each booklet were in the same language and language was alternatively assigned to the ads so half the booklets contained the target ads in Spanish and the other half contained the target ads in English. Language was randomly assigned to the filler ads. The order of the ads within the booklets was varied.

²In this research language proficiency or fluency is the construct used to conceptualize L1 and L2. Thus, the chronological order in which each language was learned is not used in the analyses. This is because it is possible that a person could have learned Spanish (English) first, and yet be more proficient in the other language at the time of the research (Dufour & Kroll, 1995). In such case, the RHM would predict that the language learned chronologically first would suffer from weaker conceptual links and a smaller lexicon, and would be best described as L2, while the language learned chronologically second would be the dominant language and would be best described as L1.

The test materials included (a) questions to assess the subjects' linguistic proficiency and the language they used the most at home and in general; (b) ad claim recognition items and other measures regarding the target and nontarget ads, and (c) the reduced 18-item Need for Cognition Scale (Cacioppo, Petty, & Kao, 1984). The linguistic proficiency questions were adapted from previous studies (Basden, Bonilla-Meeks, & Basden, 1994; Dufour & Kroll, 1995; MacLeod, 1976; Snodgrass & Tsivkin, 1995). This self-evaluation method of assessing the subjects' linguistic proficiency was chosen because retrospective reports of language ability have been found to correlate quite highly with proficiency tests (MacLeod, 1976).

Ad language was coded as first language (L1) or second language (L2), depending on the language group to which the subject had been assigned and the language in which the target ads were written. For example, when a subject was more proficient in Spanish and was shown the target ads in Spanish, the language condition was coded as L1. Conversely, if the same subject was shown the target ads in English, the language condition was coded as L2.

Need-for-cognition (NFC) scores ranged from 48 to 111, with a median of 87.00. A median split of the sample based on NFC scores resulted in two groups: the low-NFC group (mean = 67.67), and the high-NFC group (mean = 95.73). Both groups were significantly different from each other on the NFC measure [$t(26) = 7.01, p < .001$].

Procedure. Subjects were assigned randomly to the English or Spanish version of the experimental ads. They were given the ad booklet and were instructed to browse through the booklet for 3½ minutes. Pretests of the experimental material had previously shown that this amount of time was enough for subjects to thoroughly read all the ads in the booklet. Subjects were allowed to browse through the booklet freely. After the subjects had browsed through the booklet, the experimenter collected the ads and distributed the questionnaires. The subjects were then instructed to complete the questionnaires. Each experimental session lasted approximately 30 min.

Measures. Subjects were tested for their recognition of the claims presented in all of the ads. The test adapted a procedure used by Jacoby and Hoyer (1982) in which four true–false statements per ad were presented to the subjects. Two of the statements were true and two of them were false. The statements referred to the information in the copy of the ads. The subjects were instructed to answer all the items based only on the information contained in the ads. Following a procedure used by Houston, Childers, and Heckler (1987), a total recognition score was computed for each subject by summing the number of correct answers to the statements for both of the target ads. Subjects were also asked to list all their thoughts regarding the ads in the booklet. It was expected

that high-NFC subjects would elaborate on the ad claims to a greater extent than low-NFC subjects. Thus, high-NFC subjects should list more thoughts than low-NFC subjects.

Results and Discussion

The thought-listing measure can be utilized as a manipulation check for the assignment of subjects to high versus low NFC. An analysis of this measure revealed a main effect of NFC on the total number of thoughts listed by subjects [$F(1,42) = 4.14, p < .05$]. High-NFC subjects elaborated on the ad claims to a greater extent than low-NFC subjects because the former listed more thoughts than the latter ($\bar{X} = 5.05$ vs. $\bar{X} = 3.43$). As expected, no other significant effects were observed on the thought-listing measure.

The objective of this study was to inquire into the potential interaction between need for cognition and the language of the ad with respect to the recognition scores of the subjects. Our analysis was based on a 2 (NFC: high or low) \times 2 (Language: L1 or L2) between-subjects design. The results show that the expected interaction was statistically significant [$F(1,45) = 11.48, p < .001$]. The pattern of the two-way interaction offers support for the hypothesis. Within the low-NFC group, there was a significant difference between subjects in the L1 condition and subjects in the L2 condition [$\bar{X} = 5.64$ vs. $\bar{X} = 3.90; F(1,45) = 11.26, p < .001$]. This difference indicates that the recognition scores of low-NFC subjects were higher when they were presented with L1 ads than when they were presented with L2 ads. Next, within the high-NFC group, the recognition scores of subjects who had been exposed to L1 ads ($\bar{X} = 4.69$) were compared to those of subjects in the L2 condition ($\bar{X} = 5.33$). The analysis indicated a lack of a significant difference ($p > .18$). Hence, high-NFC subjects did not remember ads in one language better than ads in the other language, as predicted by H1.

The recognition results also indicate that high-NFC subjects had higher recognition scores than low-NFC subjects when they were presented with an L2 ad. This difference was significant [$F(1,45) = 7.99, p < .01$]. This effect, although not formally included in the hypothesis, is consistent with the need-for-cognition effect (Cacioppo & Petty, 1982), according to which high-NFC individuals devote greater cognitive effort to challenging tasks.

It can be concluded, then, that the findings support the hypothesis of this preliminary study. Language effects interact with need for cognition with respect to ad claim recognition. This means that relatively fluent bilinguals who are low in NFC will remember advertisements written in their first language better than advertisements written in their second language. However, relatively fluent bilinguals who are high in NFC will remember second-language ads at least equally as well as first-language ads.

One additional effect that can be observed concerns recognition scores within the L1 condition. Low-NFC subjects scored similarly or even higher than high-NFC subjects when exposed to L1 ads. This difference in recognition scores was marginally significant [$F(1,45) = 3.79$, $p < .06$]. This phenomenon can be attributed to an exception to the need-for-cognition effect. Cacioppo et al. (1996) note that there are several exceptions to the overall attentional superiority of individuals high in need for cognition. The exception that is applicable to this case surfaces when the task at hand is intrinsically easy. In this study, the processing of a first-language ad can be characterized as an intrinsically easy task, whereas the processing of a second-language ad is a more challenging task. When the task is intrinsically easy, even individuals low in NFC will have enough ability and motivation to encode the information presented to them. Therefore, recognition of ads in the subject's first language will be at least as good for subjects high in need for cognition as for subjects low in need for cognition.

Further, the finding that low-NFC subjects tended to have better recognition scores than high-NFC subjects following an ad in their first language can be explained by a boredom effect. Previous research has identified this effect as a factor that may negatively influence high-NFC subjects who are exposed to cognitively unchallenging stimuli. This negative influence has been defined as boredom, satiation, reactance, and/or tedium (Cacioppo & Petty, 1980; Rethans, Swasy, & Marks, 1986; Sawyer, 1981). This interpretation is consistent with the resource-matching hypothesis (Peracchio & Meyers-Levy, 1997), particularly considering that in this study, when subjects' required resources match their available resources, recognition tends to be higher (i.e., in the L1/low-NFC and L2/high-NFC conditions). Because of this effect, individuals high in NFC will tend to direct their attention away from stimuli that are intrinsically easy and therefore boring (i.e., ads in their first language) and perhaps redirect their attention elsewhere.

A second study was conducted to examine if motivated consumers, when faced with an L1 message, redirect their attention to nonverbal cues within the ad. Additionally, Study 2 investigates the findings of Study 1 through an additional dependent measure, ad content recall. Study 2 also includes another independent factor, explicitly manipulated processing motivation. Need for cognition can be considered a proxy for an individual's intrinsic motivation (Amabile, Hill, Hennessey, & Tighe, 1994) so Study 1 shows that intrinsically motivated consumers who are relatively fluent in two languages will process and remember messages in their second language as well as they would process and remember messages in their first language. Study 2 will examine whether manipulated and intrinsic motivation interact and have different effects on language processing.

STUDY 2

To better understand the role of motivation in language processing by bilingual consumers, a second study was conducted, which included supplementary dependent measures of memory. In this study we also added another independent variable, the explicit manipulation of processing motivation, to examine its possible interaction with need for cognition. In particular, it was expected that under low motivation, both low- and high-NFC bilingual consumers would not focus on the copy of the ads (Petty, Cacioppo, & Schumann, 1983). Therefore, no significant differences in memory were predicted for the content of L1 relative to L2 ads for low-motivation individuals.

H2: Under low motivation, first- and second-language ads will result in similar levels of memory for the ad content for both low- and high-NFC individuals.

In the high-motivation condition, however, consumers will presumably focus on the ad copy. Hence, first-language ads, which are easily processed and encoded into long-term memory (Kroll & de Groot, 1997), should result in greater memory than second-language ads, but only for low need-for-cognition individuals. These individuals are not intrinsically motivated to process difficult messages, so they would not be expected to process L2 messages sufficiently as to remember them as well as they would remember L1 messages.

On the other hand, high need-for-cognition consumers who are exposed to second-language ads will be intrinsically motivated to process and elaborate upon these challenging messages. Therefore, L2 memory is expected to increase, reducing the L1 memory superiority.

H3: Under high motivation, for low need-for-cognition individuals first-language ads will result in higher memory than second-language ads. For high need-for-cognition individuals, first- and second-language ads will result in similar memory.

Hypothesis 3 is consistent with the findings of Study 1 and predicts an interaction of motivation, language, and NFC. Under high motivation, a language superiority of L1 ads over L2 ads is expected with respect to memory for low-NFC subjects but not for high-NFC subjects.

Finally, the theorizing advanced in the discussion of Study 1 is explored. It is expected that highly motivated, high-NFC subjects will divert their attention from L1 ad copy to nontext elements of L1 ads (i.e., ad pictures). High-motivation subjects will normally focus and elaborate on the copy of the ad. However, it is expected that high-motivation, high-NFC subjects will find the L1 copy too unchallenging and therefore focus on other elements of the ad such as the pictures.

- H4:** (a) Under high motivation and in response to L1 ads, high need-for-cognition individuals will produce a higher proportion of picture-related statements relative to copy-related statements than low need-for-cognition individuals.
- (b) Under high motivation, high need-for-cognition individuals exposed to L1 ads will produce a higher proportion of picture-related statements relative to copy-related statements than similar individuals exposed to L2 ads.

Method

An experiment was conducted with three between-subjects factors: ad language (L1 or L2), motivation (high or low) and need for cognition (high or low). The ads were presented in either English or Spanish. As in Study 1, the ad's language was coded as first language (L1) or second language (L2), depending on the language in which the subjects were most fluent. Thus, if the language in which subjects were most proficient (e.g., Spanish) was the same as the language in which the ad was presented (e.g., Spanish), they were in the L1 condition; otherwise, they were in the L2 condition.

Stimuli. The study materials consisted of three print ads: a grocery store ad, an insurance company ad, and a guided tours ad. All of the ads included a picture and text, with the text located below the picture. The length of the text ranged from 37 to 55 words. The brand name of the product appeared only once and was located in the main body of text, near the beginning of the copy. The rest of the ad copy focused on the attribute of the product and also included some additional information, such as a toll-free number or an offer to contact the company for a free estimate. The ads used were different from Study 1, in order to ensure that the results of our studies were reliable and generalizable to a variety of product categories.

To control for the level of challenge that the ads themselves presented to subjects, the ads used were ones in which the picture and the text were moderately congruent with each other. This procedure resulted in ads that were equivalent and characterized by moderate processing difficulty. Ensuring a moderate level of challenge across the experimental ads is important because one of the objectives of Study 2 is to examine whether highly motivated subjects divert their attention from L1 ad copy (which may become too unchallenging for them) to nontext ad elements, that is, ad pictures.

The test materials consisted of (a) a personal inventory questionnaire that combined questions about the language proficiency of subjects with other demographic, cultural, and personality questions; and (b) a questionnaire that included a recall protocol and a recognition test. The questionnaires were available in Spanish or English and subjects were

given the choice of completing them in either language. All materials (ads and questionnaires) were originally written in English and translated by back-translation (Hui & Triandis, 1983).

Subjects. Study participants consisted of 87 fluent Spanish–English bilinguals, none of whom had participated in Study 1. The mean age was 36 years and 93% of subjects had at least a high school diploma. There were 28 males and 57 females. Subjects held diverse jobs in the community, from secretaries to middle managers. They were of diverse national origins (e.g., Puerto Rican, Mexican, Cuban). Study 1’s measure of language proficiency was improved upon by expanding the language-proficiency scale. The revised scale consisted of 12 items asking subjects to rate from 1 to 5 their own proficiency in Spanish and English in different situations (e.g., understanding newspaper headlines) or in general (e.g., reading proficiency). Scale items were adapted from previous studies (Clark, 1981; Liu, Bates, & Li, 1992; MacIntyre, Noels, & Clément, 1997). Both the Spanish ($\alpha = 0.94$) and English ($\alpha = 0.94$) scales loaded highly on one factor (eigenvalues = 8.00 and 7.63, respectively), so the scores of all the items were averaged to form a single Spanish and English proficiency measure for each subject. Subjects were relatively proficient in both languages, all scoring 2.50 or higher in both L1 and L2 on the 5-point language scale. However, they were all more proficient in their first language than in their second language, as shown by a paired t test [$t(84) = 9.27, p < .001$].

Need-for-cognition (NFC) scores ranged from 36.4 to 120.4, with a median of 81.20. A median split of the sample based on NFC scores resulted in two groups: the low-NFC group (mean = 67.71), and the high-NFC group (mean = 97.55). Both groups were significantly different from each other on the NFC measures [$t(85) = -12.13, p < .001$].

Procedure. Subjects received a booklet including the three experimental ads and four filler ads. The order of the ads was varied. All the experimental ads were in the same condition and all ads in the booklet were in the same language (Spanish or English). Subjects were instructed to examine the ads. Then they were given 20 seconds to read each of the ads. This length of time had proven sufficient to read all the ads fully during pretests. Subjects’ processing motivation was manipulated following a procedure used in previous research (Peracchio & Meyers-Levy, 1997). Individuals in the low processing motivation condition were told that they were part of a large group of people in the country participating in the study and that their opinion about the ads might be used after aggregating it with that of other individuals. On the other hand, individuals in the high processing motivation condition were told that they were part of a small group of people in the city participating in the study and that because their opinion was very valuable to the companies represented in the ads, they would be offered special dis-

counts on any advertised product or service that they wished to purchase.

After reading all the ads, the ad booklets were collected and subjects were given a second booklet that included a 10–15-min unrelated task intended to clear their short-term memory. Following this task, subjects were handed a third booklet, which included several tasks. First, subjects were prompted by the product category of the products featured in the ads and asked to recall all the information they remembered from the text and the picture of each of the ads. Next, subjects completed a recognition test in which they were asked to choose the correct product attribute for each of the ads out of five possible choices. Subjects filled out the personal inventory questionnaire, which included the language scale, either before or after exposure to the recall tasks. Subjects were randomly assigned to the before or after conditions. No effect of order for completing these measures was found (F 's < 1).

Results and Discussion

The effectiveness of the motivation manipulation was assessed by asking subjects whether they thought the ads were not at all interesting/extremely interesting and involving/not involving on a 5-point scale. Answers to both items were averaged ($r = .74$) and the results revealed a main effect of processing motivation ($F = 5.67, p < .01$). Overall, on a 5-point scale subjects found the ads more interesting and involving when processing motivation was relatively higher ($\bar{X} = 3.13$) rather than lower ($\bar{X} = 2.66$). No other effects were significant for the motivation manipulation check (F 's < 1).

The recall measure included the number of correct statements subjects recorded in their protocols regarding the ad copy content. Two bilingual judges who were blind to the hypotheses coded the recall protocols reliably with 85% of interjudge agreement (Rust & Cooil, 1994).

Recognition memory scores were computed by calculating the proportion of correct decisions in a recognition test in which each item presented five options, including the target attribute and four foils, which were similar kinds of attributes to the target (Cradit, Tashchian, & Hofacker, 1994; Tashchian, White, & Pak, 1988). Table 1 includes the means and standard deviations for all measures in this study. Degrees of freedom are 1 and 82 for all analyses, unless otherwise noted.

In the low-motivation group, both the recall and the recognition measures exhibited the predicted pattern. No differences due to language were found (F 's < 1). Hence, H2 is supported by our results. In the high-motivation group, it was found that for low need-for-cognition individuals there was a superiority of first-language ads over second-language ads for both measures (recall: $\bar{X} = 4.20$ vs. $\bar{X} = 1.09, F = 13.14, p < .001$; recognition: $\bar{X} = 0.89$ vs. $\bar{X} = 0.45, F = 7.37, p < .01$). This finding lends support to the first part of H3. Further, as predicted by the second

Table 1. Study 2: Treatment Means and Standard Deviations for All Measures.

	Low Motivation				High Motivation			
	Low NFC		High NFC		Low NFC		High NFC	
	L1	L2	L1	L2	L1	L2	L1	L2
Ad Content	2.09	1.64	3.64	2.50	4.20	1.09	3.30	2.82
Recall	(1.70)	(1.75)	(2.46)	(2.27)	(1.93)	(0.83)	(2.21)	(2.14)
Recognition	0.59	0.55	0.80	0.67	0.89	0.45	0.50	0.62
(0.39)	(0.43)	(0.19)	(0.35)	(0.17)	(0.43)	(0.36)	(0.40)	
Total	9.00	6.36	7.91	9.50	9.91	6.64	10.73	10.09
State- ments	(3.87)	(2.16)	(3.02)	(3.66)	(3.02)	(2.38)	(3.52)	(3.45)
CO-PIC	0.18	-0.82	1.00	-1.20	0.20	-0.82	-2.60	0.27
	(1.66)	(1.89)	(1.41)	(2.62)	(1.62)	(1.17)	(2.46)	(3.23)

part of H3, the L1 superiority disappears for high need-for-cognition individuals (F 's < 1).

An additional measure, the total number of statements produced by subjects, shows that there is more than meets the eye in the apparent lack of memory effects in the low-motivation group. This measure can be interpreted as an indication of the amount of conceptual processing of subjects. As suggested by prior research (Cacioppo et al., 1996) and consistent with Study 1, a main effect of need for cognition ($F = 5.36$; $p < .05$) was observed. This effect, however, was qualified by a marginally significant three-way interaction of language, motivation, and need for cognition ($F = 2.10$, $p < .10$). A closer inspection of the interaction reveals that in the low-motivation group, low need-for-cognition individuals produced fewer statements in response to second-language ads than to first language ads ($\bar{X} = 6.36$ vs. $\bar{X} = 9.50$; $F = 3.78$, $p < .05$). This difference was not observed, however, for high need-for-cognition individuals ($F = 1.31$, $p > .26$).

Thus, even in low-motivation conditions, high-NFC subjects seemed to process the information presented in L2 ads to a higher degree when compared with their low-NFC counterparts ($F = 5.10$, $p < .05$). However, this increased processing does not result in higher recall or recognition of the copy content in the L2 ads because low-motivation, high-NFC subjects tend to focus their elaboration on the picture, rather than the copy of the ads. Our last measure, CO-PIC, or the number of copy-related statements minus the number of picture-related statements produced by subjects, offers support for this reasoning. Low-motivation, high-NFC subjects exposed to L2 ads produced a higher proportion of picture-related statements than similar subjects exposed to L1 ads ($\bar{X} = -1.20$ vs. $\bar{X} = 1.00$; $F = 5.73$, $p < .01$). Therefore, low-motivation, high-NFC subjects tend to process L2 ads to a higher degree than low-

motivation, low-NFC subjects. However, this elaboration focuses on the ads' peripheral cues (Petty et al., 1983). This is likely due to the processing difficulty of L2 ads. High need-for-cognition individuals who are not explicitly motivated tend to elaborate on the L2 ads' pictures, which are more accessible than the copy of the ads.

In the high-motivation group, the total-statements measure follows a similar pattern as the recall and recognition measures, with low need-for-cognition individuals elaborating more on L1 ads than on L2 ads ($\bar{X} = 9.91$ vs. $\bar{X} = 6.64$; $F = 5.83$, $p < .01$). Similar to the memory measures, the first-language superiority was not observed for high need-for-cognition individuals ($F < 1$). As suggested by H4, an inspection of the CO-PIC measure indicates that in the high motivation, L1 group, when we compare high-NFC subjects to low-NFC subjects, the former tend to elaborate more on the ad picture than on the copy elements [H4(a): $\bar{X} = -2.60$ vs. $\bar{X} = 0.20$; $F = 8.86$, $p < .01$]. Similarly, high-motivation, high-NFC subjects exposed to L1 ads tend to focus more on the picture than those exposed to L2 ads [H4(b): $\bar{X} = -2.60$ vs. $\bar{X} = 0.27$; $F = 9.77$, $p < .01$]. This result lends support to the theory that L1 ads are too unchallenging for high-NFC subjects, who are drawn to noncopy elements of the ad in high-motivation conditions. This is particularly significant considering that research with monolingual consumers suggests that both high motivation and high need for cognition generally draw consumers' attention to the copy. In a bilingual setting, therefore, language seems to have a unique moderating effect on this general consumer-research model.

CONCLUSIONS

This article has examined the moderating role of motivation in language processing by bilingual consumers. The results of these studies cast doubt on advertisers' assumption that first-language ads are always more memorable than second-language ads. Our studies show that in some cases second-language ads can lead to levels of memory similar to those of first-language ads. Indeed, highly motivated bilingual consumers may remember the copy of an L2 ad as well as that of an L1 ad. This result suggests that when targeting such consumers, ads may not need to be translated to result in adequate cognitive processing.

From a theoretical perspective, this research provides several significant contributions. For the most part, previous research on the consumer behavior of ethnic markets has examined the effect of cultural variables such as the level of acculturation into the dominant culture (Deshpande, Hoyer, & Donthu, 1986; O'Guinn & Faber, 1986; Webster, 1990). Similarly, most previous research on advertising to ethnic/bilingual consumers has focused on the effect of social integration factors on affective measures (e.g., Deshpande & Stayman, 1994; Koslow, Sham-

dasani, & Touchstone, 1994). The present study theorizes that cognitive factors are also important when studying advertising to bilinguals. The Revised Hierarchical Model of bilingual concept representation (RHM) is presented as a cognitive framework that describes why processing second-language ads is more effortful than processing first-language ads. The RHM is extended by showing that motivational variables moderate language effects on ad memory. Because the RHM's predictions apply to all bilinguals and is not language specific, these conclusions should apply to bilingual consumers regardless of which languages they speak.

By suggesting that cognitive factors play an important role on ad processing by bilinguals, our article adds a new dimension to the existing body of consumer research. For example, one of the key findings of our research is that highly motivated, high-NFC individuals may withdraw their attention from an ad's copy and turn it toward nonverbal cues in the ad if the ad's copy is too unchallenging (L1 ads). However, if the ad's copy is perceived as relatively challenging (L2 ads), they will tend to elaborate and focus upon the copy. This may mean that the need-for-cognition construct has different implications for bilinguals and monolinguals. Our findings are consistent with the resource-matching hypothesis (Peracchio & Meyers-Levy, 1997), showing that language can be considered a moderator of relationships posited by current models of consumer behavior.

Our research also offers a number of practical implications. First, practical wisdom regarding market segmentation would suggest that a high level of processing motivation can be ensured by employing appropriate segmentation procedures. Hence, if a very specific bilingual market segment is targeted with a highly customized marketing mix, it could be safely assumed that they would be motivated to process our messages. Also, buyers of some technical products may be generally characterized by high NFC or motivation. In such cases, ads may not need to be translated to our customers' L1. In other cases, however, when customers' need for cognition or motivation level is not known, or when customers are characterized by low NFC or motivation, the findings suggest that ads should be translated to ensure adequate processing.

Future research studies that seek to apply the RHM must examine whether learning context (e.g., classroom or immersion learning), situation (e.g., home or work), medium (e.g., print or TV), or subject matter (e.g., home life issues or shopping) moderate the relationships described by the model. For example, it is possible that for some Hispanics, L2 (e.g., English) conceptual links are stronger when the topic of conversation revolves around shopping matters. Conversely, the same individuals' L1 (e.g., Spanish) conceptual links could be stronger when the subject matter is home-life issues. Peñaloza's (1994) research seems to imply that Mexican immigrants in the U.S. may be experiencing this

phenomenon because they frequently learn consumer-related concepts in English (their second language) for which there are no Spanish equivalents.

Also, this research applies the RHM to the processing of Spanish and English, both Western languages with alphabetic writing systems. Similarly, most other studies in the area of psycholinguistics testing and applying the RHM have studied and compared Western languages. It may be of interest for future researchers to investigate the application of the RHM to more distant language pairs, like Chinese and English. It may be that the asymmetries between such languages are even more pronounced than between English and Spanish, accentuating the effects observed in the present studies.

Further work is also needed to determine the effect of additional information processing variables (i.e., individual differences) on the cognition of bilingual consumers. Additionally, researchers should apply bilingual processing models like the RHM to other dependent variables, such as product evaluations and additional persuasion measures. At the same time, future research must continue to examine measures of advertising persuasion and how they are affected by factors that transcend the realm of individual-level variables. These additional variables may include cultural-level characteristics (e.g., uncertainty avoidance), consumer-behavior differences between Anglos and Hispanics, and/or intergroup attitudes (e.g., ethnic identification). In particular, whether an individual belongs to a high- or a low-context culture may be of particular interest, considering the differing importance weights given by members of each type of culture to nonverbal and non-message-related cues. Even though previous research has examined some of these variables in isolation, a systematic study of the effects of such factors must be carried out to arrive at a more comprehensive model of multicultural, multilingual advertising effectiveness.

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