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The Impact of Language and Congruity on Persuasion in Multicultural E-Marketing

David Luna
Department of Marketing
University of Wisconsin, Whitewater

Laura A. Peracchio
School of Business Administration
University of Wisconsin, Milwaukee

María Dolores de Juan
Departamento de Economía Financiera, Contabilidad y Márketing
Universidad de Alicante, Spain

In this article we examine the effect of language, graphics, and culture on bilingual consumers' Web site and product evaluations. We extend previous bilingual memory research to affective responses and to a new medium—the Internet. A series of studies suggests that attitudinal measures are influenced by the interaction of Web site language with two types of congruity: graphic congruity and cultural congruity. We conclude from our findings that both types of congruity influence bilinguals attitude-formation processes.

The Internet has become a medium used by consumers worldwide to make purchases and to search for information. One of the characteristics of the Internet that make it a unique medium is its global reach. Individuals all over the world can access Web sites regardless of where they are hosted. Despite the international reach of the Internet, the majority of Web sites are offered only in English (Fox, 2000). Whereas this may have been appropriate in 1996 when 80% of Web consumers first language (L1) was English, now only half of current Web consumers speak English as their L1. By 2004, less than one third of Web consumers worldwide will speak English as their L1 (Crockett, 2000).

Although U.S. marketers have rushed to build Web sites to attract and retain prospective local and international customers, little attention has been devoted to considering the impact of presenting Web sites in a consumer's second language (L2). Research on how consumers, particularly bilingual foreign consumers, react to L2 marketing messages and Web sites is still in its infancy. Little is known about whether current psycholinguistics and persuasion models are applicable to second language processing of Web-based messages (Luna & Peracchio, 2001). Even less is known about the factors that influence bilingual consumers attitudes toward those L2 Web sites and the products they feature.

In this article, we investigate how bilingual consumers' process L1 and L2 information presented on Web sites. In particular, we assess the impact of L1 and L2 Web site processing on persuasion. We examine how language might interact with the several other site design factors to determine international bilingual visitors' attitudes toward a Web site and the products it offers. Our focus regarding site design explores the effect of a Web site's congruity on persuasion. We conceptualize congruity in two ways: (a) the congruity between a site's graphics and its text, and (b) the congruity of the Web site's content with the visitor's culture.

Our first two studies examine graphic congruity as a moderator of language effects on the persuasion of bilingual visitors. The third study explores whether cultural congruity also moderates the influence of language on attitudinal measures. The impact of L1 versus L2 Web site processing on persuasion is the central focus of our present inquiry. We theorize that both graphic and cultural congruity will moderate the effect of language on Web-based persuasion. In a practical sense, we address the following

Requests for reprints should be sent to David Luna, College of Business and Economics, University of Wisconsin, Whitewater, Whitewater, WI 53190. E-mail: lunad@mail.uww.edu

question: Can we build Web sites that are persuasive even in our bilingual visitors' second, or weaker, language? Because language is central in our inquiry, we begin by describing some aspects of bilingual language processing.

LANGUAGE, CONGRUITY AND PERSUASION

Language Processing

The demographics and social characteristics of international Web users are such that they tend to be highly educated, innovators, and of medium-to-high social standing and income. Thus, a large number of consumers targeted through the Web at the international level have a working knowledge of English (Fox, 2000; Ryan, 1999). However, most of them are more fluent in their native language, so navigating through English-language sites is likely to be somewhat challenging. Thus, L2 sites may present bilingual consumers with a task that requires increased processing effort relative to L1 sites. In addition to language, other factors might impact the effort involved in Web site processing. For instance, site design factors, such as the congruity of site graphics with text, might influence the amount of effort required to process a Web site. Based on previous research, it would seem that if language and other site design factors impact the difficulty of Web site processing, they might also impact persuasion (Peracchio & Meyers-Levy, 1997).

To understand the circumstances in which second language processing on the Web might influence persuasion, it is useful to examine psycholinguistics models that describe how individuals process and store language. 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 presumed to be stored separately. However, at the conceptual level, there is a unitary system in which words in each language access a common semantic representation or meaning. Thus, according to Dufour and Kroll, 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" (p. 166).

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." The model specifies stronger conceptual links between the lexical representations in an individual's L1 and their corresponding semantic representations in memory (concepts) than between L2 lexical representations and their corresponding 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 strength of conceptual links is 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 conceptual links (Dufour & Kroll, 1995; Kroll & de Groot, 1997). Because of this asymmetry, the RHM would suggest that processing an L2 message at the semantic level is more cognitively effortful and less likely to succeed than processing an L1 message.

Empirical testing of the RHM supports the proposition that semantic processing of L2 stimuli is likely to be more difficult than the processing of equivalent L1 stimuli. This effect has been explained by suggesting that L1 stimuli have more direct access to concepts than L2 stimuli due to the asymmetry in the strength of L1 and L2 conceptual links. At the same time, research in psycholinguistics testing the RHM has found that the accessibility to concepts of an L2 lexical stimulus (e.g., a written word) may be facilitated by manipulating other elements of the stimulus, such as whether it is accompanied by a congruent picture.

For example, La Heij, Hooglander, Kerling, and Van Der Velden (1996) found that translation of written stimuli from L2 to L1 was facilitated in the form of shorter latencies by the presentation of related pictures, whereas unrelated pictures resulted in higher latencies. Thus, pictures seem to aid or hamper language processing, depending on their level of relatedness to the textual stimulus. La Heij et al.'s (1996) findings imply that pictures may moderate the language effects predicted by the RHM. That is, the weaker L2 conceptual links may be "strengthened" by a pictorial cue, that facilitates activation of the concept represented by the L2 word.

Confirming this reasoning, Luna and Peracchio (2001) showed that pictures that are congruent (related) with the copy of an L2 ad enhanced recall by bilingual consumers. Hence, an L2 ad could be as memorable as an L1 ad if nonverbal cues were provided to facilitate message processing. Preliminary findings from this research also indicated that L1 and L2 messages may have an impact on persuasion. L2 ads seem to benefit from high levels of picture-copy congruity resulting in increased product evaluations. By contrast, L1 ads exhibited a trend toward lower product evaluations as ad congruity increased. These preliminary attitudinal findings would seem to suggest that language does have an impact on persuasion for bilingual consumers.

In this article, we extend the domain of the RHM to the persuasive impact of international Web sites. Our extension of this model builds on the initial findings of Luna and Peracchio (2001) in predicting that L1 sites will generally

be more easily processed than L2 sites. This processing asymmetry may, however, be moderated by the presence or absence of congruent site pictures or graphics. Our first two studies examine the effect of this graphic congruity on evaluative responses. Study 3 will operationalize another type of congruity as a potential moderator of language effects on site effectiveness cultural congruity. Therefore, we build on the recall findings of previous research and extend them to evaluative responses, an important gauge of Web site effectiveness. Hence, we theorize that language and congruity impact site visitors' attitudes. In particular, we will examine product evaluations and attitude toward a Web site.

Attitude Toward the Site and Attitude Toward the Ad

The construct of attitude toward the ad (A_{ad}) has been extensively studied in the marketing literature (MacKenzie and Lutz, 1989), and it has been found to mediate the influence of advertising on brand attitudes, or A_b (Homer, 1990; MacKenzie, Lutz, & Belch, 1986).On the Internet, attitude toward the site, A_{site}, would seem to present a similar construct to A_{ad} (Chen & Wells, 1999). A sticky site that retains visitors for longer durations and motivates visitors to return must generate positive A_{site}. Internet marketers frequently carry many brands so our operationalization of A_{brand} will be $A_{products}$, or consumers' general evaluation of all the products available at a particular Web site.

Resource matching views of ad processing (Peracchio & Meyers-Levy, 1997) suggest that the optimal level of persuasion occurs at the midpoint between too much processing and too little. If there is an opportunity for extensive processing, where resources far exceed the task requirements, consumers generate counterarguments or negative ad thoughts. If there is insufficient opportunity for processing, such as when the resources required to process a message are higher than the resources available for the task, attitudes also suffer. Therefore, if L1 sites are accompanied by high congruity graphics, they may provide an opportunity for extensive processing that can result in diminished attitudes. On the other hand, L2 sites are not as likely to be processed semantically. Therefore, high congruity graphics may assist bilinguals in processing L2 sites without engaging in too much processing. This theorizing would seem to apply to both A_{site} and $A_{products}$.

H1: high congruity L2 sites will result in higher levels of A_{site} and $A_{products}$ than high congruity L1 sites.

In sites containing low congruity graphics, pictures do not facilitate semantic processing, so site visitors may not be able to use the pictures to encode the site content, thus reducing the opportunities for extensive processing in general. Whereas visitors to low congruity L1 sites may still engage in semantic processing of the site content because of the relative easiness of processing L1 stimuli, visitors to low congruity L2 sites will not be provided enough opportunity for processing, because both the language and the pictures do not facilitate visitors' elaborative processing.

H2: low congruity L1 sites will result in higher levels of A_{site} and $A_{products}$ than low congruity L2 sites.

In summary, language effects on attitude toward the site may be moderated by the level of congruity between the graphics and the verbal content of the Web site. Attitudes toward the products ($A_{products}$) featured in the site should follow a similar pattern to A_{site}. We now describe Study 1, which was designed to test these hypotheses. Study 2 was conducted to replicate the findings of Study 1 in a different country and thus lend validity to our theorizing and extend our results across cultures.

STUDY 1

Method

To test the hypotheses described in this research, a 2 (L1 or L2) x 2 (low or high graphic congruity) between-subject experiment was designed. Thus, four versions of the same Web site were prepared, in which the content of the text was identical, but the language and graphics were varied. The study was conducted in Spain and the Web sites were presented in either English or Spanish. If the language in which participants were most proficient (e.g., Spanish) was the same as the language in which the ad was presented (e.g., Spanish), they were considered to be in the L1 condition; otherwise, they were in the L2 condition. Participants were randomly assigned to one of the four Web sites. After browsing the site, they were instructed to fill out a questionnaire in the language of their choice.

Stimulus. The Web site of a fictitious camera retailer was created for this experiment. It was modeled on typical camera retailing sites. The site consisted of 61 pages, which contained a total of 50 pictures/graphics including a home page and the following sections: (a) What do you need? (an interactive quiz directing visitors to the cameras they might be most interested in); (b) New Products (a total of 12 cameras in four sections: manual, automatic, compact and digital); (c) Used Products (a long list of a variety of used cameras and photographic equipment); (d) About Us (pages describing the company and its management, personnel, and history); (e) Testimonials (pages containing comments from past "customers"); (f) Photo Contest (a page encouraging visitors to send their pictures to enter a contest); (g) Contact Us and Order pages, and an internal search engine.

Participants. A total of 74 fluent Spanish–English bilinguals in Spain participated in the research. Language proficiency was measured by a self-administered questionnaire that included 12 items that asked participants to rate from 1 to 5 (higher scores meant higher proficiency) their own proficiency in Spanish and English in different situations (e.g., understand 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). Participants' average L1 rating on the 5-point scale was 4.80 and their average L2 rating was 4.20. All participants were relatively proficient in both languages, all scoring 2.50 or higher in both L1 and L2. Participants were more proficient in their L1 than in their L2, as shown by a paired t test, $t(73) = 28.31$, $p < .001$.

Measures. Dependent measures consisted of five 7-point scales to measure attitude toward the site (the site was *boring/exciting*, *not interesting/interesting*, *not appealing/appealing*, *mediocre/exceptional*, *not fun/fun*) and five 7-point scales to measure product evaluations (the products were *boring/exciting*, *not worthwhile/worthwhile*, *not appealing/appealing*, *overall inferior/superior*, *common/unique*). Higher scores represented higher evaluations. In addition, a thoughts protocol was collected.

Pretests. The graphics in the site underwent two pretests. First, a large set of pictures/graphics (204) was preselected because they appeared to be consistent or inconsistent with the site content. Then, each graphic was rated by 20 bilingual individuals according to its attractiveness. Mean attractiveness ratings for each graphic were recorded. In the process of creating the low and high graphic congruity versions of the experimental Web site, only graphics with similar attractiveness ratings were assigned to matching pages. For example, if a graphic with a high attractiveness rating was assigned to the Nikon FM2N page in the high graphic congruity site, a graphic with a similar high rating was assigned to the matching page in the low graphic congruity site. As a result of this procedure, low- and high-congruity graphic sites did not differ in their attractiveness ($F < 1$).

The second pretest verified that the graphics in the high-congruity (low congruity) condition were indeed expressing the same (a different) meaning as the page content in which they were embedded. Twenty bilingual participants rated the degree to which the graphics were consistent with the content of each of the pages containing graphics, from 1 (*lowest graphic continuity*) to 7 (*highest graphic continuity*). After several iterations of this procedure, the sites corresponding to the two congruity conditions were designed to be significantly different in graphic congruity ($M_{\text{low congruity}} = 1.62$, $M_{\text{high congruity}} = 4.71$; $F = 191.15$, $p < .001$).

Results

Manipulation check. The RHM suggests that L2 text may be more effortful to process at the conceptual level than L1 text. We included a test of this prediction by presenting participants with two 7-point scales (*the site was easy/difficult to understand* and *simple/complicated*) after they visited the Web site. Higher scores on these scales indicated greater effort. Scores for the two scales were averaged as they were highly correlated ($r = .89$). An analysis of the effort scores suggests that L2 sites were more effortful to process than L1 sites ($M = 2.35$ vs. $M = 1.65$; $F = 4.99$, $p < .05$). No other effects were significant (Fs < 1). Hence, it would seem that, as predicted by the RHM, L2 sites were considered more demanding to process relative to L1 sites.

Experimental Results

Manipulation check. The results were analyzed as a 2 (L1, L2) $\times$ 2 (low, high graphic congruity) between-subjects factorial design. Degrees of freedom are 1 and 73 for all analyses unless otherwise noted. Table 1 includes the means and standard deviations for all measures.

The moderating effect of language and graphic congruity on attitude toward the site follows the anticipated pattern. The results reveal a significant two-way interaction of language and graphic congruity on A_{site} ($F = 12.25$, $p < .001$). Figure 1 presents these results. A closer inspection of the interaction reveals that, as predicted by H1, in the high congruity condition the L2 site results in more positive attitudes than the L1 site ($F = 5.38$, $p < .05$). In the low graphic congruity condition the reverse effect is found as predicted in H2: the L1 site results in more positive attitudes than the L2 site ($F = 7.02$, $p < .01$).

Attitudes toward the products featured in the site (A_{products}) were also examined. Analysis of this measure showed a significant two-way interaction of language by graphic congruity ($F = 4.26$, $p < .05$). The results of this measure support H1, suggesting the superiority of L2 over L1 under high graphic congruity ($F = 4.46$, $p < .05$). However, in the low graphic congruity condition there was no significant difference between L1 and L2 ($F < 1$). Thus, H2 was not supported, perhaps because the products represented real brands so, in the effortful low congruity sites, participants in both language conditions may have relied on their general positive attitudes toward these products rather than process the product information in a detailed manner.

The total number of thoughts produced by participants is often considered a measure of the amount of processing participants dedicate to a specific stimulus (i.e., our Web sites). For total thoughts, there was a marginally significant two-way interaction of language and graphic congruity ($F = 2.89$, $p < .10$). In the high graphic congruity condition, there was no difference in the number of thoughts for the L1 versus L2 sites ($F < 1$). In the low graphic congruity

TABLE 1
Studies 1 And 2: Means For All Measures

	Study 1				*Study 2*			
	Low Congruity		*High Congruity*		*Low Congruity*		*High Congruity*	
	L1	*L2*	*L1*	*L2*	*L1*	*L2*	*L1*	*L2*
A_{site}	4.52[a] (1.03)	3.49[a] (1.51)	3.27[a] (1.19)	4.25[a] (1.06)	5.80 (1.02)	4.10 (1.60)	3.97 (1.64)	5.08 (1.15)
$A_{products}$	5.32 (.82)	5.12 (.87)	4.54 (.86)	5.13 (.67)	5.27 (1.14)	5.28 (1.24)	4.71 (1.19)	5.71 (.81)
Total thoughts	2.74 (1.45)	1.40 (.88)	2.29 (2.20)	2.24 (1.72)	2.29 (2.23)	.93 (1.21)	1.47 (1.30)	2.00 (1.73)
Positive minus negative thoughts	.79 (2.32)	–.25 (.85)	–.88 (2.06)	–.47 (1.74)	2.07 (2.34)	–.29 (1.38)	.47 (1.13)	1.15 (2.08)
Seconds per page	–	–	–	–	32.40 (12.69)	32.88 (14.27)	33.05 (7.71)	44.34 (17.76)

Note. Standard deviations are in parentheses.
[a]Means plotted in Figure 1.

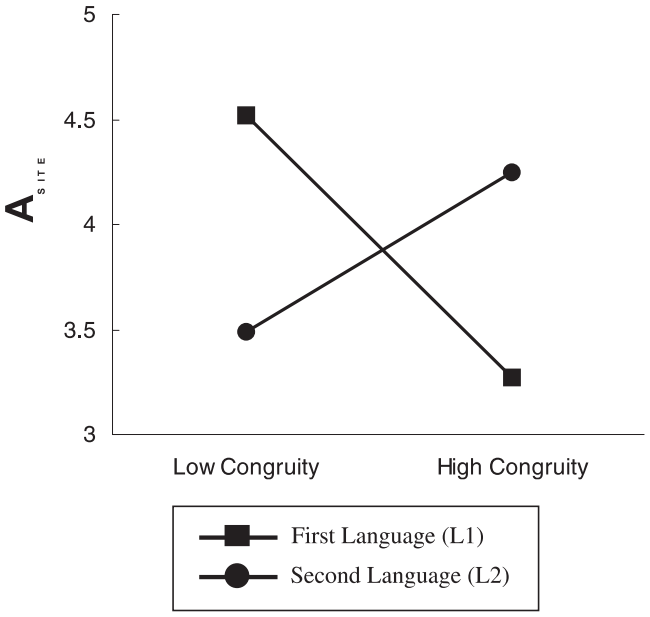

FIGURE 1 Graphic congruity by language interaction.

condition, L1 sites resulted in more thoughts than L2 sites ($F = 6.79$, $p < .01$).

An analysis of the valence of participants' thoughts also provides insight into participants' processing. It follows a similar pattern to the attitude measures. To examine the valence of participants' thoughts, we subtracted the number of negative thoughts from the number of positive thoughts generated by participants (Aaker & Sengupta, 2000). The resulting measure, positive minus negative thoughts, was submitted to an analysis of covariance with two factors, language and congruity, and one covariate, the total number of participants' thoughts. This valence of thoughts measure revealed a significant two-way interaction of language and graphic congruity ($F = 4.61$, $p < .05$). In the high graphic congruity condition, there was no difference in the valence of thoughts between the L1 and L2 sites ($F < 1$). In the low graphic congruity conditions, the L1 site produced more net positive responses than the L2 site ($F = 5.75$, $p < .01$). The impact of the valence of thoughts on both A_{site} and $A_{products}$ was assessed by performing a linear regression of the attitudinal variables on the valence of thoughts. We found that the valence of thoughts was a significant predictor of both A_{site}, $t(73) = 3.55$, $p < .001$ and $A_{products}$, $t(73) = 3.21$, $p < .01$.

Overall, in this empirical study we explore the relationship between two site design elements on the effectiveness of cross-cultural Web sites targeting bilingual consumers. The results suggest that the level of graphic congruity can moderate language effects on attitudes toward cross-cultural Web sites. Thus, our findings are consistent with previous research on advertising recall (Luna & Peracchio, 2001). Countering marketers' intuitions, L1 sites do not always deliver superior persuasion effects relative to L2 sites, particularly when the sites' graphics support their verbal content. Indeed, in such high congruity conditions, L2 sites may be even more persuasive than sites in the visitors' local language.

For low congruity sites, however, we find mixed results. Attitude toward the site confirmed our expectations indicating that L1 sites were more persuasive than L2 sites under low congruity conditions but attitude toward the products featured in the site did not support our predictions. To further examine the impact of language and graphic congruity on attitudes and also to validate our results cross-culturally, we replicated our study in a different country. Study 2 also examines an additional dependent variable, the time that participants devoted to processing each Web page.

STUDY 2

Method

The procedure and measures employed in Study 2 were identical to Study 1, except that it took place in Southern California. The participants were 55 Spanish–English

bilinguals. Language proficiency was measured using the same scale as in Study 1. Participants' average L1 rating was 4.82 and their L2 average rating was 4.19. All participants scored 2.50 or higher in both L1 and L2 on the 5-point language scale. They were all more proficient in their L1 than in their L2, as shown by a paired *t* test, $t(54) = 5.49$, $p < .001$.

An additional measure was collected in this study: The time, in seconds, that participants spent on each individual page in the site. We expected that participants in the L2 conditions would spend more time per page in high congruity sites than in low congruity sites decoding the information in those sites. Participants in the L1 conditions were expected to process the pages equally well in both the high- and low congruity sites.

Results and Discussion

As in Study 1, a manipulation check was performed on whether the L2 sites generally required more effort to process than the L1 sites. The same two 7-point scales (the site was *simple/complicated*, *easy/difficult to understand*) were averaged. The results indicate that there was a main effect of language ($F = 5.58$, $p < .05$), suggesting that L2 sites were more effortful to process ($M = 2.27$) than L1 sites ($M = 1.43$). No other effects were significant (Fs < 1). In addition, in this study the total time spent visiting the whole Web site was assessed. The results of this measure echo the findings of the effort measures. Participants assigned to L2 sites spent more time visiting the site than participants assigned to the L1 sites (1,582 sec vs. 1,236 sec; $F = 5.98$, $p < .05$).

The results of Study 2 replicate and validate those of study 1. The results were analyzed as a 2 (L1, L2) × 2 (low, high graphic congruity) between-subject factorial design. Degrees of freedom are 1 and 54 for all analyses unless otherwise noted. Table 1 includes the means and standard deviations for all measures.

A two-way analysis of variance was performed with A_{site} as the dependent variable and language and graphic congruity as the independent factors. The results reveal a significant two-way interaction, $F(3, 51) = 14.08$, $p < .001$, confirming the relationship between language and graphic congruity on A_{site}. A closer inspection of the interaction reveals that in the high congruity condition the L2 site results in more positive attitudes than the L1 site, $F(3, 51) = 4.43$, $p < .05$. However, in the low congruity condition the reverse effect is found: the L1 site results in more positive attitudes than the L2 site, $F(3, 51) = 10.19$, $p < .01$.

The two-way interaction of language and graphic congruity on $A_{products}$ was marginally significant ($F = 2.72$, $p < .10$). Similar to Study 1, we find support for H1 when we analyze $A_{products}$ in the high congruity condition, as L2 attitudes are more positive than L1 attitudes, $F(3, 51) = 5.70$, $p < .05$). However, as in study 1, the $A_{products}$ results do not support H2 in the low congruity condition, as there is no difference between the L1 and L2 conditions ($F < 1$).

The thoughts measures also provide similar results to Study 1. Total thoughts and the number of positive thoughts minus the number of negative thoughts both displayed significant interactions between language and congruity (Total thoughts: $F = 4.52$, $p < .05$; Valence of thoughts: $F = 5.11$, $p < .05$). In the high congruity condition, there were no differences between the L1 and L2 sites for these measures (Fs < 1). In the low congruity condition, the L1 site resulted in more total thoughts listed ($F = 4.67$, $p < .05$) and more net positive thoughts ($F = 6.88$, $p < .01$) than the L2 site. As in Study 1, we also regressed the two attitudinal variables, A_{site} and $A_{products}$, on the valence of thoughts. The findings suggest that the valence of thoughts is a significant predictor of both site and product evaluations: A_{site}, $t(54) = 5.15$, $p < .001$; $A_{products}$, $t(54) = 4.47$, $p < .001$.

In this study we also collected a measure of the time (in seconds) each participant spent on each page of the site. The time per page results shows that in the high congruity condition, L2 individuals spent more time in each page than L1 individuals, $F(1, 47) = 4.16$, $p < .05$. There was no significant difference between L1 and L2 in the low congruity condition ($F < 1$). This finding suggests that L2 sites can lead visitors to linger on specific pages for a longer period of time while they process the content but only if they have facilitatory cues available, such as graphics that support the verbal content of the page.

Study 2 provides cross-cultural validation for the results of Study 1. We find the same pattern of results in both studies, which indicates that our findings are robust across the two cultures we examined. Studies 1 and 2 suggest that language effects on persuasion are moderated by the congruity between the text of an international Web site and its graphics. We find an interesting result: L1 sites are not always better than L2 sites. We now describe a third study we conducted to examine the potential interaction of language and a second operationalization of congruity, cultural congruity. We define cultural congruity as the agreement of the cultural manifestations expressed in a Web site (e.g., values, symbols) with the cultural manifestations of the site's visitors (Luna & Gupta, 2001). In Study 3, we also add a third level of congruity exploring the effect of language at three levels of cultural congruity: low, moderate, and high. Finally, we report on an additional expression of site evaluation, perceived Web site informativeness, and two other measures of Web site effectiveness, time distortion and telepresence. According to Hoffman and Novak (1996), these constructs are important in that they lead to a state of flow, which is characterized by a positive site navigation experience and may itself lead to desirable consequences for e-marketers, such as exploratory and participatory behaviors and intentions to revisit and purchase from the site (also see Luna & Peracchio, 2002).

STUDY 3

In this study we vary the cultural congruity of a Web site to evaluate whether cultural congruity moderates the impact of language on Web site effectiveness. We include three levels of cultural congruity: high (cultural manifestations expressed both through the site's text and graphics are congruent with visitors' culture), moderate (either the text or the graphics are culturally congruent with visitors' culture), and low (neither the text nor the graphics are congruent with the visitors' culture). The design of the study will therefore be 3 (Cultural congruity: high, moderate, low) × 2 (Language: L1, L2) between-subject experiment.

Consistent with H1 in Studies 1 and 2, we expect that in the high congruity condition there will be a superiority of L2 over L1 because congruity facilitates processing of the site's content. In the case of cultural congruity, a congruent site may increase the ability of individuals to engage in relational processing by providing a familiar context consistent with their prior experiences. In such a context, message encoding would seem to be less effortful. Processing of these sites in L1 may therefore become too unchallenging resulting in a decrease in attitudes, whereas processing in L2 may be enhanced to an optimal point because of the familiarity of the culturally congruent content. Therefore, Study 3 includes a further test of H1 with a different operationalization of congruity, cultural congruity.

In the moderate congruity conditions, however, we expect that evaluations in the L1 condition will be superior to L2. This is because processing of L1 sites is enhanced by the moderate level of congruity and the site is neither too unchallenging nor too difficult. However, as described by the RHM, conceptual processing of L2 stimuli is less likely than L1 processing, so a moderate congruity level may not be enough to facilitate L2 processing. Indeed, lack of total congruity represents a significant hurdle for L2 processing, so we expect a superiority of L1 over L2. This expectation is consistent with the findings of recent research in bilingual's memory for advertising claims under moderate congruity conditions (Luna & Peracchio, 2001). We predict that moderate congruity will not reach a facilitatory threshold beyond which factors such as cultural congruity aid L2 processing.

H3: Moderate congruity L1 sites result in higher levels of A_{site} and $A_{products}$ than moderate congruity L2 sites.

Similar to Hypothesis 2 in Studies 1 and 2, we do not expect that low cultural congruity will aid L2 processing. However, as specified in H2, L1 processing may lead to elaboration even in the absence of facilitatory cues. Therefore, as in Studies 1 and 2, we predict that low congruity will lead to a language superiority of L1 over L2 with respect to attitudes.

Several additional measures are also analyzed in Study 3. These measures are expected to follow a similar pattern to the main attitudinal measures specified in the hypotheses. The first of these variables is perceived site informativeness. The other two variables are related to the flow construct, as described by Hoffman and Novak (1996). In this research we focus on items that are part of the flow experience: the extent to which site visitors experience the time distortion and the telepresence that would lead them to flow. Time distortion refers to visitors losing track of time while navigating the site. Telepresence refers to visitors losing track of the reality around them while navigating through the site and "existing" exclusively in a virtual universe.

Method

An experimental Web site was developed similar to the one used in Studies 1 and 2. It was a fictitious camera retailer's site, which included 20 pages and 17 different pictures. The site had several sections, all accessible from a menu embedded in every page of the site. The sections were Home, Our Cameras (in which each camera had links to two pages: a benefits page and a specifications page), Testimonials, Our Cameras and You (depicting situations in which the cameras could be used), a contact form for participants to email the company, and a search engine.

Cultural congruity was created by varying the site's content. Two factors were manipulated, text and graphics, to create the three levels of congruity. Study 3 was conducted in Spain with Spanish–English bilinguals. Thus, the text was designed to be either USA-specific text or Spain-specific text. The graphics were designed to be USA-specific, Spain-specific, or neutral to both cultures. The resulting congruity conditions were as follows: Spain text/Spain graphics (high congruity), Spain text/neutral graphics and USA text/neutral graphics (moderate congruity), and USA text/USA graphics (low congruity). Because both moderate conditions did not differ significantly from each other with respect to the key dependent measures (Fs < 1), they were collapsed into one single moderate congruity condition. Text-based cultural congruity was operationalized by using cultural manifestations that were typical and specific of each culture. For example, the Spanish-specific text of the Web site included a page in which the value of extended-family orientation was emphasized, whereas its USA-specific equivalent focused on fraternization with campus roommates. A symbol included in the Spanish-specific site was a paella, whereas its USA-specific equivalent mentioned a barbecue. A culture-specific hero mentioned in the Testimonials section of the Spanish-specific site was Penélope Cruz (the study was conducted prior to her American success), whereas the USA-specific equivalent was Helen Hunt. A ritual included in the Spanish-specific site was the Feast of the Three Kings, whereas the USA-specific site described a Thanksgiving dinner. The text of each of the pages in the site was developed through focus groups in Spain and the USA. Care was taken that the structure, length and descriptive and narrative content of the text were

equivalent across cultural versions. Pretesting of the two versions of the text revealed (on 7-point scales where higher scores meant higher cultural typicality) that Spanish participants perceived the Spanish-specific version of the site as more typically Spanish than the USA-specific version ($M = 4.55$ vs. $M = 2.85$), $F(1, 38) = 19.79$, $p < .001$.

The graphics of each of the three picture versions of the site were selected through an iterative process consisting of finding graphics that would support the text of each of the pages. Thus, the graphics for the USA, Spain, and neutral-graphic sites were selected by a panel of individuals familiar with both cultures. The final graphics included in the sites were tested on 7-point scales for several factors: both the neutral and the culture-specific versions had similar levels of graphic congruity ($M_{neutral} = 3.99$, $M_{Spain} = 3.62$, $M_{USA} = 4.01$; Fs < 1) and all were similarly attractive ($M_{neutral} = 3.66$, $M_{Spain} = 3.87$, $M_{USA} = 4.02$; Fs < 1). The graphics were also rated for their cultural typicality on a 7-point scale where higher scores meant higher Spanish typicality. The results suggest that the Spain graphics were considered more typical of a scene in Spanish people's real life than the neutral graphics ($M = 5.58$ vs. $M = 4.31$), $F(1, 19) = 4.74$, $p < .05$, and the neutral graphics were considered more typical of a Spanish scene than the USA graphics ($M = 4.31$ vs. $M = 2.89$), $F(1, 19) = 4.04$, $p < .05$. The procedure and participants were similar to studies 1 and 2. Participants were 142 Spanish–English bilinguals in Spain. All participants spoke Spanish as their native language and were proficient in English, scoring 2.50 or above on their L2 language questionnaire. In this study, we also analyzed another site evaluation measure, perceived informativeness of the site, and measures related to the flow construct, telepresence and time distortion (Hoffman & Novak, 1996). Informativeness was measured by two, 7-point Likert scales (the site was informative, the site presented a lot of information). Telepresence was measured by six 7-point Likert scales, and time distortion by two 7-point Likert scales adapted from Novak, Hoffman, and Yung (2000). We expected that these measures would follow similar patterns to our main attitudinal measures.

Results and Discussion

Similar to Studies 1 and 2, we performed a check for processing difficulty of L1 versus L2 sites. As expected, there was a main effect of language such that participants perceived the L2 sites to be more effortful to process than the L1 sites ($M = 2.08$ vs. $M = 1.69$; $F = 3.70$, $p < .05$). No other effects were significant. This finding validates the predictions of the RHM and echoes the results of Studies 1 and 2.

The results were analyzed as a 2 (L1, L2) × 3 (low, moderate, high cultural congruity) between-subject factorial design. Table 2 includes the means and standard deviations for the measures analyzed in this study.

Our analysis of the attitudinal data revealed that for A_{site}, the two-way interaction of language by cultural congruity was not significant ($F < 1$). However, we observed a marginally significant main effect of cultural congruity on A_{site} $F(1, 139) = 2.35$, $p < .10$. Thus, high congruity sites resulted in lower site evaluations than moderate and low congruity sites ($M = 3.13$ vs. $M = 3.74$), $F(1, 139) = 4.71$, $p < .05$. The lack of language effects on this measure is perhaps due to the simpler design of the site and the more prominent place that the products sold by our fictitious camera e-tailer occupied in the design of the site for this study.

For $A_{products}$, however, the two-way interaction of language by cultural congruity was significant $F(2, 136) = 4.25$, $p < .01$. In the high cultural congruity condition, L2 resulted in higher product evaluations than L1, $F(1, 139) = 4.69$, $p < .05$), thus supporting H1. In the moderate congruity condition there was a superiority of L1 over L2, $F(1, 139) = 4.04$, $p < .05$, lending support to H3. Replicating the product evaluation findings of studies 1 and 2, in the low congruity condition there was no difference between L1 and L2 ($F < 1$). Hence, for both of our conceptualizations of congruity (graphic and cultural), low congruity seems to hamper cognitive elaboration even in participants' L1.

The total thoughts measure revealed a marginally significant effect such that, more thoughts were produced by participants under the low and moderate cultural congru-

TABLE 2
Study 3: Means for All Measures

	Low Congruity		*Moderate Congruity*		*High Congruity*	
	L1	*L2*	*L1*	*L2*	*L1*	*L2*
A_{site}	3.62 (1.16)	3.89 (1.38)	3.73 (1.31)	3.72 (1.39)	3.31 (1.24)	2.92 (1.37)
$A_{products}$	4.95 (1.46)	4.68 (1.43)	5.28 (1.05)	4.72 (.86)	4.43 (1.24)	5.40 (1.03)
Total thoughts	.42 (.77)	.23 (.65)	.24 (.76)	.44 (1.60)	.00 (.00)	.00 (.00)
Positive minus negative thoughts	.17 (.79)	.10 (.56)	.00 (.73)	.00 (.31)	.00 (.00)	.00 (.00)
Time distortion	3.38 (1.88)	3.98 (1.95)	3.54 (1.70)	3.37 (1.60)	2.42 (1.40)	3.62 (1.84)
Informativeness	4.34 (1.30)	4.61 (1.73)	4.85 (1.31)	4.55 (1.27)	3.73 (1.78)	4.83 (.94)
Telepresence	2.16 (1.30)	2.34 (1.26)	2.00 (1.25)	2.01 (1.27)	1.27 (.66)	2.56 (1.45)
Seconds per page	53.79 (21.11)	52.09 (26.70)	52.37 (23.21)	46.58 (17.79)	55.95 (27.15)	63.56 (21.35)

Note. Standard deviations are in parentheses.

ity conditions than under the high congruity condition, (M = .33 versus M = 0.00), $F(2, 139) = 2.66$, $p < .10$. This finding is consistent with the A_{site} results and may be an indication of an attempt to process information that does not totally conform to participants' cultural schemas. No other effects were significant for total thoughts. Similarly, the number of positive minus negative thoughts measure did not produce any significant results (Fs < 1), perhaps due to the fact that participants did not write as many thoughts in this study as in studies 1 and 2.

Consistent with Study 2, the time that visitors spent per page indicates that high congruity leads to more extensive processing of L2 sites. high congruity, L2 sites led to more time spent per page than low- and moderate-congruity L2 sites ($M = 63.56$ vs. $M = 48.89$), $F(2, 139) = 3.99$, $p < .05$. No other effects were significant for this measure (Fs < 1).

With respect to the additional measures analyzed in this study, we found a significant (or marginally significant) superiority of L2 sites over L1 sites in the high congruity condition for informativeness, $F(2,139) = 3.79$, $p < .05$, telepresence, $F(2, 139) = 6.70$, $p < .01$, and time distortion, $F(2, 139) = 2.97$, $p < .10$. This L2 superiority in high congruity conditions suggests that visitors are challenged to process such sites and that they are more likely than visitors of similar L1 sites to lose track of time and the world around them. They are also more likely to perceive the sites as more informative than visitors to L1 sites. For moderate- and low congruity sites there were no differences due to language (Fs < 1). Therefore, whereas these measures provide support for H1, they do not provide support for H2 or H3.

The results of this study provide evidence for the moderating role of cultural congruity on language processing. Similarly to graphic congruity in Studies 1 and 2, high cultural congruity results in enhanced $A_{products}$ for L2 versus L1 individuals. Congruity, therefore, regardless of how it is operationalized, can lead to enhanced persuasion in L2 conditions. However, although Studies 1 and 2 found that graphic congruity moderates language effects on A_{site} and $A_{products}$, Study 3 did not find a significant interaction of language and congruity for A_{site}. This result should be kept in mind and suggests that factors not included in this study, such as the relative complexity and sophistication of the site, may have an impact on site evaluations.

The results of Study 3 are also consistent with previous research on the impact of language on advertising recall (Luna & Peracchio, 2001). That research suggests that L2 processing does not benefit from moderate levels of congruity. Whereas L1 processing is enhanced by moderate congruity, L2 requires a higher level of congruity before it can reap benefits.

GENERAL DISCUSSION

In this article, we suggest that congruity facilitates L2 processing and enhances attitudinal measures for L2 Web sites relative to L1 Web sites. We operationalize congruity in two ways, graphic congruity and cultural congruity, using Web design elements. Graphic congruity refers to the relationship between the graphics and the text presented in a Web site. Cultural congruity refers to the relationship between the cultural manifestations (e.g., values) expressed in the Web site and those of the site's visitors. In our empirical studies we find that both operationalizations of congruity moderate language effects on attitudinal variables such that persuasion is enhanced after exposure to congruent L2 Web sites. Our results extend existing psycholinguistic research with bilinguals by suggesting that attitudinal variables are influenced by language. Specifically, we examine the implications of a widely accepted model of language processing, the RHM, for evaluative processes. Our findings indicate that both high graphic and cultural congruity enhance evaluations of L2 stimuli relative to L1 stimuli. Perhaps because L2 ads are intrinsically more effortful to process than L1 ads, high congruity Web sites provide bilinguals with the necessary tools for successful processing resulting in enhanced evaluations.

Our research extends recent findings in consumer behavior exploring the effects of matching advertising appeals with consumers' cultural values (Aaker & Sengupta, 2000). The finding that L2 processing can be enhanced by both cultural and graphic congruity suggests that cultural congruity can be studied and understood in information processing terms. For example, the availability of certain culturally-specific schemas can facilitate the processing of congruent information, as in our L2/congruent condition.

This research also has implications for the study of the effect of language on information processing. MacInnis and Jaworski's (1989) advertising effects framework specifies that an important moderator of information processing is processing ability. They defined ability as "skill or proficiency in interpreting brand information in an ad" (p. 7). This view is consistent with the Elaboration Likelihood Model of persuasion, which also assigns an important role to ability to process (Petty & Cacioppo, 1986). Our research suggests that an important indicator of a bilingual individual's ability to process is the language in which a message is presented.

Particularly relevant to practitioners are our findings that L2 Web sites can elicit even higher site and product evaluations than L1 sites under some conditions. Thus, if the site includes relevant graphics that support the content, and/or includes content that is consistent with consumers' cultures, e-marketers may not need to translate their sites to the local languages. However, although our results support this conclusion when attitudinal responses are the focus of the e-marketers' actions, caution should be applied if other types of responses are desired, such as purchases or comprehension. Also, as Internet usage extends internationally to consumers who may have more limited knowledge of English, further research needs to address the effect of congruity and language on individuals with lower levels of English proficiency.

Future research must examine other dependent measures such as memory, intentions and purchase behavior. In addition, measures recently developed to assess Web site effectiveness, like "flow" the achievement of an optimal navigation experience (Novak et al., 2000), should also be examined in connection with studies exploring language and congruity. Our analysis of the telepresence and time distortion measures begins to address the construct of flow, and our findings offer some preliminary evidence that the flow construct can be applied to and measured in specific Web sites to assess their effectiveness, particularly in cross-cultural contexts.

Future studies also need to examine languages other than English and Spanish. For example, it is possible that the use of ideographic or logographic languages may have different implications than are presented in this research (Tavassoli, 1999). Finally, future research needs to address the possible domain- or context-specificity of language. For instance, some consumers may find English to be the standard language of the Internet and may not respond well to sites in their local languages. It may be that consumers have established scripts for processing information on the Web and processing information in English has become a central part of those scripts.

In conclusion, our empirical exploration begins to explore how bilingual consumers process information online and form attitudinal assessments. Our results are of particular significance because we build into our model a cross-cultural dimension, which is very important for a global medium like the Internet. However, a great deal of research is still necessary for a complete understanding of international and bilingual site surfing behavior.

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