Abstract

Lim, Raymond W. Perceptions and Performance for Bilingual Labels as a Function of Native Users of English and Spanish. (Under the direction of Michael S. Wogalter.)

According to the U.S. census, Hispanics are now the largest minority group in the U.S. Many are Spanish language users who are potentially susceptible to injury or death from improper handling or use of hazardous products because most warnings on products in the U.S. are written for English language users. This study focused on several issues that examined the perceptions and performance of both English and Spanish language product users towards bilingual labels (labels with two languages). Three studies were conducted; the latter two involved experimental manipulations of bilingual labels.

The first study consisted of a survey asking English language users about their beliefs and attitudes in favor of implementing bilingual label products to the mainstream. Participants were asked to rate various statements involving safety and design issues of bilingual labels. Participants agreed that bilingual products are useful for Spanish speakers and that people who intend to live in the U.S. should learn English. Also, participants believed that bilingual labels are important, because many people in the U.S. do not read English. Participants disagreed that products bearing bilingual labels should not be sold in the U.S., and that products with bilingual are lower in quality than English labeled products.

The second study asked English and Spanish language users for ratings on the level of acceptability, the likelihood of purchasing, and the likelihood of reading of several manipulated bilingual label designs on actual box and cylinder containers. Examination of the three ratings indicated that they were all highly interrelated thus the acceptable ratings was used. In general, box containers were favored over the cylinder containers. Also,

designs having both language displayed side-by-side were rated higher in acceptability than languages displayed on top and bottom. Overall, the design of the English-text on the left half and the Spanish-text on the right half displayed on a box yielded the highest acceptability ratings.

The third study tested the salience of several visual enhancements (font size, font color, and pictograph) to bilingual labels using a time-based performance task with both Spanish and English language users. The most effective bilingual design was adopted from Study 2 in which the languages were displayed side-by-side. Labels with the user's native language (English-text only for English language users and Spanish-text only for Spanish language users) produced the fastest search times. Overall, labels having either two flags or a single flag had faster search times but labels with colored text and no flags had longer search times. The English-text Left, Spanish-text Right with both flags, on average, added 76 milliseconds in response time compared to the label with just the user's native language.

This research provides validation for implementing bilingual labels in the U.S. with well designed labels, users (both English language and Spanish language) in the U.S. are more likely to accept bilingual labels on products. By making them more usable through research such as the present work, it will help consumers to find information that they need. The results suggested that bilingual labels can be developed to provide important information to persons who do not use the main language, yet still communicate important information without detracting persons of the majority language. Implications for manufacturers and federal agencies in charge of safety are discussed.

Running head: WARNING'S SALIENCY ON BILINGUAL LABELS

Perceptions and Performance for Bilingual Labels as a Function of Native Users of English and Spanish

by

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Biography

Raymond W. Lim was born in Los Angeles, California. After receiving his dual B.A. in 1998 from California State University-Los Angeles, he left for North Carolina State University to pursue his graduate degree. After completion of his M.S. in 2001 he had various roles as a teacher assistant, research assistant, and human factors intern. He currently lives in Arcadia, California.

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Introduction

The U.S. Census Bureau projected an increase in Hispanics from 11.5% to 15.8% of the total U.S. population from 1999 to 2015 (U.S. Census Bureau, 2002). As of July 2001, the Census Bureau reported that Hispanics to be the largest minority in the U.S., comprising 13% of the total U.S. population, surpassing African-Americans (12%). These figures account for only those who voluntarily register with the Census Bureau. The actual figure is higher because the Immigration and Naturalization Service estimates that, in January 2000, there were 2.7 million undocumented illegal immigrants from Mexico residing in the U.S.

California, Texas, Illinois, Arizona, Georgia, and North Carolina reported to have the largest numerical increase in undocumented immigrants. The majority of these undocumented immigrants are from Mexico; however, other Hispanic-origin countries such as El Salvador, Guatemala, Honduras, Dominican Republic, Nicaragua, Columbia, Ecuador, and Peru comprise another 912,000 undocumented immigrants (Immigration and Naturalization Service, 2000).

Immigrants, both legal and illegal, frequently have limited skills in the English language. About 27 percent of Hispanics in the U.S. (Mexicans, Cubans, Puerto Ricans, South and Central Americans, and others) overall, have reported to be monoliterate, which is knowledge of only one language, in this case Spanish (U.S. Department of Education, 1992). Many take jobs that involve manual labor, which in some cases may include the handling of potentially dangerous chemicals or operating hazardous equipment. To warn users of potential hazards, a print warning is usually located on the container of the product or attached directly to the product. However, the vast majority of products in the U.S. only have warnings written in English. Therefore, immigrants who only know Spanish will not be apprised of labeled hazards written only in English, which could increase their susceptibility to injuries, illnesses, or death.

In addition, manufacturers may be susceptible to lawsuits for inadequate warnings because portions of the target audience were not appraised of product hazards. For example, in one case a manufacturer was sued because the manufacturer publicly advertised a product's benefit but without the risks in Spanish to a Hispanic community.

In the case of Ramirez v. Plough Inc., the mother of a child suffering from Reye's syndrome sued the manufacturer of an aspirin product. The mother claimed that she was not given full disclosure to the product's warning printed on the package. The manufacturer of the aspirin product was granted summary judgment in the state of California District Court in favor of the manufacturer. However, the California Court of Appeals reversed the District Court's decision on the basis that the manufacturer should have foreseen use by Spanish-language users (Hubbard-Hall Chemical Company v. Silverman, 1965). This case worked its way up to the California Supreme Court, where the court's decision was that manufacturers of nonprescription drugs in California do not have to mandatorily print warnings in any language other than English (Ramirez v. Plough, 1992).

Another language-related problem has been described by Rosenthal (1991). On October 22, 1999 in a remote village in Tauccamarca, Peru, 24 children died and 18 were sickened as a result of ingesting milk that contained poison. The poison was meant for use as a pesticide for vegetables at a nearby farm. The package of white powder resembled powdered milk but had no strong odor. It was labeled in Spanish and displayed pictures of vegetables. The investigators of this incident suspected that, because of the preparer's illiteracy and that the package provided no understandable safety information other than a printed warning that the preparer could not read, the kitchen worker prepared the poison as if were dry milk powder.

The Role of Bilingualism in Safety

The Occupational Safety and Health Administration (OSHA) requires that "all employers shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury" (OHSA, 1994). Although bilingual training is not mentioned in the regulation, requirements for safety instruction would suggest that employers should train workers in ways that the employees would understand, and that may mean instruction in a language they know. This issue, among others, has been a major reason why bilingual training for workers in occupations where many of the workers are Spanish-language users has been adopted by some manufacturers (Flory, 2001; Stromme, 2001). In one study, an airport contracted with an insurance company to train construction workers in a language they understand to try to reduce their injury rate. In a study by Korman (2002), workers were trained in a language they understood. The results indicated that the injury rate at the airport was reduced. Also, an analysis compared the cost of the number of injuries versus the cost of training, and the results showed that training workers in either their native language or a language they understood was more cost effective than compensating for the workers' injuries (Korman, 2002). In another example, bilingual training was applied in the form of community service. A survey was distributed to Dallas residents in an area heavily populated with Hispanics. The survey showed that parents of Hispanic preschool-aged children rarely (lower than 20%) used child restraint systems while in a vehicle compared with other ethnicities (62%) within that area. A group of researchers implemented a bilingual program to change this practice among Hispanics in the communities. The results showed that by having instructions in a language they understood, more drivers complied with using child restraint systems. Educating drivers in a language they understood allowed them to be conscientious about the health of their children and themselves (Istre, McCoy, Fanning, Stowe, Womack & Dekat, 2002).

These examples are among the many bilingual training programs that show a benefit of training or instructing in the user's language. Employers, community outreach, and other programs should implement training, especially when it involves preserving safety. Training in the person's language may be already applied in the area of construction or in community services, but there may still be a need for manufacturers to implement this on product labels.

Clearly, there are advantages to labels written for consumers who are Spanish-language users. In the U.S. where Spanish language users are the largest minority, bilingual labels in English and Spanish may decrease injuries, illnesses, or even death because both English and Spanish language users will be able to understand the hazards and thus be able to make better-informed usage decisions.

Although consideration of using other languages such as French, German, Russian, etc., is probably necessary, this research focuses on the use of Spanish on labels because of the great number of monolithic Spanish language users in the U.S. Therefore, reference to bilingual labels in these studies will refer to both English and Spanish.

However, there are also potential disadvantages with bilingual labels. For example, having two languages on a conventional container label will decrease the surface area dedicated to warnings and instructions in English and, in turn, will reduce the readability of the information because of having smaller-sized text (e.g., Silver and Braun, 1993).

Also, products that have both English and Spanish languages may not appeal to the English-language population because such labeling practice may not be acceptable because of the belief that the U.S. population should use one primary language to communicate. Moreover, users may not read the warnings of bilingual labels because the perception of a bilingual label having too much text may discourage them. This may stem from a legibility issue where users are frustrated because labels with two languages in small may appear to be a lot of reading.

Review

One of the objectives of human factors research is to improve safety through designing safer products (Sanders & McCormick, 1993). The introduction of a second language to a product's label may provide to the user, the hazards associated with the product. However, as with any new or novel design, application of human factors design principles should be considered. These principles are intended to increase the likelihood for warning information on labels to be attended to, be comprehended, and motivate users to comply. In this review, human factors issues and current research are discussed, as well as the role of human information processing play in the design of bilingual labels.

Hazard

A hazard is defined as a set of circumstances that may result in injury, illness or property damage. These circumstances may include characteristics of an environment, of a product, and/or of a task. Abilities, limitations, experience, perceptions, and knowledge of a person are also included in the system (Laughery & Hammond, 1999).

The purpose of a warning is generally to improve safety. That is, it is used to eliminate or reduce incidents that result in injury, illness, or property damage. This is done through influencing the behavior of people in such a way that they comply with the warnings. Also, through warning individuals, the emphasis is to give the users critical information so they may make informed decisions. The critical aspect of this depends upon whether the information given is adequate to deter unsafe behaviors (Laughery & Hammond, 1999).

Three Hierarchical Strategies to Deal with Hazards

The hazard control hierarchy is necessary throughout the design process of any product. First, the primary focus is to design out or eliminate the hazard out of the product. One example is discontinuing the removable pull-off tab on earlier aluminum beverage cans. The contemporary aluminum beverage can has a push-back tab that does not allow the user to insert the tab back into the can, thus reducing the threat of choking from a young child inadvertently swallowing the tab.

If designing the hazard out of the product cannot be accomplished, then the second level should be implemented. The second level of hazard control is to guard against the hazard, that is, using any type of barrier that prevents the user from being subjected to the hazard or damaging the product. For example, having a metal guard that keeps fingers out of the magnetic disk often found in a computer diskette will not allow the user to damage the product. Another example would be a plastic or metal grill over a box fan to keep hands and fingers away from the rotating blades.

Warning is the third level of hazard control and is the least desired level of hazard control for a product. A warning is only implemented when designing the hazard out of the product or effectively guarding against the hazard cannot be met.

The Role of ANSI

ANSI is a non-profit organization that coordinates some of the voluntary standards in the U.S. (ANSI Z535, 2001). Prior to American National Standards Institute (ANSI) product safety labels regulations (ANSI Z535), two precursors also dealt with product safety labels: FMC Corporation and Westinghouse (FMC Corporation, 1985; Westinghouse, 1981).

Although the most current ANSI Z535 version to date was published in 2003, it was first published in 1991. There were also precursor ANSI standards: Z35 and Z58. These warning designs are in constant development and are made possible through the recommendations of members of the ANSI. For example, Martin and Deppa (1997) examined a set of warning design guidelines that affect the content order, grammatical style, and physical appearance of safety warnings. The expectation is that in application, warning labels will be more easily recognizable, legible, readable, and understandable.

The Language of Warnings

In the field of warnings, there are several definitions that need to be addressed. First, a hazard is defined as a set of circumstances that may result in injury, illness, or property damage (Wogalter, DeJoy & Laughery, 1999). It includes the abilities, limitations, experience, perception, and knowledge of the person(s) in the system. That is, the definition relates to situations that are not purely limited to, but include characteristics of, an environment, a product, and/or a task. The second is danger, a term that is used in a variety of ways. For example, one way of assessing the level of danger is through a multiplicative function of the level of a hazard and the likelihood of it occurring (Wogalter et al., 1999). That is, by multiplying the likelihood of a hazard occurring by the level of hazard a person perceives, the product of the two will give the level of danger. However, this multiplicative function does not necessarily mean it is correct in assessing the level of danger. A third term that is associated with warnings is risk. That is, risk is the overall awareness of hazards, likelihood, and potential outcomes of a situation or set of circumstances. These three terms are commonly used whenever discussion of warnings and risk communication is addressed in the literature (Wogalter et al., 1999). Although these terms are known in the field of warnings, researchers discovered that people generally do not distinguish between the expressions “hazardous,” “risky,” “dangerous,” and “hazardous-to-use.” Also, Young, Brelsford & Wogalter (1990), found that designers of warnings and education materials should communicate how badly a person can get hurt rather than the likelihood of getting hurt. Research also indicates that users more readily distinguish severity difference in warnings as opposed to the likelihood of getting hurt (Wogalter, 2003).

Assessing Behavior and Compliance in Warnings Research

The ultimate criterion of warning effectiveness is actual behavior compliance (Wogalter & Dingus, 1999). That is, after a warning has been observed and comprehended by the user, the user’s behavior is to comply with the warning. However, very few studies have reported using the approach of “compliance research” because it is difficult to set up a realistic scenario and it is very time consuming. Also, research where participants are subjected or may be subjected to dangerous conditions may be questioned on ethical grounds. Generally, self-reports on user intentions are collected through survey methodologies as a proxy for compliance research. For example, participants may be asked to rate the likelihood that they would comply with a warning of a particular type.

Three Types of Warnings

Print/Visual Warnings

Usually an attention-getting warning word is used so that the warning stands out relative to the background called "signal words" (Wogalter et al., 1999). These words are "caution," "warning," and "danger." Within the written warning labels, an explanation is sometimes given regarding the consequences of not following instructions properly. These consequences could include descriptors like death, mutilation, injury, blindness, and others. Also, these warnings communicate procedures for safe operation or proper instruction(s) to the equipment or product in order to avoid hazard or damage. Moreover, adding informative and nonredundant statements are effective (Wogalter, Godfrey, Fontenelle, Desaulniers, Rothstein & Laughery, 1987).

Warning labels are appropriate when certain conditions are met. A written warning label is better used when (1) the message that needs to be addressed is complex (including cases where the information has several levels of instructions or objectives), (2) if the message is long or when a person needs to refer to the message later, (3) when the message deals with locations in space and does not call for immediate attention, and (4) if the auditory system of the user is overburdened or the environment is too noisy (as in an environment where an auditory warning is not useful, such as a loud factory). Finally, if the person's job allows him/her to remain in one position, then having a written warning label is best suited for the environment or product (Sanders & McCormick, 1993).

Pictorial Symbols

One type of warning informs users of potential hazards through the use of graphics such as icons, pictograms, or symbols. An icon is a symbol whose main purpose in warnings is to call the user's attention to the warning label. One example of an icon is an alert symbol that is described as an exclamation mark surrounded by an upward pointed triangle, commonly found on many warning labels. Pictograms are picture-like illustrations that depict procedures to inform of proper use or hazards of a product. One example is a pictogram on some medication products that informs a person to not take medication with milk or dairy products. In this pictogram, a line drawing of a carton of milk and a wedge of cheese is within a circle with a slash though them. Symbols can also indicate potential product hazards or consequences from misuse. For example, a symbol where fingers are crushed may indicate the potential product hazard of misuse, and the skull and crossbones may represent death resulting from improper product use.

Pictorial symbols are increasingly being used in the area of warning research because they are believed to be "culturally neutral" (for review, see Cairney & Sless, 1982). It is argued that those who cannot read are able to comprehend pictorial symbols. Because of this argument that pictorial symbols are easily comprehended, researchers suggest using pictorial symbols when communicating information to those whose language is not English (Edworthy & Adams, 1996). Moreover, in comparing text and pictorial symbols in signs of the same size, some research indicates that pictorial symbols can be seen at a greater distances apparently due to their unique features relative to text (Jacobs, Johnston, & Cole, 1975). That is, pictorial symbols can sometimes be identified more quickly and more accurately than an equivalently worded sign. Pictorial symbols also have good legibility in bad weather and other less-than-favorable visual conditions (Edworthy & Adams, 1996).

Auditory Warnings

An auditory warning generally consists of a simple or complex sound that alerts or attracts the attention of the user. For sounds that are complex, those that consist of more than a single tone, the information is either general or specific to the problem at hand. The uniqueness of complex sounds may give far more information to the user than a simple pure tone (Patterson, 1982). Auditory warnings can range from simple nonverbal sounds such as sirens, tones, buzzers, bells, whistles, horns, klaxons, or gongs to verbal messages where the main job is to alert and startle the user and give the indication of a hazard. These two categories of auditory warnings are described in the following test.

Nonverbal sounds, such as signals, are common tones and beeps that carry less information than complex sounds. These simple auditory warnings generally announce that there is a problem. Conversely, complex sounds can signal specific hazards by using a combination of different frequencies or temporal arrangements of sounds. However, regardless of whether the auditory warning is simple or complex, the user must be able to associate the hazard with the specific sound and its meaning. The benefit of having a nonverbal sound is that it does not discriminate between cultures, so everyone with healthy hearing is able to perceive and encode this type of warning. However, one drawback is that nonverbal sound requires some training or some other experience to understand the warning (Stanton & Edworthy, 1999).

Verbal or speech warnings are messages that transmit information through the auditory modality. These warnings, however, do require knowledge of the vernacular to understand the meaning of the warning.

An auditory warning also has the ability to attract the attention of users who are not directionally near or in front of the warning indicator. Because of the omnidirectional nature of most sounds, users can roam within the environment without needing to be in direct line-of-sight of the warning.

Nonverbal auditory warnings may also be useful in other ways. For example, a tire screeching will alert an automobile driver that he/she needs to apply the brakes in the car. This form of auditory warning, known as an auditory icon, has recently been investigated among human factors practitioners (Belz, Robinson, & Casali, 1999).

When considering the use of auditory warnings, researchers should take several objectives into account. First, an auditory warning is best used when the message is short and simple. Second, if the message does not need to be referred to later and calls for immediate attention, an auditory warning is appropriate. Third, when the warning deals with events in time, an auditory warning should be used. For example, an auditory warning is appropriate when immediate attention and a reaction are required to turn on the cooling grids in a nuclear power plant to avoid a nuclear meltdown. Fourth, an auditory warning should be used when the visual system is burdened or when the user is in an environment that does not allow proper lighting (Wogalter & Leonard, 1999).

Brief Summary of Warnings Research Models

The following are brief reviews of four models that are fairly often referred to in the warning research literature. These reviews summarize each model and compare the stages of each model with the stages in other models. At the end of the review, presentation of the theoretical basis of this research is based on particular stages of the models presented.

(1) Communication-Human Information Processing Model (C-HIP) Model

This model consists of seven stages that are addressed in a linear function with loops that feed back to each stage (Wogalter, Dejoy, & Laughery, 1999). The first stage is the source, or in other words, the originator or initial transmitter of hazard and risk information. It may be composed of various sources, such as manufacturers, the federal government, nonprofit public service organizations, and industry trade organizations. Consideration for designing effective communication is necessary so that the receiver will easily decode the message's meaning (Cox, 1999)

The second stage is the channel. Relevant here is the way the message is transmitted from the source to the receiver. There are two approaches to conveying information at this stage. The transmission of the message through several modalities, such as the visual, auditory, kinesthetic, olfactory, and so on, is known as the sensory modality. Transmission of the message though product labels, leaflets, signs, owner's manuals, mass media, newscasts, and televised magazine shows is known as the communications medium. Depending upon the message's characteristics, such as the length of the message, conveying this message may be more suitable in a print/visual modality than the auditory modality.

The third stage is noticeability and attention. In this stage there are two processes involved. A primary goal is the capture of the receiver's attention by making the warning stand out (i.e., be salient, prominent, and conspicuous). Also, included in the capturing of the user's attention are the physical placement, the stress level, and the ambient noise conditions. The second process is maintenance, where attention is held while and until information from the warning is extracted (Wogalter & Leonard, 1999).

The next stage is comprehension and memory. For this stage, the important factor here is that the message facilitates understanding and retention of the warning by the receiver. Also, it is important that the receivers not only understand the warning but also remember the message (Leonard, Otani, & Wogalter, 1999).

The fifth stage of this model is attitudes and beliefs. For this stage, factors such as individual differences play a role. Also included in this stage are the perceived hazard on severity of injury anticipated, and familiarity where previous experience with the product affects the effectiveness of a warning. Another important aspect is expectations. That is, perceived threat either directly or indirectly shows the most promise for altering expectations (Dejoy, 1999).

The next stage is motivation. At this stage, the perceived threat or expectation about adverse consequence is what provides the initial motivation for precautionary behavior. Cost of compliance also effects one's motivation such that a warning's effectiveness is degraded once the cost of compliance increases. That is, when there is an amount of effort that must be expended, motivation to comply decreases. Moreover, individual differences such as familiarity and experience, personal relevance, and risk taking have shown to affect one's motivation (Dejoy, 1999).

The last stage is behavior. Compliance behavior is the ultimate desired outcome for a warning. In a 1997 meta-analytic review article, Cox, Wogalter, Stokes, and Murff showed that overall that the presence of a warning increases safe behavior.

(2) Lehto's Conceptual Model

Lehto asserts that there are four fundamental forms of information. These four fundamental forms are known as signals, signs, symbols, and values. The first fundamental form, signals, corresponds to sensory data where signals trigger sensory-motor behavior, which is at the skill-based level. The next fundamental form, signs, indicates perceived or named states. At this rule-based level, signs trigger the conscious application of rules (Lehto, 1992). The third fundamental form is symbols- abstract constructs that can be formally processed in mental models (Rasmussen, 1986). Symbols are at the knowledge-based level, where symbols are manipulated within mental models to identify system states, formulate goals, and plan sequences of task-related activity (Lehto, 1992). The last fundamental form, value, is at the judgment-based level. Here, the priorities of the fundamental form value are developed on the basis of agreement or disagreement with deeply processed concepts associated with opinions, attitudes, or beliefs.

(3) Rogers' Warning Process Model.

In Rogers, Lamson, and Rousseau (2000) framework, the warning process is divided into four broad components or processes. The first process is notice, where attention is drawn to the warning. There are several person variables that affect this stage: age, familiarity, hazard perception, information seeking, and gender. Also, the warning variables that affect this stage are color, emphasis, interactivity, orientation, placement, shape, signal word, size, symbols, and tone.

The second process is encode, where external information is translated into some internal representation. The person variables that affect this stage are familiarity, hazard perception, gender, and vision. The warning variables that affect this stage are color, emphasis, font size, interactivity, layout, length, placement, signal word, size, symbology, text style, and type style.

The third process is comprehend, or how the meaning of the warning is understood. The person variables that affect this stage are age, familiarity, and symbol comprehension. The warning variables are color, explicitness, layout, placement, signal word, symbology, text complexity, type style, and variations.

The last process is comply, when behavior is in accordance with the warning. The person variable's age, control perception, cost of compliance, familiarity, hazard perception, modeling, and risk-taking style affect the comply stage. Color, interactivity, layout, placement, provided response, statement of hazard, and symbology effects are warnings variables of the comply stage.

As indicated, there are many variables that can directly influence each of the four stages described in this warning process. Although the layout of the four stages is in a linear fashion, the authors did not imply that the process of these stages is strictly serial. Instead, the authors mentioned that an overlap of this processing occurs in the various components and that there are interactions among the components (Rogers, Lamson, & Rousseau, 2000; Wogalter & Laughery, 1996).

(4) Health Belief Model (HBM)

This model assumes that individuals base their health behavior on rational thinking, such that individual perceptions and modifying factors determine the likelihood of one's action (Schwarzer, 1992). This model has six components. The first component is the perceived susceptibility to illness and perceived severity of illness. This component influences the second component, perceived threat, where threat is the susceptibility of injury, that is, one being at the risk of being injured. The first component (perceived susceptibility to illness and perceived severity of illness) is influenced by a third component, individual differences, which includes demographic variables, social pressure, and personality. The third component also influences the fourth component, benefits minus barriers, in which individuals compare the perceived benefits of a recommended preventive action with the perceived barriers to this action. The fifth component, cues to action, influences the second component, perceived threat. The last component to the Health Belief Model is the likelihood of health action, which is influenced by both the second component, threat, and fourth component, benefits minus barriers (Schwarzer, 1992).

The desired outcome of modifying the level of threat, factoring the other components, and demonstrating the benefits minus barriers is to change the receiver's behavior. For example, Witte, Stokols, Ituarte, and Schneider (1993) tested this model in a field study to promote bicycle safety helmet use. Manipulation of the susceptibility and severity was addressed by mailing pamphlets that address the severity of head injuries for children not wearing safety helmets. The results showed that the perceived susceptibility and severity had influenced perceived threat. Also, these researchers tested cues to action (warnings through communication media) by forming community events, publishing service announcements, sending direct mailings, making telephone calls, and conducting physician counseling, all of which had a significant influence on the perceptions of threat. The authors reported that cues to action had a significant influence on the likelihood of health action where participants were more likely to comply with wearing a safety helmet.

Summary

Many of the theoretical models mentioned earlier have close ties to basic human information processing. In the four models presented, there were several overlapping components among each model. For instance, the Communication-Human Information

Processing model's second stage, "channel," was closely related to Lehto's first component, "signals," Rogers' "notice," and the Health Belief Model's "cues to action" component.

The next common stage is C-HIP's "noticeability/attention," which was closely related to Lethto's "signals," Rogers' "notice," and HBM's "cues to action." Among the latter three models, the C-HIP model had a clearer discrimination between the stages "channel" and "noticeability/attention."

In the C-HIP model, the stage "comprehension/memory" was related to Lethto's "signs," and Rogers' "encode" and "comprehend" but not any one of HBM's components. This stage covered the cognitive components in processing information, but the HBM did not account for this aspect.

The next common stages were between C-HIP's "attitude/beliefs," Lethto's "values," and HBM's "perceived susceptibility and severity," "perceived threat," and "individual difference," but not any of Rogers' components. Rogers' model relied more on a perceptual/behavior framework and not so much on individual attitudes.

The C-HIP's "motivation" stage was closely related to Lehto's "symbols" and HBM's "benefit minus barriers" components; no components in Roger's model were related to any of these aspects as Roger's model does not account for a human's attitude.

The last stage in the C-HIP's model is "behavior," which is closely related to Roger's "comply" and HBM's "likelihood" components. However, neither of these stages was related to any component in Lethto's model.

Although the C-HIP component "source" had no relationship with any other components in these models, it may only mean that the other models did not account for warnings to begin at such an early stage. In several cases of having stages overlapping, it was very likely that each stage encompasses more than one job. Also, some of these models lacked the finite resolution demonstrated by the C-HIP model, as the other model's method conveyed their steps of warning an individual in a much broader scope.

Although each theory proposes many suggestions about how a warning should be modeled or designed, the major theme at the early stages of each model is that "the receiver must *notice* the information and understand it" (Wogalter et. al., 1999). One overall theme of the present research is to investigate and design better bilingual labels for consumer products, in particular pesticides.

There is very little reported research on the design of pesticide warnings, let alone warnings using both the English and Spanish languages. Moreover, the main goal of this research is to measure perceptions (attitudes and beliefs) and performance on dual-language warnings.

There have been several studies investigating factors that influence the effectiveness of on-product warnings. For example, Laughery, Rowe-Hallbert, Young, Vaubel, and Laux (1991) investigated the effects of explicitness in conveying severity information in product warnings. Their research indicated that when the hazard in the warning is explicitly conveyed, the consumer is more likely to deem the product hazardous. As a result the consumer will have a heightened inclination to act cautiously in using the product.

Warning messages with greater described injury severity also appear to influence warning effectiveness. In one experiment, Wogalter and Barlow (1990) found that by varying the wording of a warning from "*mild* skin irritation" to "*intense* skin irritation," participants were more likely to comply with the warning. Also, likelihood of injury had a smaller effect on compliance compared to injury severity.

In another study related to pesticide warnings, Adams and Edworthy (1995) investigated the effects of basic text display variables on perceived urgency of warning labels. Their results indicated that text size, when increased by four points, increased the perceived urgency. Also, urgency was increased when the border width was increased by 2-3 points. Color was also noted to increase urgency of the warning. When the warning was printed in black, it did not have the same level of perceived urgency as a warning printed in red. That is, warning in black print had to be twice in size to be equal in the level of perceived urgency when the warning was in red.

Silver and Kline (1994) reported that particular fonts on warning labels, in particular pesticides, varied in size and type. Their results showed that Century Schoolbook font was rated more readable than Bookman and Helvetica. Also, by increasing the font size from 12-point font to 14-point font, researchers noticed that participants reported an increase in perceived readability and perceived hazard.

Wogalter and Young (1994) tested several alternative product label designs. Their research indicated that individuals were more likely to comply with a warning using a tag (warning attached to the mouth of the product) over conventional warnings such as those labeled on the container or another alternative form like “wings” that surrounded the bottle. Their results indicated that through larger surface area provided by the alternative designs, the warnings were more likely to capture the user’s attention and thus the user would heed the warning.

Purpose of the Present Research

In 1989, Leonard, Ponsi, Silver and Wogalter reported that a good warning design was a means of motivating people to seek out hazard information through use of a pesticide product. They indicated that perceived hazard is an important determinant of willingness for individuals to read warnings. Thus, increasing the perceptions of hazardousness, warning understandability, and warning attractiveness appears to increase the likelihood that warnings will be read.

Although the majority of research in the area of warnings has revolved around font types, font size, font color, border size, warning location, icons, and choice of words (explicitness), investigations encompassing several of these features in addition to including a second language will be the main focus of this research.

Current Label Design in Consumer Products

In 2001, the National Electronic Injury Surveillance System estimated that 118,570 people had suffered from some poison-related injury, and of that total, about half (51,051) were under the age of 18 years. Only two died from poison-related injury. Whether these injuries were from inhaling noxious fumes from paint, ingesting large quantities of aspirin, or exposing oneself to pesticides, proper precautionary measures could have possibly prevented these injuries. Precautionary include the processes of noticing, reading, and then complying with the visual/print warning.

In the majority of consumer products, visual/print warnings consist of precautions or directions a user must heed in order to have safe operation. However in the U.S., such visual/print warnings currently are only in English. These visual/print warnings do not account for users who lack knowledge of the English language. Understanding the message is necessary for a warning to be complied with.

According to the C-HIP model, there are three precursor stages prior to understanding/comprehension. These will be described in the next section with particular reference to bilingual labels.

Source

The first factor, "source," is the initial transmitter of the risk information. That is, source may be a person(s) or an organization that decides to warn users of hazards when they believe it is necessary. Source has to believe that warnings, in any form or deviation, are necessary in order to improve the safety of the individuals. When deciding to warn users, source bases their judgments upon the safety hierarchy (design, guard, and warn) when factors such as designing the hazard out and guarding against the hazard have been exhausted. However, source also has to maintain some credibility in order to have effective warnings because a less-than-credible source will affect the user's beliefs and attitude toward the warning (Wogalter & Laughery, 2004).

Channel

Within the channel stage of the Communication-Human Information Processing Model there are two main dimensions. The first dimension is concerned with what media are used to inform the user of the warning. The media consist of warnings presented as product labels, posters, brochures, audio-video presentations, oral presentations, etc. The second dimension is concerned with which modality is used to inform the user. The modality consists of a warning presented though either the visual or auditory dimension. Sometimes, olfactory and tactile may be other channels through which warnings may be disseminated.

The media that will be used in the present study will be in the form of a product label. This medium is consistent with the current medium found on most pesticide products. As for the modality, printed text (visual channel) depicting an actual warning will be used because, as with most consumer products, the visual modality has been used frequently by most manufacturers. Moreover, previous research indicated that consumers expect warning information on the product label (Mazis & Morris, 1999).

Attention and Noticeability

In the warning literature, attention plays an important role in all modalities (visual/print, auditory, tactile, olfactory, etc.). Print/visual warning labels must be adequately conspicuous relative to the particular background context for a warning to capture a user's attention (Young & Wogalter, 1990). However, capturing one's attention is only half of the objective in this stage; the ability to hold the user's attention fulfills the other half.

Within the attention and noticeability stage, there are two stages that are critical to capturing and then maintaining the user's attention. The first stage of attention and noticeability in the C-HIP model is attention switch. Attention switch is the process of transferring attention from one visual aspect to another. This process is facilitated by making an object more conspicuous over another (e.g., color, font size, etc.). The second stage of attention and noticeability in the C-HIP model is attention maintenance or the process of holding the attention to the object in this case a warning so that information in it is encoded. Some issues that affect a warning's attention maintenance are characteristics of the warning (legibility, formatting, etc.). For example, if a warning was written for an English-language user, but the user can only read Spanish, the Spanish-language user's attention will not be held because of the failure for the user to comprehend the different language on the label (Wogalter & Laughery, 2004).

Comprehension/Memory

One critical state related to warnings is comprehension and memory. Warnings should be written explicitly so that users at risk are informed about the hazards and consequences if they do not comply. This critical state is the main point to the current study. With the design of bilingual labels, this would enable Spanish-language users to receive the necessary information regarding the hazards associated with the product. This is, even with the forementioned stages (source, channel, and attention) aiding in the improvements of a design, without a language that the intended targeted population could comprehend; the stages leading to this would be a moot point.

Environmental Conditions

Other aspects that affect the processing of warnings in the visual/print modality are environmental conditions that can adversely affect a warning's detection and maintenance. For example, having low illumination or insufficient lighting can affect the visibility and legibility of the warning. Also, having too much lighting can adversely affect a warning in that glare may result in an overpowering light source that veils or obscures the surface of the warning (Dahlstedt & Sverson, 1977).

Brightness contrast also can affect the ability of a user to see a warning. For example, if the print were too light on a light background, legibility of the text would be reduced (Sanders & McCormick, 1993).

Print Size

Print size can affect attention switch and maintenance of warnings. Wogalter and Vigilante (2003) examined labels with manipulated print sizes on medication bottles. Their results indicated that older adults had a more difficult time acquiring information in the 'fine' print frequently found in various kinds of product literatures compared to younger adults. Text that is larger will capture and maintain attention better than smaller text. Of course, text size is proportional to the surface area, and such constraints need to be considered.

Color

Color contrast plays a role in which text and background should be near opposite of each other on the color spectrum. If the color of the text is dark and the background is also dark, then identification of the letters is made more difficult (Sumner, 1932). Highlighting has been one process to increase attention capture. Having words that are highlighted by color will help make the text stand out. As Strawbridge (1986) and Young and Wogalter (1990) indicated, participants were more likely to notice a warning that is highlighted.

Borders

Borders surrounding warnings can make the warning more distinctive and thus will capture the user's attention. Rashid and Wogalter (1997) indicated that border characteristics, such as thickness and diagonal stripes, were more attention capturing than other plain border characteristics.

Signal Words and Icons

The signal word panels (e.g., words with color and alert symbols) are believed to capture a user's attention. Such signal word panels are used on signs and label warnings. The American National Safety Institute (ANSI Z535, 2001) deemed the use of signal word panels to be a standard on signs and label warnings. Signal icons have been shown to increase the noticeability of a warning. For example, Laughery, Young, Vaubel, and Brelsford (1993) demonstrated that noticeability of a warning was increased when signal icons were used on alcoholic beverage containers.

Pictorial Symbols

The addition of pictorial symbols can enhance a warning's noticeability. Research has indicated that by adding a pictorial symbol, participants rated a warning as being more noticeable than without the pictorial symbol (Sojourner & Wogalter, 1998). In addition, Wogalter, Sojourner, and Brelsford (1997) indicated that comprehension of pictorial symbols could be enhanced with brief training. As such in order to have the pictorial symbols easily comprehended by the target audience, Laughery and Brelsford (1991) indicated that knowledge of the user is critical prior to constructing a pictorial symbol.

Location

The location of the warning may affect its effectiveness. That is, by having a warning located at the beginning of the set of instructions, it was more effective than at the end of the set of instructions (Wogalter, Godfrey, Fontenelle, Desaulniers, Rothstein, & Laughery, 1987). Also, in increasing the noticeability of a visual/print warning, warnings need to go through a task analyses in order to determine the best location (Frantz & Rhodes, 1993). Several researchers (e.g., Wogalter, Barlow, & Murphy, 1995) recommended that placement of warnings should be near the hazard versus elsewhere (e.g., owner's manual).

Practical Implications.

As indicted earlier, with the growing population of Hispanics in the U.S., there is a need to create warnings that will accommodate these users. Currently, most hazardous products are without an adequate warning for users whose primary language is Spanish.

With the rise of Hispanics living in the U.S., it is expected that their susceptibility to injury or illness will climb. Through bilingual labels, users of both English and Spanish are able to make informed decisions when using hazardous products. Although including a translated version of text placed aside the English text may be applied, observation of current bilingual labels designs have been deemed poor.

Therefore, the current research evaluated issues regarding bilingual labels and investigated alternative factors that may be implemented in bilingual labels. The first study and second study addresses the attitudes and beliefs of both Spanish-language users and English-language users. The first study examined agreement to various statements concerning bilingual labels in the U.S. The second study examined the perception of both users' attitudes toward several systematically manipulated bilingual label designs. The results of such label designs may indicate whether comprehension will effectively prompt the user to comply with the warning (Silver, Leonard, Ponsi, & Wogalter, 1991).

Also, the current research investigated limitations that may be encountered when implementing two languages on a limited surface area. For example, having two languages will decrease the size of the font on a label. Moreover, will specific placement (top vs. bottom, left vs. right) of the two languages affect the ability for a user to attend, notice, and comprehend the label? Size of the font may be another factor in whether users of the minority group would accept having their font smaller than the majority group's font.

The third study examined several visual enhancements to enable the user, both English-language and Spanish-language, to effectively locate the portion of the label for their native language. Having two languages on a label may deter the user from reading the text because both the English and Spanish text appears the same because both are in alphanumeric. Through implementing various visual enhancements in Study 3, investigation of three different visual enhancements (e.g., a national flag, format, color font) was examined to aid users to locate their native language on bilingual labels.

Study 1

Study 1 assessed English-language users' perception regarding implementating bilingual labels for the mainstream. This study established whether there was a practical need to implement bilingual labels in the U.S. by assessing the beliefs and attitude of only English-language users. The vignette in this study addressed safety reasons why bilingual labels are necessary for non-English speakers especially when products are of hazardous in nature. Study 1 measured the ratings of English-language users regarding products displaying bilingual labels (English and Spanish-text).

Hypothesis. It is hypothesized that, given the nature of the vignette, participants believed bilingual labels are necessary because many people in the U.S. do not read English. Also, it is hypothesized that English-language users believed that bilingual label products will be helpful, especially those whose language is Spanish. Lastly, it is hypothesized that most English-language users believes that people who intend to stay in the U.S. should learn English because English is widely spoken in the U.S.

Method

Participants. A questionnaire was distributed to a total of 342 (158 males and 184 females) individuals at various locales in the Raleigh-Durham area of North Carolina (279 individuals) and in the Los Angeles area of California (63 individuals). The sample was collected as part of class projects at two universities. Ages of the participants ranged from 17 to 84 years (M= 26.53, SD = 11.32). Fulltime students made up 73% of the sample and their average age was 21.7 (SD = 3.8). Non-students made up 27% of the sample and their average age was 39.4 (SD = 14.2). All participants reported having completed at least the 9th grade with the average education level attained being 2.7 years of college. All participants reported being fluent in English, but for 16%, English was not the first language they learned.

Racial/ethnic group composition was 73% Caucasians, 10% Hispanic or Latinos, 4.5% African-Americans, 3.5% Asians, 2% Middle Easterners, and 7% Other.

Materials and Procedure. A multipage questionnaire was distributed containing items asking participants for their opinions about current technology. One section requested demographic information such as age, gender, etc. Another section contained 14 statements concerning beliefs and attitudes about bilingual labels. These statements are shown in Table 1. There were two versions of the questionnaire, each with a different random order of statements. Each version was given to approximately half of the participants. A short vignette preceded the statements:

> There will be an increase of Spanish speakers in the United States. Manufacturers may begin to use bilingual labels to communicate directions for use, and any warnings of potential hazards. Use the 0 to 8 point scale to rate the statements as to how much you disagree or agree with them. Assume that bilingual labels have both English and Spanish text.

Participants were then asked to rate the level of agreement and disagreement of statements on a 9-point rating scale ranging from 0 to 8 with the even-numbered points having the following word anchors: 0 (Very strongly disagree), 1 (Strongly disagree), 2 (Disagree), 3 (Slightly disagree), 4 (No opinion- neither agree or disagree), 5 (Slightly agree), 6 (Agree), 7 (Strongly agree), and 8 (Very strongly agree).

Results

The mean agreement ratings (and standard deviations) for each of the 14 statements are shown in order from highest to lowest in Table 1. Initially, a repeated-measures analysis of variance (ANOVA) was conducted on the statement ratings. Comparisons among the means using Tukey's Honestly Significant Difference (HSD) of .497 at p =.05 indicates that many of the statement means were significantly different from one another, particularly at the high and low ends of the scale.

As can be seen in the table, the three highest statements in rated agreement were: (1) Bilingual products are useful for Spanish speakers; (2) People who intend to live in the U.S. should learn English; and (3) Bilingual labels are important, because many people in the U.S. do not read English. At the other end the three statements with the lowest agreement ratings (i.e., most disagreement with) were: (12) I would expect to pay less for a product with bilingual labels; (13) Bilingual products should not be sold in the United States; and (14) Bilingual products are lower quality than English labeled products.

Demographic Differences. Additional analyses examined the relationship of demographic category of participants and beliefs and attitudes about bilingual labels to determine if there were differences. These analyses used a mixed-model design using single demographic category as the between-subjects factor and statement as the within-subjects (repeated-measures) factor. The categories examined were: age, gender, student status (student vs. non-student), users of Los Angeles vs. North Carolina, ethnicity (Hispanic vs. non-Hispanic) and English as a first language vs. English as a second language. As described in the next two respective paragraphs, only the latter two demographic categories showed a significant interaction.

A 2 (Hispanic vs. Non-Hispanic) X 14 (statement) mixed-model ANOVA showed a significant interaction, $F(13, 4420) = 4.72$, $p < .0001$. The means are shown in Table 2. Simple effects analysis indicated that several of the statements significantly differed as a function of demographic category. Hispanics gave significantly higher ratings than non-Hispanics to the statements: (5) Bilingual labels are worth the extra cost; and (3) I believe that bilingual labels are important because many people in the U.S. do not read English. Also, Hispanics gave significantly lower agreement ratings (i.e., great disagreement with) than non-Hispanics to the statements: (13) I believe that products with bilingual labels are of lower quality than products with only English labels; (2) I believe that people who intend to live in the U.S. should learn English;

Table 1.
Mean agreement ratings and standard deviations for the 14 statements.

Statements	Mean	(SD)
1. Products with bilingual labels are useful for users who speak Spanish.	6.58	1.5
2. I believe that people who intend to live in the U.S. should learn English.	6.01	1.9
3. I think bilingual labels are important because many people in the U.S. do not read English.	5.11	2.0
4. Rather than make the labels bilingual, manufacturers should try to use pictorials, symbols, or icons to convey meaning to users of all languages and for people who cannot read.	4.46	2.0
5. Bilingual labels are worth the extra cost.	3.96	2.1
6. Products with bilingual labels will have too much text; many people will not read the label because it takes too much effort to read.	3.52	2.0
7. Bilingual labels should only be used for those products that are potentially hazardous to users and others (for example, pesticides and chemicals).	3.50	2.2
8. Products with bilingual labels make the product cost more because extra material must be printed on the labels.	3.44	1.7
9. Products with bilingual labels are useful for users who speak English	3.26	2.4
10. I would not read the warning on bilingual labels.	3.05	1.9
11. I prefer products that have bilingual labels more than English-only labels.	2.95	1.8
12. I would expect to pay less for a product with bilingual labels.	2.57	1.6
13. I believe that products with bilingual labels should not be sold in the United States.	1.99	1.9
14. I believe that products with bilingual labels are of lower quality than products with only English labels.	1.96	1.7

Shown in the order of highest overall agreement to disagreement.

and (6) Products with bilingual labels will have too much text; many people will not read the label because it takes too much effort to read.

A 2 (English as a first language vs. English as a second language) X 14 (statement) mixed-model ANOVA showed a significant interaction, $F(13, 4420) = 1.79$, $p < .05$. The means are shown in Table 2. A similar, although somewhat weaker, pattern of mean differences as the above-mentioned Hispanic vs. non-Hispanic by statement interaction can be seen in the table.

Table 2.
Mean agreement ratings for two-way interactions between Hispanics vs. non-Hispanics and English-as-first language for the 14 statements.

Statements	Non-Hispanics	Hispanics	English 1st	English 2nd
1. Products with bilingual labels are useful for users who speak Spanish.	6.53	7.05	6.57	6.64
2. I believe that people who intend to live in the U.S. should learn English.	6.10*	5.17	6.12*	5.39
3. I think bilingual labels are important because many people in the U.S. do not read English.	5.01	6.00*	5.07	5.34
4. Rather than make the labels bilingual, manufacturers should try to use pictorials, symbols, or icons to convey meaning to users of all languages and for people who cannot read.	4.50	4.08	4.50	4.22
5. Bilingual labels are worth the extra cost.	3.88	4.70*	3.92	4.18
6. Products with bilingual labels will have too much text; many people will not read the label because it takes too much effort to read.	3.64*	2.35	3.59	3.13
7. Products with bilingual labels make the product cost more because extra material must be printed on the labels.	3.50	2.44	3.48	3.22
8. Bilingual labels should only be used for those products that are potentially hazardous to users and others (for example, pesticides and chemicals).	3.53	3.29	3.48	3.66
9. Products with bilingual labels are useful for users who speak English	3.26	3.29	3.31	2.98
10. I would not read the warning on bilingual labels.	3.04	3.14	3.02	3.22
11. I prefer products that have bilingual labels more than English-only labels.	2.88	3.58*	2.90	3.18
12. I would expect to pay less for a product with bilingual labels.	2.58	2.47	2.56	2.62
13. I believe that products with bilingual labels are of lower quality than products with only English labels.	2.10*	0.70	2.10*	1.22
14. I believe that products with bilingual labels should not be sold in the United States.	2.05	1.44	2.06	1.62

* Indicates significant difference (p <. 05).

Attitude Difference. To determine whether persons who are strongly in favor of English-only labels differed in other respects, the relationship of this item to the other items was examined. A median split at the rating of 6 (agree) was performed on statement: “I believe that people who intend to live in the U.S. should learn English. Those that rated the “learn English” statement with a 7 or above were grouped as having strong indication that English is necessary for those who intend to live in the U.S., whereas those that rated the “learn English” statement with a 5 or below were grouped as having a strong indication that English was not necessary for those who intend to live in the U.S. Those that rated the “learn English” statements with a 6 were randomly placed either in the first or second group, to distribute participants in equal numbers in the 2 groups. A mixed model design similar to that described for the demographic analyses showed a significant interaction in a 2 (lower vs. higher on the statement “I believe that people who intend to live in the U.S. should learn English”) X 13 (statements) ANOVA, $F(12, 4080) = 12.82$, $p < .0001$. Simple effects analyses showed several statements to differ significantly ($p <.05$). Participants who more strongly agreed to the “intend to live in the U.S., should learn English” (compared to those who more strongly disagreed) also gave significantly higher agreement ratings to the statements: “I believe that products with bilingual labels should not be sold in the United States” (M= 2.39 vs.1.40), and “Products with bilingual labels will have too much text; many people will not read the label because it takes too much effort to read” (M= 3.88 vs. 3.03). Those who more strongly disagreed with the “learn English” statement (compared to those who more strongly agreed) also tended to agree with the statement “I prefer products that have bilingual labels more than English-only labels” (M= 3.49 vs. 2.53), and “I think bilingual labels are important because many people in the U.S. do not read English” (M= 5.81 vs. 4.58).

Discussion

This research examined the level of agreement to 14 statements regarding bilingual label issues in the U.S. Generally, there were high levels of agreement among participants that bilingual labels are important to non-English users and that such labels are acceptable to U.S. English users. The statement "Products with bilingual labels are useful for users who speak Spanish" was the top-most rated statement in the list. Another highly rated statement was "I think bilingual labels are important because many people in the U.S. do not read English." Moreover, the statement "I believe that products with bilingual labels should not be sold in the U.S." received very high disagreement ratings (i.e., very low agreement). Together the data suggest that most participants were favorable toward bilingual labels, probably as a reflection of being concerned for people whose language is not English. Also, some participants may be aware that there may be societal costs associated with personal injury and property damage. These potential explanations and others could be a basis for future research.

It is interesting that people who would not benefit (or only indirectly) from bilingual labels nevertheless believe them to be important to non-English users. However, perhaps more interesting is that another of the highest rated statements was "I believe that people who live in the U.S. should learn English." Thus while participants felt that bilingual labeling is important, they also held the belief that people living in the U.S. ought to learn English. This would suggest that participants were considering that, inevitably, not everyone in the U.S. would have adequate English reading skill. In other words, bilingual labels are important for preventing injury to foreign visitors and persons who do not yet know English.

Some demographic differences were shown for the categories: English as the first or second language, and Hispanic vs. non-Hispanic category. The differences were not unexpected since persons in two of the categories (English as second language and Hispanics) tended to overlap in membership and would likely be more sympathetic toward the use of bilingual labels. Moreover, significant difference was not apparent between English-language users of North Carolina and English-language users of Los Angeles, CA. Perhaps the make-up of users in Los Angeles, being that they are current university students, have the same believes and attitudes as residents of North Carolina towards the statements in this study. Interestingly for most statements, however, demographic category (including age and sex) made no difference in the ratings.

Study 2

A potential problem with including two or more languages on labels is the limits on space. The addition of a second language on a product label may compromise legibility of one or both languages. That is, by adding text of a second language the size of the primary language text will likely need to be reduced.

However, some potential solutions to this communicative problem can be derived from the last two decades of research in the Human Factors/Ergonomics literature on warnings. For example, the use of pictorial symbols (Caird, Wheat, McIntosh & Dewar, 1997; Smith-Jackson & Wogalter, 2000), and label designs that expand the surface area could be used (Wogalter, Forbes & Barlow, 1993). Also, an alternative design that does not interfere with the English text such as placing the Spanish translation on the underside of a multi-sided label (pullout label) might also be applied. Other possible designs could be implemented where the text of a particular language could be located at the top-half portion or left-half portion of a label thus the reader may look directly at that area of the label for their language.

Another consideration in designing labels with two languages is to have the font size larger for users of the main language (English-language users) and a smaller size for the minority of users (Spanish-language users). Even though the print is smaller for the minority of users (Spanish-language users), it may still be beneficial to Spanish-language users and may not raise any potential ire of English users in the U.S. Another consideration in the form of an enhancement to text in labels is color. Color might be used to enhance the salience for a particular language whereby the reader can discriminate and ultimately find their particular language (Smith-Jackson & Wogalter, 2000). That way, both the majority of users (English-language users) and the minority of users (Spanish-language users) are able to attend to a particular portion of the label for their language.

Another factor to consider is having the language displayed in columns because a particular population of users may have a preference for their language to be on a particular side of a label. For this arrangement, since the English and Spanish language is read from left to right and top to bottom (e.g., Bzostek and Wogalter, 1999), having one's native language on the left column may be appealing. That is, the majority group of English-language users in the U.S. may see this design as a possibility for bilingual label designs. While Spanish users may prefer Spanish on the left column, they may be highly accepting to having their language in the lesser preferred location in the left column.

Moreover, very little research has manipulated container configuration in risk communication research. In one exception, Wogalter, Laughery and Barfield (1997) compared with differing shapes of containers and found that user-perceived hazard varied among different designs of container. That is, by having differing formats on labels, users may also perceive varying levels of hazards. Thus, Study 2 investigated effects of different formats of bilingual labels and their shape of the containers. Primarily, the text of a language was placed at varying locations in several label designs. For example, the text size of a language (English or Spanish) may be larger or smaller depending upon the limited area on the label or the text of the language and may be placed either on the top-half, bottom-half, or left half of the label. These variables included the language proportions (50:50 or 60:40) for position (top vs. bottom), column (left vs. right) and container shapes (box vs. cylinder).

With the proportion of the label for each language varying, the maximum allowable font size was used to fit within the limited space on the label. The language proportion in terms of percentage of space allocated per language in the present research was a simple ratio (60:40 and 50:50). Having the proportion of the primary language larger may increase the perception that the product is mainly designed for the larger language population, but that it might not bother the smaller group of language users if their font size was somewhat smaller.

User preferences are important because the consumer perception of a product may influence whether they would read the label and their purchasing decisions. Therefore, an examination of the acceptability by both English- and Spanish-language users through evaluating several format designs that includes both the English and Spanish language on a label is investigated.

Hypothesis. Having various bilingual label formats to examine allowed the users to indicate their preference for particular designs. In this study, it was hypothesized that both English and Spanish–language users will prefer label designs where each text is equally presented. Having text equally presented may aid both English and Spanish–language users to become aware of the hazards associated with the product. Some label designs have the users' native language text presented either on the left or right column of the label which may show differences in preferences. Also, the shape (box and cylinder) of the container may yield differences such that users' may prefer the box container over the cylinder container because a greater viewable surface area is exposed. That is, both the English-language and Spanish-language–users are able to view the entire label on a box container versus needing to twist the cylinder container to read the text. An interaction may exist between English-language and Spanish-language users where English-language users prefer their native language in the primary position (left or on top) more than the Spanish-language users because English-language users may be more critical when their native language is in the secondary portion of bilingual labels compared to Spanish-language users. Lastly, because the product in the study is hazardous, neither group of users (English or Spanish) will prefer a single language compared to bilingual designs. In other words, both groups of users would prefer label designs that warn users of both languages of the hazards associated with the product.

Method

Participants. A total of 64 participants (32 males and 32 females) from Raleigh-Durham area of North Carolina were asked to rate several label designs. Ages of the participants ranged from 17 to 69 years (M=36.09, SD=12.43). All participants reported to have completed at least the 6^{th} grade with the average educational level attained being the 12^{th} grade of high school. Half of the participants reported being fluent in English and the other half of the participants reported being fluent in Spanish. Non-students made up 93% of the sample. As remuneration for participating, each participant received five dollars.

One half of the participants were recruited in front of a Spanish-theme grocery store. Each individual's primary language had to be Spanish. To assess their comprehension skills in Spanish, two Spanish-language research assistants were hired to conduct the study. Their duties were to aid in translating the bilingual labels, reverse translate the labels, and collect data from the Spanish-language participants. These Spanish-language research assistants were international students from Venezuela and Argentina. The Spanish-language research assistants asked each participant to read the informed consent form in Spanish. This procedure was to assess in a general manner the participant's ability to read Spanish. Also, an open-ended question regarding a self-assessment of language level was asked.

The other half of the participants, English-language users, was recruited at a flea market. The requirement prior to participating was that the participant's primary language is English. These participants were asked whether they had knowledge of any other language besides English.

Materials. Sixteen different label designs on semi-glossy, photo-quality paper were adhered on two different container shapes (see Appendix E, Study 2). The Spanish label was translated and crosschecked (contents of label were translated from English to Spanish and reverse translated from Spanish to English by another party to ensure the contents of the label were correct) against the English label by paid Spanish-language research assistants. The label information of each stimulus was modeled after a pesticide product currently in use, a dry-powdered form that is marketed to home gardeners. All of the stimuli consisted of the directions for use, special precautions to reduce risk to birds, storage and disposal, precautionary statements such as the hazards to humans and domestic animals, first aid, and environmental hazard statements. Only the part of the label concerning precautionary statements, first aid, and environmental hazards were manipulated in this study. Depending upon the condition, all the stimuli consisted of both English and Spanish or Spanish-only or English-only text with font sizes ranging from 6.5 to 11. For example, in the English-only label, the largest possible font size (11 pts) that could fit in the limited area was used and in the English-top-two-thirds and Spanish-bottom-one-third, the Spanish text was a smaller font size (6.5) because it would need to fit in the limited area below the English text. The choice of a font size greater than 6 was based on the minimum recommended size for over-the-counter drugs (Center for Drug Evaluation Research, 2000). Further information about type sizes are presented later.

Consumer pesticide products come in either a box (square) or cylindrical (round) container. To have the label stimuli appear in a realistic context, actual box and cylinder containers were used.

The 16 stimuli consisted of eight different formats on two different container shapes (Appendix E, Study 2). The cylindrical-shaped container had the label wrapped around a 9 inch (22.86 cm) high by 3 inch (7.62 cm) diameter container. The box measured 9 inches (22.86 cm) high by 5 inches (12.7 cm) wide. The maximum allowable font size in each condition was maximized per area. That is, the maximum font size was used to fill all the allocated area of space per portion of the label to ensure legibility and least amount of white space. All labels, identical in height and width were placed on the box and cylinder. Therefore, in practical application, this variation was deemed to suit the needs for this project.

Demographic questionnaire. A questionnaire requesting demographic information was completed by each participant prior to testing. The questionnaire requested the participant's age, gender, ethnicity, educational level, and whether English was their first language. A copy is shown in Appendix D, Study 2.

Formats. There were eight different formats used. Please see Appendix E, Study 2 for representations of the formats. All fonts were in the Helvetica-Narrow font type with minimal line spacing. The minimal space was adjusted for each font size to reduce the white space between each line.

The English-only text format, with a font size of 11, was used because it was the maximum font size allowable to fit within the label. Also, because this format (English-only) is found on most consumer products it was the control condition.

Another format is the Spanish-only text with a font size of 11. Here, only the Spanish text was displayed as the stimulus and it was the maximum font size allowable to fit within the label.

The next format is the English-top-half conditions. In one case, the English text was on the top ½ portion of the label and the Spanish text was on the bottom ½ portion of the label. For this label design, both languages were equally represented, the font size of 7.5 was used because this was largest size that could fit in the allowable areas of the label.

In one of the Spanish-top-half conditions, the Spanish text was on the top ½ portion of the label and the English text was on the bottom ½ portion of the label. Both languages had a font size of 7.5.

For the English-top-two-thirds condition, the English text was on the top two-thirds of the label with a font size of 9, with the Spanish text on the bottom third with the font size of 6.5 to fit within the limited space.

In the Spanish-top-two-thirds condition, Spanish text is on the top two-thirds of the label with a font size of 9 and the English text is on the bottom third of the label with the font size of 6.5 to fit within the limited space.

In the English-left-half condition, the English text was on the left half of the label with a font size of 8, and the Spanish text was on the right half of the label with a font size of 8.

Table 3. The 8 stimuli used for both the box and cylinder conditions.

Formats:	English text	Spanish text
English-only	ALL	NONE
Spanish-only	NONE	ALL
English-on-top-half	Top ½ portion	Bottom ½ portion
Spanish-on-top-half	Bottom ½ portion	Top ½ portion
English-on-top-two-thirds	Top 2/3 portion	Bottom 2/3 portion
Spanish-on-top-two-thirds	Bottom 2/3 portion	Top 2/3 portion
English-left-half	Left ½ portion	Right ½ portion
Spanish-left-half	Right ½ portion	Left ½ portion

The last format was the Spanish-left-half condition. The Spanish text was on the left half of the label with a font size of 8, and the English text was on the right half of the label with a font size of 8.

All font sizes were generated through Microsoft Word which includes whole and fractional point sizes. Each of these label formats was adhered on the two different container shapes. For a graphical representation, please see Appendix E, Study 2.

For each condition, the stimuli were printed on one side of 8.5 inch (21.6 cm) x 11.0 inch (27.9 cm) white bond semi-gloss paper and were cut to fit onto the container. All formats were limited within the 2.75 inch (6.99 cm) X 8.5 inch (21.6 cm) surface area for the round container and 3 inch (7.62 cm) X 8.5 inch (21.6 cm) surface area for the square container.

Vignette. Prior to the participants examining the stimulus, they were read the following short vignette.

> There will be an increase of Spanish speakers in the United States. Manufacturers may begin to use bilingual labels to communicate directions for use and any warnings of potential hazards. You were asked to help choose specific label designs to be used on consumer products. Use the 0 to 8 point scale for your opinion of the (16) different label designs to which they are *(1)* ***acceptable*** *to you as a person in the United States, (2) the likelihood you would* ***read*** *the product label and (3) the likelihood you would* ***purchase*** *the product with this label.* Assume that bilingual labels have both English and Spanish text.

Ratings. In the interview, participants were asked to rate the level of acceptability of the label, likelihood to read, and likelihood to purchase the products for each of the 16 bilingual label formats. Please see Appendix E, Study 2 for rating scale.

For the acceptability ratings, a 9-point rating scale was used ranging from 0 to 8 for each label with the even-numbered points having the following word anchors: 0 (Not Acceptable), 2 (Somewhat not acceptable), 6 (Somewhat acceptable), and 8 (Very acceptable). For the likelihood of reading labels and purchase products a 9-point rating scale ranging from 0 to 8 with the even numbered points having the following word anchors was used: 0 (Not Likely), 2 (Somewhat not likely), 6 (Somewhat likely), and 8 (Very likely).

Procedure. Prior to the beginning of the study, five non-paid volunteers from each language group (English-language users and Spanish-language users) participated in a pilot study. In the pilot study, preparation and training of the research assistants were done and participants were asked for comments regarding improvements or clarity needed for the study. None of the pilot participants had comments concerning the duration and subject matter of the study nor the materials and procedure.

The set up included tables and chairs available for the research assistants and participants to use when conducting the interviews. Signs were displayed indicating 5 dollars as remuneration for participating. When participants approached the area, the research assistants told them that the study was a school project that involved label designs. Once the participant indicated they were interested, the research assistant instructed the participant to complete the informed consent form.

The informed consent form was required to be signed before proceeding further with the study. All research assistants and experimenter (two paid Spanish-speaking, two paid English-speaking students, and the author) recruited and interviewed all participants. All participants were advised that they could withdraw from the study at any time and that all information about the participant would remain confidential. The interview began soon after the participants signed the informed consent form.

The experimenters would refer to a sheet where the order of the labels was randomized. This order was determined through a random permutation program. A participant was asked to read the vignette and use the rating scale of their response. Participants rated each of the 16 stimuli presented. Each participant was asked to rate the level of acceptability, the likelihood to read and the likelihood to purchase product given the label design before moving on to the next label. After the participant completed all ratings, the experimenter debriefed the participant and paid them for their time.

Design. The experiment involved a 2 (Language users: English vs. Spanish) X 2 (Container: Box vs. Cylinder) X 8 (Labels: English Only, Spanish Only, English 1^{st} top-half, Spanish 1^{st} top-half, English 1^{st} top-two-third, Spanish 1^{st} top-two-third, English-left-half, and Spanish-left-half) X 3 (Ratings: Acceptability, Read, and Purchase) mixed model design with the first factor a between subjects factor and the remaining repeated measures factors.

Two complete factorial analyses were conducted on the manipulated labels. Each comprised a partial set of conditions. One was a 2 (Language Users: English vs. Spanish) X 2 (Language placement: secondary vs. primary) X 2 (left/right vs. top/bottom) X 2 (Container: Box vs. Cylinder). The language placement category (secondary vs. primary) was derived from combination of placing one's native language visually in the secondary (e.g., bottom and right) or primary (e.g., top and left) areas of the label, respectively.

The other factorial analysis was a 2 (Language User: English vs. Spanish) X 2 (Language placement: secondary vs. primary) X 2 (Container: Box vs. Cylinder) X 3 language allocation (1/2, 2/3, all) design. This ANOVA did not include the left/right conditions. For language placement, the primary locations was derived where the user's native language was at top ½, top 2/3, or the entire language (all) on the label was shown, whereas the secondary locations was derived where the user's native language was on the bottom ½, bottom 2/3, or their native language was not shown.

Results

Ratings (Acceptability, Likelihood to Read and Purchase).

Analyses examined the relationship of demographic category (English-language users vs. Spanish-language users) of participants and the level of acceptability of the label, likelihood to read, and likelihood to purchase products of bilingual label designs to determine if there were any differences. The first analysis presented here used a mixed-model design using single demographic category as the between-subject factor and the 16 label designs (container type X 8 designs) as the within-subjects (repeated-measures) factor with the 3 rating dimensions as the dependant variables.

The mean level of acceptability of the label, likelihood to read, and likelihood to purchase the products and (standard deviation) for each of the 16 bilingual label designs (collapsed across the 2 user populations) are shown in order from highest to lowest of rated acceptability, likelihood to read, likelihood to purchase in Table 4. A repeated-measures analysis of variance (ANOVA) was conducted and significant differences were found among the 16 bilingual label ratings for ratings of acceptability, $F(15,945)=11.65$, $p<.0001$, likelihood to read, $F(15,945) = 12.61$, $p<.0001$, and likelihood to purchase, $F(15,945) = 12.26$, $p<.0001$.

Generally, participants rated the conditions with English text in the primary portions (top and left–half) of the bilingual label highest in all three rating measures (acceptable, read, and purchase). The next highest rated designs appear to be each language displayed equally in halves, also in all three ratings. Participants also appeared to indicate a preference for the box container over the cylinder container. The lowest ratings were for the Spanish only labels. Followed near the bottom, the English only or the Spanish-top-two-thirds where the English text is given only one-third positioned at the bottom or right.

In Table 4, it can be seen that the three rating measures provided approximately the same pattern across conditions. Nearly the same conditions were rated highest and lowest. Using Tukey's Honestly Significant Difference (HSD) of 1.390 at p = .05 for the acceptability ratings. HSD = 1.391 at p =.05 for the likelihood to read ratings; and HSD = 1.311 at p = .05 for the likelihood to purchase products can be used to determine significant differences among the means

Table 4.
Mean and (standard deviation) ratings for acceptability, likely to read, and likely to purchase for the 16 bilingual label formats.

Formats	Acceptable	Read	Purchase
1. BOX: English-Left-Half (English on left half and Spanish on right half)	6.85 (1.4)	6.96 (1.2)	6.82 (1.8)
2. CYLINDER: English-Left-Half (English on left half and Spanish on right half)	6.46 (1.7)	6.46 (1.8)	6.32 (2.1)
3. BOX: English-Top-Half (English on top half and Spanish on bottom half)	6.43 (1.9)	6.79 (1.8)	6.68 (1.9)
4. CYLINDER: English-Top-Half (English on top half and Spanish on bottom half)	6.14 (1.9)	6.06 (2.2)	6.04 (2.4)
5. BOX: Spanish-Left-Half (English on right half and Spanish on left half)	5.71 (2.3)	6.10 (2.2)	5.92 (2.4)
6. BOX: English-Top-Two-Thirds (English on top two-thirds and Spanish on bottom one-third)	5.84 (2.2)	6.25 (2.1)	5.93 (2.3)
7. CYLINDER: English-Top-Two-Thirds (English on top two-thirds and Spanish on bottom one-third)	5.68 (2.1)	6.01 (2.1)	5.92 (2.3)
8. BOX: Spanish-Top-Half (Spanish on top half and English on bottom half)	5.50 (2.4)	5.57 (2.5)	5.57 (2.5)
9. CYLINDER: Spanish-Left-Half (English on right half and Spanish on left half)	5.43 (2.5)	5.75 (2.4)	5.65 (2.4)
10. CYLINDER: Spanish-Top-Half (Spanish on top half and English on bottom half)	5.15 (2.6)	6.45 (1.4)	5.35 (2.6)
11. BOX: English Only (English text no Spanish text)	5.07 (2.7)	5.06 (3.1)	4.95 (3.1)
12. BOX: Spanish-Top-Two-Thirds (Spanish on top two-thirds and English on bottom one-third)	4.89 (2.9)	5.18 (2.8)	5.14 (2.8)
13. CYLINDER: Spanish-Top-Two-Thirds (Spanish on top two-thirds and English on bottom one-third)	4.65 (2.7)	5.00 (2.9)	5.04 (2.7)
14. CYLINDER: English Only (English text no Spanish text)	4.53 (2.9)	4.93 (3.1)	5.04 (3.1)
15. CYLINDER: Spanish Only (Spanish text no English text)	3.51 (3.5)	3.54 (3.6)	3.53 (3.5)
16. BOX: Spanish Only (Spanish text no English text)	3.43 (3.4)	3.37 (3.6)	3.50 (3.5)

Shown in the order of highest overall agreement to disagreement on acceptability, likelihood to read, and likelihood to purchase products

The summary table for the full ANOVA is provided in Appendix G.

Correlations

Further investigation of these rating dimensions (level of acceptability of the label, likelihood to read, and likelihood to purchase the products) was made using Pearson product moment correlations. The correlation between level of acceptability of the label and likelihood to read is .948 p <.001, level of acceptability of the label and likelihood to purchase the products is .982 p <.001, and likelihood to read and the likelihood to purchase the products is .965 p <.001. Clearly, they all are highly interrelated and appear to be measuring approximately the same thing.

Table 5.
Mean ratings (collapsed across rating dimensions) of English-language users and Spanish-language user for acceptability for the 16 Bilingual label formats.

Formats	English Users (N=32)	Spanish Users (N=32)
1. BOX: English Only (English text no Spanish text)	6.75 *	3.40
2. BOX: Spanish Only (Spanish text no English text)	0.56 *	6.31
3. BOX: English-Top-Two-Thirds (English on top two-thirds and Spanish on bottom one-third)	6.91 *	5.37
4. BOX: Spanish-Top-Two-Thirds (Spanish on top two-thirds and English on bottom one-third)	2.88 *	6.90
5. BOX: English-Top-Half (English on top half and Spanish on bottom half)	6.21	6.65
6. BOX: Spanish-Top-Half (Spanish on top half and English on bottom half)	4.00 *	7.00
7. BOX: English-Left-Half (English on left half and Spanish on right half)	6.65	7.06
8. BOX: Spanish-Left-Half (English on right half and Spanish on left half)	4.25 *	7.18
9. CYLINDER: English Only (English text no Spanish text)	6.06 *	3.00
10. CYLINDER: Spanish Only (Spanish text no English text)	0.50 *	6.53
11. CYLINDER: English-Top-Two-Thirds (English on top two-thirds and Spanish on bottom one-third)	6.47 *	4.78
12. CYLINDER: Spanish-Top-Two-Thirds (Spanish on top two-thirds and English on bottom one-third)	2.69 *	6.62
13. CYLINDER: English-Top-Half (English on top half and Spanish on bottom half)	5.90	6.37
14. CYLINDER: Spanish-Top-Half (Spanish on top half and English on bottom half)	3.44 *	6.87
15. CYLINDER: English-Left-Half (English on left half and Spanish on right half)	6.09 *	6.84
16. CYLINDER: Spanish-Left-Half (English on right half and Spanish on left half)	3.88 *	7.00

* Indicates significant difference between English and Spanish users for the label design (p <.05).

Because of the apparent high intercorrelation among the rating measures, the acceptability rating was used as the dependent variable in all of the following analysis.

Mixed Model ANOVAS

A 2 (Language users: English vs. Spanish) X 2 (Containers: Square vs. Cylinder) X 8 (bilingual label designs) mixed-model ANOVA showed a significant main effect of English-language users and Spanish-language users where ratings by Spanish-language users (M=6.12, SD=1.2) were significantly higher than the English-language users (M=4.57, SD=2.1), $F(1,62) = 37.12$, $p < .0001$. The means are shown in Table 5. The mixed model ANOVA showed a significant interaction of Language Users X Bilingual Label Designs, $F(7,434) = 58.13$, $p < .0001$. English-language users rated the English-only label (M=6.75) higher than the Spanish-only label (M= .56), whereas, the Spanish-language users rated the Spanish-only label (M=6.31) higher than the English-only label (M=3.40). It is evident that English-language users rated the Spanish-only label far lower in acceptability than the Spanish-language users for the English-only label.

ANOVA –Language, Container, Primary & Secondary, and Location design.

Secondary/Primary differences. This analysis examines user language, container, secondary/primary, and placement on perceived acceptability. Only subsets of label designs condition were included in this analysis. All label design conditions were included with the exception of English and Spanish language at the top 2/3 of the bilingual label and both the English-only and Spanish-only labels.

A 2 (English vs. Spanish–language users) X 2 (secondary vs. primary) X 2 (left/right vs. top/bottom) X 2 (cylinder vs. box) mixed model ANOVA was conducted. It showed a significant main effect between user language $F(1,62) = 35.23$, $p < .0001$. Overall, English-language users (M=5.05) gave significantly lower ratings to the label designs than Spanish-language users (M=6.87).

A mixed model ANOVA showed a significant main effect of secondary and primary, $F(1,31) = 31.44$, $p < .0001$. Ratings for primary (M=6.61) placement, where users' prefer their native language displayed in the top or left portion of the bilingual label, were significantly higher than ratings for secondary (M=5.31) placement, where the users' native language was placed in the bottom or right portion of the bilingual label.

The model also showed a main effect between left/right vs. top/bottom, $F(1,62) = 6.46$, $p < .01$. Generally, users' acceptability ratings were higher when the bilingual labels were in the left/right orientation (M=6.11) than in the top/bottom orientation (M=5.80).

The model revealed a main effect of container type, $F(1,62) = 8.61$, $p < .004$. Generally, users rated the box-shaped container (M=6.12) higher in perceived acceptability than the cylinder-shaped container (M=5.69).

The model also revealed a significant interaction between secondary/primary and language users, $F(1,62) = 19.35$, $p < .0001$. Both English-language users and Spanish-language users gave significantly higher ratings when their native language was located in the primary position. However, the English-language users showed a much more dramatic drop in their ratings when their native language was secondary. A much smaller drop in the ratings was given by Spanish-language users when their native language was in the secondary position. See Table 6. No other significant interactions were observed in the analysis.

Table 6.
Mean Perceived acceptability as a Function of 2(English vs. Spanish) X 2 (secondary vs. primary) X 2 (left/right vs. top/bottom) X 2 (box vs. cylinder),

English–language users

	English Primary?							
	No				Yes			
Left/right vs. top/bottom	Right		Bottom		Left		Top	
Shape	Box	Cylinder	Box	Cylinder	Box	Cylinder	Box	Cylinder
Mean	4.25	3.87	4.00	3.43	6.65	6.09	6.21	5.90
	Mean = 3.89				Mean = 6.21			

Spanish –language users

	English Primary?							
	No				Yes			
Left/right vs. top/bottom	Right		Bottom		Left		Top	
Shape	Box	Cylinder	Box	Cylinder	Box	Cylinder	Box	Cylinder
Mean	7.06	6.84	6.65	6.37	7.18	7.00	7.00	6.87
	Mean = 6.73				Mean = 7.01			

ANOVA–Language, Container, Secondary and Primary, and Allocation.

The second factorial analysis using part of the label design conditions was examined. The variables Language: English-user and Spanish-users, container, secondary/primary and allocation on acceptability were examined. Only a subset of conditions was included in this analysis. It excluded the one factor: conditions with left and right columns orientation. This analysis introduced a new set of variables that involved the users' native language allocation is displayed either 1/2, 2/3 or all. One-half is when the users' native language is displayed on the top or bottom half in equal amounts. The 2/3 is when the users' native language may be displayed in the top 2/3 or the bottom 1/3. The all condition is either the users' native language is shown entirely on the label or the other users' native language is shown entirely on the label.

A 2 (Language users: English vs. Spanish) X 2 (English primary vs. English secondary) X 2 (Container type: box vs. cylinder) X 3 (Language allocation: 1/2, 2/3, all) mixed-model ANOVA showed a significant main effect of language users, $F(1,62) = 29.44$, $p < .0001$. English-language users (M=4.36) gave significantly lower ratings than Spanish-language users (M=5.77).

The mixed-model ANOVA showed a significant main effect of secondary/primary, $F(1,62) = 22.34$, $p < .0001$. Acceptability ratings for users' native language at the primary portion (M=6.54) of the label were significantly higher than secondary portion (M=3.59) of the label.

Table 7.
Mean Perceived acceptability as a Function of 2(English vs. Spanish) X 2 (secondary vs. primary) X 2 (box vs. cylinder) X 3 (1/2, 2/3, all)

English –language users

	English Primary ?											
	No						Yes					
Shape	Box			Cylinder			Box			Cylinder		
Language allocation	½	2/3	All	½	2/3	All	½	2/3	All	½	2/3	All
Mean Ratings	4.00	2.87	.56	3.43	2.68	.50	6.21	6.90	6.75	5.90	6.46	6.06

Spanish –language users

	Spanish Primary?											
	No						Yes					
Shape	Box			Cylinder			Box			Cylinder		
Language allocation	½	2/3	All	½	2/3	All	½	2/3	All	½	2/3	All
Mean Ratings	6.65	4.78	3.40	6.37	4.90	3.00	7.00	6.90	6.31	6.87	6.62	6.53

The ANOVA also showed a significant main effect between language allocation, $F(2,124) = 31.63$, $p < .0001$. Overall, users' mean ratings for language allocation are: ½ (M=5.80), to 2/3 (M=5.26), to all (M=4.13). In other words, in general, as languages allocation increased, perceived acceptability decreased.

The ANOVA also revealed a significant main effect of containers, $F(1,62) = 8.89$, $p < .05$, where participants gave significantly higher ratings to box-shaped containers (M=5.16) than cylinder-shaped containers (M=4.90).

The ANOVA indicated the presence of a significant interaction involving secondary/primary and user's language, $F(1,62) = 162.28$, $p < .0001$. Both English-language users and Spanish-language users gave higher acceptability ratings when their native language located in the primary position. However, the English users showed a much more dramatic drop in the rating when their native language was secondary. A much smaller drop was seen for Spanish-language users when their native language was in the secondary position. The means for the labels are shown in Table 8.

Table 8.
Mean Perceived acceptability as a Function of for secondary/primary, and user language.

	User's Language	
Position of User's Language	English Users	Spanish Users
Secondary Position	2.34	4.83
Primary Position	6.38	6.70

The ANOVA also revealed a significant three-way interaction between secondary/primary position of users language, language allocation, and language users, $F(2,124) = 47.47$, $p < .0001$. These means are shown in Table 9. Once again, it shows that when users' native language is displayed prominently, they give high ratings. However, the pattern is different if the language is in a secondary position (or not at all). Spanish users still had high ratings if allocated ½ space and dropping somewhat when given 1/3 space and somewhat more if none of the label is in Spanish. The drop is even more dramatic for English users as area allocated for English becomes less. When English is not given at all, ratings are at the floor (completely unacceptable).

Table 9.
Mean Perceived acceptability as a Function for secondary/primary, language allocation, and user language.

Secondary	Language Allocation		
	½*	2/3**	All***
English-language users	3.70	2.70	.50
Spanish-language users	6.45	4.80	3.20

*Spanish language was on the top ½ of bilingual label.
**Spanish language was on the top 2/3 of bilingual label.
***English text was not shown.

Primary	Language Allocation		
	½*	2/3**	All***
English-language users	6.05	6.65	6.35
Spanish-language users	6.90	6.75	6.40

*English language was on the top ½ of bilingual label.
**English language was on the top 2/3 of bilingual label.
***Spanish text was not shown.

Discussion

This research examined the acceptability, likelihood to read, and likelihood to purchase of consumer products incorporating the 8 different bilingual label designs on two differently shaped containers (cylinder and box). Results indicated that all three ratings were interrelated thus, the variable acceptability was used in the analysis.

Difference existed between English-language users' and Spanish-language users' ratings in acceptability. Generally, English language users' ratings were lower than Spanish users. These results could be interpreted that English-language users were more critical than Spanish-language users when a large proportion of the label was used for Spanish (e.g., 2/3 or all) and when English was placed in a secondary position. Moreover, it is interesting that for the designs with English-left and Spanish-right bilingual label design, English-top and Spanish-bottom, English-language primary and Spanish-language secondary, that Spanish-language users still rated these designs higher than the English-language users. This pattern may indicate that the Spanish-language users in the U.S. are willing to compromise in having their language secondary to the English text. Such an outcome may indicate that Spanish-language users are grateful to have at least some representation of their language on consumer products in the U.S., which until recently was almost exclusively English on products.

Placement of the users' language either in the left vs. right and bottom vs. top was also compared. Users rated bilingual labels higher in perceived acceptability when the text was displayed in left/right designs than a top/bottom designs. Users probably preferred a vertically oriented display because scanning for one's language may be easier from left to right than from top to bottom.

Generally, English-language users had significantly lower ratings for acceptability when their language is secondary to that of Spanish-language users. That is, English-language users want English to be in the primary portion of bilingual labels and are less willing to accept English in the secondary portion of bilingual labels, whereas Spanish-language users were more willing to accept Spanish in the secondary portion of bilingual labels.

The results showed that the box container design was rated highest on perceived acceptability than the cylinder container design. This result may be due to the box's larger viewable surface area where the text is on a flat surface. The cylinder container shows only a portion of the text at any one time because of its curvature. It also requires physical manipulation for viewing the label. That is, it is more difficult for the users to read the cylinder's label because this design requires twirling the container back and forth when reading the label. Twirling, a physical manipulation is not needed with the box container design.

The significant interaction between secondary/primary and language indicated that English-language users had higher ratings of perceived acceptability when their native language was located in the primary portion of the bilingual label than in the secondary portion of the bilingual label relative to Spanish-language users, who did not show such a large difference. This may be interpreted that English-language users were more critical of bilingual labels when their native language was placed in the secondary portion of bilingual labels compared the Spanish-language users. Although both English and Spanish-language users favored their native language highly in the primary portion of the bilingual label, Spanish-language users' ratings were not as negatively affected when their native language was in the secondary portion of the bilingual label.

A significant interaction between secondary/primary, language allocation, and user language indicated that English-language users were much more critical when their native language was not represented in the bilingual label designs than Spanish language users. Also, English-language users' acceptability ratings between primary and secondary differed more than those of the Spanish-language users. This may be interpreted that, although English-language users' are yielding to have the Spanish language represented in pesticide products, English-language users still prefer to have their native language represented equally, if not more, but clearly not less than that.

Generally, participants rated bilingual label designs with both languages (English and Spanish) equally displayed on the product (English text left and Spanish text right) higher than the other bilingual label designs (English-only, Spanish-only, and 2/3). The preference of such bilingual label designs where both languages are equally represented may suggest participants, such as English-language users, are concerned for people whose language is not English. However, rating differences existed between English-language users and Spanish-language users when user's native language was not represented on the bilingual label designs. This difference indicated that English-language users only accept bilingual labels when their language has priority presence, a pattern somewhat different than that shown by the Spanish-language users. This research was performed in the U.S., thus the results are indication of what is expected by the Spanish-language users residing in the U. S.

Study 3

Study 2 examined the acceptability of eight label formats for bilingual labels. In that study, user's perception of particular label designs was addressed and few specific designs were indicated to be more desirable than others. However, in these designs, the texts of both languages look similar and maybe confused with each other since both the English and Spanish text are alphanumeric and appear similar in an overall perceptual sense. Moreover, as the font size is decreased because the surface area of the label is decreased from the addition of another language, it can be anticipated that users will have a more difficult time discriminating their language because of the reduction in font size. Since incorporating two languages on a label is relatively novel, research on the salience in terms of distinguishing the two languages in a label was investigated.

Thus, the next step was to increase their differentiation by making them appear different and thus aid users in directing them to the portion of the label with their language. The current study used a time-based search task as the response measure. Response time in a search task has been a systematic tool for uncovering mental events. In measuring improvements in salience, responses should be faster and having fewer errors. This form of measuring mental processes has theoretical implications and is a practical measure for performance (Sanders & McCormick, 1993). Moreover, Bzostek and Wogalter (1999) used response time as an indication of relative noticeability.

Sanders and McCormick (1993) indicated that "when dimensions are combined in a redundant fashion, more levels of stimuli can be identified than if only a single dimension is used." When there are multiple dimensions, participants may be able to discriminate items that vary only slightly. Also, when dimensions are redundant, knowing the value on one dimension helps predict the value of the other dimension. In addition to language, font color can be used as a method of differentiation. Thus if English text is black in color and Spanish text is blue in color, users may be aided in locating their language and thus reducing search time. For the following research, only two colors (e.g., black and blue on white background) are investigated. Although blue has no hazard connotation, Konz, Chawla, Sathaye, and Shah (1972) found that these two font colors were rated to be of high legibility.

A number of variables (e.g., font type, font size, font color, borders, location, and pictographs) have been investigated in previous research which have been shown to affect capture and then maintain attention (Sumner, 1932; Strawbridge, 1986; Rashid & Wogalter, 1997; Sojourner & Wogalter, 1998; Silver & Braun, 1993). In the present study, the factors of text displayed at specific portion of label, font color and the presence of pictographs was investigated. Label portion was defined as the sector where a user's native language is located in the label (either at the left half or right half). The color of the font was used to saliently separate one language from the other so that participants would be able to distinguish the text according to language. One or two pictographs were added to some labels to assist in distinguishing the two languages. Bzotek and Wogalter (1999) found that labels containing an icon and color were responded to more quickly than when these elements were missing.

Study 3 investigated three variables intended to aid users to finding their language. One variable was a flag icon (U.S., Mexico, or both). A second variable was the different color of the text (black or blue). The third variable was label portion or sector where a users' native language is located particular area of the label (left or right).

The idea of having a nation's flag is to represent a user's native language. By incorporating a nation's flag, it may facilitate attention to be directed to the appropriate language of the label. As Laughery, Young, Vaubel, and Brelsford (1993) found that having a warning that includes an icon makes the warning easier to detect. The American flag was used because it was believed most U.S. citizens are able to identify with it. The Mexican flag was used because Hispanics living in the U.S. came primarily from South America and Mexico's flag is likely to be recognized by most Hispanics in the U.S.

When one language is of a different color than the other language, users may be better able to discriminate the languages when searching for their language. Strawbridge (1986) and Young and Wogalter (1986) indicated that participants were more likely to notice a warning when the text was colored. In this study, only the Spanish text was in blue color on half of the conditions and on other half of the conditions, it was black. English text was always in black. Color may attract Spanish-language users to attend to the blue color text when searching for their language, whereas the English-language users may make use of the distinguishing colors by helping them to direct their attention to the appropriate text. In conditions without the blue Spanish text, both groups of users may have more difficulty.

Language location may play a part in directing the user's attention because one area of the label may be dedicated to a user's native language. As in reading, the English language is written from a left to right and top to bottom direction. Because this is generally how people read, displaying the language at the left area of the label may be more desirable because it is naturally how people read the English and Spanish language.

However, one concern with multiple enhancements on a label is that it may attract or switch attention to the wrong language. Also, it may be possible that many enhancements may reach asymptote. One distinguish characteristic may do as well as two. Two distinguishing characteristics may be just as good as three. However, the redundancy of cues may help users in the search task.

In this experiment, the text was displayed side by side (left/right), i.e., there is no top/bottom format like in Experiment 2. English-left-half and Spanish-right-half was used because users from Study 2 generally rated it highest. To counterbalance conditions, Spanish-left-half and English-right-half was also used.

Hypotheses. Enhancements in the bilingual label to assist in directing their attention to the appropriate portion of the label was expected to facilitate response time. It is predicted that participants will respond fastest to the native-language only label because their language was displayed alone. That is, there is no other language to distract them from identifying their language. It is predicted that the next fastest response in label design is having both American and Mexican flags. By having both the American and Mexican flag displayed, users will have more cues to help draw their attention to the correct portion of the label resulting in enhanced speed. Another label producing that may have a fast response times might be one with English-language text on the left portion of the label for English-language users because English-language users will naturally draw their attention to the left portion of the label when reading. It is also predicted that color will aid participants to respond faster than without color. Having color text may help users direct their attention to text that contains their languages, however it may slow response time for English-language users because the Spanish text is in color, it may attract English-language users to the wrong language.

The slowest response times might occur with the Spanish-language text is on the left and the English-language text is on the right without any enhancements. With no enhancements (color or flag) to aid the user to search for their language and the primary portion (left) contains the minority language, English-language user's may be distracted by first viewing the minority language at a prominent portion of the label. However, this same design might show relatively fast response times by Spanish-language users.

A potential interaction may occur between language users and the presence and absence of the American flag, as English-language users may respond quicker to the presence of the American flag which might be a distraction to the Spanish-language users. Also, another potential interaction may occur between language users and the presence and absence of colored text, as Spanish-language users may rely on the colored text in locating their language but this enhancement may draw English language users to it and thus may hinder performance of English-language users.

Response time was used to assess whether the user had correctly identified their language and whether they correctly identified the stimulus embedded in one portion of the label. For this technique, a millisecond timer collected the duration between the display of the label design and the response of the participants.

Method

Participants. A total of 64 participants (32 males and 32 females) from Raleigh-Durham area of North Carolina, were asked to participant in a search task. Ages of the participants ranged from 18 to 58 years (M=31.21, SD=13.86). All participants reported to have completed at least the 9^{th} grade with the average educational level attained being three years past high school. Half of the participants reported being fluent in English and the other half of the participants reported being fluent in Spanish. Non-students made up 90% of the sample. As remuneration for participating, all participants received five dollars.

One half of the participants were recruited in front of a Spanish-theme grocery store. Each individual's primary language had to be Spanish. To assess their comprehension skills in Spanish, Spanish-language assistants were hired to help conduct the study. The Spanish-language experimenters asked the participant to read the informed consent form in Spanish. Also, an open-ended question regarding other language skills and a self-assessment of language level was asked.

The other half of the participants, English-language users, was recruited at a flea market. To be able to participate, their primary language had to be English. These participants were asked if they had knowledge of any other language besides English.

Each participant's vision was tested using a color discrimination test (color vision guide by Nash Graphic Design) and near visual acuity test (Lighthouse Near Visual Acuity Test 2^{nd} edition). Participants had to pass the color discrimination test and to have at least a 20/32 visual acuity in order to participate.

Materials. Eighteen different label designs were created (see Appendix E, Study 3). The precautionary information on each label was modeled after the highest-rated bilingual label design format (English-left-half and Spanish-right-half) from Study 2. All of the stimuli consisted of directions, first aid, and environmental hazard statements. All the bilingual label designs consisted of both English and Spanish text with the exception of the user's language label (English-only text or Spanish-only text) and the font type was Helvetica-Narrow with minimal line spacing.

One baseline condition, English only (English text alone in black) had a font size of 12 and no pictorials were used. The other baseline condition, Spanish only (Spanish text alone in black had a font size of 12 and no pictorials were used. No enhancements were present on these labels.

In each condition, the first language mentioned among the two is located on the left side of the bilingual label and its respective color of the text. The second language mentioned among the two is located on the right side of the bilingual label and its respective color of text. Conditions with flags had the pictorial located at the top left in relation to its language. These variables are description of the layout for each variable. Font size was 8 point. Please see Table 10.

Consent Form. An informed consent form was completed by each participant (please see Appendix B).

Table 10. Experimental conditions in Study3

Conditions	English Text	Spanish Text	USA Flag	Mexico Flag	Color Enhancement
1. English-black/Spanish-black with no flags	Left	Right	No	No	No
2. English-black/Spanish-black with USA flag	Left	Right	Yes	No	No
3. English-black/Spanish-black with Mexico flag	Left	Right	No	Yes	No
4. English-black/Spanish-black with USA and Mexico flags	Left	Right	Yes	Yes	No
5. English-black/Spanish-blue with no flags	Left	Right	No	No	Yes
6. English-black/Spanish-blue with USA flag	Left	Right	Yes	No	Yes
7. English-black/Spanish-blue with Mexico flag	Left	Right	No	Yes	Yes
8. English-black/Spanish-blue with USA and Mexico flags	Left	Right	Yes	Yes	Yes
9. Spanish-black/English-black with no flags	Right	Left	No	No	No
10. Spanish-black/English-black with USA flag	Right	Left	Yes	No	No
11. Spanish-black/English-black with Mexico flag	Right	Left	No	Yes	No
12. Spanish-black/English-black with USA and Mexico flags	Right	Left	Yes	Yes	No
13. Spanish-blue/English-black with no flags	Right	Left	No	No	Yes
14. Spanish-blue/English-black with USA flags	Right	Left	Yes	No	Yes
15. Spanish-blue/English-black with Mexico flag	Right	Left	No	Yes	Yes
16. Spanish-blue/English-black with USA and Mexico flags	Right	Left	Yes	Yes	Yes

Demographic Questionnaire. A questionnaire requesting demographic information was completed by each participant prior to testing. The questionnaire requested the participant's age, gender, ethnicity, education level, and whether English was their first language (please see Appendix D, Study 3).

Procedure. Prior to the beginning of the study, five non-paid volunteers from each language group (English-language users and Spanish-language users) participated in a pilot study. In the pilot study, materials were prepared, the research assistants were trained, and participants were asked for comments in regards to improvements and clarity. No pilot participants had any useful comments.

An experimenter approached participants and asked them to complete an informed consent form before starting the remainder of the procedure. The experimenters were two paid Spanish-speaking students, two English-speaking students, and the author. They conducted the experimental procedures with the participants. Participants were asked whether if they could read their non-native language. If the participant could, they were excluded from the study. Participants were advised that they could withdraw at anytime, and that all information about the participant would remain confidential. The study began soon after the participants signed the informed consent form. Each participant was instructed to sit in front of a portable computer and was instructed about the task at hand. Once the procedure was completed, the experimenter debriefed the participant and paid them for their time.

Response Measures. To assess whether each participant read the correct portion of the bilingual label, a response time measure was developed and used that asked each participant to respond by identifying a number written in word form within each label stimulus. That is, each stimulus had one number, in word form (i.e., “five”), embedded in the text that the participant had to respond by typing in that number (ranging from 1 to 9). Please see the example in Appendix E, Study 3. Thus for each bilingual label presented the participants first needed to perform a search task to locate their language (English for English-language users and Spanish for Spanish-language users) and then second to search through the text for a number word. This identification procedure ensured that participants had searched and found the correct language by correctly identifying the number embedded in the text. The number in word form was always placed within 3 to 4 words from the middle of the first sentence although participants were not informed of this. All participants were instructed to respond as quickly as possible without any errors.

Apparatus. Two portable computers were used to generate and produce the 18 bilingual labels display. The experiment was programmed in SuperLab Pro (Cedrus Corporation) and was run on an IBM ThinkPad T23, Pentium 3, 1000-Mhz with a 14-inch (35.56 cm) diagonal screen. The program displayed the stimuli on a white background.

Each study began with a pilot trial before starting the actual data collection. Prior to the presentation of each label, a black cross-hair object (+) was displayed, centered on the screen between each stimulus. All participants were instructed to look at the cross hair prior to beginning the trial and again, look at the cross hair between trials. A trial began when the participants depressed the space bar and a label was displayed. At the moment when the space bar was depressed, a millisecond timer started and ended once the participant made their response by depressing the correct number key. The program collected the reaction time (between the display of the stimuli and the response from the participant) in milliseconds and the percent correct. All stimuli were replicated five times. The program randomized all trials prior to presentation. Collection of the response times was the first of the five replication of the stimulus displayed (1^{st} presentation), the geometric mean, and the actual mean (minus values over two standard deviations away from the mean).

Geometric means of the response times were used in the analysis. The geometric mean is a measure of central tendency and it is insensitive to extreme scores. The geometric mean is the *n*th root of the product of *n* scores. By using the geometric means as a measure of central tendency, it is the same as using a logarithmic transformation on the data and then computing the arithmetic mean on the logarithmic transforms. The usual way to calculate a geometric mean is to convert each score into its logarithm, compute the arithmetic mean of the logarithms of the scores and then find the antilogarithm of that mean (Snodgrass, 1985).

Design. A 2 (Language users: English vs. Spanish) X 17 (Bilingual label designs) analysis used a mixed-model design using a single demographic category as the between subject factor and the response time as the dependant variable.

Another analysis, a 2 (Language Users: English vs. Spanish) X 2 column (English-left vs. Spanish-left) X 2 (Blk-Blk vs. Blk-Blu text) X 2 (USA flags: absent vs. present) X 2 (Mexican flags: absent vs. present) mixed model design was used with the first factor between subjects and the remaining factors repeated measures. This particular analysis examined only bilingual label designs that contained both languages and left out or excluded the single language text-only label design. The latter was examined in other analyses.

Results

ANOVA – bilingual label differences.

The mean response time and (standard deviation) for each of the 17 bilingual label designs (collapsed across two user populations) are shown in order from highest to lowest in Table 11. The baseline conditions English only and Spanish only labels were combined together in the analysis.

A 2 (English-language users vs. Spanish-language users) X 17 (bilingual labels designs) mixed – model ANOVA showed a significant main effect between English-language and Spanish-language users, $F(1,62) = 21.95$, $p < .0001$. The summary table for the full ANOVA is provided in Appendix H and the means are shown in Table 12. In general, English-language users (M=2.35) response times were faster than Spanish-language users (M=3.16).

The ANOVA indicated the presence of a significant interaction involving bilingual label designs and user's language, $F(16,992) = 10.20$, $p < .0001$. Both English-language users and Spanish-language users responded faster when the bilingual labels included a visual enhancement. However, the English users showed slower response times for bilingual labels containing all three visual enhancements (#17: USA flag, Mexico flag, and blue text in

Spanish) relative to bilingual labels with one or two enhancements, whereas Spanish-language users showed the fastest response times for bilingual labels containing all three visual enhancements (#17: USA flag, Mexico flag, and blue text in Spanish) relative to bilingual labels conditions that contained one or two visual enhancements. Please see Table 12.

ANOVA –Language users, left vs. right, color, absent/present (US and Mexico flag).

This analysis examined the relationship of demographic category of participants and response time of only the experimental conditions, excluding the baseline conditions (English-only and Spanish-only labels). A 2 (User language: English vs. Spanish) X 2 (English-left vs. Spanish-left) X 2 (blk-blk vs. blk-blu) X 2 (U.S. flag: absent vs. present) X 2 (Mexican flag: absent vs. present) mixed-model ANOVA showed a significant main effect between languages, $F(1,62) = 22.68$, $p < .0001$. English-language users (M=2.42) generally responded faster than Spanish-language users (M=3.22). Please see Table 12.

Table 11.
Mean and standard deviation response time (in seconds) for the 17 Bilingual label designs.

Formats	Mean	SD
1. English-only label or Spanish-only label with no flags*	2.57	.786
2. English-black/Spanish-black with USA and Mexico flags	2.64	.747
3. Spanish-black/English-black with Mexico flag	2.67	.890
4. Spanish-blue/English-black with USA flag	2.73	.927
5. Spanish-blue/English-black with Mexico flags	2.76	.964
6. English-black/Spanish-blue with Mexico flag	2.76	.864
7. Spanish-black/English-black with no flags	2.77	.976
8. Spanish-blue/English-black with USA and Mexico flags	2.78	.900
9. English-black/Spanish-blue with USA flag	2.83	.922
10. English-black/Spanish-blue with USA and Mexico flags	2.83	.894
11. English-black/Spanish-black with no flags	2.83	.899
12. English-black/Spanish-black with USA flag	2.84	1.08
13. Spanish-black/English-black with USA and Mexico flags	2.85	.744
14. English-black/Spanish-black with Mexico flag	2.87	.893
15. Spanish-black/English-black with USA flag	2.98	.905
16. English-black/Spanish-blue with no flags	2.99	1.25
17. Spanish-blue/English-black with no flags	3.01	1.01

Shown in the order of fastest to slowest response time
*Participant received only the language that they could read

Table 12.

Mean response time in seconds for English-language users and Spanish-language users for the17 label designs.

Formats	English-language Users	Spanish-language Users
1. English-only label *or* Spanish-only label with no flags**	2.31*	2.83
2. English-black/Spanish-black with no flags	2.45*	3.21
3. English-black/Spanish-black with USA flag	2.21*	3.47
4. English-black/Spanish-black with Mexico flag	2.29*	3.44
5. English-black/Spanish-black with USA and Mexico flags	2.47	2.81
6. English-black/Spanish-blue with no flags	2.22*	3.77
7. English-black/Spanish-blue with USA flag	2.55*	3.10
8. English-black/Spanish-blue with Mexico flag	2.27*	3.26
9. English-black/Spanish-blue with USA and Mexico flags	2.66	3.00
10. Spanish-black/English-black with no flags	2.35*	3.19
11. Spanish-black/English-black with USA flag	2.58*	3.37
12. Spanish-black/English-black with Mexico flag	2.30*	3.04
13. Spanish-black/English-black with USA and Mexico flags	2.74	2.96
14. Spanish-blue/English-black with no flags	2.62*	3.39
15. Spanish-blue/English-black with USA flag	2.11*	3.36
16. Spanish-blue/English-black with Mexico flags	2.25*	3.26
17. Spanish-blue/English-black with USA and Mexico flags	2.41*	3.16

* Indicates significant difference between English and Spanish users for the label design ($p < .05$).
** Participant received only the language that they could read

The model also showed a significant main effect for the category absent vs. present of U.S. flag, $F(1,62) = 11.27$, $p < .0001$. Generally, participants responded faster to bilingual labels with the U.S. flag present (M=2.80) than absent (M=2.83).

The analysis also revealed a significant interaction between language users and U.S. flag (absent and present), $F(1,62) = 20.54$, $p < .0001$. With the presence of the U.S. flag, search time increased somewhat for English-language users whereas search time was reduced somewhat for Spanish-language users. See Table 13 for interaction table.

Table 13.

Mean response time as a function of U.S. flag (absent vs. present) and English-language users vs. Spanish-language users.

	U.S. Flag	
Formats	absent	present
English-language users	2.34	2.46
Spanish-language users	3.32	3.15

The ANOVA revealed a significant interaction between Mexican flag (presence vs. absence) and language, $F(1,62) = 20.43$, $p < .0001$. English-language users' response time was about the same with the presence or absence of the Mexican flag whereas Spanish-language users' response time was somewhat faster with the presence of the Mexican flag compared to its absence. See Table 14 for means.

Table 14.

Mean response time as a function of Mexican flag (absent vs. present) and English-language users vs. Spanish-language users.

	Mexican Flag	
Formats	absent	present
English-language users	2.38	2.42
Spanish-language users	3.35	3.11

The ANOVA also showed a significant interaction of language users and text color, $F(1,62) = 6.32$, $p < .01$. English-language users showed approximately quicker response time for color-differentiated text versus non-color text. However, Spanish-language users' response time was somewhat faster with non color-differentiated text compared to color-differentiated text. See Table 15 for means.

Table 15.

Mean response time as a function of color (blk-blk vs. blk-blu) and English-language users vs. Spanish-language users.

	Color text	
Formats	black-black	black-blue
English-language users	2.42	2.38
Spanish-language users	3.18	3.28

The model revealed a significant interaction between color and Mexican flag (absent vs. present), $F(1,62) = 6.77$, $p < .001$. With the presence of the Mexican flag, there was a reduction in response time. See Table 16 for means.

Table 16.

Mean response time as a function of color (blk-blk vs. blk-blu) and Mexican flag (absent vs. present).

	Mexican flag	
Text color	Absent	present
Black-black	2.85	2.75
Black-blue	2.90	2.78

The model also revealed a significant interaction between column, color and language, $F(1, 62) = 8.29$, $p < .05$. English-language users responded faster with the color enhancement and when their native language was on the right side (i.e., Spanish on left side) of the label or left side without color enhancements. However, when English-language user's native language was on the left side of the bilingual label, color enhancement increased response time. Spanish-language users response time was faster in the black only text and Spanish text on the right side. See Table 17 for means.

Table 17.

Mean response time as a function of column, color (blk-blk vs. blk-blue) and language.

	Color text	
English-language users	black-black	black-blue
English-left	2.35	2.42
Spanish-left	2.49	2.34
Spanish-language users	black-black	black-blue
English-left	3.14	3.29
Spanish-left	3.23	3.28

The model revealed another significant interaction between column, Mexico flag and language, $F(1, 62) = 9.82$, $p < .05$. English-language users' response time was faster without the presence of the Mexican flag and when the English text on the left column. However, Spanish-language users response time was slowest in this condition (English-left, without Mexican flag). Moreover, the presence of the flag helped in reducing response time for Spanish-language users. See Table 18 for these means.

Table 18

Mean response time as a function of column, Mexican flag (absent vs. present) and language.

	Mexican flag	
English-language users	absent	present
English-left	2.35	2.42
Spanish-left	2.41	2.42
Spanish-language users	absent	present
English-left	3.38	3.12
Spanish-left	3.32	3.10

The model revealed a significant interaction between U.S. flag, Mexico flag and language users, $F(1, 62) = 23.74$, $p < .05$. Spanish-language users reaction time was faster, compared to other conditions, with the presence of the Mexican flag and U.S. flag. However, English-language users response time was slowest for the same condition (both Mexican and U.S. flag displayed) as many enhancements may have distracted the user. See Table 19 for means.

Table 19.

Mean response time as a function of U.S. flag (absent vs. present), Mexican flag (absent vs. present) and language.

	Mexican flag	
English-language users	absent	present
U.S. flag absent	2.41	2.27
U.S. flag present	2.36	2.57
Spanish-language users	absent	Present
U.S. flag absent	3.39	3.25
U.S. flag present	3.32	2.98

The model revealed a significant interaction between column, color, and the presence and absence of Mexico flag, $F(1, 62) = 9.29$, $p < .05$. Tukey's Honestly Significant Difference (HSD) was .078 at $p = .05$. Overall, both language users responded faster with the presence of the Mexican flag with or without the color text enhancement. However, without the color enhancement, users responded faster when the English-text was on the left column of the bilingual label, compared to the color enhancement text condition. See Table 20 for means.

Table 20.

Mean response time as a function of column, Mexican flag (absent vs. present) and color.

	Mexican flag	
Color-black/black	absent	present
English-left	2.83	2.75
Spanish-left	2.87	2.76
Color-black/blue	absent	present
English-left	2.91	2.79
Spanish-left	2.87	2.77

The model revealed a significant interaction between color, and the presence and absence of the U.S. and Mexico flag, $F(1, 62) = 12.44$, $p < .05$. Tukey's Honestly Significant Difference (HSD) of .198 at $p = .05$. The presence of both the U.S. and Mexican flag with the English text black and Spanish text black condition showed a faster response time. However, with just a single cue, response time was slower overall . See Table 21 for means.

Table 21.

Mean response time as a function of U.S. flag (absent vs. present), Mexican flag (absent vs. present) and color.

	Mexican flag	
Color-black/black	absent	present
U.S. flag absent	2.80	2.76
U.S. flag present	2.90	2.74
Color-black/blue	absent	present
U.S. flag absent	3.00	2.76
U.S. flag present	2.78	2.80

The model revealed another significant interaction between color, column, Mexican flag (absence and present) and language, $F(1, 62) = 19.33$, $p < .05$. English-language users responded faster without the presence of the Mexican flag in the English-black and Spanish-black text condition and when the English text is on the left column. However, in the English-black and Spanish-blue text condition, English language users also generally responded faster without the presence of the Mexican flag and when the English text is on the left column. Moreover, Spanish-language users tended to respond faster with the aid of the blue color enhancement and presence of the Mexican flag when the Spanish text is displayed on the right column of the bilingual label. See Table 22 for means.

Table 22.

Mean response time as a function of color, column, Mexican flag (absent vs. present) and language.

	Mexican Flag	
English-language users		
Color-black/black	absent	present
English-left	2.33	2.38
Spanish-left	2.46	2.52
Color-black/blue		
English-left	2.38	2.46
Spanish-left	2.36	2.33
Spanish-language users		
Color-black/black		
English-left	3.34	3.12
Spanish-left	3.28	3.17
Color-black/blue		
English-left	3.43	2.68
Spanish-left	3.37	3.21

The model revealed another significant interaction between color, Mexico flag and U.S. flag (absence and present) and language, $F(1, 62) = 10.30$, $p < .05$. English-language users' response time was faster with the presence either of the U.S. flag or Mexican flag but not both. Also, color appeared to aid slightly in reducing response time for English language users. Spanish-language users response times were faster with the presence of both the U.S. flag and the Mexican flag but color did not appear to reduce response time. See Table 23 for means.

Table 23.

Mean response time as a function of color, Mexican flag and U.S. flag (absent vs. present) and language.

	Mexican flag	
English-language users		
Color black/black	(absent)	(present)
U.S. flag absent	2.40	2.29
U.S. flag present	2.39	2.60
Color-black/blue		
U.S. flag absent	2.42	2.26
U.S. flag present	2.33	2.53
Spanish-language users		
Color-black/black		
U.S. flag absent	3.20	3.25
U.S. flag present	3.42	2.88
Color-black/blue		
U.S. flag absent	3.58	3.26
U.S flag present	3.23	3.08

The model revealed the last significant interaction between column, color, Mexico flag and U.S. flag (absence and present) and language users, $F(1, 62) = 24.11$, $p < .05$. English-language users response times were faster with the presence of the U.S. flag, the presence of the colored text and the Spanish text displayed on the left column. Whereas, Spanish-language users' response time was faster with the display of the U.S. flag, Mexican Flag, and English text on the left column, color did not aid in reducing response time. See Table 24 for means.

Table 24.

Mean response time as a function of column, color, Mexican flag and U.S. flag (absent vs. present) and language.

English-language users	U.S. Flag: Absent		U.S. Flag: Present	
	Mexican Flag Absent	Mexican Flag Present	Mexican Flag Absent	Mexican Flag Present
English-text left				
Black/Black	2.45	2.29	2.21	2.47
Black/Blue	2.22	2.27	2.55	2.66
Spanish-text left				
Black/Black	2.35	2.30	2.58	2.74
Black/Blue	2.62	2.25	2.11	2.41
Spanish-language users				
English-text left				
Black/Black	3.21	3.44	3.47	2.81
Black/Blue	3.77	3.26	3.10	3.00
Spanish-text left				
Black/Black	3.19	3.04	3.37	2.96
Black/Blue	3.39	3.26	3.36	3.16

Discussion

This research examined the response time of 17 different bilingual label designs. Generally, participants responded fastest when only their language was displayed. This, of course, is not surprising since participants did not need to search for their language. Bilingual label designs having the English text on the left and Spanish text on the right with American and Mexican flags tended to have nearly as fast times as the single language only labels.

English-language users vs. Spanish-language users differed in their response times. Overall, Spanish-language users responded slower than English-language users in their response times. One explanation may be that the Spanish population used for this experiment was not as proficient with the computer keyboard as their counterpart, the

English-language users. Spanish-language users were recruited from Spanish-themed grocery store where some of these patrons may have limited computer skills.

The presence of the U.S. flag enabled both populations of users to respond quicker in searching for their language. The presence of this pictograph may have aided users if they were looking for the English text or to look for other text without this pictograph if they were looking for the Spanish text.

There were several interactions indicated in this study. The effects of the presence of the Mexican flag differed between user language groups. With the presence of the Mexican flag, Spanish-language users' response times were faster, whereas the presence of the American flag appeared to increase the response time for English-language users.

The interaction between color and user's language suggested that English-language users' reaction times were faster when color enhancement was used, but Spanish-language users' response times were even faster with color. This enhancement, perhaps had aided the all users to search for their language especially helpful for Spanish-language users.

The next interaction was between color and the presence of the Mexican flag. Users relied on the presence of the Mexican flag to search for their language. However, search times were slower with the blue text as this enhancement may have distracted one group of users to the incorrect language.

The interaction between column, color and language indicated that users differ as a function of users' native language. As stated earlier, Spanish-language users responded in generally more slowly than English-language users. Perhaps a combination of text displayed on the left column and with color did affect performance as a way for users to discriminate between language through location and color enhancement. Also, similar results in the interaction between column, Mexican flag, and language were noted. English-language users tended to respond faster to bilingual labels with just the English-text on the left column and without any enhancements. Perhaps, having too many enhancements may have distracted and thus slowed response time. Moreover, the interaction between U.S. flag, Mexico flag and user language also showed that English-language users' response time increased from having the multiple enhancements available on bilingual labels, whereas Spanish language users reaction time was faster with the multiple enhancements. Also, the interaction of column, color and the presence and absence of the Mexican flag, both language users response time was faster with the presence of the Mexican flag but with the display of their native language on columns, it affected response time of English-language users more than Spanish-language users.

The interaction between U.S. flag, Mexican flag and color indicated that both languages users benefited from having the display of both the U.S. and Mexican flag. However, having all enhancements such as the presence of the U.S. flag, Mexican flag, and color text, users' response time increased. Perhaps all the enhancements made available had distracted the users' attention.

In the interaction between color, column, Mexican flag (absent vs. present), and language indicated that Spanish-language users tended to have longer reaction time compared to English-language users. Display of the English-text on the left column aided English-language users in reducing search time as English-language users may have naturally gaze to the top left of bilingual labels to search for their language.

Moreover, similar results were found between the interaction of color, column, Mexican flag (absent vs. present), U.S. flag (absent vs. present), and language. With the presence of the U.S. flag, English users may easily find their native language by drawing their attention directly center and up to see the U.S. flag without the blue text enhancement. Whereas Spanish-language users responded faster with the presence of the blue text and Mexican flag that helped in their search task.

In the interaction of color, Mexico flag (absence vs. presence), U.S. flag (absence vs. presence) and language, again, having too many enhancements increased response time for English-language users. However, Spanish-language users benefited from the extra enhancements but not color text. Perhaps color may have been more distracting than helping in locating one's language.

The last interaction of column, color, Mexico flag (absence vs. presence), U.S. flag (absence and presence) and language indicated that English-language users response time was faster with the presence of the U.S. flag and the English text displayed on the right column. Spanish-language users response time was faster with the display of both flags and the English text on the left column. Perhaps during searching, English-language users would draw their attention direction center and up to search for their language. Whereas, Spanish-language users may have automatically search to the top left as would naturally happen when reading.

Color was indicated to help in the search task, the results were contrary to expectation. For example, by having the Spanish text in blue, slower response time for Spanish-language users than when the Spanish text was in black. Users tended to respond faster when the Mexican flag was present and the Spanish text was in blue. However, with the absence of the Mexican flag, users tend to respond faster when both text are black. Perhaps users overall relied on the Mexican flag more so than the color of the text. Contrary to the belief that color my decrease response time where, in fact, it may increase response time as both language users did not connote the blue text was consistently displayed with the Spanish text only.

In Study 2, the secondary/primary variable examined whether the user's native language was placed in the secondary or primary portions of the bilingual labels was different. In this study, the same secondary/primary variable was applied to the design but no significant differences were indicated in the analysis. This outcome may be inherent with the task involved with this study. That is, all participants had to perform a time-based search task by gazing at the center of the screen, locating their native language, and then search for the embedded word number. Through this process, perhaps a participant's search strategy did not involve the model of locating one's language in a prominent portion of the computer screen as each participant was told the display of stimuli were randomized.

General Discussion

To reduce injury or illness from improper use of pesticides/chemicals or hazardous equipment, the source should consider implementing bilingual labels. That way, when the manufacturer implements language that a population of users will recognize, their beliefs and attitudes about the source may be positively influenced and this in turn affects the user's behavior (Cox, 1999).

Although there were several variables (font type and borders) that were not investigated in this study, there were notable reasons to exclude them. For instance, having different font types may contribute to aiding the user to discriminate between texts but when the addition of a language is introduced, font size reduces. Thus, with a smaller font size, it may be difficult to discriminate font type, especially when the area on a label is limited.

This research investigated the attitudes of users in the United States towards labels on consumer products. From Study 1, it was apparent that many users believed bilingual labels should be implemented in the United States because users believed products with bilingual labels are useful for those who speak Spanish and bilingual labels are important because many people in the U.S. do not read English.

These attitudes towards bilingual labels led the author to believe that bilingual labels are necessary to implement in the U.S., but currently there is no guideline for format design for bilingual labels.

Thus, in Study 2, several bilingual label formats were developed and tested among English-language users and Spanish-language users. Both cultures rated the English-left and Spanish-right text of bilingual label the highest in acceptability, likely to read, and likely to purchase on both the cylinder and box container. Ratings for the level of acceptability, likelihood to purchase, and likelihood to read categories were closely related. Thus, the acceptability rating was used as the dependent variable.

In this study, English language users preferred having the English text on the left side and the Spanish text on the right, thus indicating their accommodation for Spanish-language users. Moreover, Spanish-language users settled for this format because they maybe grateful that considerations were being made to accommodate their language on products in the U.S., where English may not be the official language, but English is the majority language. Although English-language users may be accommodating to Spanish-language users by having an equal proportion of both languages shown, English-language users would rate bilingual labels, where their native language is at the primary portion of the label, much higher than if located in the secondary portion of the label.

The primary goal of this research is to access a user's acceptability of bilingual label, such information are important for consumers because it may be perceived whether products with bilingual labels will be used or purchased. The results indicated that users' preference was favorable when one's native language was placed in the primary portion of the label. This primary portion consisted of language being at the left column of the label, the top-two-thirds of the label, and the top half of the label.

In this research, products that are in a box-shaped container have a greater rating in acceptability than a cylinder-shaped container. Perhaps users are more receptive to box-shaped containers because there is greater viewable surface area to view the label in its entirety.

One consideration is that these users were asked of the rate these design of labels for hazardous products such as pesticides. However, the pattern of the present study might not hold for a less hazardous product such as household laundry detergent. Perhaps further research might investigate the degree of hazard of products that may apply these designs.

These results in Study 2 prompted other experimental questions about bilingual labels and ways to improve not only the acceptability, but add visual enhancements to enable both English-language and Spanish-language users to discriminate between languages more efficiently.

Thus, in Study 3, the highest-rated bilingual label design from Study 2 was used and the addition of various visual enhancements was incorporated. The results indicated that both English-language and Spanish-language users responded better to pictographs of the American flag located beside the English text and Mexican flag located beside the Spanish text at beginning of their respective language. Search time was fastest for this enhancement due to a cultural icon (U.S. flag and Mexican flag) that most people in the U.S. recognize (both English-language users and Spanish-language users). Interactions indicated that English-language users and Spanish-language users relied on presence of the U.S. flag in aiding them to discriminate between languages on bilingual labels. Moreover, the presence of the Mexican flag was shown to improve search time, especially for the Spanish-language users. Surprisingly, having the Spanish text in blue paired with flags did not improve search time greatly for Spanish-language users. This result indicated that multiple enhancements may have overloaded the user's capacity to search for their language.

Moreover, English-language users responded fastest to English-only label, Spanish-blue/English-black with American flag, and English-black/Spanish-black with American flag. Results of the English-only label were no surprise but perhaps the result of the other two labels was attributed to the layout of the bilingual label. In the Spanish-blue/English-black with American flag bilingual label design, English-language users fixated at the center of the screen prior to viewing the stimulus. Once the stimulus was presented, the English-language users would direct their eyes to the top of the label to begin their search, and that area is where the American flag is nearest to the center of the page, thus enabling the English-language user to respond quickly. For the English-black/Spanish-black with American flag bilingual label, users would again fixate at the center of the screen prior to the display of the stimulus. Once the stimulus appeared, since both text colors are black, the English-language users, perhaps, may have directed their eyes to the top-left of the screen because the English language is written from left to right, top to bottom. The placement of this text permitted the user to respond quickly as it comes naturally for English-language users to begin reading from the top left of the screen.

Spanish-language users responded fastest to Spanish-only label, Spanish-black/English-black with American and Mexican flags, and English-black/Spanish-black with American and Mexican flags. In the English-black/Spanish-black with American and Mexican flags bilingual label design, Spanish-language users fixated at the center of the screen prior to viewing the stimulus. Once the stimulus was presented, Spanish-language users would direct their eyes to the top of the label to begin their search, and at the center-top area is where the Mexican flag is nearest to the center of the page thus enabling the Spanish-language user to respond quickly. As for the Spanish-black/English-black with American and Mexican flags bilingual label, users would again fixate at the center of the screen prior to the display of the stimulus. Once the stimulus appeared, since both text colors are black, the Spanish-language users may have directed their eyes to the top-left of the screen because the Spanish language is written from left to right, top to bottom. The placement of this text permitted the user to respond quickly as it come naturally for Spanish-language users to begin reading from the top left of the screen.

Through the enhancement of both the American and Mexican flags, users are able to search for the flag next to their language, thus enabling them to respond more quickly than without the enhancement of the flags. The design will permit users to quickly and accurately locate their language on products with bilingual labels.

Bilingual label design having the Spanish text on the left and the English text on the right, English text in black and Spanish text in blue was slowest in response time. However, the fastest response time on average, took an additional 4.38 seconds in comparison to the user's language label (English-text only for English-language user and Spanish-text only for the Spanish-language users). Perhaps the slow response time was caused by two confusing factors. First, there were no flags to draw the user's attention. Second, since the Spanish text was on the left portion of the label and blue in color, English-language users who normally read from left to right may have been confused as the blue highlighted text may have drawn their attention to that portion of the label.

The results showed that as a bilingual label transition from color text enhancement to the no color text enhancement, response times were faster overall. That is, since the Spanish text was blue it may have caught all participants' attention, whether the language is for the users' native language or not, and it may have cost them time.

Significant interactions occurred throughout the analysis. With the presence of the U.S. flag, both English-language users and Spanish-language users responded faster than without the U.S. flag. Having this icon as an enhancement may have aided the user to direct their attention to the correct portion of the label for their language. Another interaction showed that with the presence of the Mexican flag, Spanish-language users' response times reduced when searching for their language. Again, having a representative icon, such as the Mexican flag may have made the Spanish language more salient in the search task.

In addition, English language user's response time results did not favor bilingual labels with blue color text enhancements, especially when combined with the U.S. flag enhancements. This result may indicate that having both enhancements may indirectly have drawn English-language users' attention to the wrong text, thus increasing their response times.

Implications. This research could serve as guidance for manufacturers to use when labeling products that are hazardous for English-language and Spanish-language consumers. Government agencies involved in protecting the health and well being of residents in the

United States should be made aware of this research. Government agencies such as the Consumer Product Safety Commission, the Underwriters Laboratory, and the Food and Drug Administration may be interested in this research and should consider implementing the findings on products that are potentially dangerous to the Spanish-language population.

Bilingual labels are not meant solely for the Spanish-language community, as attitudes from Study 1 indicated that English-language users in the U.S. believed that bilingual labels are useful especially for consumer products that are hazardous. Although it may be conceivable that bilingual labels may be applied to many consumer products, users surveyed in the study seemed to believe that only products that are hazardous to humans should have bilingual labels, so discretion is advised upon considering which products should be labeled.

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Appendix A

Study 1
Bilingual Label Survey

Bilingual Labels

As the number of Spanish speakers increase in the United States, manufacturers may begin to use bilingual labels (those written in both English and Spanish) to communicate directions for use, and any warnings of potential hazards. Below are 14 statements. Please read the ENTIRE list of statements before making your ratings. Use the 0 to 8 point scale below to rate the statements as to how much you disagree or agree with them. Please answer every item. Assume that bilingual labels have both English and Spanish text.

Rating Scale

0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Very strongly disagree	Strongly disagree	Disagree	Slightly disagree	No opinion (neither agree or disagree)	Slightly agree	Agree	Strongly agree	Very Strongly agree

Ratings
↓

1._____ Products with bilingual labels are useful for users who speak English.

2. _____ Products with bilingual labels are useful for users who speak Spanish.

3. _____ Products with bilingual labels make the product cost more because extra material must be printed on the labels.

4. _____ I would expect to pay less for a product with bilingual labels.

5. _____ Bilingual labels are worth the extra cost.

6. _____ Bilingual labels should only be used for those products that are potentially hazardous to users and others (for example, pesticides and chemicals).

7. _____ I do not read the warning on bilingual labels.

8. _____ I prefer products that have bilingual labels more than English-only labels.

9. _____ I think bilingual labels are important because many people in the U.S. do not read English.

10. _____ I believe that bilingual labels make products look "cheap."

11. _____I believe the use of bilingual labels in the U.S. is really intended only for people who can read Spanish , not for people who can read English. (Not all Spanish speakers can read.)

12. _____ I believe that people who intend to live in the U.S. should learn English.

13. _____ I believe that products with bilingual labels should not be sold in the United States.

14. _____ Products with bilingual labels will have too much text, many people will not read the label because it takes too much effort to read.

Optional:
Do you have anything else to add?

____

Appendix B
Study 2 & 3
Informed Consent Form
(English and Spanish version)

North Carolina State University
INFORMED CONSENT FORM

Consumer Product and Safety Issues
Michael S. Wogalter

You are invited to participate in a research study. The purpose of this study is to ascertain people's perceptions and beliefs about various aspects concerning safety issues and consumer products. In this study you will be asked to complete a comprehensive questionnaire dealing with the above mentioned topics.

INFORMATION

You will complete a survey of questions related to the topics mentioned above.

RISKS

There are no known risks or discomforts associated with this study.

CONFIDENTIALITY

The information in the study records will be kept strictly confidential. Data will be stored securely and will be made available only to persons conducting the study unless you specifically give permission in writing to do otherwise. No reference will be made in oral or written reports that could link you to the study.

CONTACT

If you have questions at any time about the study or the procedures, you may contact the researcher, Michael S. Wogalter at 515-8260. If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Dr. Matthew T. Zingraff, Chair of the NCSU IRB for the Use of Human Subjects in Research Committee, Box 7514, NCSU Campus 919/513-1837

PARTICIPATION

Your participation in this study is voluntary; you may decline to participate at any time.

CONSENT

I have read and understand the above information. If you would like a copy of this form, please ask the investigator. I agree to participate in this study.

Participant’s signature______________________________________ Date __________________

Print Name____

Investigator's signature______________________________________ Date _________________

North Carolina State University
FORMULARIO DE INFORMACION Y CONSENTIMIENTO

Temas de Seguridad del Producto del Consumidor
Michael S. Wogalter

Usted está invitado a participar en un estudio de investigación. El objetivo de este estudio es de averiguar el entendimiento y la creencia de la gente acerca de varios aspectos concernientes a temas de seguridad y del consumo de productos. En este estudio se le pedirá completar un cuestionario comprensivo que trata de los temas mencionados arriba.

INFORMACION
Usted completará una encuesta de preguntas relacionadas a los temas mencionados arriba.

RIESGOS
No existen riesgos o incomodidades asociados con este estudio.

CONFIDENCIALIDAD
La información obtenida en este estudio será estrictamente confidencial. Los resultados serán seguramente guardados y estarán disponibles solamente a personas conduciendo el estudio, al menos que usted específicamente de permiso por escrito para hacer lo contrario. Ninguna referencia será hecha, en reportes orales o escritos, que puedan vincularlo con el estudio.

CONTACTOS

Si en algún momento tiene preguntas acerca del estudio o de su procedimiento, puede contactar al investigador, Michael S. Wogalter al 515-8260. Si siente que no ha sido tratado conforme a las descripciones de este formulario, o que sus derechos como participante en la investigación han sido violados durante el curso de este proyecto, puede contactar al Dr. Matthew T. Zingraff, Presidente del NCSU IRB para el Uso de Sujetos Humanos en el Comité de Investigación, Box 7514, NCSU Campus 919/513-1387

PARTICIPACION
Su participación en este estudio es voluntaria; usted puede declinar a participar en cualquier momento.

CONSENTIMIENTO
Yo he leído y entendido la información arriba mencionada. Si usted quisiera una copia de este formulario, por favor pregunte al investigador. Yo acepto participar en este estudio.

Firma del Participante______________________________ Fecha_____________

Nombre Impreso__________________________________

Firma del Investigador______________________________ Fecha_____________

Appendix C
Study 2
Vignette & Rating Scale
(English and Spanish Version)

There will be an increase of Spanish speakers in the United States. Manufacturers may begin to use bilingual labels to communicate directions for use and any warnings of potential hazards. You were asked to help choose specific label designs to be used on consumer products. Use the 0 to 8 point scale for your opinion of the (16) different label designs to which they are *(1)* ***acceptable*** *to you as a person in the United States, (2) the likelihood you would* ***read*** *the product label and (3) the likelihood you would* ***purchase*** *the product with this label.* Assume that bilingual labels have both English and Spanish text.

Acceptable Rating Scale:

0	1	2	3	4	5	6	7	8
Not Acceptable		Somewhat Not Acceptable				Somewhat Acceptable		Very Acceptable

Likelihood Rating Scale:

0	1	2	3	4	5	6	7	8
Not Likely		Somewhat Not Likely				Somewhat Likely		Very Likely

Habrá un incremento de hablantes Hispanos en los Estados Unidos. Fabricantes empezarán a usar etiquetas bilingues para comunicar direcciones de uso y cualquier advertencia de peligro potencial. Usted fue consultado para ayudarnos a escoger etiquetas específicas para ser usadas en productos del consumidor. Use la escala de los puntos 0 al 8 para expresar su opinión de los (16) diferentes diseños de etiquetas para los que son *(1)* ***acceptable*** *para usted (usted viviendo en Estados Unidos), (2) la probabilidad de que usted* **leerá** *la etiqueta del producto y (3) la probabilidad de que usted* **comprará** *el producto con esta etiqueta*. Asuma que las etiquetas bilingues tienen texto en Español e Inglés.

Escala de Puntos de Aceptabilidad

|---------|---------|---------|---------|---------|---------|---------|---------|

0	1	2	3	4	5	6	7	8
No Aceptado	No	Algo Aceptado				Algo Aceptado		Muy Aceptado

Escala de Puntos de Probabilidad

|---------|---------|---------|---------|---------|---------|---------|---------|

0	1	2	3	4	5	6	7	8
No Probable		Algo No Probable				Algo Probable		Muy Probable

Appendix D
Study 2 and 3
Demographic Data
(English and Spanish version)

Bilingual Labels Experiment #2 # ______

Age: ________ Gender: ____ Male ___Female

Ethnicity:
____ African
____ African-American
____ Asian
____ Caucasian
____ East Indian
____ Hispanic or Latino
____ Native American
____ Middle Eastern
____ Mixed Race
____ Pacific Islander
____ Other (please specify): ____________________

Are you a full-time student?
____ No, your current occupation? ____________________
____ Yes, major area of study? ____________________

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 or more
---Grade School-----------High School-- ---Technical/College/University---

Was English the first language you learned? ____ No ____ Yes

If "No," please give your language(s) and level (years): _________________, ______yrs.

- How **acceptable** is this label to you as a person in the United States?
- How likely would you **read** this label?
- How likely would you **purchase** a product with this label?

Ratings: (1-8)

	Format(s)	**acceptable**	**read**	**purchase**
R O U N D	1. English Only (no Spanish)			
	2. Spanish Only (no English)			
	3. English Top-Half/Spanish Bottom-Half			
	4. Spanish Top-Half/English Bottom-Half			
	5. English Top-Two-Thirds/Spanish Bottom			
	6. Spanish Top-Two-Thirds/English Bottom			
	7. English Left Half/Spanish Right Half			
	8. Spanish Left Half/English Right Half			
S Q U A R E	9. English Only (no Spanish)			
	10. Spanish Only (no English)			
	11. English Top-Half/Spanish Bottom-Half			
	12. Spanish Top-Half/English Bottom-Half			
	13. English Top-Two-Thirds/Spanish Bottom			
	14. Spanish Top-Two-Thirds/English Bottom			
	15. English Left Half/Spanish Right Half			
	16. Spanish Left Half/English Right Half			

Proyecto de Etiquetas Bilingues #2 #__________

Edad:__________ Genero: ____Masculino _____Femenino

Grupo Étnico:

____ Mexicano ____ Argentino
____ Puerto Riqueño ____ Colombiano
____ Cubano ____ Chileno
____ Venezolano ____ Ecuatoriano
____ Guatemalteco ____ Dominicano
____ Español Otro: _____________

Es usted un estudiante de tiempo completo?
____ No. Cual es su ocupacíon? _____________
____ Yes. Cual es su area de estudio? _____________

Último o mayor año de estudio completado (por favor circule un número)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 ó mas
--Escuela-----Colegio---- ---Universidad----------

Fue Inglés el primer idioma que aprendió? _____No ____Yes
Si "No," por favor indique su idioma natal y los años de experiencia: __________________, __________ años

Cuan **aceptable** es esta etiqueta para usted?
Cual es la probabilidad de que usted **lea** esta etiqueta?
Cual es la probabilidad de que usted **comprará** un producto con esta etiqueta?

Ratings: (1-8)

	Format(s)	**acceptable**	**read**	**purchase**
R O U N D	1. English Only (no Spanish)			
	2. Spanish Only (no English)			
	3. English Top-Half/Spanish Bottom-Half			
	4. Spanish Top-Half/English Bottom-Half			
	5. English Top-Two-Thirds/Spanish Bottom			
	6. Spanish Top-Two-Thirds/English Bottom			
	7. English Left Half/Spanish Right Half			
	8. Spanish Left Half/English Right Half			
S Q U A R E	9. English Only (no Spanish)			
	10. Spanish Only (no English)			
	11. English Top-Half/Spanish Bottom-Half			
	12. Spanish Top-Half/English Bottom-Half			
	13. English Top-Two-Thirds/Spanish Bottom			
	14. Spanish Top-Two-Thirds/English Bottom			
	15. English Left Half/Spanish Right Half			
	16. Spanish Left Half/English Right Half			

Bilingual Labels Study #3 # ______

Age: ________ Gender: ____ Male ____ Female

Ethnicity:
____ African
____ African-American
____ Asian
____ Caucasian
____ East Indian
____ Hispanic or Latino
____ Native American
____ Middle Eastern
____ Mixed Race
____ Pacific Islander
____ Other (please specify): ____________________

Are you a full-time student?

____ No, your current occupation? ____________________
____ Yes, major area of study? ____________________

Last or highest year of school completed (please circle a number):

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 or more
---Grade School-----------High School-- ---Technical/College/University---

Was English the first language you learned? ____ No ____ Yes

If "No," please give your language(s) and level (years): _________________, ______yrs.

<u>Proyecto de Etiquetas Bilingues</u> #3 #__________

Edad:__________ Genero: ____Masculino _____Femenino

Grupo Étnico:

____ Mexicano	____ Argentino
____ Puerto Riqueño	____ Colombiano
____ Cubano	____ Chileno
____ Venezolano	____ Ecuatoriano
____ Guatemalteco	____ Dominicano
____ Español	Otro: _____________

Es usted un estudiante de tiempo completo?
____ No. Cual es su ocupacíon? _____________
____ Yes. Cual es su area de estudio? _____________

Último o mayor año de estudio completado (por favor circule un número)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 ó mas
--Escuela-----Colegio---- ---Universidad----------

Fue Inglés el primer idioma que aprendió? _____No ____Yes

Si "No," por favor indique su idioma natal y los años de experiencia: __________________, __________ años

Appendix E
Study 2
Bilingual Label Formats

Label Formats –Shown on the following pages

Study 2 (Labels adhered to cylindrical and box –shaped containers)

Label Number, Condition Name and Page Number

Important: To avoid damage or poor results, carefully read and follow all directions and precautionary statements.
DIRECTIONS FOR USE· It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
LAWN PROTECTION
Controls certain lawn pests on both grass and dichondra lawns. Apply with the shaker top on the container. Apply at a rate of 1 lb. Per 200 sq ft. (10 ft X 20 ft)
Ants Cinch bugs Fire ants Sowbugs (Pillbugs) Armyworms Clover mites Fleas Springtails(collumbola) Bermuda grass mites Crickets Lawn moths White grubs of Japanese beetle Billbugs Cutworms (Sodwebworms) Brown dog ticks Digger wasps Leafhoppers European chafer Chiggers Earwigs Millipedes Southern chafer
DIRECTIONS: Water grass with at least ¼-inch of water after applications, however, stop watering before puddling occurs. For billbug control, apply when activity is first observed or when chewed or brown grass indicates damage. If necessary, repeat application at 3 week intervals. Make no more than 4 applications per year. For hyperodes weevils, treat problem areas in mid-April and again in mid-May. For grub control, except dung beetle, treat any time between late July and early October. For dung beetle control, apply in spring or early summer when damage is first noticed. Treat again in late summer or early fall, if a second generation occurs.

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION: Harmful if swallowed, inhaled, or absorbed through skin. Avoid breathing dust and contact with skin, eyes, or clothing. Wash thoroughly after handling and before eating or smoking. May cause contact sensitization reactions result, contact a physician. Do not store near food or feed products. Food utensils such as tablespoons or measuring cups must not be used for food purposes after use in measuring pesticides. Do not contaminate ornamental fish ponds. Do not allow people or pets on treated areas until granules have been watered in and the grass has dried.
FIRST AID
If Swallowed: Call a physician immediately. Drink 1 or 2 glasses or water and induce vomiting by touching the back of the throat with finger. Repeat until vomit fluid is clear. Do not induce vomiting or give anything by mouth if person is unconscious or convulsing. **If Inhaled:** Remove victim to fresh air and apply artificial respiration if indicated. Get medical attention. **If on Skin:** Rinse eyes with plenty of water and call a physician immediately. **NOTE TO PHYSICIAN:** This product is an organophosphate insecticide. If symptoms of cholinesterase inhibition are present, atropine sulfate by injection is antidotal. 2-PAM is also antidotal and may be administered, but only in conjunction with atropine.

ENVIRONMENTAL HAZARDS
This product is highly toxic to birds, fish, and other wildlife. Birds, especially waterfowl (ducks or geese), feeding or drinking on treated areas may be killed. Because of the migratory habits of certain Atlantic Coast waterfowl, do not apply this product to lawns in Nassau County, New York, between November 1 and May 20. Do not exceed maximum permitted label rates. Application rates above those recommended significantly increase potential hazards to birds. Avoid overlapping granules. Follow all watering instructions in the directions for use; however, stop watering before puddling occurs. Do not apply this product to sites occupied by waterfowl, or within 75 ft. of any body of water which may attract waterfowl, such as ponds or lakes. Keep out of lakes, streams, ponds, tidal marshes, and estuaries. Do not apply directly to water. Runoff may be hazardous to fish and other aquatic organisms in neighboring areas. Shrimp and crab may be killed at applications rates recommended on this label. Do not apply where fish, shrimp, crab and other aquatic life are important resources. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. NOTICE: Buyer assumes all responsibility for safety and use not in accordance with directions.

Importante: Para evitar daños o resultados pobres, lea y siga cuidadosamente los direcciones y los enunciados preventivos.
DIRECCIONES DE USO: Es una violación de la Ley Federal usar este producto de una manera inconsistente con su etiqueta.
PROTECCION DEL CESPED
Controla ciertas pestes del césped en ambos la hierba y en césped de dichondra. Aplique con el agitador de arriba del contenedor. Aplique a una proporción de 1 lb. Por 200 pies cuadrados (1 lb. Por 18,581 m^2. (3,048 m X 6,096 m)
Ants (hormigas) Cinch (cincha) bugs (insectos) Fire (fuego) Ants Sowbugs (Pillbugs) Gusanos de polilla Garrapatas de trébol Pulgas Springtails (collumbola) Garrapata del césped de Bermuda Grillos Polilla de césped Gorgojo blanco de escarabajo Japonés Billbugs Larva de la falena (Sodwebworms) Brown dog ticks Avispa excavadora Leafhoppers European chafer Garrapatas Cortapicos Milpiés Southern chafer (Chafer sureño)

DIRECCIONES: Riegue la hierba con al menos 1/4 pulgada de agua después de las aplicaciones del producto, de todos modos, pare de regar antes de que se encharque. Para controlar el billbug, aplique cuando la actividad sea observada por primera vez o cuando el césped chewed o café indiquen daño. Si necesario, repita la aplicación a intervalos de 3 semanas. No haga más de 4 aplicaciones por año. Para gorgojos de hyperodes, trate las áreas problemáticas a mediados de Abril y otra vez a mediados de Mayo. Para control de larvas, excepto estiércol de escarabajo (dung beetle), trate cualquier momento entre finales de Julio y comienzos de Octubre. Para control de estiércol de escarabajo (dung beetle), aplique en primavera o a comienzos de verano cuando el daño se note por primera vez. Trate otra vez a finales de verano o a comienzos de otoño, si una segunda generación aparece.

ENUNCIADO PREVENTIVO
PELIGROSO PARA HUMANOS Y ANIMALES DOMESTICOS
PRECAUCION: Dañino si tragado, inhalado o absorbido por la piel. Evite respirar polvo y el contacto con piel, ojos o ropa. Lavarse por completo después de manipularlo y antes de comer o fumar. Podría causar sensibilización después de repetido contacto con la piel de personas sensibles. Si reacciones de sensibilización ocurren contacte a un médico. No almacenor cerca de comida o productos alimenticios. Utensilios de comida como cucharas o tazas de medida no deben ser usados para propósitos alimenticios después de utilizarlos para medición del pesticida. No contamine peceras ornamentales. No permita personas o animales en áreas tratadas hasta que el gránulo haya sido absorbido y la hierba se haya secado.
PRIMEROS AUXILIOS
Si ingerido: Llame a un doctor inmediatamente. Beba uno o dos vasos de agua e induzca al vómito tocando la parta de atrás de la garganta con un dedo. Repita hasta que el vomitado sea transparente. No induzca al vómito o introduzca nada por la boca si la persona está inconsciente o convulsionando. **Si inhalado**: Coloque a la persona al aire libre y aplique respiración artificial si fuese necesario. Consiga atención médica. **Si en contacto con la piel**: Lavar inmediatamente con jabón y agua. Enjuagar completamente. Si la irritación persiste obtenga atención médica. **NOTA AL MEDICO**: Este producto es un insecticida organophosphate*. Si síntomas de inhibición colinesterasa existen, sulfato de atropina por inyección es un antídoto. 2-PAM* también es un antídoto y puede ser administrado, pero sólo en conjunción con atropina.
PELIGRO AMBIENTAL
Este producto es altamente tóxico para pájaros, peces y fauna silvestre. Aves, especialmente aves acuáticas (patos o gansos), pueden morirse por alimentación o bebida de aguas tratadas. Por hábitos migratorios de ciertas aves acuáticas de la Costa Atlántica, no aplique este producto a prados del Condado de Nassau, Nueva York, entre el 1 de Noviembre y el 20 de Mayo. No exceda el máximo porcentaje permitido en la etiqueta. La utilización del producto que exceda el porcentaje recomendado incrementa el potencial de peligro para aves. Evite el superposicionamiento de los gránulos. Siga todas las instrucciones de riego en las direcciones de empleo; de todos modos, pare de regar antes de que se encharque. No aplique este producto en lugares ocupados por aves, o 75 pies alrededor de cualquier reserva de agua que pueda atraer aves, como estanques o lagos. Mantenga alejado de lagos, arroyos, estanques, pantanos y esteros. No aplique directamente al agua. El exceso de riego puede ser peligroso para peces y otras especies acuáticas en áreas vecinas. Camarón y cangrejo pueden ser matados con la aplicación del producto a niveles recomendados en esta etiqueta. No aplique donde peces, camarón, cangrejo y otras especies acuáticas son recursos importantes. No contamine el agua limpiando el equipo o por la eliminación del agua del equipo.
AVISO: El comprador asume toda responsabilidad por la seguridad y uso en no-conformidad con las instrucciones

Important: To avoid damage or poor results, carefully read and follow all directions and precautionary statements.
DIRECTIONS FOR USE· It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
LAWN PROTECTION
Controls certain lawn pests on both grass and dichondra lawns. Apply with the shaker top on the container. Apply at a rate of 1 lb. Per 200 sq ft. (10 ft X 20 ft)
Ants Cinch bugs Fire ants Sowbugs (Pillbugs) Armyworms Clover mites Fleas Springtails(collumbola) Bermuda grass mites Crickets Lawn moths White grubs of Japanese beetle Billbugs Cutworms (Sodwebworms) Brown dog ticks Digger wasps
PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION: Harmful if swallowed, inhaled, or absorbed through skin. Avoid breathing dust and contact with skin, eyes, or clothing. Wash thoroughly after handling and before eating or smoking. May cause contact sensitization reactions result, contact a physician. Do not store near food or feed products. Food utensils such as tablespoons or measuring cups must not be used for food purposes after use in measuring pesticides. Do not contaminate ornamental fish ponds. Do not allow people or pets on treated areas until granules have been watered in and the grass has dried.
FIRST AID
If Swallowed: Call a physician immediately. Drink 1 or 2 glasses or water and induce vomiting by touching the back of the throat with finger. Repeat until vomit fluid is clear. Do not induce vomiting or give anything by mouth if person is unconscious or convulsing. **If Inhaled:** Remove victim to fresh air and apply artificial respiration if indicated. Get medical attention. **If on Skin:** Rinse eyes with plenty of water and call a physician immediately. **NOTE TO PHYSICIAN:** This product is an organophosphate insecticide. If symptoms of cholinesterase inhibition are present, atropine sulfate by injection is antidotal. 2-PAM is also antidotal and may be administered, but only in conjunction with atropine.

Leafhoppers European chafer Chiggers Earwigs Millipedes Southern chafer
DIRECTIONS: Water grass with at least ¼-inch of water after applications, however, stop watering before puddling occurs. For billbug control, apply when activity is first observed or when chewed or brown grass indicates damage. If necessary, repeat application at 3 week intervals. Make no more than 4 applications per year. For hyperodes weevils, treat problem areas in mid-April and again in mid-May. For grub control, except dung beetle, treat any time between late July and early October. For dung beetle control, apply in spring or early summer when damage is first noticed. Treat again in late summer or early fall, if a second generation occurs.

ENVIRONMENTAL HAZARDS
This product is highly toxic to birds, fish, and other wildlife. Birds, especially waterfowl (ducks or geese), feeding or drinking on treated areas may be killed. Because of the migratory habits of certain Atlantic Coast waterfowl, do not apply this product to lawns in Nassau County, New York, between November 1 and May 20. Do not exceed maximum permitted label rates. Application rates above those recommended significantly increase potential hazards to birds. Avoid overlapping granules. Follow all watering instructions in the directions for use; however, stop watering before puddling occurs. Do not apply this product to sites occupied by waterfowl, or within 75 ft. of any body of water which may attract waterfowl, such as ponds or lakes. Keep out of lakes, streams, ponds, tidal marshes, and estuaries. Do not apply directly to water. Runoff may be hazardous to fish and other aquatic organisms in neighboring areas. Shrimp and crab may be killed at applications rates recommended on this label. Do not apply where fish, shrimp, crab and other aquatic life are important resources. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters.
NOTICE: Buyer assumes all responsibility for safety and use not in accordance with directions.

Importante: Para evitar daños o resultados pobres, lea y siga cuidadosamente los direcciones y los enunciados preventivos.
DIRECCIONES DE USO: Es una violación de la Ley Federal usar este producto de una manera inconsistente con su etiqueta.
PROTECCION DEL CESPED
Controla ciertas pestes del césped en ambos la hierba y en césped de dichondra. Aplique con el agitador de arriba del contenedor. Aplique a una proporción de 1 lb. Por 200 pies cuadrados (1 lb. Por 18,581 m^2. (3,048 m X 6,096 m)
Ants (hormigas) Cinch (cincha) bugs (insectos) Fire (fuego) Ants Sowbugs (Pillbugs) Gusanos de polilla Garrapatas de trébol Pulgas Springtails (collumbola) Garrapata del césped de Bermuda Grillos Polilla de césped Gorgojo blanco de escarabajo Japonés Billbugs Larva de la falena (Sodwebworms) Brown dog ticks Avispa excavadora Leafhoppers European
ENUNCIADO PREVENTIVO
PELIGROSO PARA HUMANOS Y ANIMALES DOMESTICOS
PRECAUCION: Dañino si tragado, inhalado o absorbido por la piel. Evite respirar polvo y el contacto con piel, ojos o ropa. Lavarse por completo después de manipularlo y antes de comer o fumar. Podría causar sensibilización después de repetido contacto con la piel de personas sensibles. Si reacciones de sensibilización ocurren contacte a un médico. No almacenor cerca de comida o productos alimenticios. Utensilios de comida como cucharas o tazas de medida no deben ser usados para propósitos alimenticios después de utilizarlos para medición del pesticida. No contamine peceras ornamentales. No permita personas o animales en áreas tratadas hasta que el gránulo haya sido absorbido y la hierba se haya secado.
PRIMEROS AUXILIOS
Si ingerido: Llame a un doctor inmediatamente. Beba uno o dos vasos de agua e induzca al vómito tocando la parta de atrás de la garganta con un dedo. Repita hasta que el vomitado sea transparente. No induzca al vómito o introduzca nada por la boca si la persona está inconsciente o convulsionando. **Si inhalado**: Coloque a la persona al aire libre y aplique respiración artificial si fuese necesario. Consiga atención médica. **Si en contacto con la piel**: Lavar inmediatamente con jabón y agua. Enjuagar completamente. Si la irritación persiste obtenga atención médica. **NOTA AL MÉDICO**: Este producto es un insecticida organophosphate*. Si síntomas de inhibición colinesterasa existen, sulfato de atropina por inyección es un antídoto. 2-PAM* también es un antídoto y puede ser administrado, pero sólo en conjunción con atropina.
PELIGRO AMBIENTAL
Este producto es altamente tóxico para pájaros, peces y fauna silvestre. Aves, especialmente aves acuáticas (patos o gansos),

chafer Garrapatas Cortapicos Milpiés Southern chafer (Chafer sureño)
DIRECCIONES: Riegue la hierba con al menos 1/4 pulgada de agua después de las aplicaciones del producto, de todos modos, pare de regar antes de que se encharque. Para controlar el billbug, aplique cuando la actividad sea observada por primera vez o cuando el césped chewed o café indiquen daño. Si necesario, repita la aplicación a intervalos de 3 semanas. No haga más de 4 aplicaciones por año. Para gorgojos de hyperodes, trate las áreas problemáticas a mediados de Abril y otra vez a mediados de Mayo. Para control de larvas, excepto estiércol de escarabajo (dung beetle), trate cualquier momento entre finales de Julio y comienzos de Octubre. Para control de estiércol de escarabajo (dung beetle), aplique en primavera o a comienzos de verano cuando el daño se note por primera vez. Trate otra vez a finales de verano o a comienzos de otoño, si una segunda generación aparece.
pueden morirse por alimentación o bebida de aguas tratadas. Por hábitos migratorios de ciertas aves acuáticas de la Costa Atlántica, no aplique este producto a prados del Condado de Nassau, Nueva York, entre el 1 de Noviembre y el 20 de Mayo. No exceda el máximo porcentaje permitido en la etiqueta. La utilización del producto que exceda el porcentaje recomendado incrementa el potencial de peligro para aves. Evite el superposicionamiento de los gránulos. Siga todas las instrucciones de riego en las direcciones de empleo; de todos modos, pare de regar antes de que se encharque. No aplique este producto en lugares ocupados por aves, o 75 pies alrededor de cualquier reserva de agua que pueda atraer aves, como estanques o lagos. Mantenga alejado de lagos, arroyos, estanques, pantanos y esteros. No aplique directamente al agua. El exceso de riego puede ser peligroso para peces y otras especies acuáticas en áreas vecinas. Camarón y cangrejo pueden ser matados con la aplicación del producto a niveles recomendados en esta etiqueta. No aplique donde peces, camarón, cangrejo y otras especies acuáticas son recursos importantes. No contamine el agua limpiando el equipo o por la eliminación del agua del equipo.
AVISO: El comprador asume toda responsabilidad por la seguridad y uso en no-conformidad con las instrucciones.

Importante: Para evitar daños o resultados pobres, lea y siga cuidadosamente los direcciones y los enunciados preventivos.
DIRECCIONES DE USO: Es una violación de la Ley Federal usar este producto de una manera inconsistente con su etiqueta.
PROTECCION DEL CESPED
Controla ciertas pestes del césped en ambos la hierba y en césped de dichondra. Aplique con el agitador de arriba del contenedor. Aplique a una proporción de 1 lb. Por 200 pies cuadrados (1 lb. Por 18,581 m^2. (3,048 m X 6,096 m)
Ants (hormigas) Cinch (cincha) bugs (insectos) Fire (fuego) Ants Sowbugs (Pillbugs) Gusanos de polilla Garrapatas de trébol Pulgas Springtails (collumbola) Garrapata del césped de Bermuda Grillos Polilla de césped Gorgojo blanco de escarabajo Japonés Billbugs Larva de la falena (Sodwebworms) Brown dog ticks Avispa excavadora Leafhoppers European chafer Garrapatas Cortapicos Milpiés Southern chafer (Chafer sureño)

DIRECCIONES: Riegue la hierba con al menos 1/4 pulgada de agua después de las aplicaciones del producto, de todos modos, pare de regar antes de que se encharque. Para controlar el billbug, aplique cuando la actividad sea observada por primera vez o cuando el césped chewed o café indiquen daño. Si necesario, repita la aplicación a intervalos de 3 semanas. No haga más de 4 aplicaciones por año. Para gorgojos de hyperodes, trate las áreas problemáticas a mediados de Abril y otra vez a mediados de Mayo. Para control de larvas, excepto estiércol de escarabajo (dung beetle), trate cualquier momento entre finales de Julio y comienzos de Octubre. Para control de estiércol de escarabajo (dung beetle), aplique en primavera o a comienzos de verano cuando el daño se note por primera vez. Trate otra vez a finales de verano o a comienzos de otoño, si una segunda generación aparece.

ENUNCIADO PREVENTIVO
PELIGROSO PARA HUMANOS Y ANIMALES DOMESTICOS
PRECAUCION: Dañino si tragado, inhalado o absorbido por la piel. Evite respirar polvo y el contacto con piel, ojos o ropa. Lavarse por completo después de manipularlo y antes de comer o fumar. Podría causar sensibilización después de repetido contacto con la piel de personas sensibles. Si reacciones de sensibilización ocurren contacte a un médico. No almacenor cerca de comida o productos alimenticios. Utensilios de comida como cucharas o tazas de medida no deben ser usados para propósitos alimenticios después de utilizarlos para medición del pesticida. No contamine peceras ornamentales. No permita personas o animales en áreas tratadas hasta que el gránulo haya sido absorbido y la hierba se haya secado.
PRIMEROS AUXILIOS
Si ingerido: Llame a un doctor inmediatamente. Beba uno o dos vasos de agua e induzca al vómito tocando la parta de atrás de la garganta con un dedo. Repita hasta que el vomitado sea transparente. No induzca al vómito o introduzca nada por la boca si la persona está inconsciente o convulsionando. **Si inhalado**: Coloque a la persona al aire libre y aplique respiración artificial si fuese necesario. Consiga atención médica. **Si en contacto con la piel**: Lavar inmediatamente con jabón y agua. Enjuagar completamente. Si la irritación persiste obtenga atención médica. **NOTA AL MEDICO**: Este producto es un insecticida organophosphate*. Si síntomas de inhibición colinesterasa existen, sulfato de atropina por inyección es un antídoto. 2-PAM* también es un antídoto y puede ser administrado, pero sólo en conjunción con atropina.
PELIGRO AMBIENTAL
Este producto es altamente tóxico para pájaros, peces y fauna silvestre. Aves, especialmente aves acuáticas (patos o gansos), pueden morirse por alimentación o bebida de aguas tratadas. Por hábitos migratorios de ciertas aves acuáticas de la Costa Atlántica, no aplique este producto a prados del Condado de Nassau, Nueva York, entre el 1 de Noviembre y el 20 de Mayo. No exceda el máximo porcentaje permitido en la etiqueta. La utilización del producto que exceda el porcentaje recomendado incrementa el potencial de peligro para aves. Evite el superposicionamiento de los gránulos. Siga todas las instrucciones de riego en las direcciones de empleo; de todos modos, pare de regar antes de que se encharque. No aplique este producto en lugares ocupados por aves, o 75 pies alrededor de cualquier reserva de agua que pueda atraer aves, como estanques o lagos. Mantenga alejado de lagos, arroyos, estanques, pantanos y esteros. No aplique directamente al agua. El exceso de riego puede ser peligroso para peces y otras especies acuáticas en áreas vecinas. Camarón y cangrejo pueden ser matados con la aplicación del producto a niveles recomendados en esta etiqueta. No aplique donde peces, camarón, cangrejo y otras especies acuáticas son recursos importantes. No contamine el agua limpiando el equipo o por la eliminación del agua del equipo.
AVISO: El comprador asume toda responsabilidad por la seguridad y uso en no-conformidad con las instrucciones

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Important: To avoid damage or poor results, carefully read and follow all directions and precautionary statements.
DIRECTIONS FOR USE· It is a violation of Federal law to use this inconsistent with its labeling.
LAWN PROTECTION
Controls certain lawn pests on both grass and dichondra lawns. Apply with the shaker top on the container. Apply at a rate of 1 lb. Per 200 sq ft. (10 ft X 20 ft)
Ants Cinch bugs Fire ants Sowbugs (Pillbugs) Armyworms Clover mites Fleas Springtails(collumbola) Bermuda grass mites Crickets Lawn moths White grubs of Japanese beetle Billbugs Cutworms (Sodwebworms) Brown dog ticks Digger wasps
PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION: Harmful if swallowed, inhaled, or absorbed through skin. Avoid breathing dust and contact with skin, eyes, or clothing. Wash thoroughly after handling and before eating or smoking. May cause contact sensitization reactions result, contact a physician. Do not store near food or feed products. Food utensils such as tablespoons or measuring cups must not be used for food purposes after use in measuring pesticides. Do not contaminate ornamental fish ponds. Do not allow people or pets on treated areas until granules have been watered in and the grass has dried.
FIRST AID
If Swallowed: Call a physician immediately. Drink 1 or 2 glasses or water and induce vomiting by touching the back of the throat with finger. Repeat until vomit fluid is clear. Do not induce vomiting or give anything by mouth if person is unconscious or convulsing. **If Inhaled:** Remove victim to fresh air and apply artificial respiration if indicated. Get medical attention. **If on Skin:** Rinse eyes with plenty of water and call a physician immediately. **NOTE TO PHYSICIAN:** This product is an organophosphate insecticide. If symptoms of cholinesterase inhibition are present, atropine sulfate by injection is antidotal. 2-PAM is also antidotal and may be administered, but only in conjunction with atropine.
ENVIRONMENTAL HAZARDS
This product is highly toxic to birds, fish, and other wildlife. Birds, especially waterfowl (ducks or geese), feeding or drinking on

Leafhoppers European chafer Chiggers Earwigs Millipedes Southern chafer
DIRECTIONS: Water grass with at least ¼-inch of water after applications, however, stop watering before puddling occurs. For billbug control, apply when activity is first observed or when chewed or brown grass indicates damage. If necessary, repeat application at 3 week intervals. Make no more than 4 applications per year. For hyperodes weevils, treat problem areas in mid-April and again in mid-May. For grub control, except dung beetle, treat any time between late July and early October. For dung beetle control, apply in spring or early summer when damage is first noticed. Treat again in late summer or early fall, if a second generation occurs.
treated areas may be killed. Because of the migratory habits of certain Atlantic Coast waterfowl, do not apply this product to lawns in Nassau County, New York, between November 1 and May 20. Do not exceed maximum permitted label rates. Application rates above those recommended significantly increase potential hazards to birds. Avoid overlapping granules. Follow all watering instructions in the directions for use; however, stop watering before puddling occurs. Do not apply this product to sites occupied by waterfowl, or within 75 ft. of any body of water which may attract waterfowl, such as ponds or lakes. Keep out of lakes, streams, ponds, tidal marshes, and estuaries. Do not apply directly to water. Runoff may be hazardous to fish and other aquatic organisms in neighboring areas. Shrimp and crab may be killed at applications rates recommended on this label. Do not apply where fish, shrimp, crab and other aquatic life are important resources. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters.
NOTICE: Buyer assumes all responsibility for safety and use not in accordance with directions.

Important: To avoid damage or poor results, carefully read and follow all directions and precautionary statements.
DIRECTIONS FOR USE· It is a violation of Federal law to product in a manner inconsistent with its labeling.
LAWN PROTECTION
Controls certain lawn pests on both grass and dichondra lawns. Apply with the shaker top on the container. Apply at a rate of 1 lb. Per 200 sq ft. (10 ft X 20 ft)
Ants Cinch bugs Fire ants Sowbugs (Pillbugs) Armyworms Clover mites Fleas Springtails(collumbola) Bermuda grass mites Crickets Lawn moths White grubs of Japanese beetle Billbugs Cutworms (Sodwebworms) Brown dog ticks Digger wasps Leafhoppers European chafer Chiggers Earwigs Millipedes Southern chafer
PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION: Harmful if swallowed, inhaled, or absorbed through skin. Avoid breathing dust and contact with skin, eyes, or clothing. Wash thoroughly after handling and before eating or smoking. May cause contact sensitization reactions result, contact a physician. Do not store near food or feed products. Food utensils such as tablespoons or measuring cups must not be used for food purposes after use in measuring pesticides. Do not contaminate ornamental fish ponds. Do not allow people or pets on treated areas until granules have been watered in and the grass has dried.
FIRST AID
If Swallowed: Call a physician immediately. Drink 1 or 2 glasses or water and induce vomiting by touching the back of the throat with finger. Repeat until vomit fluid is clear. Do not induce vomiting or give anything by mouth if person is unconscious or convulsing. **If Inhaled:** Remove victim to fresh air and apply artificial respiration if indicated. Get medical attention. **If on Skin:** Rinse eyes with plenty of water and call a physician immediately. **NOTE TO PHYSICIAN:** This product is an organophosphate insecticide. If symptoms of cholinesterase inhibition are present, atropine sulfate by injection is antidotal. 2-PAM is also antidotal and may be administered, but only in conjunction with atropine.

DIRECTIONS: Water grass with at least ¼-inch of water after applications, however, stop watering before puddling occurs. For billbug control, apply when activity is first observed or when chewed or brown grass indicates damage. If necessary, repeat application at 3 week intervals. Make no more than 4 applications per year. For hyperodes weevils, treat problem areas in mid-April and again in mid-May. For grub control, except dung beetle, treat any time between late July and early October. For dung beetle control, apply in spring or early summer when damage is first noticed. Treat again in late summer or early fall, if a second generation occurs.
ENVIRONMENTAL HAZARDS
This product is highly toxic to birds, fish, and other wildlife. Birds, especially waterfowl (ducks or geese), feeding or drinking on treated areas may be killed. Because of the migratory habits of certain Atlantic Coast waterfowl, do not apply this product to lawns in Nassau County, New York, between November 1 and May 20. Do not exceed maximum permitted label rates. Application rates above those recommended significantly increase potential hazards to birds. Avoid overlapping granules. Follow all watering instructions in the directions for use; however, stop watering before puddling occurs. Do not apply this product to sites occupied by waterfowl, or within 75 ft. of any body of water which may attract waterfowl, such as ponds or lakes. Keep out of lakes, streams, ponds, tidal marshes, and estuaries. Do not apply directly to water. Runoff may be hazardous to fish and other aquatic organisms in neighboring areas. Shrimp and crab may be killed at applications rates recommended on this label. Do not apply where fish, shrimp, crab and other aquatic life are important resources. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters.
NOTICE: Buyer assumes all responsibility for safety and use not in accordance with directions.

Importante: Para evitar daños o resultados pobres, lea y siga cuidadosamente los direcciones y los enunciados preventivos.
DIRECCIONES DE USO: Es una violación de la Ley Federal usar este producto de una manera inconsistente con su etiqueta.
PROTECCION DEL CESPED
Controla ciertas pestes del césped en ambos la hierba y en césped de dichondra. Aplique con el agitador de arriba del contenedor. Aplique a una proporción de 1 lb. Por 200 pies cuadrados (1 lb. Por 18,581 m^2. (3,048 m X 6,096 m)
Ants (hormigas) Cinch (cincha) bugs (insectos) Fire (fuego) Ants Sowbugs (Pillbugs) Gusanos de polilla Garrapatas de trébol Pulgas Springtails (collumbola) Garrapata del césped de Bermuda Grillos Polilla de césped Gorgojo blanco de escarabajo Japonés Billbugs Larva de la falena (Sodwebworms) Brown dog ticks Avispa excavadora Leafhoppers European chafer Garrapatas Cortapicos Milpiés Southern chafer (Chafer sureño)

ENUNCIADO PREVENTIVO
PELIGROSO PARA HUMANOS Y ANIMALES DOMESTICOS
PRECAUCION: Dañino si tragado, inhalado o absorbido por la piel. Evite respirar polvo y el contacto con piel, ojos o ropa. Lavarse por completo después de manipularlo y antes de comer o fumar. Podría causar sensibilización después de repetido contacto con la piel de personas sensibles. Si reacciones de sensibilización ocurren contacte a un médico. No almacenor cerca de comida o productos alimenticios. Utensilios de comida como cucharas o tazas de medida no deben ser usados para propósitos alimenticios después de utilizarlos para medición del pesticida. No contamine peceras ornamentales. No permita personas o animales en áreas tratadas hasta que el gránulo haya sido absorbido y la hierba se haya secado.
PRIMEROS AUXILIOS
Si ingerido: Llame a un doctor inmediatamente. Beba uno o dos vasos de agua e induzca al vómito tocando la parta de atrás de la garganta con un dedo. Repita hasta que el vomitado sea transparente. No induzca al vómito o introduzca nada por la boca si la persona está inconsciente o convulsionando. **Si inhalado**: Coloque a la persona al aire libre y aplique respiración artificial si fuese necesario. Consiga atención médica. **Si en contacto con la piel**: Lavar inmediatamente con jabón y agua. Enjuagar completamente. Si la irritación persiste obtenga atención médica. **NOTA AL MÉDICO**: Este producto es un insecticida organophosphate*. Si síntomas de inhibición colinesterasa existen, sulfato de atropina por inyección es un antídoto. 2-PAM* también es un antídoto y puede ser administrado, pero sólo en conjunción con atropina.
PELIGRO AMBIENTAL

DIRECCIONES: Riegue la hierba con al menos 1/4 pulgada de agua después de las aplicaciones del producto, de todos modos, pare de regar antes de que se encharque. Para controlar el billbug, aplique cuando la actividad sea observada por primera vez o cuando el césped chewed o café indiquen daño. Si necesario, repita la aplicación a intervalos de 3 semanas. No haga más de 4 aplicaciones por año. Para gorgojos de hyperodes, trate las áreas problemáticas a mediados de Abril y otra vez a mediados de Mayo. Para control de larvas, excepto estiércol de escarabajo (dung beetle), trate cualquier momento entre finales de Julio y comienzos de Octubre. Para control de estiércol de escarabajo (dung beetle), aplique en primavera o a comienzos de verano cuando el daño se note por primera vez. Trate otra vez a finales de verano o a comienzos de otoño, si una segunda generación aparece.

Este producto es altamente tóxico para pájaros, peces y fauna silvestre. Aves, especialmente aves acuáticas (patos o gansos), pueden morirse por alimentación o bebida de aguas tratadas. Por hábitos migratorios de ciertas aves acuáticas de la Costa Atlántica, no aplique este producto a prados del Condado de Nassau, Nueva York, entre el 1 de Noviembre y el 20 de Mayo. No exceda el máximo porcentaje permitido en la etiqueta. La utilización del producto que exceda el porcentaje recomendado incrementa el potencial de peligro para aves. Evite el superposicionamiento de los gránulos. Siga todas las instrucciones de riego en las direcciones de empleo; de todos modos, pare de regar antes de que se encharque. No aplique este producto en lugares ocupados por aves, o 75 pies alrededor de cualquier reserva de agua que pueda atraer aves, como estanques o lagos. Mantenga alejado de lagos, arroyos, estanques, pantanos y esteros. No aplique directamente al agua. El exceso de riego puede ser peligroso para peces y otras especies acuáticas en áreas vecinas. Camarón y cangrejo pueden ser matados con la aplicación del producto a niveles recomendados en esta etiqueta. No aplique donde peces, camarón, cangrejo y otras especies acuáticas son recursos importantes. No contamine el agua limpiando el equipo o por la eliminación del agua del equipo.
AVISO: El comprador asume toda responsabilidad por la seguridad y uso en no-conformidad con las instrucciones.

Importante: Para evitar daños o resultados pobres, lea y siga cuidadosamente los direcciones y los enunciados preventivos.
DIRECCIONES DE USO: Es una violación de la Ley Federal usar este producto de una manera inconsistente con su etiqueta.
PROTECCION DEL CESPED
Controla ciertas pestes del césped en ambos la hierba y en césped de dichondra. Aplique con el agitador de arriba del contenedor. Aplique a una proporción de 1 lb. Por 200 pies cuadrados (1 lb. Por 18,581 m^2. (3,048 m X 6,096 m)
Ants (hormigas) Cinch (cincha) bugs (insectos) Fire (fuego) Ants Sowbugs (Pillbugs) Gusanos de polilla Garrapatas de trébol Pulgas Springtails (collumbola) Garrapata del césped de Bermuda Grillos Polilla de césped Gorgojo blanco de escarabajo Japonés Billbugs Larva de la falena (Sodwebworms) Brown dog ticks Avispa excavadora Leafhoppers European chafer Garrapatas Cortapicos Milpiés Southern chafer (Chafer sureño)
ENUNCIADO PREVENTIVO
PELIGROSO PARA HUMANOS Y ANIMALES DOMESTICOS
PRECAUCION: Dañino si tragado, inhalado o absorbido por la piel. Evite respirar polvo y el contacto con piel, ojos o ropa. Lavarse por completo después de manipularlo y antes de comer o fumar. Podría causar sensibilización después de repetido contacto con la piel de personas sensibles. Si reacciones de sensibilización ocurren contacte a un médico. No almacenor cerca de comida o productos alimenticios. Utensilios de comida como cucharas o tazas de medida no deben ser usados para propósitos alimenticios después de utilizarlos para medición del pesticida. No contamine peceras ornamentales. No permita personas o animales en áreas tratadas hasta que el gránulo haya sido absorbido y la hierba se haya secado.
PRIMEROS AUXILIOS
Si ingerido: Llame a un doctor inmediatamente. Beba uno o dos vasos de agua e induzca al vómito tocando la parta de atrás de la garganta con un dedo. Repita hasta que el vomitado sea transparente. No induzca al vómito o introduzca nada por la boca si la persona está inconsciente o convulsionando. **Si inhalado**: Coloque a la persona al aire libre y aplique respiración artificial si fuese necesario. Consiga atención médica. **Si en contacto con la piel**: Lavar inmediatamente con jabón y agua. Enjuagar completamente. Si la irritación persiste obtenga atención médica.
NOTA AL MÉDICO: Este producto es un insecticida organophosphate*. Si síntomas de inhibición colinesterasa existen, sulfato de atropina por inyección es un antídoto. 2-PAM* también es un antídoto y puede ser administrado, pero sólo en conjunción con atropina.

DIRECCIONES: Riegue la hierba con al menos 1/4 pulgada de agua después de las aplicaciones del producto, de todos modos, pare de regar antes de que se encharque. Para controlar el billbug, aplique cuando la actividad sea observada por primera vez o cuando el césped chewed o café indiquen daño. Si necesario, repita la aplicación a intervalos de 3 semanas. No haga más de 4 aplicaciones por año. Para gorgojos de hyperodes, trate las áreas problemáticas a mediados de Abril y otra vez a mediados de Mayo. Para control de larvas, excepto estiércol de escarabajo (dung beetle), trate cualquier momento entre finales de Julio y comienzos de Octubre. Para control de estiércol de escarabajo (dung beetle), aplique en primavera o a comienzos de verano cuando el daño se note por primera vez. Trate otra vez a finales de verano o a comienzos de otoño, si una segunda generación aparece.

PELIGRO AMBIENTAL
Este producto es altamente tóxico para pájaros, peces y fauna silvestre. Aves, especialmente aves acuáticas (patos o gansos), pueden morirse por alimentación o bebida de aguas tratadas. Por hábitos migratorios de ciertas aves acuáticas de la Costa Atlántica, no aplique este producto a prados del Condado de Nassau, Nueva York, entre el 1 de Noviembre y el 20 de Mayo. No exceda el máximo porcentaje permitido en la etiqueta. La utilización del producto que exceda el porcentaje recomendado incrementa el potencial de peligro para aves. Evite el superposicionamiento de los gránulos. Siga todas las instrucciones de riego en las direcciones de empleo; de todos modos, pare de regar antes de que se encharque. No aplique este producto en lugares ocupados por aves, o 75 pies alrededor de cualquier reserva de agua que pueda atraer aves, como estanques o lagos. Mantenga alejado de lagos, arroyos, estanques, pantanos y esteros. No aplique directamente al agua. El exceso de riego puede ser peligroso para peces y otras especies acuáticas en áreas vecinas. Camarón y cangrejo pueden ser matados con la aplicación del producto a niveles recomendados en esta etiqueta. No aplique donde peces, camarón, cangrejo y otras especies acuáticas son recursos importantes. No contamine el agua limpiando el equipo o por la eliminación del agua del equipo.
AVISO: El comprador asume toda responsabilidad por la seguridad y uso en no-conformidad con las instrucciones

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Important: To avoid damage or poor results, carefully read and follow all directions and precautionary statements.
DIRECTIONS FOR USE· It is a violation of Federal law to use this product in a inconsistent with its labeling.
LAWN PROTECTION
Controls certain lawn pests on both grass and dichondra lawns. Apply with the shaker top on the container. Apply at a rate of 1 lb. Per 200 sq ft. (10 ft X 20 ft)
Ants Cinch bugs Fire ants Sowbugs (Pillbugs) Armyworms Clover mites Fleas Springtails(collumbola) Bermuda grass mites Crickets Lawn moths White grubs of Japanese beetle Billbugs Cutworms (Sodwebworms)

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION: Harmful if swallowed, inhaled, or absorbed through skin. Avoid breathing dust and contact with skin, eyes, or clothing. Wash thoroughly after handling and before eating or smoking. May cause contact sensitization reactions result, contact a physician. Do not store near food or feed products. Food utensils such as tablespoons or measuring cups must not be used for food purposes after use in measuring pesticides. Do not contaminate ornamental fish ponds. Do not allow people or pets on treated areas until granules have been watered in and the grass has dried.
FIRST AID
If Swallowed: Call a physician immediately. Drink 1 or 2 glasses or water and induce vomiting by touching the back of the throat with finger. Repeat until vomit fluid is clear. Do not induce vomiting or give anything by mouth if person is unconscious or convulsing. **If Inhaled:** Remove victim to fresh air and apply artificial respiration if indicated. Get medical attention. **If on Skin:** Rinse eyes with plenty of water and call a physician immediately. **NOTE TO PHYSICIAN:** This product is an organophosphate insecticide. If symptoms of cholinesterase inhibition are present, atropine sulfate by injection is antidotal. 2-PAM is also antidotal and may be administered, but only in conjunction with atropine.

Brown dog ticks Digger wasps Leafhoppers European chafer Chiggers Earwigs Millipedes Southern chafer
DIRECTIONS: Water grass with at least ¼-inch of water after applications, however, stop watering before puddling occurs. For billbug control, apply when activity is first observed or when chewed or brown grass indicates damage. If necessary, repeat application at 3 week intervals. Make no more than 4 applications per year. For hyperodes weevils, treat problem areas in mid-April and again in mid-May. For grub control, except dung beetle, treat any time between late July and early October. For dung beetle control, apply in spring or early summer when damage is first noticed. Treat again in late summer or early fall, if a second generation occurs.
ENVIRONMENTAL HAZARDS
This product is highly toxic to birds, fish, and other wildlife. Birds, especially waterfowl (ducks or geese), feeding or drinking on treated areas may be killed. Because of the migratory habits of certain Atlantic Coast waterfowl, do not apply this product to lawns in Nassau County, New York, between November 1 and May 20. Do not exceed maximum permitted label rates. Application rates above those recommended significantly increase potential hazards to birds. Avoid overlapping granules. Follow all watering instructions in the directions for use; however, stop watering before puddling occurs. Do not apply this product to sites occupied by waterfowl, or within 75 ft. of any body of water which may attract waterfowl, such as ponds or lakes. Keep out of lakes, streams, ponds, tidal marshes, and estuaries. Do not apply directly to water. Runoff may be hazardous to fish and other aquatic organisms in neighboring areas. Shrimp and crab may be killed at applications rates recommended on this label. Do not apply where fish, shrimp, crab and other aquatic life are important resources. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters.
NOTICE: Buyer assumes all responsibility for safety and use not in accordance with directions.

Important: To avoid damage or poor results, carefully read and follow all directions and precautionary statements.
DIRECTIONS FOR USE· It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
LAWN PROTECTION
Controls certain lawn pests on both grass and dichondra lawns. Apply with the shaker top on the container. Apply at a rate of 1 lb. Per 200 sq ft. (10 ft X 20 ft)
Ants Cinch bugs Fire ants Sowbugs (Pillbugs) Armyworms Clover mites Fleas Springtails(collumbola) Bermuda grass mites Crickets Lawn moths White grubs of Japanese beetle Billbugs Cutworms (Sodwebworms) Brown dog ticks Digger wasps Leafhoppers European chafer Chiggers Earwigs Millipedes Southern chafer.

DIRECTIONS: Water grass with at least ¼-inch of water after applications, however, stop watering before puddling occurs. For billbug control, apply when activity is first observed or when chewed or brown grass indicates damage. If necessary, repeat application at 3 week intervals. Make no more than 4 applications per year. For hyperodes weevils, treat problem areas in mid-April and again in mid-May. For grub control, except dung beetle, treat any time between late July and early October. For dung beetle control, apply in spring or early summer when damage is first noticed. Treat again in late summer or early fall, if a second generation occurs. **PRECAUTIONARY STATEMENTS**
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION: Harmful if swallowed, inhaled, or absorbed through skin. Avoid breathing dust and contact with skin, eyes, or clothing. Wash thoroughly after handling and before eating or smoking. May cause contact sensitization reactions result, contact a physician. Do not store near food or feed products. Food utensils such as tablespoons or measuring cups must not be used for food purposes after use in measuring pesticides. Do not contaminate ornamental fish ponds. Do not allow people or pets on treated areas until granules have been watered in and the grass has dried.
FIRST AID
If Swallowed: Call a physician immediately. Drink 1 or 2 glasses or water and induce vomiting by touching the back of the throat with finger. Repeat until vomit fluid is clear. Do not induce vomiting or give anything by mouth if person is unconscious or convulsing. **If Inhaled:** Remove victim to fresh air and apply artificial respiration if indicated. Get medical attention. **If on Skin:** Rinse eyes with plenty of water and call a physician immediately. **NOTE TO PHYSICIAN:** This product is an organophosphate insecticide. If symptoms of cholinesterase inhibition are present, atropine sulfate by injection is antidotal. 2-PAM is also antidotal and may be administered, but only in conjunction with atropine.
ENVIRONMENTAL HAZARDS
This product is highly toxic to birds, fish, and other wildlife. Birds, especially waterfowl (ducks or geese), feeding or drinking on treated areas may be killed. Because of the migratory habits of certain Atlantic Coast waterfowl, do not apply this product to lawns in Nassau County, New York, between November 1 and May 20. Do not exceed maximum permitted label rates. Application rates above those recommended significantly increase potential hazards to birds. Avoid overlapping granules. Follow all watering instructions in the directions for use; however, stop watering before puddling occurs. Do not apply this product to sites occupied by waterfowl, or within 75 ft. of any body of water which may attract waterfowl, such as ponds or lakes. Keep out of lakes, streams, ponds, tidal marshes, and estuaries. Do not apply directly to water. Runoff may be hazardous to fish and other aquatic organisms in neighboring areas. Shrimp and crab may be killed at applications rates recommended on this label. Do not apply where fish, shrimp, crab and other aquatic life are important resources. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters.
NOTICE: Buyer assumes all responsibility for safety and use not in accordance with directions.

Importante: Para evitar daños o resultados pobres, lea y siga cuidadosamente los direcciones y los enunciados preventivos.
DIRECCIONES DE USO: Es una violación de la Ley Federal usar este producto de una manera inconsistente con su etiqueta.
PROTECCION DEL CESPED
Controla ciertas pestes del césped en ambos la hierba y en césped de dichondra. Aplique con el agitador de arriba del contenedor. Aplique a una proporción de 1 lb. Por 200 pies cuadrados (1 lb. Por 18,581 m^2. (3,048 m X 6,096 m)
Ants (hormigas) Cinch (cincha) bugs (insectos) Fire (fuego) Ants Sowbugs (Pillbugs) Gusanos de polilla Garrapatas de trébol Pulgas Springtails (collumbola) Garrapata del césped de Bermuda Grillos Polilla de césped Gorgojo blanco de escarabajo Japonés Billbugs Larva de la falena (Sodwebworms) Brown dog ticks Avispa excavadora Leafhoppers European chafer Garrapatas Cortapicos Milpiés Southern chafer (Chafer sureño)
DIRECCIONES: Riegue la hierba con al menos 1/4 pulgada de agua después de las aplicaciones del producto, de todos modos, pare de regar antes de que se encharque. Para controlar el billbug, aplique cuando la actividad sea observada por primera vez o cuando el césped chewed o café indiquen daño. Si necesario, repita la aplicación a intervalos de 3 semanas. No haga más de 4 aplicaciones por año. Para gorgojos de hyperodes, trate las áreas problemáticas a mediados de Abril y otra vez a mediados de Mayo. Para control de larvas, excepto estiércol de escarabajo (dung beetle), trate cualquier momento entre finales de Julio y comienzos de Octubre. Para control de estiércol de escarabajo (dung beetle), aplique en primavera o a comienzos de verano cuando el daño se note por primera vez. Trate otra vez a finales de verano o a comienzos de otoño, si una segunda generación aparece.
ENUNCIADO PREVENTIVO
PELIGROSO PARA HUMANOS Y ANIMALES DOMESTICOS
PRECAUCION: Dañino si tragado, inhalado o absorbido por la piel. Evite respirar polvo y el contacto con piel, ojos o ropa. Lavarse por completo después de manipularlo y antes de comer o fumar. Podría causar sensibilización después de repetido contacto con la piel de personas sensibles. Si reacciones de sensibilización ocurren contacte a un médico. No almacenor cerca de comida o productos alimenticios. Utensilios de comida como cucharas o tazas de medida no deben ser usados para propósitos alimenticios después de utilizarlos para medición del pesticida. No contamine peceras ornamentales. No permita personas o animales en áreas tratadas hasta que el gránulo haya sido absorbido y la hierba se haya secado.
PRIMEROS AUXILIOS
Si ingerido: Llame a un doctor inmediatamente. Beba uno o dos vasos de agua e induzca al vómito tocando la parta de atrás de la garganta con un dedo. Repita hasta que el vomitado sea transparente. No induzca al vómito o introduzca nada por la boca si la persona está inconsciente o convulsionando. **Si inhalado**: Coloque a la persona al aire libre y aplique respiración artificial si fuese necesario. Consiga atención médica. **Si en contacto con la piel**: Lavar inmediatamente con jabón y agua. Enjuagar completamente. Si la irritación persiste obtenga atención médica. **NOTA AL MEDICO**: Este producto es un insecticida organophosphate*. Si síntomas de inhibición colinesterasa existen, sulfato de atropina por inyección es un antídoto. 2-PAM* también es un antídoto y puede ser administrado, pero sólo en conjunción con atropina.
PELIGRO AMBIENTAL
Este producto es altamente tóxico para pájaros, peces y fauna silvestre. Aves, especialmente aves acuáticas (patos o gansos), pueden morirse por alimentación o bebida de aguas tratadas. Por hábitos migratorios de ciertas aves acuáticas de la Costa Atlántica, no aplique este producto a prados del Condado de Nassau, Nueva York, entre el 1 de Noviembre y el 20 de Mayo. No exceda el máximo porcentaje permitido en la etiqueta. La utilización del producto que exceda el porcentaje recomendado incrementa el potencial de peligro para aves. Evite el superposicionamiento de los gránulos. Siga todas las instrucciones de riego en las direcciones de empleo; de todos modos, pare de regar antes de que se encharque. No aplique este producto en lugares ocupados por aves, o 75 pies alrededor de cualquier reserva de agua que pueda atraer aves, como estanques o lagos. Mantenga alejado de lagos, arroyos, estanques, pantanos y esteros. No aplique directamente al agua. El exceso de riego puede ser peligroso para peces y otras especies acuáticas en áreas vecinas. Camarón y cangrejo pueden ser matados con la aplicación del producto a niveles recomendados en esta etiqueta. No aplique donde peces, camarón, cangrejo y otras especies acuáticas son recursos importantes. No contamine el agua limpiando el equipo o por la eliminación del agua del equipo.
AVISO: El comprador asume toda responsabilidad por la seguridad y uso en no-conformidad con las instrucciones

Importante: Para evitar daños o resultados pobres, lea y siga cuidadosamente los direcciones y los enunciados preventivos.
DIRECCIONES DE USO: Es una violación de la Ley Federal usar este producto de una manera inconsistente con su etiqueta.
PROTECCION DEL CESPED
Controla ciertas pestes del césped en ambos la hierba y en césped de dichondra. Aplique con el agitador de arriba del contenedor. Aplique a una proporción de 1 lb. Por 200 pies cuadrados (1 lb. Por 18,581 m^2. (3,048 m X 6,096 m)
Ants (hormigas) Cinch (cincha) bugs (insectos) Fire (fuego) Ants Sowbugs (Pillbugs) Gusanos de polilla Garrapatas de trébol Pulgas Springtails (collumbola) Garrapata del césped de Bermuda Grillos Polilla de césped Gorgojo blanco de escarabajo Japonés Billbugs Larva de la falena (Sodwebworms) Brown dog ticks Avispa excavadora Leafhoppers European chafer Garrapatas Cortapicos Milpiés Southern chafer (Chafer sureño)
DIRECCIONES: Riegue la hierba con al menos 1/4 pulgada de agua después de las aplicaciones del producto, de todos modos, pare de regar antes de que se encharque. Para controlar el billbug, aplique cuando la actividad sea observada por primera vez o cuando el césped chewed o café indiquen daño. Si necesario, repita la aplicación a intervalos de 3 semanas. No haga más de 4 aplicaciones por año. Para gorgojos de hyperodes, trate las áreas problemáticas a mediados de Abril y otra vez a mediados de Mayo. Para control de larvas, excepto estiércol de escarabajo (dung beetle), trate cualquier momento entre finales de Julio y comienzos de Octubre. Para control de estiércol de escarabajo (dung beetle), aplique en primavera o a comienzos de verano cuando el daño se note por primera vez. Trate otra vez a finales de verano o a comienzos de otoño, si una segunda generación aparece.

ENUNCIADO PREVENTIVO
PELIGROSO PARA HUMANOS Y ANIMALES DOMESTICOS
PRECAUCION: Dañino si tragado, inhalado o absorbido por la piel. Evite respirar polvo y el contacto con piel, ojos o ropa. Lavarse por completo después de manipularlo y antes de comer o fumar. Podría causar sensibilización después de repetido contacto con la piel de personas sensibles. Si reacciones de sensibilización ocurren contacte a un médico. No almacenor cerca de comida o productos alimenticios. Utensilios de comida como cucharas o tazas de medida no deben ser usados para propósitos alimenticios después de utilizarlos para medición del pesticida. No contamine peceras ornamentales. No permita personas o animales en áreas tratadas hasta que el gránulo haya sido absorbido y la hierba se haya secado.
PRIMEROS AUXILIOS
Si ingerido: Llame a un doctor inmediatamente. Beba uno o dos vasos de agua e induzca al vómito tocando la parta de atrás de la garganta con un dedo. Repita hasta que el vomitado sea transparente. No induzca al vómito o introduzca nada por la boca si la persona está inconsciente o convulsionando. **Si inhalado**: Coloque a la persona al aire libre y aplique respiración artificial si fuese necesario. Consiga atención médica. **Si en contacto con la piel**: Lavar inmediatamente con jabón y agua. Enjuagar completamente. Si la irritación persiste obtenga atención médica. **NOTA AL MEDICO**: Este producto es un insecticida organophosphate*. Si síntomas de inhibición colinesterasa existen, sulfato de atropina por inyección es un antídoto. 2-PAM* también es un antídoto y puede ser administrado, pero sólo en conjunción con atropina.
PELIGRO AMBIENTAL
Este producto es altamente tóxico para pájaros, peces y fauna silvestre. Aves, especialmente aves acuáticas (patos o gansos), pueden morirse por alimentación o bebida de aguas tratadas. Por hábitos migratorios de ciertas aves acuáticas de la Costa Atlántica, no aplique este producto a prados del Condado de Nassau, Nueva York, entre el 1 de Noviembre y el 20 de Mayo. No exceda el máximo porcentaje permitido en la etiqueta. La utilización del producto que exceda el porcentaje recomendado incrementa el potencial de peligro para aves. Evite el superposicionamiento de los gránulos. Siga todas las instrucciones de riego en las direcciones de empleo; de todos modos, pare de regar antes de que se encharque. No aplique este producto en lugares ocupados por aves, o 75 pies alrededor de cualquier reserva de agua que pueda atraer aves, como estanques o lagos. Mantenga alejado de lagos, arroyos, estanques, pantanos y esteros. No aplique directamente al agua. El exceso de riego puede ser peligroso para peces y otras especies acuáticas en áreas vecinas. Camarón y cangrejo pueden ser matados con la aplicación del producto a niveles recomendados en esta etiqueta. No aplique donde peces, camarón, cangrejo y otras especies acuáticas son recursos importantes. No contamine el agua limpiando el equipo o por la eliminación del agua del equipo. AVISO: El comprador asume toda responsabilidad por la seguridad y uso en no-conformidad con las instrucciones.

Important: To avoid damage or poor results, carefully read and follow all directions and precautionary statements.
DIRECTIONS FOR USE· It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
LAWN PROTECTION
Controls certain lawn pests on both grass and dichondra lawns. Apply with the shaker top on the container. Apply at a rate of 1 lb. Per 200 sq ft. (10 ft X 20 ft)
Ants Cinch bugs Fire ants Sowbugs (Pillbugs) Armyworms Clover mites Fleas Springtails(collumbola) Bermuda grass mites Crickets Lawn moths White grubs of Japanese beetle Billbugs Cutworms (Sodwebworms) Brown dog ticks Digger wasps Leafhoppers European chafer Chiggers Earwigs Millipedes Southern chafer
DIRECTIONS: Water grass with at least ¼-inch of water after applications, however, stop watering before puddling occurs. For billbug control, apply when activity is first observed or when chewed or brown grass indicates damage. If necessary, repeat application at 3 week intervals. Make no more than 4 applications per year. For hyperodes weevils, treat problem areas in mid-April and again in mid-May. For grub control, except dung beetle, treat any time between late July and early October. For dung beetle control, apply in spring or early summer when damage is first noticed. Treat again in late summer or early fall, if a second generation occurs.
PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION: Harmful if swallowed, inhaled, or absorbed through skin. Avoid breathing dust and contact with skin, eyes, or clothing. Wash thoroughly after handling and before eating or smoking. May cause contact sensitization reactions result, contact a physician. Do not store near food or feed products. Food utensils such as tablespoons or measuring cups must not be used for food purposes after use in measuring pesticides. Do not contaminate ornamental fish ponds. Do not allow people or pets on treated areas until granules have been watered in and the grass has dried.
FIRST AID
If Swallowed: Call a physician immediately. Drink 1 or 2 glasses or water and induce vomiting by touching the back of the throat with finger. Repeat until vomit fluid is clear. Do not induce vomiting or give anything by mouth if person is unconscious or convulsing. **If Inhaled:** Remove victim to fresh air and apply artificial respiration if indicated. Get medical attention. **If on Skin:** Rinse eyes with plenty of water and call a physician immediately. **NOTE TO PHYSICIAN:** This product is an organophosphate insecticide. If symptoms of cholinesterase inhibition are present, atropine sulfate by injection is antidotal. 2-PAM is also antidotal and may be administered, but only in conjunction with atropine.
ENVIRONMENTAL HAZARDS
This product is highly toxic to birds, fish, and other wildlife. Birds, especially waterfowl (ducks or geese), feeding or drinking on treated areas may be killed. Because of the migratory habits of certain Atlantic Coast waterfowl, do not apply this product to lawns in Nassau County, New York, between November 1 and May 20. Do not exceed maximum permitted label rates. Application rates above those recommended significantly increase potential hazards to birds. Avoid overlapping granules. Follow all watering instructions in the directions for use; however, stop watering before puddling occurs. Do not apply this product to sites occupied by waterfowl, or within 75 ft. of any body of water which may attract waterfowl, such as ponds or lakes. Keep out of lakes, streams, ponds, tidal marshes, and estuaries. Do not apply directly to water. Runoff may be hazardous to fish and other aquatic organisms in neighboring areas. Shrimp and crab may be killed at applications rates recommended on this label. Do not apply where fish, shrimp, crab and other aquatic life are important resources. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters.
NOTICE: Buyer assumes all responsibility for safety and use not in accordance with directions.

Appendix F
Study 3
Bilingual Label Formats

Label Formats –Shown on the following pages

Study 3 (Formats displayed on portable computer screen)

Label Number, Condition Name and Page Number

23. Spanish Left black- English black both USA and Mexican (Spanish text black and English text black with both USA and Spanish flags) [134]

24. Spanish Left blue - English black USA (Spanish text blue and English text black with only USA flag) [135]

25. Spanish Left blue - English black Mexican (Spanish text blue and English text black with Mexican flag) [136]

26. Spanish Left blue - English black both USA and Mexican (Spanish text blue and English text black with both USA and Spanish flags) [137]

27. Interstimulus (Cross-hair point, users were instructed to fixate between trials). [138]

Important: To avoid damage or poor results, carefully read two and follow all directions and precautionary statements.

DIRECTIONS FOR USE· It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

LAWN PROTECTION

Controls certain lawn pests on both grass and dichondra lawns. Apply with the shaker top on the container. Apply at a rate of 1 lb. Per 200 sq ft. (10 ft X 20 ft)

Ants Cinch bugs Fire ants Sowbugs (Pillbugs) Armyworms Clover mites Fleas Springtails(collumbola) Bermuda grass mites Crickets Lawn moths White grubs of Japanese beetle Billbugs Cutworms (Sodwebworms) Brown dog ticks Digger wasps Leafhoppers European chafer Chiggers Earwigs Millipedes Southern chafer.

DIRECTIONS: Water grass with at least ¼-inch of water after applications, however, stop watering before puddling occurs. For billbug control, apply when activity is first observed or when chewed or brown grass indicates damage. If necessary, repeat application at 3 week intervals. Make no more than 4 applications per year. For hyperodes weevils, treat problem areas in mid-April and again in mid-May. For grub control, except dung beetle, treat any time between late July and early October. For dung beetle control, apply in spring or early summer when damage is first noticed. Treat again in late summer or early fall, if a second generation occurs. **PRECAUTIONARY STATEMENTS**

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION: Harmful if swallowed, inhaled, or absorbed through skin. Avoid breathing dust and contact with skin, eyes, or clothing. Wash thoroughly after handling and before eating or smoking. May cause contact sensitization reactions result, contact a physician. Do not store near food or feed products. Food utensils such as tablespoons or measuring cups must not be used for food purposes after use in measuring pesticides. Do not contaminate ornamental fish ponds. Do not allow people or pets on treated areas until granules have been watered in and the grass has dried.

FIRST AID

If Swallowed: Call a physician immediately. Drink 1 or 2 glasses or water and induce vomiting by touching the back of the throat with finger. Repeat until vomit fluid is clear. Do not induce vomiting or give anything by mouth if person is unconscious or convulsing. **If Inhaled:** Remove victim to fresh air and apply artificial respiration if indicated. Get medical attention. **If on Skin:** Rinse eyes with plenty of water and call a physician immediately. **NOTE TO PHYSICIAN:** This product is an organophosphate insecticide. If symptoms of cholinesterase inhibition are present, atropine sulfate by injection is antidotal. 2-PAM is also antidotal and may be administered, but only in conjunction with atropine.

ENVIRONMENTAL HAZARDS

This product is highly toxic to birds, fish, and other wildlife. Birds, especially waterfowl (ducks or geese), feeding or drinking on treated areas may be killed. Because of the migratory habits of certain Atlantic Coast waterfowl, do not apply this product to lawns in Nassau County, New York, between November 1 and May 20. Do not exceed maximum permitted label rates. Application rates above those recommended significantly increase potential hazards to birds. Avoid overlapping granules. Follow all watering instructions in the directions for use; however, stop watering before puddling occurs. Do not apply this product to sites occupied by waterfowl, or within 75 ft. of any body of water which may attract waterfowl, such as ponds or lakes. Keep out of lakes, streams, ponds, tidal marshes, and estuaries. Do not apply directly to water. Runoff may be hazardous to fish and other aquatic organisms in neighboring areas. Shrimp and crab may be killed at applications rates recommended on this label. Do not apply where fish, shrimp, crab and other aquatic life are important resources. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters.

NOTICE: Buyer assumes all responsibility for safety and use not in accordance with directions.

Importante: Para evitar daños o resultados pobres, uno lea y siga cuidadosamente los direcciones y los enunciados preventivos.
DIRECCIONES DE USO: Es una violación de la Ley Federal usar este producto de una manera inconsistente con su etiqueta.
PROTECCION DEL CESPED
Controla ciertas pestes del césped en ambos la hierba y en césped de dichondra. Aplique con el agitador de arriba del contenedor. Aplique a una proporción de 1 lb. Por 200 pies cuadrados (1 lb. Por 18,581 m^2. (3,048 m X 6,096 m)
Hormigas, insectos fuego Gusanos de polilla Garrapatas de trébol Pulgas collumbola Garrapata del césped de Bermuda Grillos Polilla de césped Gorgojo blanco de escarabajo Japonés Larva de la falena Avispa excavadora Garrapatas Cortapicos Milpiés (Chafer sureño)
DIRECCIONES: Riegue la hierba con al menos 1/4 pulgada de agua después de las aplicaciones del producto, de todos modos, pare de regar antes de que se encharque. Para controlar el billbug, aplique cuando la actividad sea observada por primera vez o cuando el césped o café indiquen daño. Si necesario, repita la aplicación a intervalos de 3 semanas. No haga más de 4 aplicaciones por año. Para gorgojos de hyperodes, trate las áreas problemáticas a mediados de Abril y otra vez a mediados de Mayo. Para control de larvas, excepto estiércol de escarabajo), trate cualquier momento entre finales de Julio y comienzos de Octubre. Para control de estiércol de escarabajo,aplique en primavera o a comienzos de verano cuando el daño se note por primera vez. Trate otra vez a finales de verano o a comienzos de otoño, si una segunda generación aparece.
ENUNCIADO PREVENTIVO
PELIGROSO PARA HUMANOS Y ANIMALES DOMESTICOS
PRECAUCION: Dañino si tragado, inhalado o absorbido por la piel. Evite respirar polvo y el contacto con piel, ojos o ropa. Lavarse por completo después de manipularlo y antes de comer o fumar. Podría causar sensibilización después de repetido contacto con la piel de personas sensibles. Si reacciones de sensibilización ocurren contacte a un médico. No almacenor cerca de comida o productos alimenticios. Utensilios de comida como cucharas o tazas de medida no deben ser usados para propósitos alimenticios después de utilizarlos para medición del pesticida. No contamine peceras ornamentales. No permita personas o animales en áreas tratadas hasta que el gránulo haya sido absorbido y la hierba se haya secado.
PRIMEROS AUXILIOS
Si ingerido: Llame a un doctor inmediatamente. Beba uno o dos vasos de agua e induzca al vómito tocando la parta de atrás de la garganta con un dedo. Repita hasta que el vomitado sea transparente. No induzca al vómito o introduzca nada por la boca si la persona está inconsciente o convulsionando. **Si inhalado**: Coloque a la persona al aire libre y aplique respiración artificial si fuese necesario. Consiga atención médica. **Si en contacto con la piel**: Lavar inmediatamente con jabón y agua. Enjuagar completamente. Si la irritación persiste obtenga atención médica. **NOTA AL MEDICO**: Este producto es un insecticida organophosphate*. Si síntomas de inhibición colinesterasa existen, sulfato de atropina por inyección es un antídoto. 2-PAM* también es un antídoto y puede ser administrado, pero sólo en conjunción con atropina.
PELIGRO AMBIENTAL
Este producto es altamente tóxico para pájaros, peces y fauna silvestre. Aves, especialmente aves acuáticas (patos o gansos), pueden morirse por alimentación o bebida de aguas tratadas. Por hábitos migratorios de ciertas aves acuáticas de la Costa Atlántica, no aplique este producto a prados del Condado de Nassau, Nueva York, entre el 1 de Noviembre y el 20 de Mayo. No exceda el máximo porcentaje permitido en la etiqueta. La utilización del producto que exceda el porcentaje recomendado incrementa el potencial de peligro para aves. Evite el superposicionamiento de los gránulos. Siga todas las instrucciones de riego en las direcciones de empleo; de todos modos, pare de regar antes de que se encharque. No aplique este producto en lugares ocupados por aves, o 75 pies alrededor de cualquier reserva de agua que pueda atraer aves, como estanques o lagos. Mantenga alejado de lagos, arroyos, estanques, pantanos y esteros. No aplique directamente al agua. El exceso de riego puede ser peligroso para peces y otras especies acuáticas en áreas vecinas. Camarón y cangrejo pueden ser matados con la aplicación del producto a niveles recomendados en esta etiqueta. No aplique donde peces, camarón, cangrejo y otras especies acuáticas son recursos importantes. No contamine el agua limpiando el equipo o por la eliminación del agua del equipo.
AVISO: El comprador asume toda responsabilidad por la seguridad y uso en no-conformidad con las instrucciones

Important: To avoid damage or poor results, carefully read one and follow all directions and precautionary statements.
DIRECTIONS FOR USE· It is a violation of Federal law to use this a manner inconsistent with its labeling.
LAWN PROTECTION
Controls certain lawn pests on both grass and dichondra lawns. Apply with the shaker top on the container. Apply at a rate of 1 lb. Per 200 sq ft. (10 ft X 20 ft)
Ants Cinch bugs Fire ants Sowbugs (Pillbugs) Armyworms Clover mites Fleas Springtails(collumbola) Bermuda grass mites Crickets Lawn moths White grubs of Japanese beetle Billbugs Cutworms (Sodwebworms) Brown dog ticks Digger wasps Leafhoppers European chafer Chiggers Earwigs Millipedes Southern chafer.
DIRECTIONS: Water grass with at least ¼-inch of water after applications, however, stop watering before puddling occurs. For billbug control, apply when activity is first observed or when chewed or brown grass indicates damage. If necessary, repeat application at 3 week intervals. Make no more than 4 applications per year. For hyperodes weevils, treat problem areas in mid-April and again in mid-May. For grub control, except dung beetle, treat any time between late July and early October. For dung beetle control, apply in spring or early summer when damage is first noticed. Treat again in late summer or early fall, if a second generation occurs. **PRECAUTIONARY STATEMENTS**
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION: Harmful if swallowed, inhaled, or absorbed through skin. Avoid breathing dust and contact with skin, eyes, or clothing. Wash thoroughly after handling and before eating or smoking. May cause contact sensitization reactions result, contact a physician. Do not store near food or feed products. Food utensils such as tablespoons or measuring cups must not be used for food purposes after use in measuring pesticides. Do not contaminate ornamental fish ponds. Do not allow people or pets on treated areas until granules have been watered in and the grass has dried.
FIRST AID
If Swallowed: Call a physician immediately. Drink 1 or 2 glasses or water and induce vomiting by touching the back of the throat with finger. Repeat until vomit fluid is clear. Do not induce vomiting or give anything by mouth if person is unconscious or convulsing. **If Inhaled:** Remove victim to fresh air and apply artificial respiration if indicated. Get medical attention. **If on Skin:** Rinse eyes with plenty of water and call a physician immediately. **NOTE TO PHYSICIAN:** This product is an organophosphate insecticide. If symptoms of cholinesterase inhibition are present, atropine sulfate by injection is antidotal. 2-PAM is also antidotal and may be administered, but only in conjunction with atropine.
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ENUNCIADO PREVENTIVO
PELIGROSO PARA HUMANOS Y ANIMALES DOMESTICOS
PRECAUCION: Dañino si tragado, inhalado o absorbido por la piel. Evite respirar polvo y el contacto con piel, ojos o ropa. Lavarse por completo después de manipularlo y antes de comer o fumar. Podría causar sensibilización después de repetido contacto con la piel de personas sensibles. Si reacciones de sensibilización ocurren contacte a un médico. No almacenor cerca de comida o productos alimenticios. Utensilios de comida como cucharas o tazas de medida no deben ser usados para propósitos alimenticios después de utilizarlos para medición del pesticida. No contamine peceras ornamentales. No permita personas o animales en áreas tratadas hasta que el gránulo haya sido absorbido y la hierba se haya secado.
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PROTECCION DEL CESPED
Controla ciertas pestes del césped en ambos la hierba y en césped de dichondra. Aplique con el agitador de arriba del contenedor. Aplique a una proporción de 1 lb. Por 200 pies cuadrados (1 lb. Por 18,581 m^2. (3,048 m X 6,096 m)
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DIRECCIONES: Riegue la hierba con al menos 1/4 pulgada de agua después de las aplicaciones del producto, de todos modos, pare de regar antes de que se encharque. Para controlar el billbug, aplique cuando la actividad sea observada por primera vez o cuando el césped o café indiquen daño. Si necesario, repita la aplicación a intervalos de 3 semanas. No haga más de 4 aplicaciones por año. Para gorgojos de hyperodes, trate las áreas problemáticas a mediados de Abril y otra vez a mediados de Mayo. Para control de larvas, excepto estiércol de escarabajo), trate cualquier momento entre finales de Julio y comienzos de Octubre. Para control de estiércol de escarabajo,aplique en primavera o a comienzos de verano cuando el daño se note por primera vez. Trate otra vez a finales de verano o a comienzos de otoño, si una segunda generación aparece.
ENUNCIADO PREVENTIVO
PELIGROSO PARA HUMANOS Y ANIMALES DOMESTICOS
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PRIMEROS AUXILIOS
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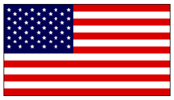

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LAWN PROTECTION
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Importante: Para evitar daños o resultados pobres, uno lea y siga cuidadosamente los direcciones y los enunciados preventivos.
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DIRECCIONES: Riegue la hierba con al menos 1/4 pulgada de agua después de las aplicaciones del producto, de todos modos, pare de regar antes de que se encharque. Para controlar el billbug, aplique cuando la actividad sea observada por primera vez o cuando el césped o café indiquen daño. Si necesario, repita la aplicación a intervalos de 3 semanas. No haga más de 4 aplicaciones por año. Para gorgojos de hyperodes, trate las áreas problemáticas a mediados de Abril y otra vez a mediados de Mayo. Para control de larvas, excepto estiércol de escarabajo), trate cualquier momento entre finales de Julio y comienzos de Octubre. Para control de estiércol de escarabajo,aplique en primavera o a comienzos de verano cuando el daño se note por primera vez. Trate otra vez a finales de verano o a comienzos de otoño, si una segunda generación aparece.
ENUNCIADO PREVENTIVO
PELIGROSO PARA HUMANOS Y ANIMALES DOMESTICOS
PRECAUCION: Dañino si tragado, inhalado o absorbido por la piel. Evite respirar polvo y el contacto con piel, ojos o ropa. Lavarse por completo después de manipularlo y antes de comer o fumar. Podría causar sensibilización después de repetido contacto con la piel de personas sensibles. Si reacciones de sensibilización ocurren contacte a un médico. No almacenor cerca de comida o productos alimenticios. Utensilios de comida como cucharas o tazas de medida no deben ser usados para propósitos alimenticios después de utilizarlos para medición del pesticida. No contamine peceras ornamentales. No permita personas o animales en áreas tratadas hasta que el gránulo haya sido absorbido y la hierba se haya secado.
PRIMEROS AUXILIOS
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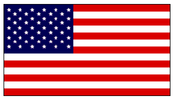

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HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION: Harmful if swallowed, inhaled, or absorbed through skin. Avoid breathing dust and contact with skin, eyes, or clothing. Wash thoroughly after handling and before eating or smoking. May cause contact sensitization reactions result, contact a physician. Do not store near food or feed products. Food utensils such as tablespoons or measuring cups must not be used for food purposes after use in measuring pesticides. Do not contaminate ornamental fish ponds. Do not allow people or pets on treated areas until granules have been watered in and the grass has dried.
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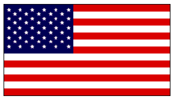

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ENUNCIADO PREVENTIVO

PELIGROSO PARA HUMANOS Y ANIMALES DOMESTICOS

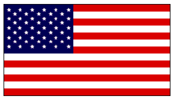
PRECAUCION: Dañino si tragado, inhalado o absorbido por la piel. Evite respirar polvo y el contacto con piel, ojos o ropa. Lavarse por completo después de manipularlo y antes de comer o fumar. Podría causar sensibilización después de repetido contacto con la piel de personas sensibles. Si reacciones de sensibilización ocurren contacte a un médico. No almacenor cerca de comida o productos alimenticios. Utensilios de comida como cucharas o tazas de medida no deben ser usados para propósitos alimenticios después de utilizarlos para medición del pesticida. No contamine peceras ornamentales. No permita personas o animales en áreas tratadas hasta que el gránulo haya sido absorbido y la hierba se haya secado.

PRIMEROS AUXILIOS

Si ingerido: Llame a un doctor inmediatamente. Beba uno o dos vasos de agua e induzca al vómito tocando la parta de atrás de la garganta con un dedo. Repita hasta que el vomitado sea transparente. No induzca al vómito o introduzca nada por la boca si la persona está inconsciente o convulsionando. **Si inhalado**: Coloque a la persona al aire libre y aplique respiración artificial si fuese necesario. Consiga atención médica. **Si en contacto con la piel**: Lavar inmediatamente con jabón y agua. Enjuagar completamente. Si la irritación persiste obtenga atención médica. **NOTA AL MÉDICO**: Este producto es un insecticida organophosphate*. Si síntomas de inhibición colinesterasa existen, sulfato de atropina por inyección es un antídoto. 2-PAM* también es un antídoto y puede ser administrado, pero sólo en conjunción con atropina.

PELIGRO AMBIENTAL

Este producto es altamente tóxico para pájaros, peces y fauna silvestre. Aves, especialmente aves acuáticas (patos o gansos), pueden morirse por alimentación o bebida de aguas tratadas. Por hábitos migratorios de ciertas aves acuáticas de la Costa Atlántica, no aplique este producto a prados del Condado de Nassau, Nueva York, entre el 1 de Noviembre y el 20 de Mayo. No exceda el máximo porcentaje permitido en la etiqueta. La utilización del producto que exceda el porcentaje recomendado incrementa el potencial de peligro para aves. Evite el superposicionamiento de los gránulos. Siga todas las instrucciones de riego en las direcciones de empleo; de todos modos, pare de regar antes de que se encharque.



Important: To avoid damage or poor results, carefully read one and follow all directions and precautionary statements.
DIRECTIONS FOR USE· It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
LAWN PROTECTION
Controls certain lawn pests on both grass and dichondra lawns. Apply with the shaker top on the container. Apply at a rate of 1 lb. Per 200 sq ft. (10 ft X 20 ft)
Ants Cinch bugs Fire ants Sowbugs (Pillbugs) Armyworms Clover mites Fleas Springtails(collumbola) Bermuda grass mites Crickets Lawn moths White grubs of Japanese beetle Billbugs Cutworms (Sodwebworms) Brown dog ticks Digger wasps Leafhoppers European chafer Chiggers Earwigs Millipedes Southern chafer.
DIRECTIONS: Water grass with at least ¼-inch of water after applications, however, stop watering before puddling occurs. For billbug control, apply when activity is first observed or when chewed or brown grass indicates damage. If necessary, repeat application at 3 week intervals. Make no more than 4 applications per year. For hyperodes weevils, treat problem areas in mid-April and again in mid-May. For grub control, except dung beetle, treat any time between late July and early October. For dung beetle control, apply in spring or early summer when damage is first noticed. Treat again in late summer or early fall, if a second generation occurs. **PRECAUTIONARY STATEMENTS**
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION: Harmful if swallowed, inhaled, or absorbed through skin. Avoid breathing dust and contact with skin, eyes, or clothing. Wash thoroughly after handling and before eating or smoking. May cause contact sensitization reactions result, contact a physician. Do not store near food or feed products. Food utensils such as tablespoons or measuring cups must not be used for food purposes after use in measuring pesticides. Do not contaminate ornamental fish ponds. Do not allow people or pets on treated areas until granules have been watered in and the grass has dried.
FIRST AID
If Swallowed: Call a physician immediately. Drink 1 or 2 glasses or water and induce vomiting by touching the back of the throat with finger. Repeat until vomit fluid is clear. Do not induce vomiting or give anything by mouth if person is unconscious or convulsing. **If Inhaled:** Remove victim to fresh air and apply artificial respiration if indicated. Get medical attention. **If on Skin:** Rinse eyes with plenty of water and call a physician immediately. **NOTE TO PHYSICIAN:** This product is an organophosphate insecticide. If symptoms of cholinesterase inhibition are present, atropine sulfate by injection is antidotal. 2-PAM is also antidotal and may be administered, but only in conjunction with atropine.
ENVIRONMENTAL HAZARDS
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Importante: Para evitar daños o resultados pobres, uno lea y siga cuidadosamente los direcciones y los enunciados preventivos.
DIRECCIONES DE USO: Es una violación de la Ley Federal usar este producto de una manera inconsistente con su etiqueta.
PROTECCION DEL CESPED
Controla ciertas pestes del césped en ambos la hierba y en césped de dichondra. Aplique con el agitador de arriba del contenedor. Aplique a una proporción de 1 lb. Por 200 pies cuadrados (1 lb. Por 18,581 m^2. (3,048 m X 6,096 m)
Hormigas, insectos fuego Gusanos de polilla Garrapatas de trébol Pulgas collumbola Garrapata del césped de Bermuda Grillos Polilla de césped Gorgojo blanco de escarabajo Japonés Larva de la falena Avispa excavadora Garrapatas Cortapicos Milpiés (Chafer sureño)
DIRECCIONES: Riegue la hierba con al menos 1/4 pulgada de agua después de las aplicaciones del producto, de todos modos, pare de regar antes de que se encharque. Para controlar el billbug, aplique cuando la actividad sea observada por primera vez o cuando el césped o café indiquen daño. Si necesario, repita la aplicación a intervalos de 3 semanas. No haga más de 4 aplicaciones por año. Para gorgojos de hyperodes, trate las áreas problemáticas a mediados de Abril y otra vez a mediados de Mayo. Para control de larvas, excepto estiércol de escarabajo), trate cualquier momento entre finales de Julio y comienzos de Octubre. Para control de estiércol de escarabajo,aplique en primavera o a comienzos de verano cuando el daño se note por primera vez. Trate otra vez a finales de verano o a comienzos de otoño, si una segunda generación aparece.
ENUNCIADO PREVENTIVO
PELIGROSO PARA HUMANOS Y ANIMALES DOMESTICOS
PRECAUCION: Dañino si tragado, inhalado o absorbido por la piel. Evite respirar polvo y el contacto con piel, ojos o ropa. Lavarse por completo después de manipularlo y antes de comer o fumar. Podría causar sensibilización después de repetido contacto con la piel de personas sensibles. Si reacciones de sensibilización ocurren contacte a un médico. No almacenor cerca de comida o productos alimenticios. Utensilios de comida como cucharas o tazas de medida no deben ser usados para propósitos alimenticios después de utilizarlos para medición del pesticida. No contamine peceras ornamentales. No permita personas o animales en áreas tratadas hasta que el gránulo haya sido absorbido y la hierba se haya secado.
PRIMEROS AUXILIOS
Si ingerido: Llame a un doctor inmediatamente. Beba uno o dos vasos de agua e induzca al vómito tocando la parta de atrás de la garganta con un dedo. Repita hasta que el vomitado sea transparente. No induzca al vómito o introduzca nada por la boca si la persona está inconsciente o convulsionando. **Si inhalado**: Coloque a la persona al aire libre y aplique respiración artificial si fuese necesario. Consiga atención médica. **Si en contacto con la piel**: Lavar inmediatamente con jabón y agua. Enjuagar completamente. Si la irritación persiste obtenga atención médica. **NOTA AL MÉDICO**: Este producto es un insecticida organophosphate*. Si síntomas de inhibición colinesterasa existen, sulfato de atropina por inyección es un antídoto. 2-PAM* también es un antídoto y puede ser administrado, pero sólo en conjunción con atropina.
PELIGRO AMBIENTAL
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ENUNCIADO PREVENTIVO
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PRECAUCION: Dañino si tragado, inhalado o absorbido por la piel. Evite respirar polvo y el contacto con piel, ojos o ropa. Lavarse por completo después de manipularlo y antes de comer o fumar. Podría causar sensibilización después de repetido contacto con la piel de personas sensibles. Si reacciones de sensibilización ocurren contacte a un médico. No almacenor cerca de comida o productos alimenticios. Utensilios de comida como cucharas o tazas de medida no deben ser usados para propósitos alimenticios después de utilizarlos para medición del pesticida. No contamine peceras ornamentales. No permita personas o animales en áreas tratadas hasta que el gránulo haya sido absorbido y la hierba se haya secado.
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DIRECTIONS: Water grass with at least ¼-inch of water after applications, however, stop watering before puddling occurs. For billbug control, apply when activity is first observed or when chewed or brown grass indicates damage. If necessary, repeat application at 3 week intervals. Make no more than 4 applications per year. For hyperodes weevils, treat problem areas in mid-April and again in mid-May. For grub control, except dung beetle, treat any time between late July and early October. For dung beetle control, apply in spring or early summer when damage is first noticed. Treat again in late summer or early fall, if a second generation occurs. **PRECAUTIONARY STATEMENTS**
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION: Harmful if swallowed, inhaled, or absorbed through skin. Avoid breathing dust and contact with skin, eyes, or clothing. Wash thoroughly after handling and before eating or smoking. May cause contact sensitization reactions result, contact a physician. Do not store near food or feed products. Food utensils such as tablespoons or measuring cups must not be used for food purposes after use in measuring pesticides. Do not contaminate ornamental fish ponds. Do not allow people or pets on treated areas until granules have been watered in and the grass has dried.
FIRST AID
If Swallowed: Call a physician immediately. Drink 1 or 2 glasses or water and induce vomiting by touching the back of the throat with finger. Repeat until vomit fluid is clear. Do not induce vomiting or give anything by mouth if person is unconscious or convulsing. **If Inhaled:** Remove victim to fresh air and apply artificial respiration if indicated. Get medical attention. **If on Skin:** Rinse eyes with plenty of water and call a physician immediately. **NOTE TO PHYSICIAN:** This product is an organophosphate insecticide. If symptoms of cholinesterase inhibition are present, atropine sulfate by injection is antidotal. 2-PAM is also antidotal and may be administered, but only in conjunction with atropine.
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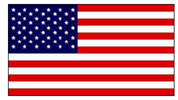
ENUNCIADO PREVENTIVO
PELIGROSO PARA HUMANOS Y ANIMALES DOMESTICOS
PRECAUCION: Dañino si tragado, inhalado o absorbido por la piel. Evite respirar polvo y el contacto con piel, ojos o ropa. Lavarse por completo después de manipularlo y antes de comer o fumar. Podría causar sensibilización después de repetido contacto con la piel de personas sensibles. Si reacciones de sensibilización ocurren contacte a un médico. No almacenor cerca de comida o productos alimenticios. Utensilios de comida como cucharas o tazas de medida no deben ser usados para propósitos alimenticios después de utilizarlos para medición del pesticida. No contamine peceras ornamentales. No permita personas o animales en áreas tratadas hasta que el gránulo haya sido absorbido y la hierba se haya secado.
PRIMEROS AUXILIOS
Si ingerido: Llame a un doctor inmediatamente. Beba uno o dos vasos de agua e induzca al vómito tocando la parta de atrás de la garganta con un dedo. Repita hasta que el vomitado sea transparente. No induzca al vómito o introduzca nada por la boca si la persona está inconsciente o convulsionando. **Si inhalado**: Coloque a la persona al aire libre y aplique respiración artificial si fuese necesario. Consiga atención médica. **Si en contacto con la piel**: Lavar inmediatamente con jabón y agua. Enjuagar completamente. Si la irritación persiste obtenga atención médica. **NOTA AL MÉDICO**: Este producto es un insecticida organophosphate*. Si síntomas de inhibición colinesterasa existen, sulfato de atropina por inyección es un antídoto. 2-PAM* también es un antídoto y puede ser administrado, pero sólo en conjunción con atropina.
PELIGRO AMBIENTAL
Este producto es altamente tóxico para pájaros, peces y fauna silvestre. Aves, especialmente aves acuáticas (patos o gansos), pueden morirse por alimentación o bebida de aguas tratadas. Por hábitos migratorios de ciertas aves acuáticas de la Costa Atlántica, no aplique este producto a prados del Condado de Nassau, Nueva York, entre el 1 de Noviembre y el 20 de Mayo. No exceda el máximo porcentaje permitido en la etiqueta. La utilización del producto que exceda el porcentaje recomendado incrementa el potencial de peligro para aves. Evite el superposicionamiento de los gránulos. Siga todas las instrucciones de riego en las direcciones de empleo; de todos modos, pare de regar antes de que se encharque.



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LAWN PROTECTION
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DIRECTIONS: Water grass with at least ¼-inch of water after applications, however, stop watering before puddling occurs. For billbug control, apply when activity is first observed or when chewed or brown grass indicates damage. If necessary, repeat application at 3 week intervals. Make no more than 4 applications per year. For hyperodes weevils, treat problem areas in mid-April and again in mid-May. For grub control, except dung beetle, treat any time between late July and early October. For dung beetle control, apply in spring or early summer when damage is first noticed. Treat again in late summer or early fall, if a second generation occurs. **PRECAUTIONARY STATEMENTS**
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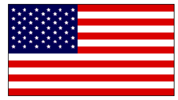

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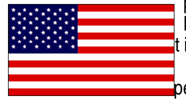

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If Swallowed: Call a physician immediately. Drink 1 or 2 glasses or water and induce vomiting by touching the back of the throat with finger. Repeat until vomit fluid is clear. Do not induce vomiting or give anything by mouth if person is unconscious or convulsing. **If Inhaled:** Remove victim to fresh air and apply artificial respiration if indicated. Get medical attention. **If on Skin:** Rinse eyes with plenty of water and call a physician immediately. **NOTE TO PHYSICIAN:** This product is an organophosphate insecticide. If symptoms of cholinesterase inhibition are present, atropine sulfate by injection is antidotal. 2-PAM is also antidotal and may be administered, but only in conjunction with atropine.
ENVIRONMENTAL HAZARDS
This product is highly toxic to birds, fish, and other wildlife. Birds, especially waterfowl (ducks or geese), feeding or drinking on treated areas may be killed. Because of the migratory habits of certain Atlantic Coast waterfowl, do not apply this product to lawns in Nassau County, New York, between November 1 and May 20. Do not exceed maximum permitted label rates. Application rates above those recommended significantly increase potential hazards to birds. Avoid overlapping granules. Follow all watering instructions in the directions for use; however, stop watering before puddling occurs. Do not apply this product to sites occupied by waterfowl, or within 75 ft. of any body of water which may attract waterfowl, such as ponds or lakes. Keep out of lakes, streams, ponds, tidal marshes, and estuaries. Do not apply directly to water. Runoff may be hazardous to fish and other aquatic organisms in neighboring areas. Shrimp and crab may be killed at applications rates recommended on this label. Do not apply where fish, shrimp, crab and other aquatic life are important resources. Do not contaminate water by cleaning of equipment or disposal of equipment wash waters. NOTICE: Buyer assumes all responsibility for safety and use not in accordance with directions.

Importante: Para evitar daños o resultados pobres, uno lea y siga cuidadosamente los direcciones y los enunciados preventivos.
DIRECCIONES DE USO: Es una violación de la Ley Federal usar este producto de una manera inconsistente con su etiqueta.
PROTECCION DEL CESPED
Controla ciertas pestes del césped en ambos la hierba y en césped de dichondra. Aplique con el agitador de arriba del contenedor. Aplique a una proporción de 1 lb. Por 200 pies cuadrados (1 lb. Por 18,581 m^2. (3,048 m X 6,096 m)
Hormigas, insectos fuego Gusanos de polilla Garrapatas de trébol Pulgas collumbola Garrapata del césped de Bermuda Grillos Polilla de césped Gorgojo blanco de escarabajo Japonés Larva de la falena Avispa excavadora Garrapatas Cortapicos Milpiés (Chafer sureño)
DIRECCIONES: Riegue la hierba con al menos 1/4 pulgada de agua después de las aplicaciones del producto, de todos modos, pare de regar antes de que se encharque. Para controlar el billbug, aplique cuando la actividad sea observada por primera vez o cuando el césped o café indiquen daño. Si necesario, repita la aplicación a intervalos de 3 semanas. No haga más de 4 aplicaciones por año. Para gorgojos de hyperodes, trate las áreas problemáticas a mediados de Abril y otra vez a mediados de Mayo. Para control de larvas, excepto estiércol de escarabajo), trate cualquier momento entre finales de Julio y comienzos de Octubre. Para control de estiércol de escarabajo,aplique en primavera o a comienzos de verano cuando el daño se note por primera vez. Trate otra vez a finales de verano o a comienzos de otoño, si una segunda generación aparece.
ENUNCIADO PREVENTIVO
PELIGROSO PARA HUMANOS Y ANIMALES DOMESTICOS
PRECAUCION: Dañino si tragado, inhalado o absorbido por la piel. Evite respirar polvo y el contacto con piel, ojos o ropa. Lavarse por completo después de manipularlo y antes de comer o fumar. Podría causar sensibilización después de repetido contacto con la piel de personas sensibles. Si reacciones de sensibilización ocurren contacte a un médico. No almacenor cerca de comida o productos alimenticios. Utensilios de comida como cucharas o tazas de medida no deben ser usados para propósitos alimenticios después de utilizarlos para medición del pesticida. No contamine peceras ornamentales. No permita personas o animales en áreas tratadas hasta que el gránulo haya sido absorbido y la hierba se haya secado.
PRIMEROS AUXILIOS
Si ingerido: Llame a un doctor inmediatamente. Beba uno o dos vasos de agua e induzca al vómito tocando la parta de atrás de la garganta con un dedo. Repita hasta que el vomitado sea transparente. No induzca al vómito o introduzca nada por la boca si la persona está inconsciente o convulsionando. **Si inhalado**: Coloque a la persona al aire libre y aplique respiración artificial si fuese necesario. Consiga atención médica. **Si en contacto con la piel**: Lavar inmediatamente con jabón y agua. Enjuagar completamente. Si la irritación persiste obtenga atención médica. **NOTA AL MÉDICO**: Este producto es un insecticida organophosphate*. Si síntomas de inhibición colinesterasa existen, sulfato de atropina por inyección es un antídoto. 2-PAM* también es un antídoto y puede ser administrado, pero sólo en conjunción con atropina.
PELIGRO AMBIENTAL
Este producto es altamente tóxico para pájaros, peces y fauna silvestre. Aves, especialmente aves acuáticas (patos o gansos), pueden morirse por alimentación o bebida de aguas tratadas. Por hábitos migratorios de ciertas aves acuáticas de la Costa Atlántica, no aplique este producto a prados del Condado de Nassau, Nueva York, entre el 1 de Noviembre y el 20 de Mayo. No exceda el máximo porcentaje permitido en la etiqueta. La utilización del producto que exceda el porcentaje recomendado incrementa el potencial de peligro para aves. Evite el superposicionamiento de los gránulos. Siga todas las instrucciones de riego en las direcciones de empleo; de todos modos, pare de regar antes de que se encharque.

Important: To avoid damage or poor results, carefully read one and follow all directions and precautionary statements.
DIRECTIONS FOR USE· It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
LAWN PROTECTION
Controls certain lawn pests on both grass and dichondra lawns. Apply with the shaker top on the container. Apply at a rate of 1 lb. Per 200 sq ft. (10 ft X 20 ft)
Ants Cinch bugs Fire ants Sowbugs (Pillbugs) Armyworms Clover mites Fleas Springtails(collumbola) Bermuda grass mites Crickets Lawn moths White grubs of Japanese beetle Billbugs Cutworms (Sodwebworms) Brown dog ticks Digger wasps Leafhoppers European chafer Chiggers Earwigs Millipedes Southern chafer.
DIRECTIONS: Water grass with at least ¼-inch of water after applications, however, stop watering before puddling occurs. For billbug control, apply when activity is first observed or when chewed or brown grass indicates damage. If necessary, repeat application at 3 week intervals. Make no more than 4 applications per year. For hyperodes weevils, treat problem areas in mid-April and again in mid-May. For grub control, except dung beetle, treat any time between late July and early October. For dung beetle control, apply in spring or early summer when damage is first noticed. Treat again in late summer or early fall, if a second generation occurs. **PRECAUTIONARY STATEMENTS**
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION: Harmful if swallowed, inhaled, or absorbed through skin. Avoid breathing dust and contact with skin, eyes, or clothing. Wash thoroughly after handling and before eating or smoking. May cause contact sensitization reactions result, contact a physician. Do not store near food or feed products. Food utensils such as tablespoons or measuring cups must not be used for food purposes after use in measuring pesticides. Do not contaminate ornamental fish ponds. Do not allow people or pets on treated areas until granules have been watered in and the grass has dried.
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ENVIRONMENTAL HAZARDS
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ENUNCIADO PREVENTIVO

PELIGROSO PARA HUMANOS Y ANIMALES DOMESTICOS

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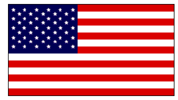

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Appendix G

Repeated Measures Analysis of Variance (ANOVA) for Study 1 and Raw Data

14 Bilingual label Statements

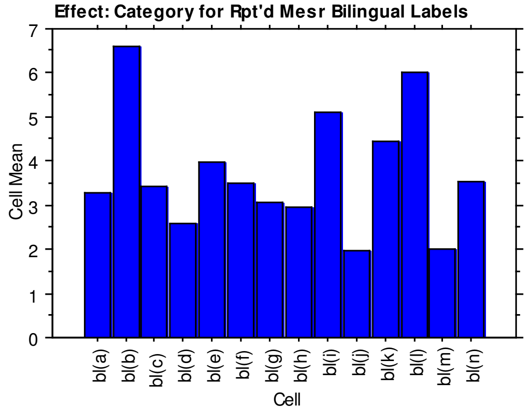
ANOVA Table for Rpt'd Mesr Bilingual Labels

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Subject	341	1883.680	5.524				
Category for Rpt'd Mesr Bilingual Labels	13	8481.711	652.439	173.488	<.0001	2255.350	1.000
Category for Rpt'd Mesr Bilingual Labels ...	4433	16671.217	3.761				

Means Table for Rpt'd Mesr Bilingual Labels
Effect: Category for Rpt'd Mesr Bilingual Labels

	Count	Mean	Std. Dev.	Std. Err.
bl(a)	342	3.263	2.435	.132
bl(b)	342	6.588	1.504	.081
bl(c)	342	3.444	1.757	.095
bl(d)	342	2.576	1.686	.091
bl(e)	342	3.968	2.145	.116
bl(f)	342	3.509	2.218	.120
bl(g)	342	3.053	1.980	.107
bl(h)	342	2.950	1.854	.100
bl(i)	342	5.114	2.057	.111
bl(j)	342	1.965	1.729	.094
bl(k)	342	4.462	2.066	.112
bl(l)	342	6.015	1.984	.107
bl(m)	342	1.997	1.982	.107
bl(n)	342	3.520	2.016	.109

Interaction Bar Plot for Rpt'd Mesr Bilingual Labels
Effect: Category for Rpt'd Mesr Bilingual Labels



2 (male vs. female) X 14 statements

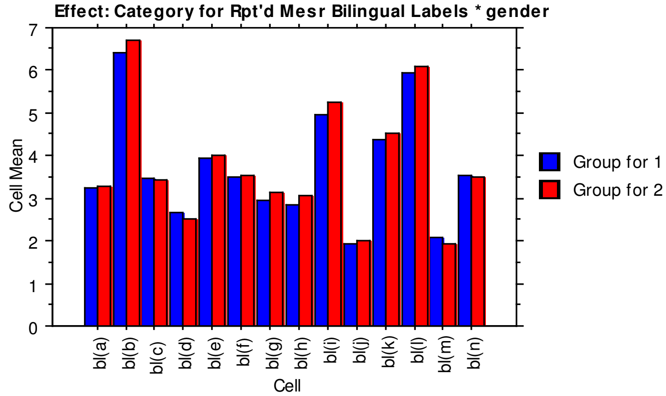
ANOVA Table for Rpt'd Mesr Bilingual Labels

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
gender	1	7.266	7.266	1.317	.2520	1.317	.196
Subject(Group)	340	1876.415	5.519				
Category for Rpt'd Mesr Bilingual Labels	13	8392.565	645.582	171.398	<.0001	2228.179	1.000
Category for Rpt'd Mesr Bilingual Labels ...	13	23.033	1.772	.470	.9417	6.115	.288
Category for Rpt'd Mesr Bilingual Labels ...	4420	16648.185	3.767				

Means Table for Rpt'd Mesr Bilingual Labels
Effect: Category for Rpt'd Mesr Bilingual Labels * gender

	Count	Mean	Std. Dev.	Std. Err.
Group for 1, bl(a)	158	3.234	2.509	.200
Group for 1, bl(b)	158	6.430	1.709	.136
Group for 1, bl(c)	158	3.481	1.881	.150
Group for 1, bl(d)	158	2.665	1.843	.147
Group for 1, bl(e)	158	3.937	2.170	.173
Group for 1, bl(f)	158	3.487	2.240	.178
Group for 1, bl(g)	158	2.943	2.076	.165
Group for 1, bl(h)	158	2.829	1.962	.156
Group for 1, bl(i)	158	4.975	2.147	.171
Group for 1, bl(j)	158	1.918	1.767	.141
Group for 1, bl(k)	158	4.373	2.146	.171
Group for 1, bl(l)	158	5.949	2.105	.167
Group for 1, bl(m)	158	2.076	2.125	.169
Group for 1, bl(n)	158	3.538	2.164	.172
Group for 2, bl(a)	184	3.288	2.377	.175
Group for 2, bl(b)	184	6.723	1.291	.095
Group for 2, bl(c)	184	3.413	1.647	.121
Group for 2, bl(d)	184	2.500	1.540	.114
Group for 2, bl(e)	184	3.995	2.128	.157
Group for 2, bl(f)	184	3.527	2.205	.163
Group for 2, bl(g)	184	3.147	1.895	.140
Group for 2, bl(h)	184	3.054	1.755	.129
Group for 2, bl(i)	184	5.234	1.974	.146
Group for 2, bl(j)	184	2.005	1.700	.125
Group for 2, bl(k)	184	4.538	1.997	.147
Group for 2, bl(l)	184	6.071	1.879	.139
Group for 2, bl(m)	184	1.929	1.853	.137
Group for 2, bl(n)	184	3.505	1.885	.139

Interaction Bar Plot for Rpt'd Mesr Bilingual Labels
Effect: Category for Rpt'd Mesr Bilingual Labels * gender



2 (English first vs. English second) X 14 statements

ANOVA Table for Rpt'd Mesr Bilingual Labels

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Pow er
english	1	13.637	13.637	2.479	.1163	2.479	.331
Subject(Group)	340	1870.043	5.500				
Category for Rpt'd Mesr Bilingual Labels	13	4601.020	353.925	94.332	<.0001	1226.311	1.000
Category for Rpt'd Mesr Bilingual Labels ...	13	87.727	6.748	1.799	.0377	23.382	.918
Category for Rpt'd Mesr Bilingual Labels ...	4420	16583.490	3.752				

Means Table for Rpt'd Mesr Bilingual Labels
Effect: Category for Rpt'd Mesr Bilingual Labels * english

	Count	Mean	Std. Dev.	Std. Err.
Group for 0, bl(a)	53	2.981	2.291	.315
Group for 0, bl(b)	53	6.642	1.711	.235
Group for 0, bl(c)	53	3.226	1.997	.274
Group for 0, bl(d)	53	2.623	2.059	.283
Group for 0, bl(e)	53	4.189	2.378	.327
Group for 0, bl(f)	53	3.660	2.425	.333
Group for 0, bl(g)	53	3.226	2.423	.333
Group for 0, bl(h)	53	3.189	2.067	.284
Group for 0, bl(i)	53	5.340	2.496	.343
Group for 0, bl(j)	53	1.226	1.815	.249
Group for 0, bl(k)	53	4.226	2.516	.346
Group for 0, bl(l)	53	5.396	2.429	.334
Group for 0, bl(m)	53	1.623	2.264	.311
Group for 0, bl(n)	53	3.132	2.296	.315
Group for 1, bl(a)	289	3.315	2.461	.145
Group for 1, bl(b)	289	6.578	1.465	.086
Group for 1, bl(c)	289	3.484	1.710	.101
Group for 1, bl(d)	289	2.567	1.613	.095
Group for 1, bl(e)	289	3.927	2.101	.124
Group for 1, bl(f)	289	3.481	2.181	.128
Group for 1, bl(g)	289	3.021	1.891	.111
Group for 1, bl(h)	289	2.907	1.813	.107
Group for 1, bl(i)	289	5.073	1.968	.116
Group for 1, bl(j)	289	2.100	1.681	.099
Group for 1, bl(k)	289	4.505	1.974	.116
Group for 1, bl(l)	289	6.128	1.875	.110
Group for 1, bl(m)	289	2.066	1.922	.113
Group for 1, bl(n)	289	3.592	1.956	.115

Interaction Bar Plot for Rpt'd Mesr Bilingual Labels
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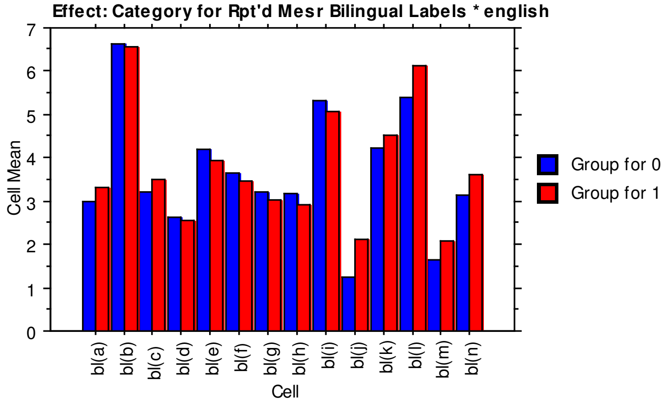


2 (student vs. non-student) X 14 statements.

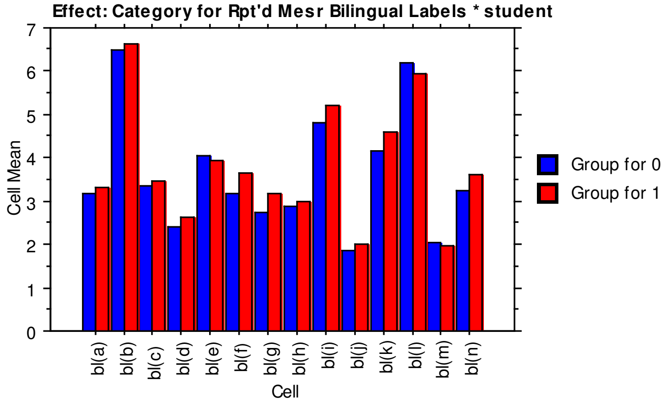
ANOVA Table for Rpt'd Mesr Bilingual Labels

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
student	1	32.096	32.096	5.894	.0157	5.894	.678
Subject(Group)	340	1851.584	5.446				
Category for Rpt'd Mesr Bilingual Labels	13	6773.605	521.047	138.500	<.0001	1800.499	1.000
Category for Rpt'd Mesr Bilingual Labels ...	13	42.862	3.297	.876	.5780	11.393	.551
Category for Rpt'd Mesr Bilingual Labels ...	4420	16628.356	3.762				

Means Table for Rpt'd Mesr Bilingual Labels
Effect: Category for Rpt'd Mesr Bilingual Labels * student

	Count	Mean	Std. Dev.	Std. Err.
Group for 0, bl(a)	93	3.161	2.433	.252
Group for 0, bl(b)	93	6.484	1.515	.157
Group for 0, bl(c)	93	3.366	1.921	.199
Group for 0, bl(d)	93	2.419	1.884	.195
Group for 0, bl(e)	93	4.054	2.314	.240
Group for 0, bl(f)	93	3.183	2.241	.232
Group for 0, bl(g)	93	2.720	2.018	.209
Group for 0, bl(h)	93	2.882	1.994	.207
Group for 0, bl(i)	93	4.817	2.293	.238
Group for 0, bl(j)	93	1.860	1.748	.181
Group for 0, bl(k)	93	4.151	2.100	.218
Group for 0, bl(l)	93	6.183	2.069	.215
Group for 0, bl(m)	93	2.032	2.056	.213
Group for 0, bl(n)	93	3.237	2.087	.216
Group for 1, bl(a)	249	3.301	2.440	.155
Group for 1, bl(b)	249	6.627	1.500	.095
Group for 1, bl(c)	249	3.474	1.694	.107
Group for 1, bl(d)	249	2.635	1.606	.102
Group for 1, bl(e)	249	3.936	2.082	.132
Group for 1, bl(f)	249	3.631	2.202	.140
Group for 1, bl(g)	249	3.177	1.955	.124
Group for 1, bl(h)	249	2.976	1.803	.114
Group for 1, bl(i)	249	5.225	1.955	.124
Group for 1, bl(j)	249	2.004	1.724	.109
Group for 1, bl(k)	249	4.578	2.045	.130
Group for 1, bl(l)	249	5.952	1.952	.124
Group for 1, bl(m)	249	1.984	1.957	.124
Group for 1, bl(n)	249	3.627	1.982	.126

Interaction Bar Plot for Rpt'd Mesr Bilingual Labels
Effect: Category for Rpt'd Mesr Bilingual Labels * student



subject	coast	survey	age	gender	ethnic	student	major
1	East	A	21&under	1	mid.Eas	1	engineering
2	East	A	21&under	1	afri/am	1	social work/spanish
3	East	A	21&under	1	cauc.	1	civil engineering
4	East	A	21&under	1	cauc.	1	business management
5	East	A	21&under	2	cauc.	1	spanish
6	East	A	over21	2	cauc.	0	.
7	East	A	over21	2	cauc.	0	.
8	East	A	21&under	2	cauc.	1	sociology
9	East	A	over21	1	cauc.	0	.
10	East	A	over21	1	cauc.	0	.
11	East	A	21&under	1	cauc.	1	psychology
12	East	A	over21	2	cauc.	0	.
13	East	A	over21	2	cauc.	1	psychology
14	East	A	21&under	2	cauc.	0	.
15	East	A	over21	1	cauc.	0	.
16	East	A	over21	1	cauc.	0	.
17	East	A	over21	2	cauc.	0	.
18	East	A	over21	1	cauc.	1	engineering
19	East	A	21&under	1	afri/am	1	computer engineering
20	East	A	21&under	2	cauc.	1	communications
21	East	A	21&under	1	cauc.	1	industrial engineering
22	East	A	21&under	1	mixed	1	nuclear engineering
23	East	A	21&under	1	cauc.	1	
24	East	A	21&under	2	cauc.	1	biology
25	East	A	21&under	1	cauc.	1	biological sciences
26	East	A	21&under	2	cauc.	1	civil engineering
27	East	A	21&under	1	cauc.	1	material engineering
28	East	A	21&under	1	cauc.	1	political science
29	East	A	over21	2	cauc.	0	.
30	East	A	21&under	1	cauc.	1	computer engineering
31	East	A	21&under	2	cauc.	1	elementary education
32	East	A	21&under	2	cauc.	1	psychology
33	East	A	21&under	2	cauc.	1	business management
34	East	A	over21	2	cauc.	1	textile management
35	East	A	21&under	2	cauc.	1	psychology
36	East	A	over21	1	cauc.	1	business management
37	East	A	21&under	2	cauc.	1	textile & apparel management
38	East	A	over21	1	cauc.	1	business management
42	East	A	21&under	2	cauc.	1	food science
43	East	A	over21	1	cauc.	1	communications
44	East	A	21&under	2	cauc.	1	communications
45	East	A	21&under	2	cauc.	1	biological sciences
46	East	A	over21	1	cauc.	0	.
47	East	A	21&under	2	cauc.	1	mds
48	East	A	21&under	2	cauc.	1	communications
49	East	A	over21	1	cauc.	1	cem
50	East	A	21&under	2	cauc.	1	information systems
51	East	A	21&under	2	cauc.	1	Psychology
52	East	A	over21	2	cauc.	0	.
53	East	A	over21	1	cauc.	0	.
54	East	A	over21	2	cauc.	0	.
55	East	A	over21	1	cauc.	0	.
56	East	A	over21	2	cauc.	0	.
57	East	A	over21	1	cauc.	0	.

58	East	A	over21	2	cauc.	1	psychology
59	East	A	21&under	2	cauc.	1	biomedical engineering
60	East	A	21&under	2	cauc.	1	science education-biology
62	East	A	21&under	1	cauc.	0	.
63	East	A	21&under	2	cauc.	1	education
64	East	A	21&under	2	cauc.	1	history
65	East	A	21&under	2	cauc.	1	chemical engineering
67	East	A	21&under	2	cauc.	1	zoology
68	East	A	over21	2	cauc.	0	.
70	East	A	21&under	2	cauc.	1	business and marketing education
71	East	A	21&under	2	cauc.	1	IE & applied math
72	East	A	21&under	2	cauc.	1	industrial engineering
73	East	A	over21	1	cauc.	1	biomedical engineering
74	East	A	21&under	1	asian	1	industrial engineering
75	East	A	21&under	2	cauc.	1	industrial engineering
76	East	A	21&under	1	cauc.	1	college prep courses
77	East	A	over21	2	cauc.	0	.
78	East	A	over21	1	cauc.	0	.
79	East	A	over21	2	cauc.	1	psychology
80	East	A	21&under	2	cauc.	1	psychology
81	East	A	over21	2	cauc.	0	.
82	East	A	over21	2	cauc.	0	.
83	East	A	over21	2	cauc.	0	.
84	East	A	over21	1	cauc.	0	.
85	East	A	over21	2	cauc.	0	.
86	East	A	21&under	1	cauc.	1	psychology
87	East	A	21&under	1	cauc.	1	criminal justice
88	East	A	21&under	1	cauc.	1	finance
89	East	A	21&under	2	cauc.	1	biology education
90	East	A	over21	2	cauc.	1	industrial engineering
91	East	A	over21	2	cauc.	1	business and psychology
92	East	A	21&under	2	cauc.	1	biomedical engineering
93	East	A	over21	2	cauc.	1	meteorolgy & marine science
94	East	A	21&under	2	cauc.	1	poli sci
95	East	A	21&under	2	cauc.	1	comm disorders
96	East	A	21&under	2	cauc.	1	business
97	East	A	over21	2	cauc.	1	accounting
98	East	A	over21	2	cauc.	1	marine science
100	East	A	21&under	2	cauc.	1	journalism
101	East	A	over21	1	cauc.	1	textile mgmt
102	East	A	over21	2	cauc.	0	.
103	East	A	over21	2	cauc.	0	.
104	East	A	21&under	2	cauc.	1	psychology
105	East	A	over21	1	cauc.	1	civil engineering
106	East	A	over21	2	cauc.	1	textiles
107	East	A	21&under	2	cauc.	1	education
108	East	A	over21	1	cauc.	0	.
110	East	A	over21	1	cauc.	0	.
111	East	A	21&under	2	cauc.	1	business management
113	East	A	over21	2	cauc.	0	.
114	East	A	over21	2	cauc.	0	.
115	East	A	21&under	1	cauc.	1	statistics
116	East	A	over21	1	cauc.	1	TC & CHE
118	East	A	21&under	2	cauc.	1	business
119	East	A	over21	1	cauc.	0	.

120	East	A	over21	2	cauc.	0	.
121	East	A	over21	1	cauc.	0	.
122	East	A	over21	1	mid.Eas	0	.
123	East	A	21&under	1	asian	1	textile mgmt
124	East	A	over21	1	cauc.	1	horticulture
125	East	A	over21	1	cauc.	0	.
126	East	A	over21	2	cauc.	0	.
127	East	A	over21	1	cauc.	0	.
128	East	A	21&under	1	cauc.	1	engineering
129	East	A	21&under	1	afri/am	1	com
130	East	A	21&under	1	cauc.	1	criminology
131	East	A	21&under	1	cauc.	1	engineering
132	East	A	21&under	2	cauc.	1	biological sciences
133	East	A	21&under	2	cauc.	1	pre-vet
134	East	A	21&under	1	afri/am	1	electrical and computer engineering
135	East	A	21&under	1	cauc.	1	geology
136	East	A	21&under	1	cauc.	1	finance/bus mgmnt.
137	East	B	over21	2	mid.Eas	1	computer science
138	East	B	over21	2	asian	1	COMPUTER SCIENCE
139	East	B	21&under	2	nat.am	1	biochem
140	East	B	over21	2	e.ind	1	COMPUTER SCIENCE
141	East	B	21&under	2	nat.am	1	COMPUTER SCIENCE
142	East	B	over21	2	nat.am	0	.
143	East	B	over21	2	mid.Eas	0	.
144	East	B	over21	2	nat.am	0	.
145	East	B	21&under	1	mid.Eas	0	.
146	East	B	over21	1	nat.am	0	.
147	East	B	over21	1	cauc.	0	.
149	East	B	over21	1	afri/am	0	.
150	East	B	over21	1	afri/am	0	.
151	East	B	21&under	1	cauc.	0	.
152	East	B	over21	1	cauc.	0	.
153	East	B	over21	2	cauc.	0	.
154	East	B	over21	1	cauc.	0	.
155	East	B	21&under	2	cauc.	0	.
156	East	B	over21	1	cauc.	1	psychology
157	East	B	over21	2	cauc.	1	business
158	East	B	21&under	2	cauc.	1	painting/art
159	East	B	over21	1	cauc.	0	.
160	East	B	21&under	1	cauc.	1	industrial design
161	East	B	21&under	1	cauc.	1	Industrial design
162	East	B	over21	1	cauc.	1	industrial design
163	East	B	21&under	2	cauc.	1	industrial design
164	East	B	over21	2	cauc.	1	industrial design
165	East	B	over21	2	cauc.	1	landscape architecture
166	East	B	21&under	2	cauc.	1	psychology
168	East	B	21&under	2	cauc.	1	business management
169	East	B	21&under	2	cauc.	1	sociology
170	East	B	over21	2	cauc.	1	arts applications
171	East	B	21&under	2	cauc.	1	accounting
172	East	B	21&under	2	cauc.	1	biomedical engineering
173	East	B	21&under	2	cauc.	1	comunications
174	East	B	over21	2	cauc.	1	biomedical engineering
175	East	B	over21	1	cauc.	1	computer info systems
176	East	B	21&under	2	cauc.	1	technology education

177	East	B	21&under	2	cauc.	1	meterology
178	East	B	21&under	2	cauc.	1	poultry science or chemistry
179	East	B	21&under	1	cauc.	1	meterology
181	East	B	21&under	2	cauc.	1	math/math education
182	East	B	21&under	2	afri/am	1	biological sciences
183	East	B	over21	1	cauc.	0	.
184	East	B	21&under	2	cauc.	1	meterology
185	East	B	over21	2	african	1	business management
186	East	B	21&under	2	cauc.	1	early education
187	East	B	over21	2	cauc.	1	secondary education
188	East	B	over21	1	cauc.	0	.
189	East	B	21&under	1	cauc.	1	business management
190	East	B	over21	2	cauc.	0	.
191	East	B	over21	2	cauc.	0	.
200	East	B	21&under	2	cauc.	1	psychology
201	East	B	over21	2	cauc.	1	education
202	East	B	over21	1	cauc.	0	.
203	East	B	21&under	2	cauc.	1	psychology
204	East	B	over21	1	mid.Eas	1	computer science
205	East	B	21&under	1	mid.Eas	1	electrical engineering
206	East	B	over21	1	cauc.	0	.
207	East	B	over21	1	asian	1	electrical engineering
208	East	B	over21	1	cauc.	1	computer science
209	East	B	over21	1	african	1	computer science
210	East	B	21&under	1	mid.Eas	1	cpe
211	East	B	over21	1	cauc.	1	business management
212	East	B	21&under	1	cauc.	1	accounting
213	East	B	over21	1	asian	1	computer engineering
214	East	B	over21	1	afri/am	1	computer science
215	East	B	over21	1	cauc.	0	.
216	East	B	over21	1	cauc.	0	.
217	East	B	over21	2	cauc.	0	.
218	East	B	over21	1	cauc.	1	computer science
219	East	B	21&under	1	cauc.	1	parks and rec
220	East	B	over21	2	cauc.	0	.
221	East	B	over21	1	cauc.	0	.
222	East	B	over21	1	afri/am	0	.
223	East	B	over21	1	cauc.	1	graphic communications
224	East	B	over21	1	cauc.	0	.
225	East	B	over21	2	cauc.	0	.
226	East	B	21&under	2	cauc.	1	math
227	East	B	over21	2	cauc.	1	civil engineering
228	East	B	21&under	1	cauc.	1	civil engineering
229	East	B	over21	1	cauc.	1	civil engineering
230	East	B	21&under	2	cauc.	1	civil engineering
231	East	B	over21	1	cauc.	1	civil engineering
232	East	B	over21	1	cauc.	1	civil engineering
233	East	B	over21	1	cauc.	1	secondary science ed.
234	East	B	over21	1	cauc.	1	civil engineering
235	East	B	over21	1	cauc.	1	civil engineering
236	East	B	21&under	2	cauc.	1	biosciences
237	East	B	21&under	2	cauc.	1	zoology
238	East	B	over21	2	cauc.	1	civil engineering
239	East	B	over21	1	cauc.	1	civil engineering
240	East	B	over21	1	cauc.	0	.

241	East	B	21&under	1	afri/am	1	business management
242	East	B	over21	1	cauc.	1	art and design
243	East	B	over21	1	cauc.	1	physics
244	East	B	21&under	2	cauc.	0	.
245	East	B	21&under	1	cauc.	1	undecided
246	East	B	over21	2	cauc.	1	math education
247	East	B	21&under	1	cauc.	1	computer science
248	East	B	21&under	1	cauc.	1	computer science
250	East	B	over21	2	cauc.	1	computer science
252	East	B	21&under	1	cauc.	1	political science/ philosophy
253	East	B	over21	1	cauc.	1	health promotion
254	East	B	over21	1	cauc.	1	english
255	East	B	21&under	1	cauc.	1	computer science
256	East	B	over21	2	cauc.	0	.
257	East	B	over21	1	cauc.	0	.
258	East	B	over21	1	cauc.	0	.
259	East	B	over21	2	cauc.	0	.
260	East	B	21&under	2	cauc.	1	mechanical engineering/physics
261	East	B	over21	2	cauc.	0	.
262	East	B	over21	1	cauc.	0	.
263	East	B	over21	1	cauc.	1	computer science
264	East	B	21&under	1	cauc.	1	physical therapy
265	East	B	21&under	1	cauc.	1	associate in arts
266	East	B	over21	2	cauc.	0	.
267	East	B	over21	1	cauc.	0	.
268	East	B	over21	2	cauc.	0	.
269	East	B	over21	2	cauc.	0	.
270	East	B	over21	1	cauc.	0	.
271	East	B	over21	1	cauc.	1	zoology
272	East	B	over21	2	cauc.	1	zoology
273	East	B	21&under	2	cauc.	1	psychology
274	East	B	over21	2	cauc.	0	.
277	East	B	over21	1	cauc.	0	.
280	East	B	over21	1	cauc.	0	.
281	East	B	21&under	1	cauc.	1	high school
283	East	B	over21	2	cauc.	1	textile chemistry
284	East	B	over21	1	cauc.	1	mechanical engineering/physics
285	East	B	over21	1	cauc.	0	.
289	East	B	over21	1	cauc.	0	.
290	East	B	over21	2	cauc.	0	.
291	East	B	over21	2	cauc.	1	psychology
292	East	B	over21	1	cauc.	1	computer science
293	East	B	21&under	1	cauc.	1	mechanical engineering/physics
294	East	B	21&under	1	cauc.	1	First Year
295	East	B	21&under	2	cauc.	1	First Year
296	East	B	21&under	2	cauc.	1	English
297	East	B	21&under	1	afri/am	1	undecided
298	East	A	over21	1	cauc.	0	.
299	East	B	over21	1	cauc.	0	.
300	East	A	21&under	1	cauc.	1	business
301	East	B	21&under	1	cauc.	1	sociology
302	East	B	21&under	2	cauc.	1	communications
303	East	B	21&under	2	cauc.	1	communication disorders
304	East	B	over21	1	cauc.	0	.
305	East	B	over21	2	cauc.	1	communications

306	East	B	21&under	2	cauc.	1	communications
307	East	B	21&under	1	cauc.	1	political science
308	East	B	21&under	2	cauc.	1	languages and social studies education
309	East	B	21&under	2	cauc.	1	psychology
310	East	B	over21	2	cauc.	0	.
400	West	A	over21	2	mixed	1	psychology
401	West	A	over21	2	latino	1	psychology
402	West	A	over21	1	cauc.	1	psychology
403	West	A	over21	2	latino	1	psychology
404	West	A	over21	1	latino	1	psychology
405	West	A	over21	2	latino	1	psychology
406	West	A	over21	2	asian	1	psychology
407	West	A	21&under	1	asian	1	psychology
408	West	A	over21	2	cauc.	1	psychology
409	West	A	over21	1	latino	1	education
410	West	A	over21	2	cauc.	1	psychology
411	West	A	over21	1	afri/am	1	bio
412	West	A	over21	2	african	1	psychology
413	West	A	over21	2	asian	1	psychology
414	West	A	over21	1	latino	1	psychology
415	West	A	over21	2	latino	1	psychology
416	West	A	over21	2	african	1	psychology
417	West	A	over21	2	latino	1	psychology
418	West	A	over21	1	asian	1	psychology
419	West	A	over21	2	cauc.	1	psychology
420	West	A	over21	2	asian	1	psychology
421	West	A	over21	1	latino	1	psychology
422	West	A	over21	2	latino	1	psychology
423	West	A	over21	2	cauc.	1	psychology
424	West	A	over21	2	african	1	psychology
425	West	A	21&under	2	asian	1	psychology
426	West	A	over21	2	africanafrican	1	psychology
427	West	A	21&under	1	latino	1	psychology
428	West	A	over21	2	latino	1	liberal studies
429	West	A	over21	1	african	1	psychology
430	West	A	over21	2	african	1	psychology
431	West	A	over21	2	latino	1	psychology
432	West	A	over21	2	latino	1	psychology
433	West	A	over21	2	asian	1	psychology
434	West	A	21&under	2	latino	1	psychology
435	West	A	21&under	2	latino	1	psychology
436	West	A	over21	1	latino	1	psychology
437	West	A	over21	2	mixed	1	psychology
438	West	A	over21	2	latino	1	psychology
439	West	A	over21	2	mixed	1	psychology
440	West	A	over21	1	mixed	1	psychology
441	West	A	21&under	1	latino	1	psychology
442	West	A	over21	2	afri/am	1	psychology
443	West	A	over21	1	latino	1	psychology
444	West	A	over21	2	latino	1	psychology
445	West	A	over21	2	afri/am	1	psychology
446	West	A	over21	1	latino	0	.
447	West	A	over21	2	latino	0	.
448	West	A	over21	2	latino	1	psychology

449	West	A	over21	1	latino	1	psychology
450	West	A	over21	1	afri/am	1	psychology
451	West	A	over21	1	latino	0	.
452	West	A	over21	2	latino	1	psychology
453	West	A	over21	2	latino	1	psychology
455	West	A	over21	2	latino	1	psychology
456	West	A	21&under	2	latino	1	psychology
457	West	A	over21	2	afri/am	1	psychology
458	West	A	over21	2	mid.Eas	1	psychology
459	West	A	over21	1	cauc.	1	psychology
460	West	A	over21	2	latino	1	psychology
461	West	A	over21	1	latino	1	psychology
462	West	A	21&under	1	latino	1	psychology
463	West	A	over21	2	latino	1	psychology

occupation	school	english	language	subject
.	12	1	.	1
.	13	1	.	2
.	13	1	.	3
.	14	1	.	4
.	13	1	.	5
art instructor	16	1	.	6
marketing manager	16	1	.	7
.	13	1	.	8
assistant builder	12	1	.	9
lab tech	15	1	.	10
.	13	1	.	11
domestic engineer (mom)	15	1	.	12
.	15	1	.	13
head cashier	12	1	.	14
server	13	1	.	15
water treatment consultant	14	1	.	16
domestic engineer (mom)	12	1	.	17
.	15	1	.	18
.	12	1	.	19
.	13	1	.	20
.	13	1	.	21
.	13	1	.	22
.	13	1	.	23
.	14	1	.	24
.	14	0	urdu	25
.	13	1	.	26
.	13	1	.	27
.	13	1	.	28
supported employement	16	1	.	29
.	15	1	.	30
.	13	1	.	31
.	13	1	.	32
.	14	1	.	33
.	16	1	.	34
.	16	1	.	35
.	15	1	.	36
.	14	1	.	37
.	15	1	.	38
.	16	1	.	42
.	16	1	.	43
.	14	1	.	44
.	15	1	.	45
sales consultant	16	1	.	46
.	12	1	.	47
.	13	1	.	48
.	16	1	.	49
.	14	1	.	50
.	14	1	.	51
homemaker	14	1	.	52
engineering	16	1	.	53
teacher	16	1	.	54
.	14	1	.	55
teacher	14	1	.	56

cust.service assoc.	10	1	.	57
.	14	1	.	58
.	12	1	.	59
.	14	1	.	60
landscaper	12	1	.	62
.	12	1	.	63
.	12	1	.	64
.	13	1	.	65
.	12	1	.	67
director of operations	16	1	.	68
.	13	1	.	70
.	13	1	.	71
.	14	1	.	72
.	15	1	.	73
.	14	1	.	74
.	15	1	.	75
.	11	1	.	76
.	16	1	.	77
engineering	16	1	.	78
.	15	1	.	79
.	14	1	.	80
management consultant	18	1	.	81
house wife	16	1	.	82
analyst	17	0	Russian	83
.	20	1	.	84
teacher	18	1	.	85
.	14	1	.	86
.	14	1	.	87
.	14	1	.	88
.	14	1	.	89
.	16	1	.	90
.	16	1	.	91
.	15	1	.	92
.	16	1	.	93
.	14	1	.	94
.	14	1	.	95
.	15	1	.	96
.	14	1	.	97
.	16	1	.	98
.	12	1	.	100
.	16	1	.	101
homemaker p.t. office worker	16	1	.	102
HR Coordinator	16	1	.	103
.	15	1	.	104
co-op	16	1	.	105
	17	1	.	106
.	12	1	.	107
sales rep.	16	1	.	108
.	16	1	.	110
.	14	1	.	111
high school administrator	19	1	.	113
school counselor	18	1	.	114
.	14	1	.	115
.	15	1	.	116
.	14	1	.	118

optician	14	1	.	119
seamstress	12	1	.	120
cook	14	1	.	121
maintanance mech. III	18	0	arabic	122
.	15	0	malagalam	123
.	14	0	.	124
.	20	1	.	125
computer programmer	18	1	.	126
facilities management	16	1	.	127
.	13	1	.	128
.	14	1	.	129
.	14	1	.	130
.	13	1	.	131
.	12	1	.	132
.	14	1	.	133
.	13	1	.	134
.	13	1	.	135
.	14	1	.	136
.	17	0	Farsi	137
.	16	0	hindi	138
.	14	1	.	139
.	20	0	arujah	140
.	15	1	.	141
reporter	17	1	.	142
housewife	14	0	farsi	143
housewife	16	1	.	144
self-employed	14	0	farsi	145
self-employed	16	1	.	146
.	20	1	.	147
.	18	1	.	149
TRUCK DRIVER	12	0	.	150
work	9	1	.	151
truck Driver	12	0	german	152
.	12	1	.	153
excrusion cutter	12	1	.	154
veterinary tech.	14	1	.	155
.	15	1	.	156
.	15	1	.	157
.	15	1	.	158
engineer	16	1	.	159
.	14	1	.	160
.	14	1	.	161
.	17	1	.	162
.	14	1	.	163
.	15	1	.	164
.	15	1	.	165
.	15	1	.	166
.	14	1	.	168
.	14	1	.	169
.	15	1	.	170
.	14	1	.	171
.	15	1	.	172
.	14	1	.	173
.	15	1	.	174
.	15	1	.	175

.	13	1	.	176
.	13	1	.	177
.	14	1	.	178
.	14	1	.	179
.	13	1	.	181
.	13	1	.	182
salesman	16	1	.	183
.	13	1	.	184
.	13	1	.	185
.	12	1	.	186
.	14	1	.	187
program director	18	1	.	188
.	13	1	.	189
receptionist	14	1	.	190
.	16	1	.	191
.	15	1	.	200
.	16	1	.	201
medical rep	12	1	.	202
.	16	1	.	203
.	17	0	arabic	204
	16	0	arabic	205
.	12	1	.	206
	16	1	.	207
.	16	1	.	208
software engineer	20	1	.	209
.	16	0	arabic	210
	16	1	.	211
.	14	1	.	212
.	16	1	.	213
.	17	1	.	214
waiter/bartender	16	1	.	215
maintenance	12	1	.	216
secretary	16	1	.	217
.	16	1	.	218
.	14	1	.	219
teacher	18	1	.	220
construction project estimator	16	1	.	221
bartender	14	1	.	222
.	17	1	.	223
.	14	1	.	224
.	12	1	.	225
.	15	1	.	226
.	15	1	.	227
.	15	1	.	228
.	15	1	.	229
.	16	1	.	230
.	16	0	italian	231
.	15	1	.	232
.	16	1	.	233
.	16	1	.	234
.	17	1	.	235
.	14	1	.	236
.	13	1	.	237
.	16	1	.	238
.	16	1	.	239

office manager	16	1	.	240
.	15	1	.	241
.	15	1	.	242
.	14	1	.	243
pharmacy technician	14	1	.	244
.	12	1	.	245
.	15	1	.	246
.	14	1	.	247
.	15	1	.	248
.	15	1	.	250
.	15	1	.	252
.	14	1	.	253
.	20	1	.	254
.	15	1	.	255
volunteer	13	0	German	256
.	14	1	.	257
advisory system engineer	16	1	.	258
homemaker	12	0	German	259
.	13	1	.	260
homemaker	12	1	.	261
electrical engineer	18	1	.	262
.	15	1	.	263
.	13	1	.	264
.	12	1	.	265
.	13	1	.	266
assistant principal of a middle	18	1	.	267
licensed practical nurse	13	1	.	268
teacher	16	1	.	269
.	8	1	.	270
.	15	1	.	271
.	15	1	.	272
.	15	1	.	273
minister	20	1	.	274
healthcare	16	1	.	277
project. engineer manager	16	1	.	280
.	11	1	.	281
.	15	1	.	283
.	15	1	.	284
landscape	16	1	.	285
independent sales rep	16	1	.	289
teacher of the hearing impaired	16	1	.	290
.	16	1	.	291
.	15	1	.	292
.	13	1	.	293
.	12	1	.	294
.	12	1	.	295
.	13	1	.	296
.	13	1	.	297
lab tech	13	1	.	298
installer	13	1	.	299
.	12	1	.	300
.	15	1	.	301
.	14	1	.	302
.	14	1	.	303

marketing	16	1	.	304
.	14	1	.	305
.	14	1	.	306
.	14	1	.	307
.	14	1	.	308
.	14	1	.	309
global cash management	16	1	.	310
	16	1	.	400
1	16	1	.	401
.	17	1	.	402
.	16	0	spanish	403
.	15	0	spanish	404
.	15	0	spanish	405
.	15	0	korean	406
.	14	1	cantonese	407
.	15	1	.	408
.	15	0	spanish	409
tutor	17	0	armenian	410
.	15	1	.	411
.	16	1	.	412
.	16	1	.	413
.	18	0	spanish	414
.	15	0	spanish	415
.	15	0	greek	416
.	15	1	.	417
.	20	0	spanish	418
.	16	1	.	419
.	16	0	korean	420
.	17	0	spanish	421
.	17	0	spanish	422
.	15	0	armenian	423
.	15	0	armenian	424
.	15	1	.	425
.	18	1	.	426
.	15	0	spanish	427
.	14	1	.	428
.	17	0	spanish	429
.	16	0	armenian	430
.	19	1	.	431
.	16	0	spanish	432
.	15	0	cantonese	433
.	14	1	.	434
.	14	0	spanish	435
.	16	0	spanish	436
.	16	1	.	437
.	15	0	spanish	438
.	15	1	.	439
.	15	1	.	440
.	15	1	.	441
.	15	1	.	442
.	14	0	spanish	443
.	14	1	.	444
.	16	1	.	445
mailman	15	0	spanish	446
legal asst	20	1	.	447

.	15	0	spanish	448
.	16	0	spanish	449
.	16	1	.	450
instructor	20	0	spanish	451
.	15	0	spanish	452
.	16	0	spanish	453
.	16	0	spanish	455
.	15	1	.	456
.	15	1	.	457
.	14	0	armenian	458
.	16	1	.	459
.	17	0	spanish	460
.	14	0	spanish	461
.	16	1	.	462
.	16	0	spanish	463

Key to following statements in Study 1, bilingual labels (bl)

(a) Products with bilingual labels are useful for users who speak English

(b) Products with bilingual labels are useful for users who speak Spanish.

(c) Products with bilingual labels make the product cost more because extra material must be printed on the labels.

(d) I would expect to pay less for a product with bilingual labels.

(e) Bilingual labels are worth the extra cost.

(f) Bilingual labels should only be used for those products that are potentially hazardous to users and others (for example, pesticides and chemicals).

(g) I would not read the warning on bilingual labels.

(h) I prefer products that have bilingual labels more than English-only labels.

(i) I think bilingual labels are important because many people in the U.S. do not read English

(j) I believe that products with bilingual labels are of lower quality than products with only English labels.

(k) Rather than make the labels bilingual, manufacturers should try to use pictorials, symbols, or icons to convey meaning to users of all languages and for people who cannot read.

(l) I believe that people who intend to live in the U.S. should learn English.

(m) I believe that products with bilingual labels should not be sold in the United States.

(n) Products with bilingual labels will have too much text; many people will not read the label because it takes too much effort to read.

Data Ratings for Statements in Study 1

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	subject
1	7	6	2	3	5	5	0	3	5	8	7	3	6	1
2	6	4	2	4	2	2	4	6	2	2	2	2	2	2
4	8	2	2	2	2	6	0	5	2	0	5	3	0	3
2	6	3	4	4	2	7	4	6	4	5	8	0	2	4
8	8	4	2	4	3	4	4	7	2	5	4	2	3	5
5	6	3	1	4	7	4	4	6	2	7	2	0	2	6
2	6	4	2	4	2	2	2	6	2	4	7	2	3	7
6	6	3	2	3	1	1	4	6	2	3	3	1	4	8
8	8	6	7	2	2	1	8	8	5	5	8	1	3	9
3	3	3	0	0	8	0	0	0	0	8	8	0	8	10
3	6	6	3	5	6	3	4	5	4	6	5	3	5	11
0	6	4	4	4	0	4	4	5	0	6	8	0	4	12
0	7	3	3	3	6	3	4	3	5	5	7	2	3	13
2	8	4	2	4	2	0	4	6	2	2	5	2	2	14
0	5	3	3	4	3	8	6	7	5	4	6	7	7	15
6	6	4	4	4	2	2	4	6	2	5	5	2	4	16
0	8	2	1	8	1	1	1	1	1	1	8	0	0	17
5	7	4	3	4	3	2	4	5	1	5	7	3	3	18
4	8	6	2	6	2	4	3	7	2	3	5	0	4	19
2	7	5	2	2	6	3	1	7	2	3	7	1	3	20
1	7	2	2	0	2	0	2	8	0	6	6	0	4	21
0	8	1	4	5	5	3	4	6	4	6	7	0	3	22
4	6	5	2	5	5	2	4	6	2	5	3	2	4	23
5	8	4	2	4	3	4	2	6	2	4	7	1	5	24
2	7	5	1	4	5	5	2	8	0	2	5	1	6	25
2	6	4	3	2	7	6	1	2	2	6	8	4	5	26
8	8	6	2	8	6	2	6	8	1	8	4	0	0	27
0	0	2	2	0	7	6	2	6	0	6	8	2	6	28
2	6	5	3	4	4	4	4	6	2	5	8	2	3	29
0	7	1	4	0	6	8	0	0	5	4	8	7	6	30
0	8	4	4	4	4	4	2	5	2	4	8	2	2	31
3	2	4	5	4	5	3	6	7	5	4	3	2	2	32
2	8	6	2	2	2	4	2	1	2	2	6	2	2	33
5	7	2	1	0	8	4	0	2	5	6	8	4	6	34
2	7	2	2	5	6	4	4	5	2	8	6	1	3	35
2	6	4	2	2	4	6	2	4	4	7	7	4	4	36
8	8	5	3	1	6	2	4	2	2	1	8	4	4	37
0	5	4	0	4	5	7	0	3	2	4	8	4	6	38
0	7	5	3	0	6	0	0	5	5	6	8	2	6	42
8	8	1	1	7	1	0	4	7	1	4	1	0	1	43
6	7	5	2	6	2	5	6	7	2	7	6	2	5	44
2	8	6	4	5	6	2	3	6	2	7	5	2	4	45
6	7	5	5	4	7	3	4	6	4	3	6	1	5	46
6	6	2	4	5	2	4	3	6	2	5	6	1	2	47
5	6	2	3	4	3	2	4	6	2	2	5	2	3	48
0	6	8	0	2	7	1	1	3	3	1	8	3	5	49
2	8	2	4	6	2	4	8	8	4	0	7	0	1	50
2	7	4	3	3	2	4	2	5	3	5	6	2	5	51
1	7	2	4	2	4	4	4	2	2	6	8	4	2	52
0	8	5	5	3	3	0	4	6	0	5	8	0	5	53
0	8	8	0	0	2	4	0	5	2	5	8	3	3	54
0	8	0	0	4	4	0	4	3	0	6	7	0	2	55

6	6	5	3	4	3	3	4	6	3	3	6	2	2	56
4	7	4	4	4	4	4	4	2	2	3	6	2	3	57
0	7	4	5	0	5	7	0	0	5	7	8	8	4	58
1	6	4	2	2	4	4	2	2	5	6	8	4	7	59
4	7	5	4	6	8	4	5	7	1	4	2	1	1	60
2	8	2	2	4	6	2	2	6	2	8	8	2	2	62
1	8	2	2	3	2	8	0	2	2	8	8	4	3	63
8	8	2	2	4	0	4	5	8	0	3	6	1	3	64
1	7	5	2	2	8	5	1	6	1	7	8	2	4	65
3	8	2	2	8	6	2	2	2	3	6	8	2	3	67
2	7	4	2	6	2	2	4	6	2	5	5	0	5	68
3	8	5	2	5	1	3	4	7	1	2	5	1	2	70
6	6	3	4	5	2	3	6	7	2	7	7	1	4	71
2	7	5	4	5	2	2	4	6	4	5	5	2	5	72
0	8	6	2	3	6	2	2	4	4	3	6	3	5	73
6	6	2	2	4	2	1	4	6	4	4	6	0	1	74
0	6	2	2	2	1	3	3	6	2	5	8	6	5	75
4	8	5	3	5	4	4	4	6	4	3	7	2	2	76
6	6	6	2	3	2	6	4	4	2	5	6	4	2	77
4	8	5	2	4	2	2	5	8	2	2	6	2	2	78
7	7	4	4	2	5	5	4	6	3	5	6	2	5	79
0	3	4	7	0	8	5	0	0	8	7	8	4	4	80
0	6	2	2	1	7	3	1	5	0	4	7	4	2	81
5	5	5	5	6	6	6	2	6	5	6	8	2	8	82
0	4	8	8	0	6	4	0	2	8	5	8	8	8	83
0	8	4	4	4	6	4	0	4	0	0	8	0	4	84
1	6	5	2	1	5	4	1	4	4	7	8	6	5	85
6	6	4	4	4	2	7	4	6	2	5	5	2	4	86
0	8	4	4	1	1	4	1	1	4	5	8	6	5	87
1	6	0	0	4	8	7	4	6	4	6	7	1	4	88
7	7	5	2	2	3	0	4	6	1	5	3	0	0	89
2	7	4	4	3	8	4	0	6	3	5	5	0	1	90
1	6	2	2	4	7	4	3	6	2	7	8	3	7	91
2	6	5	4	1	5	3	3	3	3	5	5	3	5	92
0	8	0	0	0	6	1	1	3	0	3	6	0	5	93
0	8	2	2	4	4	4	4	6	2	6	4	2	4	94
2	7	4	4	3	3	4	2	3	1	4	5	3	6	95
0	6	4	2	0	5	2	0	0	4	7	8	4	2	96
4	6	3	4	4	4	2	4	6	4	5	5	2	2	97
0	4	4	2	2	4	2	0	0	4	2	8	4	4	98
2	2	2	2	2	2	2	2	2	2	5	7	2	2	100
8	8	6	0	6	2	4	4	6	2	8	8	2	2	101
0	8	6	5	3	6	4	0	4	4	6	5	4	4	102
4	8	5	2	7	1	2	4	8	2	5	5	2	2	103
5	8	2	2	5	5	2	4	6	0	5	3	0	3	104
3	7	1	1	4	1	2	4	6	4	4	6	4	3	105
4	8	3	2	3	2	3	3	7	2	4	6	2	5	106
5	3	5	3	2	5	4	5	4	4	5	6	4	3	107
1	7	5	0	4	2	6	0	2	5	3	7	4	3	108
1	8	5	0	5	2	2	0	6	0	5	6	0	1	110
6	8	4	1	7	2	2	4	8	0	5	3	0	3	111
1	8	6	2	4	8	2	4	8	2	6	7	2	5	113
4	8	2	0	4	7	4	4	7	1	5	3	0	2	114
5	7	4	2	2	2	2	4	6	1	4	3	1	3	115
2	7	2	4	5	6	6	1	3	5	7	7	1	6	116

6	6	6	2	4	2	2	2	2	2	2	7	2	2	118
7	8	3	3	7	2	1	8	8	0	6	6	0	1	119
8	8	2	0	8	0	1	4	8	0	7	8	0	1	120
6	6	2	4	2	5	2	2	4	2	3	3	2	2	121
0	8	6	4	0	6	0	0	0	4	2	8	2	2	122
7	7	5	0	0	7	2	1	2	0	0	6	0	5	123
6	7	2	2	6	2	4	4	6	1	6	5	1	6	124
4	7	1	1	6	1	1	2	6	1	6	6	1	1	125
0	6	5	0	0	6	0	0	5	0	5	8	0	5	126
2	8	7	3	3	3	7	2	2	2	7	8	5	7	127
8	3	0	2	1	5	4	1	2	2	2	8	2	3	128
6	6	7	8	2	2	1	3	4	3	5	7	7	8	129
2	7	2	2	4	4	3	4	4	2	6	8	2	5	130
0	0	6	1	0	6	6	0	1	0	0	8	2	5	131
4	7	5	4	4	3	4	5	6	2	2	6	2	4	132
6	8	4	4	6	2	2	4	4	0	5	4	6	4	133
4	6	4	4	4	3	4	2	5	3	5	5	2	3	134
2	6	4	4	4	2	4	4	6	4	4	5	2	2	135
0	8	4	4	4	5	4	4	5	4	5	5	0	4	136
4	6	1	2	7	5	2	2	4	4	8	5	2	7	137
2	6	2	2	2	3	3	3	6	0	5	6	0	3	138
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Appendix H

Repeated Measures Analysis of Variance (ANOVA) for Study 2 and Raw Data

ANOVA for Acceptability Rating

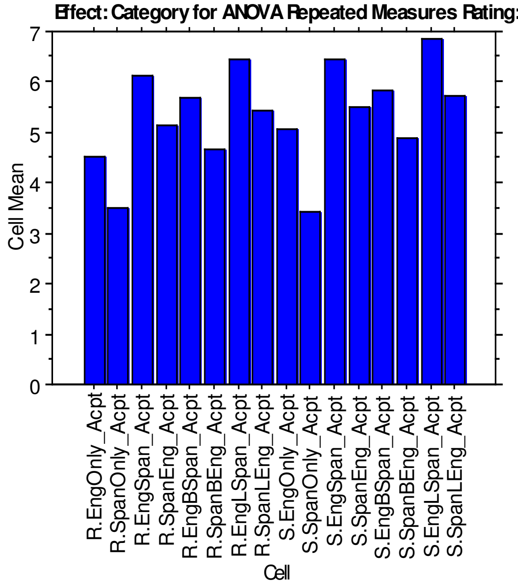
ANOVA Table for ANOVA Repeated Measures Rating: Acceptability

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Subject	63	1566.171	24.860				
Category for ANOVA Repeated Measures Rating: Acceptability	15	918.687	61.246	11.656	<.0001	174.847	1.000
Category for ANOVA Repeated Measures Rating: Acceptabilit...	945	4965.251	5.254				

Means Table for ANOVA Repeated Measures Rating: Acceptability
Effect: Category for ANOVA Repeated Measures Rating: Acceptability

	Count	Mean	Std. Dev.	Std. Err.
R.EngOnly_Acpt	64	4.531	2.944	.368
R.SpanOnly_Acpt	64	3.516	3.546	.443
R.EngSpan_Acpt	64	6.141	1.910	.239
R.SpanEng_Acpt	64	5.156	2.620	.327
R.EngBSpan_Acpt	64	5.688	2.130	.266
R.SpanBEng_Acpt	64	4.656	2.721	.340
R.EngLSpan_Acpt	64	6.469	1.727	.216
R.SpanLEng_Acpt	64	5.438	2.513	.314
S.EngOnly_Acpt	64	5.078	2.779	.347
S.SpanOnly_Acpt	64	3.438	3.486	.436
S.EngSpan_Acpt	64	6.438	1.901	.238
S.SpanEng_Acpt	64	5.500	2.430	.304
S.EngBSpan_Acpt	64	5.844	2.227	.278
S.SpanBEng_Acpt	64	4.891	2.961	.370
S.EngLSpan_Acpt	64	6.859	1.446	.181
S.SpanLEng_Acpt	64	5.719	2.340	.292

Interaction Bar Plot for ANOVA Repeated Measures Rating: Acceptability
Effect: Category for ANOVA Repeated Measures Rating: Acceptability



ANOVA for Likelihood to read rating

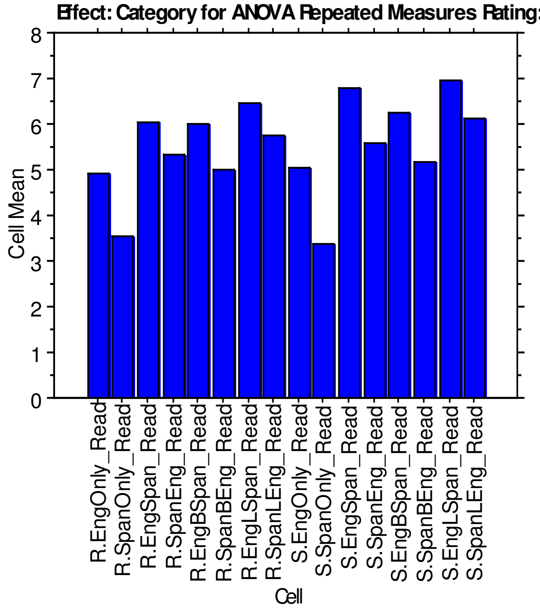
ANOVA Table for ANOVA Repeated Measures Rating: Read

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Subject	63	2022.366	32.101				
Category for ANOVA Repeated Measures Rating: Read	15	995.819	66.388	12.610	<.0001	189.156	1.000
Category for ANOVA Repeated Measures Rating: Read...	945	4974.993	5.265				

Means Table for ANOVA Repeated Measures Rating: Read
Effect: Category for ANOVA Repeated Measures Rating: Read

	Count	Mean	Std. Dev.	Std. Err.
R.EngOnly_Read	64	4.938	3.162	.395
R.SpanOnly_Read	64	3.547	3.686	.461
R.EngSpan_Read	64	6.063	2.210	.276
R.SpanEng_Read	64	5.344	2.596	.324
R.EngBSpan_Read	64	6.016	2.186	.273
R.SpanBEng_Read	64	5.000	2.944	.368
R.EngLSpan_Read	64	6.469	1.868	.234
R.SpanLEng_Read	64	5.750	2.430	.304
S.EngOnly_Read	64	5.063	3.182	.398
S.SpanOnly_Read	64	3.375	3.632	.454
S.EngSpan_Read	64	6.797	1.887	.236
S.SpanEng_Read	64	5.578	2.581	.323
S.EngBSpan_Read	64	6.250	2.160	.270
S.SpanBEng_Read	64	5.188	2.839	.355
S.EngLSpan_Read	64	6.969	1.297	.162
S.SpanLEng_Read	64	6.109	2.255	.282

Interaction Bar Plot for ANOVA Repeated Measures Rating: Read
Effect: Category for ANOVA Repeated Measures Rating: Read



ANOVA for Likelihood to Purchase products rating

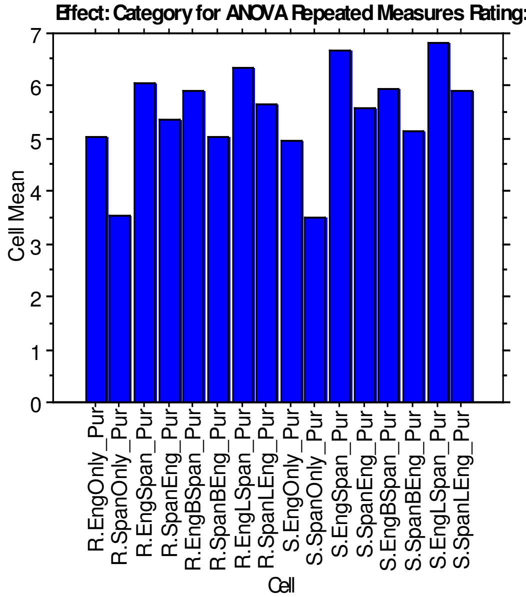
ANOVA Table for ANOVA Repeated Measures Rating: Purchase

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Subject	63	2841.374	45.101				
Category for ANOVA Repeated Measures Rating: Purchase	15	861.108	57.407	12.267	<.0001	184.004	1.000
Category for ANOVA Repeated Measures Rating: Purchas...	945	4422.454	4.680				

Means Table for ANOVA Repeated Measures Rating: Purchase
Effect: Category for ANOVA Repeated Measures Rating: Purchase

	Count	Mean	Std. Dev.	Std. Err.
R.EngOnly_Pur	64	5.047	3.164	.396
R.SpanOnly_Pur	64	3.531	3.532	.442
R.EngSpan_Pur	64	6.047	2.452	.307
R.SpanEng_Pur	64	5.359	2.633	.329
R.EngBSpan_Pur	64	5.922	2.311	.289
R.SpanBEng_Pur	64	5.047	2.791	.349
R.EngLSpan_Pur	64	6.328	2.153	.269
R.SpanLEng_Pur	64	5.656	2.470	.309
S.EngOnly_Pur	64	4.953	3.179	.397
S.SpanOnly_Pur	64	3.500	3.505	.438
S.EngSpan_Pur	64	6.688	1.983	.248
S.SpanEng_Pur	64	5.578	2.506	.313
S.EngBSpan_Pur	64	5.938	2.343	.293
S.SpanBEng_Pur	64	5.141	2.872	.359
S.EngLSpan_Pur	64	6.828	1.890	.236
S.SpanLEng_Pur	64	5.922	2.464	.308

Interaction Bar Plot for ANOVA Repeated Measures Rating: Purchase
Effect: Category for ANOVA Repeated Measures Rating: Purchase



Correlation Matrix for Accept, Likelihood to Read, Likelihood to Purchase products

Correlation Maxtrix

	Accept	Read
Read	.948	
Purchase	.982	.965

N=16 (condition means were used)

2 (Language Users: English vs. Spanish) X 2 (Containers: Box vs. Cylinder) X 8 (labels)

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Language	1	586.548	586.548	37.122	<.0001	37.122	1.000
Subject(Group)	62	979.623	15.800				
shape	1	18.868	18.868	11.214	.0014	11.214	.928
shape * Language	1	4.126	4.126	2.452	.1224	2.452	.321
shape * Subject(Group)	62	104.318	1.683				
label	7	892.366	127.481	24.565	<.0001	171.952	1.000
label * Language	7	2111.772	301.682	58.132	<.0001	406.922	1.000
label * Subject(Group)	434	2252.299	5.190				
shape * label	7	7.452	1.065	.942	.4733	6.597	.403
shape * label * Language	7	2.507	.358	.317	.9463	2.219	.146
shape * label * Subject(Group)	434	490.229	1.130				

Means Table for
Effect: shape * label * Language

	Count	Mean	Std. Dev.	Std. Err.
English, round, EnOnly	32	6.063	2.488	.440
English, round, SpOnly	32	.500	1.244	.220
English, round, ESpan	32	5.906	1.573	.278
English, round, SpanE	32	3.438	2.341	.414
English, round, EBig	32	6.469	1.459	.258
English, round, SpaBig	32	2.688	1.874	.331
English, round, Elft	32	6.094	1.820	.322
English, round, Splft	32	3.875	2.268	.401
English, square, EnOnly	32	6.750	1.704	.301
English, square, SpOnly	32	.563	1.268	.224
English, square, ESpan	32	6.219	1.862	.329
English, square, SpanE	32	4.000	2.272	.402
English, square, EBig	32	6.906	1.510	.267
English, square, SpaBig	32	2.875	2.537	.448
English, square, Elft	32	6.656	1.335	.236
English, square, Splft	32	4.250	2.095	.370
Spanish, round, EnOnly	32	3.000	2.565	.453
Spanish, round, SpOnly	32	6.531	2.286	.404
Spanish, round, ESpan	32	6.375	2.196	.388
Spanish, round, SpanE	32	6.875	1.540	.272
Spanish, round, EBig	32	4.906	2.414	.427
Spanish, round, SpaBig	32	6.625	1.879	.332
Spanish, round, Elft	32	6.844	1.568	.277
Spanish, round, Splft	32	7.000	1.626	.288
Spanish, square, EnOnly	32	3.406	2.650	.468
Spanish, square, SpOnly	32	6.313	2.455	.434
Spanish, square, ESpan	32	6.656	1.945	.344
Spanish, square, SpanE	32	7.000	1.481	.262
Spanish, square, EBig	32	4.781	2.338	.413
Spanish, square, SpaBig	32	6.906	1.729	.306
Spanish, square, Elft	32	7.063	1.544	.273
Spanish, square, Splft	32	7.188	1.512	.267

2(Language Users: English vs. Spanish) X 2 (secondary vs. primary) X 2 (left/right vs. top/bottom) X 2 (box vs. cylinder).

ANOVA Table for Labels

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Language	1	424.133	424.133	35.239	<.0001	35.239	1.000
Subject(Group)	62	746.234	12.036				
secondary/primary	1	217.883	217.883	31.449	<.0001	31.449	1.000
secondary/primary * Language	1	134.070	134.070	19.351	<.0001	19.351	.997
secondary/primary * Subject(Group)	62	429.547	6.928				
placement	1	12.500	12.500	6.460	.0135	6.460	.710
placement * Language	1	.031	.031	.016	.8993	.016	.052
placement * Subject(Group)	62	119.969	1.935				
shape	1	13.781	13.781	8.612	.0047	8.612	.838
shape * Language	1	2.000	2.000	1.250	.2679	1.250	.185
shape * Subject(Group)	62	99.219	1.600				
secondary/primary * placement	1	.781	.781	.446	.5069	.446	.098
secondary/primary * placement * Langua...	1	.500	.500	.285	.5953	.285	.081
secondary/primary * placement * Subject...	62	108.719	1.754				
secondary/primary * shape	1	.125	.125	.128	.7213	.128	.064
secondary/primary * shape * Language	1	.031	.031	.032	.8584	.032	.054
secondary/primary * shape * Subject(Gr...	62	60.344	.973				
placement * shape	1	.008	.008	.008	.9272	.008	.051
placement * shape * Language	1	.008	.008	.008	.9272	.008	.051
placement * shape * Subject(Group)	62	57.484	.927				
secondary/primary * placement * shape	1	.633	.633	.686	.4106	.686	.124
secondary/primary * placement * shape *...	1	.195	.195	.212	.6470	.212	.073
secondary/primary * placement * shape *...	62	57.172	.922				

Means Table for Labels
Effect: secondary/primary * placement * shape * Language

	Count	Mean	Std. Dev.	Std. Err.
English, secondary, left/right, square	32	4.250	2.095	.370
English, secondary, left/right, round	32	3.875	2.268	.401
English, secondary, top/bottom, square	32	4.000	2.272	.402
English, secondary, top/bottom, round	32	3.438	2.341	.414
English, primary, left/right, square	32	6.656	1.335	.236
English, primary, left/right, round	32	6.094	1.820	.322
English, primary, top/bottom, square	32	6.219	1.862	.329
English, primary, top/bottom, round	32	5.906	1.573	.278
Spanish, secondary, left/right, square	32	7.063	1.544	.273
Spanish, secondary, left/right, round	32	6.844	1.568	.277
Spanish, secondary, top/bottom, square	32	6.656	1.945	.344
Spanish, secondary, top/bottom, round	32	6.375	2.196	.388
Spanish, primary, left/right, square	32	7.188	1.512	.267
Spanish, primary, left/right, round	32	7.000	1.626	.288
Spanish, primary, top/bottom, square	32	7.000	1.481	.262
Spanish, primary, top/bottom, round	32	6.875	1.540	.272

2 (Language Users: English vs. Spanish) X 2 (secondary vs. primary) X 2 (box vs. cylinder) X 3 (1/2, 2/3, all).

ANOVA Table for Eng/Span_Sec/Pri_LangAlloc

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Language	1	385.333	385.333	29.449	<.0001	29.449	1.000
Subject(Group)	62	811.250	13.085				
Sec/Pri	1	229.687	229.687	22.340	<.0001	22.340	.999
Sec/Pri * Language	1	1668.521	1668.521	162.282	<.0001	162.282	1.000
Sec/Pri * Subject(Group)	62	637.458	10.282				
Shape	1	12.000	12.000	8.892	.0041	8.892	.851
Shape * Language	1	3.000	3.000	2.223	.1410	2.223	.295
Shape * Subject(Group)	62	83.667	1.349				
Lang Allocation	2	370.956	185.478	31.631	<.0001	63.262	1.000
Lang Allocation * Language	2	19.268	9.634	1.643	.1976	3.286	.329
Lang Allocation * Subject(Group)	124	727.109	5.864				
Sec/Pri * Shape	1	1.333	1.333	1.223	.2730	1.223	.183
Sec/Pri * Shape * Language	1	.083	.083	.076	.7831	.076	.058
Sec/Pri * Shape * Subject(Group)	62	67.583	1.090				
Sec/Pri * Lang Allocation	2	5.305	2.652	.786	.4580	1.572	.176
Sec/Pri * Lang Allocation * Language	2	320.471	160.236	47.471	<.0001	94.941	1.000
Sec/Pri * Lang Allocation * Subject(Group)	124	418.557	3.375				
Shape * Lang Allocation	2	.523	.262	.264	.7682	.529	.090
Shape * Lang Allocation * Language	2	.023	.012	.012	.9882	.024	.052
Shape * Lang Allocation * Subject(Group)	124	122.786	.990				
Sec/Pri * Shape * Lang Allocation	2	5.049	2.525	1.553	.2158	3.105	.312
Sec/Pri * Shape * Lang Allocation * Lang...	2	2.299	1.150	.707	.4951	1.414	.162
Sec/Pri * Shape * Lang Allocation * Subje...	124	201.651	1.626				

Means Table for Eng/Span_Sec/Pri_LangAlloc
Effect: Sec/Pri * Shape * Lang Allocation * Language

	Count	Mean	Std. Dev.	Std. Err.
English, Secondary, Square, 1/2	32	4.000	2.272	.402
English, Secondary, Square, 2/3	32	2.875	2.537	.448
English, Secondary, Square, All	32	.563	1.268	.224
English, Secondary, Round, 1/2	32	3.438	2.341	.414
English, Secondary, Round, 2/3	32	2.688	1.874	.331
English, Secondary, Round, All	32	.500	1.244	.220
English, Primary, Square, 1/2	32	6.219	1.862	.329
English, Primary, Square, 2/3	32	6.906	1.510	.267
English, Primary, Square, All	32	6.750	1.704	.301
English, Primary, Round, 1/2	32	5.906	1.573	.278
English, Primary, Round, 2/3	32	6.469	1.459	.258
English, Primary, Round, All	32	6.063	2.488	.440
Spanish, Secondary, Square, 1/2	32	7.000	1.481	.262
Spanish, Secondary, Square, 2/3	32	6.906	1.729	.306
Spanish, Secondary, Square, All	32	6.313	2.455	.434
Spanish, Secondary, Round, 1/2	32	6.875	1.540	.272
Spanish, Secondary, Round, 2/3	32	6.625	1.879	.332
Spanish, Secondary, Round, All	32	6.531	2.286	.404
Spanish, Primary, Square, 1/2	32	6.656	1.945	.344
Spanish, Primary, Square, 2/3	32	4.781	2.338	.413
Spanish, Primary, Square, All	32	3.406	2.650	.468
Spanish, Primary, Round, 1/2	32	6.375	2.196	.388
Spanish, Primary, Round, 2/3	32	4.906	2.414	.427
Spanish, Primary, Round, All	32	3.000	2.565	.453

English-Language Users
Simple effects analysis for 16 (bilingual labels)-

ANOVA Table for labels

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Subject	31	395.125	12.746				
Category for labels	15	2190.562	146.037	48.603	<.0001	729.044	1.000
Category for labels * Subject	465	1397.187	3.005				

Means Table for labels
Effect: Category for labels

	Count	Mean	Std. Dev.	Std. Err.
R.EngOnly_Acpt	32	6.063	2.488	.440
R.SpanOnly_Overall	32	.500	1.244	.220
R.EngSpan_Overall	32	5.906	1.573	.278
R.SpanEng_Overall	32	3.438	2.341	.414
R.EngBSpan_Overall	32	6.469	1.459	.258
R.SpanBEng_Overall	32	2.688	1.874	.331
R.EngLSpan_Overall	32	6.094	1.820	.322
R.SpanLEng_Overall	32	3.875	2.268	.401
S.EngOnly_Overall	32	6.750	1.704	.301
S.SpanOnly_Overall	32	.563	1.268	.224
S.EngSpan_Overall	32	6.219	1.862	.329
S.SpanEng_Overall	32	4.000	2.272	.402
S.EngBSpan_Overall	32	6.906	1.510	.267
S.SpanBEng_Overall	32	2.875	2.537	.448
S.EngLSpan_Overall	32	6.656	1.335	.236
S.SpanLEng_Overall	32	4.250	2.095	.370

Spanish-language users
Simple effects analysis for 16 labels

ANOVA Table for Labels

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Subject	31	584.498	18.855				
Category for Labels	15	846.529	56.435	18.102	<.0001	271.537	1.000
Category for Labels * Subject	465	1449.658	3.118				

Means Table for Labels
Effect: Category for Labels

	Count	Mean	Std. Dev.	Std. Err.
R.EngOnly_Acpt.2	32	3.000	2.565	.453
R.SpanOnly_Overall.2	32	6.531	2.286	.404
R.EngSpan_Overall.2	32	6.375	2.196	.388
R.SpanEng_Overall.2	32	6.875	1.540	.272
R.EngBSpan_Overall.2	32	4.906	2.414	.427
R.SpanBEng_Overall.2	32	6.625	1.879	.332
R.EngLSpan_Overall.2	32	6.844	1.568	.277
R.SpanLEng_Overall.2	32	7.000	1.626	.288
S.EngOnly_Overall.2	32	3.406	2.650	.468
S.SpanOnly_Overall.2	32	6.313	2.455	.434
S.EngSpan_Overall.2	32	6.656	1.945	.344
S.SpanEng_Overall.2	32	7.000	1.481	.262
S.EngBSpan_Overall.2	32	4.781	2.338	.413
S.SpanBEng_Overall.2	32	6.906	1.729	.306
S.EngLSpan_Overall.2	32	7.063	1.544	.273
S.SpanLEng_Overall.2	32	7.188	1.512	.267

Means Table for Labels
Effect: secondary/primary * Shape * order * Language

	Count	Mean	Std. Dev.	Std. Err.
English, secondary, square, half	32	4.000	2.272	.402
English, secondary, square, two-thirds	32	2.875	2.537	.448
English, secondary, square, all	32	.563	1.268	.224
English, secondary, round, half	32	3.438	2.341	.414
English, secondary, round, two-thirds	32	2.688	1.874	.331
English, secondary, round, all	32	.500	1.244	.220
English, primary, square, half	32	6.219	1.862	.329
English, primary, square, two-thirds	32	6.906	1.510	.267
English, primary, square, all	32	6.750	1.704	.301
English, primary, round, half	32	5.906	1.573	.278
English, primary, round, two-thirds	32	6.469	1.459	.258
English, primary, round, all	32	6.063	2.488	.440
Spanish, secondary, square, half	32	7.000	1.481	.262
Spanish, secondary, square, two-thirds	32	6.906	1.729	.306
Spanish, secondary, square, all	32	3.406	2.650	.468
Spanish, secondary, round, half	32	6.875	1.540	.272
Spanish, secondary, round, two-thirds	32	6.625	1.879	.332
Spanish, secondary, round, all	32	6.531	2.286	.404
Spanish, primary, square, half	32	6.656	1.945	.344
Spanish, primary, square, two-thirds	32	4.781	2.338	.413
Spanish, primary, square, all	32	6.313	2.455	.434
Spanish, primary, round, half	32	6.375	2.196	.388
Spanish, primary, round, two-thirds	32	4.906	2.414	.427
Spanish, primary, round, all	32	3.000	2.565	.453

English-Language Users
2 (secondary vs. primary) X 2 (box vs. cylinder) X 3 (1/2, 2/3, All)

ANOVA Table for labels

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Subject	31	267.458	8.628				
secondary/primary	1	1568.167	1568.167	127.594	<.0001	127.594	1.000
secondary/primary * Subject	31	381.000	12.290				
Shape	1	13.500	13.500	16.520	.0003	16.520	.986
Shape * Subject	31	25.333	.817				
order	2	155.646	77.823	15.373	<.0001	30.747	1.000
order * Subject	62	313.854	5.062				
secondary/primary * Shape	1	1.042	1.042	1.438	.2396	1.438	.202
secondary/primary * Shape * Subject	31	22.458	.724				
secondary/primary * order	2	200.396	100.198	30.093	<.0001	60.185	1.000
secondary/primary * order * Subject	62	206.438	3.330				
Shape * order	2	.250	.125	.149	.8616	.299	.072
Shape * order * Subject	62	51.917	.837				
secondary/primary * Shape * order	2	3.083	1.542	1.357	.2649	2.715	.271
secondary/primary * Shape * order * Sub...	62	70.417	1.136				

Means Table for labels
Effect: secondary/primary * Shape * order

	Count	Mean	Std. Dev.	Std. Err.
secondary, square, half	32	4.000	2.272	.402
secondary, square, two-thirds	32	2.875	2.537	.448
secondary, square, all	32	.563	1.268	.224
secondary, round, half	32	3.438	2.341	.414
secondary, round, two-thirds	32	2.688	1.874	.331
secondary, round, all	32	.500	1.244	.220
primary, square, half	32	6.219	1.862	.329
primary, square, two-thirds	32	6.906	1.510	.267
primary, square, all	32	6.750	1.704	.301
primary, round, half	32	5.906	1.573	.278
primary, round, two-thirds	32	6.469	1.459	.258
primary, round, all	32	6.063	2.488	.440

Spanish-Language Users
2 (secondary vs. primary) X 2 (box vs. cylinder) X 3 (1/2, 2/3, All)

ANOVA Table for Labels

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Subject	31	543.792	17.542				
secondary/primary	1	75.260	75.260	13.017	.0011	13.017	.953
secondary/primary * Subject	31	179.240	5.782				
Shape	1	1.500	1.500	.797	.3788	.797	.133
Shape * Subject	31	58.333	1.882				
order	2	234.578	117.289	17.597	<.0001	35.193	1.000
order * Subject	62	413.255	6.665				
secondary/primary * Shape	1	102.094	102.094	33.643	<.0001	33.643	1.000
secondary/primary * Shape * Subject	31	94.073	3.035				
secondary/primary * order	2	51.755	25.878	12.086	<.0001	24.173	.997
secondary/primary * order * Subject	62	132.745	2.141				
Shape * order	2	.297	.148	.130	.8785	.260	.069
Shape * order * Subject	62	70.870	1.143				
secondary/primary * Shape * order	2	230.953	115.477	29.971	<.0001	59.943	1.000
secondary/primary * Shape * order * Sub...	62	238.880	3.853				

Means Table for Labels
Effect: secondary/primary * Shape * order

	Count	Mean	Std. Dev.	Std. Err.
secondary, square, half	32	7.000	1.481	.262
secondary, square, two-thirds	32	6.906	1.729	.306
secondary, square, all	32	3.406	2.650	.468
secondary, round, half	32	6.875	1.540	.272
secondary, round, two-thirds	32	6.625	1.879	.332
secondary, round, all	32	6.531	2.286	.404
primary, square, half	32	6.656	1.945	.344
primary, square, two-thirds	32	4.781	2.338	.413
primary, square, all	32	6.313	2.455	.434
primary, round, half	32	6.375	2.196	.388
primary, round, two-thirds	32	4.906	2.414	.427
primary, round, all	32	3.000	2.565	.453

Subject	Language	Age	Gender	Race	Student	Grade	English First
1	English	42	Male	1	NonStudent	13	EnglishFirst
2	English	39	Male	1	NonStudent	12	EnglishFirst
3	English	42	Male	1	NonStudent	16	EnglishFirst
4	English	58	Male	1	NonStudent	12	EnglishFirst
5	English	38	Male	1	NonStudent	9	EnglishFirst
6	English	32	Male	1	NonStudent	17	EnglishFirst
7	English	53	Male	1	NonStudent	15	EnglishFirst
8	English	25	Male	1	NonStudent	12	EnglishFirst
9	English	38	Male	1	NonStudent	16	EnglishFirst
10	English	69	Male	1	NonStudent	20	EnglishFirst
11	English	56	Male	2	NonStudent	16	EnglishFirst
12	English	42	Male	1	NonStudent	14	EnglishFirst
13	English	49	Male	1	NonStudent	18	EnglishFirst
14	English	40	Male	2	NonStudent	16	EnglishFirst
15	English	40	Male	1	NonStudent	19	EnglishFirst
16	English	43	Male	1	NonStudent	12	EnglishFirst
17	English	43	Female	1	NonStudent	16	EnglishFirst
18	English	23	Female	1	NonStudent	12	EnglishFirst
19	English	47	Female	1	NonStudent	16	EnglishFirst
20	English	37	Female	1	NonStudent	17	EnglishFirst
21	English	63	Female	1	NonStudent	16	EnglishFirst
22	English	19	Female	1	Student	13	EnglishFirst
23	English	46	Female	1	NonStudent	12	EnglishFirst
24	English	46	Female	1	NonStudent	12	EnglishFirst
25	English	40	Female	1	NonStudent	16	EnglishFirst
26	English	42	Female	1	NonStudent	14	EnglishFirst
27	English	47	Female	1	NonStudent	13	EnglishFirst
28	English	44	Female	1	NonStudent	18	EnglishFirst
29	English	38	Female	1	NonStudent	13	EnglishFirst
30	English	63	Female	1	NonStudent	16	EnglishFirst
31	English	41	Female	3	NonStudent	14	EnglishFirst
32	English	45	Female	1	NonStudent	15	EnglishFirst
33	Spanish	30	Male	4	NonStudent	12	SpanishFirst
34	Spanish	28	Male	4	NonStudent	16	SpanishFirst
35	Spanish	32	Male	4	NonStudent	12	SpanishFirst
36	Spanish	18	Male	4	Student	9	SpanishFirst
37	Spanish	27	Male	4	NonStudent	9	SpanishFirst
38	Spanish	27	Male	4	NonStudent	12	SpanishFirst
39	Spanish	24	Male	4	NonStudent	14	SpanishFirst
40	Spanish	17	Male	4	NonStudent	9	SpanishFirst
41	Spanish	20	Male	4	NonStudent	6	SpanishFirst
42	Spanish	21	Male	4	NonStudent	12	SpanishFirst
43	Spanish	22	Male	4	NonStudent	9	SpanishFirst
44	Spanish	23	Male	4	Student	16	SpanishFirst
45	Spanish	19	Male	4	NonStudent	10	SpanishFirst
46	Spanish	30	Male	5	NonStudent	12	SpanishFirst
47	Spanish	28	Male	4	NonStudent	12	SpanishFirst
48	Spanish	18	Male	4	Student	12	SpanishFirst
49	Spanish	42	Female	5	NonStudent	9	SpanishFirst
50	Spanish	37	Female	4	NonStudent	14	SpanishFirst
51	Spanish	50	Female	4	NonStudent	6	SpanishFirst
52	Spanish	34	Female	4	NonStudent	6	SpanishFirst
53	Spanish	33	Female	4	NonStudent	6	SpanishFirst
54	Spanish	30	Female	4	NonStudent	12	SpanishFirst

55	Spanish	34	Female	5	NonStudent	13	SpanishFirst
56	Spanish	40	Female	4	NonStudent	6	SpanishFirst
57	Spanish	50	Female	5	NonStudent	16	SpanishFirst
58	Spanish	31	Female	4	NonStudent	15	SpanishFirst
59	Spanish	18	Female	4	NonStudent	6	SpanishFirst
60	Spanish	25	Female	4	NonStudent	12	SpanishFirst
61	Spanish	22	Female	4	NonStudent	12	SpanishFirst
62	Spanish	46	Female	5	NonStudent	5	SpanishFirst
63	Spanish	25	Female	5	NonStudent	12	SpanishFirst
64	Spanish	19	Female	4	NonStudent	10	SpanishFirst

Key to the following data set:
R- Cylinder
S- Box
Eng_only- English text only
Span_only- Spanish text only
Eng_Span- English, Top / Spanish, bottom
Span_Eng- Spanish, Top / English, bottom
EngB_Span- English top 2/3, Spanish bottom 1/3
SpanB_Eng- Spanish top 2/3, English bottom ½
EngL_Span- English left / Spanish right
SpanL_Eng- Spanish left / English right
Acpt- Acceptae
Read- Likelihood to read
Pur- Likelihood to purchase

R.EngOnly_Acpt	R.EngOnly_Read	R.EngOnly_Pur	R.SpanOnly_Acpt	R.SpanOnly_Read	R.SpanOnly_Pur
0	8	8	0	0	0
8	8	8	0	0	0
6	8	7	4	1	1
8	8	8	0	0	0
2	3	6	0	0	7
8	8	8	0	0	3
8	8	8	0	0	2
8	8	8	0	0	0
8	8	8	0	0	1
7	7	8	0	0	0
7	7	8	1	0	0
8	6	6	0	0	0
5	8	0	0	0	0
3	4	5	0	0	0
2	8	8	0	0	0
7	7	8	0	0	0
8	8	8	0	0	0
8	8	8	0	0	0
3	3	3	5	4	4
8	6	7	0	0	0
8	8	8	0	0	0
6	5	8	2	4	1
7	7	7	3	0	3
6	8	8	0	0	0
7	7	7	0	0	0
8	8	8	0	0	0
5	5	4	1	0	0
3	8	0	0	0	0
7	8	8	0	0	0
7	7	7	0	0	1
0	8	7	0	0	0
8	8	8	0	0	0
6	6	7	7	6	7
7	6	7	7	7	7
4	4	8	8	8	3
5	8	5	5	8	5
3	5	6	2	4	3

4	3	5	8	8	8
6	5	4	8	7	8
7	7	7	8	8	8
1	0	1	7	4	3
0	0	0	0	0	0
1	0	0	8	8	8
5	2	1	5	7	7
3	0	1	8	5	0
4	4	4	8	8	8
6	8	7	8	8	7
0	0	0	6	6	8
0	0	0	8	6	6
2	1	0	5	8	6
5	5	5	8	8	8
6	6	8	6	8	6
1	0	1	8	8	8
4	3	2	8	6	7
2	3	5	5	8	8
4	0	5	8	8	8
8	8	8	8	8	8
0	0	0	0	0	0
0	0	2	8	8	8
1	0	0	8	8	8
0	0	0	8	8	8
0	0	0	4	8	8
1	6	6	6	8	8
0	0	0	8	8	8

R.EngSpan_Acpt	R.EngSpan_Read	R.EngSpan_Pur	R.SpanEng_Acpt	R.SpanEng_Read	R.SpanEng_Pur
8	8	8	7	8	8
8	6	8	0	0	0
7	8	7	7	8	7
4	4	4	4	5	4
7	3	7	8	3	7
8	6	8	6	6	6
5	5	8	3	6	8
3	4	5	1	1	3
6	8	7	1	4	4
4	2	0	6	2	0
4	8	7	6	7	8
6	6	6	2	5	5
4	8	0	0	8	0
5	5	5	5	6	7
8	8	8	6	8	8
5	6	6	2	2	1
5	5	5	5	5	5
5	3	0	0	0	0
4	4	4	4	4	4
6	4	3	2	0	4
7	8	7	5	8	6
7	7	6	4	4	6
6	6	6	5	5	5
7	6	8	2	2	2
6	6	6	2	2	2
6	6	8	6	6	6
5	5	4	3	2	2
6	8	0	3	8	0
8	8	8	0	0	0
3	3	5	2	2	4
8	7	8	2	2	0
8	8	8	1	1	4
7	7	8	8	8	8
6	6	7	7	7	7
0	0	5	8	8	5
8	8	5	8	8	5
7	7	4	6	5	7
7	7	8	8	7	8
7	6	7	7	6	7
7	7	7	8	8	8
5	2	0	4	3	6
8	8	8	8	8	8
8	8	8	8	6	6
8	8	8	8	8	8
4	0	3	8	5	4
6	6	5	5	5	6
8	8	8	8	8	8
4	4	6	6	4	6
5	5	5	8	5	6
8	8	8	5	8	7
7	7	7	6	6	6
8	8	6	8	8	6
8	8	8	8	8	8

5	6	8	7	6	8
8	8	8	2	2	2
8	8	8	8	8	8
3	8	8	7	8	8
6	6	8	6	6	8
0	0	0	6	6	6
8	8	8	8	8	8
8	8	8	6	6	6
6	3	4	4	8	7
8	8	8	8	8	8
8	8	8	8	8	8

R.EngBSpan_Acpt	R.EngSpan_Read	R.EngBSpan_Pur	R.SpanBEng_Acpt	R.SpanBEng_Read	R.SpanBEng_Pur
8	8	8	4	7	8
8	8	8	2	1	2
7	8	7	6	8	7
7	6	7	3	3	3
8	3	3	5	3	8
8	8	8	3	3	6
6	6	8	1	3	8
5	3	5	1	0	1
7	7	7	2	4	4
5	5	5	2	2	0
4	7	8	6	7	8
7	6	6	2	4	6
3	8	0	0	8	0
6	6	7	5	5	5
8	8	8	6	8	8
7	7	8	1	1	2
8	8	8	0	0	0
4	6	1	0	0	0
4	4	4	3	3	3
8	8	8	1	1	3
8	8	7	5	8	7
7	5	7	4	4	6
6	8	6	5	5	5
7	7	7	2	2	2
7	7	7	2	2	1
6	6	8	4	5	6
4	4	4	2	2	1
6	8	0	4	8	0
8	8	8	0	0	0
6	7	6	2	3	4
7	8	7	2	0	2
7	7	8	1	1	3
7	7	7	6	8	7
6	6	6	8	8	8
0	0	5	8	8	5
5	8	5	5	8	5
6	6	7	2	3	5
5	5	3	8	8	8
7	6	7	8	7	8
7	7	7	8	8	8
6	7	5	2	0	2
5	5	5	5	5	5
2	6	6	4	3	6
3	4	4	8	8	8
2	0	0	5	5	0
8	8	8	8	8	8
8	8	8	8	8	8
4	0	4	4	0	4
0	5	3	6	5	6
8	8	8	8	8	7
6	6	6	7	7	7
6	8	8	8	8	6
4	4	8	8	8	8

5	6	6	8	6	7
2	2	2	8	8	8
6	7	7	8	8	8
8	8	8	7	8	8
4	4	4	4	4	4
0	0	0	8	8	8
7	8	8	8	8	8
7	5	7	6	6	6
2	5	6	8	6	5
6	8	8	8	8	8
5	5	4	5	8	5

R.EngLSpan_Acpt	R.EngLSpan_Read	R.EngLSpan_Pur	R.SpanLEng_Acpt	R.SpanLEng_Read	R.SpanLEng_Pur
8	8	8	8	8	8
5	5	7	0	2	2
4	8	6	5	8	6
5	5	4	5	3	4
7	3	7	8	3	8
8	8	8	5	5	5
6	6	8	6	6	8
3	2	2	3	2	4
6	6	7	1	4	4
0	0	0	1	1	2
7	7	8	7	7	8
6	6	6	2	5	5
3	8	0	3	8	0
6	8	8	5	7	8
8	8	8	6	8	8
7	7	8	2	2	3
8	8	8	5	5	5
5	5	2	0	0	0
6	6	6	6	6	5
8	8	8	6	6	5
7	8	7	5	8	6
8	5	6	4	4	6
6	6	6	5	5	6
6	5	4	6	4	4
7	6	7	3	3	3
6	6	6	4	6	6
6	5	4	3	3	2
4	8	0	4	8	0
8	8	8	0	0	0
6	6	6	3	2	4
8	8	8	2	1	0
7	7	7	1	5	5
7	7	8	7	8	6
6	7	7	8	8	8
8	8	5	8	8	5
8	8	5	8	8	5
7	6	8	4	5	4
7	8	8	8	8	8
6	5	6	7	6	7
6	6	6	8	8	8
2	4	5	4	7	4
8	8	8	8	8	8
8	8	8	8	6	6
8	8	8	8	8	8
5	4	4	3	3	5
7	6	6	6	6	7
8	8	8	8	8	8
4	0	4	4	4	6
5	5	5	8	5	8
8	8	8	8	8	8
7	7	7	7	7	7
8	8	8	8	8	8

8	7	8	8	8	8
7	6	7	8	7	8
8	8	8	8	8	8
8	8	8	8	8	8
7	8	8	3	7	8
8	8	8	8	8	8
6	6	6	6	6	6
8	7	8	8	8	8
7	7	7	7	8	7
3	4	2	6	2	3
8	8	8	8	8	8
8	8	7	8	8	8

S.EngOnly_Acpt	S.EngOnly_Read	S.EngOnly_Pur	S.SpanOnly_Acpt	S.SpanOnly_Read	S.SpanOnly_Pur
8	8	8	0	0	0
8	8	8	0	0	0
6	8	6	4	1	1
8	8	8	0	0	0
4	3	7	0	0	3
8	8	8	0	0	3
8	8	8	0	0	2
8	8	8	0	0	0
8	8	8	1	0	2
8	8	8	0	0	0
6	7	8	1	0	0
8	8	8	0	0	0
7	8	0	0	0	0
6	5	5	0	0	0
2	8	8	0	0	0
8	8	8	0	0	0
8	8	8	0	0	0
8	8	8	0	0	0
4	5	5	3	2	2
8	8	8	0	0	0
8	8	8	0	0	0
6	5	8	2	4	1
7	7	7	5	0	4
6	8	8	0	0	0
8	8	8	0	0	0
8	8	8	0	0	0
4	4	2	2	0	0
4	8	0	0	0	0
7	8	8	0	0	0
8	8	6	0	0	0
4	6	8	0	0	0
7	7	8	0	0	0
8	7	7	7	8	8
6	6	6	7	7	6
5	5	5	8	8	8
5	8	5	5	8	5
3	5	5	1	1	2
5	4	3	8	8	8
5	4	3	8	7	8
7	7	7	8	8	8
2	0	1	4	5	3
0	0	0	3	3	3
2	0	1	8	8	8
5	2	1	5	7	8
5	4	0	8	6	5
2	2	2	8	8	8
6	7	7	8	8	7
0	0	0	6	6	6
0	0	0	8	5	8
0	0	0	5	8	6
5	5	5	8	8	8
6	0	6	8	8	8
2	2	6	8	8	8

3	2	2	8	7	8
3	1	3	2	8	8
4	0	4	8	8	8
8	8	8	8	8	8
0	0	0	0	0	0
8	6	6	8	8	8
1	0	1	1	1	0
0	0	0	8	8	8
0	0	0	7	3	4
1	6	1	6	8	8
2	0	0	7	7	7

S.EngSpan_Acpt	S.EngSpan_Read	S.EngSpan_Pur	S.SpanEng_Acpt	S.SpanEng_Read	S.SpanEng_Pur
8	8	8	8	8	8
8	6	8	0	0	5
7	8	7	6	8	6
6	8	6	6	6	6
7	9	7	8	3	8
8	8	8	6	6	6
1	0	8	5	5	8
4	3	4	3	2	4
6	7	7	3	6	6
7	8	8	5	4	4
4	7	8	6	7	8
7	6	6	2	6	6
1	8	0	2	8	0
7	7	7	4	5	5
8	8	8	6	8	8
6	6	5	3	2	2
8	8	8	7	7	7
6	8	2	2	0	0
5	5	5	5	6	5
7	7	7	2	2	3
7	8	7	5	8	6
7	7	8	5	5	6
5	5	5	5	5	5
8	8	8	2	2	2
6	6	6	2	2	2
6	8	8	6	6	8
4	4	4	3	3	3
5	8	0	4	8	0
8	8	8	0	0	0
6	6	5	6	6	5
8	8	7	0	0	0
8	8	8	1	1	3
7	7	7	7	7	7
7	7	8	8	8	8
0	0	5	8	8	5
8	8	5	8	8	5
7	7	8	4	4	6
7	8	8	7	7	8
8	7	8	6	5	6
8	8	8	8	8	8
4	4	5	2	1	2
8	8	8	8	8	8
8	8	8	6	6	4
8	7	8	8	8	8
4	3	2	8	3	4
6	6	6	6	6	4
8	8	8	8	8	8
4	4	6	4	4	4
5	5	5	8	6	6
8	8	8	8	8	8
8	8	8	7	8	8
6	8	8	6	8	8
8	8	8	8	8	8

5	5	7	8	6	7
3	8	8	8	8	8
8	8	8	8	8	8
8	8	8	8	8	8
6	6	8	6	6	8
8	8	8	6	6	6
8	8	8	8	8	8
8	8	8	7	7	7
6	4	3	6	2	3
8	8	8	8	8	8
8	8	8	8	8	8

S.EngBSpan_Acpt	S.EngSpan_Read	S.EngBSpan_Pur	S.SpanBEng_Acpt	S.SpanBEng_Read	S.SpanBEng_Pur
6	8	8	8	5	8
8	8	8	0	1	1
7	8	7	5	8	6
7	8	7	5	4	4
7	2	7	8	2	6
8	8	8	3	3	6
8	8	8	3	4	8
7	7	8	0	0	2
7	7	7	0	2	2
7	7	8	4	4	6
7	7	8	6	7	8
7	6	6	2	5	5
2	8	0	0	8	0
7	8	7	6	7	5
8	8	8	6	8	8
8	8	8	1	1	0
8	8	8	0	0	0
4	4	0	0	0	0
3	3	2	4	4	5
8	8	8	2	2	3
5	8	6	5	8	6
8	7	7	3	2	5
7	7	7	5	5	5
8	8	8	6	2	2
8	8	8	1	1	1
8	8	8	3	6	6
6	5	5	2	2	2
6	8	0	3	8	0
8	8	8	0	0	0
8	7	6	0	2	5
8	8	8	0	0	0
7	7	7	1	1	3
6	6	5	8	8	8
7	7	8	8	8	8
0	0	5	8	8	5
5	8	5	5	8	5
2	5	7	3	4	6
6	7	6	7	8	8
7	5	6	8	7	8
7	7	7	6	6	6
1	3	1	8	6	4
5	5	5	8	8	8
2	4	4	7	6	8
3	3	2	5	7	7
4	3	2	7	5	0
4	5	4	8	8	8
8	8	8	8	8	8
4	0	4	4	4	4
3	5	3	6	5	8
6	8	7	5	8	5
7	7	7	8	8	8
6	8	8	8	8	8
4	5	5	8	8	8

5	6	6	8	8	8
1	2	2	2	2	2
8	8	8	8	8	8
7	8	8	8	8	8
4	4	4	4	4	4
0	2	2	8	8	8
8	8	8	8	8	8
7	7	7	8	6	8
6	5	6	8	6	3
6	8	6	8	8	8
4	5	5	8	8	8

S.EngLSpan_Acpt	S.EngLSpan_Read	S.EngLSpan_Pur	S.SpanLEng_Acpt	S.SpanLEng_Read	S.SpanLEng_Pur
8	8	8	8	8	8
6	5	5	2	2	2
7	8	7	7	8	7
6	8	6	6	7	6
9	3	7	7	3	8
8	8	8	4	6	6
6	6	8	4	5	8
5	6	6	3	2	5
7	7	7	4	6	6
7	7	7	7	7	7
7	7	8	7	7	8
6	6	6	2	5	5
3	8	0	4	8	0
5	7	6	4	6	8
8	8	8	6	8	8
6	6	6	1	5	4
8	8	8	5	5	5
8	8	8	2	0	0
7	8	8	6	6	6
8	7	7	5	5	6
7	8	7	4	8	6
7	7	8	4	6	7
5	7	6	5	5	5
7	7	7	7	7	7
5	5	5	3	3	3
8	6	8	6	6	8
5	4	5	3	3	2
5	8	0	5	8	0
8	8	8	0	0	0
6	6	6	2	6	5
8	8	8	2	0	0
7	7	8	1	5	1
7	7	7	8	7	8
7	7	8	8	8	8
6	8	8	8	8	3
8	8	5	8	8	5
7	8	8	2	6	4
8	8	8	8	8	8
7	6	7	7	6	7
7	7	7	7	7	7
2	4	3	3	4	6
8	8	8	8	8	8
8	6	8	8	8	8
8	8	8	8	8	8
4	3	0	7	6	5
6	6	6	7	6	6
8	8	8	8	8	8
4	6	6	4	0	4
4	5	5	8	5	8
8	8	8	8	8	8
6	6	6	7	7	7
8	8	8	8	8	6
7	7	8	8	8	8

8	6	7	8	7	8
8	8	8	8	8	8
8	8	8	8	8	8
8	8	8	7	8	8
8	8	8	8	8	8
8	8	8	6	6	6
8	8	8	8	8	8
8	8	8	7	7	7
8	6	8	6	7	5
8	8	8	8	8	8
8	8	8	8	8	8

Appendix I

Repeated Measures Analysis of Variance (ANOVA) for Study 3 and Raw Data

2 (Language Users: English vs. Spanish) X 17 (bilingual label designs)

ANOVA Table for Labels

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
language	1	180.407	180.407	21.958	<.0001	21.958	.999
Subject(Group)	62	509.397	8.216				
Category for Labels	16	14.345	.897	4.398	<.0001	70.366	1.000
Category for Labels * language	16	33.300	2.081	10.209	<.0001	163.343	1.000
Category for Labels * Subject(Group)	992	202.234	.204				

Means Table for Labels
Effect: Category for Labels * language

	Count	Mean	Std. Dev.	Std. Err.
English, S# & E#(G)	32	2.311	.649	.115
English, ES(G)	32	2.460	.791	.140
English, ESA(G)	32	2.211	.598	.106
English, ESS(G)	32	2.298	.369	.065
English, ESB(G)	32	2.477	.712	.126
English, ESC(G)	32	2.221	.623	.110
English, ESCA(G)	32	2.559	.784	.139
English, ESCS(G)	32	2.272	.581	.103
English, ESCB(G)	32	2.662	.897	.159
English, SE(G)	32	2.360	.762	.135
English, SEA(G)	32	2.582	.615	.109
English, SES(G)	32	2.301	.673	.119
English, SEB(G)	32	2.742	.618	.109
English, SEC(G)	32	2.627	.828	.146
English, SECA(G)	32	2.115	.548	.097
English, SECS(G)	32	2.258	.620	.110
English, SECB(G)	32	2.411	.694	.123
Spanish, S# & E#(G)	32	2.834	.834	.147
Spanish, ES(G)	32	3.215	.850	.150
Spanish, ESA(G)	32	3.479	1.089	.192
Spanish, ESS(G)	32	3.443	.899	.159
Spanish, ESB(G)	32	2.820	.755	.133
Spanish, ESC(G)	32	3.770	1.254	.222
Spanish, ESCA(G)	32	3.102	.982	.174
Spanish, ESCS(G)	32	3.263	.822	.145
Spanish, ESCB(G)	32	3.002	.873	.154
Spanish, SE(G)	32	3.198	.997	.176
Spanish, SEA(G)	32	3.380	.979	.173
Spanish, SES(G)	32	3.045	.935	.165
Spanish, SEB(G)	32	2.968	.847	.150
Spanish, SEC(G)	32	3.395	1.059	.187
Spanish, SECA(G)	32	3.363	.802	.142
Spanish, SECS(G)	32	3.270	.989	.175
Spanish, SECB(G)	32	3.164	.936	.165

2 (Language Users: English vs. Spanish) X 2 Column (English left vs. Spanish left) X 2(k-k vs. k-u) X 2 (US flag: absent vs. present) X 2 (Mexico flag: absent vs. present)

ANOVA Table for Labels

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
language	1	177.484	177.484	22.680	<.0001	22.680	.999
Subject(Group)	62	485.181	7.826				
Column	1	.006	.006	.031	.8602	.031	.053
Column * language	1	.297	.297	1.457	.2320	1.457	.209
Column * Subject(Group)	62	12.641	.204				
color	1	.226	.226	1.212	.2751	1.212	.181
color * language	1	1.181	1.181	6.327	.0145	6.327	.700
color * Subject(Group)	62	11.569	.187				
US Flag	1	2.697	2.697	11.277	.0013	11.277	.929
US Flag * language	1	4.912	4.912	20.540	<.0001	20.540	.998
US Flag * Subject(Group)	62	14.826	.239				
Mexico flag	1	.130	.130	.508	.4787	.508	.105
Mexico flag * language	1	5.217	5.217	20.439	<.0001	20.439	.998
Mexico flag * Subject(Group)	62	15.825	.255				
Column * color	1	.179	.179	.933	.3379	.933	.151
Column * color * language	1	1.592	1.592	8.296	.0054	8.296	.823
Column * color * Subject(Group)	62	11.901	.192				
Column * US Flag	1	.007	.007	.022	.8834	.022	.052
Column * US Flag * language	1	.142	.142	.457	.5018	.457	.099
Column * US Flag * Subject(Group)	62	19.315	.312				
Column * Mexico flag	1	.812	.812	3.082	.0841	3.082	.392
Column * Mexico flag * language	1	2.590	2.590	9.825	.0026	9.825	.888
Column * Mexico flag * Subject(Group)	62	16.342	.264				
color * US Flag	1	.004	.004	.017	.8956	.017	.052
color * US Flag * language	1	.037	.037	.178	.6744	.178	.069
color * US Flag * Subject(Group)	62	12.874	.208				
color * Mexico flag	1	1.073	1.073	6.776	.0115	6.776	.732
color * Mexico flag * language	1	.345	.345	2.178	.1451	2.178	.290
color * Mexico flag * Subject(Group)	62	9.817	.158				
US Flag * Mexico flag	1	.301	.301	1.510	.2238	1.510	.215
US Flag * Mexico flag * language	1	4.734	4.734	23.740	<.0001	23.740	.999
US Flag * Mexico flag * Subject(Group)	62	12.363	.199				
Column * color * US Flag	1	.037	.037	.334	.5653	.334	.086
Column * color * US Flag * language	1	.405	.405	3.669	.0601	3.669	.456
Column * color * US Flag * Subject(Group)	62	6.852	.111				
Column * color * Mexico flag	1	2.216	2.216	9.299	.0034	9.299	.868
Column * color * Mexico flag * language	1	4.607	4.607	19.332	<.0001	19.332	.997
Column * color * Mexico flag * Subject(Group)	62	14.776	.238				
Column * US Flag * Mexico flag	1	.304	.304	1.687	.1988	1.687	.235
Column * US Flag * Mexico flag * language	1	.067	.067	.371	.5447	.371	.090
Column * US Flag * Mexico flag * Subject(Group)	62	11.163	.180				
color * US Flag * Mexico flag	1	2.400	2.400	12.442	.0008	12.442	.952
color * US Flag * Mexico flag * language	1	1.987	1.987	10.303	.0021	10.303	.903
color * US Flag * Mexico flag * Subject(Group)	62	11.958	.193				
Column * color * US Flag * Mexico flag	1	.083	.083	.535	.4673	.535	.108
Column * color * US Flag * Mexico flag * language	1	3.740	3.740	24.118	<.0001	24.118	1.000
Column * color * US Flag * Mexico flag * Subject(...	62	9.613	.155				

Means Table for labels
Effect: column * color * us * mex * language

	Count	Mean	Std. Dev.	Std. Err.
English, eng-lft, blk, usNO, mex-NO	32	2.460	.791	.140
English, eng-lft, blk, usNO, mex-YES	32	2.211	.598	.106
English, eng-lft, blk, usYES, mex-NO	32	2.298	.369	.065
English, eng-lft, blk, usYES, mex-YES	32	2.477	.712	.126
English, eng-lft, blu, usNO, mex-NO	32	2.221	.623	.110
English, eng-lft, blu, usNO, mex-YES	32	2.559	.784	.139
English, eng-lft, blu, usYES, mex-NO	32	2.272	.581	.103
English, eng-lft, blu, usYES, mex-YES	32	2.662	.897	.159
English, spn-lft, blk, usNO, mex-NO	32	2.360	.762	.135
English, spn-lft, blk, usNO, mex-YES	32	2.582	.615	.109
English, spn-lft, blk, usYES, mex-NO	32	2.301	.673	.119
English, spn-lft, blk, usYES, mex-YES	32	2.742	.618	.109
English, spn-lft, blu, usNO, mex-NO	32	2.627	.828	.146
English, spn-lft, blu, usNO, mex-YES	32	2.115	.548	.097
English, spn-lft, blu, usYES, mex-NO	32	2.258	.620	.110
English, spn-lft, blu, usYES, mex-YES	32	2.411	.694	.123
Spanish, eng-lft, blk, usNO, mex-NO	32	3.215	.850	.150
Spanish, eng-lft, blk, usNO, mex-YES	32	3.479	1.089	.192
Spanish, eng-lft, blk, usYES, mex-NO	32	3.443	.899	.159
Spanish, eng-lft, blk, usYES, mex-YES	32	2.820	.755	.133
Spanish, eng-lft, blu, usNO, mex-NO	32	3.770	1.254	.222
Spanish, eng-lft, blu, usNO, mex-YES	32	3.102	.982	.174
Spanish, eng-lft, blu, usYES, mex-NO	32	3.263	.822	.145
Spanish, eng-lft, blu, usYES, mex-YES	32	3.002	.873	.154
Spanish, spn-lft, blk, usNO, mex-NO	32	3.198	.997	.176
Spanish, spn-lft, blk, usNO, mex-YES	32	3.380	.979	.173
Spanish, spn-lft, blk, usYES, mex-NO	32	3.045	.935	.165
Spanish, spn-lft, blk, usYES, mex-YES	32	2.968	.847	.150
Spanish, spn-lft, blu, usNO, mex-NO	32	3.395	1.059	.187
Spanish, spn-lft, blu, usNO, mex-YES	32	3.363	.802	.142
Spanish, spn-lft, blu, usYES, mex-NO	32	3.270	.989	.175
Spanish, spn-lft, blu, usYES, mex-YES	32	3.164	.936	.165

Simple effects analysis: English-language Users

ANOVA Table for Labels

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Subject	31	168.540	5.437				
Category for Labels	16	16.620	1.039	6.926	<.0001	110.820	1.000
Category for Labels * Subject	496	74.386	.150				

Means Table for Labels
Effect: Category for Labels

	Count	Mean	Std. Dev.	Std. Err.
S# & E#(G)	32	2.311	.649	.115
ES(G)	32	2.460	.791	.140
ESA(G)	32	2.211	.598	.106
ESS(G)	32	2.298	.369	.065
ESB(G)	32	2.477	.712	.126
ESC(G)	32	2.221	.623	.110
ESCA(G)	32	2.559	.784	.139
ESCS(G)	32	2.272	.581	.103
ESCB(G)	32	2.662	.897	.159
SE(G)	32	2.360	.762	.135
SEA(G)	32	2.582	.615	.109
SES(G)	32	2.301	.673	.119
SEB(G)	32	2.742	.618	.109
SEC(G)	32	2.627	.828	.146
SECA(G)	32	2.115	.548	.097
SECS(G)	32	2.258	.620	.110
SECB(G)	32	2.411	.694	.123

Simple effects analysis: Spanish-language Users

ANOVA Table for Labels

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Subject	31	340.857	10.995				
Category for Labels	16	31.025	1.939	7.523	<.0001	120.366	1.000
Category for Labels * Subject	496	127.847	.258				

Means Table for Labels
Effect: Category for Labels

	Count	Mean	Std. Dev.	Std. Err.
S# & E#(G).2	32	2.834	.834	.147
ES(G).2	32	3.215	.850	.150
ESA(G).2	32	3.479	1.089	.192
ESS(G).2	32	3.443	.899	.159
ESB(G).2	32	2.820	.755	.133
ESC(G).2	32	3.770	1.254	.222
ESCA(G).2	32	3.102	.982	.174
ESCS(G).2	32	3.263	.822	.145
ESCB(G).2	32	3.002	.873	.154
SE(G).2	32	3.198	.997	.176
SEA(G).2	32	3.380	.979	.173
SES(G).2	32	3.045	.935	.165
SEB(G).2	32	2.968	.847	.150
SEC(G).2	32	3.395	1.059	.187
SECA(G).2	32	3.363	.802	.142
SECS(G).2	32	3.270	.989	.175
SECB(G).2	32	3.164	.936	.165

Subject	Subject	Age	Gender	Ethnicity	Student	School	Eng 1st?	# years not Eng
1	1	22	1	2	2	16	yes	.
2	2	26	1	4	1	16	yes	.
3	3	21	1	3	2	16	no	5
4	4	58	1	4	1	12	yes	.
5	5	21	1	3	1	14	no	7
6	6	27	1	4	1	16	yes	.
7	7	47	1	3	1	16	no	5
8	8	22	1	4	1	16	yes	.
9	9	19	1	4	1	14	yes	.
10	10	18	1	4	1	13	yes	.
11	11	22	1	4	1	14	yes	.
12	12	21	1	4	1	12	yes	.
13	13	33	1	4	1	18	yes	.
14	14	30	1	4	2	17	yes	.
15	15	46	1	4	1	16	yes	.
16	16	21	1	3	1	14	yes	.
17	17	46	2	4	1	12	yes	.
18	18	18	2	7	1	15	yes	.
19	19	47	2	2	1	15	no	8
20	20	31	2	2	1	14	no	10
21	21	20	2	4	2	14	yes	.
22	22	49	2	4	1	13	yes	.
23	23	31	2	3	1	16	no	5
24	24	23	2	7	1	12	yes	.
25	25	20	2	4	1	12	yes	.
26	26	50	2	4	1	16	yes	.
27	27	23	2	3	2	17	no	5
28	28	48	2	4	1	19	yes	.
29	29	27	2	4	1	16	yes	.
30	30	30	2	4	1	14	yes	.
31	31	20	2	7	2	13	yes	
32	32	22	2	4	2	16	yes	.
S1	S1	50	1	4	1	18	no	12
S2	S2	58	1	4	1	20	no	23
S3	S3	26	1	4	1	16	no	16
S4	S4	28	1	8	1	16	no	16
S5	S5	25	1	8	1	16	no	16
S6	S6	22	1	1	1	13	no	13
S7	S7	49	1	1	1	20	no	20
S8	S8	43	1	1	1	10	no	40
S9	S9	44	1	8	1	17	no	17
S10	S10	29	1	1	1	14	no	14
S11	S11	26	1	5	1	16	no	16
S12	S12	32	1	12	1	18	no	18
S13	S13	26	1	4	4	17	no	17
S14	S14	35	1	3	1	18	no	18
S15	S15	44	1	4	1	18	no	18
S16	S16	35	1	11	1	16	no	16
S17	S17	50	2	4	1	15	no	14
S18	S18	31	2	4	1	16	no	16
S19	S19	25	2	4	1	16	no	16
S20	S20	55	2	4	1	16	no	16
S21	S21	26	2	1	1	15	no	15
S22	S22	23	2	1	1	12	no	12

S23	S23	35	2	1	1	16	no	16
S24	S24	50	2	8	1	20	no	20
S25	S25	30	2	1	1	12	no	12
S26	S26	21	2	12	1	12	no	12
S27	S27	19	2	1	1	9	no	9
S28	S28	19	2	7	2	13	no	13
S29	S29	21	2	2	1	16	no	16
S30	S30	26	2	4	1	16	no	16
S31	S31	21	2	7	2	15	no	15
S32	S32	15	2	4	2	9	no	7

Key to the following data set, Study 3.
S#- Spanish text only
E#- English text only
ES- English, left / Spanish right, no enhancement
ESA- English, left / Spanish right, American flag
ESS- English, left / Spanish right, Mexican flag
ESB- English, left / Spanish right, both flags
ESC- English, left / Spanish right, Spanish text ue
ESCA- English, left / Spanish right, Spanish text ue, American flag
ESCS- English, left / Spanish right, Spanish text ue, Spanish flag
ESCB- English, left / Spanish right, Spanish text ue, both flags
SE- Spanish, left / English right, no enhancement
SEA- Spanish, left / English right, American flag
SES- Spanish, left / English right, Mexican flag
SEB- Spanish, left / English right, both flags
SEC- Spanish, left / English right, Spanish text ue
SECA- Spanish, left / English right, Spanish text ue, American flag
SECS- Spanish, left / English right, Spanish text ue, Spanish flag
SECB- Spanish, left / English right, Spanish text ue, both flags
(1)- First presentation
(M)- mean, minus 2 SD from subject's mean
(G)- geometric mean

S# & E#(M)	S# & E#(1)	S# & E#(G)	ES(M)	ES(1)	ES(G)	ESA(M)	ESA(1)	ESA(G)	ESB(M)	ESB(1)	ESB(G)	Subject
2642	1743	2407	1981	1973	1934	1656	1532	1592	2489	2113	2335	1
1942	1692	1900	2694	1692	2553	2758	2003	2702	1979	1392	1919	2
2435	2524	2401	3038	2784	3022	2880	2474	2863	1578	1452	1568	3
3655	3665	3524	2419	2193	2284	2738	2554	2518	3603	4286	3565	4
2241	1823	2137	2624	3153	2471	1522	1482	1496	2448	3105	2292	5
2063	1843	2041	2199	2503	2150	2555	5588	2223	2273	1533	2150	6
4773	3915	4335	5161	6339	4957	4244	4707	4120	3923	3885	3720	7
2078	1802	2061	2779	2784	2690	2207	2704	2189	2087	1552	2006	8
2411	1993	2352	2798	2183	2732	2181	1552	2136	4418	4056	4242	9
2584	3364	2657	2914	2874	2820	2535	2053	2498	3517	4006	3423	10
1768	2173	1701	1710	2093	1613	1498	1663	1475	2231	1173	1967	11
2690	2834	2675	3110	2634	3053	2559	2514	2544	2564	2414	2552	12
1776	1853	1773	2117	3145	2000	1898	1532	1869	1832	1904	1831	13
2351	1643	2180	2715	1633	2598	2467	3595	2338	2621	3264	2575	14
2241	1873	2220	2411	2784	2383	2138	1602	2076	2668	2384	2608	15
1744	1522	1691	2181	2263	2159	1502	1592	1481	1996	2533	1977	16
1764	1372	1748	2082	1382	1936	2098	2233	2090	3300	2384	3189	17
1894	2083	1838	1762	1922	1730	1758	1392	1704	1746	1562	1737	18
2817	2513	2760	2297	2364	2264	2685	3405	2516	2846	2704	2690	19
2772	3215	2756	3834	3134	3808	2794	2814	2687	2195	2123	2170	20
2084	2343	2028	1928	1632	1828	2299	1332	2155	2723	1582	2562	21
3319	3525	3310	3789	5828	3645	3541	3184	3500	3693	2804	3392	22
1644	1432	1617	2027	1773	2007	1562	1732	1542	1636	1913	1625	23
1594	1362	1567	1564	1583	1540	2163	2143	2034	2741	2193	2663	24
1694	1682	1686	1588	1532	1580	1864	1653	1846	3230	3355	3406	25
2327	2674	2270	2307	2534	2288	1848	1753	1840	1660	1762	1651	26
2607	2314	2597	4011	7631	3969	2515	2063	2493	2107	1291	1948	27
2605	2433	2422	2898	4016	2730	2203	2394	2199	2721	2494	2093	28
1778	1852	1730	2038	1812	1989	1772	2303	1682	1987	1542	1944	29
1438	1422	1437	1381	1041	1357	1414	1261	1391	1576	1231	1521	30
3178	3015	2945	1772	1542	1742	2333	3215	2189	3106	3244	3024	31
3372	2373	3192	3048	3545	2873	2840	3665	2765	3108	2063	2933	32
2615	2593	2585	2706	2925	2670	3480	3495	3422	2501	1783	2465	S1
3947	3455	3619	3426	2453	3314	4226	4517	4158	3633	4586	3586	S2
2497	3725	2330	2463	1973	2444	3415	4146	3373	2659	2413	2543	S3
3270	2263	3808	3405	2504	3312	2409	2143	2385	2348	2133	2335	S4
2603	1743	2459	3178	2373	3103	3060	3245	3024	2838	3294	2811	S5
4636	7441	4403	5744	7010	5515	7102	9924	6902	4309	4309	4019	S6
2020	1622	1962	3116	3485	3030	5252	3024	3240	2545	2544	2514	S7
3288	2784	3226	3621	4006	3604	4733	3796	4574	3623	3235	3482	S8
2333	2033	2293	2986	2494	2933	3405	4196	3378	3030	4006	2958	S9
3867	3515	3816	3919	3806	3799	6349	4128	6102	2866	3064	2829	S10
2599	2073	2488	2203	2203	2193	2914	2994	2883	2221	1862	2139	S11
1930	1592	1903	2499	2303	2486	2551	3635	2479	1906	1532	1888	S12
1918	2073	1913	3336	1773	2960	2158	1452	2041	2724	2544	2655	S13
1674	2593	1600	2721	2493	2699	2760	2674	2731	1780	2364	1694	S14
2556	2709	2548	4084	6750	3632	3567	2443	3237	2665	2684	2535	S15
2567	2494	2558	3160	2804	3142	3561	3224	3550	2461	2437	2654	S16
3300	2653	3181	3102	2484	3049	3503	2754	3440	3439	3745	3299	S17
3685	4427	3510	3196	1832	2946	4015	7211	3689	1901	2003	1777	S18
2405	1692	2336	2780	2363	2724	3721	4036	3682	2335	2714	2250	S19
1862	2083	1834	2053	2544	2027	2441	2093	2423	3443	3555	2921	S20
2187	1742	2171	2702	2754	2697	3649	3154	3582	2423	3244	2370	S21

3058	2734	3023	4416	2814	4197	4112	3455	4034	3875	3104	3813	S22
3805	4136	3772	5311	5448	5282	3983	4857	3940	5067	6269	4876	S23
2906	3325	2875	3092	3285	3079	4886	2704	4886	3040	3214	2863	S24
5085	3506	4970	4534	4706	4518	4909	4667	4651	3926	3521	3505	S25
4184	8231	3780	4630	5558	4380	3279	2624	3197	5381	2744	4650	S26
4130	2814	3792	3713	3996	3694	3831	3715	3785	3491	1953	2743	S27
2287	2504	2267	2441	2774	2414	1920	1913	1890	2531	2513	2489	S28
2012	1712	1957	2429	2684	2425	2569	2343	2562	2551	4756	2370	S29
2423	2735	2284	3092	2894	3040	2854	2233	2831	2772	1993	2720	S30
2449	1592	2263	2491	1352	1985	2187	2213	2143	2377	1662	2264	S31
3268	3074	3156	3627	4066	3593	3134	3105	3125	2213	2063	2208	S32

ESC(M)	ESC(1)	ESC(G)	ESCA(M)	ESCA(1)	ESCA(G)	ESCB(M)	ESCB(1)	ESCB(G0	ESCS(M)	ESCS(1)	ESCS(G)	Subject
1941	1402	1879	2187	2294	2077	1906	2624	1861	1708	1772	1705	1
1592	1833	1584	2455	1812	2373	1860	2113	1821	2699	2353	2597	2
2926	2694	2900	2573	2183	2560	2685	2333	2660	2557	3225	2526	3
2395	2483	2322	3747	2544	3388	4570	4426	4254	2275	2413	2261	4
1850	1913	1715	1736	1832	1724	2093	3505	1935	1730	1452	1652	5
2335	1873	2233	2177	2113	2164	3062	2854	2875	2395	2554	2384	6
3679	3084	3547	4580	7761	4353	6237	7291	6052	3793	2884	3547	7
2533	2884	2502	2633	2574	2597	2109	2354	2103	2666	1872	2456	8
2026	2123	1996	2766	4396	2650	3240	2543	3105	2165	2684	2118	9
2317	2283	2310	4101	4246	2756	2827	2403	2741	3585	4066	3423	10
1352	1222	1319	1572	1692	1415	2079	2524	2028	1872	1261	1828	11
3365	3445	3351	3222	2624	3169	3465	4486	3384	2399	2173	2353	12
1804	2073	1788	2253	3344	2198	2055	1482	2011	1656	1763	1614	13
2692	1983	2556	2962	2133	2847	2910	1902	2737	2377	1623	2310	14
1926	2343	1897	2498	2444	2479	2283	2614	2188	1996	1522	1950	15
1374	2003	1343	2081	2293	2058	2069	1903	2016	1708	1322	1672	16
2530	1893	2303	2349	2774	2339	2333	2193	2186	2867	4286	2784	17
1780	1613	1720	2070	2504	2042	2856	2463	2794	2010	3385	1914	18
2681	2203	2548	2813	1812	2744	2976	2043	2653	2764	2353	2736	19
3206	2884	3163	3156	2855	3120	3132	2013	2991	2835	2914	2809	20
2051	1923	2004	2197	2053	2188	2841	3965	2788	2073	1993	2041	21
2908	2534	2856	3372	3114	3319	3166	3335	3154	2752	2965	2740	22
1834	1702	1756	1832	2234	1808	1750	1592	1696	1724	1702	1680	23
1570	1702	1548	1798	1792	1756	2098	3024	2042	1876	1842	1856	24
2055	1762	2024	2159	2264	2107	2231	2534	2202	2579	3204	2515	25
1946	2424	1926	2301	2013	2294	2027	1823	2021	2217	2023	2201	26
2609	2854	2592	2673	3074	2635	2915	2633	2907	2617	1963	2435	27
2227	2193	2199	2846	2994	2823	3056	2374	2778	2548	1743	2501	28
1732	1512	1714	3006	3545	2850	2341	2383	2269	1430	1672	1380	29
1298	1442	1294	1406	1112	1389	1592	1292	1588	1530	1452	1520	30
2817	4286	2680	2425	2434	2403	3395	3165	3144	1606	1362	1592	31
3518	3735	3514	5738	2614	5278	4232	4196	4187	3797	2564	3617	32
3350	2493	3282	2851	2233	2796	2831	2614	2768	3192	4085	3156	S1
5674	4777	5635	2989	2363	2963	3891	4256	3793	3973	5038	3896	S2
2720	2614	2695	3641	7731	3149	2399	1842	2328	2543	2594	2504	S3
2629	3885	2557	2802	2363	2727	3426	2293	2996	2467	2614	2455	S4
4308	4056	4308	3179	2674	3134	4352	2904	4193	3066	3355	3027	S5
7693	9433	7452	5289	7381	5114	5539	6088	5296	5530	6640	5439	S6
4310	4697	4213	3024	3826	2935	3006	2514	2946	3200	2354	3063	S7
4706	4346	4406	4872	3895	4650	3741	2394	3242	2994	3745	2957	S8
3769	3305	3718	3104	3075	3101	2565	2904	2539	3312	3065	3296	S9
5808	4727	5701	4832	4076	4789	2812	2776	2434	3949	3525	3941	S10
2597	2444	2543	2517	2814	2480	2800	3255	2736	2824	1993	2737	S11
2295	2013	2283	2215	1842	2189	2178	2213	2171	3012	2103	2945	S12
3921	6259	3731	2577	2153	2416	2067	1792	2053	2780	3415	2750	S13
3086	4357	2982	1620	2163	1556	2082	1732	2082	2449	1813	2407	S14
5021	3855	4584	3359	2474	3223	3335	3685	3319	4242	5858	4159	S15
4432	4456	4369	3635	3605	3602	3126	2663	3077	3563	3745	3542	S16
3505	2634	3277	3068	3214	3042	2563	2604	2467	2747	2243	2638	S17
3074	2354	2955	2683	3806	2304	3605	3986	3554	2611	2473	2490	S18
4015	5958	3908	3190	2744	3142	2740	2383	2685	3491	3015	3462	S19
2207	2133	2188	2407	1862	2346	2075	2404	2051	2090	1893	2070	S20
2790	2534	2782	2499	2353	2474	2567	2654	2566	3230	3134	3201	S21

4040	4357	3976	2718	2604	2696	3475	4456	3415	4886	3806	4460	S22
5744	4186	5539	5870	4817	5806	5132	4537	5054	4524	3755	4414	S23
3222	3585	3193	4386	3235	4083	3386	2694	3346	3719	4026	3679	S24
6024	5648	5907	3897	5738	3799	5070	5458	4967	5249	3274	5077	S25
4272	5838	4082	4215	5257	4041	3368	2295	3280	3877	4476	3788	S26
3520	2573	3459	3683	4847	3470	2503	2694	2478	3649	3555	3637	S27
2183	2534	2169	1983	1372	1928	2119	1823	2106	2782	2354	2692	S28
3032	2423	2975	2141	2643	2122	2079	1953	2049	2649	2173	2570	S29
3364	5337	3244	1894	2003	1849	2765	3555	2718	3200	3124	3163	S30
2333	2553	2209	2429	2484	2384	2475	2493	2465	2093	1232	2025	S31
4378	5408	4327	3804	2633	2946	2960	4006	2904	2814	2303	2787	S32

ESS(M)	ESS(1)	ESS(G)	SE(M)	SE(1)	SE(G)	SEA(M)	SEA(1)	SEA(G)	SEB(M)	SEB(1)	SEB(G)	Subject
2311	2383	2285	1646	1632	1634	1933	1513	1839	2219	1873	2199	1
1880	1672	1859	2637	1923	2577	2249	3044	2184	2553	2093	2447	2
2599	2444	2577	2495	2354	2490	2657	2884	2635	2798	2814	2796	3
2154	1823	2106	2565	3846	2445	2587	2203	2531	3415	4437	3337	4
2531	2203	2522	1518	1322	1499	1976	2043	1956	2283	2493	2263	5
2657	2213	2603	2004	1723	1989	2415	2443	2406	2339	2183	2314	6
3134	3956	3104	4033	3575	3860	3669	4046	3635	4330	4246	4313	7
2231	2464	2186	2710	3394	2654	2655	2043	2455	2259	2604	2243	8
2581	2914	2467	2403	2453	2391	3082	4277	2931	3054	2854	3027	9
2910	3445	2852	3898	3445	3581	2687	3765	2631	2926	2754	2893	10
2129	1913	2117	1486	1282	1449	1772	1171	1682	1952	2383	1936	11
2794	2284	2719	2521	2704	2511	3587	3565	3485	3419	3755	3394	12
2013	1783	1919	1816	2353	1785	2039	2254	2020	2351	1573	2309	13
2870	2323	2709	2778	2934	2753	2586	1953	2738	2105	2594	2067	14
2469	2333	2428	2197	2354	2188	2183	2223	2146	3929	5778	3831	15
1632	1973	1623	1720	1622	1699	1870	1512	1804	2047	2133	2030	16
2271	3826	2135	2549	2154	2305	2852	2691	2691	2626	3145	2566	17
2051	1311	1998	2295	3255	2208	2265	1232	2153	2744	2784	2683	18
3769	3986	2688	3192	5659	2980	2721	2964	2695	2942	2504	2927	19
2399	2053	2340	3451	2804	3233	3931	5287	3837	2894	3044	2777	20
2083	2464	2060	2085	2333	2047	2471	2854	2357	2515	2313	2511	21
2810	2694	2795	3323	3725	3104	4312	4737	4282	4116	3165	4072	22
1892	1752	1864	2026	1862	1992	2986	2634	2803	2229	2484	2220	23
1820	1472	1782	1704	1653	1668	2267	2053	2252	2129	1822	2116	24
2541	2484	2477	1802	2213	1775	2607	2153	2492	2904	2464	2880	25
1985	2163	1964	1746	2043	1736	2523	2483	2499	2550	2613	2537	26
2196	1832	2174	2549	3705	2482	3384	3184	3287	3084	3275	3068	27
2451	2123	2410	2315	1852	2281	2958	2513	2929	2670	3135	2552	28
2057	1863	1947	1730	1482	1713	2443	1883	2363	2501	2264	2456	29
2133	1132	2030	1566	1582	1547	1676	2303	1628	2180	1942	2161	30
2052	2003	1978	2067	1923	2018	2459	2499	2429	2988	2975	2962	31
2935	4576	2827	5297	6599	4914	2864	3645	2835	3915	3795	3844	32
3319	3275	3308	3509	3625	3469	3863	5448	3731	2726	2253	2664	S1
3763	5308	3674	4153	3565	4107	4354	3976	4263	3168	2724	3156	S2
2846	2464	2784	2636	3956	2564	2878	2123	2836	2591	2013	2524	S3
2689	3095	2681	2555	3215	2526	3795	2333	3268	2445	2353	2435	S4
3821	2984	3714	3084	2254	3037	3891	2063	3691	2838	3014	2813	S5
5475	5408	5404	6406	3685	6017	4611	2965	4427	5820	3585	5353	S6
3368	3465	3324	2948	4246	2841	3541	6209	3223	3368	3996	3250	S7
4149	3254	3950	3717	5148	3605	4795	7110	4555	4934	3785	4638	S8
3014	2353	2980	2938	1856	2856	3024	3455	3004	2778	3515	2736	S9
5071	4146	4841	4907	5388	4459	3901	5548	3808	4027	3315	3976	S10
2972	2433	2841	3106	3375	3084	2139	2974	2065	1914	3215	1734	S11
2071	1803	2042	2127	2133	2124	2239	2093	2197	2167	1742	2130	S12
2737	3495	2706	2659	1452	2490	2736	2009	2529	2147	1252	1950	S13
3237	3155	2997	2247	1832	2218	3601	1793	3010	2417	2303	2373	S14
3138	2469	2964	2746	3495	2411	2531	721	2228	2886	2674	2881	S15
3427	3114	3375	3292	2674	3220	3593	4827	3484	2802	3184	2776	S16
3038	3645	2995	3315	3555	3236	2293	2173	2265	2797	2784	2773	S17
3783	4066	3420	3062	6259	3062	3162	3726	3062	2836	1872	2751	S18
2802	2504	2772	2625	2403	2562	3378	4457	3113	2858	2934	2603	S19
2235	2314	2208	2006	1792	1997	2227	1953	2216	2000	1512	1948	S20
3669	5658	3509	2327	1772	2285	3042	2814	2950	2731	2774	2708	S21

3961	2904	3909	3565	3625	3557	6141	6783	5641	4268	7451	4003	S22
4947	7031	4823	5477	7261	5291	4320	5137	4243	4471	4617	4347	S23
3308	4376	3236	4095	8572	3657	4662	3054	4423	2726	2554	2679	S24
5833	9203	5532	5608	6299	5370	6151	4447	5899	4784	3565	4564	S25
5939	5278	5492	4739	2273	4303	3735	4035	3708	3256	3004	3201	S26
3730	3174	3715	3154	3235	3101	3356	4176	3116	2990	3285	2947	S27
3880	7772	3506	2832	3054	2806	2569	2484	2556	2755	2443	2688	S28
2940	2854	2931	2265	2053	2258	2590	3905	2466	2098	2093	2066	S29
2920	2453	2879	2139	2033	2092	4634	3485	4339	3164	3125	2917	S30
2761	3084	2738	2255	2189	2954	2275	2223	2223	2510	1813	2312	S31
4001	4547	2923	2806	2504	2791	3675	4837	3617	3242	5568	3068	S32

SEC(M)	SEC(1)	SEC(G)	SECA(M)	SECA(1)	SECA(G)	SECB(M)	SECB(1)	SECB(G)	SECS(M)	SECS(1)	SECS(G)	Subject
1899	1803	1894	2213	1412	1926	1554	1702	1535	2129	1912	2016	1
2104	2944	2044	1762	1583	1758	2031	1562	1916	2063	1793	2044	2
2744	2734	2655	2237	2263	2234	2521	2604	2487	2611	2874	2604	3
2521	2093	2497	2363	2343	2354	3176	5908	2883	2593	2664	2518	4
2437	2393	2401	1704	1573	1673	1688	1682	1662	1894	1302	1851	5
2130	1812	2058	1928	2143	1924	2311	2484	2296	2029	2423	2015	6
5115	6860	4663	4296	2694	3940	4654	3475	4373	4244	2934	4019	7
2335	2794	2315	2279	1823	2086	2017	2263	2011	2055	2604	2055	8
4314	7621	3831	2295	2185	2292	2395	2093	2345	2171	2083	2134	9
2732	2884	2664	2489	2453	2489	3641	8021	2983	3192	2704	3142	10
1458	1182	1364	1478	1322	1457	1500	1272	1473	1474	1532	1462	11
4348	5858	4180	2345	2794	2324	2685	2724	2677	2844	2784	2752	12
2307	1742	2213	1568	1252	1548	1948	1542	1922	2241	2043	2171	13
2600	2895	2574	2401	2584	2335	3108	3064	3104	1993	1723	1979	14
2215	1973	2152	2047	2113	2021	3122	5237	2960	4045	2884	3623	15
2057	1853	1991	1660	1492	1655	1512	1412	1509	1466	1652	1460	16
2403	2984	2328	1816	1633	1773	2187	2714	2135	2062	2053	2047	17
2211	1742	2191	1804	1202	1761	1704	1723	1684	2013	2423	1993	18
3392	2493	3301	2363	3334	2291	3018	2954	2972	2283	2554	2253	19
3408	3204	3368	3267	3425	3257	3359	3085	3337	2727	4025	2605	20
2854	2714	2842	1802	1593	1790	2217	2153	2171	2061	1933	2051	21
3585	3505	3543	2964	3445	2919	3737	3245	3642	3529	3245	3455	22
1921	2534	1898	1626	1351	1613	1864	1792	1848	1910	1703	1892	23
1918	1562	1907	1744	1553	1739	1840	1903	1830	1608	1352	1586	24
2391	2464	2383	2207	2835	2167	1884	2033	1880	1820	1712	1789	25
2229	2183	2216	2113	1943	2096	2195	2023	2159	2241	2133	2217	26
2876	2133	2802	1830	1582	1822	2634	2434	2567	2154	2533	2147	27
2859	3195	2816	2538	1693	2375	3266	4446	3111	1965	2083	1941	28
2431	1913	2329	1672	1923	1661	2119	2093	2041	1822	1612	1784	29
1604	1593	1600	1265	1162	1262	1762	2023	1752	1674	1212	1607	30
2377	1673	2244	2413	1853	2387	3246	1892	2953	1995	2223	1982	31
5013	4236	4784	2778	2574	2745	3011	2714	2930	3094	3695	3051	32
3707	5498	3582	2854	2784	2849	2748	2914	2744	3915	4887	2866	S1
4554	4116	4446	4130	4967	4058	4766	3515	4542	5580	5077	5263	S2
3690	2644	3291	3222	3646	3067	3184	2844	3078	3363	2514	3266	S3
3256	2093	3183	2924	2033	2871	2711	2493	2677	3595	1943	3093	S4
3919	3655	3828	4678	4807	4390	3891	3795	3790	3867	3044	3806	S5
5783	3285	5393	5778	2664	4867	6253	7721	6822	6120	5459	6041	S6
3130	1983	2986	4416	2854	4046	2283	2343	2252	3034	2724	2595	S7
3745	4797	3671	3948	3746	3847	3693	2784	3559	3455	3395	3441	S8
2824	3215	2801	2856	3906	2801	3010	3174	2974	2884	3145	2869	S9
3254	2984	3147	4398	4096	4339	4260	6730	3946	3775	2654	3546	S10
2567	2033	2537	3805	2363	3615	2624	2143	2606	3370	2874	3206	S11
2750	2033	2682	2451	1933	2379	2840	2554	2737	2105	1782	2084	S12
3717	1412	3133	4078	1633	3646	2547	3034	2376	2712	2113	2642	S13
2489	1832	2344	3271	1202	2303	3333	1793	2926	2163	2263	2147	S14
2754	3005	2743	2792	2548	2452	2699	3736	2643	3002	2408	2908	S15
3492	3956	3481	2393	1933	2355	3140	4226	3098	3046	2243	2945	S16
3903	4987	3705	2581	3315	2535	2516	2854	2386	3080	2584	3035	S17
3180	2303	3056	3499	3345	3282	3619	2323	3296	2339	2083	2297	S18
2407	1412	2181	3855	3105	3552	2999	3174	2991	2746	3015	2722	S19
2581	2283	2535	2347	2403	2328	2425	1783	2384	1888	602	1861	S20
2337	2413	2331	2866	2694	2811	3300	3074	3264	2309	1933	2291	S21

4033	4826	3880	5471	3144	4911	4247	3115	3975	4568	5017	4540	S22
6056	6860	5793	3743	4647	3700	3953	4046	3858	5518	7371	5374	S23
3084	3535	3061	3703	3435	3686	2722	1903	2668	3136	2314	3056	S24
6705	7110	6581	4839	2183	4497	4631	4517	4552	4380	4867	4320	S25
4831	6510	4727	4710	6229	4597	3817	4766	3738	4554	5047	4078	S26
4352	4040	4177	3310	3776	3235	3244	3214	3053	3038	2223	2868	S27
2882	4156	2747	3056	3195	2927	2475	2103	2445	3096	2224	2905	S28
2313	2063	2295	3136	3715	3097	2047	1583	1998	2401	2964	2277	S29
2327	1202	2206	3252	2844	2087	2537	3225	2464	4183	2654	3816	S30
2715	2093	2616	3425	1823	3170	2399	2523	2360	2796	2804	2727	S31
3629	5708	3495	3595	3145	3331	3240	2473	3030	3743	3986	3739	S32

SES(M)	SES(1)	SES(G)	Subject
1491	1742	1444	1
2085	2444	2065	2
2954	1973	2898	3
1823	2073	1787	4
2020	1332	1943	5
2183	1463	2079	6
2870	2945	2839	7
1998	1502	1952	8
2966	2375	2665	9
3997	2394	3586	10
1436	1482	1430	11
2227	2163	2212	12
1900	1743	1890	13
2327	3635	2244	14
2343	1953	2319	15
1586	1743	1575	16
2616	4286	2489	17
2233	3194	2095	18
3215	2784	3043	19
2782	2313	2744	20
2091	1702	2068	21
3355	2764	3250	22
2231	2023	2187	23
1786	1762	1765	24
1987	1593	1972	25
1904	1663	1875	26
2027	1853	1987	27
2985	3214	2786	28
1700	1552	1645	29
1482	1733	1469	30
2944	2263	2884	31
4940	9430	4447	32
3519	4837	3431	S1
3617	3896	3598	S2
2575	2864	2568	S3
2591	3104	2504	S4
3557	2734	3466	S5
6571	6640	6423	S6
3246	3706	3223	S7
3483	2894	3465	S8
2954	2624	2912	S9
3779	3796	3725	S10
2704	1853	2647	S11
2245	1913	2228	S12
1632	1212	1500	S13
2291	2544	2271	S14
2543	2183	2500	S15
3447	2804	3406	S16
2808	2824	2734	S17
2972	2819	1752	S18
3132	4006	3076	S19
2311	1592	2207	S20
2692	3065	2676	S21

3745	3225	3677	S22
4670	7070	4472	S23
3561	3279	3508	S24
4284	4531	4245	S25
2876	2834	2722	S26
3935	2644	3766	S27
2936	2596	2885	S28
1882	1151	1833	S29
2932	2343	2897	S30
2185	2604	2166	S31
3104	2713	2960	S32