

Use of care labels: linking need for cognition with consumer confidence and perceived risk

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Abstract:

The purpose of this paper is to investigate the effect of apparel care label information presentation formats (i.e. symbols only, text only, and the combination) and the individual trait of need for cognition on consumers' confidence in and risk perceptions about the post-purchase activity of care of apparel items. A scenario-based experiment was conducted using a convenience sample of 275 undergraduate students for data collection. MANCOVA was conducted to test the hypotheses. The findings of this research suggest not only that the text only format and the combination of text and symbols format are preferred to the symbols only format but also that the text only format was the most preferred among the three formats. Both the text only format and the combination format significantly increased consumers' confidence in and reduced consumers' risk perceptions about their care of apparel items. The symbols only label does reduce apparel manufacturers' costs. However, because consumers may use care label information as a decision criterion for purchasing apparel items, industry practitioners need to also pay attention to the impact of end consumers' perceptions of these labels on their purchase decisions. Examination of three different information presentation formats (symbols only, text only, and the combination of symbols and text) adds to the extant literature focusing on mainly two levels of formats (i.e. visual vs verbal).

Keywords: clothing | labelling | consumer behavior | cognition | consumer risk

Article:

Introduction

In the USA, the Federal Trade Commission (FTC) regulates care labelling on apparel products sold domestically under its "Care Labeling of Textile Wearing Apparel and Certain Piece Goods" rule (16 CFR Part 423). According to the most recent amendment of this rule ([15] FTC, 2001), instead of using English words to describe the recommended processes for care (e.g. cleaning, drying, ironing) of an apparel item, manufacturers may instead choose to use a set of four basic care label symbols that were developed by the American Society of Testing and Materials ([3]

ASTM International, 2001). These care label symbols represent a set of graphic images that function like universal symbols on highway signs that do not need to be translated into various languages ([22] Magill, 1998).

Following the FTC's ruling, apparel manufacturers selling products in the USA now have an option regarding which presentation format (i.e. text only, symbols only, or text and symbols) to use on their products. However, manufacturers whose products are destined for multiple sites are likely to adopt the symbols only format in order to avoid inserting labels in multiple languages and to save both time and money ([23] Meadows, 1999). While the benefits to manufacturers cannot be denied, the adoption of the symbols only labelling system may or may not be the best option from the consumers' standpoint. Despite the fact that consumers tend to use care label information during both the pre-purchase and decision-making stages ([1], [2] Abraham-Murali and Littrell, 1995a, b; [12] Davis, 1987; [27] Seitz, 1988; [28] Shin, 2000; [35] Then and DeLong, 1999), as well as the post-purchase stage while caring for their apparel, little is known concerning American consumers' perceptions of care label information and the effectiveness of different presentation formats (i.e. text only, symbols only, both text and symbols).

Although, it has not yet been studied in the context of apparel care labels, need for cognition may impact information presentation format preference ([7], [6] Cacioppo et al. , 1996, 1984; [11] Crowley and Hoyer, 1989; [31] Sojka and Giese, 2001). Individuals with a high need for cognition tend to prefer to process verbal information; on the other hand, those who have a low need for cognition are likely to favor visual information ([31] Sojka and Giese, 2001). As a result, consumers with a high need for cognition should prefer labels that present care information in text format, and consumers with a low need for cognition should prefer the information in visual format. Moreover, those with a low need for cognition may be frustrated by the presentation of information in multiple formats and may, instead, prefer the information to be presented in a single format. This speculation, however, needs verification through empirical data.

In the consumer context, information processing has been linked to both perceived risk and consumer confidence in consumption activities. Individuals' perception of risk may become more salient and may increase when they are actively contemplating, rather than passively contemplating, the purchase of a product or service ([13] Dholakia, 2000). In addition to risk, how consumers process information may as well have impact on consumer confidence, such that a greater understanding of product information tends to lead to greater consumer confidence in purchase decisions ([38] Wendler, 1983).

The concept of information processing has been linked with perceived risk and consumer confidence in their purchase decisions. Researchers have also examined the effect of the amount of information on perceived risk and consumer confidence. However, little research has investigated whether information presentation format may also influence those responses concerning certain post-purchase activities. Thus, considering an individual trait related to information processing (i.e. need for cognition), this research addresses this issue and examines how information presentation format influences consumers' confidence and perceived risk.

The purpose of this research is to investigate consumers' psychological reactions to information presented and to assess how an individual information processing trait (i.e. need for cognition) influences those reactions. Adopting the definition used in [31] Sojka and Giese (2001), information appears in this research as stimuli data that can be presented in various forms (i.e. symbols only, text only, and the combination format). More specifically, this research examines the effect of information presentation formats on consumers' confidence in and risk perceptions

about a specific post-purchase activity (i.e. care of apparel items) in the context of care labels. This study was guided by the following questions:

1. How does care label information presentation format (i.e. symbols only, text only, both text and symbols) influence consumers' level of confidence and perceptions of risk concerning care of apparel items?
2. Given consumers' level of need for cognition, how does care label information presentation format (i.e. symbols only, text only, both text and symbols) influence consumers' level of confidence and perceptions of risk concerning care of apparel items?

Literature review

Research about care labels

Information presented on the care label of an apparel item is a cue that consumers use to collect information about the product during the pre-purchase stage in bricks-and-mortar stores ([12] Davis, 1987), in catalogues ([27] Seitz, 1988), and on the internet ([35] Then and DeLong, 1999). One of the attributes that consumers associate with care label information is an apparel product's quality level ([1], [2] Abraham-Murali and Littrell, 1995a, b; [12] Davis, 1987; [28] Shin, 2000). Because care label information can serve as an indicator of quality to potential buyers, the presentation of this information on the care label needs to be appealing to the target market. Furthermore, the information on the care label needs to be understood by the target market because consumers will most likely consult the label during the post-purchase stage for instructions concerning the care of their garments.

Even though using the symbols only format on care labels has obvious benefits for manufacturers, end consumers may not prefer the care labels with exclusively symbols to the care labels with text. Shortly, after the introduction of the symbols by the [14] FTC (1997), most consumers did not understand care label information when it was presented only in symbol format ([24] Moore et al. , 2001; [33] Swinker et al. , 1999). While general comprehension of these symbols may have increased over the past ten years, consumers' level of exposure to and experience with these care labels varies. Thus, consumers' ability to comprehend these symbols also varies. It seems likely that the majority of consumers would still prefer the versions of the care label that contain text which can be referred to during care situations (i.e. text only or text and symbols). Care label information that is understood by consumers should increase consumers' confidence in their ability to care for their apparel items and in turn should reduce their perceptions of risk concerning the purchase of these items ([24] Moore et al. , 2001; [33] Swinker et al. , 1999). Therefore, it is critical to find out how information presented on care labels influences consumers' confidence in and risk perceptions concerning the care of apparel items.

Consumer confidence and perceived risk

Consumer confidence is generally defined as "the extent to which an individual feels capable and assured with respect to his or her marketplace decisions and behaviors" ([4] Bearden et al. , 2001, p. 122). It is regarded as a consumer's subjective evaluation of his/her ability to produce positive

experiences in the marketplace. It has been acknowledged that consumer confidence plays an important role in influencing consumer behaviour because this construct has a psychological influence on the cognitive, affective, and conative elements of consumers' attitude scheme ([4] Bearden et al. , 2001; [17] Harrell, 1979; [18] Howard and Sheth, 1969; [26] Ray, 1973; [38] Wendler, 1983). Therefore, the consumer confidence construct cannot only be used to predict consumer purchase behavior, but also to understand consumer information processing.

Consumer perceived risk, one of the widely examined concepts in consumer psychology, refers to consumers' expected negative utility associated with the purchase of a particular product or brand ([8] Chakraborty et al. , 1995). It is agreed that consumer risk perception may arise from "unanticipated and uncertain consequences of an unpleasant nature resulting from the product purchase" ([13] Dholakia, 2000, p. 1342). It is suggested that perceived risk may result from the cognitive processing of specific product information ([13] Dholakia, 2000, p. 1342).

Specific to the context of apparel, confidence refers to a consumer's belief that his or her knowledge or ability is sufficient to make an accurate judgment in certain situations, such as apparel care ([25] O'Cass, 2004). Fashion literature has reported that consumer confidence reflects the extent to which consumers experience uncertainty or ambiguity related to the meaning of an attitude object. Such confidence levels seem to vary depending upon the presence of information and consumers' understanding of that information ([38] Wendler, 1983). In general, most people are proficient with word-based communication because these skills are taught and reinforced from an early age ([31] Sojka and Giese, 2001). Given their experience, in general, consumers are likely to prefer product information presented in text format to visual format. However, when visual information is presented along with text information, this combination may enhance their ability to effectively interpret product information and increase their understanding of the product usage information. Thus, when consumers are presented with care label information in a preferred format (e.g. text only or both text and symbols), they should have more confidence in their knowledge to select an apparel item for purchase that they have the ability to care for properly after purchase. Consumers' cognitive activities in processing care label information may as well influence their perceptions of risk in relation to handling the apparel product. That is, consumers who understand the care label information should be less concerned about the likelihood of damaging the apparel item during post-purchase care and should, therefore, feel less risk associated with the purchase of that item. Thus, the first hypothesis was developed:

- H1. The information presentation format (i.e. symbols only, text only, both text and symbols) influences consumers' level of confidence in and risk perceptions about their care of apparel items. More specifically, the text only and both text and symbols formats will result in higher levels of confidence in and lower risk perceptions about their care of apparel items than the symbols only format.

Research about need for cognition

Need for cognition is one individual difference variable that may have an impact on consumers' information processing and may, in turn, have an influence on their preferences regarding the presentation format of product information ([31] Sojka and Giese, 2001). Need for cognition refers to the "tendency to engage in and enjoy effortful cognitive activity" ([7] Cacioppo et al. , 1996, p. 197). It is conceptualized as lying along a continuum ranging from low to high. People with a high need for cognition "are thought to naturally seek, acquire, think about, and reflect on information

in their environment" ([36] Tuten and Bosnjak, 2001, p. 392). They tend to enjoy the challenge of thinking and expend more cognitive effort in processing information ([5] Cacioppo and Petty, 1982; [34] Takacs, 1997; [37] Verplanken et al. , 1992). On the other hand, people with a low need for cognition are thought to be "chronic cognitive misers" who do not have a "high intrinsic motivation to exercise their mental faculties" ([7] Cacioppo et al. , 1996, p. 197). [31] Sojka and Giese (2001) further suggested that an individual's intrinsic motivation may motivate him/her to process information with a preference toward visual or verbal information. Namely, individuals with a high need for cognition may show higher preference for verbal information than individuals with a low need for cognition; on the other hand, individuals with a low need for cognition tend to engage in a visual modality of processing compared to those with a high need for cognition ([31] Sojka and Giese, 2001).\

It is assumed that consumers with a high need for cognition may prefer care labels that present the information in multiple formats (e.g. both text and symbols) because they might like the opportunity to utilize their cognitive ability by processing the information in both the text and symbol formats. On the contrary, those with a low need for cognition may, instead, prefer the singular presentation format with symbols as opposed to the text only or the combination format because they are less likely to be intrinsically motivated to process additional information. Based on this reasoning, the following hypotheses are proposed:

- H2. Consumers' need for cognition interacts with the information presentation format in influencing consumers' level of confidence in and risk perceptions about their care of apparel items. More specifically, consumers with a high need for cognition will have more confidence and perceive less risk when information is presented in exclusively text or both text and symbols than consumers with a low need for cognition. Likewise, consumers with a low need for cognition will have more confidence and perceive less risk when information is presented in exclusively symbols than consumers with a high need for cognition.

Method

Research design and measures

After pretesting at a Southeastern university with a convenience sample of 34 undergraduate students, three versions of a questionnaire were developed including care label information in various formats. The questionnaires were then completed by 275 undergraduate students (90 percent female, average age = 20.48 years) at one Midwestern and another Southwestern university. Respondents were randomly given one of the three questionnaires. One version contained care label information that is commonly used on apparel items in symbols only (e.g. wash in cold water, do not dry, do not iron); one version contained the same care information in text only; and the third version contained the same information in both symbols and text. The respondents were told that the care label information presented was attached to a \$65 dress shirt that they were considering purchasing to wear for an upcoming job interview. Based on this information, they were then asked to answer questions on a seven-point Likert-type scale (1 - strongly disagree, 7 - strongly agree) related to their level of confidence and risk perceptions about care of the apparel item. Consumer confidence in their care of the dress shirt was assessed using eight items (e.g. I am confident in my ability to take care of this dress shirt based on the care label

information) revised from [4] Bearden et al. (2001) ($\alpha = 0.93$). Overall, risk perception about caring for the shirt was measured with six items (e.g. I am afraid that not knowing what the care label means would result in the loss of this dress shirt) modified from [8] Chakraborty et al. (1995) ($\alpha = 0.88$). Because, we were interested in overall risk perception, the specific types of risk perception (i.e. psychological, financial, performance, physical, social) identified by [19] Jacoby and Kaplan (1972) were not investigated separately. Need for cognition was measured with 18 items identified by [6] Cacioppo et al. (1984) ($\alpha = 0.85$). In addition, we assessed the care label knowledge of participants by asking them to indicate the meaning of six symbols that are frequently found in apparel care labels (e.g. machine wash cold; tumble dry low) and asked to indicate what each of the symbols meant. The purpose of these questions was to assess the respondents' prior objective knowledge and understanding of various care symbols. As suggested in previous literature, prior knowledge may impact the individual's information processes ([9] Chebat et al. , 2001; [20] MacInnis and Jaworski, 1989). If the respondent gave the right answer to a symbol, then one was coded for that symbol; otherwise it was coded as zero. This process resulted in a maximum of six and minimum of zero for the variable of prior knowledge of care label symbols. This prior knowledge variable was then included as a covariate in following analyses. The last section of the questionnaire assessed demographic information.

Results

A multivariate analysis of covariance (MANCOVA) was conducted using consumers' level of confidence in and risk perceptions about their care of the apparel item as dependent variables and information presentation format, need for cognition, and the interaction term of information presentation format and need for cognition as independent variables. The covariate, prior knowledge of care label symbols, was kept in the model due to its significant effect.

H1 stated that the information presentation format of care labels significantly influences consumers' level of confidence in and risk perceptions about their care of apparel items. MANCOVA results (Table I [Figure omitted. See Article Image.]) indicated that the overall model was significant (Wilks' $\lambda = 0.9252$, $F = 10.51$, $p < 0.0001$) for both consumer confidence and perceived risk ($F = 20.31$, $p < 0.001$; $F = 7.61$, $p < 0.001$, respectively). Univariate analyses demonstrated that there was a significant main effect of information presentation format on respondents' confidence levels ($F = 44.99$, $p < 0.0001$) and risk perceptions ($F = 14.72$, $p < 0.0001$). It was predicted that the text only and the combination of text and symbols formats would result in higher confidence levels and lower risk perceptions than the symbols only format. Consistent with *H1*, the means for confidence in their care of the apparel item with the symbols only format were significantly lower than the text only ($M_{\text{symbol}} = 3.80$ vs $M_{\text{text}} = 5.69$, $p < 0.05$) and the combination ($M_{\text{symbol}} = 3.80$ vs $M_{\text{combination}} = 5.06$, $p < 0.05$) formats. Moreover, the means for the risk perceptions associated with the symbols only format were significantly higher than the text only ($M_{\text{symbol}} = 3.50$ vs $M_{\text{text}} = 2.45$, $p < 0.05$) and the combination ($M_{\text{symbol}} = 3.50$ vs $M_{\text{combination}} = 2.95$, $p < 0.05$) formats. Therefore, *H1* is supported. Further comparison between the text only and the combination formats indicated that for all respondents, regardless of their need for cognition, the mean for confidence in their care of the apparel item with the text only format was significantly higher than the combination format ($M_{\text{text}} = 5.69$ vs $M_{\text{combination}} = 5.06$, $p < 0.05$), while the mean for the risk perceptions with the text only format was significantly lower than the combination format ($M_{\text{text}} = 2.45$ vs $M_{\text{combination}} = 2.95$, $p < 0.05$). These findings provide evidence that the text only format was the most preferred and the symbols

Table I. Effects of information presentation format and need for cognition on consumer confidence and risk perceptions

Variables	Means for confidence	Multivariate F	Means for perceived risk	Multivariate F
		20.31***		7.61***
<i>Information presentation format (I)</i>				
Symbols only	3.80		3.50	
Text only	5.59		2.45	
Combination	5.06		2.95	
F-value	44.99***		14.72***	
<i>Need for cognition (C)</i>				
Low	4.78		2.95	
High	5.03		2.94	
F-value	1.74		0.03	
<i>Information presentation format (I) X need for cognition (C)</i>				
Symbols only X low	3.62		3.75	
Symbols only X high	3.93		3.33	
Text only X low	5.69		2.37	
Text only X high	5.69		2.53	
Combo X low	4.71		2.95	
Combo X high	5.42		2.95	
F-value	1.88		1.34	
<i>Prior knowledge (P)</i>				
F-value	19.41***		14.58***	

Notes: *p < 0.05; **p < 0.001; ***p < 0.001; prior knowledge of care symbols was included as a covariate

only format was the most preferred and the symbols only format the least preferred among the three different information presentation formats. In this analysis, the univariate effects of need for cognition were not significant for either confidence or risk perceptions ($F = 1.74, p > 0.05$; $F = 0.03, p > 0.05$, respectively).

H2 examined the interactive effect between need for cognition and information presentation format on consumers' level of confidence in and risk perceptions about their care of apparel items. To test this hypothesis, respondents were split into low vs high groups regarding their need for cognition based on a summed score ([29] Sicilia *et al.*, 2005) using a mean split method ($M_{\text{need for cognition}} = 3.75$). MANCOVA results (Table I [Figure omitted. See Article Image.]) showed that the interactive effect between information presentation format and need for cognition was not significant for either consumers' level of confidence ($F = 1.88, p > 0.05$) or risk perceptions ($F = 1.34, p > 0.05$). To further assess potential significant differences among different combinations of interactive effects, 15 pairs of contrast comparison analyses were conducted (Table II [Figure omitted. See Article Image.]). In terms of consumer confidence, eleven pairs of comparison were significantly different, while eight pairs of comparison regarding risk perceptions were significantly different. Thus, *H2* is partially supported.

According to contrast testing, this study found that consumers with a high need for cognition feel more confident in processing the combination format than consumers with a low need for cognition ($M_{\text{combination-high}} = 5.42$ vs $M_{\text{combination-low}} = 4.71, p < 0.05$); however, there was no significant difference regarding their risk perceptions ($M_{\text{combination-high}} = 2.95$ vs $M_{\text{combination-low}} = 2.95, p > 0.05$). Consumers with a high need for cognition felt more confident in processing information presented in the text only format than processing information presented in the symbols only format ($M_{\text{text-high}} = 5.69$ vs $M_{\text{symbols-high}} = 3.93, p < 0.001$), and there was a significant difference for risk perceptions ($M_{\text{text-high}} = 2.53$ vs $M_{\text{symbols-high}} = 3.33, p < 0.001$). On the other hand, consumers with a high need for cognition, as compared to the consumers with a low need for cognition, showed no significantly different preference for either the text only or the symbols only format in relation to level of confidence and risk perception ($M_{\text{text-high}} = 5.69$ vs $M_{\text{text-low}} = 5.69, p > 0.05$; $M_{\text{symbols-high}} = 3.93$ vs $M_{\text{symbols-low}} = 3.62, p > 0.05$ for confidence; $M_{\text{text-high}} = 2.53$ vs $M_{\text{text-low}} = 2.37, p > 0.05$; $M_{\text{symbols-high}} = 3.33$ vs $M_{\text{symbols-low}} = 3.75, p > 0.05$ for risk perception). There was no significant difference for consumers with a high need for cognition in processing information presented in the text only format compared with information presented in the combination format ($M_{\text{text-high}} = 5.69$ vs $M_{\text{combination-high}} = 5.42, p > 0.05$), and there was no significant difference for their risk perceptions ($M_{\text{text-high}} = 2.53$ vs $M_{\text{combination-high}} = 2.95, p > 0.05$).

Table II. Contrast test for interaction effects

Contrast	Means for confidence	F-value	Means for perceived risk	F-value
Symbols only X low vs symbols only X high	3.62 vs 3.93	0.56	3.75 vs 3.33	1.31
Text only X low vs text only X high	5.69 vs 5.69	0.31	2.37 vs 2.53	1.22
Combo X low vs Combo X high	4.71 vs 5.42	4.87*	2.95 vs 2.95	0.23
Symbols only X low vs text only X high	3.62 vs 5.69	42.12***	3.75 vs 2.53	13.69***
Symbol only X high vs text only X high	3.93 vs 5.69	41.45***	3.33 vs 2.53	8.22**
Symbols only X high vs text only X low	3.93 vs 5.69	46.86***	3.33 vs 2.37	15.24***
Symbols only X low vs text only X low	3.62 vs 5.69	47.92***	3.75 vs 2.37	21.68***
Symbols only X low vs Combo X low	3.62 vs 4.71	12.04***	3.75 vs 2.95	6.22*
Symbols only X low vs Combo X high	3.62 vs 5.42	27.90***	3.75 vs 2.95	4.07*
Symbols only X high vs Combo X low	3.93 vs 4.71	9.23**	3.33 vs 2.95	2.21
Symbols only X high vs Combo X high	3.93 vs 5.42	26.14***	3.33 vs 2.95	0.97
Text only X low vs Combo X low	5.69 vs 4.71	16.56***	2.37 vs 2.95	6.56*
Text only X low vs Combo X high	5.69 vs 5.42	3.48	2.37 vs 2.95	8.62**
Text only X high vs Combo X low	5.69 vs 4.71	12.84***	2.53 vs 2.95	2.14
Text only X high vs Combo X high	5.69 vs 5.42	1.85	2.53 vs 2.95	3.65

Notes: *p < .005; **p < 0.001; ***p < 0.001

Discussion and implications

The objective of this study was to investigate how information presentation formats influence consumers' confidence in and risk perceptions about post-purchase activities (i.e. care of apparel items) and whether an individual trait (i.e. need for cognition) plays a role in that relationship. The study revealed several interesting and useful results. Consistent with past literature ([4] Bearden et al. , 2001; [25] O'Cass, 2004), the findings of this research suggest not only that the text only format and the combination of text and symbols format are preferred to the symbols only format but also that the text only format was the most preferred among the three formats. Both the text only format and the combination format significantly increased consumers' confidence in and reduced consumers' risk perceptions about their care of apparel items in the context of care labels. The findings extend the existing information processing literature in that three forms of information presentation format (i.e. symbols only, text only, and the combination of symbols and text), as opposed to two (e.g. verbal and visual) ([10] Childers et al. , 1985; [32] Stafford, 1996), were considered in this study. Past research has emphasized the relationship either between information processing and consumer confidence and perceived risk ([13] Dholakia, 2000) or between information format and individual traits. This study, however, connects the different streams and provides a better understanding of the relationship between information presentation formats and consumers' confidence and risk perceptions associated with a specific post-purchase activity (i.e. care of apparel items) considering an individual trait (i.e. need for cognition). The findings that information presentation formats impact consumers' confidence in and risk perceptions about consumption activities suggest that information presentation formats (visual vs verbal cues) may influence consumers' psychological reactions with regard to performing certain post-purchase activities. Future research may extend that relationship to understand whether consumers' behavioural intentions vary (e.g. approach vs avoidance) given different types of information presentation formats.

While, surprisingly, the interaction effect between information presentation format and individual need for cognition does not seem to have a significant impact on consumers' confidence in and risk perceptions about the care of apparel items, further contrast testing shows meaningful results. Consistent with the literature ([29] Sicilia et al. , 2005; [34] Takacs, 1997; [37] Verplanken et al. , 1992), individuals with a high need for cognition did feel more confident than individuals with a low need for cognition in terms of their ability to care for the apparel item when that item had the care label information presented in the combination format. This finding is presumably due to the fact that labels with care information presented in multiple formats may require additional processing efforts from consumers and, thus, this information presentation format would be preferred by individuals with a high need for cognition ([7] Cacioppo et al. , 1996). In addition, consumers with a high need for cognition were found to have more confidence and less risk perceptions when the information was presented in text (i.e. verbally) rather than when it was presented in symbols (i.e. visually), which is also consistent with previous literature ([16] Gould, 1990; [31] Sojka and Giese, 2001). However, the study found that those who had a low need for cognition seemed to prefer the text only format to the symbols only format and those who had a low need for cognition also showed less confidence and higher risk perceptions when processing information presented in the symbols only format compared with those who had a high need for cognition. These unexpected findings may be a result of the fact that most consumers are still not familiar with the care label symbols ([24] Moore et al. , 2001; [33] Swinker et al. , 1999). The mean score of the covariate (prior knowledge of care labels) was less than two out of six ($M=1.78$),

implying that our respondents had a low level of understanding of the symbols on care labels of apparel products used in this study. Because of their lack of familiarity with and understanding of these symbols, the symbols only format most likely required consumers to engage in an extra step of information processing as they deduced the meanings of the care label symbols. Hence, this format may have been more appealing to consumers with a high need for cognition who would enjoy the extra cognitive processing and would, therefore, most likely feel more confident in processing information in the symbols only format than those consumers with a low need for cognition.

In terms of consumers' risk perceptions about their care of apparel items, descriptive statistics showed that there was little difference between consumers with a high need for cognition and those with a low need for cognition. This finding may have resulted from the fact that the sample was composed of younger consumers, many of whom were most likely still financially supported by their parents. Younger consumers' identities are less fixed than older consumers' identities. As such, older people tend to act more on their established internal values and beliefs, and younger people are more likely to be persuaded by the situation and peer influence than by their own values. Thus, it is expected that younger consumers would be more likely concerned with the social risks associated with apparel purchases than the financial risks associated with inappropriate care of apparel items, particularly if they were not financially independent ([30] Sirgy et al. , 2000). Surprisingly, although the difference was not significant, consumers with a high need for cognition had higher means of risk perceptions than those with a low need for cognition in the text only format. This may be due to the deeper level of understanding they had with the instructions when they appeared in text as opposed to symbols. Rather than focusing on the interpretation of the symbols, the high need for cognition consumers could use their cognitive energy to focus on the activities that the care label was recommending. Perhaps, some of these activities (e.g. not drying, not ironing) were perceived as inherently risky in terms of caring for an apparel item. As reflected in the above finding regarding consumer confidence, consumers with a high need for cognition were found to have lower risk perceptions than those with a low need for cognition in the symbols only format. This finding again suggests that the visual stimuli provided on care labels in this research may have suggested "visual overload" for those with a low need for cognition and thus produced higher risk perceptions due to these consumers' lower motivations and capabilities in terms of cognitive processing ([21] Macklin, 1996).

In general, consumers showed the highest level of confidence and the lowest risk perceptions when processing information with the text only format and lowest level of confidence and highest risk perceptions when processing information with the symbols only format. It is likely that the combination format with both symbols and text may be somewhat confusing and possibly convey more information than consumers are willing to process in the context of care labels. While past research focused more on either visual or verbal stimuli in understanding consumers' recall and attitudes toward advertisements ([31] Sojka and Giese, 2001), this research fills a gap by drawing attention to how consumers process and perceive information when it is presented in both visual and text formats. It remains unknown whether, when consumers are presented with information in dual formats, they focus on one type of information and ignore the other or if they try to process the information in both formats presented. This question is worthy of future investigation.

This study has implications for public policy. It was found that the text only format results in the highest level of confidence and the lowest level of risk perceptions from consumers. Information presented in the symbols only format generates the least level of confidence and the

highest level of risk perceptions from consumers regarding care of apparel items. Furthermore, our respondents show lower accuracy when comprehending the care symbols that are commonly seen on care labels attached to apparel products. These findings suggest that apparel retailers who sell items with care label information presented exclusively with symbols may be doing so at the detriment of their business. As research has suggested that consumers may utilize care label information as a decision criterion for purchasing apparel items, apparel retailers need to pay more attention to this practice in addition to considering the cost of manufacturing. Therefore, if the FTCs goal is to adopt the universal symbols on all apparel items sold in the USA, relevant institutions need to promote the understanding of care label symbols among American consumers through educational programmes.

Conclusions, limitations, and future research

This study investigates the effect of apparel care label information presentation formats (i.e. symbols only, text only, and the combination) and the individual trait of need for cognition on consumers' confidence in and risk perceptions about the post-purchase activity of care of apparel items. The empirical results suggest not only that the text only format and the combination of text and symbols format are preferred to the symbols only format but also that the text only format was the most preferred among the three formats. Both the text only format and the combination format significantly increased consumers' confidence in and reduced consumers' risk perceptions about their care of apparel items. The finding that our respondents have limited knowledge of the care symbols that are commonly seen on care labels has suggested that promotion of understanding of care label symbols will be crucial to help consumers make better decisions in terms of purchase and care of apparel items.

Limitations and recommendations for further research

A number of constraints have capped the rigor of experimentation in the current study. This study investigated consumers' psychological reactions to information presented in the context of apparel care labels by examining a regular post-purchase activity (i.e. care of apparel items). The scenario-based experiments provided information about a specific apparel item with three different formats of care instructions solely based on price and product usage situation without providing more specific information in terms of fabrics, fit, and/or affordability. Future research can be done by incorporating more detailed information in the scenario. Other contexts, in addition to comprehension of care labels, such as signage in theme parks and store directories at retail stores, can also be studied to further understand how consumers process and react to various formats of information presented in the marketplace. In addition, this research uses a convenience student sample that concentrates greatly on one age group and is predominately female in composition. Future endeavor in relation to this research subject should consider investigating consumers with more diverse backgrounds (e.g. age, gender, and education). Data collection in a field setting, as opposed to a quasi-experimental design, may also help enhance the external validity of the findings. The study reported here provides a preliminary analysis of whether consumers' confidence and risk perceptions vary across different information presentation formats considering mainly one individual trait, i.e. need for cognition. Other types of processing traits, such as style of information processing, may be also considered in future research.

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